



GENERAL **CATALOGUE**





BETTER SWITCHES

GENERAL CATALOGUE



Quality makes our products great

With over 50 years of experience we are specialist in the manufacturing of cam switches, disconnect switches, position and safety switches, power tools switches, relay sockets and push buttons. We design and build extremely reliable and efficient products: our company is managed in full accordance with UNI EN ISO 9001, ISO 14001 and all our products are verified in our laboratory under the most stringent standards to guarantee performance, durability and safety.



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CAM SWITCHES



01

CR series

CA series

CQ series

Cam switches

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Handles and plates

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Range

The range of Bremas Cam Switches includes 3 top performance series in line with the highest market standards.

Their characteristics make them the ideal choice for any industrial application.

■ CR Series

- Rated current: from 12A up to 40A
- Rated insulation voltage: 690V
- Terminal protection degree: IP20

**■ CA Series**

- Rated current: from 12A up to 630A
- Rated insulation voltage: 690V
- Terminal protection degree: IP00

**■ CQ Series**

- Rated current: from 16A up to 40A
- Rated insulation voltage: 690V
- Terminal protection degree: IP20
- Simplified wiring



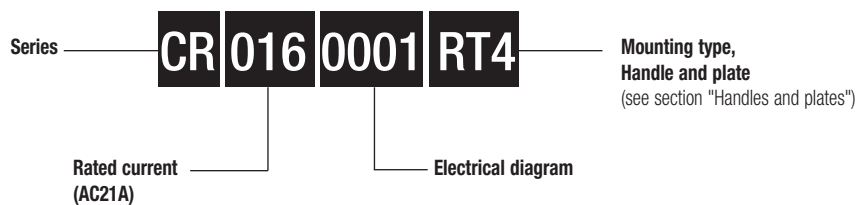
■ CR Series

- Terminal protection degree: IP20
- Class V2 self-extinguishing housing
- Metal shaft
- Metal rods
- Terminal with self raising plate and captive screws
- Rear mounting and Base mounting



Size	Rated current I _e (A)	Rated insulation voltage U _i (V)	Type
S1	12	690	CR012
	16	690	CR016
	20	690	CR020
	25	690	CR026
	32	690	CR033
S2	25	690	CR025
	32	690	CR032
	40	690	CR040

Code structure



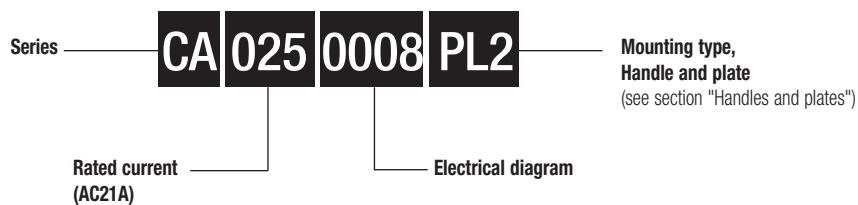
■ CA Series

- Terminal protection degree: IP00
- Class V2 self-extinguishing housing
- Metal shaft
- Metal rods
- Terminal with self raising plate and captive screws
- Rear mounting and Base mounting



Size	Rated current I _e (A)	Rated insulation voltage U _i (V)	Type
S1	12	690	CA012
	16	690	CA016
	20	690	CA020
	25	690	CA026
	32	690	CA033
S2	25	690	CA025
	32	690	CA032
	40	690	CA040
S3	50	690	CA050
S4	75	690	CA063
S5	115	690	CA100
S6	200	690	CA200
	400	690	CA400
	630	690	CA630

Code structure



Technical data IEC/EN 60947-3

Rated insulation voltage	Ui	V
Rated operating voltage	Ue	V
Rated impulse withstand voltage	Uimp	kV
Rated thermal current for open switch	Ith	A
Rated thermal current for enclosed switch	Ithe	A
Rated operation frequency		Hz
Power dissipation for each pole		W
Rated operating current		
AC-21A Switching resistive loads, including moderate overloads	Ie	A
AC-22A Switching of mixed resistive and inductive loads, including moderate overloads	Ie	A
AC-20A Connecting and disconnecting under no loads conditions		
Rated operating power		
AC-23A Switching of motor loads or other highly inductive loads 3 phase - 3 pole	230V	Kw (A)
	400V	Kw (A)
	500V	Kw (A)
	690V	Kw (A)
AC-23A Switching of motor loads or other highly inductive loads 1 phase - 2 pole	110V	Kw (A)
	230V	Kw (A)
AC-3 Squirrel cage motors: starting, switching off motors during running 3 phase - 3 pole	230V	Kw (A)
	400V	Kw (A)
	500V	Kw (A)
	690V	Kw (A)
AC-3 Squirrel cage motors: starting, switching off motors during running 1 phase - 2 pole	110V	Kw (A)
	230V	Kw (A)
	400V	Kw (A)
AC-4 Squirrel cage motors: Direct-on-line starting, reversing, plugging and inching 3 phase - 3 pole	230V	Kw (A)
	400V	Kw (A)
	400V	Kw (A)
AC-15 Control of a.c electromagnetic loads	230V	A
	400V	A
	400V	A
Rated breaking capability in AC-23A (cos $\varphi=0,45$)	230V	A
	400V	A
	400V	A
Short circuit protection		
Rated short time withstand current	Icw	A
Rated short-circuit make capacity	Icm	A
Rated conditional short-circuit current	-	kA
With fuses class gG	500V	A

Technical data UL/CSA

Rated operating voltage	Ue	UL/CSA V
General use current	Ie	UL/CSA A
Short circuit rating @600Vac		Arms
Fuse size (Class RK5, 600Vac, 200kA A.I.C.)		A
Rated operating power		
1 phase - 2 pole	120V	Hp (A)
	240V	Hp (A)
	200V	Hp (A)
3 phase - 3 pole	240V	Hp (A)
	480V	Hp (A)
	600V	Hp (A)
	600V	Hp (A)

Mechanical characteristics

Mechanical life		Cycles x 10 ⁶
		Cycles/hr
Connection according to IEC 9471-1 and EN 50947-1		
Connecting capability	With flexible wires	Min-Max mm ²
		Min-Max AWG
	With solid wires	Min-Max mm ²
Connection terminal screw dimensions		Type
Screw tightening torque		Nm
Protection degree IEC 529 EN 60529		
Terminals	IP	
Ambient conditions		
Operating ambient temperature	°C	
Storage ambient temperature	°C	
Withstand to constant humid according to IEC 60068		
Withstand to cyclic humid according to IEC 60068		

SIZE													
1					2			3	4	5	6	7	8
CA/CR 012	CA/CR 016	CA/CR 020	CA/CR 026	CA/CR 033	CA/CR 025	CA/CR 032	CA/CR 040	CA 050	CA 063	CA 100	CA200	CA400	CA630
690	690	690	690	690	690	690	690	690	690	690	690	690	690
690	690	690	690	690	690	690	690	690	690	690	690	690	690
6	6	6	6	6	6	6	6	6	6	6	6	6	6
16	20	25	32	32	32	40	50	63	80	115	200	400	630
16	20	25	25	32	32	40	50	63	80	100	160	-	-
50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50/60	50	50
0,27	0,5	0,4	0,5	0,5	1	1	1,3	1,6	2,5	4,7	7	15	30
12	16	20	25	32	25	32	40	50	75	115/110 ⁵	160 ⁵	-	-
12	16	16	20	25	20	25	32	40	63 ⁵	110	160	-	-
-	-	-	-	-	-	-	-	-	-	-	-	400	630
3 (9)	4 (14)	5,5 (17)	7,5 (24)	8,5 (27)	7,5 (24)	8,5 (27)	10 (32)	15 (48)	18,5 (58)	30 (95)	40 (125)	-	-
4 (9)	7,5 (14)	9 (16)	11 (20)	15 (27)	11 (20)	15 (27)	18,5 (30)	25 (45)	30 (54)	45 (85)	59 (106)	-	-
-	-	9 (13)	11 (15)	15 (22)	11 (15)	15 (22)	18,5 (27)	33 (48)	22 (32)	30 (40)	75 (108)	-	-
-	-	9 (9)	11 (11)	15 (16)	11 (11)	15 (16)	18,5 (19)	22 (23)	-	-	-	-	-
0,75 (8,5)	1,1 (12)	1,1 (5)	2,2 (25)	2,2 (25)	2,2 (25)	2,2 (25)	3 (34)	3,7 (42)	5,5 (63)	9 (102)	11 (125)	-	-
1,5 (8,5)	2,2 (14)	3 (17)	3,7 (20)	3,7 (20)	3,7 (20)	3,7 (20)	5,5 (30)	7,5 (40)	10 (32)	15 (82)	22 (120)	-	-
2,2 (7)	3,7 (12)	4 (13)	4,5 (16)	5,5 (17)	5,5 (17)	5,5 (17)	7,5 (24)	11 (35)	15 (47)	22 (70)	30 (95)	-	-
3,5 (7)	5,5 (10)	7,5 (14)	8 (16)	9,5 (16)	9,5 (16)	10 (17)	15 (27)	18 (33)	22 (40)	37 (67)	45 (82)	-	-
-	-	7,5 (11)	8 (12,5)	9,5 (12,5)	9,5 (12,5)	10 (14)	15 (22)	22 (32)	22 (32)	30 (40)	59 (85)	-	-
-	-	7,5 (8)	8,5 (10)	9,5 (10)	8,5 (10)	10 (10)	16 (16)	20 (20)	-	-	-	-	-
0,37 (4)	0,75 (9)	1,1 (13)	1,5 (17)	1,5 (17)	1,5 (17)	1,5 (17)	2,2 (25)	3,7 (42)	4 (45)	7,5 (85)	9 (102)	-	-
1,1 (6)	1,5 (8)	2,2 (12)	3 (17)	3 (17)	3 (17)	3 (17)	4,5 (25)	7,5 (40)	7,5 (40)	11 (60)	15 (82)	-	-
-	-	3,7 (12)	-	-	-	-	-	-	-	-	-	-	-
-	-	1,5 (4,5)	1,7	2	2,2 (17)	2,2 (17)	3 (10)	3,7 (12)	5,5 (17)	7,5 (85)	-	-	-
-	-	2,2 (2,6)	2	2,5	3 (5,5)	3 (5,5)	5,5 (10)	6 (11)	7,5 (14)	11 (20)	-	-	-
4	6	7	8	8	8	8	10	-	-	-	-	-	-
3	4	5	6	6	6	6	8	-	-	-	-	-	-
72	112	136	192	216	192	216	256	384	464	760	1000	-	-
72	112	128	160	216	160	216	240	360	432	680	848	-	-
150	240	240	240	-	400	400	500	600	800	1500	2000	-	-
-	-	1500	1500	-	2000	2000	2000	2000	2500	3000	3000	-	-
4	4	5	5	5	10	10	10	15	15	15	15	-	-
16	20	20	25	32	35	35	50	50	63	125	200	-	-

600/-	600/-	600/300	600/-	600/-	600/600	600/600	600/600	600/600	600/600	600/600	600/600	600/-	600/- ⁴	600/- ⁴
12	16	20/16	25/-	30/-	25/25	35/25	40/32	60/40	85/63	125/100	240/-	400/- ³⁴	630/- ³⁴	
5000	5000	5000	5000	5000	5000	5000	5000	-	-	-	-	-	-	-
60	25 (30)	60	25	30	60	60	60	-	-	-	-	-	-	-
0,5 (9,8)	1 (16)	1,5 (20)/-	2 (24)/-	-	2 (24)/-	2 (24)/-	3 (34)/2,5	5 (56)/-	7,5 (80)/-	10 (100)/5	-	-	-	
1,5 (10)	2 (12)	3 (17)/-	3 (17)/-	-	3 (17)/6	5 (17,5)/-	7,5 (25,3)/-	10 (50)/-	10 (50)/-	15 (68)/12	-	-	-	
1,5 (6,9)	2 (7,8)	5 (17,5)/-	-	7,5 (25,3)/-	5 (17,5)/-	7,5 (22)/-	10 (28)/9,5	15 (48,3)/-	20 (62,1)/-	20 (62,1)/-	-	-	-	
2 (6,8)	3 (9,6)	5 (15,2)/-	7,5 (22)/-	10 (28)/-	7,5 (22)/-	10 (14)/-	15 (21)/20	20 (54)/-	20 (54)/-	25 (68)/24	-	-	-	
3 (4,8)	7,5 (11)	10 (14)/-	-	15 (21)/-	10 (14)/-	15 (17)/-	20 (22)/25	30 (40)/-	30 (40)/-	40 (52)/50	-	-	-	
5 (6,1)	7,5 (9)	10 (11)/-	15 (17)	20 (22)/-	15 (17)/-	15 (17)/17	20 (22)/25	30 (32)/32,5	40 (41)/50	50 (52)/65	-	-	-	

2	2	2	2	2	1,5	1,5	1,5	1,5	1	0,3	0,1	-	-	
120	120	120	120	120	120	120	120	120	120	120	120	-	-	
2x1,5-4	2x1,5-4	2x1,5-4	2x1,5-4	2x1,5-4	2x2,5-10	2x2,5-10	2x2,5-10	2x2,5-6	6-16	10-25	50-70 ¹	Terminals designed for cable lugs or copper bars suitable for bolts		
16-10	16-10	16-10	16-10	16-10	16-8	16-8	16-8	14-8	10-6	10-3	1/0-2/0			
2x1,5-6	2x1,5-6	2x1,5-6	2x1,5-6	2x1,5-6	2x2,5-16	2x2,5-16	2x2,5-16	2x4-10	10-25	10-25	16-35			
M3,5	M3,5	M3,5	M3,5	M3,5	M4	M4	M4	M5	2xM5	M8	M10	M12x20	M16x25	
1	1	1	1	1	1,2	1,2	1,2	2,8	2,8	2,8	23	40	98	
00/20	00/20	00/20	00/20	00/20	00/20	00/20	00/20	00	00	00	00	00	00	00

-25 ÷ +55

-30 ÷ +70

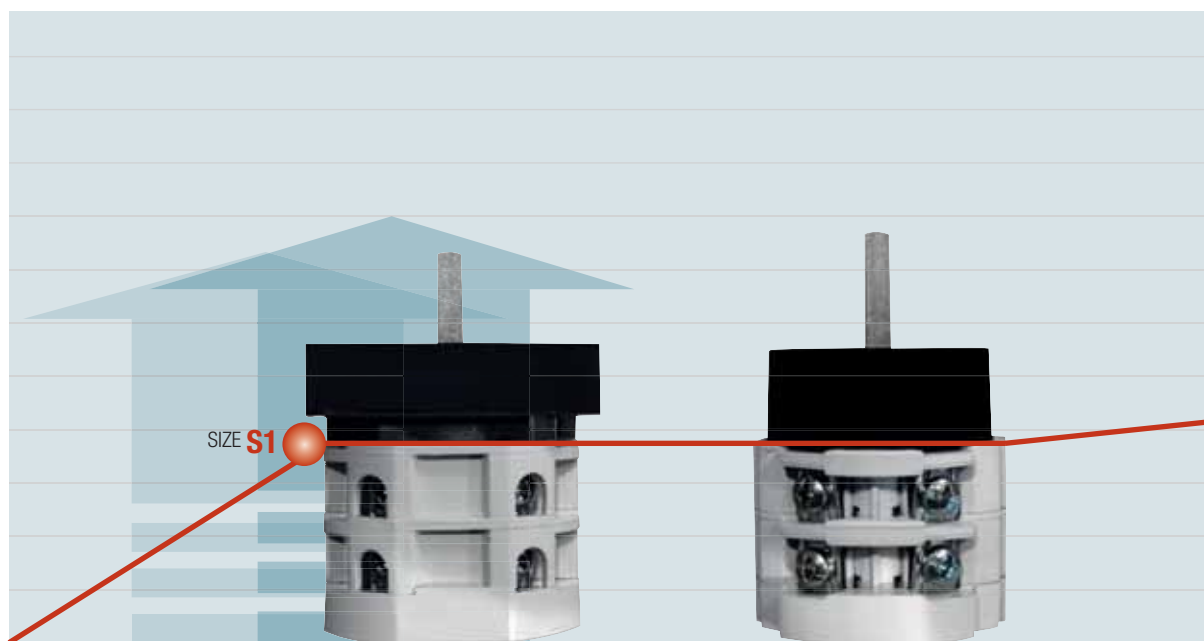
parte 2-78

parte 2-30

New

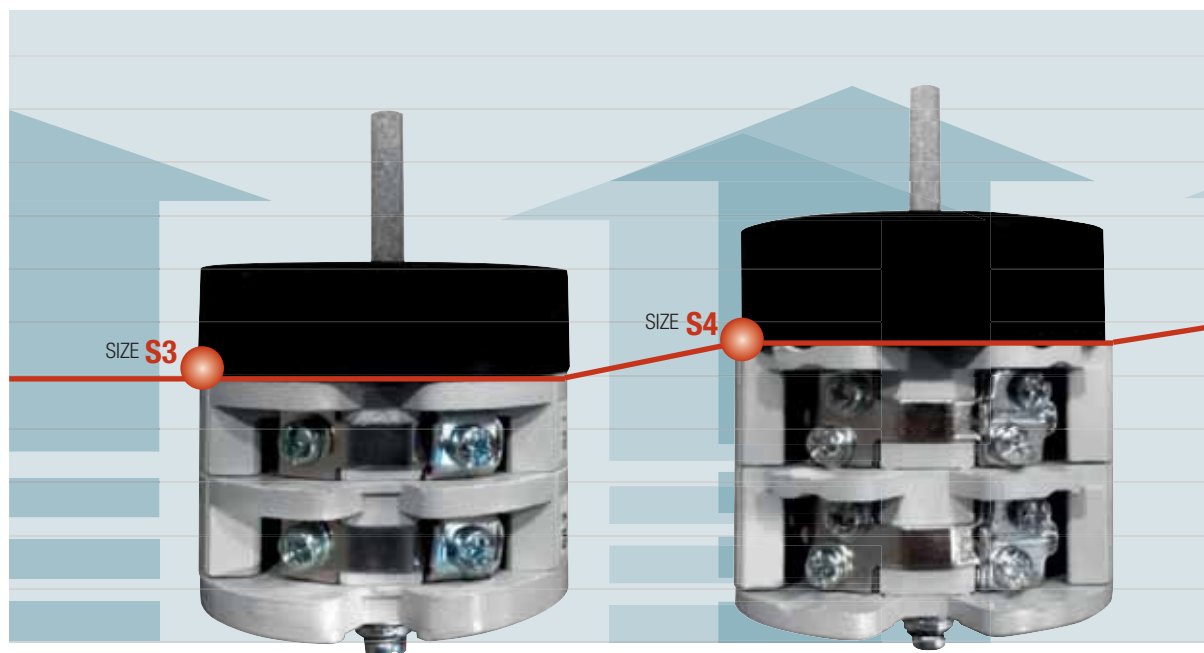
Notes: ¹ = Terminals for M10 bolts ² = CSA at 300V ³ = for use similar to the category AC20 ⁴ = UR approval ⁵ = at 500V

■ CR/CA 012...630 dimensions



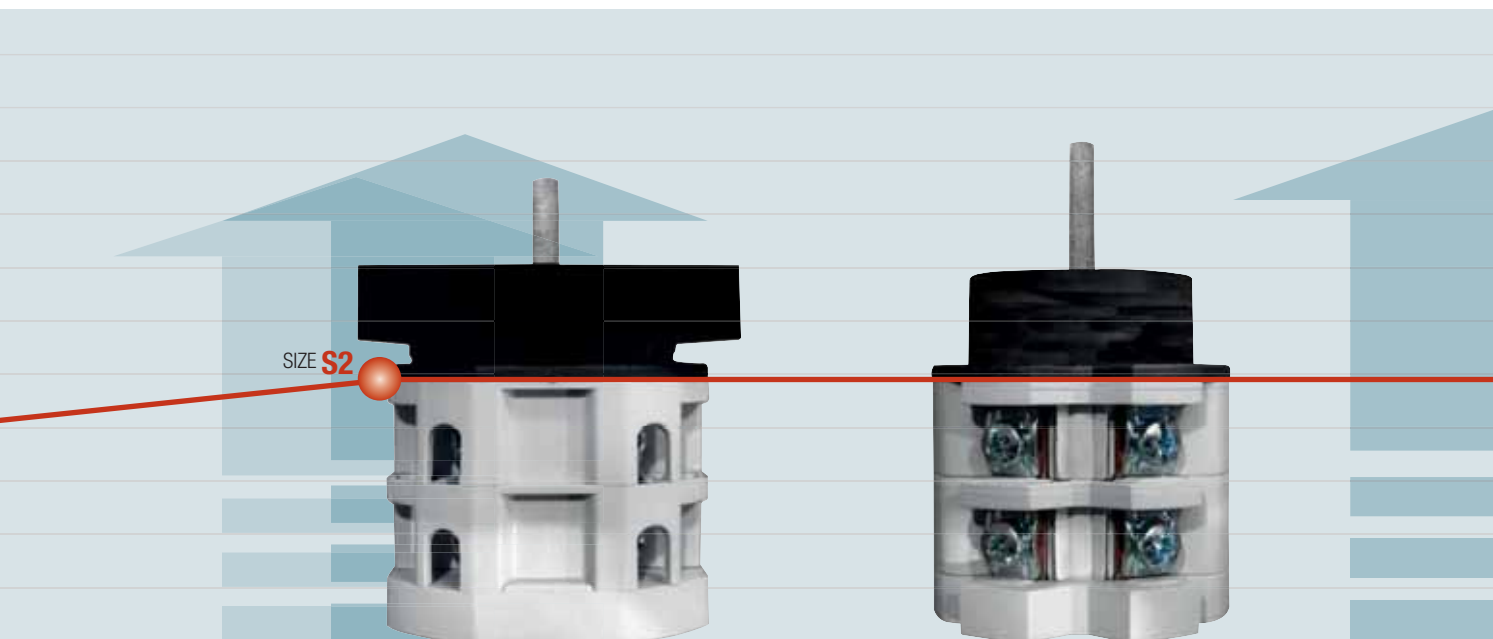
■ CR 012/033

■ CA 012/033



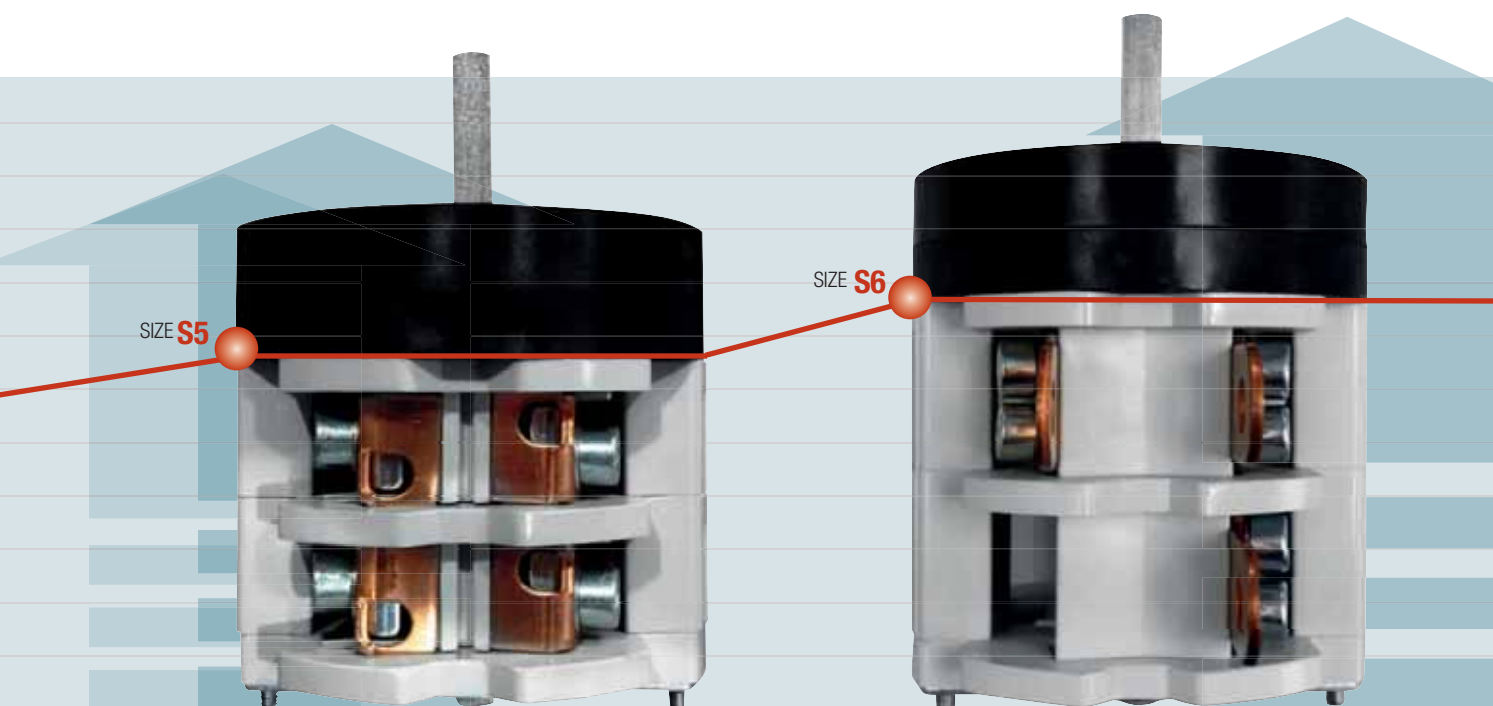
■ CA 050

■ CA 063



■ CR 025/040

■ CA 025/040

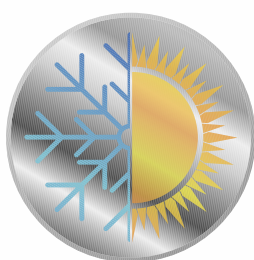


■ CA 100

■ CA 200-400-630

Ambient conditions

- Designed to withstand very severe conditions of use up to +55°C
- Operating ambient temperature -25°C ÷ +55°C
- Storage ambient temperature -30°C ÷ +70°C
- Withstand to constant and cycling humid according to IEC 60068



Bremas is able to meet any application requirement through the use of special materials, such as stainless steel, metal alloys and plastics even in environments which demands for specific construction requirements (eg. UV resistance, higher self-extinguishing degree, higher mechanical strength etc.).

CR-CA Series - Approval

cam switches

International standards and approvals

Country	USA / Canada	Canada	China	UK	Germany	Switzerland	Denmark	Norway	Sweden	Finland	Austria	Great Britain	IEC International electrical Commission	Technischer Überwachungs-Verein	Istituto Italiano del Marchio di Qualità
Authority	UL investigated according to CSA	CSA International	China Compulsory Certificate		Verband Deutscher Elektrotechniker	Schweizerischer Elektrotechnischer Verein	Danmarks Elektriske Materielkontroll	Norges Elektriske Materielkontroll	Svenska Elektriske Materielkontroll-anstalten	Sähkötar-kastuskeskus	Österreichischer Verband für Elektrotechnik	British Standards Institution			
Mark of standard															
CA012	•			•	+	+	+	+	+	+	+	+	+		
CA016	•			•	+	+	+	+	+	+	+	+	+		
CA020	•			•	+	+	+	+	+	+	+	+	+	•	•
CA026	•			•	+	+	+	+	+	+	+	+	+	•	
CA033	•			•											
CA025	•			•	+	+	+	+	+	+	+	+	+		
CA032	•			•	+	+	+	+	+	+	+	+	+		
CA040	•			•	+	+	+	+	+	+	+	+	+		•
CA050	•			•	+	+	+	+	+	+	+	+	+		
CA063	•		•	•	+	+	+	+	+	+	+	+	+		
CA100	•		•	•	+	+	+	+	+	+	+	+	+		
CA200		•		•	+	+	+	+	+	+	+	+	+		
CA400		•		•	+	+	+	+	+	+	+	+	+		
CA630		•		•	+	+	+	+	+	+	+	+	+		
CQ012	•		•	•	+	+	+	+	+	+	+	+	+		
CQ016	•		•	•	+	+	+	+	+	+	+	+	+		
CQ025				•	+	+	+	+	+	+	+	+	+		
CQ032				•	+	+	+	+	+	+	+	+	+		
CR012	•		•	•	+	+	+	+	+	+	+	+	+		
CR016	•		•	•	+	+	+	+	+	+	+	+	+		
CR020	•		•	•	+	+	+	+	+	+	+	+	+	•	•
CR026	•		•	•	+	+	+	+	+	+	+	+	+	•	
CR033	•		•	•											
CR025	•		•	•	+	+	+	+	+	+	+	+	+		
CR032	•		•	•	+	+	+	+	+	+	+	+	+		
CR040	•		•	•	+	+	+	+	+	+	+	+	+		•

• Approved

+ conforms to requirements

* Pending

⁽¹⁾ on request, available in certified version EN 61058

Note:

1) UL Approval File E101686

2) CSA Approval File 039540-0-000

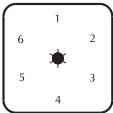
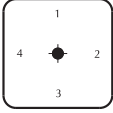
3) It is not required to bear a symbol but switches must conform to requirements.

4) IEC does not operate an approval diagram



Switching angles

The range of Bremas solution include more than 10.000 electrical diagrams, characterized by different switching angles, number of positions as well as specific customer requirements:

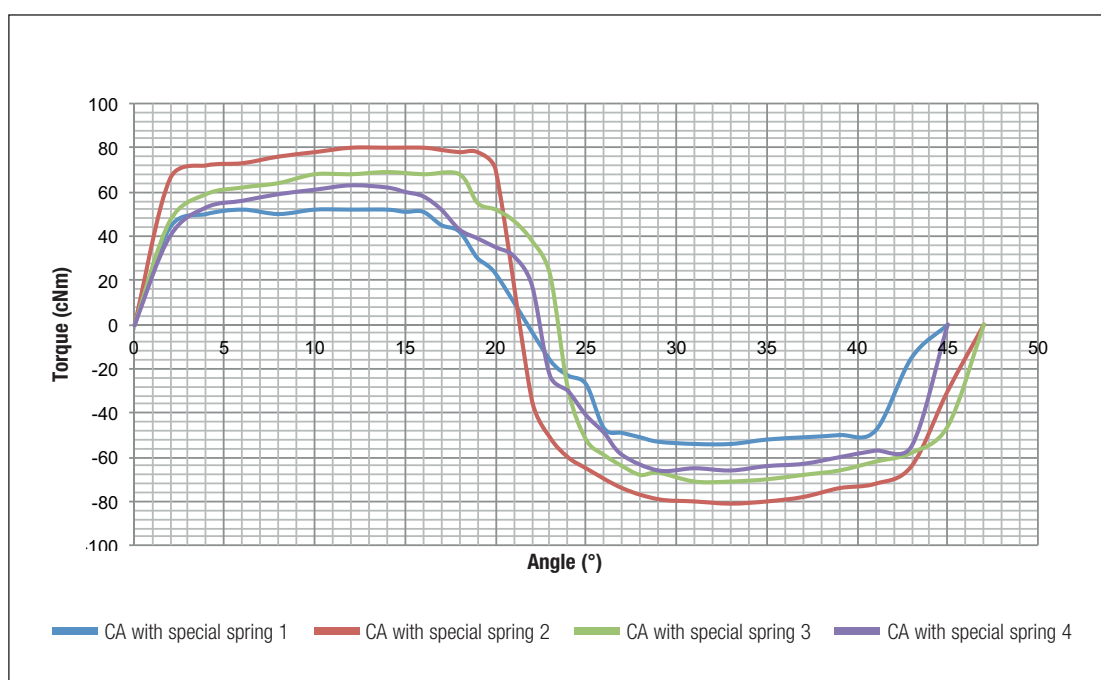
Switching angles	Number of positions	
22,5°	16	
30°	12	
45°	8	
60°	6	
90°	4	

Latching Torque

The Bremas switching system allows the best performances in every application. Its modular design allows to develop customized solution with different latching torques.

Any special requirement can be fulfilled by using different combinations of components such as:

- Springs with different resistances
- Cursors
- Latching mechanism
- Cams
- Shafts



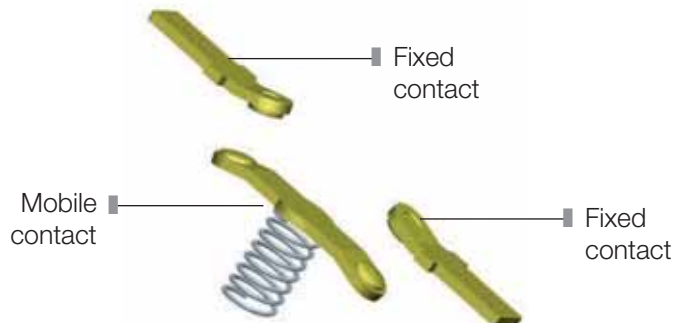
Comparison of latching torques between some switches with special springs.

Contacts

- Copper contacts
- Silver alloy pads
- Double break with positive opening
- Long electrical life (over 1.000.000 electrical cycles)
- Gold contacts for low voltage signals control
- Sliding and self-cleaning contacts for occasional maneuvers

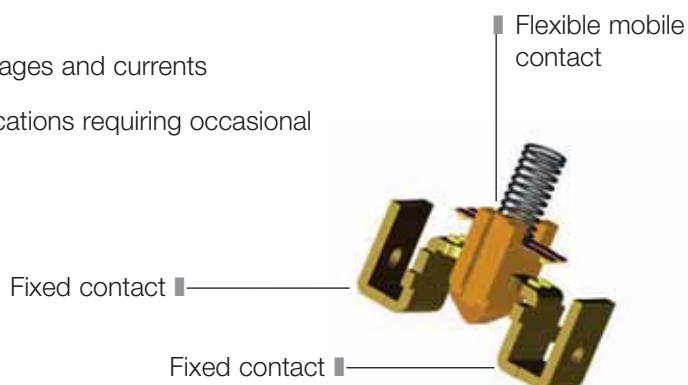
■ Standard contact system (optional gold contacts)

- Consists of fixed contacts, connected to the terminals, and mobile contacts controlled by springs, cursors and cams
- In the standard configuration, there are a spring and a cursor for each mobile contact
- For special configurations, can be used more springs and cursors for each mobile contact



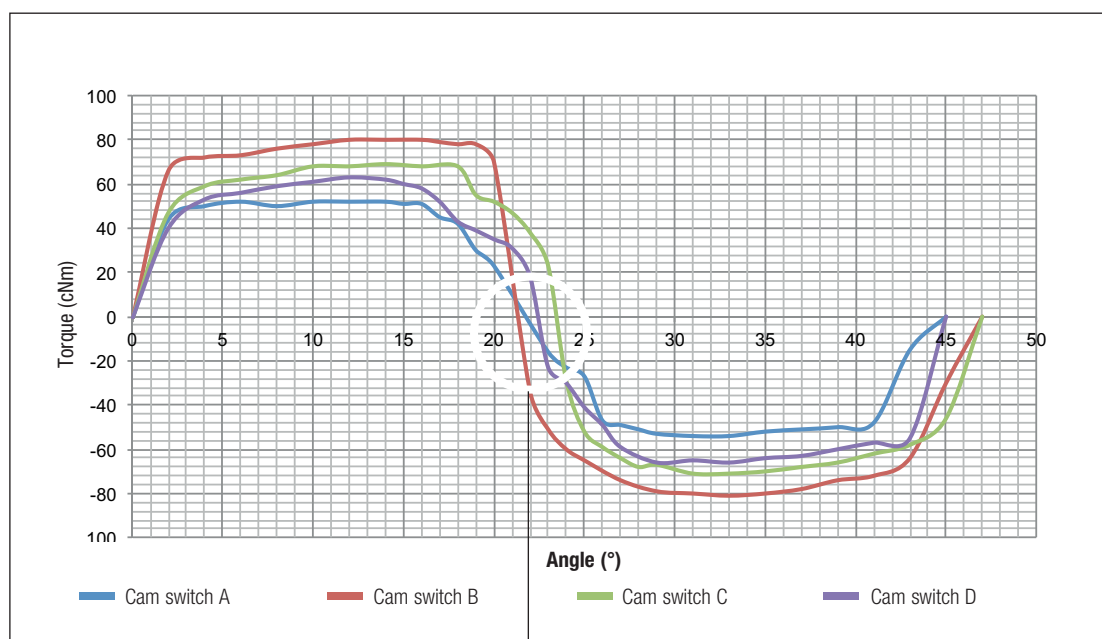
■ Sliding and self-cleaning contacts system (optional gold contacts)

- Consists of fixed contacts, connected to the terminals, and mobile contacts controlled by springs, cursors and cams
- High reliability even at low voltages and currents
- Specifically designed for applications requiring occasional maneuvers

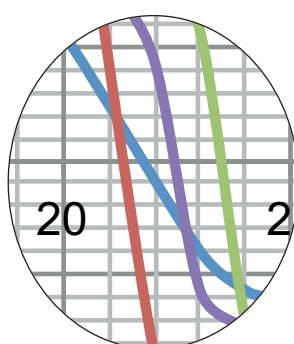


Precision of the latching and the contacts closure

- High precision in the latch: $\pm 3^\circ$
- High precision in the closure of the contacts: $\pm 4^\circ$



Comparison between the latch of some cam switches with switching angle 45° .



Latching precision $\pm 3^\circ$

Terminals for cables connection

■ Different types of terminals for cables connection:



■ Screw connection
Standard Solution



■ Single faston at 90°



■ Double faston at 90°



■ Alternating faston



■ Single faston at 135°

■ Additional features of the terminals for cables connection:



■ **CR series**
Captive plus-minus terminal screws



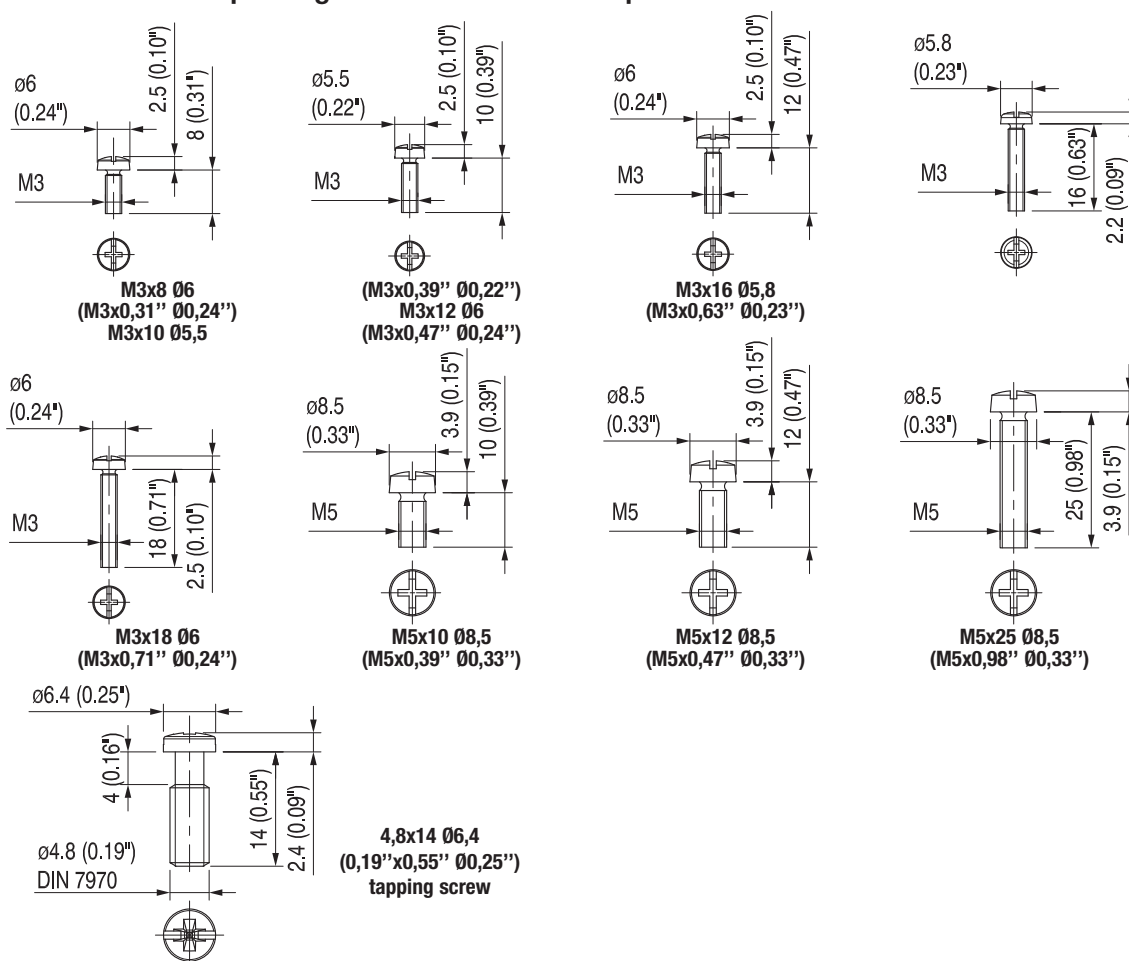
■ **CA series**
Terminal with self raising plate and captive screws

Fixing screws

All Bremas switches are equipped with fixing screws and, upon request, with knobs and/or plates. Different types and sizes of fixing screws can be supplied on request.

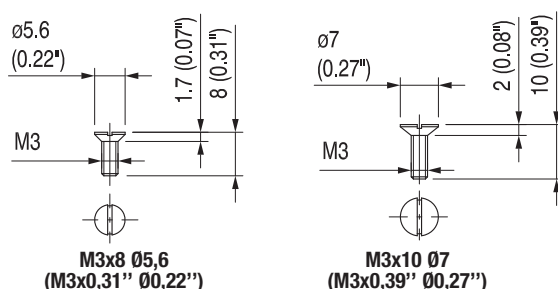
■ Cylinder head (convex):

- Cross head (for Philips and slot screwdrivers)
- Can be used depending on the thickness of the panel where the cam switch will be fixed



■ Countersunk head:

- Single slot (for slot screwdrivers)
- Can be used when is necessary that the screw head does not protrude from the panel where the cam switch will be fixed



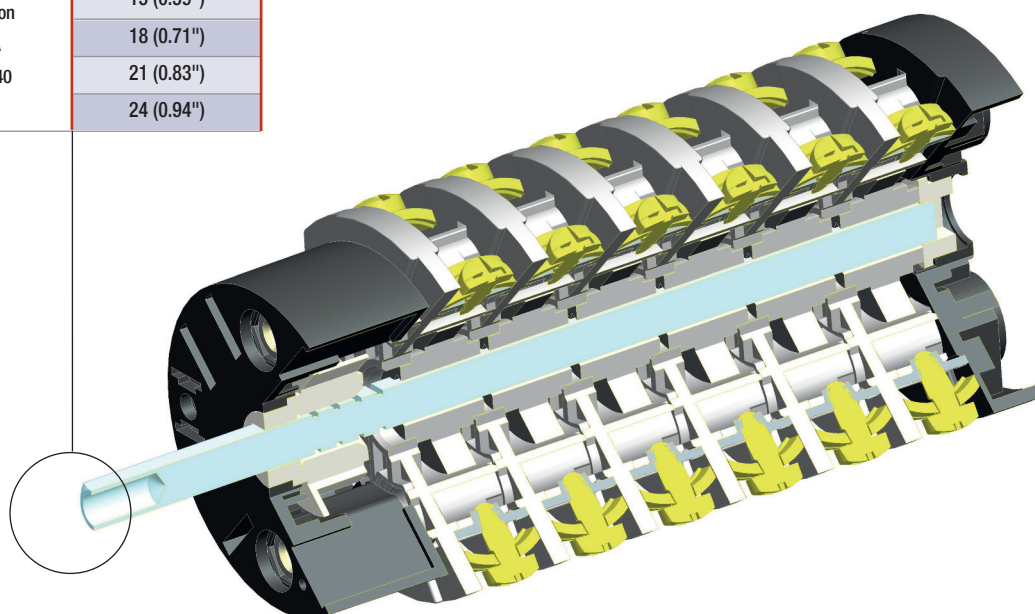
Cam switches for industry

CR-CA 012...040 Series

Metal control shafts

- Steel made with galvanic treatment;
- Passing through all the contact elements of the switch;
- High quality construction and high resistance to bending and torsion;
- They ensure the simultaneous perfect closing and opening of the contacts;
- Section of the control shaft determined by the size and by the power of the switch.

	mm (in)
Standard protrusion	15 (0.59")
CR/CA	18 (0.71")
012...040	21 (0.83")
	24 (0.94")

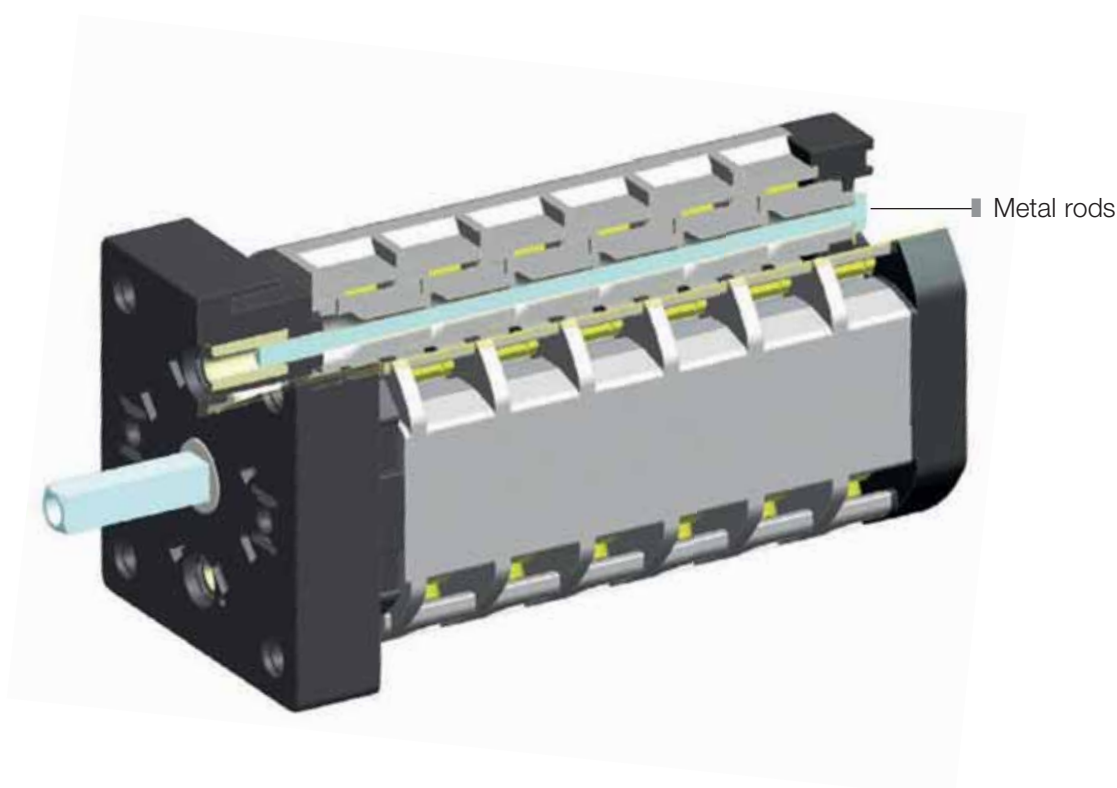


Size	Type	Section of the control shaft
S1/S2	CR/CA 012/040	Q5*
S3/S4	CA 050/063	Q7
S5/S6	CA 100/630	Q10

*Q6 on request

Metal rods

- Steel made with galvanic treatment;
- Passing through all the contacts elements of the switch;
- Ensure the solid construction of the cam switch;
- They ensure the simultaneous perfect closing and opening of the contacts;
- Guarantee a high mechanical resistance to the torsion and, consequently, avoid short circuits between the various phases during the transition from one position to another of the switch (especially when there are many contact elements);
- Special rods achievable for specific customer requirements.



Plastic material

- Body of the cam switch made with self-extinguishing plastic, which guarantees safety even in emergency conditions;
- High precision components made of special plastic materials;
- UL approval with characteristics required for:
 - Flammability class
 - HWI (Hot Wire Ignition)
 - HAI (High-Amp Arc Ignition)
 - CTI (Comparative Tracking Index)

The choice of the plastic material type used for the construction of the Bremas cam switches depends on the application and on customer needs.

■ Self-extinguishing class

	V0	V2
Total time of flaming combustion for each group of samples.	< 50 s	< 250 s
Residual combustion time plus persistence time of the incandescence for each sample, after the second application of the flame.	< 30 s	< 60 s
Residual combustion time for each of the samples after the removal of the flame.	< 10 s	< 30s
Ignition of cotton wool by incandescent drops (drip).	NO	NO
Complete burning of the sample.	NO	NO

Stainless steel solutions

Specific applications require products with particular characteristics in terms of **mechanical** and **weathering strength**.

Bremas cam switches can be made with Stainless Steel components:

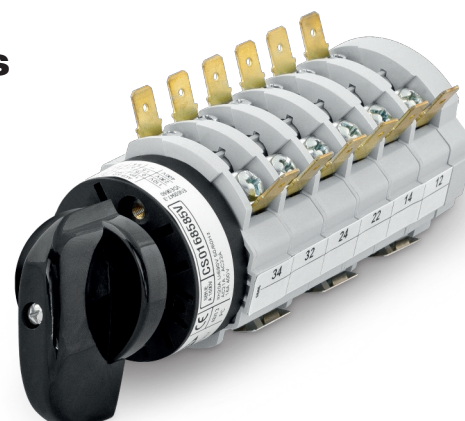
- Control shaft
- Rods
- Terminal plates
- Shaft brake disk of the control shaft
- Nuts
- Terminal screws for cable connections
- Product fixing screws
- Knob fixing screws



Other
solutions for
special
applications

■ Quick connection terminals (faston connection)

- Faston with angle to customer specification



■ Coaxial cam switches

Obtained by coupling
2 different sizes



■ Key selector switch

Device for mounting on single hole
Ø22mm (0.87") with key



■ With undervoltage release

Security electromagnet that allows, in case of power failure, an automatic return in "0" position of the switch, thus interrupting the circuit power supply.



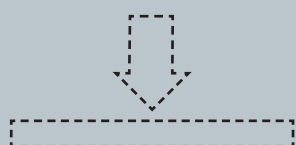
Custom terminals

- Protruding to the switch, for rear mounting version



Latching
mechanism
CA/CR
012...040

■ Latching mechanism in 3 different interchangeable fixing housing



CR series
(IP20)



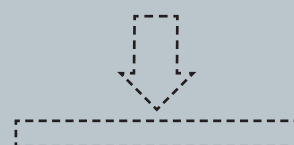
square - 48x48 mm
(1.89"x1.89")



square - 60x60 mm
(2.36"x2.36")

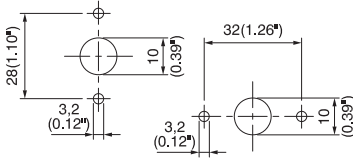
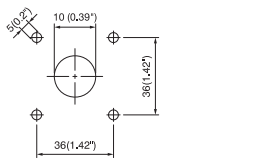
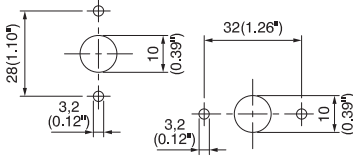
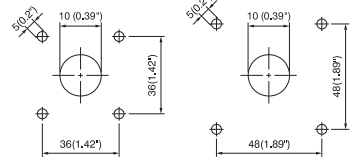
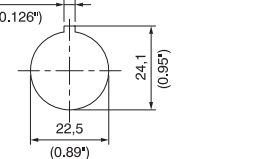
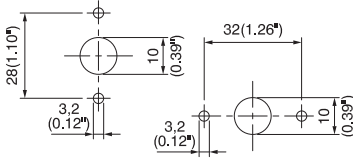


round - Ø 40 mm
(1.57")



CA series
(IP00)

**Latching
mechanism
CA/CR
012...040**

Type	Model	Dimensions	Product	Holes	Drilling template
Fixing housing CR/CA 012...040	Square	48x48 mm (1.89"x1.89")		2 holes, 28mm (1.10") verticals 2 holes 32mm (1.26") horizontals (optional)	
				4 holes, 36x36mm (1.42"x1.42")	
		60x60 mm (2.36"x2.36")		2 holes, 28mm (1.10") verticals 2 holes, 32mm (1.26") horizontals (optional)	
				4 holes, 36x36mm (1.42"x1.42") 4 holes, 48x48mm (1.89"x1.89")	
	Round	Ø22 mm (0.87")		1 holes, Ø22mm (0.87")	
		Ø40 mm (1.57")		2 holes, 28mm (1.10") verticals 2 holes, 32mm (1.26") horizontals (optional)	
Fixing adapter	T	Ø40 mm (1.57")		2 holes, 30mm (1.18") verticals 2 holes, 32mm (1.26") verticals 2 holes, 30mm (1.18") horizontals 2 holes, 32mm (1.26") horizontals	
	Q1	48x48 mm (1.89"x1.89")		2 holes, 34mm (1.34") verticals 2 holes, 40mm (1.57") verticals 2 holes, 34mm (1.34") horizontals 2 holes, 40mm (1.57") horizontals 2 holes, 20x35mm (0.79"x1.38") diagonals	
	Q2			2 holes, 32mm (1.26") verticals 2 holes, 40mm (1.57") verticals 2 holes, 32mm (1.26") horizontals 2 holes, 40mm (1.57") horizontals 2 holes, 12,2x30mm (0.48"x1.18") diagonals	

The fixing adapter in the table are useful in case of particular fixing requirements; they enclose the most known and used types of fixing on the market.

Fixing types

■ Rear mounting:



■ Base mounting:

Body

- 2 Screws
- DIN rail

Plates and handles

- 2 screws
- 4 screws
- Quick fixing Ø22



**CR/CA
012...040
protections**

- Protections in PVC
- Different diameters for an easy connection even in case of multiple cables and bigger sections

CA/CR 012...026



Ø 48mm (1.89")



Ø 53mm (2.09")



Ø 56mm (2.20")

CA/CR 025...040



Ø 58mm (2.28")



Ø 70,5mm (2.78")

Standard solutions

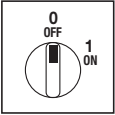
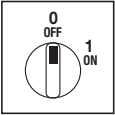
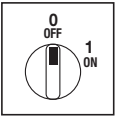
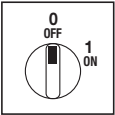
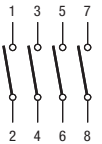
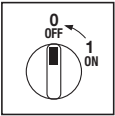
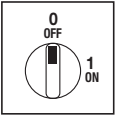
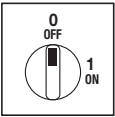
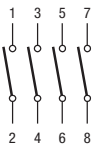
In addition to solutions made to customer specifications, Bremas offers a complete range of standard products.

Standard products are designed and developed in line with the most common requirements from the market.



Circuit diagrams

cam switches

Switches																												
plate	diagram	function	circuit diagram	contact/element description	element no.																							
	0001	ON-OFF switch 1 pole		<table border="1"> <tr> <td></td><td>0</td><td></td><td></td><td>CR</td><td rowspan="2">60°</td></tr> <tr> <td></td><td>1</td><td>X</td><td></td><td>CA</td></tr> <tr> <td>Contact</td><td>1</td><td>2</td><td>3</td><td>CQ</td><td></td></tr> <tr> <td>Element</td><td>1</td><td></td><td></td><td>Angle</td><td></td></tr> </table>		0			CR	60°		1	X		CA	Contact	1	2	3	CQ		Element	1			Angle		1
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	0002	ON-OFF switch 2 pole		<table border="1"> <tr> <td></td><td>0</td><td></td><td></td><td>CR</td><td rowspan="2">60°</td></tr> <tr> <td></td><td>1</td><td>X</td><td>X</td><td>CA</td></tr> <tr> <td>Contact</td><td>1</td><td>2</td><td>3</td><td>CQ</td><td></td></tr> <tr> <td>Element</td><td>1</td><td></td><td></td><td>Angle</td><td></td></tr> </table>		0			CR	60°		1	X	X	CA	Contact	1	2	3	CQ		Element	1			Angle		1
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Contact	1	2	3	CQ																								
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	0003	ON-OFF switch 3 pole		<table border="1"> <tr> <td></td><td>0</td><td></td><td></td><td>CR</td><td rowspan="2">60°</td></tr> <tr> <td></td><td>1</td><td>X</td><td>X</td><td>CA</td></tr> <tr> <td>Contact</td><td>1</td><td>2</td><td>3</td><td>4</td><td>CQ</td></tr> <tr> <td>Element</td><td>1</td><td>2</td><td></td><td></td><td>Angle</td></tr> </table>		0			CR	60°		1	X	X	CA	Contact	1	2	3	4	CQ	Element	1	2			Angle	2
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	0004	ON-OFF switch 4 pole		<table border="1"> <tr> <td></td><td>0</td><td></td><td></td><td>CR</td><td rowspan="2">60°</td></tr> <tr> <td></td><td>1</td><td>X</td><td>X</td><td>CA</td></tr> <tr> <td>Contact</td><td>1</td><td>2</td><td>3</td><td>4</td><td>CQ</td></tr> <tr> <td>Element</td><td>1</td><td>2</td><td></td><td></td><td>Angle</td></tr> </table>		0			CR	60°		1	X	X	CA	Contact	1	2	3	4	CQ	Element	1	2			Angle	2
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Contact	1	2	3	4	CQ																							
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	0035	ON-OFF switch 3 pole with spring return to "OFF"		<table border="1"> <tr> <td></td><td>0</td><td></td><td></td><td>CR</td><td rowspan="2">45°</td></tr> <tr> <td></td><td>1</td><td>X</td><td>X</td><td>CA</td></tr> <tr> <td>Contact</td><td>1</td><td>2</td><td>3</td><td>4</td><td>CQ</td></tr> <tr> <td>Element</td><td>1</td><td>2</td><td></td><td></td><td>Angle</td></tr> </table>		0			CR	45°		1	X	X	CA	Contact	1	2	3	4	CQ	Element	1	2			Angle	2
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	00G3	ON-OFF switch 3 pole with padlockable handle		<table border="1"> <tr> <td></td><td>0</td><td></td><td></td><td>CR</td><td rowspan="2">90°</td></tr> <tr> <td></td><td>1</td><td>X</td><td>X</td><td>CA</td></tr> <tr> <td>Contact</td><td>1</td><td>2</td><td>3</td><td>4</td><td>CQ</td></tr> <tr> <td>Element</td><td>1</td><td>2</td><td></td><td></td><td>Angle</td></tr> </table>		0			CR	90°		1	X	X	CA	Contact	1	2	3	4	CQ	Element	1	2			Angle	2
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Cam Switches - Standard solutions

Circuit diagrams

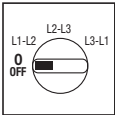
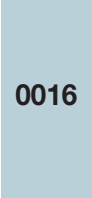
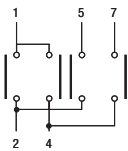
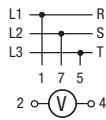
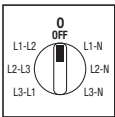
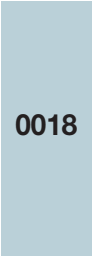
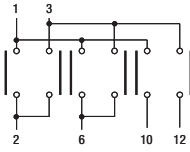
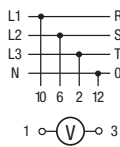
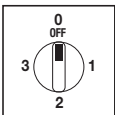
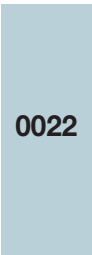
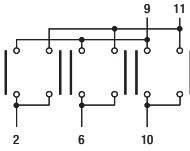
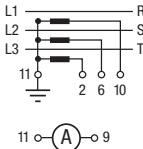
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	0007	Change-over switch 3 pole		<table><tr><td>2</td><td></td><td></td><td>X</td><td></td><td>X</td><td></td><td>X</td><td>CR</td><td rowspan="3">60°</td></tr><tr><td>0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>CA</td></tr><tr><td>1</td><td></td><td>X</td><td></td><td>X</td><td></td><td>X</td><td></td><td>CQ</td></tr><tr><td>Contact</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td rowspan="2">Angle</td></tr><tr><td>Element</td><td>1</td><td></td><td></td><td></td><td>2</td><td></td><td></td><td></td><td>3</td><td></td><td></td><td></td></tr></table>	2			X		X		X	CR	60°	0								CA	1		X		X		X		CQ	Contact	1	2	3	4	5	6	7	8	9	10	11	12	Angle	Element	1				2				3				3														
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0								CA																																																																		
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Element	1				2				3																																																																	
	0039	Change-over switch 4 pole		<table><tr><td>2</td><td></td><td></td><td>X</td><td></td><td>X</td><td></td><td>X</td><td></td><td>X</td><td>CR</td><td rowspan="3">60°</td></tr><tr><td>0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>CA</td></tr><tr><td>1</td><td></td><td>X</td><td></td><td>X</td><td></td><td>X</td><td></td><td>X</td><td></td><td>CQ</td></tr><tr><td>Contact</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td rowspan="2">Angle</td></tr><tr><td>Element</td><td>1</td><td></td><td></td><td></td><td>2</td><td></td><td></td><td></td><td>3</td><td></td><td></td><td></td><td>4</td><td></td><td></td><td></td></tr></table>	2			X		X		X		X	CR	60°	0										CA	1		X		X		X		X		CQ	Contact	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Angle	Element	1				2				3				4				4
2			X		X		X		X	CR	60°																																																															
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1		X		X		X		X		CQ																																																																
Contact	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Angle																																																									
Element	1				2				3				4																																																													

plate	diagram	function	circuit diagram	contact/element description	 element no.
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Motor control switches single phase						element no.
plate	diagram	function	circuit diagram	contact/element description		

37

Voltmeter & Ammeter switches

plate	diagram	function	circuit diagram	contact/element description	element no.																																																																																																								
		Voltmeter switch 3 concatenated voltages		<table border="1"><tr><td>L3-L1</td><td></td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td>CR</td><td rowspan="3">45°</td></tr><tr><td>L2-L3</td><td></td><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td></td><td>CA</td></tr><tr><td>L1-L2</td><td>X</td><td></td><td></td><td></td><td></td><td>X</td><td></td><td></td><td>CQ</td></tr><tr><td>0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Contact</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>Angle</td><td></td></tr><tr><td>Element</td><td>1</td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	L3-L1		X	X						CR	45°	L2-L3				X	X				CA	L1-L2	X					X			CQ	0											Contact	1	2	3	4	5	6	7	8	Angle		Element	1	2										2																																							
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L2-L3				X	X				CA																																																																																																				
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Contact	1	2	3	4	5	6	7	8	Angle																																																																																																				
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		Voltmeter switch 3 concatenated voltages and 3 phase voltages		<table border="1"><tr><td>L3-N</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>CR</td><td rowspan="3">45°</td></tr><tr><td>L2-N</td><td></td><td></td><td>X</td><td></td><td></td><td></td><td></td><td></td><td>CA</td></tr><tr><td>L1-N</td><td></td><td></td><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td>CQ</td></tr><tr><td>0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>L1-L2</td><td></td><td></td><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td></td><td></td></tr><tr><td>L2-L3</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>L3-L1</td><td>X</td><td></td><td></td><td></td><td>X</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Contact</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>Angle</td></tr><tr><td>Element</td><td>1</td><td>2</td><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	L3-N	X								CR	45°	L2-N			X						CA	L1-N					X	X			CQ	0											L1-L2					X	X					L2-L3	X	X									L3-L1	X				X						Contact	1	2	3	4	5	6	7	8	9	10	11	12	Angle	Element	1	2	3												3
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Element	1	2	3																																																																																																										
		Ammeter switch 1 pole 3 current transformers		<table border="1"><tr><td>3</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td>CR</td><td rowspan="3">90°</td></tr><tr><td>2</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td></td><td>CA</td></tr><tr><td>1</td><td></td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td><td>CQ</td></tr><tr><td>0</td><td></td><td></td><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td></td><td></td></tr><tr><td>Contact</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>Angle</td></tr><tr><td>Element</td><td>1</td><td>2</td><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	3	X	X	X	X					CR	90°	2	X	X	X	X					CA	1		X	X	X	X				CQ	0					X	X					Contact	1	2	3	4	5	6	7	8	9	10	11	12	Angle	Element	1	2	3												3																																	
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[illegible]

Multi-step change-over switches																																																																																			
plate	diagram	function	circuit diagram	contact/element description	element no.																																																																														
		Multi step switch without OFF 1 pole 3 steps		<table border="1"> <tr> <td></td><td>3</td><td></td><td></td><td></td><td>✗</td><td>CR</td><td rowspan="3">45°</td></tr> <tr> <td></td><td>2</td><td>✗</td><td></td><td></td><td></td><td>CA</td></tr> <tr> <td></td><td>1</td><td></td><td></td><td></td><td>✗</td><td>CQ</td></tr> <tr> <td>Contact</td><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>Angle</td></tr> <tr> <td>Element</td><td></td><td>1</td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>		3				✗	CR	45°		2	✗				CA		1				✗	CQ	Contact		1	2	3	4	5	6	7	8	Angle	Element		1	2								2																																		
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		Multi step switch without OFF 1 pole 4 steps		<table border="1"> <tr> <td></td><td>4</td><td></td><td></td><td>✗</td><td></td><td></td><td>CR</td><td rowspan="3">45°</td></tr> <tr> <td></td><td>3</td><td></td><td></td><td></td><td></td><td>✗</td><td>CA</td></tr> <tr> <td></td><td>2</td><td>✗</td><td></td><td></td><td></td><td></td><td>CQ</td></tr> <tr> <td></td><td>1</td><td></td><td></td><td></td><td></td><td>✗</td><td></td><td></td></tr> <tr> <td>Contact</td><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>Angle</td></tr> <tr> <td>Element</td><td></td><td>1</td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>		4			✗			CR	45°		3					✗	CA		2	✗					CQ		1					✗			Contact		1	2	3	4	5	6	7	8	Angle	Element		1	2								2																						
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Contact		1	2	3	4	5	6	7	8	Angle																																																																									
Element		1	2																																																																																
		Multi step switch without OFF 1 pole 5 steps		<table border="1"> <tr> <td></td><td>5</td><td></td><td></td><td></td><td></td><td></td><td>✗</td><td>CR</td><td rowspan="3">45°</td></tr> <tr> <td></td><td>4</td><td></td><td></td><td></td><td></td><td>✗</td><td></td><td>CA</td></tr> <tr> <td></td><td>3</td><td>✗</td><td></td><td></td><td></td><td></td><td></td><td>CQ</td></tr> <tr> <td></td><td>2</td><td></td><td></td><td></td><td></td><td>✗</td><td></td><td></td><td></td></tr> <tr> <td></td><td>1</td><td></td><td></td><td></td><td></td><td></td><td>✗</td><td></td><td></td></tr> <tr> <td>Contact</td><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>Angle</td></tr> <tr> <td>Element</td><td></td><td>1</td><td>2</td><td>3</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>		5						✗	CR	45°		4					✗		CA		3	✗						CQ		2					✗					1						✗			Contact		1	2	3	4	5	6	7	8	9	10	11	12	Angle	Element		1	2	3											3
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Contact		1	2	3	4	5	6	7	8	9	10	11	12	Angle																																																																					
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CAM SWITCHES CR series



01

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



RT4



RT6

Rear mounting

Ø 22mm (0,87") single hole fixing



GT4



GT6

ON-OFF switch 1 pole

 0001	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120001RT4	1	CR0120001RT6	1	CR0120001GT4	1	CR0120001GT6	1
			16A	CR0160001RT4	1	CR0160001RT6	1	CR0160001GT4	1	CR0160001GT6	1
			20A	CR0200001RT4	1	CR0200001RT6	1	CR0200001GT4	1	CR0200001GT6	1
			25A	CR0260001RT4	1	CR0260001RT6	1				
		S2	25A	CR0250001RT4	1	CR0250001RT6	1	CR0250001GT4	1	CR0250001GT6	1
			32A								
			40A								

ON-OFF switch 2 pole

 0002	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120002RT4	1	CR0120002RT6	1	CR0120002GT4	1	CR0120002GT6	1
			16A	CR0160002RT4	1	CR0160002RT6	1	CR0160002GT4	1	CR0160002GT6	1
			20A	CR0200002RT4	1	CR0200002RT6	1	CR0200002GT4	1	CR0200002GT6	1
			25A	CR0260002RT4	1						
		S2	25A	CR0250002RT4	1	CR0250002RT6	1	CR0250002GT4	1	CR0250002GT6	1
			32A	CR0320002RT4	1	CR0320002RT6	1	CR0320002GT4	1	CR0320002GT6	1
			40A	CR0400002RT4	1	CR0400002RT6	1	CR0400002GT4	1	CR0400002GT6	1

ON-OFF switch 3 pole

 0003	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120003RT4	1	CR0120003RT6	1	CR0120003GT4	1	CR0120003GT6	1
			16A	CR0160003RT4	1	CR0160003RT6	1	CR0160003GT4	1	CR0160003GT6	1
			20A	CR0200003RT4	1	CR0200003RT6	1	CR0200003GT4	1	CR0200003GT6	1
			25A	CR0260003RT4	1						
		S2	25A	CR0250003RT4	1	CR0250003RT6	1	CR0250003GT4	1	CR0250003GT6	1
			32A	CR0320003RT4	1	CR0320003RT6	1	CR0320003GT4	1	CR0320003GT6	1
			40A	CR0400003RT4	1	CR0400003RT6	1	CR0400003GT4	1	CR0400003GT6	1

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



RT4



RT6

Rear mounting

Ø 22mm (0,87") single hole fixing

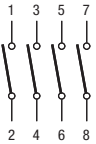


GT4



GT6

■ **ON-OFF switch 4 pole**

 0004	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120004RT4	1	CR0120004RT6	1	CR0120004GT4	1	CR0120004GT6	1
			16A	CR0160004RT4	1	CR0160004RT6	1	CR0160004GT4	1	CR0160004GT6	1
			20A	CR0200004RT4	1	CR0200004RT6	1	CR0200004GT4	1	CR0200004GT6	1
			25A	CR0260004RT4	1						
		S2	25A	CR0250004RT4	1	CR0250004RT6	1	CR0250004GT4	1	CR0250004GT6	1
			32A	CR0320004RT4	1	CR0320004RT6	1	CR0320004GT4	1	CR0320004GT6	1
			40A	CR0400004RT4	1	CR0400004RT6	1	CR0400004GT4	1	CR0400004GT6	1

■ **ON-OFF switch 3 pole with spring return to "OFF"**

 0035	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120035RT4	1	CR0120035RT6	1	CR0120035GT4	1	CR0120035GT6	1
			16A	CR0160035RT4	1	CR0160035RT6	1	CR0160035GT4	1	CR0160035GT6	1
			20A								
			25A								
		S2	25A								
			32A								
			40A								

■ **Change-over switch 1 pole**

 0005	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120005RT4	1	CR0120005RT6	1	CR0120005GT4	1	CR0120005GT6	1
			16A	CR0160005RT4	1	CR0160005RT6	1	CR0160005GT4	1	CR0160005GT6	1
			20A	CR0200005RT4	1	CR0200005RT6	1	CR0200005GT4	1	CR0200005GT6	1
			25A	CR0260005RT4	1						
		S2	25A	CR0250005RT4	1	CR0250005RT6	1	CR0250005GT4	1	CR0250005GT6	1
			32A								
			40A								

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



RT4



RT6

Rear mounting

Ø 22mm (0,87") single hole fixing

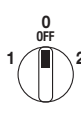
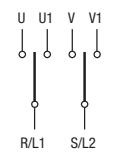


GT4

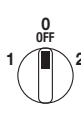
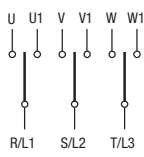


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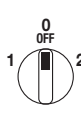
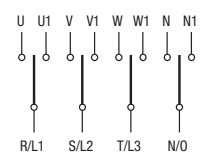
Change-over switch 2 pole

 0006	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
											
	S1		12A	CR0120006RT4	1	CR0120006RT6	1	CR0120006GT4	1	CR0120006GT6	1
			16A	CR0160006RT4	1	CR0160006RT6	1	CR0160006GT4	1	CR0160006GT6	1
			20A	CR0200006RT4	1	CR0200006RT6	1	CR0200006GT4	1	CR0200006GT6	1
			25A	CR0260006RT4	1						
	S2		25A	CR0250006RT4	1	CR0250006RT6	1	CR0250006GT4	1	CR0250006GT6	1
			32A	CR0320006RT4	1	CR0320006RT6	1	CR0320006GT4	1	CR0320006GT6	1
			40A	CR0400006RT4	1	CR0400006RT6	1	CR0400006GT4	1	CR0400006GT6	1

Change-over switch 3 pole

 0007	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
											
	S1		12A	CR0120007RT4	1	CR0120007RT6	1	CR0120007GT4	1	CR0120007GT6	1
			16A	CR0160007RT4	1	CR0160007RT6	1	CR0160007GT4	1	CR0160007GT6	1
			20A	CR0200007RT4	1	CR0200007RT6	1	CR0200007GT4	1	CR0200007GT6	1
			25A	CR0260007RT4	1						
	S2		25A	CR0250007RT4	1	CR0250007RT6	1	CR0250007GT4	1	CR0250007GT6	1
			32A	CR0320007RT4	1	CR0320007RT6	1	CR0320007GT4	1	CR0320007GT6	1
			40A	CR0400007RT4	1	CR0400007RT6	1	CR0400007GT4	1	CR0400007GT6	1

Change-over switch 4 pole

 0039	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
											
	S1		12A	CR0120039RT4	1	CR0120039RT6	1	CR0120039GT4	1	CR0120039GT6	1
			16A	CR0160039RT4	1	CR0160039RT6	1	CR0160039GT4	1	CR0160039GT6	1
			20A	CR0200039RT4	1	CR0200039RT6	1	CR0200039GT4	1	CR0200039GT6	1
			25A	CR0260039RT4	1						
	S2		25A	CR0250039RT4	1	CR0250039RT6	1	CR0250039GT4	1	CR0250039GT6	1
			32A	CR0320039RT4	1	CR0320039RT6	1	CR0320039GT4	1	CR0320039GT6	1
			40A	CR0400039RT4	1	CR0400039RT6	1	CR0400039GT4	1	CR0400039GT6	1

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



RT4



RT6



GT4

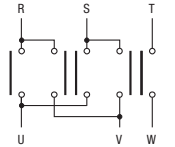


GT6

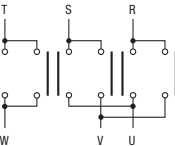
Rear mounting

Ø 22mm (0,87") single hole fixing

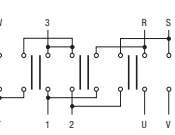
Reversing switch 3 pole

 0008	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
 0008		S1	12A	CR0120008RT4	1	CR0120008RT6	1	CR0120008GT4	1	CR0120008GT6	1
			16A	CR0160008RT4	1	CR0160008RT6	1	CR0160008GT4	1	CR0160008GT6	1
			20A	CR0200008RT4	1	CR0200008RT6	1	CR0200008GT4	1	CR0200008GT6	1
			25A	CR0260008RT4	1						
		S2	25A	CR0250008RT4	1	CR0250008RT6	1	CR0250008GT4	1	CR0250008GT6	1
			32A	CR0320008RT4	1	CR0320008RT6	1	CR0320008GT4	1	CR0320008GT6	1
			40A	CR0400008RT4	1	CR0400008RT6	1	CR0400008GT4	1	CR0400008GT6	1

Reversing switch 3 pole with spring return to "off"

 0036	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
 0036		S1	12A	CR0120036RT4	1	CR0120036RT6	1	CR0120036GT4	1	CR0120036GT6	1
			16A	CR0160036RT4	1	CR0160036RT6	1	CR0160036GT4	1	CR0160036GT6	1
			20A	CR0200036RT4	1	CR0200036RT6	1	CR0200036GT4	1	CR0200036GT6	1
			25A	CR0260036RT4	1						
		S2	25A	CR0250036RT4	1	CR0250036RT6	1	CR0250036GT4	1	CR0250036GT6	1
			32A								
			40A								

Changing switch Dahlander pole

 0009	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
 0009		S1	12A	CR0120009RT4	1	CR0120009RT6	1	CR0120009GT4	1	CR0120009GT6	1
			16A	CR0160009RT4	1	CR0160009RT6	1	CR0160009GT4	1	CR0160009GT6	1
			20A	CR0200009RT4	1	CR0200009RT6	1	CR0200009GT4	1	CR0200009GT6	1
			25A	CR0260009RT4	1						
		S2	25A	CR0250009RT4	1	CR0250009RT6	1	CR0250009GT4	1	CR0250009GT6	1
			32A	CR0320009RT4	1	CR0320009RT6	1	CR0320009GT4	1	CR0320009GT6	1
			40A	CR0400009RT4	1	CR0400009RT6	1	CR0400009GT4	1	CR0400009GT6	1

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



RT4



RT6

Rear mounting

Ø 22mm (0,87") single hole fixing

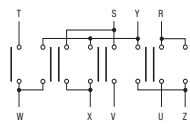


GT4

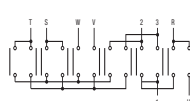
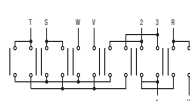


GT6

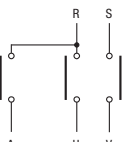
STAR-DELTA Starter

0 OFF Y Δ 0010	Circuit diagram	Size	I ₆	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120010RT4	1	CR0120010RT6	1	CR0120010GT4	1	CR0120010GT6	1
			16A	CR0160010RT4	1	CR0160010RT6	1	CR0160010GT4	1	CR0160010GT6	1
			20A	CR0200010RT4	1	CR0200010RT6	1	CR0200010GT4	1	CR0200010GT6	1
			25A	CR0260010RT4	1						
		S2	25A	CR0250010RT4	1	CR0250010RT6	1	CR0250010GT4	1	CR0250010GT6	1
			32A	CR0320010RT4	1	CR0320010RT6	1	CR0320010GT4	1	CR0320010GT6	1
			40A	CR0400010RT4	1	CR0400010RT6	1	CR0400010GT4	1	CR0400010GT6	1

Reversing switch pole changing

 0011	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
											
S1			12A	CR0120011RT4	1	CR0120011RT6	1	CR0120011GT4	1	CR0120011GT6	1
			16A	CR0160011RT4	1	CR0160011RT6	1	CR0160011GT4	1	CR0160011GT6	1
			20A	CR0200011RT4	1	CR0200011RT6	1	CR0200011GT4	1	CR0200011GT6	1
			25A	CR0260011RT4	1						
S2			25A	CR0250011RT4	1	CR0250011RT6	1	CR0250011GT4	1	CR0250011GT6	1
			32A								
			40A								

Switch single phase motor + aux phase

 0031	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
											
S1			12A	CR0120031RT4	1	CR0120031RT6	1	CR0120031GT4	1	CR0120031GT6	1
			16A	CR0160031RT4	1	CR0160031RT6	1	CR0160031GT4	1	CR0160031GT6	1
			20A	CR0200031RT4	1	CR0200031RT6	1	CR0200031GT4	1	CR0200031GT6	1
			25A	CR0260031RT4	1						
S2			25A	CR0250031RT4	1	CR0250031RT6	1	CR0250031GT4	1	CR0250031GT6	1
			32A								
			40A								

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



RT4



RT6



GT4

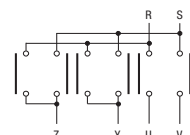


GT6

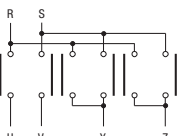
Rear mounting

Ø 22mm (0,87") single hole fixing

■ Reversing switch single-phase motor + aux phase

 0032	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120032RT4	1	CR0120032RT6	1	CR0120032GT4	1	CR0120032GT6	1
			16A	CR0160032RT4	1	CR0160032RT6	1	CR0160032GT4	1	CR0160032GT6	1
			20A								
			25A	CR0260032RT4	1						
	S2	25A	CR0250032RT4	1	CR0250032RT6	1	CR0250032GT4	1	CR0250032GT6	1	
		32A									
		40A									

■ Reversing switch single-phase motor + centrif.

 0034	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120034RT4	1	CR0120034RT6	1	CR0120034GT4	1	CR0120034GT6	1
			16A	CR0160034RT4	1	CR0160034RT6	1	CR0160034GT4	1	CR0160034GT6	1
			20A	CR0200034RT4	1	CR0200034RT6	1	CR0200034GT4	1	CR0200034GT6	1
			25A	CR0260034RT4	1						
		S2	25A	CR0250034RT4	1	CR0250034RT6	1	CR0250034GT4	1	CR0250034GT6	1
			32A								
			40A								

■ Voltmeter switch 3 concatenated voltages

L1-L2 L2-L3 L3-L1 0 OFF 0016	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120016RT4	1	CR0120016RT6	1	CR0120016GT4	1	CR0120016GT6	1
			16A								
			20A								
			25A								
			25A								
		S2	32A								
			40A								

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



RT4



RT6



GT4

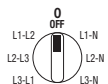
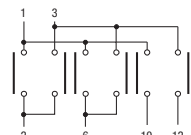


GT6

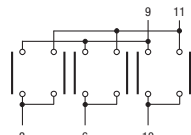
Rear mounting

Ø 22mm (0,87") single hole fixing

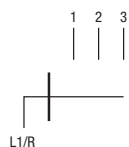
Voltmeter switch 3 concatenated voltages and 3 phase voltages

 0018	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120018RT4	1	CR0120018RT6	1	CR0120018GT4	1	CR0120018GT6	1
			16A								
			20A								
			25A								
		S2	25A								
			32A								
			40A								

Ammeter switch 1 pole 3 current transformers

 0022	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120022RT4	1	CR0120022RT6	1	CR0120022GT4	1	CR0120022GT6	1
			16A								
			20A								
			25A								
		S2	25A								
			32A								
			40A								

Multi step switch with off 1 pole 3 steps

 MZ13	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR012MZ13RT4	1	CR012MZ13RT6	1	CR012MZ13GT4	1	CR012MZ13GT6	1
			16A	CR016MZ13RT4	1	CR016MZ13RT6	1	CR016MZ13GT4	1	CR016MZ13GT6	1
			20A	CR020MZ13RT4	1	CR020MZ13RT6	1	CR020MZ13GT4	1	CR020MZ13GT6	1
			25A	CR026MZ13RT4	1						
		S2	25A	CR025MZ13RT4	1	CR025MZ13RT6	1	CR025MZ13GT4	1	CR025MZ13GT6	1
			32A								
			40A								

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



RT4



RT6

Rear mounting

Ø 22mm (0,87") single hole fixing

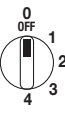


GT4

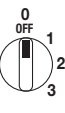


GT6

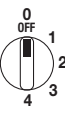
■ Multi step switch with off 1 pole 4 steps

 MZ14	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
			12A	CR012MZ14RT4	1	CR012MZ14RT6	1	CR012MZ14GT4	1	CR012MZ14GT6	1
			16A	CR016MZ14RT4	1	CR016MZ14RT6	1	CR016MZ14GT4	1	CR016MZ14GT6	1
			20A								
			25A								
			25A								
			32A								
		S2	40A								

■ Multi step switch with off 2 pole 3 steps

 MZ23	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
			12A	CR012MZ23RT4	1	CR012MZ23RT6	1	CR012MZ23GT4	1	CR012MZ23GT6	1
			16A	CR016MZ23RT4	1	CR016MZ23RT6	1	CR016MZ23GT4	1	CR016MZ23GT6	1
			20A	CR020MZ23RT4	1	CR020MZ23RT6	1	CR020MZ23GT4	1	CR020MZ23GT6	1
			25A	CR026MZ23RT4	1						
			25A	CR025MZ23RT4	1	CR025MZ23RT6	1	CR025MZ23GT4	1	CR025MZ23GT6	1
			32A								
		S2	40A								

■ Multi step switch with off 2 pole 4 steps

 MZ24	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
			12A	CR012MZ24RT4	1	CR012MZ24RT6	1	CR012MZ24GT4	1	CR012MZ24GT6	1
			16A	CR016MZ24RT4	1	CR016MZ24RT6	1	CR016MZ24GT4	1	CR016MZ24GT6	1
			20A								
			25A								
			25A								
			32A								
		S2	40A								

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



RT4



RT6

Rear mounting

Ø 22mm (0,87") single hole fixing

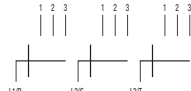


GT4

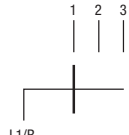


GT6

Multi step switch with off 3 pole 3 steps

 MZ33	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR012MZ33RT4	1	CR012MZ33RT6	1	CR012MZ33GT4	1	CR012MZ33GT6	1
			16A	CR016MZ33RT4	1	CR016MZ33RT6	1	CR016MZ33GT4	1	CR016MZ33GT6	1
			20A								
			25A								
		S2	25A								
			32A								
			40A								

Multi step switch without off 1 pole 3 steps

 M013	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR012M013RT4	1	CR012M013RT6	1	CR012M013GT4	1	CR012M013GT6	1
			16A	CR016M013RT4	1	CR016M013RT6	1	CR016M013GT4	1	CR016M013GT6	1
			20A								
			25A								
		S2	25A								
			32A								
			40A								

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



RT4



RT6

Rear mounting

Ø 22mm (0,87") single hole fixing

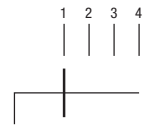


GT4



GT6

■ Multi step switch without off 1 pole 4 steps

 M014	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR012M014RT4	1	CR012M014RT6	1	CR012M014GT4	1	CR012M014GT6	1
			16A	CR016M014RT4	1	CR016M014RT6	1	CR016M014GT4	1	CR016M014GT6	1
			20A								
			25A								
		S2	25A								
			32A								
			40A								

■ Multi step switch without off 1 pole 5 steps

 M015	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR012M015RT4	1	CR012M015RT6	1	CR012M015GT4	1	CR012M015GT6	1
			16A	CR016M015RT4	1	CR016M015RT6	1	CR016M015GT4	1	CR016M015GT6	1
			20A								
			25A								
		S2	25A								
			32A								
			40A								

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



RL6



RK6

Base mounting*

2-screw fixing: 28mm (1.10") V. / 32mm (1.26") H.



BL6



BK6

ON-OFF switch 3 pole with padlockable handle

 00G3	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
											
00G3		S1	12A	CR01200G3RL6	1	CR01200G3RK6	1	CR01200G3BL6	1	CR01200G3BK6	1
			16A	CR01600G3RL6	1	CR01600G3RK6	1	CR01600G3BL6	1	CR01600G3BK6	1
			20A	CR02000G3RL6	1	CR02000G3RK6	1	CR02000G3BL6	1	CR02000G3BK6	1
			25A	CR02600G3RL6	1	CR02600G3RK6	1	CR02600G3BL6	1	CR02600G3BK6	1
		S2	25A	CR02500G3RL6	1	CR02500G3RK6	1	CR02500G3BL6	1	CR02500G3BK6	1
			32A	CR03200G3RL6	1	CR03200G3RK6	1	CR03200G3BL6	1	CR03200G3BK6	1
			40A	CR04000G3RL6	1	CR04000G3RK6	1	CR04000G3BL6	1	CR04000G3BK6	1

ON-OFF switch 4 pole with padlockable handle

 00G4	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
											
00G4		S1	12A	CR01200G4RL6	1	CR01200G4RK6	1	CR01200G4BL6	1	CR01200G4BK6	1
			16A	CR01600G4RL6	1	CR01600G4RK6	1	CR01600G4BL6	1	CR01600G4BK6	1
			20A	CR02000G4RL6	1	CR02000G4RK6	1	CR02000G4BL6	1	CR02000G4BK6	1
			25A	CR02600G4RL6	1	CR02600G4RK6	1	CR02600G4BL6	1	CR02600G4BK6	1
		S2	25A	CR02500G4RL6	1	CR02500G4RK6	1	CR02500G4BL6	1	CR02500G4BK6	1
			32A	CR03200G4RL6	1	CR03200G4RK6	1	CR03200G4BL6	1	CR03200G4BK6	1
			40A	CR04000G4RL6	1	CR04000G4RK6	1	CR04000G4BL6	1	CR04000G4BK6	1

* Base mounting switches are supplied with standard 175mm (6.89") shaft

Rear mounting

Ø 22mm (0,87") single hole fixing



GL6



GK6



HL6



HK6

Base mounting*

Ø 22mm (0,87") single hole fixing

ON-OFF switch 3 pole with padlockable handle

 00G3	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR01200G3GL6	1	CR01200G3GK6	1	CR01200G3HL6	1	CR01200G3HK6	1
			16A	CR01600G3GL6	1	CR01600G3GK6	1	CR01600G3HL6	1	CR01600G3HK6	1
			20A	CR02000G3GL6	1	CR02000G3GK6	1	CR02000G3HL6	1	CR02000G3HK6	1
			25A	CR02600G3GL6	1	CR02600G3GK6	1	CR02600G3HL6	1	CR02600G3HK6	1
		S2	25A	CR02500G3GL6	1	CR02500G3GK6	1	CR02500G3HL6	1	CR02500G3HK6	1
			32A	CR03200G3GL6	1	CR03200G3GK6	1	CR03200G3HL6	1	CR03200G3HK6	1
			40A	CR04000G3GL6	1	CR04000G3GK6	1	CR04000G3HL6	1	CR04000G3HK6	1

ON-OFF switch 4 pole with padlockable handle

 00G4	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR01200G4GL6	1	CR01200G4GK6	1	CR01200G4HL6	1	CR01200G4HK6	1
			16A	CR01600G4GL6	1	CR01600G4GK6	1	CR01600G4HL6	1	CR01600G4HK6	1
			20A	CR02000G4GL6	1	CR02000G4GK6	1	CR02000G4HL6	1	CR02000G4HK6	1
			25A	CR02600G4GL6	1	CR02600G4GK6	1	CR02600G4HL6	1	CR02600G4HK6	1
		S2	25A	CR02500G4GL6	1	CR02500G4GK6	1	CR02500G4HL6	1	CR02500G4HK6	1
			32A	CR03200G4GL6	1	CR03200G4GK6	1	CR03200G4HL6	1	CR03200G4HK6	1
			40A	CR04000G4GL6	1	CR04000G4GK6	1	CR04000G4HL6	1	CR04000G4HK6	1

* Base mounting switches are supplied with standard 175mm (6.89") shaft



■ ON-OFF switch 1 pole

 0001	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120001RV4	1			CR0120001GV4	1		
			16A	CR0160001RV4	1			CR0160001GV4	1		
			20A	CR0200001RV4	1			CR0200001GV4	1		
			25A	CR0260001RV4	1						
		S2	25A			CR0250001RV6	1			CR0250001GV6	1
			32A								
			40A								

■ ON-OFF switch 2 pole

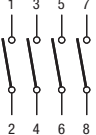
 0002	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120002RV4	1			CR0120002GV4	1		
			16A	CR0160002RV4	1			CR0160002GV4	1		
			20A	CR0200002RV4	1			CR0200002GV4	1		
			25A	CR0260002RV4	1						
		S2	25A			CR0250002RV6	1			CR0250002GV6	1
			32A			CR0320002RV6	1			CR0320002GV6	1
			40A			CR0400002RV6	1			CR0400002GV6	1

■ ON-OFF switch 3 pole

 0003	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120003RV4	1			CR0120003GV4	1		
			16A	CR0160003RV4	1			CR0160003GV4	1		
			20A	CR0200003RV4	1			CR0200003GV4	1		
			25A	CR0260003RV4	1						
		S2	25A			CR0250003RV6	1			CR0250003GV6	1
			32A			CR0320003RV6	1			CR0320003GV6	1
			40A			CR0400003RV6	1			CR0400003GV6	1



■ ON-OFF switch 4 pole

 0004	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120004RV4	1			CR0120004GV4	1		
			16A	CR0160004RV4	1			CR0160004GV4	1		
			20A	CR0200004RV4	1			CR0200004GV4	1		
			25A	CR0260004RV4	1						
		S2	25A			CR0250004RV6	1			CR0250004GV6	1
			32A			CR0320004RV6	1			CR0320004GV6	1
			40A			CR0400004RV6	1			CR0400004GV6	1

■ ON-OFF switch 3 pole with spring return to "OFF"

 0035	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120035RV4	1			CR0120035GV4	1		
			16A	CR0160035RV4	1			CR0160035GV4	1		
			20A								
			25A								
		S2	25A								
			32A								
			40A								

■ Change-over switch 1 pole

 0005	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120005RV4	1			CR0120005GV4	1		
			16A	CR0160005RV4	1			CR0160005GV4	1		
			20A	CR0200005RV4	1			CR0200005GV4	1		
			25A	CR0260005RV4	1						
		S2	25A			CR0250005RV6	1			CR0250005GV6	1
			32A								
			40A								

Rear mounting
4-screw fixing: □ 36mm (□1.42") / □ 48mm (□1.89")



RV4



RV6

Rear mounting
Ø 22mm (0,87") single hole fixing

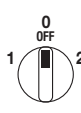
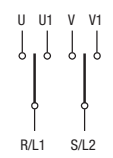
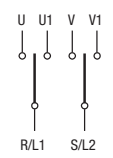
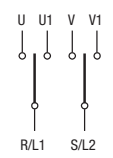


GV4

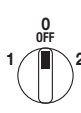
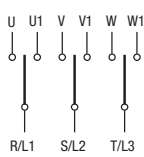
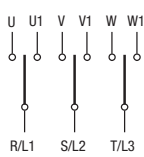
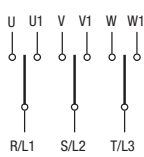


GV6

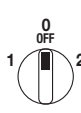
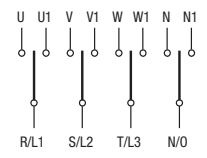
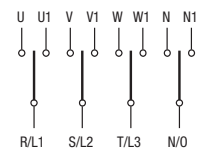
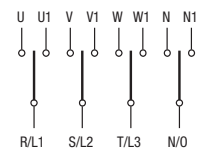
Change-over switch 2 pole

 0006	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
											
S1		S1	12A	CR0120006RV4	1			CR0120006GV4	1		
			16A	CR0160006RV4	1			CR0160006GV4	1		
			20A	CR0200006RV4	1			CR0200006GV4	1		
			25A	CR0260006RV4	1						
S2		S2	25A			CR0250006RV6	1			CR0250006GV6	1
			32A			CR0320006RV6	1			CR0320006GV6	1
			40A			CR0400006RV6	1			CR0400006GV6	1

Change-over switch 3 pole

 0007	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
											
S1		S1	12A	CR0120007RV4	1			CR0120007GV4	1		
			16A	CR0160007RV4	1			CR0160007GV4	1		
			20A	CR0200007RV4	1			CR0200007GV4	1		
			25A	CR0260007RV4	1						
S2		S2	25A			CR0250007RV6	1			CR0250007GV6	1
			32A			CR0320007RV6	1			CR0320007GV6	1
			40A			CR0400007RV6	1			CR0400007GV6	1

Change-over switch 4 pole

 0039	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
											
S1		S1	12A	CR0120039RV4	1			CR0120039GV4	1		
			16A	CR0160039RV4	1			CR0160039GV4	1		
			20A	CR0200039RV4	1			CR0200039GV4	1		
			25A	CR0260039RV4	1						
S2		S2	25A			CR0250039RV6	1			CR0250039GV6	1
			32A			CR0320039RV6	1			CR0320039GV6	1
			40A			CR0400039RV6	1			CR0400039GV6	1

Rear mounting
4-screw fixing: □ 36mm (□1.42") / □ 48mm (□1.89")



RV4



RV6

Rear mounting
Ø 22mm (0,87") single hole fixing

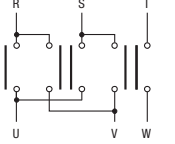


GV4

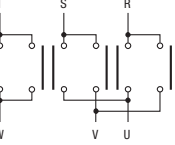


GV6

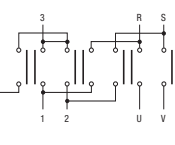
Reversing switch 3 pole

 0008	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120008RV4	1			CR0120008GV4	1		
			16A	CR0160008RV4	1			CR0160008GV4	1		
			20A	CR0200008RV4	1			CR0200008GV4	1		
			25A	CR0260008RV4	1						
		S2	25A			CR0250008RV6	1			CR0250008GV6	1
			32A			CR0320008RV6	1			CR0320008GV6	1
			40A			CR0400008RV6	1			CR0400008GV6	1

Reversing switch 3 pole with spring return to "off"

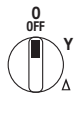
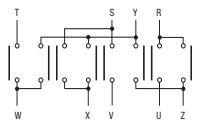
 0036	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120036RV4	1			CR0120036GV4	1		
			16A	CR0160036RV4	1			CR0160036GV4	1		
			20A	CR0200036RV4	1			CR0200036GV4	1		
			25A	CR0260036RV4	1						
		S2	25A			CR0250036RV6	1			CR0250036GV6	1
			32A								
			40A								

Changing switch Dahlander pole

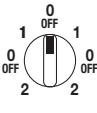
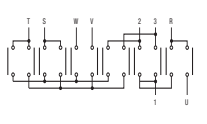
 0009	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120009RV4	1			CR0120009GV4	1		
			16A	CR0160009RV4	1			CR0160009GV4	1		
			20A	CR0200009RV4	1			CR0200009GV4	1		
			25A	CR0260009RV4	1						
		S2	25A			CR0250009RV6	1			CR0250009GV6	1
			32A			CR0320009RV6	1			CR0320009GV6	1
			40A			CR0400009RV6	1			CR0400009GV6	1



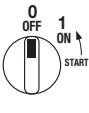
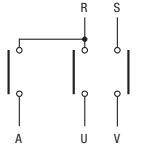
■ STAR-DELTA Starter

 0010	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120010RV4	1			CR0120010GV4	1		
			16A	CR0160010RV4	1			CR0160010GV4	1		
			20A	CR0200010RV4	1			CR0200010GV4	1		
			25A	CR0260010RV4	1						
		S2	25A			CR0250010RV6	1			CR0250010GV6	1
			32A			CR0320010RV6	1			CR0320010GV6	1
			40A			CR0400010RV6	1			CR0400010GV6	1

■ Reversing switch pole changing

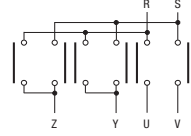
 0011	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120011RV4	1			CR0120011GV4	1		
			16A	CR0160011RV4	1			CR0160011GV4	1		
			20A	CR0200011RV4	1			CR0200011GV4	1		
			25A	CR0260011RV4	1						
		S2	25A			CR0250011RV6	1			CR0250011GV6	1
			32A								
			40A								

■ Switch single phase motor + aux phase

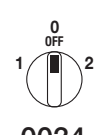
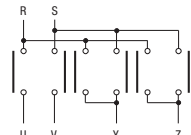
 0031	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120031RV4	1			CR0120031GV4	1		
			16A	CR0160031RV4	1			CR0160031GV4	1		
			20A	CR0200031RV4	1			CR0200031GV4	1		
			25A	CR0260031RV4	1						
		S2	25A			CR0250031RV6	1			CR0250031GV6	1
			32A								
			40A								



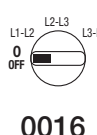
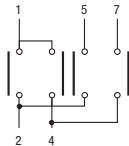
■ Reversing switch single-phase motor + aux phase

 RT6-GT6 0032	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120032RV4	1			CR0120032GV4	1		
			16A	CR0160032RV4	1			CR0160032GV4	1		
			20A								
			25A	CR0260032RV4	1						
		S2	25A			CR0250032RV6	1			CR0250032GV6	1
			32A								
			40A								

■ Reversing switch single-phase motor + centrif.

 0034	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120034RV4	1			CR0120034GV4	1		
			16A	CR0160034RV4	1			CR0160034GV4	1		
			20A	CR0200034RV4	1			CR0200034GV4	1		
			25A	CR0260034RV4	1						
		S2	25A			CR0250034RV6	1			CR0250034GV6	1
			32A								
			40A								

■ Voltmeter switch 3 concatenated voltages

 0016	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120016RV4	1			CR0120016GV4	1		i
			16A								
			20A								
			25A								
		S2	25A								
			32A								
			40A								

Rear mounting
4-screw fixing: □ 36mm (□1.42") / □ 48mm (□1.89")



RV4



RV6

Rear mounting
Ø 22mm (0,87") single hole fixing

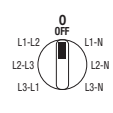
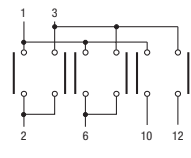


GV4

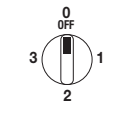
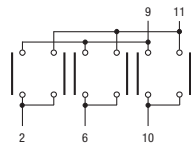


GV6

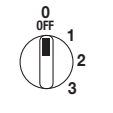
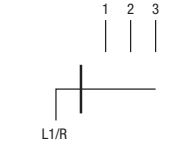
■ Voltmeter switch 3 concatenated voltages and 3 phase voltages

 0018	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120018RV4	1			CR0120018GV4	1		
			16A								
			20A								
			25A								
		S2	25A								
			32A								
			40A								

■ Ammeter switch 1 pole 3 current transformers

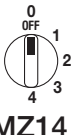
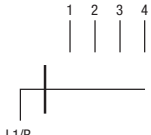
 0022	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR0120022RV4	1			CR0120022GV4	1		
			16A								
			20A								
			25A								
		S2	25A								
			32A								
			40A								

■ Multi step switch with off 1 pole 3 steps

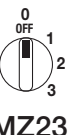
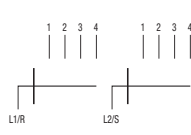
 MZ13	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR012MZ13RV4	1			CR012MZ13GV4	1		
			16A	CR016MZ13RV4	1			CR016MZ13GV4	1		
			20A	CR020MZ13RV4	1			CR020MZ13GV4	1		
			25A	CR026MZ13RV4	1						
		S2	25A			CR025MZ13RV6	1			CR025MZ13GV6	1
			32A								
			40A								



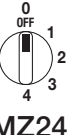
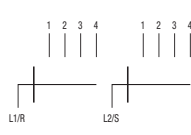
■ Multi step switch with off 1 pole 4 steps

 MZ14	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR012MZ14RV4	1			CR012MZ14GV4	1		
			16A	CR016MZ14RV4	1			CR016MZ14GV4	1		
			20A								
			25A								
		S2	25A								
			32A								
			40A								

■ Multi step switch with off 2 pole 3 steps

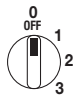
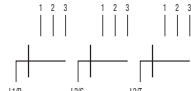
 MZ23	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR012MZ23RV4	1			CR012MZ23GV4	1		
			16A	CR016MZ23RV4	1			CR016MZ23GV4	1		
			20A	CR020MZ23RV4	1			CR020MZ23GV4	1		
			25A	CR026MZ23RV4	1						
		S2	25A			CR025MZ23RV6	1			CR025MZ23GV6	1
			32A								
			40A								

■ Multi step switch with off 2 pole 4 steps

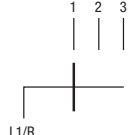
 MZ24	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR012MZ24RV4	1			CR012MZ24GV4	1		
			16A	CR016MZ24RV4	1			CR016MZ24GV4	1		
			20A								
			25A								
		S2	25A								
			32A								
			40A								



■ Multi step switch with off 3 pole 3 steps

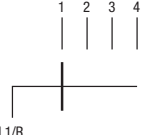
 MZ33	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR012MZ33RV4	1			CR012MZ33GV4	1		
			16A	CR016MZ33RV4	1			CR016MZ33GV4	1		
			20A								
			25A								
		S2	25A								
			32A								
			40A								
			50A								

■ Multi step switch without off 1 pole 3 steps

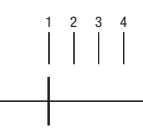
 M013	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR012M013RV4	1			CR012M013GV4	1		
			16A	CR016M013RV4	1			CR016M013GV4	1		
			20A								
			25A								
		S2	25A								
			32A								
			40A								



■ Multi step switch without off 1 pole 4 steps

 M014	 L1/R	Size	I_e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
			12A	CR012M014RV4	1			CR012M014GV4	1		
			16A	CR016M014RV4	1			CR016M014GV4	1		
			20A								
			25A								
			25A								
			32A								
			40A								

■ Multi step switch without off 1 pole 5 steps

 M015	 L1/R	Size	I_e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
			12A	CR012M015RV4	1			CR012M015GV4	1		
			16A	CR016M015RV4	1			CR016M015GV4	1		
			20A								
			25A								
			25A								
			32A								
			40A								



■ ON-OFF switch 3 pole with padlockable handle

 00G3	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR01200G3RL6S	1	CR01200G3RK6S	1	CR01200G3BL6S	1	CR01200G3BK6S	1
			16A	CR01600G3RL6S	1	CR01600G3RK6S	1	CR01600G3BL6S	1	CR01600G3BK6S	1
			20A	CR02000G3RL6S	1	CR02000G3RK6S	1	CR02000G3BL6S	1	CR02000G3BK6S	1
			25A	CR02600G3RL6S	1	CR02600G3RK6S	1	CR02600G3BL6S	1	CR02600G3BK6S	1
		S2	25A	CR02500G3RL6S	1	CR02500G3RK6S	1	CR02500G3BL6S	1	CR02500G3BK6S	1
			32A	CR03200G3RL6S	1	CR03200G3RK6S	1	CR03200G3BL6S	1	CR03200G3BK6S	1
			40A	CR04000G3RL6S	1	CR04000G3RK6S	1	CR04000G3BL6S	1	CR04000G3BK6S	1

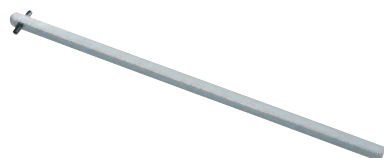
■ ON-OFF switch 4 pole with padlockable handle

 00G4	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CR01200G4RL6S	1	CR01200G4RK6S	1	CR01200G4BL6S	1	CR01200G4BK6S	1
			16A	CR01600G4RL6S	1	CR01600G4RK6S	1	CR01600G4BL6S	1	CR01600G4BK6S	1
			20A	CR02000G4RL6S	1	CR02000G4RK6S	1	CR02000G4BL6S	1	CR02000G4BK6S	1
			25A	CR02600G4RL6S	1	CR02600G4RK6S	1	CR02600G4BL6S	1	CR02600G4BK6S	1
		S2	25A	CR02500G4RL6S	1	CR02500G4RK6S	1	CR02500G4BL6S	1	CR02500G4BK6S	1
			32A	CR03200G4RL6S	1	CR03200G4RK6S	1	CR03200G4BL6S	1	CR03200G4BK6S	1
			40A	CR04000G4RL6S	1	CR04000G4RK6S	1	CR04000G4BL6S	1	CR04000G4BK6S	1

* Fixing 36mm by 4 screws

** Fixing 48mm by 4 screws and fixing adapter (included in the package)

Optional shafts



Part no.	Description	Pack
PALBL055	Shaft L=55mm - Square section 5 mm	5
PALBL075	Shaft L=75mm - Square section 5 mm	5
PALBL095	Shaft L=95mm - Square section 5 mm	5
PALBL115	Shaft L=115mm - Square section 5 mm	5
PALBL135	Shaft L=135mm - Square section 5 mm	5
PALBL155	Shaft L=155mm - Square section 5 mm	5
PALBL175	Shaft L=175mm - Square section 5 mm	5
PALBL300	Shaft L=300mm - Square section 5 mm	5
PALBL500	Shaft L=500mm - Square section 5 mm	5

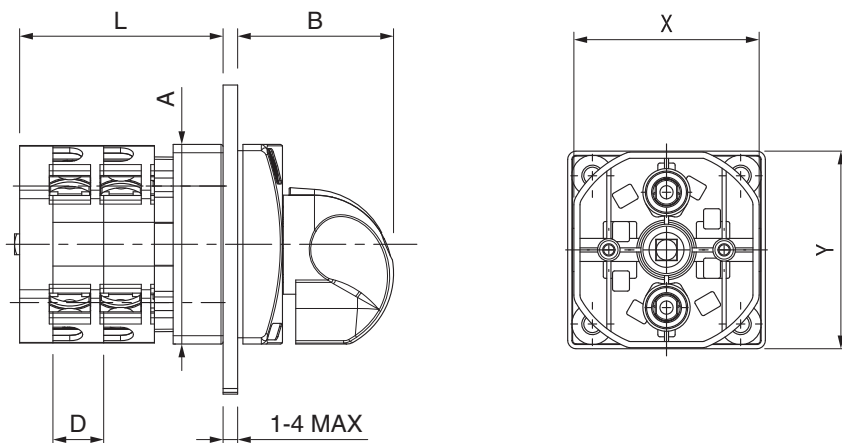
Flexible PVC protections IP40



Part no.	Description	Pack
PVCCA012D48E1E2D	Flexible pvc protection from 1 to 2 elements, ø 48mm with adapter	2
PVCCA012D48E3E4D	Flexible pvc protection from 3 to 4 elements, ø 48mm with adapter	2
PVCCA012D48E5E7D	Flexible pvc protection from 5 to 7 elements, ø 48mm with adapter	2
PVCCA012D53E1E3D	Flexible pvc protection from 1 to 3 elements, ø 53mm with flange adapter	2
PVCCA032D58E1E3D	Flexible pvc protection from 1 to 3 elements, ø 58mm with adapter	2
PVCCA032D58E4E5D	Flexible pvc protection from 4 to 5 elements, ø 58mm with adapter	2
PVCCC012D56E1E3D	Flexible pvc protection from 1 to 3 elements, ø 56mm with flange adapter	2

■ Rear mounting

(RT - RY - RL6 - RK6 - RR0) - Measures in mm (in)

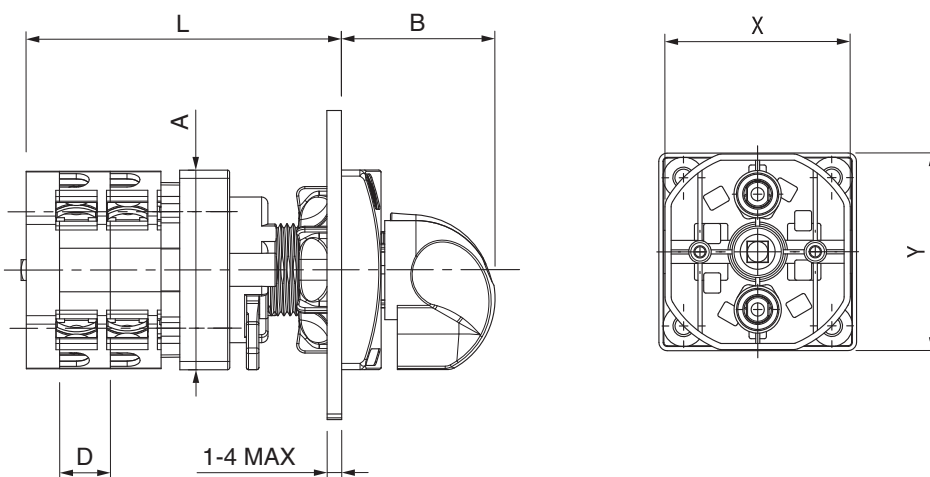


Series	X	Y	A	D		no. of stages					
						1	2	3	4	5	6
CA 012-016-020-026-033	45 (1.77")	47,5 (1.87")	□ 48 (□1.89")	12,2 (0.48")	L	36,7 (1.44")	49 (1.93")	61,1 (2.41")	73,3 (2.89")	85,5 (3.37")	97,7 (3.85")
CR 025-032-040	53 (2.09")	62 (2.44")	□ 60 (□2.36")	16,2 (0.64")	L	42,7 (1.68")	58,9 (2.32")	75,1 (2.96")	91,3 (3.59")	107,5 (4.23")	123,7 (4.87")

Handle	B
RV4-RW4	31 (1,22")
RV6-RW6	36 (1,42")
RT4-RY4	37 (1.46")
RT6-RY6	39 (1.54")
RL6-RK6	39 (1.54")
RR0	34 (1.34")

■ Rear mounting

(GT - GY - GL6 - GK6 - GR0) - Measures in mm (in)



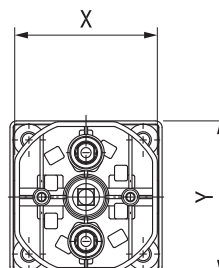
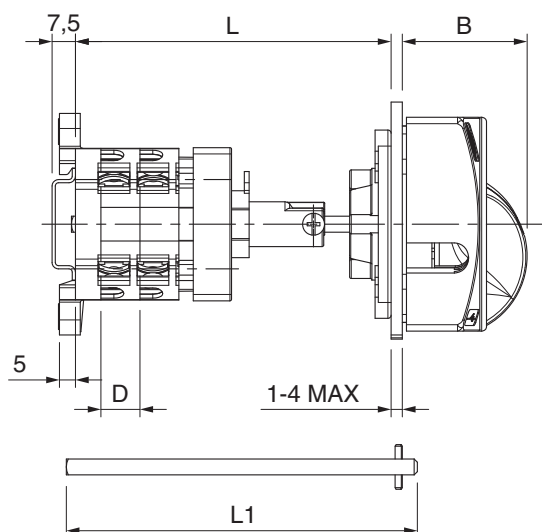
Series	X	Y	A	D		no. of stages					
						1	2	3	4	5	6
CA 012-016-020-026-033	45 (1.77")	47,5 (1.87")	□ 48 (□1.89")	12,2 (0.48")	L	63,5 (2.50")	76 (2.99")	88,2 (3.47")	100,5 (3.96")	112,6 (4.43")	124,8 (4.91")
CR 025-032-040	53 (2.09")	62 (2.44")	□ 60 (□2.36")	16,2 (0.64")	L	69,8 (2.75")	86 (3.39")	102 (4.02")	118,5 (4.67")	135 (5.31")	151 (5.94")

Handle	B
GV4-GW4	31 (1,22")
GV6-GW6	36 (1,42")
GT4-GY4	37 (1.46")
GT6-GY6	39 (1.54")
GL6-GK6	39 (1.54")
GR0	38 (1.50")

■ Base mounting

Switching angle 90°, padlockable (max 3 padlocks)

(BT - BY - BL6 - BK6) - Measures in mm (in)



Handle	B
BL6-BK6	39 (1.54")
BT4L-BY4L	40 (1.57")
BT6L-BY6L	40 (1.57")

	no. of stages				2	
	X	Y	D	L1	Lmin	Lmax
CA 012-016-020-026-033	45	47,5	12,2	175 (6.89") *	99 (3.90")	243 (9.57")
	(1.77")	(1.87")	(0.48")	300 (11.81")	99 (3.90")	368 (14.49")
				500 (19.69")	99 (3.90")	568 (22.36")
CR 025-032-040	53	62	16,2	175 (6.89") *	109 (4.29")	253 (9.96")
	(2.09")	(2.44")	(0.64")	300 (11.81")	109 (4.29")	378 (14.88")
				500 (19.69")	109 (4.29")	578 (22.76")

Overall length (min-max)** for different shaft lengths (L1)

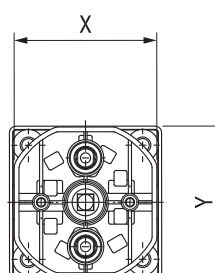
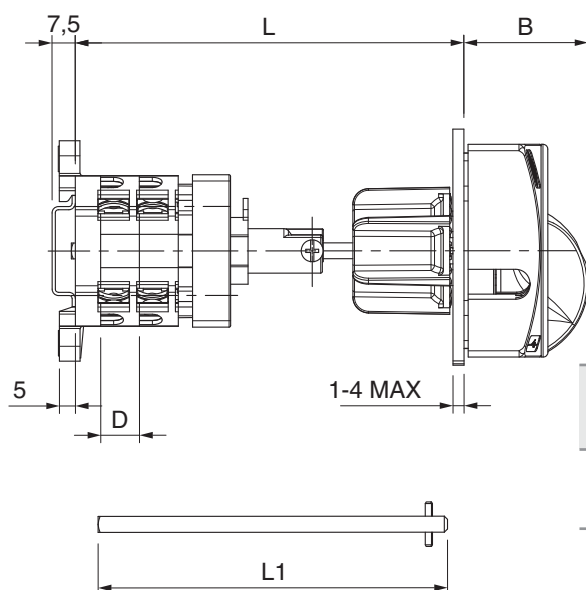
* Standard shaft, bundled

** Minimum length is obtainable by cutting the shaft

■ Base mounting

Switching angle 90°, padlockable (max 3 padlocks)

(HT - HY - HL6 - HK6) - Measures in mm (in)



Handle	B
HL6-HK6	39 (1.54")
GT4L-GY4L	40 (1.57")
GT6L-GY6L	40 (1.57")

	no. of stages				2	
	X	Y	D	L1	Lmin	Lmax
CA 012-016-020-026-033	45	47,5	12,2	175 (6.89") *	111 (4.37")	255 (10.04")
	(1.77")	(1.87")	(0.48")	300 (11.81")	111 (4.37")	380 (14.96")
				500 (19.69")	111 (4.37")	580 (22.83")
CR 025-032-040	53	62	16,2	175 (6.89") *	121 (4.76")	265 (10.43")
	(2.09")	(2.44")	(0.64")	300 (11.81")	121 (4.76")	390 (15.35")
				500 (19.69")	121 (4.76")	590 (23.23")

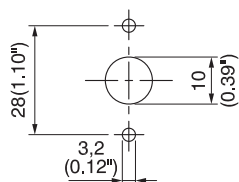
Overall length (min-max)** for different shaft lengths (L1)

* Standard shaft, bundled

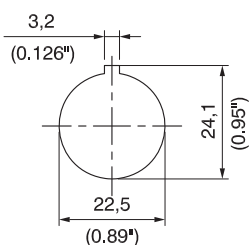
** Minimum length is obtainable by cutting the shaft

■ Rear mounting

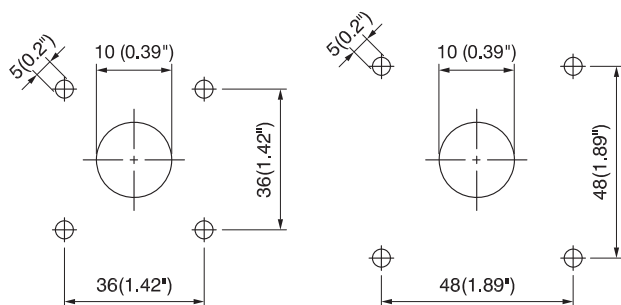
(RT - RY - RL6 - RK6 - RR0) - Measures in mm (in)



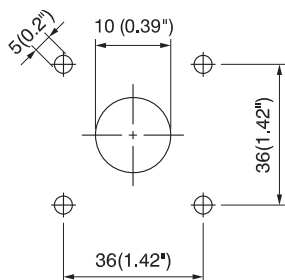
(GT - GY - GV - GW - GL - GK - GR0)



(RV6/RV6-T - RW6/RW6-T - RL6S - RK6S)



(RV4/RV4-T - RW4/RW4-T)



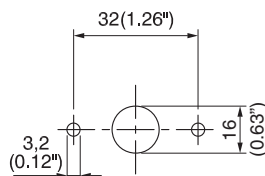
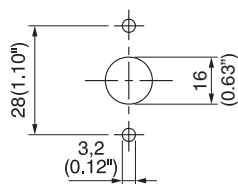
■ Base mounting

(BT - BY - BV - BW - BL - BK) - Measures in mm (in)

Escutcheon plate mounting options:

1) 2 holes with vertical distance 28mm (1.10")

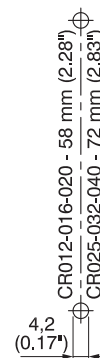
2) 2 holes with horizontal distance 32mm (1.26")



Switch mounting options:

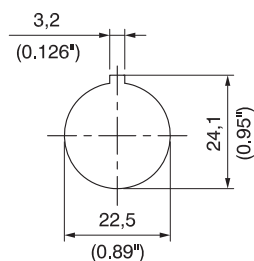
1) 2 holes with distance 58mm (2.28") - 72mm (2.83")

2) snap mount on DIN 46277/3 rail



(HT - HY - HV - HW - HL - HK)

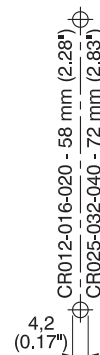
Escutcheon plate



Switch mounting options:

1) 2 holes with distance 58mm (2.28") - 72mm (2.83")

2) snap mount on DIN 46277/3 rail





CAM SWITCHES

CA series



01

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



PL1



PL2

ON-OFF switch 1 pole

 0001	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CA0120001PL1	1	CA0120001PL2	1
			16A			CA0160001PL2	1
			20A			CA0200001PL2	1
			25A			CA0260001PL2	1
		S2	25A			CA0250001PL2	1
			32A				
			40A				

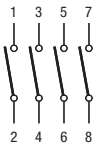
ON-OFF switch 2 pole

 0002	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CA0120002PL1	1	CA0120002PL2	1
			16A	CA0160002PL1	1	CA0160002PL2	1
			20A	CA0200002PL1	1	CA0200002PL2	1
			25A			CA0260002PL2	1
		S2	25A			CA0250002PL2	1
			32A			CA0320002PL2	1
			40A			CA0400002PL2	1

ON-OFF switch 3 pole

 0003	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CA0120003PL1	1	CA0120003PL2	1
			16A	CA0160003PL1	1	CA0160003PL2	1
			20A	CA0200003PL1	1	CA0200003PL2	1
			25A			CA0260003PL2	1
		S2	25A	CA0250003PL1	1	CA0250003PL2	1
			32A			CA0320003PL2	1
			40A			CA0400003PL2	1

ON-OFF switch 4 pole

 0004	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CA0120004PL1	1	CA0120004PL2	1
			16A	CA0160004PL1	1	CA0160004PL2	1
			20A			CA0200004PL2	1
			25A			CA0260004PL2	1
		S2	25A			CA0250004PL2	1
			32A			CA0320004PL2	1
			40A			CA0400004PL2	1

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



PL1

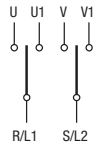


PL2

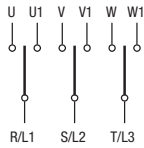
Change-over switch 1 pole

 0005	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CA0120005PL1	1	CA0120005PL2	1
			16A			CA0160005PL2	1
			20A			CA0200005PL2	1
			25A			CA0260005PL2	1
		S2	25A			CA0250005PL2	1
			32A				
			40A				

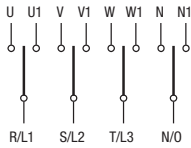
Change-over switch 2 pole

 0006	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CA0120006PL1	1	CA0120006PL2	1
			16A	CA0160006PL1	1	CA0160006PL2	1
			20A	CA0200006PL1	1	CA0200006PL2	1
			25A			CA0260006PL2	1
		S2	25A			CA0250006PL2	1
			32A			CA0320006PL2	1
			40A			CA0400006PL2	1

Change-over switch 3 pole

 0007	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CA0120007PL1	1	CA0120007PL2	1
			16A	CA0160007PL1	1	CA0160007PL2	1
			20A			CA0200007PL2	1
			25A			CA0260007PL2	1
		S2	25A			CA0250007PL2	1
			32A			CA0320007PL2	1
			40A			CA0400007PL2	1

Change-over switch 4 pole

 0039	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CA0120039PL1	1	CA0120039PL2	1
			16A	CA0160039PL1	1	CA0160039PL2	1
			20A			CA0200039PL2	1
			25A			CA0260039PL2	1
		S2	25A			CA0250039PL2	1
			32A			CA0320039PL2	1
			40A			CA0400039PL2	1

Rear mounting

2-screw fixing: 28mm (1.10") Vertical

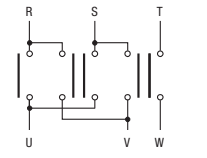


PL1

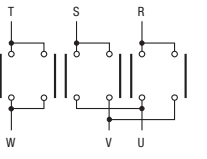


PL2

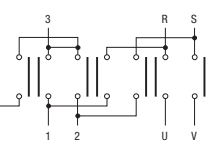
Reversing switch 3 pole

 0008	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
			I _e	Part no.	Pack	Part no.	Pack
 0008		S1	12A	CA0120008PL1	1	CA0120008PL2	1
			16A	CA0160008PL1	1	CA0160008PL2	1
			20A			CA0200008PL2	1
			25A			CA0260008PL2	1
		S2	25A			CA0250008PL2	1
			32A			CA0320008PL2	1
			40A			CA0400008PL2	1

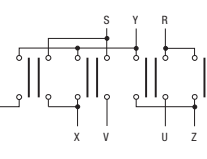
Reversing switch 3 pole with spring return to "OFF"

 0036	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
			I _e	Part no.	Pack	Part no.	Pack
 0036		S1	12A	CA0120036PL1	1	CA0120036PL2	1
			16A			CA0160036PL2	1
			20A			CA0200036PL2	1
			25A				
		S2	25A				
			32A				
			40A				

Changing switch Dahlander pole

 0009	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
			I _e	Part no.	Pack	Part no.	Pack
 0009		S1	12A	CA0120009PL1	1	CA0120009PL2	1
			16A	CA0160009PL1	1	CA0160009PL2	1
			20A			CA0200009PL2	1
			25A			CA0260009PL2	1
		S2	25A			CA0250009PL2	1
			32A			CA0320009PL2	1
			40A			CA0400009PL2	1

STAR-DELTA Starter

 0010	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
			I _e	Part no.	Pack	Part no.	Pack
 0010		S1	12A	CA0120010PL1	1	CA0120010PL2	1
			16A	CA0160010PL1	1	CA0160010PL2	1
			20A			CA0200010PL2	1
			25A			CA0260010PL2	1
		S2	25A			CA0250010PL2	1
			32A			CA0320010PL2	1
			40A			CA0400010PL2	1

Rear mounting

2-screw fixing: 28mm (1.10") Vertical

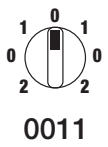
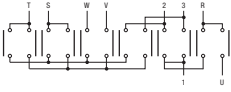


PL1

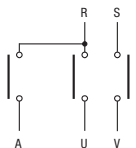


PL2

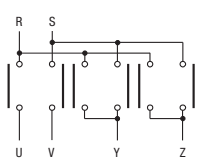
■ Reversing switch pole changing

 0011	Circuit diagram	Size	I ₀	Part no.	Pack	Part no.	Pack
		S1	12A	CA0120011PL1	1	CA0120011PL2	1
			16A	CA0160011PL1	1	CA0160011PL2	1
			20A			CA0200011PL2	1
			25A			CA0260011PL2	1
		S2	25A			CA0250011PL2	1
			32A				
			40A				

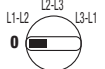
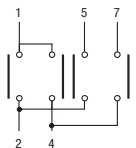
■ Switch single phase motor + aux phase

 0031	Circuit diagram	Size	I ₀	Part no.	Pack	Part no.	Pack
		S1	12A	CA0120031PL1	1	CA0120031PL2	1
			16A			CA0160031PL2	1
			20A			CA0200031PL2	1
			25A			CA0260031PL2	1
		S2	25A			CA0250031PL2	1
			32A				
			40A				

■ Reversing switch single-phase motor + centrif.

 0034	Circuit diagram	Size	I ₀	Part no.	Pack	Part no.	Pack
		S1	12A	CA0120034PL1	1	CA0120034PL2	1
			16A	CA0160034PL1	1	CA0160034PL2	1
			20A			CA0200034PL2	1
			25A			CA0260034PL2	1
		S2	25A			CA0250034PL2	1
			32A				
			40A				

■ Voltmeter switch 3 concatenated voltages

 0016	Circuit diagram	Size	I ₀	Part no.	Pack	Part no.	Pack
		S1	12A	CA0120016PL1	1	CA0120016PL2	1
			16A			CA0160016PL2	1
			20A				
			25A				
		S2	25A				
			32A				
			40A				

Rear mounting

2-screw fixing: 28mm (1.10") Vertical

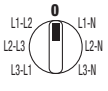
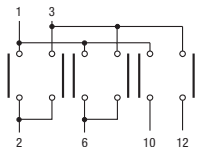


PL1

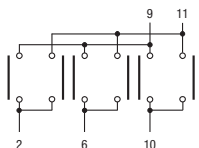


PL2

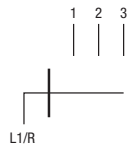
Voltmeter switch 3 concatenated voltages and 3 phase voltages

 0018	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CA0120018PL1	1	CA0120018PL2	1
			16A			CA0160018PL2	1
		S2	20A				
			25A				
			32A				
			40A				

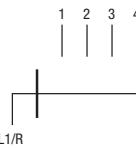
Ammeter switch 1 pole 3 current transformers

 0022	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CA0120022PL1	1	CA0120022PL2	1
			16A			CA0160022PL2	1
		S2	20A				
			25A				
			32A				
			40A				

Multi step switch with off 1 pole 3 steps

 MZ13	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CA012MZ13PL1	1	CA012MZ13PL2	1
			16A	CA016MZ13PL1	1	CA016MZ13PL2	1
		S2	20A			CA020MZ13PL2	1
			25A				
			32A				
			40A				

Multi step switch with off 1 pole 4 steps

 MZ14	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CA012MZ14PL1	1	CA012MZ14PL2	1
			16A	CA016MZ14PL1	1	CA016MZ14PL2	1
		S2	20A				
			25A				
			32A				
			40A				

Rear mounting

2-screw fixing: 28mm (1.10") Vertical

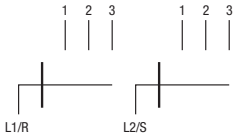


PL1



PL2

■ **Multi step switch with off 2 pole 3 steps**

 MZ23	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CS012MZ23PL1	1	CS012MZ23PL2	1
			16A			CS016MZ23PL2	1
			20A				
			25A				
		S2	25A				
			32A				
			40A				

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



RL6



RK6

Base mounting*

2-screw fixing: 28mm (1.10") V. / 32mm (1.26") H.



BL6



BK6

■ **ON-OFF switch 3 pole with padlockable handle**

 00G3	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CA01200G3RL6	1	CA01200G3RK6	1	CA01200G3BL6	1	CA01200G3BK6	1
			16A	CA01600G3RL6	1	CA01600G3RK6	1	CA01600G3BL6	1	CA01600G3BK6	1
			20A	CA02000G3RL6	1	CA02000G3RK6	1	CA02000G3BL6	1	CA02000G3BK6	1
			25A	CA02600G3RL6	1	CA02600G3RK6	1	CA02600G3BL6	1	CA02600G3BK6	1
		S2	25A	CA02500G3RL6	1	CA02500G3RK6	1	CA02500G3BL6	1	CA02500G3BK6	1
			32A	CA03200G3RL6	1	CA03200G3RK6	1	CA03200G3BL6	1	CA03200G3BK6	1
			40A	CA04000G3RL6	1	CA04000G3RK6	1	CA04000G3BL6	1	CA04000G3BK6	1

* Base mounting switches are supplied with standard 175mm (6.89") shaft

Rear mounting

2-screw fixing: 28mm (1.10") Vertical



RL6



RK6

Base mounting*

2-screw fixing: 28mm (1.10") V. / 32mm (1.26") H.

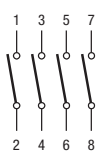


BL6



BK6

ON-OFF switch 4 pole with padlockable handle

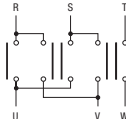
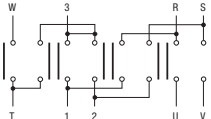
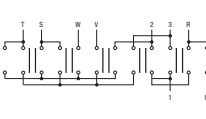
 00G4	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S1	12A	CA01200G4RL6	1	CA01200G4RK6	1	CA01200G4BL6	1	CA01200G4BK6	1
			16A	CA01600G4RL6	1	CA01600G4RK6	1	CA01600G4BL6	1	CA01600G4BK6	1
			20A	CA02000G4RL6	1	CA02000G4RK6	1	CA02000G4BL6	1	CA02000G4BK6	1
			25A	CA02600G4RL6	1	CA02600G4RK6	1	CA02600G4BL6	1	CA02600G4BK6	1
		S2	25A	CA02500G4RL6	1	CA02500G4RK6	1	CA02500G4BL6	1	CA02500G4BK6	1
			32A	CA03200G4RL6	1	CA03200G4RK6	1	CA03200G4BL6	1	CA03200G4BK6	1
			40A	CA04000G4RL6	1	CA04000G4RK6	1	CA04000G4BL6	1	CA04000G4BK6	1

* Base mounting switches are supplied with standard 175mm (6.89") shaft

Rear mounting



R03

		 0002	 0003	 0008	 0009	 0011			
Circuit diagram									
Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	S	Pack
S1	12A	CA0120002R03	1			CA0120008R03	1	CA0120009R03	1
	16A	CA0160002R03	1	CA0160003R03	1	CA0160008R03	1	CA0160009R03	1
	20A	CA0200002R03	1	CA0200003R03	1	CA0200008R03	1	CA0200009R03	1
	25A	CA0260002R03	1	CA0260003R03	1				
S2	25A	CA0250002R03	1	CA0250003R03	1				
	32A								
	40A								

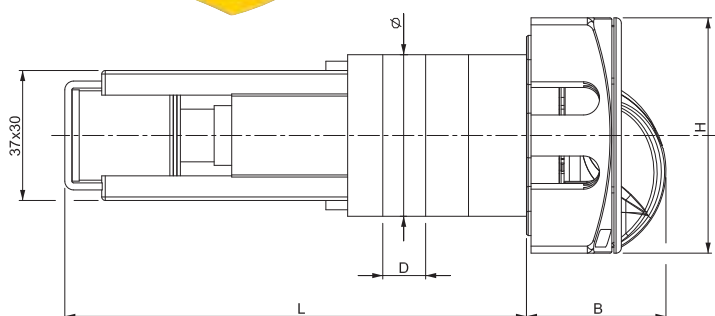
Switches with electromagnet



Device with safety electromagnet. It allows the spring return of the switch to "OFF" position in case of supply failure.

	B	H
PL2	32 (1,26")	75x75 (2,95"x2,95")
RT6	39 (1,53")	67x67 (2,64"x2,64")
RL6	39 (1,53")	67x67 (2,64"x2,64")

dimensions in mm (in)



dimensions in mm (in)

Stages no.		2
CA 016 D = 12,2 (0,48") ø = 40x46 (1,57"x1,81")	L	126 (4,96")
CA 025 D = 16,2 (0,64") ø = 58 (2,28")	L	140,5 (5,53")



RL6

Rear mounting

Circuit diagram

0035

Size	I _e	Part no.	Pack
S1	16A	CA0160035E3RL6	1
S2	25A	CA0250035E3RL6	1
	* rat. voltage	110V	

Protections



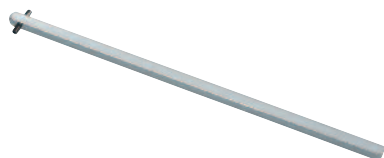
Part no.	Description	Pack
PVCCA012D48E1E2D	Flexible pvc protection from 1 to 2 elements, ø 48mm with adapter	2
PVCCA012D48E3E4D	Flexible pvc protection from 3 to 4 elements, ø 48mm with adapter	2
PVCCA012D48E5E7D	Flexible pvc protection from 5 to 7 elements, ø 48mm with adapter	2
PVCCA012D53E1E3D	Flexible pvc protection from 1 to 3 elements, ø 53mm with flange adapter	2
PVCCA032D58E1E3D	Flexible pvc protection from 1 to 3 elements, ø 58mm with adapter	2
PVCCA032D58E4E5D	Flexible pvc protection from 4 to 5 elements, ø 58mm with adapter	2
PVCCC012D56E1E3D	Flexible pvc protection from 1 to 3 elements, ø 56mm with flange adapter	2

■ Terminal protection for diagrams 00G3,00G4



Part no.	Description	Pack
PROTLE6747	Terminals protection CA012 ÷ 020 2 stages	5
PROTLE6748	Terminals protection CA025 ÷ 040 2 stages	5

■ Optional shafts



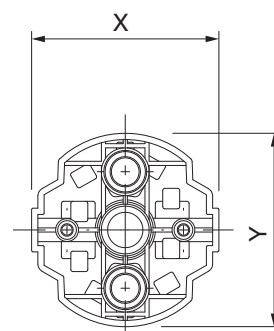
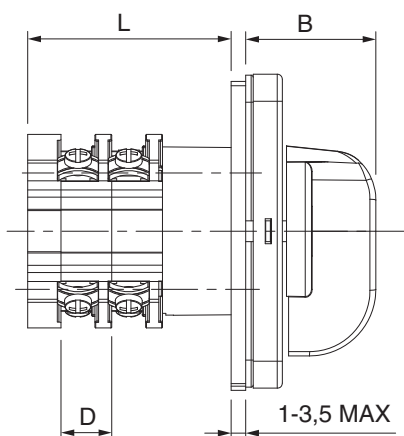
Part no.	Description	Pack
PALBL055	Shaft L=55mm - Square section 5 mm	5
PALBL075	Shaft L=75mm - Square section 5 mm	5
PALBL095	Shaft L=95mm - Square section 5 mm	5
PALBL115	Shaft L=115mm - Square section 5 mm	5
PALBL135	Shaft L=135mm - Square section 5 mm	5
PALBL155	Shaft L=155mm - Square section 5 mm	5
PALBL175	Shaft L=175mm - Square section 5 mm	5
PALBL300	Shaft L=300mm - Square section 5 mm	5
PALBL500	Shaft L=500mm - Square section 5 mm	5

Dimensions

cam switches

■ Rear mounting - PL Handle

Measures in mm (in)



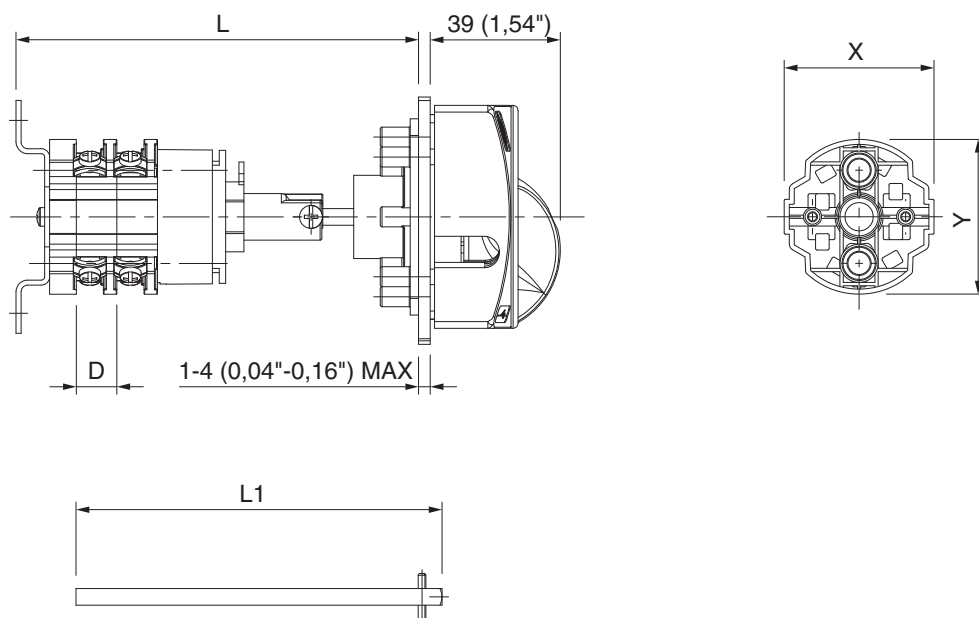
Series	X	Y	D		no. of stages					
					1	2	3	4	5	6
CA 012-016-020-026	45 (1,77")	∅ 46,5 ∅ (1,83")	12,2 (0,48")	L	36,7 (1,44")	49 (1,93")	61,1 (2,41")	73,3 (2,89")	85,5 (3,37")	97,7 (3,85")
Ca 025-032-040-051	-	∅ 58,5 ∅ (2,30")	16,2 (0,64")	L	42,8 (1,69")	59 (2,32")	75 (2,95")	91,5 (3,60")	108 (4,25")	124 (4,88")

Handle	B
PL1	30 (1,18")
PL2	32 (1,26")

■ Base mounting - Handles BL6/BK6

(switching angle 90°, padlockable with max 3 padlocks)

Measures in mm (in)



Overall length (min-max)** for different shaft lengths (L1):

Series	no. of stages			L1	2	
	X	Y	D		Lmin	Lmax
CA 012-016-020-026-033	45	ø 46,5	12,2	175 (6.89")*	114 (4,49")	258 (10,16")
	(1.77")	ø (1.83")	(0.48")	300 (11.81")	114 (4,49")	383 (15,08")
				500 (19.69")	114 (4,49")	583 (22,95")
Ca 025-032-040	-	ø 58,5	16,2	175 (6.89")*	117 (4,61")	261 (10,28")
	-	ø (2.30")	(0.64")	300 (11.81")	117 (4,61")	386 (15,20")
				500 (19.69")	117 (4,61")	586 (23,07")

* Standard shaft, bundled

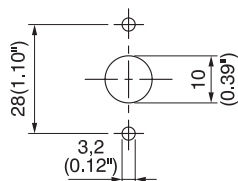
** Minimum length is obtainable by cutting the shaft

Drilling templates

cam switches

■ Drilling templates - Rear mounting

(RT - RL - RK - PL1 - PL2) - Measures in mm (in)

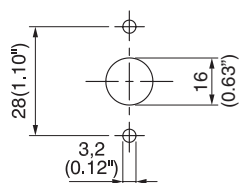


■ Drilling templates - Base mounting

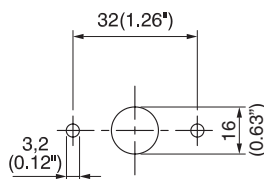
(BL6 - BK6) - Measures in mm (in)

Escutcheon plate mounting options:

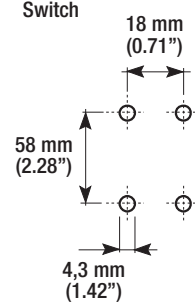
1) 2 holes with vertical distance 28mm (1.10")



2) 2 holes with horizontal distance 32mm (1.26")



Switch



Switch mounting options:

1) 4 holes with distance 58x18mm (2.28x0.71")

Cam switches

CA 050...630 series



Latching
mechanism
CA 050...630

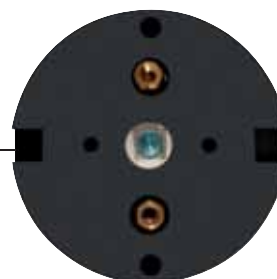
CA 050

Round Ø 74 mm (2.91")



CA 063

Round Ø 84 mm (3.31")

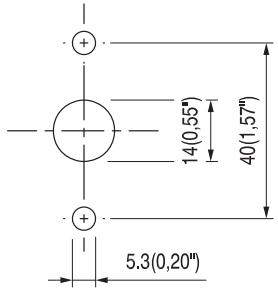
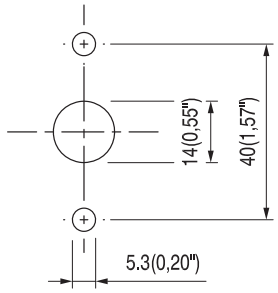
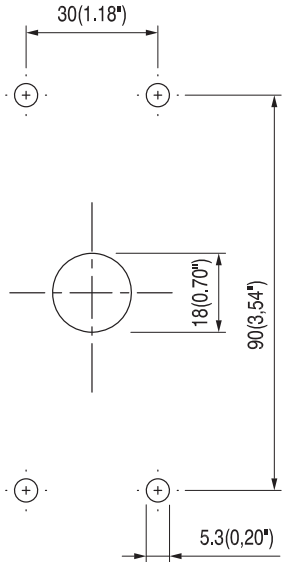


CA 100-200-400-630

Round Ø 110 mm (4.33")



Latching mechanism CA 050...630

Type	Dimensions	Product	Holes	Drilling template
Round	Ø 74mm (2.91")		2 holes, 40mm (1.57") verticals	
	Ø 84mm (3.31")		2 holes, 40mm (1.57") verticals	
	Ø 110mm (4.33")		4 holes, 30x90mm (1.18"x3.54")	

CA 50-630A

Standard plates and knobs



Rear mount
with screw fixing



PL3⁽¹⁾

Transparent plate 105x105mm (4.13x4.13"), black knob, IP40



PL4⁽²⁾

Transparent plate 130x130mm (5.12x5.12"), black knob, IP40



3L3⁽¹⁾

Yellow plate 105x105mm (4.13x4.13"), red padlockable knob (max 3 padlocks), IP40



3L4⁽²⁾

Yellow plate 130x130mm (5.12x5.12"), red padlockable knob (max 3 padlocks), IP40



Base mount
with screw fixing



LE3⁽³⁾

Yellow plate 105x105mm (4.13x4.13"), red padlockable knob (max 3 padlocks), door interlock in "ON" position, IP54, terminals cover IP20

LE4⁽⁴⁾

Yellow plate 130x130mm (5.12x5.12"), red padlockable knob (max 3 padlocks), door interlock in "ON" position, IP54, terminals cover IP20

Optional plates and knobs



Rear mount
with screw fixing



PL9⁽²⁾

Transparent plate 130x130mm (5.12x5.12"), black lever length 115 mm (4.53"), IP40



PL5⁽²⁾

Transparent plate 130x130mm (5.12x5.12"), black handwheel, IP40



3N3⁽¹⁾

Grey plate 105x105mm (4.13x4.13"), black padlockable knob (max 3 padlocks), IP40



Base mount
with screw fixing



LN3⁽³⁾

Grey plate 105x105mm (4.13x4.13"), black padlockable knob (max 3 padlocks), door interlock in "ON" position, IP54, terminals cover IP20

LN4⁽⁴⁾

Grey plate 130x130mm (5.12x5.12"), black padlockable knob (max 3 padlocks), door interlock in "ON" position, IP54, terminals cover IP20

Possible fixing options in rear mount depend on the combination of the plate with the rear mount cam-switch body

(1) suitable for 2-screw fixing with 2 holes at 40mm (1.57") vertical distance

(2) suitable for 4-screw fixing with holes at 30 x 90mm (1.18" x 3.54") distance

(3) suitable for 4-screw fixing with □ 65 ÷ 85mm (□ 2.56" ÷ 3.35") holes layout

(4) suitable for 4-screw fixing with □ 94 ÷ 110mm (□ 3.70" ÷ 4.33") holes layout

Rear mounting



PL3



PL4

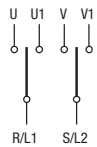


PL9

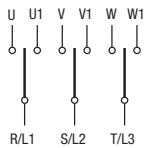


PL5

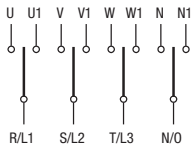
Change-over switch 2 pole

 0006	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S3	50A	CA0500006PL3	1						
		S4	63A	CA0630006PL3	1						
		S5	100A			CA1000006PL4	1	CA1000006PL9	1		
		S6	200A			CA2000006PL4	1	CA2000006PL9	1		
			400A					CA4000006PL9	1	CA4000006PL5	1
			630A					CA6300006PL9	1	CA6300006PL5	1

Change-over switch 3 pole

 0007	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S3	50A	CA0500007PL3	1						
		S4	63A	CA0630007PL3	1						
		S5	100A			CA1000007PL4	1	CA1000007PL9	1		
		S6	200A			CA2000007PL4	1	CA2000007PL9	1		
			400A					CA4000007PL9	1	CA4000007PL5	1
			630A							CA6300007PL5	1

Change-over switch 4 pole

 0039	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S3	50A	CA0500039PL3	1						
		S4	63A	CA0630039PL3	1						
		S5	100A			CA1000039PL4	1	CA1000039PL9	1		
		S6	200A			CA2000039PL4	1	CA2000039PL9	1		
			400A							CA4000039PL5	1
			630A							CA6300039PL5	1

Rear mounting



PL3



PL4

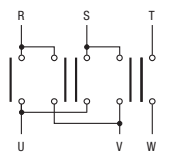


PL9

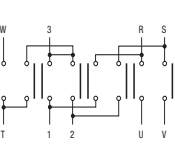


PL5

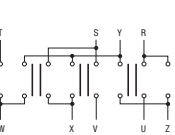
■ Reversing switch 3 pole

 0008		Size	I_e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S3	50A	CA0500008PL3	1						
		S4	63A	CA0630008PL3	1						
		S5	100A			CA1000008PL4	1	CA1000008PL9	1		
		S6	200A			CA2000008PL4	1	CA2000008PL9	1		
			400A					CA4000008PL9	1	CA4000008PL5	1
			630A							CA6300008PL5	1

■ Changing switch Dahlander pole

 0009		Size	I_e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S3	50A	CA0500009PL3	1						
		S4	63A	CA0630009PL3	1						
		S5	100A								
		S6	200A								
			400A								
			630A								

■ STAR-DELTA Starter

 0010		Size	I_e	Part no.	Pack	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S3	50A	CA0500010PL3	1						
		S4	63A	CA0630010PL3	1						
		S5	100A			CA1000010PL4	1	CA1000010PL9	1		
		S6	200A			CA2000010PL4	1	CA2000010PL9	1		
			400A								
			630A								

Rear mounting



3L3



3N3



3L4

ON-OFF switch 3 pole with padlockable handle

 00G3	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S3	50A	CA05000G33L3	1	CA05000G33N3	1		
		S4	63A	CA06300G33L3	1	CA06300G33N3	1		
		S5	100A					CA10000G33L4	1
		S6	200A					CA20000G33L4	1

ON-OFF switch 4 pole with padlockable handle

 00G4	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S3	50A	CA05000G43L3	1	CA05000G43N3	1		
		S4	63A	CA06300G43L3	1				
		S5	100A					CA10000G43L4	1
		S6	200A					CA20000G43L4	1

Base mounting



LE3



LN3



LE4

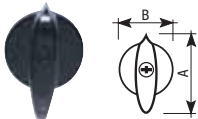
ON-OFF switch 3 pole with padlockable handle

 00G3	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S3	50A	CA05000G3LE3	1	CA05000G3LN3	1		
		S4	63A	CA06300G3LE3	1	CA06300G3LN3	1		
		S5	100A					CA10000G3LE4	1
		S6	200A					CA20000G3LE4	1

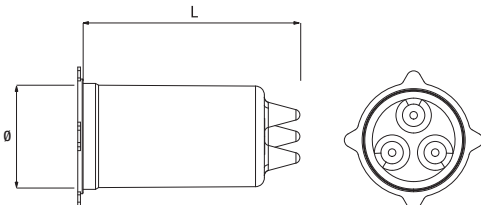
ON-OFF switch 4 pole with padlockable handle

 00G4	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack	Part no.	Pack
		S3	50A	CA05000G4LE3	1	CA05000G4LN3	1		
		S4	63A	CA06300G4LE3	1	CA06300G4LN3	1		
		S5	100A					CA10000G4LE4	1
		S6	200A					CA20000G4LE4	1

■ Plates and knobs

	Part no.	Description	Legend included		Pack
			Type	Degrees	
	FINPL3Q7	Rear mounting with screws, transparent plate 105x105mm (4.13x4.13"), black knob, IP40	0 - 1 1 - 0 - 2	60° 60°	5
	FINPL4Q10	Rear mounting with screws, transparent plate 105x105mm (5.12x5.12"), black knob, IP40	0 - 1 1 - 0 - 2	60° 60°	5
	FIN3L3Q7	Rear mounting with screws, yellow plate 105x105mm (4.13x4.13"), red padlockable knob (max 3 padlocks), IP40	0 - 1	90°	5
	M9G034N5	black knob square section 10mm (0.39") 105x75 (4.13x2.95")	-	-	5

■ Flexible PVC protections IP40

	Part no.	Description	Dimensions in mm (in)		Pack
			L	Ø	
	PROT2271003	CA050 up to 5 stages CA063 up to 4 stages	155 (6.10)	84 (3.31)	2
					

■ Terminal covers for diagrams 00G3,00G4

	Part no.	Description	Pack
	PROTLEG3229001	terminals cover CA050	2
	PROTLEG3229002	terminals cover CA063	2
	PROTLEG3942	terminals cover CA100-200	2

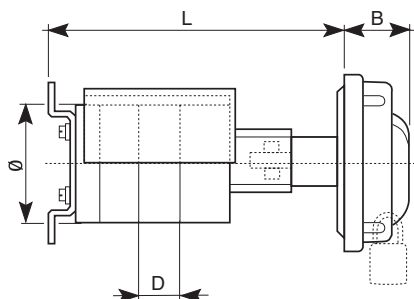
■ Shaft extensions with coupling

	Part no.	Description	Pack
	PALBL185	CA050-063, L.185mm (7.28"), □ 7mm (0.28")	10

■ Base mounting - Handles LE/LN

(switching angle 90°, padlockable with max 3 padlocks)

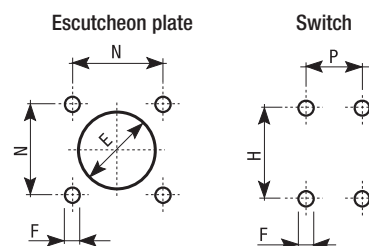
Measures in mm (in)



	B	
	(mm)	(in)
LE3-LN3	44	1.73
LE4-LN4	62	2.44

Stages no		2
CA 050		
D = 18	L (mm)	135 - 139
0.71	L (in)	5.31 - 5.47
Ø = 74		
2.91		
CA 063		
D = 25	L (mm)	151 - 155
0.98	L (in)	5.94 - 6.10
Ø = 84		
3.31		

Stages no		2
CA 100		
D = 30	L (mm)	182 - 186
1.18	L (in)	7.16 - 7.32
Ø = 110		
4.33		
CA 200		
D = 39	L (mm)	200 - 204
1.54	L (in)	7.87 - 8.03
Ø = 110		
4.33		

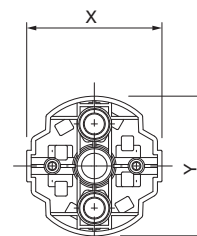
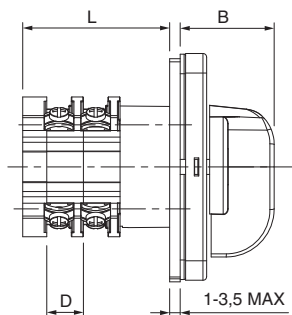


Dimensions

handle	N	E	F	H	P
LE3/LN3	65÷85 2.56÷3.35	40 1.57	5,3 0.21	84 3.30	26 1.02
LE4/LN4	94÷110 3.70÷4.33	50 1.97	5,3 0.21	94÷110 3.70÷4.33	94÷110 3.70÷4.33

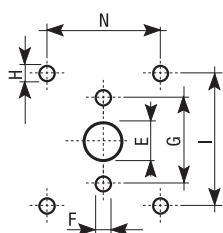
■ Rear mounting - Handles PL 3L/3N

Measures in mm (in)



Series	X	Y	D		no. of stages					
					1	2	3	4	5	6
CA 050	-	Ø 74 (2,91")	18 (0,71")	L	52,5 (2,07")	70,5 (2,78")	88,5 (3,48")	106,5 (4,19")	125 (4,92")	142,5 (5,61")
CA 063	-	Ø 84 (3,31")	25 (0,98")	L	60,5 (2,38")	85,5 (3,37")	110,5 (4,35")	135,5 (5,33")	160,5 (6,32")	185,5 (7,30")
CA 100	-	Ø 110 (4,33")	30 (1,18")	L	80,8 (3,18")	110,8 (4,36")	140,8 (5,54")	170,8 (6,72")	200,8 (7,91")	230,8 (9,09")
CA 200	-	Ø 110 (4,33")	39 (1,54")	L	90 (3,54")	129 (5,08")	168 (6,61")	207 (8,15")	246 (9,69")	285 (11,22")

Handle	B
PL3	44 (1,73")
PL4	62 (2,44")
PL5	63 (2,48")
PL9	73 (2,87")
3N3-3L3	44 (1,73")
RL6-RK6	39 (1,54")



Dimensions

cod.	E	F	G	H	I	N
PL3	14 0.55	5,3 0.21	40 1.57			
PL4	18 0.71			5,3 0.21	90 3.54	30 1.18
PL5	18 0.71			5,3 0.21	90 3.54	30 1.18
3L3/3N3	14 0.55	5,3 0.21	40 1.57			
3L4/3N4	18 0.71			5,3 0.21	90 3.54	30 1.18



BETTER SWITCHES

CAM SWITCHES

CQ series



01

Technical data IEC 947-3 EN 60947-3

Rated insulation voltage
Rated operating voltage
Rated impulse withstand voltage
Rated thermal current for open switch
Rated thermal current for enclosed switch
Rated operation frequency
Power dissipation for each pole
Rated operating current I_e
AC-21A Switching resistive loads, including moderate overloads 3P/3P+N
AC-22A Switching of mixed resistive and inductive loads, including moderate overloads 3P/3P+N
AC-20A Connecting and disconnecting under no load conditions
Rated operating power
AC-23A Switching of motor loads or other highly inductive loads 3 phase - 3 pole
AC-3 Squirrel cage motors: starting, switching off motors during running 3 phase - 3 pole
AC-4 Squirrel cage motors: starting, plugging, inching
AC-15 Control of a.c. electromagnetic loads ≥ 72 VA
Rated breaking capability in category in AC-23A ($\cos \varphi = 0,45$)
Short circuit protection
Rated short time withstand current (1s)
Rated short-circuit make capacity
Rated conditional short-circuit current
With fuses class gG

Technical data UL/CSA

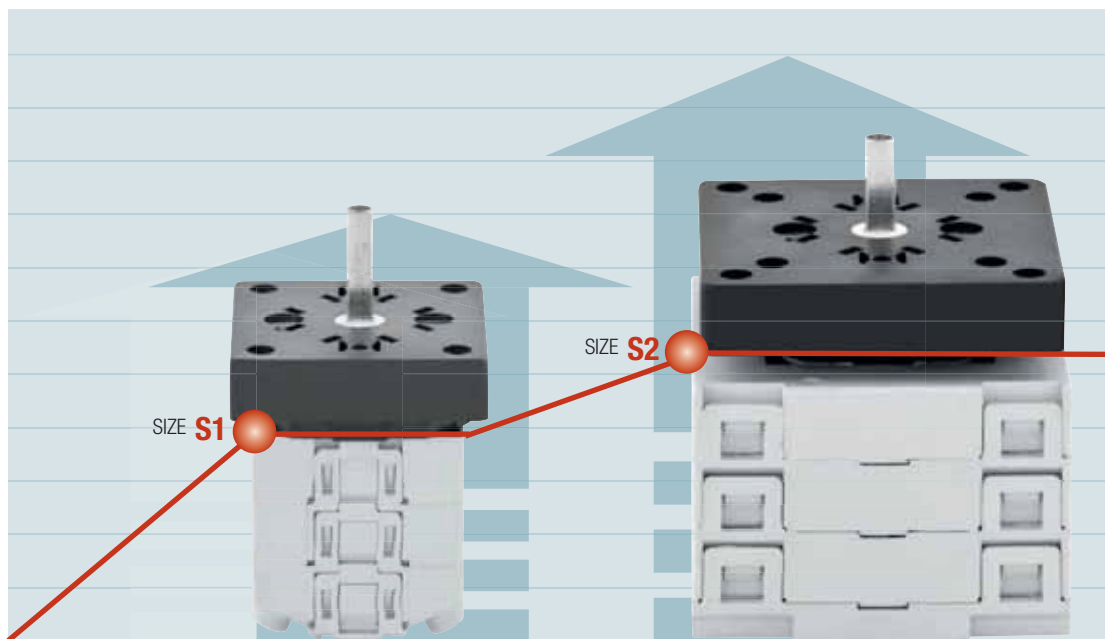
Rated insulation voltage
Rated operating voltage
General Use Current
Rated operating power
1 phase - 2 pole
3 phase - 3 pole

Mechanical characteristics

Mechanical life
Connections according to IEC 9471-1 and EN 60947-1
Connecting capability
Connecting capability with flexible wires
Connecting capability with solid wires
Connection terminal screw dimensions
Screw tightening torque
Protection degree IEC 529 EN 60529
Terminals
Ambient conditions
Operating ambient temperature
Storage ambient temperature
Withstand to constant humid
Withstand to cyclic humid

		CQ012	CQ016	CQ025	CQ032
Ui	V	690	690	690	690
Ue	V	690	690	690	690
Uimp	kV	6	6	4	4
Ith	A	16	20	32	40
Ithe	A	16	20	25	32
	Hz	50	50	50	50
	W	0,4	0,6	0,85	1,3
Ie	A	16	20	32	40
Ie	A	12	16	25	32
-	-	-	-	-	-
230V	Kw (A)	4 (13)	5,5 (17)	9 (28)	11 (35)
400V	Kw (A)	7,5 (14)	9 (16)	15 (27)	18,5 (33)
500V	Kw (A)	7,5 (11)	9 (13)	15 (22)	18 (27)
690V	Kw (A)	7,5 (8)	9 (9)	15 (16)	18,5 (19)
230V	Kw (A)	2,8 (9)	4 (13)	6,5 (20)	8,5 (26)
400V	Kw (A)	5,5 (10)	7,5 (14)	11 (21)	15 (27)
500V	Kw (A)	5,5 (8)	7,5 (11)	11 (16)	14 (20)
690V	Kw (A)	5,5 (6)	7,5 (8)	11(12)	14 (15)
230V	Kw (A)	1,1 (3)	1,5 (4)	3,7 (12)	4 (12)
400V	Kw (A)	1,75 (3)	2,2 (4)	4 (7)	5,5 (10)
230V	A	5	6	8	10
400V	A	3	4	6	8
230V	A	112	128	240	280
400V	A	112	128	216	264
Icw	A	200	240	500	640
Icm	A	1000	1000	2000	2000
-	kA	5	5	10	10
500V	A	20	20	50	50
Ui	UL/CSA V	600	600	-	-
Ue	UL/CSA V	600	600	-	-
Ie	UL/CSA A	16	20	-	-
120V	UL/CSA Hp	0,5/0,5	1,5 /0,5	-	-
240V	UL/CSA Hp	1,5/1,5	3/1,5	-	-
200V	UL/CSA Hp	2/2	5/3	-	-
240V	UL/CSA Hp	3/3	7,5/5	-	-
480V	UL/CSA Hp	5/5	7,5/7,5	-	-
600V	UL/CSA Hp	7,5/7,5	10/10	-	-
-	cycles x 10 ⁶	2	2	2	1,5
-	cycles/hour	120	120	120	120
Min-Max	mm ²	2x1,5-2,5	2x1,5-2,5	2x2,5-6	2x2,5-6
Min-Max	AWG	16-12	16-12	14-10	14-10
Min-Max	mm ²	2x1,5-4	2x1,5-4	2x2,5-10	2x2,5-10
-	Type	M3,5	M3,5	M5	M5
-	Nm	1,0	1,0	2,8	2,8
IP		20			
°C		-25 ÷ +55			
°C		-30 ÷ +70			
		sec. IEC60068 2-78 part			
		sec. IEC60068 2-30 part			

■ **CQ 012...032**

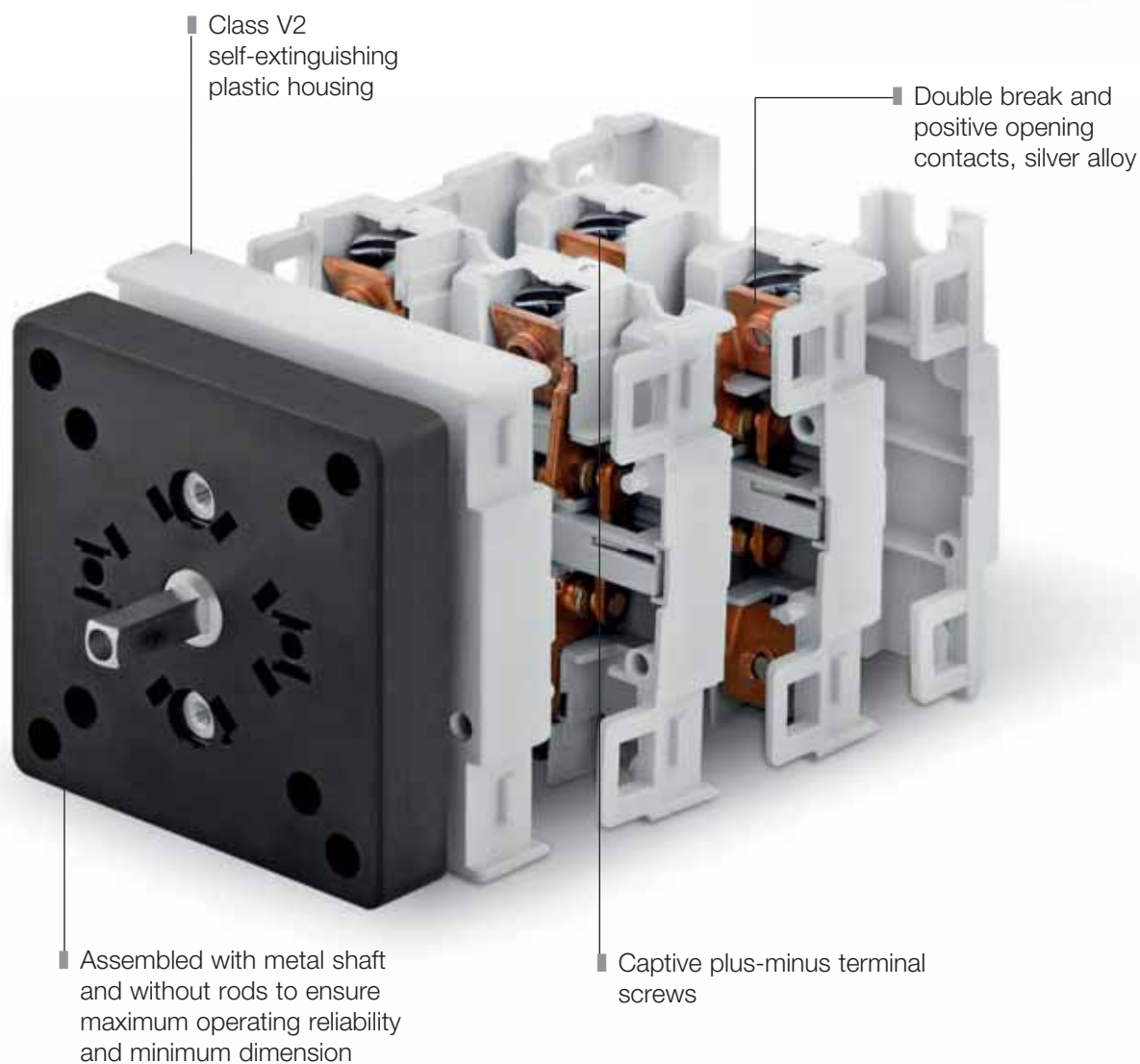


■ CQ 012-016

■ CQ 025-032

CQ series

- Terminal protection degree: IP20
- Class V2 self-extinguishing housing
- Metal shaft
- Captive plus-minus terminal screws
- Rear mounting and Base mounting
- Simplified wiring



Overview

The range of cam switches **CQ series** includes ratings from 12 to 32A with insulation voltage of 690V. According to the latest industrial application standards, CQ series offers IP 20 terminals protection degree and up to IP66 handle protection degree. Available with different mounting systems: rear panel with screws, base mounting with screws or snap mounting on DIN rail (EN 50022) with escutcheon plate for 45mm standard knock-out. Available diagrams for every application: ON-OFF switches, line switches, cam switches for motor control, ammeter and voltmeter switches.

Easy made wiring

■ Rear access to terminals screws for rear mounting versions



■ Front access to terminals screws for base mounting versions



■ Escutcheon plate for 45mm (1.77") standard knock-out

45mm (1.77") plate for fixing in standard panel/distribution boards slots. Available diagrams for ON-OFF switches, line switches, ammeter and voltmeter switches.

Rear mounting

4-screw fixing: □ 36mm (1.42")

4-screw fixing: □ 36mm (1.42") / □ 48mm (1.89")



RV4



RV6

■ ON-OFF switch 2 pole

 0002	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CQ0120002RV4	1		
			16A	CQ0160002RV4	1	CQ0160002RV6	1
		S2	25A			CQ0250002RV6	1
			32A				

■ ON-OFF switch 3 pole

 0003	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CQ0120003RV4	1	CQ0120003RV6	1
			16A	CQ0160003RV4	1	CQ0160003RV6	1
		S2	25A			CQ0250003RV6	1
			32A			CQ0320003RV6	1

■ ON-OFF switch 4 pole

 0004	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CQ0120004RV4	1	CQ0120004RV6	1
			16A	CQ0160004RV4	1	CQ0160004RV6	1
		S2	25A			CQ0250004RV6	1
			32A			CQ0320004RV6	1

■ Change-over switch 1 pole

 0005	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CQ0120005RV4	1	CQ0120005RV6	1
			16A				
		S2	25A				
			32A				

Rear mounting

4-screw fixing: □ 36mm (1.42")

4-screw fixing: □ 36mm (1.42") / □ 48mm (1.89")



RV4



RV6

Change-over switch 2 pole

 0006	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack
			12A	CQ0120006RV4	1		
			16A	CQ0160006RV4	1	CQ0160006RV6	1
			25A			CQ0250006RV6	1
		S2	32A			CQ0320006RV6	1

Change-over switch 3 pole

 0007	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack
			12A	CQ0120007RV4	1	CQ0120007RV6	1
			16A	CQ0160007RV4	1	CQ0160007RV6	1
			25A			CQ0250007RV6	1
		S2	32A			CQ0320007RV6	1

Change-over switch 4 pole

 0039	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack
			12A	CQ0120039RV4	1		
			16A	CQ0160039RV4	1	CQ0160039RV6	1
			25A			CQ0250039RV6	1
		S2	32A			CQ0320039RV6	1

Reversing switch 3 pole

 0008	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack
			12A	CQ0120008RV4	1	CQ0120008RV6	1
			16A	CQ0160008RV4	1	CQ0160008RV6	1
			25A			CQ0250008RV6	1
		S2	32A			CQ0320008RV6	1

Rear mounting

4-screw fixing: □ 36mm (1.42")

4-screw fixing: □ 36mm (1.42") / □ 48mm (1.89")



RV4



RV6

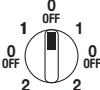
Changing switch Dahlander pole

 0009	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack
			12A	CQ0120009RV4	1	CQ0120009RV6	1
			16A	CQ0160009RV4	1	CQ0160009RV6	1
			25A			CQ0250009RV6	1
		S2	32A			CQ0320009RV6	1

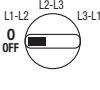
STAR-DELTA Starter

 0010	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack
			12A				
			16A	CQ0160010RV4	1	CQ0160010RV6	1
			25A			CQ0250010RV6	1
		S2	32A			CQ0320010RV6	1

Reversing switch pole changing

 0011	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack
			12A				
			16A	CQ0160011RV4	1		
			25A				
		S2	32A				

Voltmeter switch 3 concatenated voltages

 0016	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack
			12A	CQ0120016RV4	1	CQ0120016RV6	1
			16A				
			25A				
		S2	32A				

Rear mounting

4-screw fixing: □ 36mm (1.42")

4-screw fixing: □ 36mm (1.42") / □ 48mm (1.89")

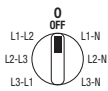


RV4



RV6

Voltmeter switch 3 concatenated voltages and 3 phase voltages

 0018	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack
			12A	CQ0120018RV4	1	CQ0120018RV6	1
			16A				
			25A				
		S2	32A				

Ammeter switch 1 pole 3 current transformers

 0022	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack
			12A	CQ0120022RV4	1	CQ0120022RV6	1
			16A				
			25A				
		S2	32A				

Rear mounting

4-screw fixing: 36mm (1.42")** / 48mm (1.89")***



RL6S

Base mounting*

4-screw fixing: 36mm (1.42")** / 48mm (1.89")***



BL6S

■ **ON-OFF switch 3 pole with padlockable handle**

 00G3	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack
			12A	CQ01200G3RL6S	1	CQ01200G3BL6S	1
			16A	CQ01600G3RL6S	1	CQ01600G3BL6S	1
		S2	25A	CQ02500G3RL6S	1	CQ02500G3BL6S	1
			32A	CQ03200G3RL6S	1	CQ03200G3BL6S	1

■ **ON-OFF switch 4 pole with padlockable handle**

 00G4	Circuit diagram	Size	I_e	Part no.	Pack	Part no.	Pack
			12A	CQ01200G4RL6S	1	CQ01200G4BL6S	1
			16A	CQ01600G4RL6S	1	CQ01600G4BL6S	1
		S2	25A	CQ02500G4RL6S	1	CQ02500G4BL6S	1
			32A	CQ03200G4RL6S	1	CQ03200G4BL6S	1

* Base mounting switches are supplied with standard 175mm (6.89") shaft

** Fixing 36mm by 4 screws

*** Fixing 48mm by 4 screws and fixing adapter (included in the package)

Rear mounting

4-screw fixing: 36mm (1.42")** / 48mm (1.89")***



RK6S

Base mounting*

4-screw fixing: 36mm (1.42")** / 48mm (1.89")***

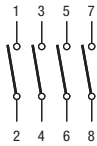


BK6S

■ ON-OFF switch 3 pole with padlockable handle

 00G3	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CQ01200G3RK6S	1	CQ01200G3BK6S	1
			16A	CQ01600G3RK6S	1	CQ01600G3BK6S	1
		S2	25A	CQ02500G3RK6S	1	CQ02500G3BK6S	1
			32A	CQ03200G3RK6S	1	CQ03200G3BK6S	1

■ ON-OFF switch 4 pole with padlockable handle

 00G4	Circuit diagram	Size	I _e	Part no.	Pack	Part no.	Pack
		S1	12A	CQ01200G4RK6S	1	CQ01200G4BK6S	1
			16A	CQ01600G4RK6S	1	CQ01600G4BK6S	1
		S2	25A	CQ02500G4RK6S	1	CQ02500G4BK6S	1
			32A	CQ03200G4RK6S	1	CQ03200G4BK6S	1

* Base mounting switches are supplied with standard 175mm (6.89") shaft

** Fixing 36mm by 4 screws

*** Fixing 48mm by 4 screws and fixing adapter (included in the package)

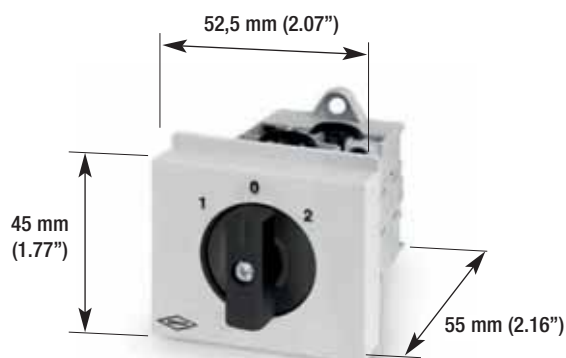
■ Optional shafts



Part no.	Description	Pack
PALBL055	Shaft L=55mm - Square section 5 mm	5
PALBL075	Shaft L=75mm - Square section 5 mm	5
PALBL095	Shaft L=95mm - Square section 5 mm	5
PALBL115	Shaft L=115mm - Square section 5 mm	5
PALBL135	Shaft L=135mm - Square section 5 mm	5
PALBL155	Shaft L=155mm - Square section 5 mm	5
PALBL175	Shaft L=175mm - Square section 5 mm	5
PALBL300	Shaft L=300mm - Square section 5 mm	5
PALBL500	Shaft L=500mm - Square section 5 mm	5

Construction data

DDN is the solution proposed by Bremas for mounting the switch in panel/distribution boards standard slots, with 45mm (1.77") plate.
The main mounting system is snap mount on DIN rail, otherwise it's possible to fix the switch with screws with 48mm (1.89") interaxis between the holes.
Available diagrams for ON-OFF switches, line switches, ammeter and voltmeter switches.
Grey escutcheon plate, black knob, IP40.



■ DDN version

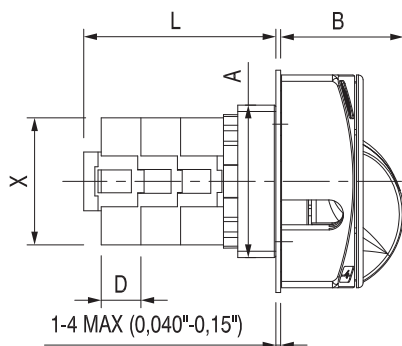
	Rated nominal current			
	12A		16A	
Circuit diagram	Part no.	Pack	Part no.	Pack
DN07	CQ012DN07DDN	1	CQ016DN07DDN	1
DN08	CQ012DN08DDN	1	CQ016DN08DDN	1
DN09	CQ012DN09DDN	1	CQ016DN09DDN	1
DN10	CQ012DN10DDN	1	CQ016DN10DDN	1
DN16	CQ012DN16DDN	1		
DN18	CQ012DN18DDN	1		
DN22	CQ012DN22DDN	1		

Switches

[illegible]

■ Rear mounting (RT - RY - RL6 - RK6 - RR0 - RV - RW - RR)

Measures in mm (in)



Handle	B	
	mm	in
RT4-RY4	37	1,45
RT6-RY6	39	1,53
RL6-RK6	39	1,53
RV4-RW4	31	1,22
RV6-RW6	36	1,42
RR0	34	1,34

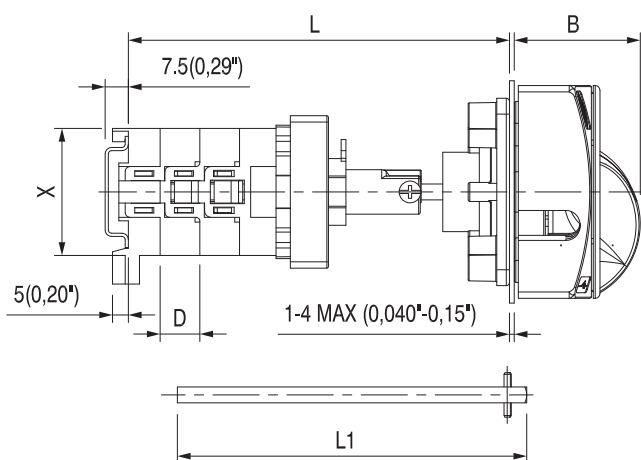
Switch dimensions

Series	X	A	D		N° Stages					
					1	2	3	4	5	6
CQ 012-016	40x40 1,57"x1,57"	□ 48 □ 1,89"	12,5 0,49"	L (mm)	48	60,5	73	85,5	98	110,5
				L(in)	1,89	2,38	2,87	3,36	3,85	4,35
CQ 025-032	63x62 2,48"x 2,44"	□ 60 □ 2,36"	12,5 0,49"	L (mm)	49,5	62	74,5	87	99,5	112
				L(in)	1,94	2,44	2,93	3,42	3,92	4,40

■ Base mounting - (BL - BK - BT - BY)

Switching angle 90°, padlockable (max 3 padlocks)

Measures in mm (in)



Handle	B	
	mm	in
BL6-BK6	39	1,53
BT4L-BY4L	40	1,57
BT6L-BY6L	40	1,57

Switch dimensions

Series	X	D	L1	N° Stages: 2	
				Lmin **	Lmax
CQ 012-016	40x40 1,57"x1,57"	12,5 0,49"	175 (6,89")*	115 (4,52")	259 (10,20")
			300 (11,81")	115 (4,52")	384 (15,12")
			500 (19,69")	115 (4,52")	584 (23,00")
CQ 025-032	63x62 2,48"x 2,44"	12,5 0,49"	175 (6,89")*	117 (4,60")	261 (10,27")
			300 (11,81")	117 (4,60")	386 (15,20")
			500 (19,69")	117 (4,60")	586 (23,07")

Overall length (min-max)** for different shaft lengths (L1)

* Standard shaft, bundled

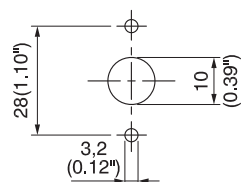
** Minimum length is obtainable by cutting the shaft

CQ Series - Dimensions - Drilling templates

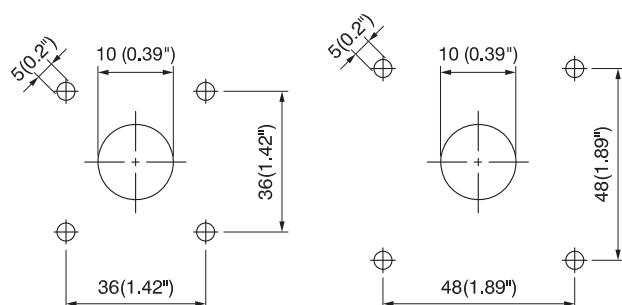
cam switches

■ Rear mounting

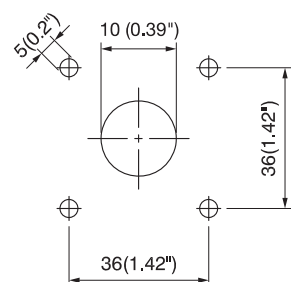
(RT - RY - RL6 - RK6 - RR0) - Measures in mm (in)



(RV6/RV6-T - RW6/RW6-T)



(RV4/RV4-T - RW4/RW4-T)

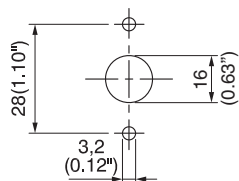


■ Base mounting

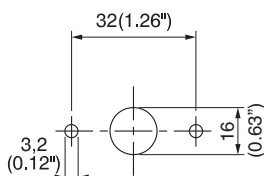
(BL - BK - BT - BY) - Measures in mm (in)

Escutcheon plate mounting options:

1) 2 holes with vertical distance 28mm (1.10")



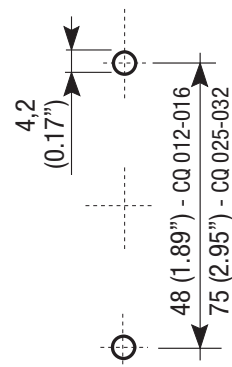
2) 2 holes with horizontal distance 32mm (1.26")



Switch mounting options:

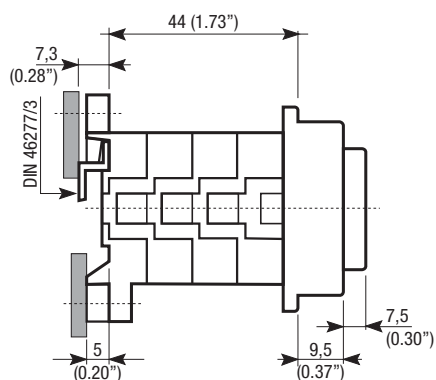
1) 2 holes with distance 58mm (2.28") - 72mm (2.83")

2) snap mount on DIN 46277/3 rail



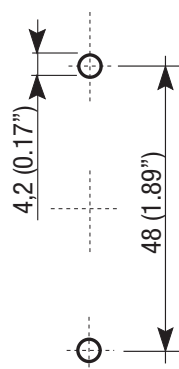
■ Base mounting - DDN

Measures in mm (in)



■ Drilling templates - DDN

Measures in mm (in)



HANDLES AND PLATES



02

IP66

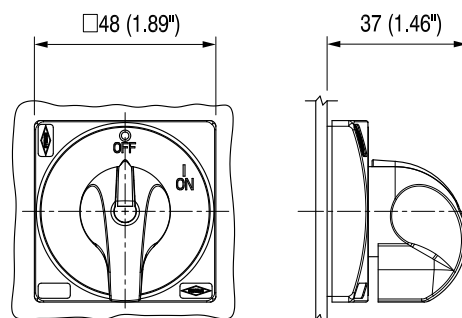
Screws fixing

Not lockable - 28mm (1,10") vertical fixing with 2 screws M3x12 Ø6 (M3x0,47" Ø0,24")



RT4

Grey plate 48x48mm (1,89"x1,89"), black knob



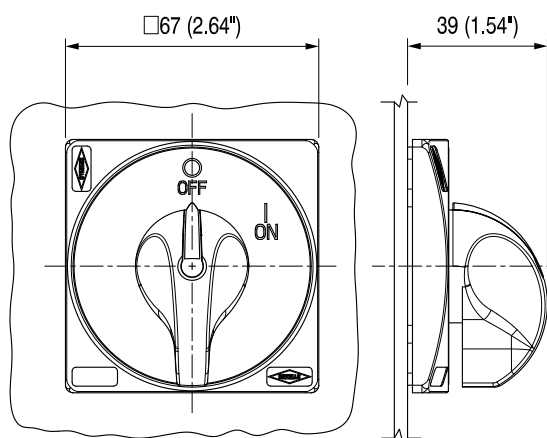
RY4

Yellow plate 48x48mm (1,89"x1,89"), red knob



RT6

Grey plate 67x67mm (2,64"x2,64"), black knob



RY6

Yellow plate 67x67mm (2,64"x2,64"), red knob

Product code structure

Mounting / Position		Plate size		Color	
R	Rear mounting, 0/OFF at 12 hour	4	48x48mm (1,89"x1,89")	T	Grey plate and black knob
Q	Rear mounting, 0/OFF at 9 hour	6	67x67mm (2,64"x2,64")	Y	Yellow plate and red knob

measures in mm (in)

IP66

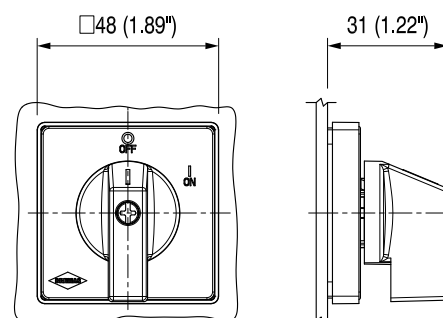
**Screws
fixing**

Not lockable - 36x36mm (1,42''x1,42'') fixing with 4 tapping screws 4,8x14 Ø6,4 (0,19''x0,55'' Ø0,25'')



RV4

Grey plate 48x48mm
(1,89''x1,89''),
black knob



RW4

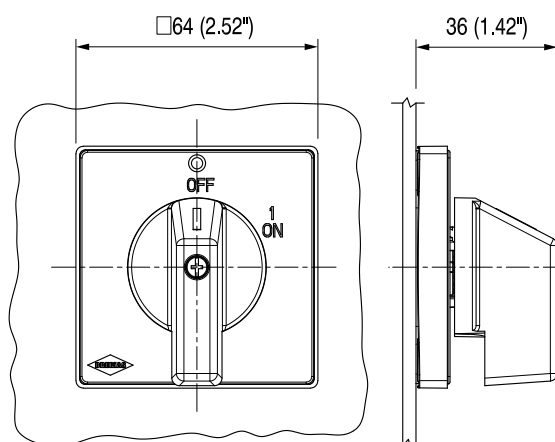
Yellow plate 48x48mm
(1,89''x1,89''),
red knob

Not lockable - 36x36mm/48x48 (1,42''x1,42''/1,89''x1,89'') fixing
with 4 tapping screws 4,8x14 Ø6,4 (0,19''x0,55'' Ø0,25'')



RV6

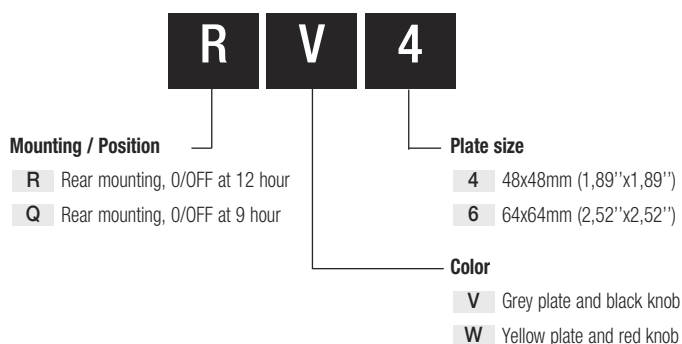
Grey plate 64x64mm
(2,52''x2,52''),
black knob



RW6

Yellow plate 64x64mm
(2,52''x2,52''),
red knob

**Product code
structure**



measures in mm (in)

IP66

**With label holder,
screws fixing**

Not lockable - 36x36mm (1,42"x1,42") fixing with 4 tapping screws 4,8x14 Ø6,4 (0,19"x0,55" Ø0,25")



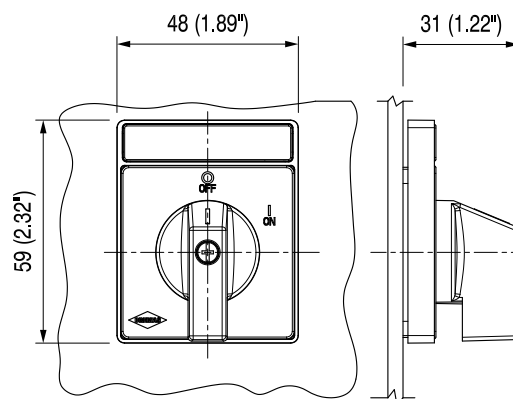
RV4-T

Grey plate 48x59mm (1,89"x2,32") with label holder, black knob



RW4-T

Yellow plate 48x59mm (1,89"x2,32") with label holder, red knob



Not lockable - 36x36mm/48x48 (1,42"x1,42"/1,89"x1,89") fixing with 4 tapping screws 4,8x14 Ø6,4 (0,19"x0,55" Ø0,25")



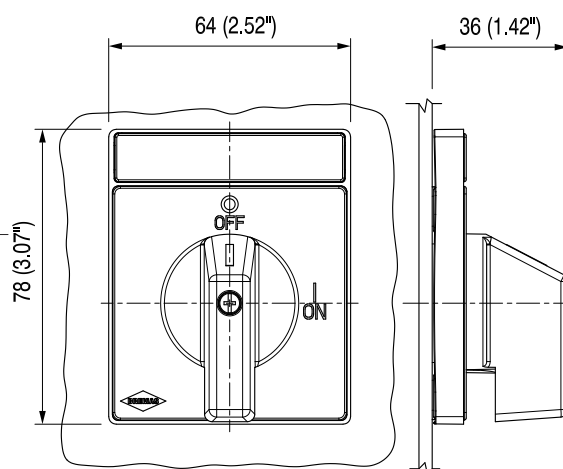
RV6-T

Grey plate 64x78mm (2,52"x3,07") with label holder, black knob



RW6-T

Yellow plate 64x78mm (2,52"x3,07") with label holder, red knob



**Product code
structure**

R V 4 -T			
Mounting / Position		Label holder	
R Rear mounting, 0/OFF at 12 hour		R*4-T 48x59mm (1,89"x2,32")	
Q Rear mounting, 0/OFF at 9 hour		R*6-T 64x78mm (2,52"x3,07")	
Color		Plate size	
V Grey plate and black knob		4 48x48mm (1,89"x1,89")	
W Yellow plate and red knob		6 64x64mm (2,52"x2,52")	

measures in mm (in)

IP66

**Screws
fixing**

Padlockable handle - 28mm (1,10") vertical fixing with 2 screws M3x12 Ø6 (M3x0,47" Ø0,24")



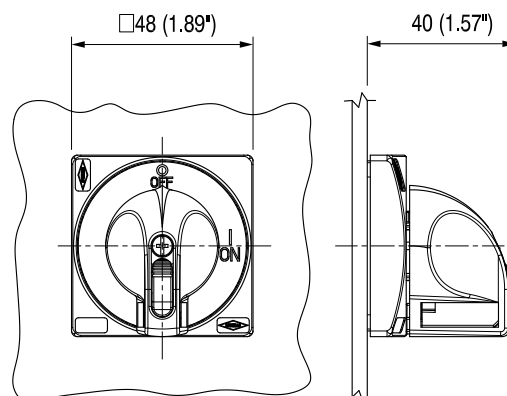
RT4L

Grey plate 48x48mm
(1,89"x1,89"),
black knob



RY4L

Yellow plate 48x48mm
(1,89"x1,89"),
red knob



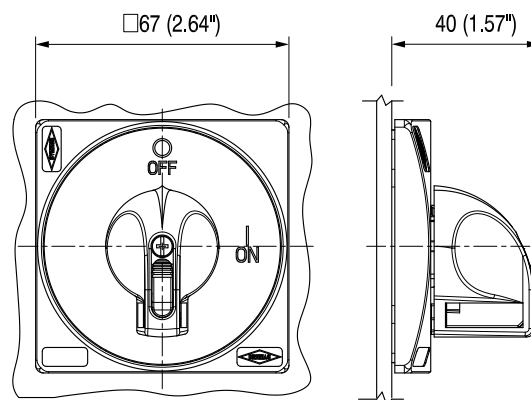
RT6L

Grey plate 67x67mm
(2,64"x2,64"),
black knob

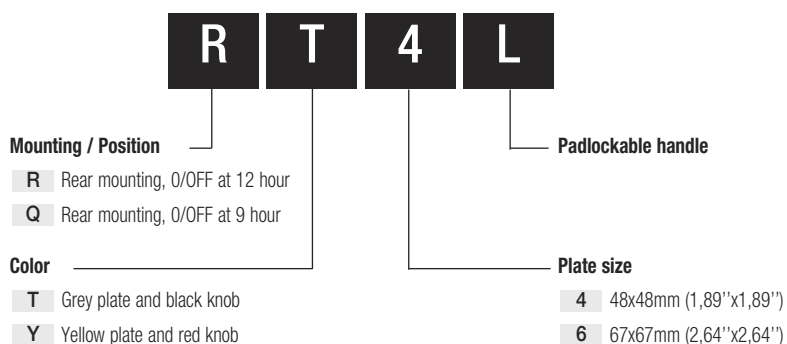


RY6L

Yellow plate 67x67mm
(2,64"x2,64"),
red knob



**Product code
structure**



measures in mm (in)

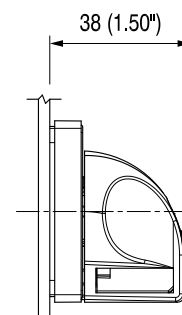
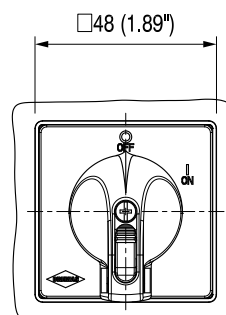
Screws fixing

Padlockable handle - 36x36mm (1,42''x1,42'') fixing
with 4 tapping screws 4,8x14 Ø6,4 (0,19''x0,55'' Ø0,25'')



RV4L

Grey plate 48x48mm
(1,89''x1,89''),
black knob



RW4L

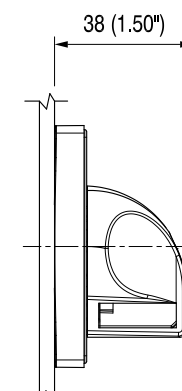
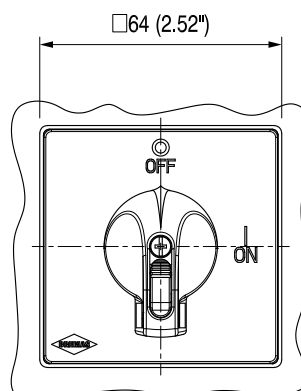
Yellow plate 48x48mm
(1,89''x1,89''),
red knob

Padlockable handle - 36x36mm/48x48 (1,42''x1,42''/1,89''x1,89'') fixing
with 4 tapping screws 4,8x14 Ø6,4 (0,19''x0,55'' Ø0,25'')



RV6L

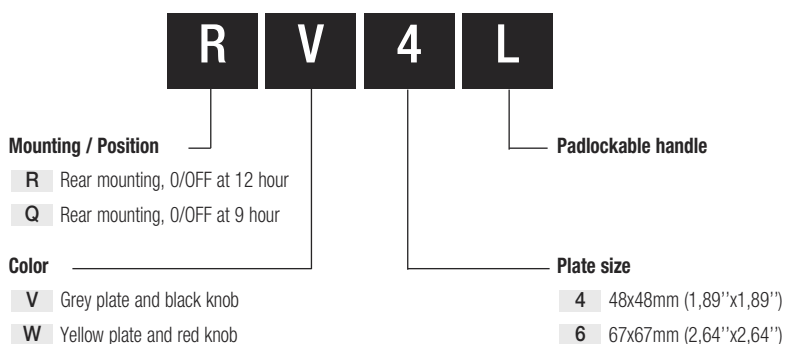
Grey plate 64x64mm
(2,52''x2,52''),
black knob



RW6L

Yellow plate 64x64mm
(2,52''x2,52''),
red knob

Product code structure



measures in mm (in)

IP66

**Screws
fixing**

Padlockable plate - 28mm (1,10") vertical fixing with 2 screws M3x12 Ø6 (M3x0,47" Ø0,24")



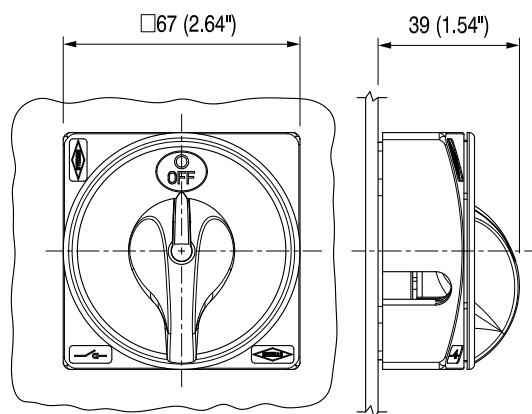
RK6

Grey plate 67x67mm
(2,64"x2,64"),
black knob



RL6

Yellow plate 67x67mm
(2,64"x2,64"),
red knob



Padlockable plate - 36x36mm/48x48 (1,42"x1,42"/1,89"x1,89")* fixing
with 4 tapping screws 4,8x14 Ø6,4 (0,19"x0,55" Ø0,25")



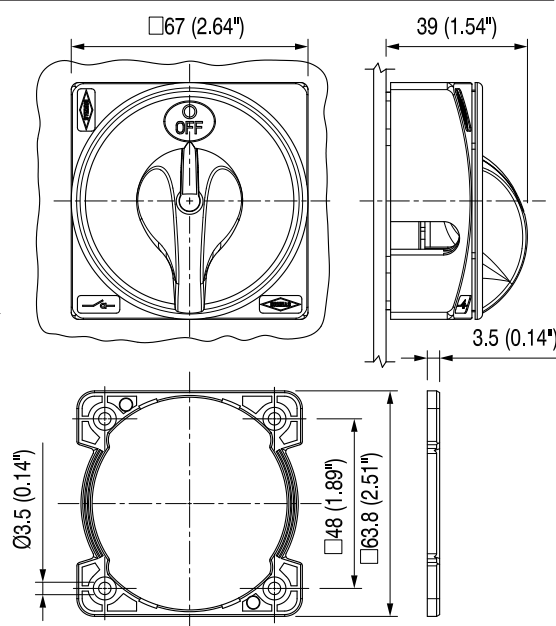
RK6S

Grey plate 67x67mm
(2,64"x2,64"),
black knob



RL6S

Yellow plate 67x67mm
(2,64"x2,64"),
red knob



* 48x48mm (1,89"x1,89") fixing with 4 screws and fixing adapter (included in the package)

**Product code
structure**

R K 6 S

Mounting / Position

- R** Rear mounting, 0/OFF at 12 hour
- Q** Rear mounting, 0/OFF at 9 hour

Color

- K** Grey plate and black knob, padlockable plate
- L** Yellow plate and red knob, padlockable plate

Screws

- S** 4 screws

Plate size

- 6** 67x67mm (2,64"x2,64")

measures in mm (in)

**Quick fixing
Ø22mm
(0,87")**

Not lockable - Quick fixing Ø22mm (0,87mm), without screws



GT4

Grey plate 48x48mm
(1,89"x1,89"),
black knob



GY4

Yellow plate 48x48mm
(1,89"x1,89"),
red knob



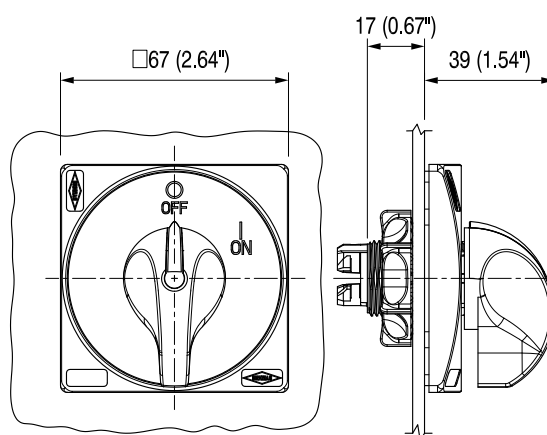
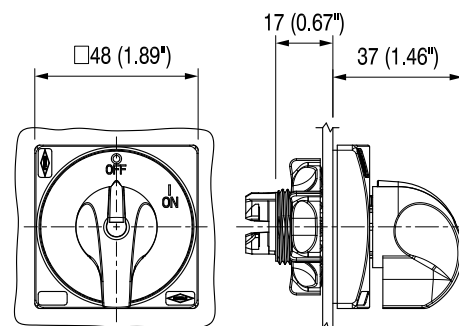
GT6

Grey plate 67x67mm
(2,64"x2,64"),
black knob

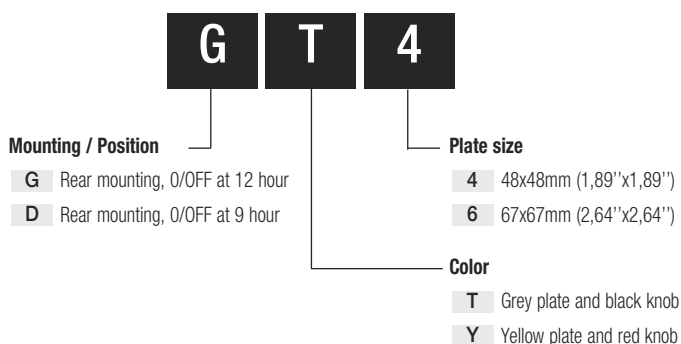


GY6

Yellow plate 67x67mm
(2,64"x2,64"),
red knob



Product code structure



measures in mm (in)

IP66

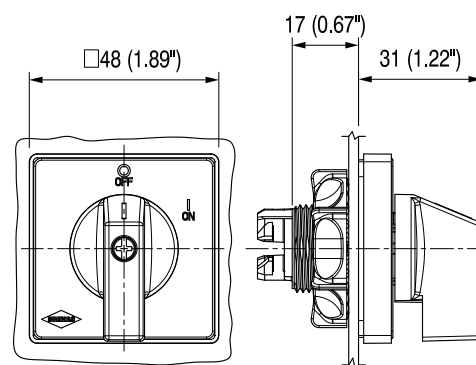
**Quick fixing
Ø22mm
(0,87")**

Not lockable - Quick fixing Ø22mm (0,87"), without screws



GV4

Grey plate 48x48mm
(1,89"x1,89"),
black knob



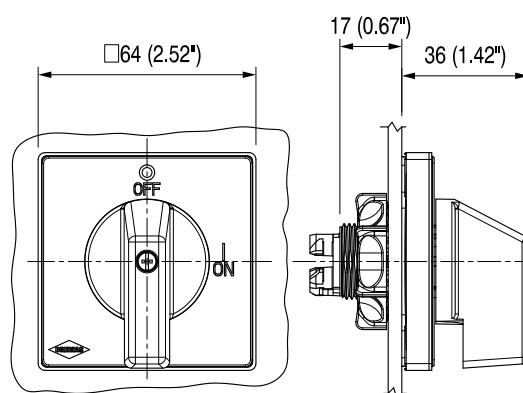
GW4

Yellow plate 48x48mm
(1,89"x1,89"),
red knob



GV6

Grey plate 64x64mm
(2,52"x2,52"),
manopola nera



GW6

Yellow plate 64x64mm
(2,52"x2,52"),
black knob

Product code structure

G V 4

Mounting / Position

- G** Rear mounting, 0/OFF at 12 hour
- D** Rear mounting, 0/OFF at 9 hour

Plate size

- 4** 48x48mm (1,89"x1,89")
- 6** 64x64mm (2,52"x2,52")

Color

- V** Grey plate and black knob
- W** Yellow plate and red knob

measures in mm (in)

IP66

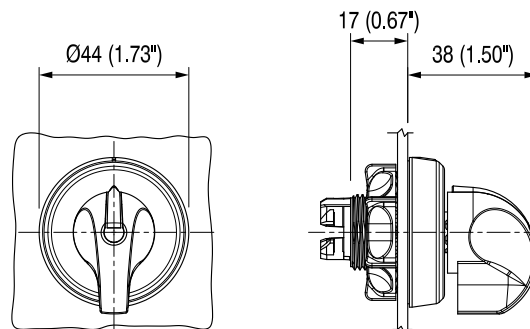
**Quick fixing
Ø22mm
(0,87")**

Not lockable - Quick fixing Ø22mm (0,87"), without screws



GRO

**Black knob
Ø44mm (1,73")**



measures in mm (in)

IP66

**Quick fixing
Ø22mm
(0,87")**

Padlockable handle - Quick fixing Ø22mm (0,87"), without screws



GT4L

Grey plate 48x48mm
(1,89"x1,89"),
black knob



GY4L

Yellow plate 48x48mm
(1,89"x1,89"),
red knob



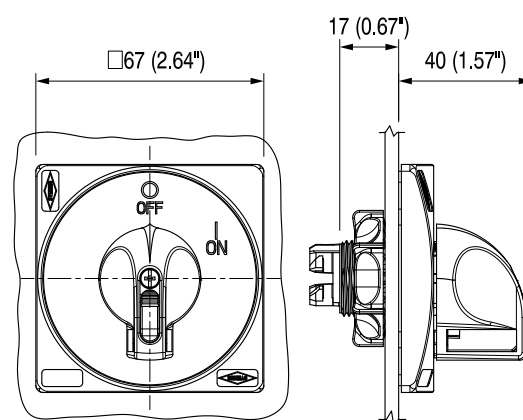
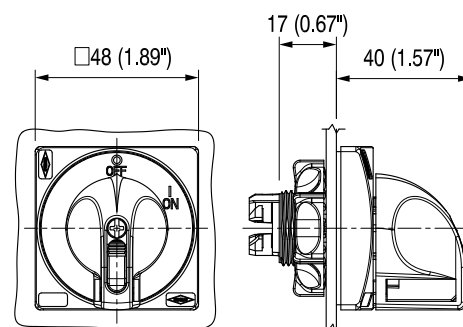
GT6L

Grey plate 67x67mm
(2,64"x2,64"),
black knob



GY6L

Yellow plate 67x67mm
(2,64"x2,64"),
red knob



Product code structure

G T 4 L

Mounting / Position

- G** Rear mounting, 0/OFF at 12 hour
- D** Rear mounting, 0/OFF at 9 hour

Color

- T** Grey plate and black knob
- Y** Yellow plate and red knob

Padlockable handle

Plate size

- 4** 48x48mm (1,89"x1,89")
- 6** 67x67mm (2,64"x2,64")

measures in mm (in)

**Quick fixing
Ø22mm
(0,87")**

Padlockable handle - Quick fixing Ø22mm (0,87"), without screws



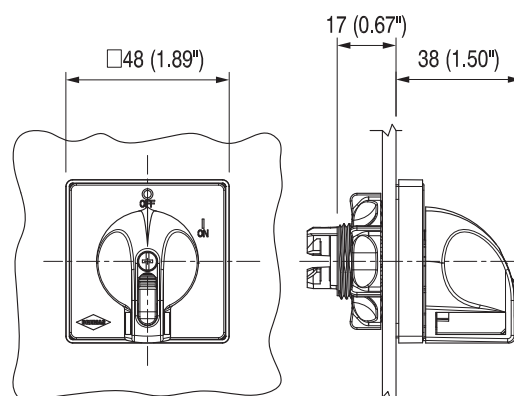
GV4L

Grey plate 48x48mm
(1,89"x1,89"),
black knob



GW4L

Yellow plate 48x48mm
(1,89"x1,89"),
red knob



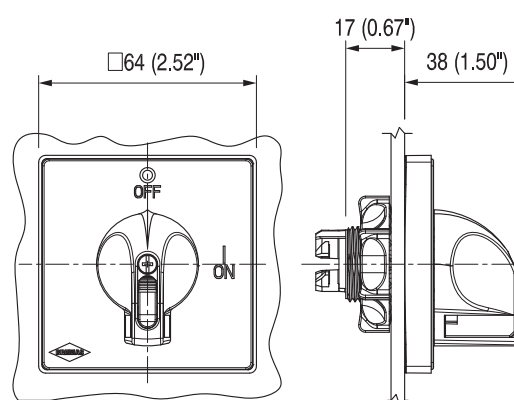
GV6L

Grey plate 64x64mm
(2,52"x2,52"),
black knob

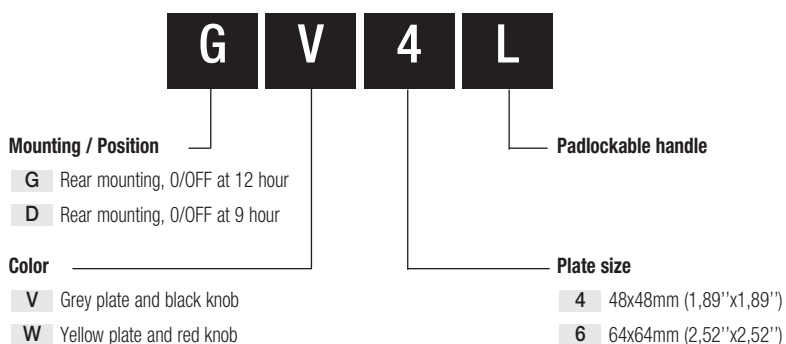


GW6L

Yellow plate 64x64mm
(2,52"x2,52"),
red knob



Product code structure



measures in mm (in)

IP66

**Quick fixing
Ø22mm
(0,87")**

Padlockable plate - Quick fixing Ø22mm (0,87"), without screws



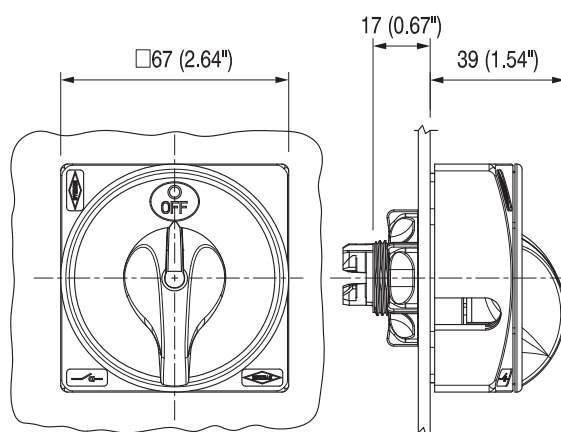
GK6

Grey plate 67x67mm
(2,64"x2,64"),
black knob

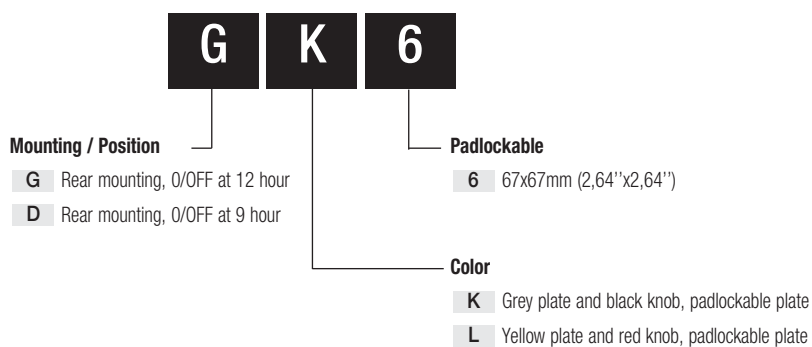


GL6

Yellow plate 67x67mm
(2,64"x2,64"),
red knob



**Product code
structure**



measures in mm (in)

IP66

Screws fixing

Padlockable plates - 28mm (1,10") vertical/32mm (1,26") horizontal fixing with 2 tapping screws 3x13 Ø5 (0,12"x0,51" Ø0,20)



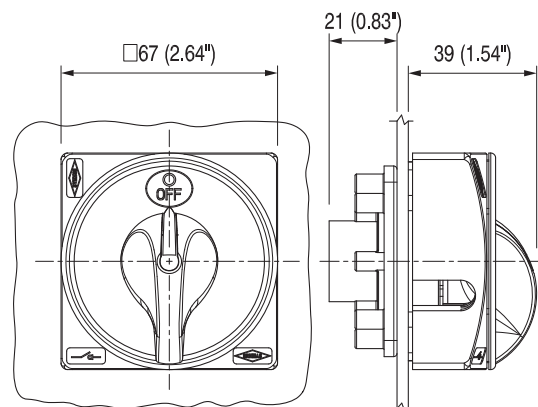
BK6

Grey plate 67x67mm (2,64"x2,64"), black knob



BL6

Yellow plate 67x67mm (2,64"x2,64"), red knob



Padlockable plates - 36x36mm/48x48 (1,42"x1,42"/1,89"x1,89")* fixing with 4 tapping screws 4,8x14 Ø6,4 (0,19"x0,55" Ø0,25")



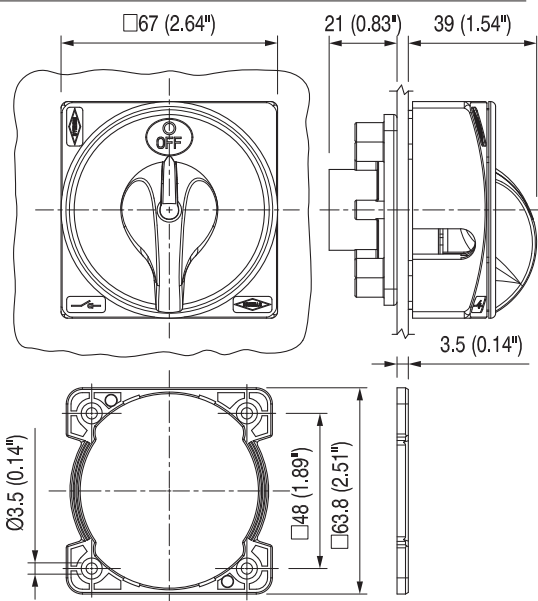
BK6S

Grey plate 67x67mm (2,64"x2,64"), black knob



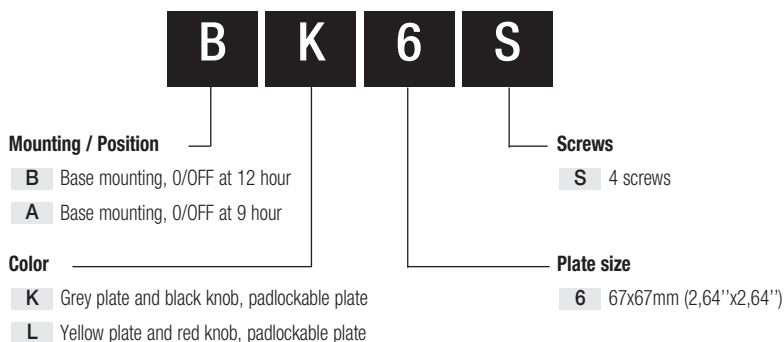
BL6S

Yellow plate 67x67mm (2,64"x2,64"), red knob



* 48x48mm (1,89"x1,89") fixing with 4 screws and fixing adapter (included in the package)

Product code structure



measures in mm (in)

IP66

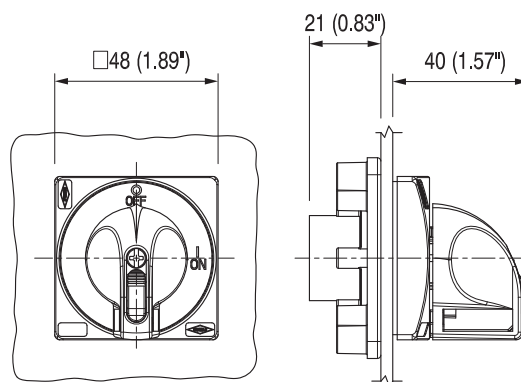
**Screws
fixing**

Padlockable handle - 28mm (1,10'') vertical/32mm (1,26'') horizontal fixing
with 2 tapping screws 3x13 Ø5 (0,12''x0,51'' Ø0,20)



BT4L

Grey plate 48x48mm
(1,89''x1,89''),
black knob



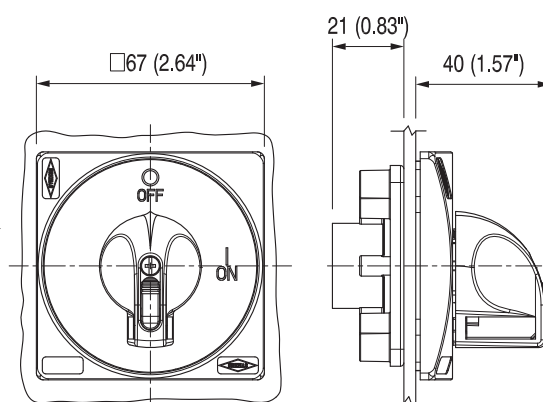
BY4L

Yellow plate 48x48mm
(1,89''x1,89''),
red knob



BT6L

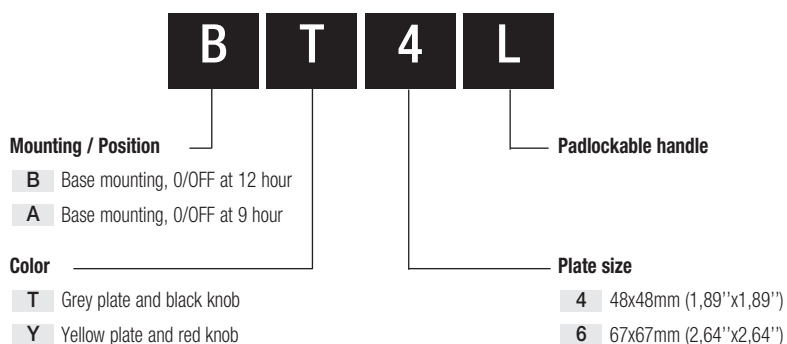
Grey plate 67x67mm
(2,64''x2,64''),
black knob



BY6L

Yellow plate 67x67mm
(2,64''x2,64''),
red knob

**Product code
structure**



measures in mm (in)

IP66

Screws fixing

Padlockable handle - 36x36mm (1,42''x1,42'') fixing
with 4 tapping screws 4,8x14 Ø6,4 (0,19''x0,55'' Ø0,25'')



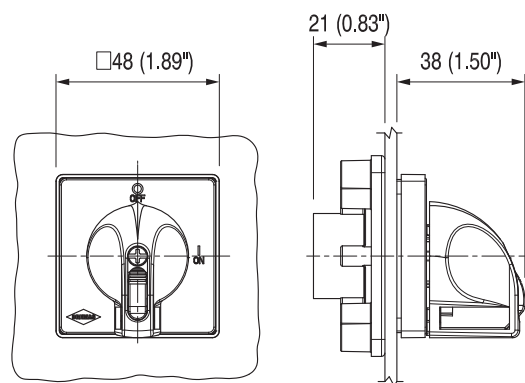
BV4L

Grey plate 48x48mm
(1,89''x1,89''),
black knob



BW4L

Yellow plate 48x48mm
(1,89''x1,89''),
red knob



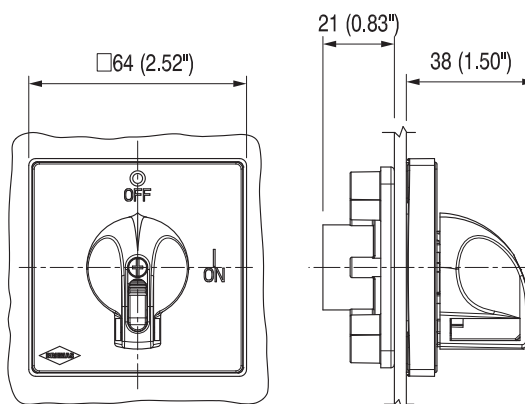
BV6L

Grey plate 64x64mm
(2,52''x2,52''),
black knob

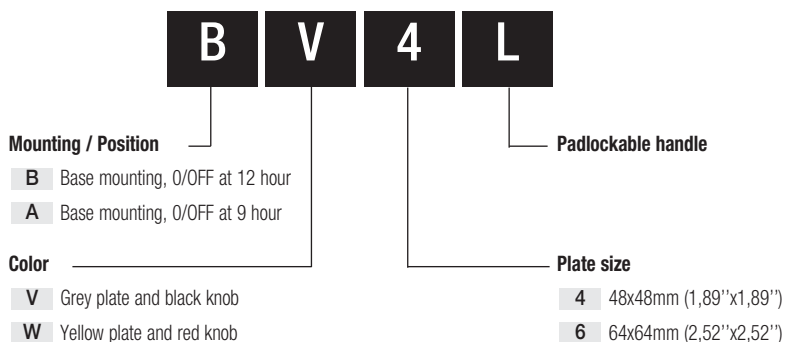


BW6L

Yellow plate 64x64mm
(2,52''x2,52''),
red knob



Product code structure



measures in mm (in)

IP66

**Quick fixing
Ø22mm
(0,87")**

Padlockable plates - Quick fixing Ø22mm (0,87"), without screws



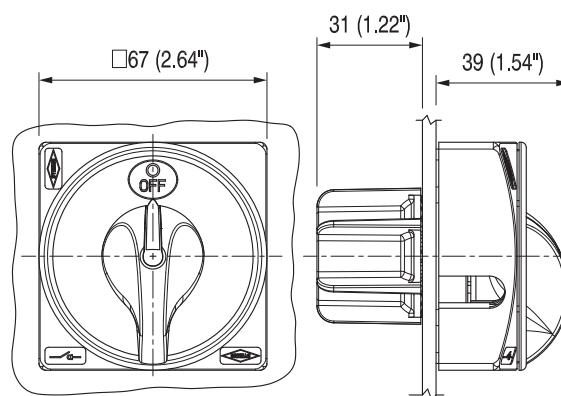
HK6

Grey plate 67x67mm
(2,64"x2,64"),
black knob



HL6

Yellow plate 67x67mm
(2,64"x2,64"),
red knob



**Product code
structure**

H K 6

Mounting / Position

- H** Base mounting, 0/OFF at 12 hour
- F** Base mounting, 0/OFF at 9 hour

Plate size

- 6** 67x67mm (2,64"x2,64")

Color

- K** Grey plate and black knob, padlockable plate
- L** Yellow plate and red knob, padlockable plate

measures in mm (in)

**Quick fixing
Ø22mm
(0,87")**

Not lockable - Quick fixing Ø22mm (0,87"), without screws



HT4

Grey plate 48x48mm
(1,89"x1,89"),
black knob



HY4

Yellow plate 48x48mm
(1,89"x1,89"),
red knob



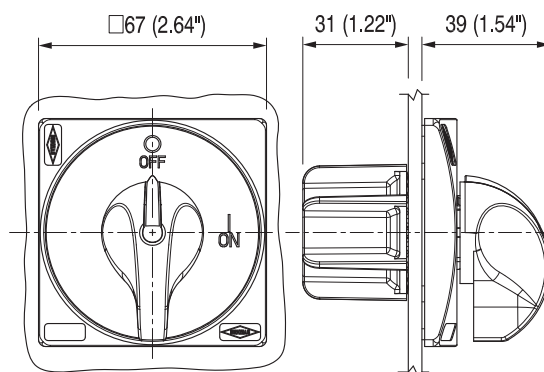
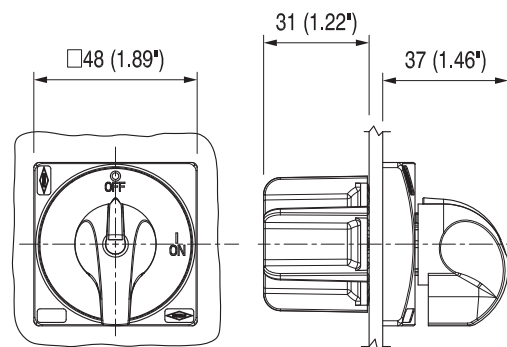
HT6

Grey plate 67x67mm
(2,64"x2,64"),
black knob

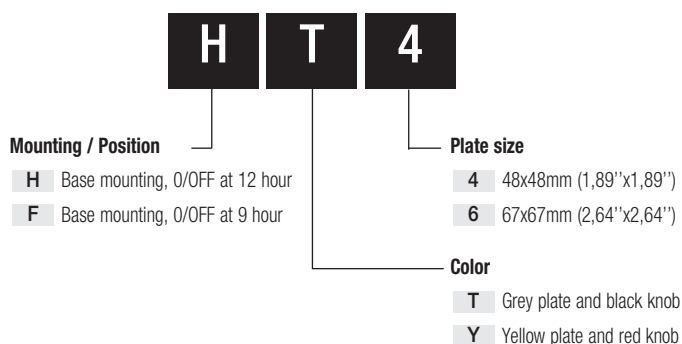


HY6

Yellow plate 67x67mm
(2,64"x2,64"),
red knob



Product code structure



measures in mm (in)

IP66

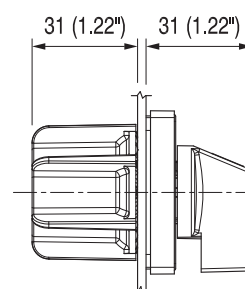
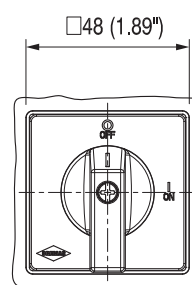
**Quick fixing
Ø22mm
(0,87")**

Not lockable - Quick fixing Ø22mm (0,87"), without screws



HV4

Grey plate 48x48mm
(1,89"x1,89"),
black knob



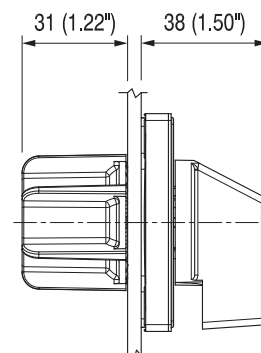
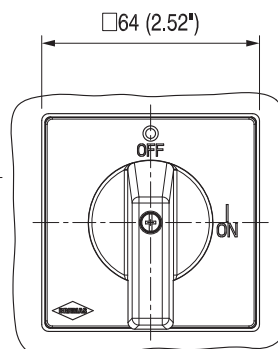
HW4

Yellow plate 48x48mm
(1,89"x1,89"),
red knob



HV6

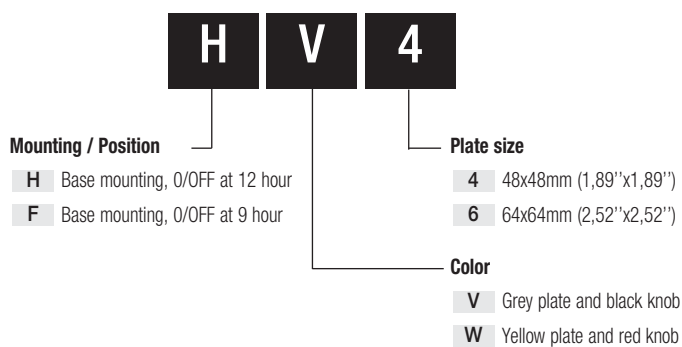
Grey plate 64x64mm
(2,52"x2,52"),
black knob



HW6

Yellow plate 64x64mm
(2,52"x2,52"),
red knob

**Product code
structure**



measures in mm (in)

**Quick fixing
Ø22mm
(0,87")**

Padlockable handle - Quick fixing Ø22mm (0,87"), without screws



HT4L

Grey plate 48x48mm
(1,89"x1,89"),
black knob



HY4L

Yellow plate 48x48mm
(1,89"x1,89"),
red knob



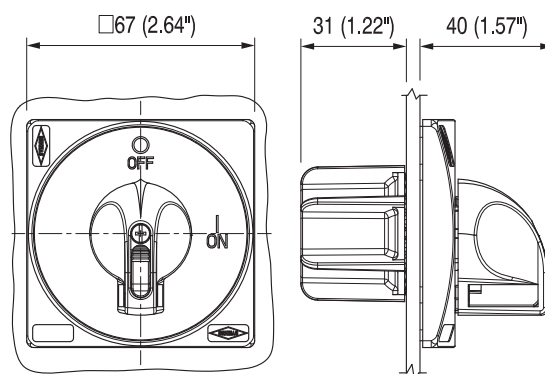
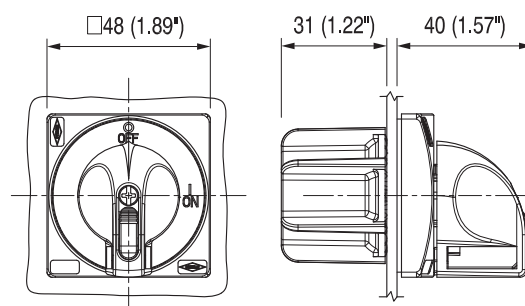
HT6L

Grey plate 67x67mm
(2,64"x2,64"),
black knob

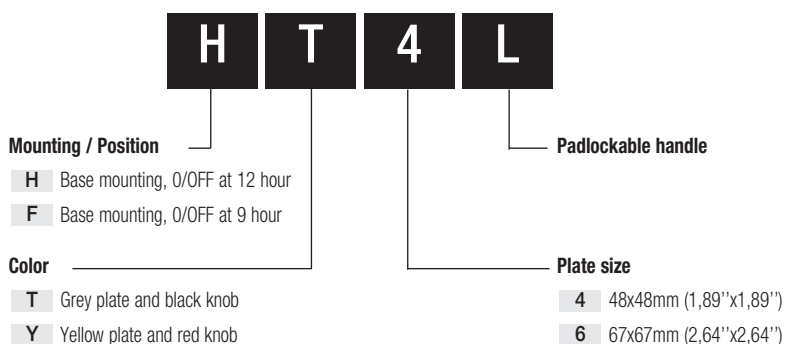


HY6L

Yellow plate 67x67mm
(2,64"x2,64"),
red knob



Product code structure



measures in mm (in)

IP66

**Quick fixing
Ø22mm
(0,87")**

Padlockable handle - Quick fixing Ø22mm (0,87"), without screws



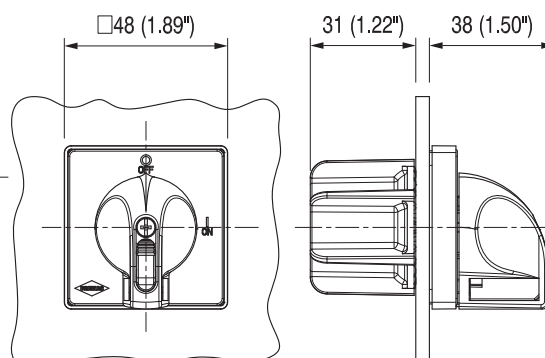
HV4L

Grey plate 48x48mm
(1,89"x1,89"),
black knob



HW4L

Yellow plate 48x48mm
(1,89"x1,89"),
red knob



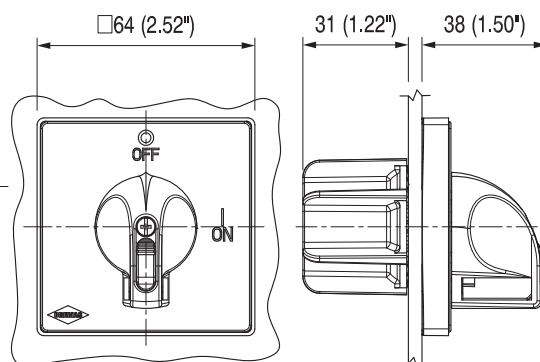
HV6L

Grey plate 64x64mm
(2,52"x2,52"),
black knob

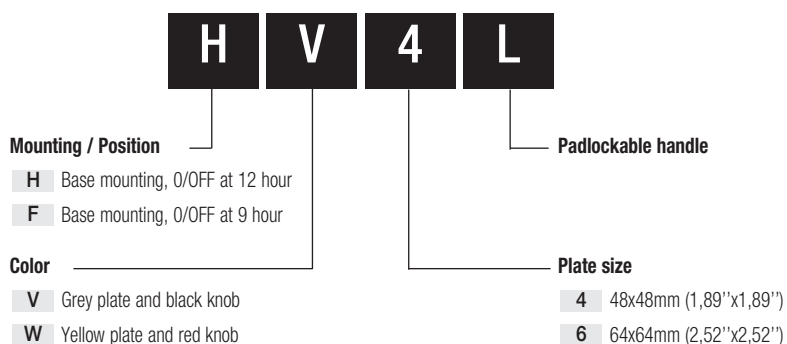


HW6L

Yellow plate 64x64mm
(2,52"x2,52"),
red knob



Product code structure



measures in mm (in)

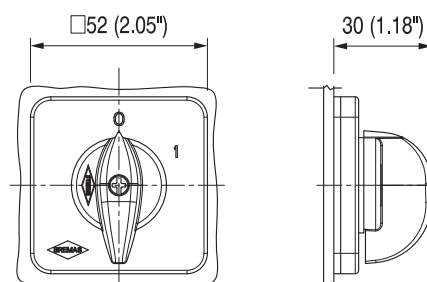
Screws fixing

Not lockable - 28mm (1,10'') vertical fixing with 2 screws M3x10 Ø5,5 (M3x0,39'' Ø0,22'')



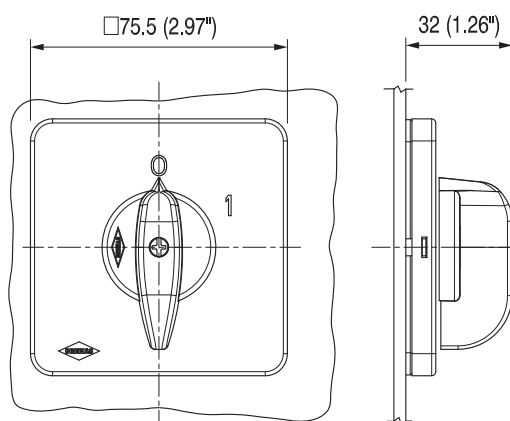
PL1

Transparent plate
52x52mm
(2,05''x2,05''),
black knob

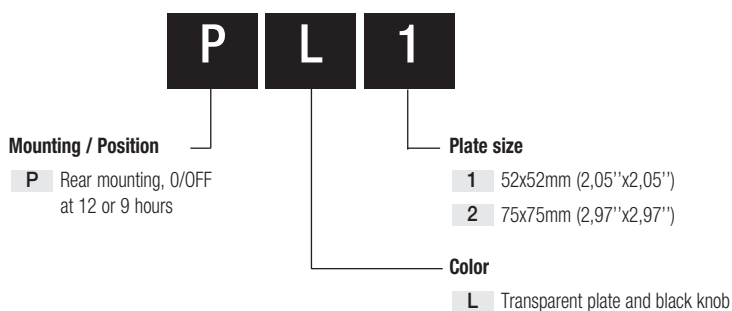


PL2

Transparent plate
75x75mm
(2,97''x2,97''),
black knob



Product code structure



measures in mm (in)

IP40

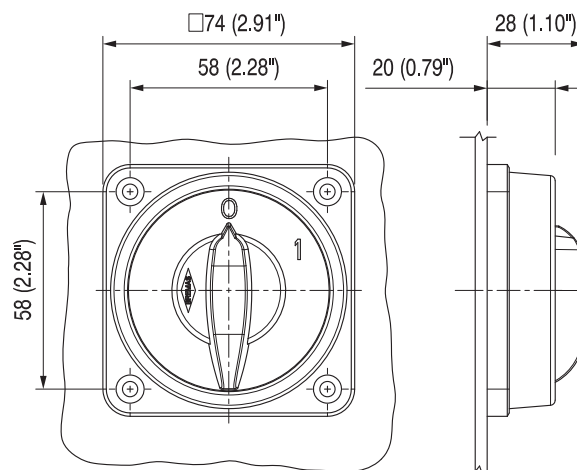
**Flush
mounting
with screws**

Not lockable - 28mm (1,10") vertical fixing with 2 screws M3x8 Ø5,5 (M3x0,31" Ø0,22)
Panel fixing 58x58mm (2,28"x2,28") with 4 screws



IPA

Grey plate
74x74mm
(2,91"x2,91"),
black knob

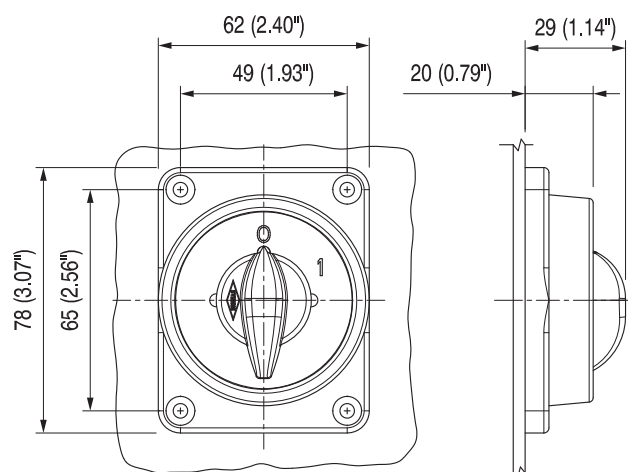


Not lockable - 28mm (1,10") vertical fixing with 2 screws M3x8 Ø5,5 (M3x0,31" Ø0,22)
Panel fixing 65x49mm (2,56"x1,93") with 4 screws

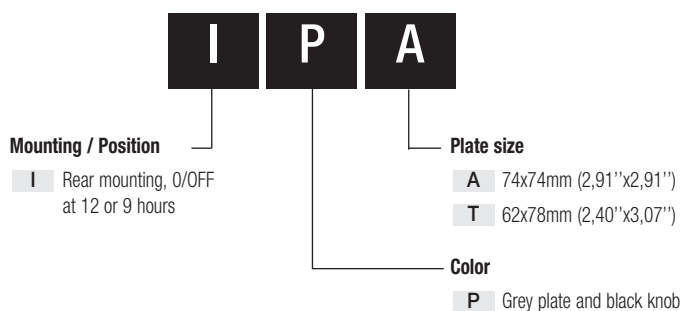


IPT

Grey plate
62x78mm
(2,40"x3,07"),
black knob



**Product code
structure**



measures in mm (in)

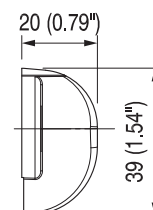
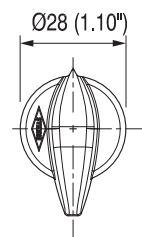
Spring fixing

Not lockable



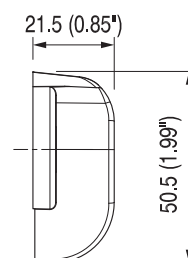
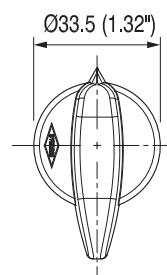
M04

Black knob
L=39mm $\varnothing$ 28mm
(1,54" $\varnothing$ 1,10")



M05

Black knob
L=50,5mm $\varnothing$ 33,5mm
(1,99" $\varnothing$ 1,32")



Knobs can be realized with different colors on request



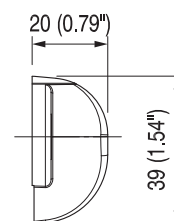
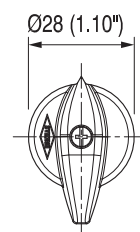
measures in mm (in)

**Screw
fixing**

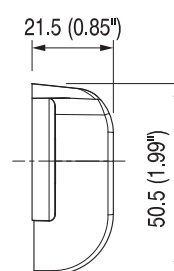
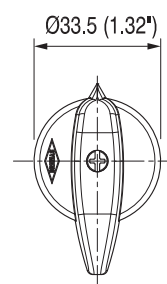
Not lockable

**M4**

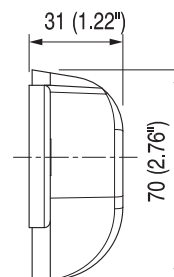
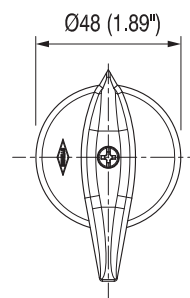
Black knob
L=39mm $\varnothing$ 28mm
(1,54 $\varnothing$ 1,10")

**M5**

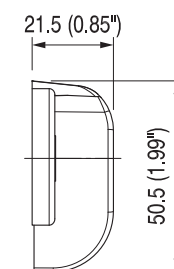
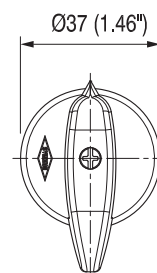
Black knob
L=50,5mm $\varnothing$ 33,5mm
(1,99" $\varnothing$ 1,32")

**M6**

Black knob
L=70mm $\varnothing$ 48mm
(2,76" $\varnothing$ 1,89")

**MPERN***

Black knob
L=50,5mm $\varnothing$ 37mm
(1,99" $\varnothing$ 1,46")



*The peculiarity of the MPERN knob allows to cover the fixing screws of the switch at 28mm distance

Knobs can be realized with different colors on request



measures in mm (in)

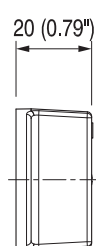
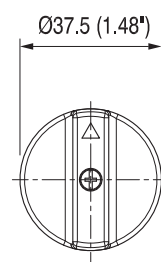
Screw fixing

Not lockable



RNO

Black knob
ø37,5mm (1,48")



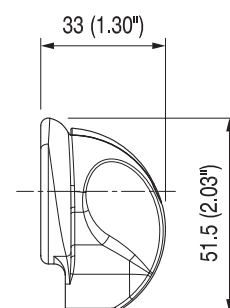
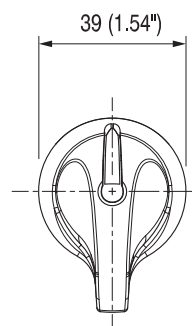
RNF

Red knob
ø37,5mm (1,48")



RRO

Black knob
L=51,5mm ø39mm
(2,03" ø1,54")



RROR

Red knob
L=51,5mm ø39mm
(2,03" ø1,54")

Knobs can be realized with different colors on request



measures in mm (in)

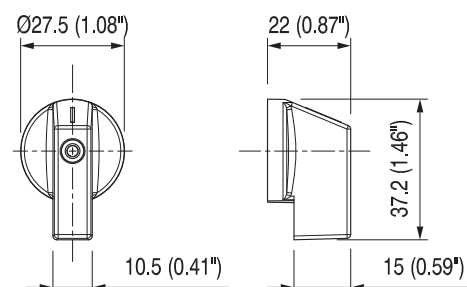
**Screw
fixing**

Not lockable



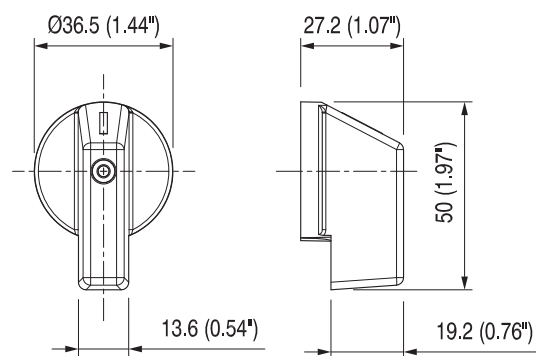
MV4

Black knob
L=37,2mm $\varnothing$ 27,5mm
(1,46'' $\varnothing$ 1,08'')



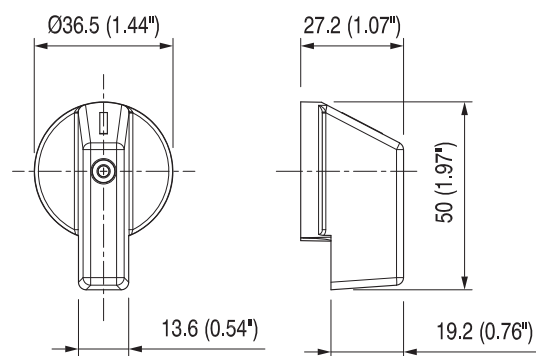
MW4

Red knob
L=37,2mm $\varnothing$ 27,5mm
(1,46'' $\varnothing$ 1,08'')



MV6

Black knob
L=50mm $\varnothing$ 36,5mm
(1,97'' $\varnothing$ 1,44'')



MW6

Red knob
L=50mm $\varnothing$ 36,5mm
(1,97'' $\varnothing$ 1,44'')

Knobs can be realized with different colors on request



measures in mm (in)

Plates and handles

	Description	Fixing type	Part. no.	Pack	Legend included	
					Type	Degrees
	Grey plate 48x48mm, black knob, 0/OFF at 12 hour	Rear mounting with 2 screws	FINRT4Q5	5	0-1 / 1-0-2	60°
	Grey plate 67x67mm, black knob, 0/OFF at 12 hour	Rear mounting with 2 screws	FINRT6Q5	5	0-1 / 1-0-2	60°
	Yellow plate 48x48mm, red knob, 0/OFF at 12 hour	Rear mounting with 2 screws	FINRY4Q5	5	0-1 / 1-0-2	60°
	Yellow plate 67x67mm, red knob, 0/OFF at 12 hour	Rear mounting with 2 screws	FINRY6Q5	5	0-1 / 1-0-2	60°
	Grey plate 48x48mm, black knob, 0/OFF at 12 hour	Rear mounting with 4 screws	FINRV4Q5	5	0-1 / 1-0-2	60°
	Grey plate 64x64mm, black knob, 0/OFF at 12 hour	Rear mounting with 4 screws	FINRV6Q5	5	0-1 / 1-0-2	60°
	Grey plate 48x48mm, black padlockable knob, 0/OFF at 9 hour	Rear mounting with 2 screws	FINQT4LQ5	5	0-1	90°
	Yellow plate 48x48mm, red padlockable knob, 0/OFF at 9 hour	Rear mounting with 2 screws	FINQY4LQ5	5	0-1	90°
	Grey plate 67x67mm, black knob, padlockable, 0/OFF at 12 hour	Rear mounting with 2 screws	FINRK6Q5	5	0-1	90°
	Grey plate 67x67mm, black knob, padlockable, 0/OFF at 9 hour	Rear mounting with 2 screws	FINRRK6Q5	5	0-1	90°
	Yellow plate 67x67mm, red knob, padlockable, 0/OFF at 12 hour	Rear mounting with 2 screws	FINRL6Q5	5	0-1	90°
	Yellow plate 67x67mm, red knob, padlockable, 0/OFF at 9 hour	Rear mounting with 2 screws	FINRRL6Q5	5	0-1	90°
	Grey plate 48x48mm, black knob, 0/OFF at 12 hour	Rear mounting ø22 mm	FINGT4Q5	5	0-1 / 1-0-2	60°
	Grey plate 67x67mm, black knob, 0/OFF at 12 hour	Rear mounting ø22 mm	FINGT6Q5	5	0-1 / 1-0-2	60°
	Grey plate 48x48mm, black knob, padlockable, 0/OFF at 9 hour	Rear mounting ø22 mm	FINDT4LQ5	5	0-1	90°
	Yellow plate 48x48mm, red knob, padlockable, 0/OFF at 9 hour	Rear mounting ø22 mm	FINDY4LQ5	5	0-1	90°
	Grey plate 67x67mm, black knob, padlockable, 0/OFF at 9 hour	Rear mounting ø22 mm	FINDK6Q5	5	0-1	90°
	Yellow plate, 67x67mm, red knob, padlockable, 0/OFF at 9 hour	Rear mounting ø22 mm	FINDL6Q5	5	0-1	90°
	Yellow plate 67x67mm, red knob, padlockable, 0/OFF at 12 hour	Rear mounting ø22 mm	FINGL6Q5	5	0-1	90°
	Grey plate 67x67mm, black knob, padlockable, 0/OFF at 9 hour	Base mounting with 2 screws	FINAK6Q5	5	0-1	90°
	Grey plate 67x67mm, black knob, padlockable, 0/OFF at 12 hour	Base mounting with 2 screws	FINBK6Q5	5	0-1	90°
	Yellow plate, 67x67mm, red knob, padlockable, 0/OFF at 9 hour	Base mounting with 2 screws	FINAL6Q5	5	0-1	90°
	Yellow plate 67x67mm, red knob, padlockable, 0/OFF at 12 hour	Base mounting with 2 screws	FINBL6Q5	5	0-1	90°
	Yellow plate 67x67mm, red knob, padlockable, 0/OFF at 12 hour	Base mounting ø22 mm	FINHL6Q5	5	0-1	90°
	Yellow plate 67x67mm, red knob, padlockable, 0/OFF at 9 hour	Base mounting ø22 mm	FINFL6Q5	5	0-1	90°
	Grey plate, 67x67mm, black knob, padlockable, 0/OFF at 9 hour	Base mounting ø22 mm	FINFK6Q5	5	0-1	90°
	Transparent plate 52x52mm, black knob	Rear mounting with 2 screws	FINPL1Q5	5	0-1 / 1-0-2	60°
	Transparent plate 75x75mm, black knob	Rear mounting with 2 screws	FINPL2Q5	5	1-0-2	60°

Knobs

	Extractible black knob, square section 5 mm, 50,5x33,5mm	Spring fixing	M05G028N10	10		
	Black knob, square section 5 mm, 70x48mm	Spring fixing	M06G085N10	10		
	Black knob, square section 5 mm, 39x28mm	Screw fixing	M4G083N10	10		
	Black knob, square section 5 mm, 50,5x33,5mm	Screw fixing	M5G025N10	10		
	Black knob, square section 7 mm, 70x48mm	Screw fixing	M6G086N10	10		
	Black round knob, square section 5 mm, ø37,5mm	Screw fixing	MRNON10	10		
	Black round plate ø 60mm, black knob	Screw fixing	FINRR0Q5	5		

DISCONNECT SWITCHES

DS 20-32-40A series
DS 50-63-80-100A series
TS series
TSC/TSD series



03

DS series

TS series

TSC/TSD series

■ Disconnect switches

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■ Handles and plates*

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*Handles and plates for DS 20...100A series

Overview

Bremas disconnect switches range includes **DS 20-32-40A, DS 50-63-80-100A, TS and TSC/TSD series** with current ratings from 16A to 2500A.

The double break contacts have positive opening to guarantee high electrical efficiency and safety.

The terminals of the DS 20-32-40A and DS 50-63-80-100A series have IP20 protection degree and are provided with captive screws in open position to reduce the wiring time.

The new DS series have contact block designed to simplify the wiring: rear access to terminal connections for rear mounting versions and front access for base mounting versions.

TS and TSC/TSD series have bolt connections (screw terminals are available for TS rated 125°).

Terminal covers and additional accessories are optionally available.

	DS	20A 32A 40A	• Ui/Ue 800V • 3P- 3P+N • Screw cage terminals with captive screws • Max 10/16 mm² (flex/solid wire) • Max AWG 8 • Rear mount with screws or Ø22mm (0,87") singl-hole and nut • Base mounting with screws or on DIN rail
		50A 63A 80A 100A	• Ui/Ue 690V • 3P- 3P+N • Screw cage terminals with captive screws • Max 35/50 mm² (flex/solid wire) • Max AWG 1 • Rear mount with screws or Ø22mm (0,87") singl-hole and nut • Base mount with screws or on DIN rail
	TS	125A 160A 200A 250A	• Ui/Ue 1000V/690V • 690V AC 23A IEC 60947-3 • 600V DC 23A IEC 60947-3 • 3 - 4 pole • Bolt connection for ring lugs (also screw terminals for the 125A only) • Base mount
		400A 630A 800A 1000A	On request • Current ratings up to 2500A • 6 and 8 pole • Rear mount
	TSC TSD	250A 400A 630A 800A 1000A 1250A 1600A	• Ui/Ue 1000V/600V • 500V AC 23A • 690 AC 22A IEC 60947-3 • 600V DC 22A IEC 60947-3 • 3 - 4 pole • Bolt connection for ring lugs • Base mount On request 6 and 8 pole

DS Disconnect switches range

Bremas disconnect switches range is designed for safety operations even under load.

DS disconnect switches series ensure high performance in small spaces and are suitable both for switching resistive loads and inductive loads or motors.

In only two sizes are available current rating from 20A to 100A.

■ 20-32-40A

- Rated current: 20A - 32A - 40A
- Rated insulation voltage 800V
- Protection degree IP20
- Rear mounting or Base mounting
- Padlockable handles and knobs

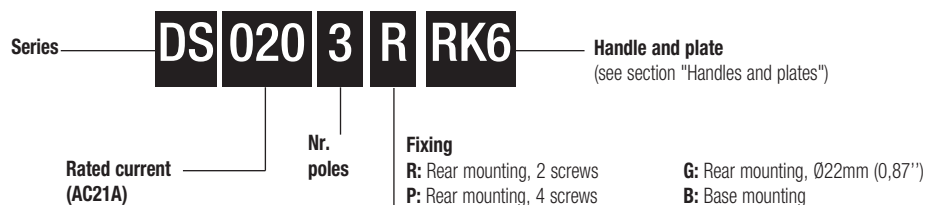


■ 50-63-80-100A

- Rated current: 50A - 63A - 80A - 100A
- Rated insulation voltage 690V
- Protection degree IP20
- Rear mounting or Base mounting
- Padlockable handles and knobs



Code structure



Range

The DS disconnect switches series are characterized by high performance and are suitable for installation in distribution circuits and power engines, in distribution boards or directly on the machine, with alternate current rating from 20 up to 100A.



20-32-40A



50-63-80-100A

Dimensions

The **DS series** has the most compact dimensions on the market that provide installation in reduced spaces also thanks to the many handles with IP66 protection degree.



20-32-40A

Fixing types

It is possible to choose between different fixing types according to the needs:

■ Rear mounting

- 2 holes with vertical interaxis 28mm (1.10")
- 4 holes with interaxis 36mm / 48mm (1.42"/1.89")
- Single hole $\varnothing$ 22 mm (0.87") holes with fixing nut

■ Base mounting with control shaft

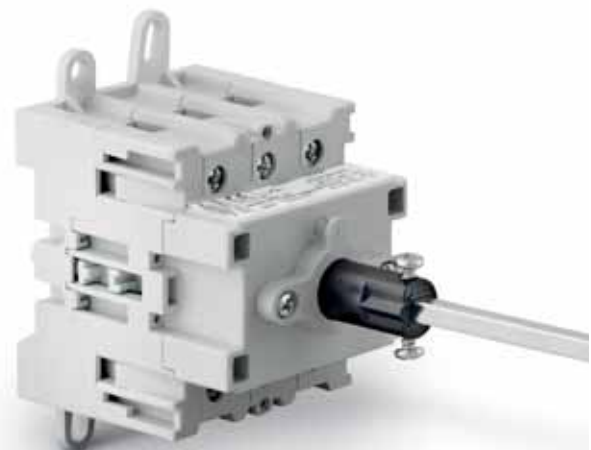
- Snap mount on DIN rail
- 2 screws
- Plate fixed on panel with 2 or 4 screws or with single hole $\varnothing$ 22mm (0.87") with fixing nut

■ Base mounting direct operation (with handle)

■ Base mounting for panel board - DDN



DDN version



Base mounting version

Adjustable depth for the control shaft

The base mounting version of the **DS** includes an ergonomic handle for direct command of the switch; the handle also incorporates a housing for the shaft with a fixing screw. The height of the shaft can be adjusted within an excursion of 20mm, therefore the need of cutting the shaft can be reduced. Base mounting switches are provided with 175mm. shaft.

In the 20-32-40A base mounting version, the shaft insertion dimension in the housing has a tolerance of about 20mm; this makes it possible to reduce the need to cut the shaft with a consequent reduction in installation times and costs.



Easy to wire

The terminals access depending on the fixing option:

- Rear mounting: rear access to terminals.
- Base mounting: front access to terminals.



Rear mounting version



Base mounting version

And also:

- The clamps are provided in open position and equipped with captive plus-minus screws.
- Protection against direct contacts assured even when the panel is opened.

Equipment

The DS disconnect switches series can be equipped with 2 additional poles and/or 2 auxiliary contact (max 1 per side).



Plates and knobs for every application

A complete IP66 range

All the most common plates and knobs are available, for base and rear mounting, with or without padlocking. For all these plates and knobs the **IP66** degree of protection is guaranteed, allowing the installation even in difficult environments.



Safety for the operator

The base mounting plates and knobs are provided with door interlock mechanism in "I/ON" position to avoid door opening when the board is connected to the supply.



DISCONNECT SWITCHES

DS 20-32-40A series
DS 50-63-80-100A series



03

International Standards and approvals

Country	USA / Canada	Canada	China	UK	Germany	Switzerland	Denmark	Norway	Sweden	Finland	Austria	Great Britain	IEC International electrical Commission
Authority	UL investigated according to CSA	CSA International	China Compulsory Certificate		Verband Deutscher Elektrotechniker	Schweizerischer Elektrotechnischer Verein	Danmarks Elektriske Materielkontrol	Norges Elektriske Materielkontrol	Svenska Elektriske Materielkontroll-anstalten	Sähkötar-kastuskeskus	Österreichischer Verband für Elektrotechnik	British Standards Institution	
Mark of standard					⁽¹⁾ VDE 0660							⁽¹⁾ BS EN 60947	⁽²⁾ IEC 60947
DS020	•	+		•	+	+	+	+	+	+	+	+	+
DS032	•	+		•	+	+	+	+	+	+	+	+	+
DS040	•	+		•	+	+	+	+	+	+	+	+	+
DS050	•	+	•	•	+	+	+	+	+	+	+	+	+
DS063	•	+	•	•	+	+	+	+	+	+	+	+	+
DS080	•	+	•	•	+	+	+	+	+	+	+	+	+
DS100	•	+	•	•	+	+	+	+	+	+	+	+	+

- Approved
- + Conforms to requirements

UL Approval File E101686

Notes:

- 1) It is not required to bear a symbol but switches must conform to requirements.
- 2) IEC does not operate an approval scheme

Technical specifications

disconnect switches

Technical data IEC/EN 60947-3

				DS020	DS032	DS040	DS050	DS063	DS080	DS100
Rated operating voltage	Ui	V		800	800	800	690	690	690	690
Rated insulation voltage	Ue	V		800	800	800	690	690	690	690
Rated impulse withstand voltage	Uimp	kV		8	8	8	6	6	6	6
Rated thermal current for open switch	Ith	A		25	32	40	50	63	80	100
Rated thermal current for enclosed switch	Ithe	A		25	32	40	50	63	80	80
Rated operation frequency		Hz		50/60	50/60	50/60	50	50	50	50
Power dissipation for each pole		W		0,6	1,3	2,5	4,6	3,7	5,8	7,5
Rated operating current Ie										
AC-21A Switching resistive loads, including moderate overloads	690V	Ie	A	20	32	40	50	63	80	100
AC-22A Switching of mixed resistive and inductive loads, including moderate overloads	690V	Ie	A	20	32	40	50	63	80	100
Rated operating power										
AC-23A Switching of motor loads or other highly inductive loads	400V	Kw (A)		9 (18)	11 (22)	15 (28)	22 (40)	25 (47)	30 (55)	35 (63)
	690V	Kw (A)		9 (13)	11 (16)	15 (18)	18,5 (19)	18,5 (19)	25 (25)	30 (31)
AC-3 Squirrel cage motors: starting, switching off motors during running	400V	Kw (A)		5,5 (10)	7,5 (14)	11 (21)	18,5 (33)	18,5 (33)	25 (44)	30 (54)
	690V	Kw (A)		5,5 (6)	7,5 (8)	11 (12)	15 (16)	15 (16)	19 (20)	22 (23)
Rated breaking capability in category AC-23A (cos φ=0,45)	400V	A		144	176	228	320	376	440	504
	690V	A		104	128	144	-	-	-	-
Short circuit protection										
Rated short time withstand current (1s)	Icw	A		300	400	500	1500	1500	1500	1500
Rated short-circuit make capacity	Icm	A		750	750	750	2000	2000	2500	2500
Rated conditional short-circuit current		kA		10	10	10	15	15	15	15
With fuses class gG	500V	A		20	32	40	63	63	100	100

Technical data UL/CSA (sec. UL508)

General use voltage	Ue	V		600	600	600	600	600	600	600
General use current	600Vac	Ie	A	20	30	40	80	80	100	100
Rated operating power										
1 phase - 2 pole	120V	Hp/FLA	- / -	- / -	- / -	3/34	3/34	5/56	5/56	
	240V	Hp/FLA	- / -	- / -	- / -	3/17	5/28	7,5/40	10/50	
3 phase - 3 pole	200V	Hp/FLA	- / -	- / -	- / -	7,5/25,3	10/32	15/48	20/62	
	240V	Hp/FLA	5 / 15,2	7,5 / 22	- / -	15/42	20/54	20/54	25/68	
	480V	Hp/FLA	10 / 14	15 / 21	- / -	20/27	25/34	40/52	50/65	
	600V	Hp/FLA	15 / 17	20 / 22	10-11	30/32	30/32	50/52	50/52	
Line protection fuses		A		20	30	40	225	225	225	225
(DS size 1: Class RK5, 600Vac, 200kA A.I.C.), (DS size 2: Class J, 600Vac)										
Short Circuit Rating@600Vac		kA		5	5	5	10	10	10	10

Mechanical characteristics

Mechanical life (120 cycles/hour)	Mil.Man			0,03	0,03	0,03	0,1	0,1	0,1	0,1
Connecting capability with flexible wires	Min-Max	mm²		1,5 - 10	1,5 - 10	1,5 - 10	6-35	6-35	6-35	6-35
Connecting capability with solid wires	Min-Max	mm²		1,5 - 16	1,5 - 16	1,5 - 16	10-50	10-50	10-50	10-50
Connecting capability with flexible wires	Min-Max	AWG		16/08	16/08	16/08	10/01	10/01	10/01	10/01
Connecting capability with solid wires	Min-Max	AWG		16/06	16/06	16/06	08/01	08/01	08/01	08/01
Terminal screw				M4	M4	M4	M5	M5	M5	M5
Screw tightening torque		Nm		1,7	1,7	1,7	2,8	2,8	2,8	2,8
		lb.in		12	12	12	24	24	24	24

Protection degree IEC 529 EN 60529

Terminals				IP20	IP20	IP20	IP20	IP20	IP20	IP20
Handles				IP66	IP66	IP66	IP66	IP66	IP66	IP66

Ambient conditions

Operational ambient temperature	°C			-25 ÷ +55				-25 ÷ +70		
Storage ambient temperature	°C			-25 ÷ +55				-40 ÷ +85		
Withstand to constant humid according to IEC 60068								sec. IEC 60068-2-78		
Withstand to cycling humid according to IEC 60069								sec. IEC 60068-2-30		

Auxiliary contacts

			DSC040NOx			XC012AB XC012CB			
Rated insulation voltage	Ui	V	800	800	800	690	690	12	12
Rated thermal current for open switch	Ith	A	10	10	10	12	12	12	12
AC-15 Control of a.c electromagnetic loads	240V	A	3	3	3	6	6	6	6

Rear-mount switches



Base mount switches



IP66 handles with screw fixing

Padlockable handles		poles	le AC21	Two-screw fixing	Pack	Four-screw fixing 36x36 or 48x48*	Pack	Two-screw fixing	Pack
	Grey plate 67x67mm padlockable, black knob	3	20A	DS0203RRK6	1	DS0203PQK6S	1	DS0203BAK6	1
			32A	DS0323RRK6	1	DS0323PQK6S	1	DS0323BAK6	1
			40A	DS0403RRK6	1	DS0403PQK6S	1	DS0403BAK6	1
		3+N	20A	DS0204RRK6	1	DS0204PQK6S	1	DS0204BAK6	1
			32A	DS0324RRK6	1	DS0324PQK6S	1	DS0324BAK6	1
			40A	DS0404RRK6	1	DS0404PQK6S	1	DS0404BAK6	1
	Yellow plate 67x67mm padlockable, red knob	3	20A	DS0203RRL6	1	DS0203PQL6S	1	DS0203BAL6	1
			32A	DS0323RRL6	1	DS0323PQL6S	1	DS0323BAL6	1
			40A	DS0403RRL6	1	DS0403PQL6S	1	DS0403BAL6	1
		3+N	20A	DS0204RRL6	1	DS0204PQL6S	1	DS0204BAL6	1
			32A	DS0324RRL6	1	DS0324PQL6S	1	DS0324BAL6	1
			40A	DS0404RRL6	1	DS0404PQL6S	1	DS0404BAL6	1
	Grey plate 67x67 mm, black knob padlockable	3	20A	DS0203RQT6L	1	-	-	DS0203BAT6L	1
			32A	DS0323RQT6L	1	-	-	DS0323BAT6L	1
			40A	DS0403RQT6L	1	-	-	DS0403BAT6L	1
		3+N	20A	DS0204RQT6L	1	-	-	DS0204BAT6L	1
			32A	DS0324RQT6L	1	-	-	DS0324BAT6L	1
			40A	DS0404RQT6L	1	-	-	DS0404BAT6L	1
	Yellow plate 67x67 mm, red knob padlockable	3	20A	DS0203RQY6L	1	-	-	DS0203BAY6L	1
			32A	DS0323RQY6L	1	-	-	DS0323BAY6L	1
			40A	DS0403RQY6L	1	-	-	DS0403BAY6L	1
		3+N	20A	DS0204RQY6L	1	-	-	DS0204BAY6L	1
			32A	DS0324RQY6L	1	-	-	DS0324BAY6L	1
			40A	DS0404RQY6L	1	-	-	DS0404BAY6L	1
	Grey plate 48x48 mm, black knob padlockable Only for two-screw fixing	3	20A	DS0203RQT4L	1	-	-	DS0203BAT4L	1
			32A	DS0323RQT4L	1	-	-	DS0323BAT4L	1
			40A	DS0403RQT4L	1	-	-	DS0403BAT4L	1
		3+N	20A	DS0204RQT4L	1	-	-	DS0204BAT4L	1
			32A	DS0324RQT4L	1	-	-	DS0324BAT4L	1
			40A	DS0404RQT4L	1	-	-	DS0404BAT4L	1
	Yellow plate 48x48 mm, red knob padlockable Only for two-screw fixing	3	20A	DS0203RQY4L	1	-	-	DS0203BAY4L	1
			32A	DS0323RQY4L	1	-	-	DS0323BAY4L	1
			40A	DS0403RQY4L	1	-	-	DS0403BAY4L	1
		3+N	20A	DS0204RQY4L	1	-	-	DS0204BAY4L	1
			32A	DS0324RQY4L	1	-	-	DS0324BAY4L	1
			40A	DS0404RQY4L	1	-	-	DS0404BAY4L	1

Two-screw fixing, distance between holes: 28mm (1.10") Vertical or 32mm (1.26") Horizontal

Four-screw fixing, distance between holes: 48x48mm (1.89"x1.89")

* Fixing 48x48 (1,89"x1,89") with adapter flange (included in the package)

**Rear-mount
switches**



**Base mount
switches**



■ IP66 handles with screw fixing

Padlockable handles		poles	Ie AC21	Two-screw fixing	Pack	Four-screw fixing 36x36 or 48x48*	Pack	Four-screw fixing 36x36 or 48x48*	Pack
	Grey plate 67x67mm padlockable, black knob	3	20A	-	-	-	-	DS0203BAK6S	1
			32A	-	-	-	-	DS0323BAK6S	1
			40A	-	-	-	-	DS0403BAK6S	1
		3+N	20A	-	-	-	-	DS0204BAK6S	1
			32A	-	-	-	-	DS0324BAK6S	1
			40A	-	-	-	-	DS0404BAK6S	1
	Yellow plate 67x67mm padlockable, red knob	3	20A	-	-	-	-	DS0203BAL6S	1
			32A	-	-	-	-	DS0323BAL6S	1
			40A	-	-	-	-	DS0403BAL6S	1
		3+N	20A	-	-	-	-	DS0204BAL6S	1
			32A	-	-	-	-	DS0324BAL6S	1
			40A	-	-	-	-	DS0404BAL6S	1

Two-screw fixing, distance between holes: 28mm (1.10") Vertical or 32mm (1.26") Horizontal

Four-screw fixing, distance between holes: 36x36mm (1.42"x1.42") or 48x48mm (1.89"x1.89")

* Fixing 48x48 (1,89"x1,89") with adapter flange (included in the package)

Rear-mount
switches



Base mount
switches



■ IP66 handles with Ø22mm (0,87") single-hole and nut fixing

Padlockable handles		poles	Ie AC21	Ø22mm (0,87") single-hole and nut fixing	Pack	Ø22mm (0,87") single-hole and nut fixing	Pack
	Grey plate 67x67mm padlockable, black knob	3	20A	DS0203GDK6	1	DS0203BFK6	1
			32A	DS0323GDK6	1	DS0323BFK6	1
			40A	DS0403GDK6	1	DS0403BFK6	1
		3+N	20A	DS0204GDK6	1	DS0204BFK6	1
			32A	DS0324GDK6	1	DS0324BFK6	1
			40A	DS0404GDK6	1	DS0404BFK6	1
	Yellow plate 67x67mm padlockable, red knob	3	20A	DS0203GDL6	1	DS0203BFL6	1
			32A	DS0323GDL6	1	DS0323BFL6	1
			40A	DS0403GDL6	1	DS0403BFL6	1
		3+N	20A	DS0204GDL6	1	DS0204BFL6	1
			32A	DS0324GDL6	1	DS0324BFL6	1
			40A	DS0404GDL6	1	DS0404BFL6	1
	Grey plate 67x67 mm, black knob padlockable	3	20A	DS0203GDT6L	1	DS0203BFT6L	1
			32A	DS0323GDT6L	1	DS0323BFT6L	1
			40A	DS0403GDT6L	1	DS0403BFT6L	1
		3+N	20A	DS0204GDT6L	1	DS0204BFT6L	1
			32A	DS0324GDT6L	1	DS0324BFT6L	1
			40A	DS0404GDT6L	1	DS0404BFT6L	1
	Yellow plate 67x67 mm, red knob padlockable	3	20A	DS0203GDY6L	1	DS0203BFY6L	1
			32A	DS0323GDY6L	1	DS0323BFY6L	1
			40A	DS0403GDY6L	1	DS0403BFY6L	1
		3+N	20A	DS0204GDY6L	1	DS0204BFY6L	1
			32A	DS0324GDY6L	1	DS0324BFY6L	1
			40A	DS0404GDY6L	1	DS0404BFY6L	1
	Grey plate 48x48 mm, black knob padlockable	3	20A	DS0203GDT4L	1	DS0203BFT4L	1
			32A	DS0323GDT4L	1	DS0323BFT4L	1
			40A	DS0403GDT4L	1	DS0403BFT4L	1
		3+N	20A	DS0204GDT4L	1	DS0204BFT4L	1
			32A	DS0324GDT4L	1	DS0324BFT4L	1
			40A	DS0404GDT4L	1	DS0404BFT4L	1
	Yellow plate 48x48 mm, red knob padlockable	3	20A	DS0203GDY4L	1	DS0203BFY4L	1
			32A	DS0323GDY4L	1	DS0323BFY4L	1
			40A	DS0403GDY4L	1	DS0403BFY4L	1
		3+N	20A	DS0204GDY4L	1	DS0204BFY4L	1
			32A	DS0324GDY4L	1	DS0324BFY4L	1
			40A	DS0404GDY4L	1	DS0404BFY4L	1

Base mounting



Direct operation
Black knob



For standard cabinets
45mm (1.77") slots
Black knob

Rear mounting



2 screw fixing
at 28mm
vertical distance



4 screw fixing
36x36mm (1.42"x1.42")
or 48x48mm (1.89"x1.89")



ø 22mm (ø 0.87")
single hole
and nut fixing

Direct operation

poles	Ie AC21	Code	Pack	Code	Pack	Code	Pack	Code	Pack	Code	Pack
3	20A	DS0203BFCD	1	DS0203BDDN	1	DS0203R	1	DS0203P	1	DS0203G	1
	32A	DS0323BFCD	1	DS0323BDDN	1	DS0323R	1	DS0323P	1	DS0323G	1
	40A	DS0403BFCD	1	DS0403BDDN	1	DS0403R	1	DS0403P	1	DS0403G	1
3+N	20A	DS0204BFCD	1	DS0204BDDN	1	DS0204R	1	DS0204P	1	DS0204G	1
	32A	DS0324BFCD	1	DS0324BDDN	1	DS0324R	1	DS0324P	1	DS0324G	1
	40A	DS0404BFCD	1	DS0404BDDN	1	DS0404R	1	DS0404P	1	DS0404G	1

Accessories and spare parts

	Code	Description	Pack
Additional poles	DSC040PAR	DS020/040 4th pole early make/late break (for Neutral) rear mounting	5
	DSC040PSR	DS020/040 4th pole rear mounting	5
	DSC040PAB	DS020/040 4th pole early make/late break (for Neutral) base mounting	5
	DSC040PSB	DS020/040 4th pole base mounting	5
	DSC040PENR	DS020/040 4th pole poleEN rear mounting	5
	DSC040PENB	DS020/040 4th pole poleEN base mounting	5
	DSC040NOR	DS020/040 auxiliary contact NO rear mounting	5
	DSC040NOB	DS020/040 auxiliary contact NO base mounting	5
	DSC040NCR	DS020/040 auxiliary contact NC rear mounting	5
	DSC040NCB	DS020/040 auxiliary contact NC base mounting	5

■ Accessories and spare parts

	Code	Description	Pack
	DS040PAD	DS020/040 Transparent Padlockable plate for DS_FC	5
		Padlockable plate for DS_FCD	

	Code	Description	Pack
 	DS040PR1	DS020/040 Pair of one-pole terminal covers	5
	DS040PR3	DS020/040 Pair of three-pole terminal covers	5
Terminal covers			

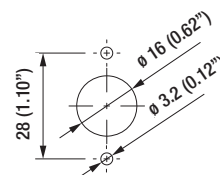
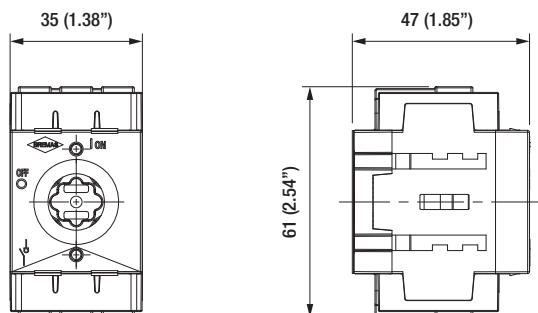
 Shafts	Part no.	Description	Pack
	PALBL055	Shaft L=55mm - Square section 5 mm	5
	PALBL075	Shaft L=75mm - Square section 5 mm	5
	PALBL095	Shaft L=95mm - Square section 5 mm	5
	PALBL115	Shaft L=115mm - Square section 5 mm	5
	PALBL135	Shaft L=135mm - Square section 5 mm	5
	PALBL155	Shaft L=155mm - Square section 5 mm	5
	PALBL175	Shaft L=175mm - Square section 5 mm	5
	PALBL300	Shaft L=300mm - Square section 5 mm	5
	PALBL500	Shaft L=500mm - Square section 5 mm	5

Rear mounting

Measures in mm (in)

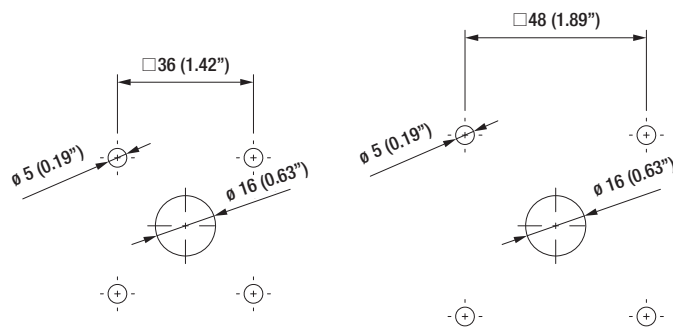
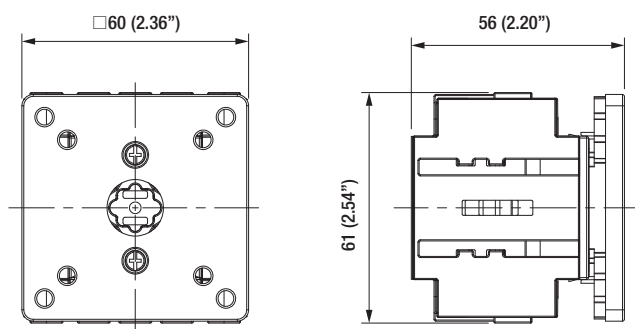
2 holes with screws

Drilling templates



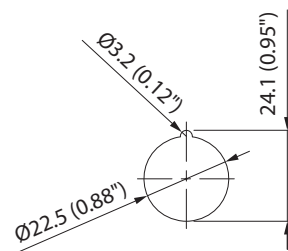
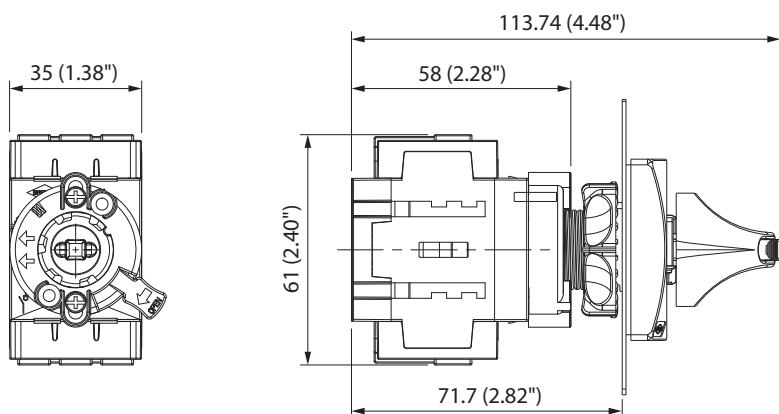
Two-screws fixing

4 holes with screws



Four-screws fixing

Ø 22mm (0,87") single hole with locking nut

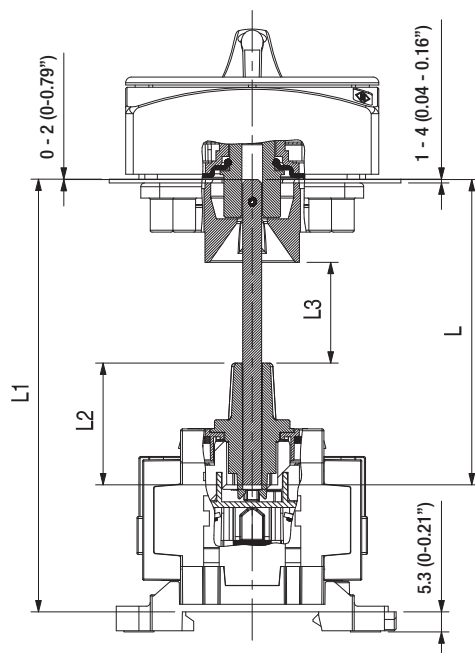


Handles fixing with
Ø 22mm (0,87") single hole
and locking nut

■ Base mounting

Measures in mm (in)

Screw-fixed handles



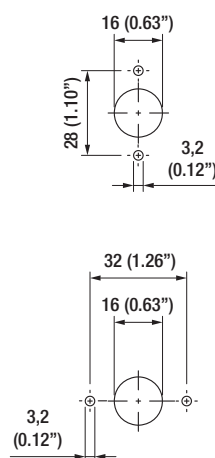
Cutting length of the extension shaft

The base mounting execution is provided with integrated control knob and includes the housing for the shaft and the fixing screw. The depth of insertion of the shaft in the housing has a tolerance of about 20mm, this allows to reduce the need and the precision of the cutting to size (dimension L) of the shaft.

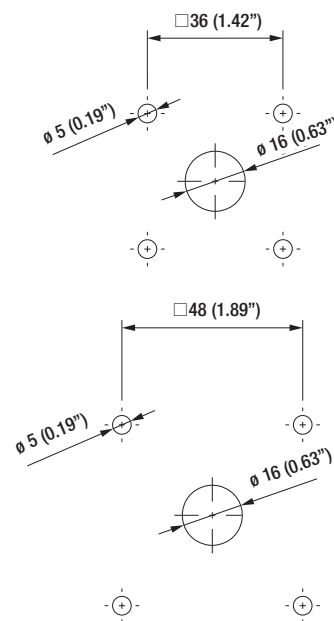
To determine the cut length L of the shaft, consider the following guidelines:

$L3 \geq 1\text{mm}$
 $12\text{mm} \leq L2 \leq 32\text{mm}$

In practice: $L1 - 53\text{mm} \leq L \leq L1 - 33\text{mm}$

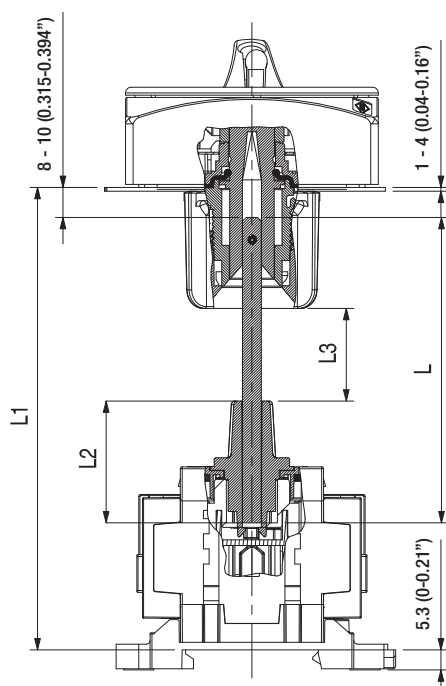


Two-screw handle fixing



Four-screw handle fixing

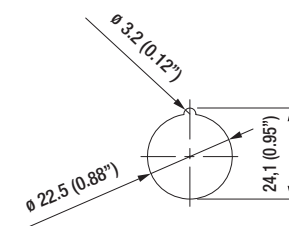
Ø 22mm (0,87") single-hole handle fixing



To determine the cut length L of the shaft, consider the following guidelines:

$L3 \geq 1\text{mm}$
 $12\text{mm} \leq L2 \leq 32\text{mm}$

In practice: $L1 - 61\text{mm} \leq L \leq L1 - 41\text{mm}$



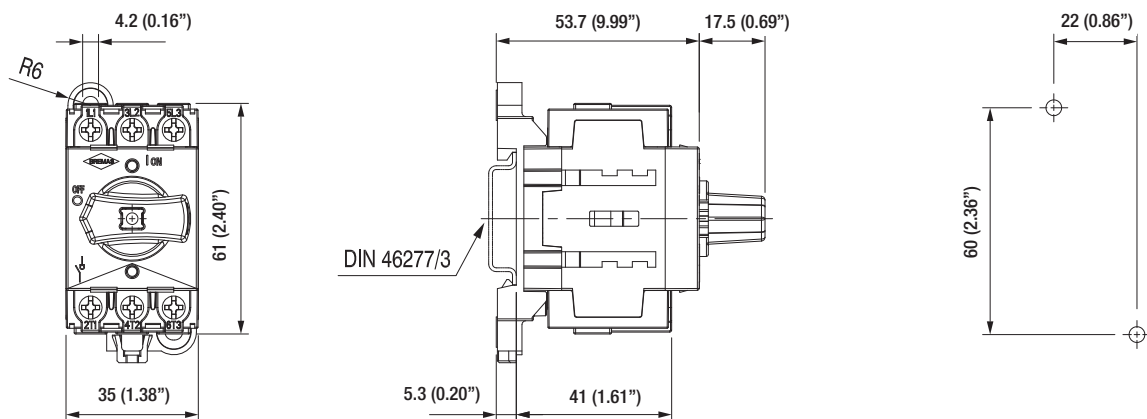
Ø 22mm (0,87")
 single-hole handle fixing

■ Base mounting

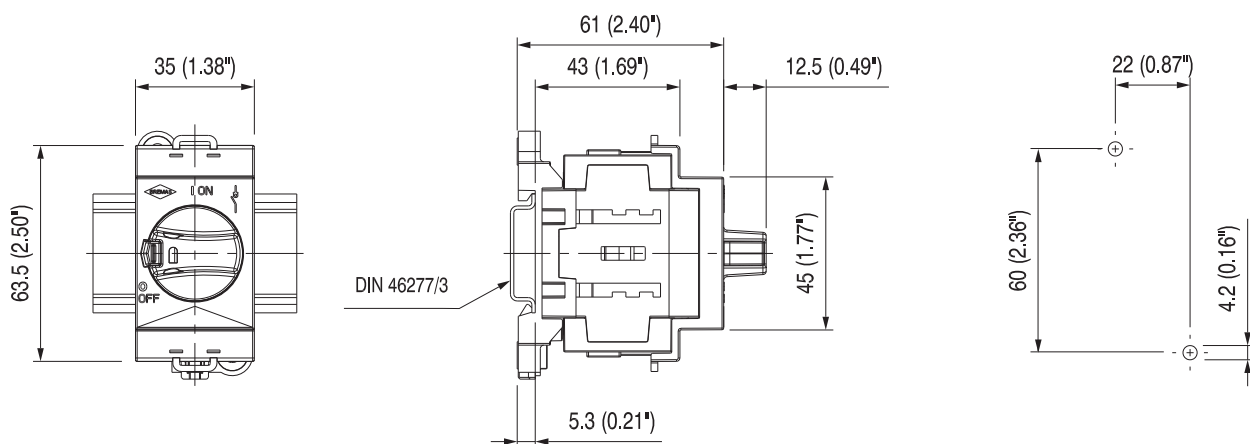
Measures in mm (in)

Direct command

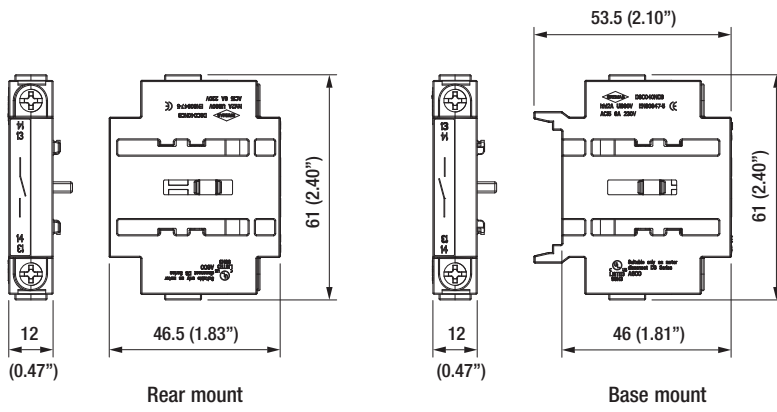
Drilling templates - Base mount



DDN version - For panel board



Fourth pole (additional/auxiliary)



Rear-mount switches



Base mount switches



■ IP66 handles with screw fixing

Padlockable handles		poles	le AC21	Two-screw fixing	Pack	Four-screw fixing 36x36 o 48x48*	Pack	Two-screw fixing	Pack
	Grey plate 67x67mm padlockable, black knob	3	50A	DS0503RQK6	1	DS0503PQK6S	1	DS0503BAK6	1
			63A	DS0633RQK6	1	DS0633PQK6S	1	DS0633BAK6	1
			80A	DS0803RQK6	1	DS0803PQK6S	1	DS0803BAK6	1
			100A	DS1003RQK6	1	DS1003PQK6S	1	DS1003BAK6	1
		3+N	50A	DS0504RQK6	1	DS0504PQK6S	1	DS0504BAK6	1
			63A	DS0634RQK6	1	DS0634PQK6S	1	DS0634BAK6	1
			80A	DS0804RQK6	1	DS0804PQK6S	1	DS0804BAK6	1
			100A	DS1004RQK6	1	DS1004PQK6S	1	DS1004BAK6	1
	Yellow plate 67x67mm padlockable, red knob	3	50A	DS0503RQL6	1	DS0503PQL6S	1	DS0503BAL6	1
			63A	DS0633RQL6	1	DS0633PQL6S	1	DS0633BAL6	1
			80A	DS0803RQL6	1	DS0803PQL6S	1	DS0803BAL6	1
			100A	DS1003RQL6	1	DS1003PQL6S	1	DS1003BAL6	1
		3+N	50A	DS0504RQL6	1	DS0504PQL6S	1	DS0504BAL6	1
			63A	DS0634RQL6	1	DS0634PQL6S	1	DS0634BAL6	1
			80A	DS0804RQL6	1	DS0804PQL6S	1	DS0804BAL6	1
			100A	DS1004RQL6	1	DS1004PQL6S	1	DS1004BAL6	1
	Grey plate 67x67 mm, black knob padlockable	3	50A	DS0503RQT6L	1	-	-	DS0503BAT6L	1
			63A	DS0633RQT6L	1	-	-	DS0633BAT6L	1
			80A	DS0803RQT6L	1	-	-	DS0803BAT6L	1
			100A	DS1003RQT6L	1	-	-	DS1003BAT6L	1
		3+N	50A	DS0504RQT6L	1	-	-	DS0504BAT6L	1
			63A	DS0634RQT6L	1	-	-	DS0634BAT6L	1
			80A	DS0804RQT6L	1	-	-	DS0804BAT6L	1
			100A	DS1004RQT6L	1	-	-	DS1004BAT6L	1
	Yellow plate 67x67 mm, red knob padlockable	3	50A	DS0503RQY6L	1	-	-	DS0503BAY6L	1
			63A	DS0633RQY6L	1	-	-	DS0633BAY6L	1
			80A	DS0803RQY6L	1	-	-	DS0803BAY6L	1
			100A	DS1003RQY6L	1	-	-	DS1003BAY6L	1
		3+N	50A	DS0504RQY6L	1	-	-	DS0504BAY6L	1
			63A	DS0634RQY6L	1	-	-	DS0634BAY6L	1
			80A	DS0804RQY6L	1	-	-	DS0804BAY6L	1
			100A	DS1004RQY6L	1	-	-	DS1004BAY6L	1

Two-screw fixing, distance between holes: 28mm (1.10") Vertical or 32mm (1.26") Horizontal

Four-screw fixing, distance between holes: 48x48mm (1.89"x1.89")

* Fixing 48x48 (1,89"x1,89") with adapter flange (included in the package)

**Rear-mount
switches**



**Base mount
switches**



■ IP66 handles with screw fixing

Padlockable handles		poles	Ie AC21	Two-screw fixing	Pack	Four-screw fixing 36x36 or 48x48	Pack	Two-screw fixing	Pack
	Grey plate 48x48 mm, black knob padlockable	3	50A	DS0503RQT4L	1	-	-	DS0503BAT4L	1
			63A	DS0633RQT4L	1	-	-	DS0633BAT4L	1
			80A	DS0803RQT4L	1	-	-	DS0803BAT4L	1
			100A	DS1003RQT4L	1	-	-	DS1003BAT4L	1
		3+N	50A	DS0504RQT4L	1	-	-	DS0504BAT4L	1
			63A	DS0634RQT4L	1	-	-	DS0634BAT4L	1
			80A	DS0804RQT4L	1	-	-	DS0804BAT4L	1
			100A	DS1004RQT4L	1	-	-	DS1004BAT4L	1
	Yellow plate 48x48 mm, red knob padlockable	3	50A	DS0503RQY4L	1	-	-	DS0503BAY4L	1
			63A	DS0633RQY4L	1	-	-	DS0633BAY4L	1
			80A	DS0803RQY4L	1	-	-	DS0803BAY4L	1
			100A	DS1003RQY4L	1	-	-	DS1003BAY4L	1
		3+N	50A	DS0504RQY4L	1	-	-	DS0504BAY4L	1
			63A	DS0634RQY4L	1	-	-	DS0634BAY4L	1
			80A	DS0804RQY4L	1	-	-	DS0804BAY4L	1
			100A	DS1004RQY4L	1	-	-	DS1004BAY4L	1

Padlockable handles		poles	Ie AC21	Two-screw fixing	Pack	Four-screw fixing 36x36 or 48x48	Pack	Four-screw fixing 36x36 or 48x48*	Pack
	Grey plate 67x67 mm black knob padlockable	3	50A	-	-	-	-	DS0503BAK6S	1
			63A	-	-	-	-	DS0633BAK6S	1
			80A	-	-	-	-	DS0803BAK6S	1
			100A	-	-	-	-	DS1003BAK6S	1
		3+N	50A	-	-	-	-	DS0504BAK6S	1
			63A	-	-	-	-	DS0634BAK6S	1
			80A	-	-	-	-	DS0804BAK6S	1
			100A	-	-	-	-	DS1004BAK6S	1
	Yellow plate 67x67 mm red knob padlockable	3	50A	-	-	-	-	DS0503BAL6S	1
			63A	-	-	-	-	DS0633BAL6S	1
			80A	-	-	-	-	DS0803BAL6S	1
			100A	-	-	-	-	DS1003BAL6S	1
		3+N	50A	-	-	-	-	DS0504BAL6S	1
			63A	-	-	-	-	DS0634BAL6S	1
			80A	-	-	-	-	DS0804BAL6S	1
			100A	-	-	-	-	DS1004BAL6S	1

Two-screw fixing, distance between holes: 28mm (1.10") Vertical or 32mm (1.26") Horizontal

* Fixing 48x48 (1,89"x1,89") with adapter flange (included in the package)

Rear-mount switches



Base mount switches



■ IP66 handles with Ø22mm (0,87") single-hole and nut fixing

Padlockable handles		poles	Ie AC21	Ø22mm (0,87") single-hole and nut fixing	Pack	Ø22mm (0,87") single-hole and nut fixing	Pack
	Grey plate 67x67mm padlockable, black knob	3	50A	DS0503GDK6	1	DS0503BFK6	1
			63A	DS0633GDK6	1	DS0633BFK6	1
			80A	DS0803GDK6	1	DS0803BFK6	1
			100A	DS1003GDK6	1	DS1003BFK6	1
		3+N	50A	DS0504GDK6	1	DS0504BFK6	1
			63A	DS0634GDK6	1	DS0634BFK6	1
			80A	DS0804GDK6	1	DS0804BFK6	1
			100A	DS1004GDK6	1	DS1004BFK6	1
	Yellow plate 67x67mm padlockable, red knob	3	50A	DS0503GDL6	1	DS0503BFL6	1
			63A	DS0633GDL6	1	DS0633BFL6	1
			80A	DS0803GDL6	1	DS0803BFL6	1
			100A	DS1003GDL6	1	DS1003BFL6	1
		3+N	50A	DS0504GDL6	1	DS0504BFL6	1
			63A	DS0634GDL6	1	DS0634BFL6	1
			80A	DS0804GDL6	1	DS0804BFL6	1
			100A	DS1004GDL6	1	DS1004BFL6	1
	Grey plate 67x67 mm, black knob padlockable	3	50A	DS0503GDT6L	1	DS0503BFT6L	1
			63A	DS0633GDT6L	1	DS0633BFT6L	1
			80A	DS0803GDT6L	1	DS0803BFT6L	1
			100A	DS1003GDT6L	1	DS1003BFT6L	1
		3+N	50A	DS0504GDT6L	1	DS0504BFT6L	1
			63A	DS0634GDT6L	1	DS0634BFT6L	1
			80A	DS0804GDT6L	1	DS0804BFT6L	1
			100A	DS1004GDT6L	1	DS1004BFT6L	1
	Yellow plate 67x67 mm, red knob padlockable	3	50A	DS0503GDY6L	1	DS0503BFY6L	1
			63A	DS0633GDY6L	1	DS0633BFY6L	1
			80A	DS0803GDY6L	1	DS0803BFY6L	1
			100A	DS1003GDY6L	1	DS1003BFY6L	1
		3+N	50A	DS0504GDY6L	1	DS0504BFY6L	1
			63A	DS0634GDY6L	1	DS0634BFY6L	1
			80A	DS0804GDY6L	1	DS0804BFY6L	1
			100A	DS1004GDY6L	1	DS1004BFY6L	1

**Rear-mount
switches**



**Base mount
switches**



■ IP66 handles with Ø22mm (0,87") single-hole and nut fixing

Padlockable handles		poles	Ie AC21	Ø22mm (0,87") single-hole and nut fixing	Pack	Ø22mm (0,87") single-hole and nut fixing	Pack
	Grey plate 48x48 mm, black knob padlockable	3	50A	DS0503GDT4L	1	DS0503BFT4L	1
			63A	DS0633GDT4L	1	DS0633BFT4L	1
			80A	DS0803GDT4L	1	DS0803BFT4L	1
			100A	DS1003GDT4L	1	DS1003BFT4L	1
		3+N	50A	DS0504GDT4L	1	DS0504BFT4L	1
			63A	DS0634GDT4L	1	DS0634BFT4L	1
			80A	DS0804GDT4L	1	DS0804BFT4L	1
			100A	DS1004GDT4L	1	DS1004BFT4L	1
	Yellow plate 48x48 mm, red knob padlockable	3	50A	DS0503GDY4L	1	DS0503BFY4L	1
			63A	DS0633GDY4L	1	DS0633BFY4L	1
			80A	DS0803GDY4L	1	DS0803BFY4L	1
			100A	DS1003GDY4L	1	DS1003BFY4L	1
		3+N	50A	DS0504GDY4L	1	DS0504BFY4L	1
			63A	DS0634GDY4L	1	DS0634BFY4L	1
			80A	DS0804GDY4L	1	DS0804BFY4L	1
			100A	DS1004GDY4L	1	DS1004BFY4L	1

DS 50-63-80-100A series

Base mounting



Direct operation
Black knob

Rear mounting



2 screw fixing
at 28mm
vertical distance



4 screw fixing
36x36mm (1.42"x1.42")
or 48x48mm (1.89"x1.89")



ø 22mm (ø 0.87")
single hole
and nut fixing

Direct operation

poles	Ie AC21	Code	Pack	Code	Pack	Code	Pack	Code	Pack
3	50A	DS0503BFCD	1	DS0503R	1	DS0503P	1	DS0503G	1
	63A	DS0633BFCD	1	DS0633R	1	DS0633P	1	DS0633G	1
	80A	DS0803BFCD	1	DS0803R	1	DS0803P	1	DS0803G	1
	100A	DS1003BFCD	1	DS1003R	1	DS1003P	1	DS1003G	1
3+N	50A	DS0504BFCD	1	DS0504R	1	DS0504P	1	DS0504G	1
	63A	DS0634BFCD	1	DS0634R	1	DS0634P	1	DS0634G	1
	80A	DS0804BFCD	1	DS0804R	1	DS0804P	1	DS0804G	1
	100A	DS1004BFCD	1	DS1004R	1	DS1004P	1	DS1004G	1

Additional poles and auxiliary contacts



Code	Description	Pack
XC012AB	Auxiliary contact NO for DS50-63-80-100 base mounting	5
XC012CB	Auxiliary contact NC for DS50-63-80-100 base mounting	5
XC050PB	DS50 4th pole early make/late break (for Neutral) base mounting	5
XC063PB	DS63 4th pole early make/late break (for Neutral) base mounting	5
XC100PB	DS80/DS100 4th pole early make/late break (for Neutral) base mounting	5
XC100GB	Earth pole for DS50-63-80-100 base mounting	5
XC012AR	Auxiliary contact NO for DS50-63-80-100 rear mounting	5
XC012CR	Auxiliary contact NC for DS50-63-80-100 rear mounting	5
XC050PR	DS50 4th pole early make/late break (for Neutral) rear mounting	5
XC063PR	DS63 4th pole early make/late break (for Neutral) rear mounting	5
XC100PR	DS80/DS100 4th pole early make/late break (for Neutral) rear mounting	5
XC100GR	Earth pole for DS50-63-80-100 rear mounting	5

Shafts



Part no.	Description	Pack
PALBL055	Shaft L=55mm - Square section 5 mm	5
PALBL075	Shaft L=75mm - Square section 5 mm	5
PALBL095	Shaft L=95mm - Square section 5 mm	5
PALBL115	Shaft L=115mm - Square section 5 mm	5
PALBL135	Shaft L=135mm - Square section 5 mm	5
PALBL155	Shaft L=155mm - Square section 5 mm	5
PALBL175	Shaft L=175mm - Square section 5 mm	5
PALBL300	Shaft L=300mm - Square section 5 mm	5
PALBL500	Shaft L=500mm - Square section 5 mm	5

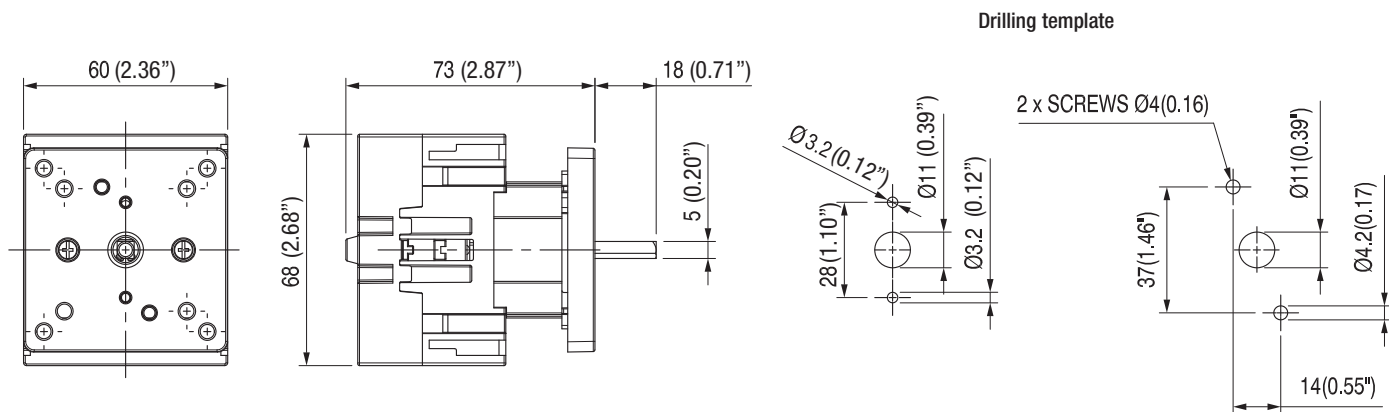
Terminal covers



Code	Description	Pack
DS100PR3B	Couple of terminal covers for DS 50-63-80-100A (base mounting)	5
DS100PR1B	Couple of terminal covers for additional pole DS 50-63-80-100A (base mounting)	5
DS100PR3R	Couple of terminal covers for DS 50-63-80-100A (rear mounting)	5
DS100PR1R	Couple of terminal covers for additional pole DS 50-63-80-100A (rear mounting)	5

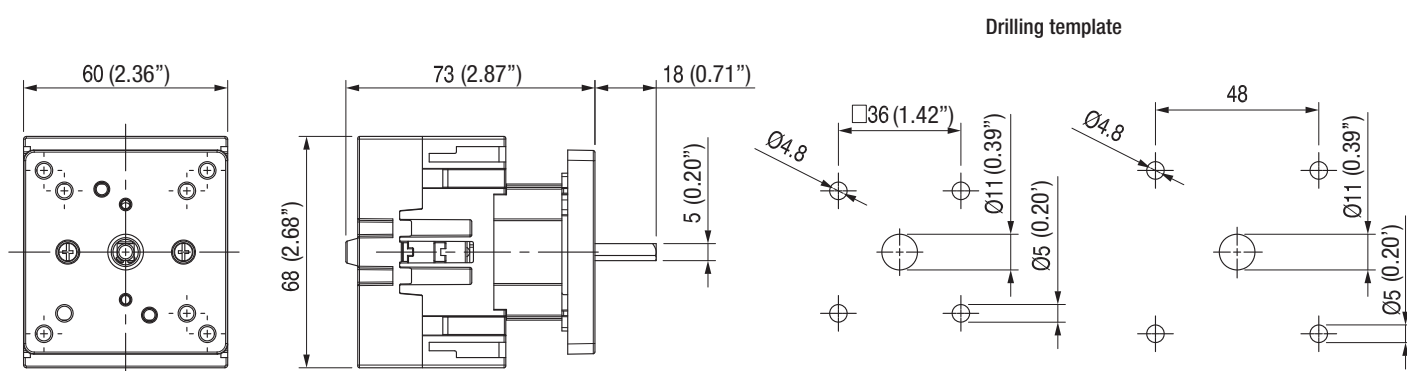
■ Rear mounting - 2 holes with screws

Measures in mm (in)



■ Rear mounting - 4 holes with screws

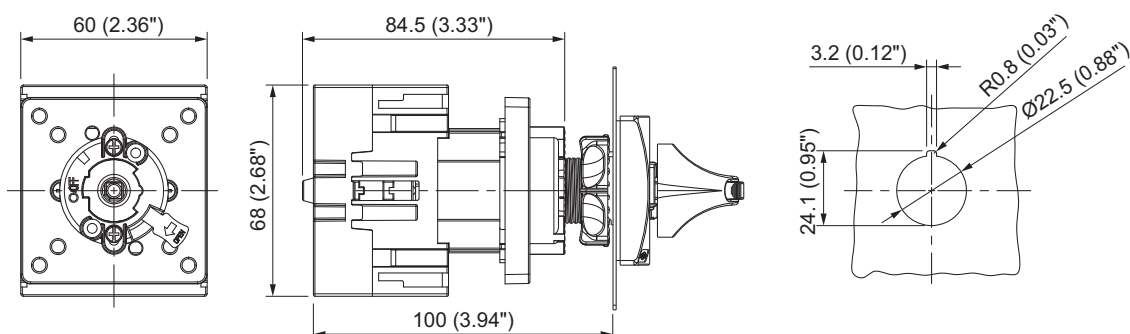
Measures in mm (in)



■ Rear mounting - Ø 22mm (0,87") single hole with locking nut

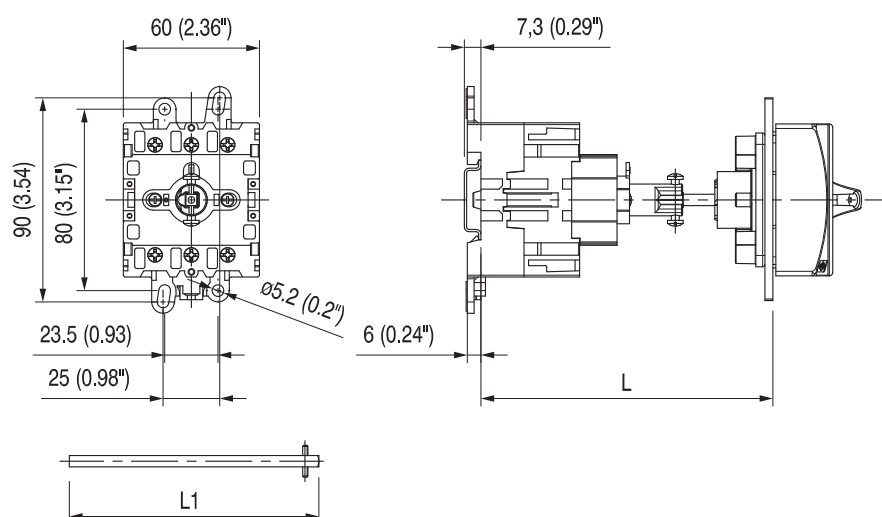
Measures in mm (in)

Drilling template



■ Base mounting

(DS 50-63-80-100A) - Measures in mm (in)

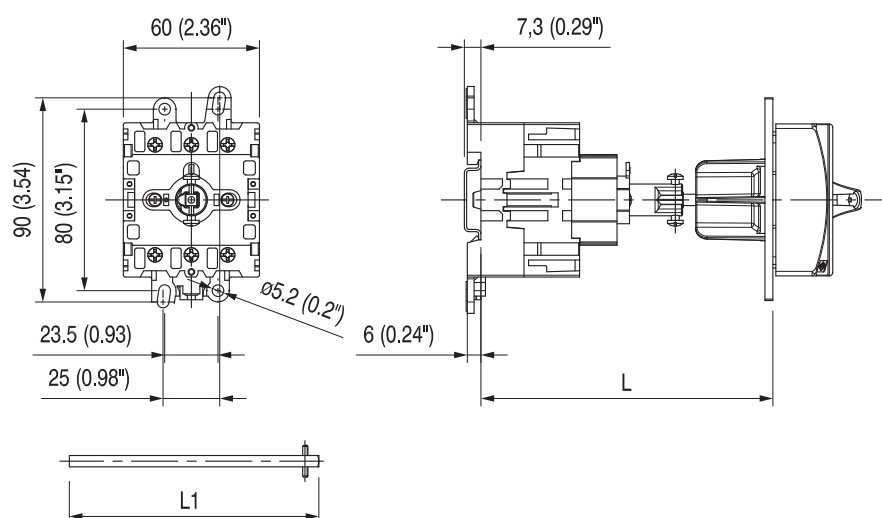


Overall length (min-max)**
for different shaft length (L1):

L1		
175*	L (mm)	114 - 258
6.89*	L (in)	4.49" - 10.15"
300	L (mm)	114 - 383
11.81	L (in)	4.49" - 15.07"
500	L (mm)	114 - 258
19.68	L (in)	4.49" - 22.95"

* Standard shaft, bundled

** Minimum length obtainable by cutting the shaft.



Overall length (min-max)**
for different shaft length (L1):

L1		
175*	L (mm)	125 - 262
6.89*	L (in)	4.92" - 10.31"
300	L (mm)	125 - 387
11.81	L (in)	4.92" - 15.23"
500	L (mm)	125 - 587
19.68	L (in)	4.92" - 23.11"

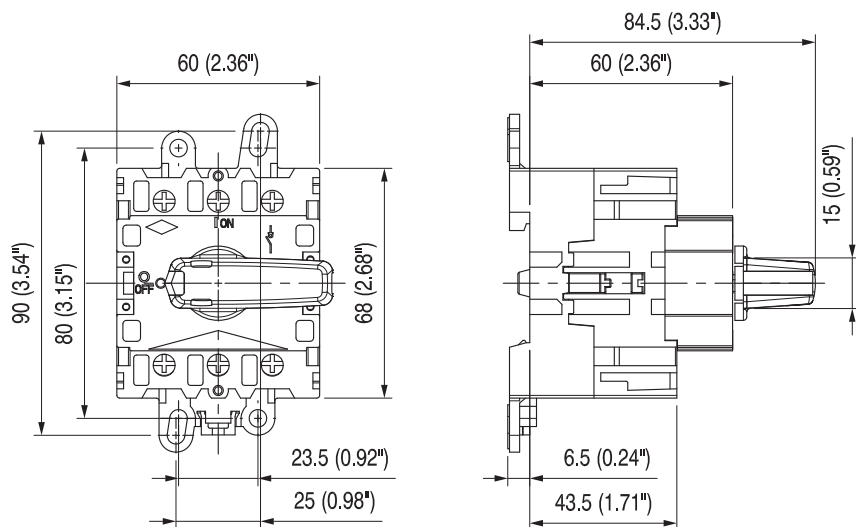
* Standard shaft, bundled

** Minimum length obtainable by cutting the shaft.

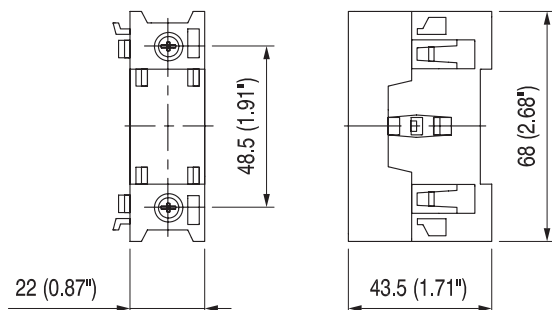
■ Base mounting

Measures in mm (in)

Direct command



Fourth pole (additonal/auxiliary)





DISCONNECT SWITCHES

TS series



03

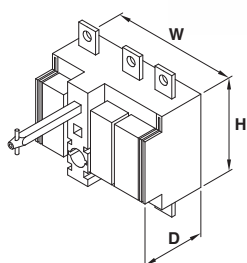
Overview

The switches **series TS** have the following main design features:

- Polyester self-extinguishing and anti-trace insulating housing
- Silver plated electrolytic copper fix and moving contacts
- Double breaking for pole.
- High closing and opening speed, independent from the operator
- Feeder connection is possible either in the upper in on the lower side

■ Size S1 (125A) and
Size S2 (160A; 200A; 250A)

■ Size S3 (400A; 630A) and
Size S4 (800A; 1000A)



Measures * in mm (in)	H	W	D
Size S1	3 pole	100	129 (5.08")
	4 pole	(3.94")	160 (3.30")
Size S2	3 pole	125	174 (6.85")
	4 pole	(4.92")	204 (8.03")

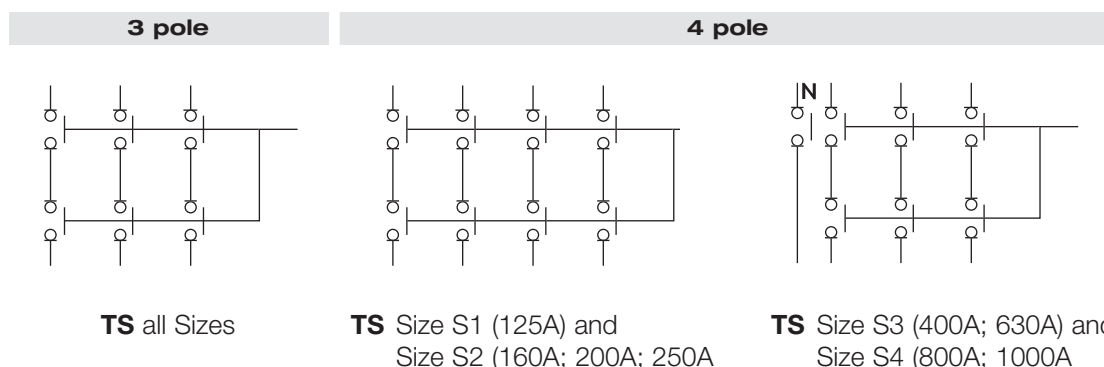
Measures * in mm (in)	H *	W	D
Size S3	3-4 pole	161 ÷ 187 (6.34" ÷ 7.36")	251 (9.88")
			125 (4.92")
Size S4	3-4 pole	238 (9.37")	325 (12.79")
			145 (5.71")

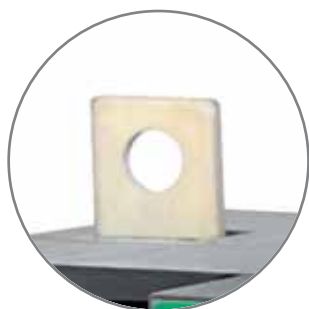
Note: * dimension H depends on the extension of the current bars, which may change with the rating.
Shaft or other installed accessories are not considered.

- The actuator always respects the real position of the contacts. This type of control is called "positive operation". The auxiliary contacts are directly acted from the operating mechanism.
- 4 pole switch-disconnectors are suitable for all-phase breaking (the Neutral contact closes before and opens after the phases)
- **TS** series switch-disconnectors are suitable for polluted ambient and tropical climates according to IEC 68-2 Standards



Two contact blocks in series result in 4 breaking for phase





Bolt connection
is standard on
all the TS range



Screw connection
available with 125A
rating (TS_S execution)



Visible isolation
available
(TS_V execution)

A complete range of optional accessories allows the use of TS switch-disconnectors in several installations.

Standard bundle handle with door interlock in closed position and possibility to install a legend with 0-1 positions (IEC Standard) or ON-OFF positions (BS Standard).

Standard handle is IP54 (IP55 using an optional handle washer) and can be locked in open position with max 3 padlocks. Optional handles are available that are padlockable both in open and closed position (door interlock override optional as well).



Handle M801 for TS switches in Size S1 and Size S2.



Handle M1201 for TS switches in Size S3.



Handle M1301 for TS switches in Size S4.

Note: several additional current ratings are available on request up to 2500A.

TS switch-disconnectors are also available on request in 6-8 pole versions, with the same dimensions of the 3-4 pole executions.

Technical data IEC 947-3 EN 60947-3

SIZE

Rated insulation voltage	Ui	V
Rated impulse withstand voltage	Uimp	kV
Rated thermal current for open switch	Ith	A
Rated thermal current for enclosed switches	Ithe	A
Number of poles		
Power dissipation each pole	W	

Rated operating current Ie

AC-22A Switching of mixed resistive loads, including moderate overloads	Ie	690V	A
		1000V	A

Rated operating power

AC-23A Switching of motor loads or other highly inductive loads 3 phase - 3 pole	Ie	415V	Kw (A)
		500V	Kw (A)
		690V	Kw (A)
DC-23A Switching of motor loads or other highly inductive loads	Ie	220V	Kw (A)
		440V	Kw (A)
		600V	Kw (A)
Reactive power ¹		380V	kVAr
Rated short time withstand current (1s)	Icw		kA
Rated short-circuit make capacity	Icm		kA
Mechanical life	operations		nr.
Electrical life	operations		nr.

Weight

3 pole with link bar covers	Kg
4 pole with link bar covers (4° leaning pole)	Kg
3 pole with visible isolation	Kg
4 pole with visible isolation (4° leaning pole)	Kg
3 pole	Kg
4 pole	Kg

Note:

¹ = due to the presence of harmonics and to the tolerances of capacitors, nominal values must be reduced by 33%

² = data about the 6 and 8 pole versions are available on request

Normal service, mounting and transportation conditions

- storage and transport ambient temperature -25° C + 55° C
- operative ambient temperature -5° C + 45° C
- relative humidity max 95%
- rated frequency 50-60 Hz
- altitude max 2000 m a.s.l.
- mounting in enclosure:

In case of utilisation at full load and without adequate ventilation, ensure a volume of about 5 time the volume of the switch.

Performances shall be derated up to 40% according to the environmental temperature.

For other operating conditions please contact Brema Ersce.

disconnect switches

TS125 S1	TS160 S2	TS200 S2	TS250 S2	TS400 S3	TS630 S3	TS800 S4	TS1000 S4
1000	1000	1000	1000	1000	1000	1000	1000
6	6	6	6	8	8	8	8
125	160	200	250	400	630	800	1000
100	125	160	200	340	550	630	800
3-4 ²	3-4 ²	3-4 ²	3-4 ²	3-4 ²	3-4 ²	3-4 ²	3-4 ²
6	6	7,5	16	20	50	50	55
125	-	-	250	-	-		
	160	200		400	630	800	1000
55 (125)	75 (160)	96 (200)	132 (250)	200 (400)	355 (630)	400 (800)	500 (1000)
75 (125)	100 (125)	120 (200)	150 (220)	280 (400)	425 (630)	560 (800)	670 (1000)
90 (125)	140 (125)	175 (200)	175 (200)	375 (400)	375 (400)	710 (800)	710 (800)
28 (125)	35 (160)	44 (200)	55 (250)	88 (400)	139 (630)	176 (800)	220 (1000)
55 (125)	70 (160)	88 (200)	97 (220)	176 (400)	277 (630)	352 (800)	440 (1000)
75 (125)	96 (125)	96 (160)	150 (210)	240 (400)	378 (630)	480 (800)	600 (1000)
55	70	80	110	250	315	350	400
6	10	10	10	18	20	25	40
15	25	25	25	44	50	63	84
8000	8000	8000	8000	5000	5000	3000	3000
1000	1000	1000	1000	1000	1000	500	500
-	-	-	-	4,7	5,1	9,5	10,6
-	-	-	-	4,9	5,6	10	11,2
-	-	-	-	4,5	-	8,4	9,8
-	-	-	-	4,7	-	8,9	10,4
1,3	2,1	2,1	2,1	-	-	-	-
1,4	2,5	2,5	2,5	-	-	-	-



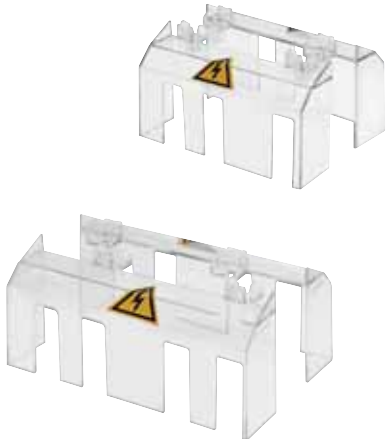
Switch-disconnectors

	Size	Ie AC21	poles	Code	Model	Pack	Code	Model	Pack.
	S1	125	3	VC522100	TS1253M801	1	-	-	1
			4	VC523900	TS1254M801	1	-	-	1
	S2	160	3	VC524700	TS1603M801	1	-	-	1
			4	VC525400	TS1604M801	1	-	-	1
		200	3	VC853800	TS2003M801	1	-	-	1
			4	VC854600	TS2004M801	1	-	-	1
		250	3	VC855400	TS2503M801	1	-	-	1
			4	VC856200	TS2504M801	1	-	-	1
	S3	400	3	VC416600	TS4003M1201	1	VC437200	TS4003VM1201	1
			4	VC417400	TS4004M1201	1	VC438000	TS4004VM1201	1
		630	3	VC418200	TS6303M1201	1	VC439800	TS6303VM1301	1
			4	VC419000	TS6304M1201	1	VC440600	TS6304VM1301	1
	S4	800	3	VC420800	TS8003M1301	1	VC441400	TS8003VM1301	1
			4	VC421600	TS8004M1301	1	VC442200	TS8004VM1301	1
		1000	3	VC422400	TS10003M1301	1	VC443000	TS10003VM1301	1
			4	VC423200	TS10004M1301	1	VC444800	TS10004VM1301	1

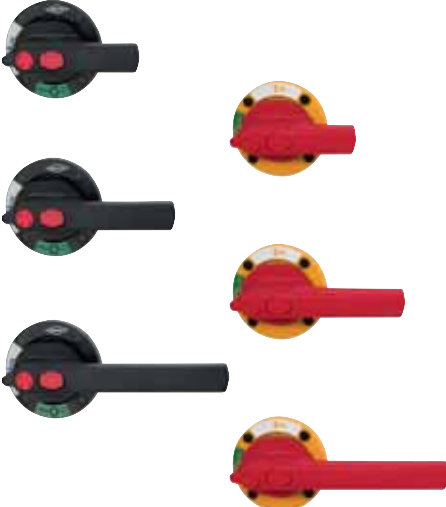
Switch-disconnectors with screw terminals

	Size	Ie AC21	poles	Code	Model	Pack
	S1	125	3	VC526200	TS1253SM801	1
			4	VC527000	TS1254SM801	1

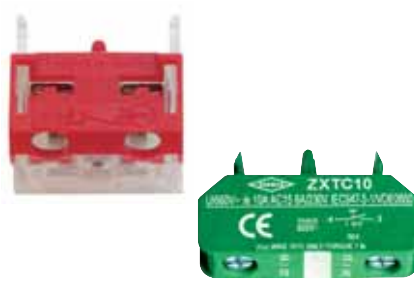
disconnect switches

	Code	Model	Description	Pack
	VC822500	S55	protection shield 3 pole o 4 pole add. for TS Size S3	1
	VC824100	S555	protection shield 3 pole o 4 pole add. for TS Size S4	1
	VC723500	S31C	upper terminal cover 3 pole for TF / TS Size S1	1
	VD692100	I31	lower terminal cover 3 pole for TF / TS Size S1	1
	VC724300	S41	upper terminal cover 4 pole for TF / TS Size S1	1
	VD693900	I41	lower terminal cover 4 pole for TF / TS Size S1	1
	VD696200	I32	lower terminal cover 3 pole for TS Size S2	1
	VD697000	I42	lower terminal cover 4 pole for TS Size S2	1
	VD694700	S32	upper terminal cover 3 pole for TS Size S2	1
	VD695400	S42	upper terminal cover 4 pole for TS Size S2	1
	VC804300	S123	upper terminal cover 3 pole and 4 pole add. for TF / TS Size S3	1
	VC805000	I123	lower terminal cover 3 pole and 4 pole add. for TF / TS Size S3	1
	VC806800	S203	upper terminal cover 3 pole and 4 pole add. for TF / TS Size S4	1
	VC807600	I203	lower terminal cover 3 pole and 4 pole add. for TF / TS Size S4	1

	Code	Model	Description	Pack
	VC728400	T8	standard extension shaft L=180mm Q8 for TF / TS Sizes S1-S2	1
	VD700200	T8/1	extension shaft L=280mm Q8 for TF / TS Sizes S1-S2	1
	VC797900	T12	standard extension shaft L=180mm Q12 for TF / TS Sizes S3-S4 and TSC / TSD Size S2	1
	VC798700	T12/1	standard extension shaft L=280mm Q12 for TF / TS Sizes S3-S4 and TSC / TSD Size S2	1

	Code	Model	Description	Pack
	VC733400	M801	long black handle 0-1 standard for TF/ TS Size S1- S2	1
	VC735900	M801DS	long black handle 0-1 with door-interlock override for TF / TS Size S1 - S2	1
	VC742500	M801R	long red handle 0-1 standard for TF / TS Size S1 - S2	1
	VC744100	M801RDS	long red handle 0-1 with door-interlock override for TF / TS Size S1 - S2	1
	VC756500	M1201	short black handle 0-1 standard for TF / TS Size S3	1
	VC757300	M12C01	short black handle 0-1 with key lock for TF / TS Size S3	1
	VC758100	M12DS01	short black handle 0-1 with door-interlock override for TF / TS Size S3	1
	VC768000	M12R01	short red handle 0-1 standard for TF / TS Size S3	1
	VC770600	M12RDS01	short red handle 0-1 with door-interlock override for TF / TS Size S3	1
	VC771400	M1301	long black handle 0-I standard for TF / TS Size S4	1
	VC772200	M13C01	short black handle 0-I with key lock for TF / TS Size S4	1
	VC773000	M13DS01	short black handle 0-I with door-interlock override for TF / TS Size S4	1
	VC783900	M13R01	short red handle 0-I standard for TF / TS Size S4	1
	VC785400	M13RDS01	long red handle 0-I with door-interlock override for TF / TS Size S4	1

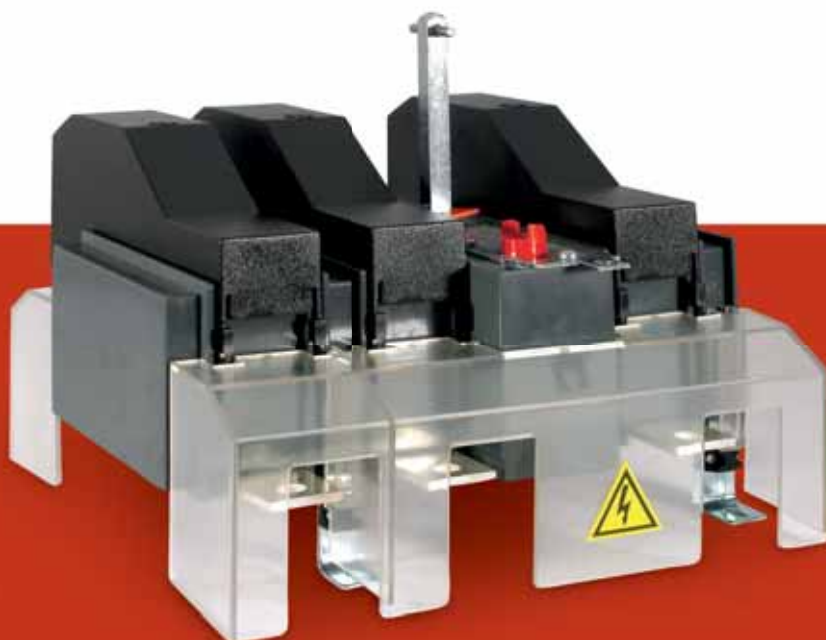
	Code	Model	Description	Pack
	VC792000	G12	handle washer IP55 for TF / TS (S3-S4); TSC / TSD (S1-S2)	1
	VC748200	G8	handle washer IP55 for TF (S0-S1-S2); TS (S1-S2)	1

	Code	Model	Description	Pack
	C10B	C10B	auxiliary contact 1NO for TS size S1-S2	5
	C01B	C01B	auxiliary contact 1NC for TS size S1-S2	5
	VC846400	AU1	auxiliary contacts 1NO for TF / TS / TSC / TSD size S3-S4	1
	VC847200	AU2	auxiliary contacts 1NC for TF / TS / TSC / TSD size S3-S4	1
	VC848000	AU3	auxiliary contacts 1NO+1NC for TF / TS / TSC / TSD size S3-S4	1
	VC849800	AU4	auxiliary contacts 1NO+1NO for TF / TS / TSC / TSD size S3-S4	1
	VC851400	AU6	auxiliary contacts 2NO+2NC for TF / TS / TSC / TSD size S3-S4	1
	VC852200	AU7	auxiliary contacts 2NO+2NO for TF / TS / TSC / TSD size S3-S4	1
	VC853000	AU8	auxiliary contacts 2NC+2NC for TF / TS / TSC / TSD size S3-S4	1



CHANGE-OVER AND DEVIATOR SWITCHES

TSC series
TSD series



03

Main features

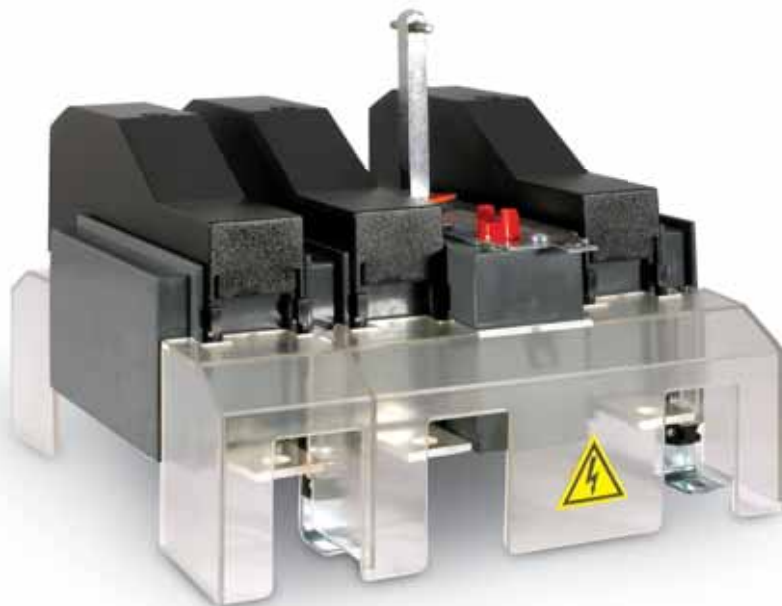
TSC / TSD are respectively change-over switches (II-0-I POSITIONS) and deviator switches (II-I POSITIONS) with manual operation.

Typical applications are:

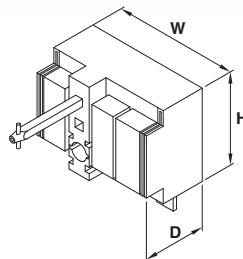
- a) change-over
- b) network inversion
- c) on-load change over of two circuits
- d) safety isolation

Main features and characteristics are:

- Reduced dimensions
- Polyester self-extinguishing and anti-trace insulating housing
- Fix and moving contacts in silver-plated electrolytic copper
- Manual operating device fitted in the insulating case in central position
- High thermal and dynamic performances
- Padlocking facility up to 3 padlocks
- 3 and 4 pole versions
- 4 pole switch-disconnectors suitable for all-phase breaking (the Neutral contact closes before and opens after the phases)



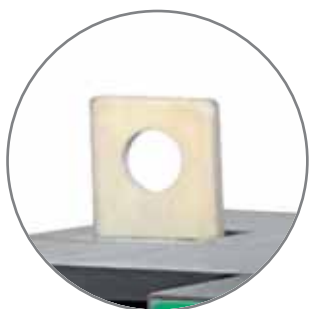
Two contact ■
block in series
result in
4 breaking
per phase



Measures * in mm (in)		H	W	D
Size S1 250A÷630A	3 pole	218	260 (10.24")	121 ÷ 123
	4 pole	(8.58")	307 (12.09")	(4.76" ÷ 4.84")
Size S2 800A÷1600A	3 pole	292	320 (12.60")	137 ÷ 139
	4 pole	(11.5")	392 (15.43")	(5.39" ÷ 5.47")

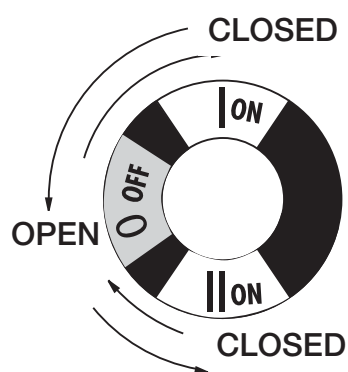
Note: * dimensions H and D depend on the extension and position of the current bars. They may change with the rating.
Shaft or other installed accessories are not considered.

- The actuator always respects the real position of the contacts. This type of control is called "positive operation". The auxiliary contacts are directly acted from the operating mechanism.
- Suitable for polluted ambient and tropical climates according to IEC 68-2 Standards



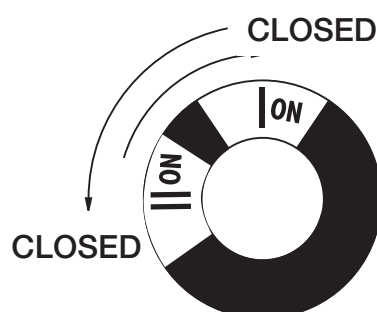
■ **TSC / TSD**
Bolt connection

**TSC
change-over**



■ II-0-I

**TSD
deviator**



■ II-I

A complete range of optional accessories allows the use of TSC / TSD in several installations. Standard bundle handle with door interlock in closed position. Standard handle is IP54 (IP55 using an optional handle washer) and can be locked in open position with max 3 padlocks.



Handle M1203
for TSC in Size S1



Handle size M1205
for TSD in Size S1



Handle size M1303
for TSC in Size S2



Handle size M1305
for TSD in Size S2

Note: 6-8 pole versions are available on request.

Technical data IEC/EN 60947-3

SIZE

Rated insulation voltage	Ui	V
Rated impulse withstand voltage	Uimp	kV
Rated thermal current for open switch	Ie	A
Number of poles		
Power dissipation each pole	W	
Rated operating current Ie		
AC-21A Switching of resistive loads, including moderate overloads	690V	A
AC-22A Switching of mixed resistive loads, including moderate overloads	690V	A
AC-23A Switching of motor loads or other highly inductive loads 3 phase - 3 pole	415V	A
	690V	A
DC-21A Switching of resistive loads, including moderate overloads	500V	A
DC-22A Switching of mixed resistive loads, including moderate overloads	500V	A
DC-23A Switching of motor loads or other highly inductive loads	400V	A
Reactive power ¹	380V	kVAr
Rated short time withstand current (1s)	Icw	kA
Rated short-circuit make capacity	Icm	kA
Mechanical life (no. of operations)		nr.
Electrical life (no. of operations)		nr.
Switching time I-O-II or II-O-I (for TSC series)		s
Weight		
3 pole with link bar covers		Kg
4 pole with link bar covers (4° leaning pole)		Kg

Note:

¹ = due to the presence of harmonics and to the tolerances of capacitors, nominal values must be reduced by 33%

² = data about the 6 and 8 pole versions are available on request

Normal service, mounting and transportation conditions

- storage and transport ambient temperature -25° C + 55° C
 - operative ambient temperature -5° C + 40° C
 - relative humidity max 95%
 - rated frequency 50-60 Hz
 - altitude max 2000 m a.s.l.
 - mounting in enclosure:
 - In case of utilisation at full load and without adequate ventilation, ensure a volume of about 5 time the volume of the switch.
 - Performances shall be derated up to 40% according to the environmental temperature.
- For other operating conditions please contact Brema.

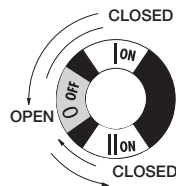
Reference Standards

Change-over switches and deviators are designed, manufactured and tested in compliance with **EN 60947-6-1**.

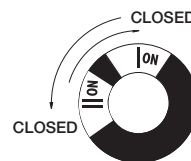
disconnect switches

TSC0250 TSD0250	TSC0400 TSD0400	TSC0630 TSD0630	TSC0800 TSD0800	TSC1000 TSD1000	TSC1250 TSD1250	TSC1600 TSD1600
S1	S1	S1	S2	S2	S2	S2
1000	1000	1000	1000	1000	1000	1000
8	8	8	12	12	12	12
250	400	630	800	1000	1250	1600
3-4 ²	3-4 ²	3-4 ²	3-4 ²	3-4 ²	3-4 ²	3-4 ²
4,7	11	25	22,5	34	53	65
250	400	630	800	1000	1250	1600
250	400	630	800	1000	1250	1600
250	400	630	800	1000	1250	1600
125	160	200	250	315	400	500
250	400	630	800	1000	1250	1600
250	400	630	800	1000	1250	1600
200	250	400	630	800	1000	1000
100	150	250	300	375	450	550
12,5	15	16	30	32	35	35
25	30	32	60	70	73,5	73,5
8000	5000	5000	3000	3000	3000	3000
1000	1000	1000	500	500	500	500
2,5	2,5	2,5	2,5	2,5	2,5	2,5
7	7	7,5	11	15	19	19
7,8	7,8	8,3	17	18,5	20,5	20,5

Change-over switches



Deviator switches



Disconnect switches

	Size	Ie AC21	poles	Code	Model	Pack	Code	Model	Pack
	S1	250	3	VC540300	TSC02503M1203	1	VD555000	TSD02503M1205	1
			4	VC541100	TSC02504M1203	1	VD556800	TSD02504M1205	1
		400	3	VC542900	TSC04003M1203	1	VD559200	TSD04003M1205	1
			4	VC543700	TSC04004M1203	1	VD560000	TSD04004M1205	1
		630	3	VC544500	TSC06303M1203	1	VD563400	TSD06303M1205	1
			4	VC545200	TSC06304M1203	1	VD564200	TSD06304M1205	1
	S2	800	3	VC546000	TSC08003M1303	1	VD567500	TSD08003M1305	1
			4	VC547800	TSC08004M1303	1	VD568300	TSD08004M1305	1
		1000	3	VC548600	TSC10003M1303	1	VD571700	TSD10003M1305	1
			4	VC549400	TSC10004M1303	1	VD572500	TSD10004M1305	1
		1250	3	VC550200	TSC12503M1303	1	VD575800	TSD12503M1305	1
			4	VC551000	TSC12504M1303	1	VD576600	TSD12504M1305	1
	1600		3	VC857000	TSC16003M1303	1	VC858600	TSD16003M1305	1
			4	VC857800	TSC16004M1303	1	VC859400	TSD16004M1305	1

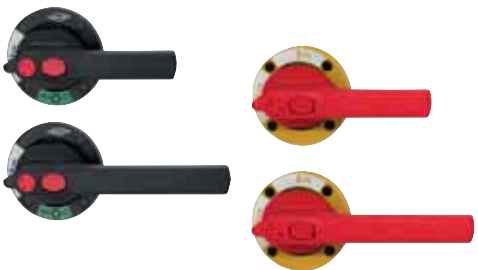
Code	Model	Description	Pack
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VC844900	K4	link bar cover for TSC / TSD Size S1	1
VC845600	K5	link bar cover for TSC / TSD Size S2	1
VD718400	S09	upper terminal cover 3 pole for TSC / TSD Size S1	1
VD719200	I09	lower terminal cover 3 pole for TSC / TSD Size S1	1
VD720000	S09NL	upper terminal cover 4 pole for TSC / TSD Size S1	1
VD721800	I09NL	lower terminal cover 4 pole for TSC / TSD Size S1	1
VD722600	S99	upper terminal cover 3 pole for TSC / TSD Size S2	1
VD723400	I99	lower terminal cover 3 pole for TSC / TSD Size S2	1
VD724200	S99NL	upper terminal cover 4 pole for TSC / TSD Size S2	1
VD725900	I99NL	lower terminal cover 4 pole for TSC / TSD Size S2	1

disconnect switches

	Code	Model	Description	Pack
	VC728400	T8	standard extension shaft L=180mm Q8 for TF / TS Sizes S1-S2	1
	VD700200	T8/1	extension shaft L=280mm Q8 for TF / TS Sizes S1-S2	1
	VC794600	T10	standard extension shaft L=180mm Q10 for TSC / TSD Size S1	1
	VC795300	T10/1	standard extension shaft L=280mm Q10 for TSC / TSD Size S1	1
	VC797900	T12	standard extension shaft L=180mm Q12 for TF / TS Sizes S3-S4 and TSC / TSD Size S2	1
	VC798700	T12/1	standard extension shaft L=280mm Q12 for TF / TS Sizes S3-S4 and TSC / TSD Size S2	1

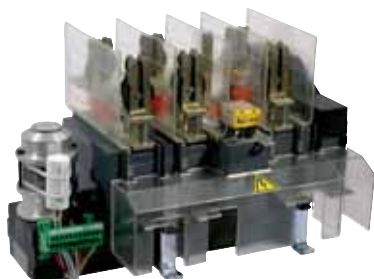
	Code	Model	Description	Pack
	VC762300	M1203	short black handle II-0-I standard for TSC / TSD Size S1-S2	1
	VC763100	M12C03	short black handle II-0-I with key lock for TSC / TSD Size S1-S2	1
	VC764900	M12DS03	short black handle II-0-I with door-interlock override for TSC / TSD Size S1-S2	1
	VC777100	M1303	long black handle II-0-I standard for TSC / TSD Size S2	1
	VC778900	M13C03	short black handle II-0-I with key lock for TSC / TSD Size S2	1
	VC779700	M13DS03	long black handle II-0-I with door-interlock override for TSC / TSD Size S2	1

	Code	Model	Description	Pack
	VC792000	G12	handle washer IP55 for TF / TS (S3-S4); TSC / TSD (S1-S2)	1
	VC748200	G8	handle washer IP55 for TF (S0-S1-S2); TS (S1-S2)	1

	Code	Model	Description	Pack
	VC846400	AU1	auxiliary contacts 1NO for TF / TS / TSC / TSD	1
	VC847200	AU2	auxiliary contacts 1NC for TF / TS / TSC / TSD	1
	VC848000	AU3	auxiliary contacts 1NO+1NC for TF / TS / TSC / TSD	1
	VC849800	AU4	auxiliary contacts 1NO+1NO for TF / TS / TSC / TSD	1
	VC851400	AU6	auxiliary contacts 2NO+2NC for TF / TS / TSC / TSD	1
	VC852200	AU7	auxiliary contacts 2NO+2NO for TF / TS / TSC / TSD	1
	VC853000	AU8	auxiliary contacts 2NC+2NC for TF / TS / TSC / TSD	1

On request

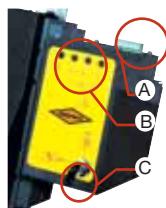
Motor driven change-overs and deviators



Range: 125A ÷ 1600A
 3-4 pole
 Operation directions: II-0-I or II-I
 500V AC 23A 690V AC 22A CEI EN 60947-6-1
 600V DC 22A CEI EN 60947-6-1
 Isolation voltage U_i 1000 V

Electronic control unit

Remotely controls the switch and warnings about possible faults through a local visive signalisation and a remote output.

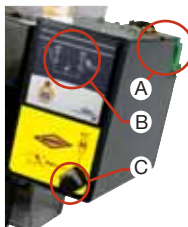


- Abnormal condition signalling LED
- LED to indicate the Main / generator position
- Manual-automatic selector key
- 220V a.c. or 24V d.c. supply voltage

A – Terminal block
 B – Signalling LED
 C – Manual-automatic selector key

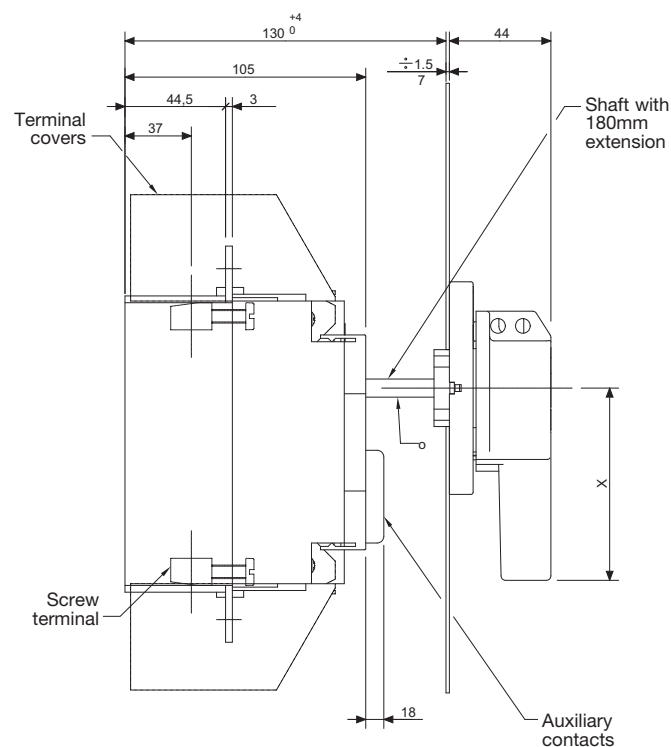
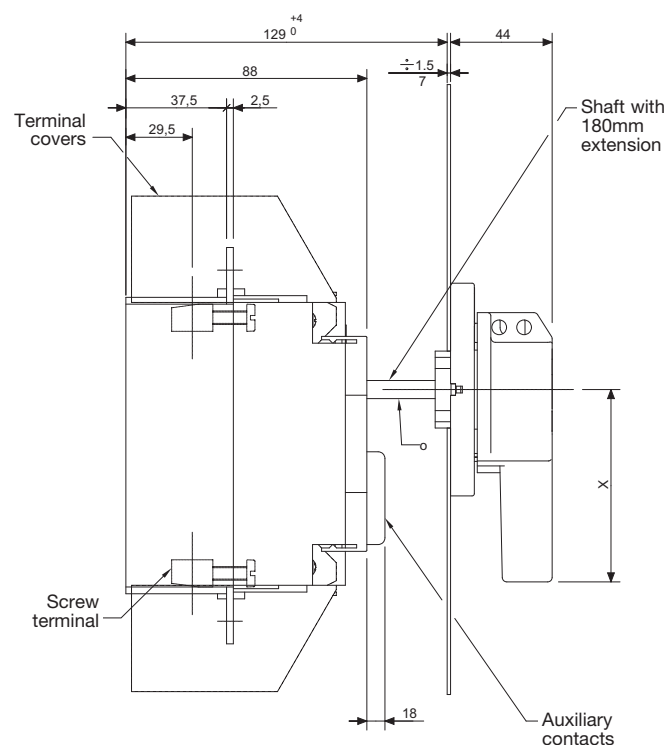
Microprocessor unit MNS

This unit continuously monitors the Main line and automatically switches to the auxiliary generator when the line voltage drops low. It also switches back to the line when its voltage rises back to a normal value.



- Abnormal condition signalling LED
- LED to indicate the Main / generator position
- Manual-automatic selector key
- 220V a.c. or 24V d.c. supply voltage

A – Terminal block
 B – Signalling LED
 C – Manual-automatic selector key

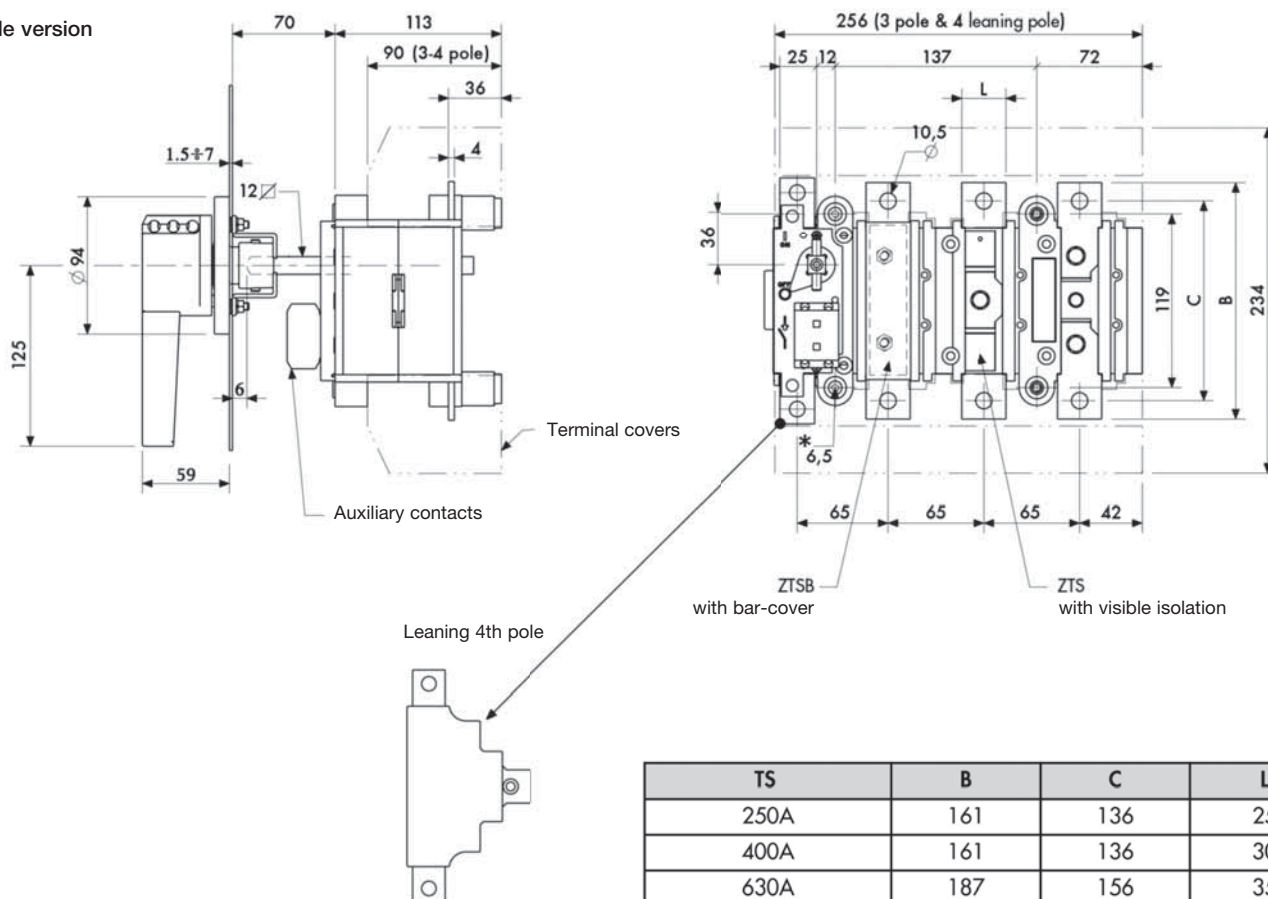


TS, TSC/TSD Series - Dimensions

TS 400A÷630A 3-4 pole - Measures in mm

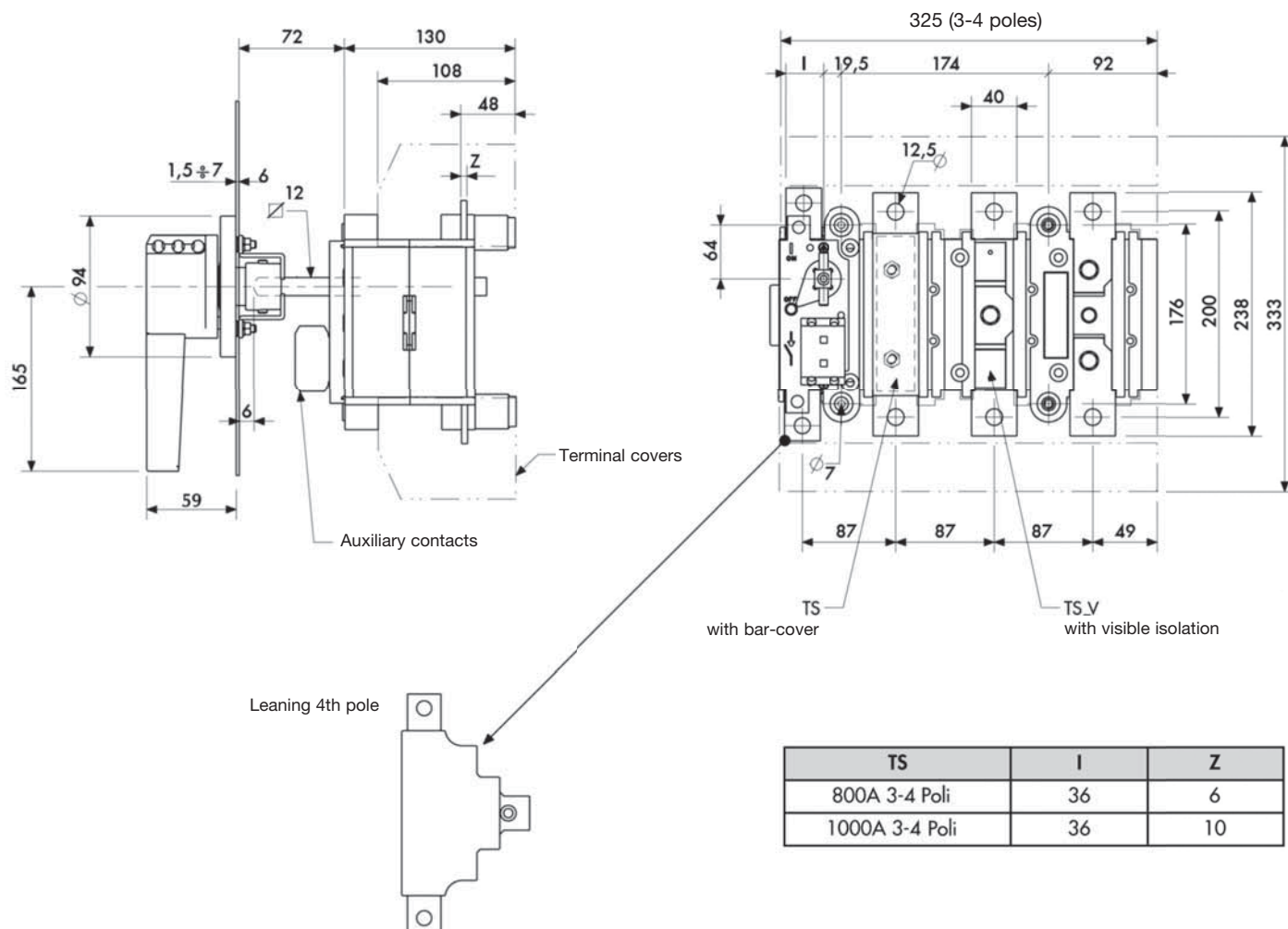
TS Size S3

3-4 pole version



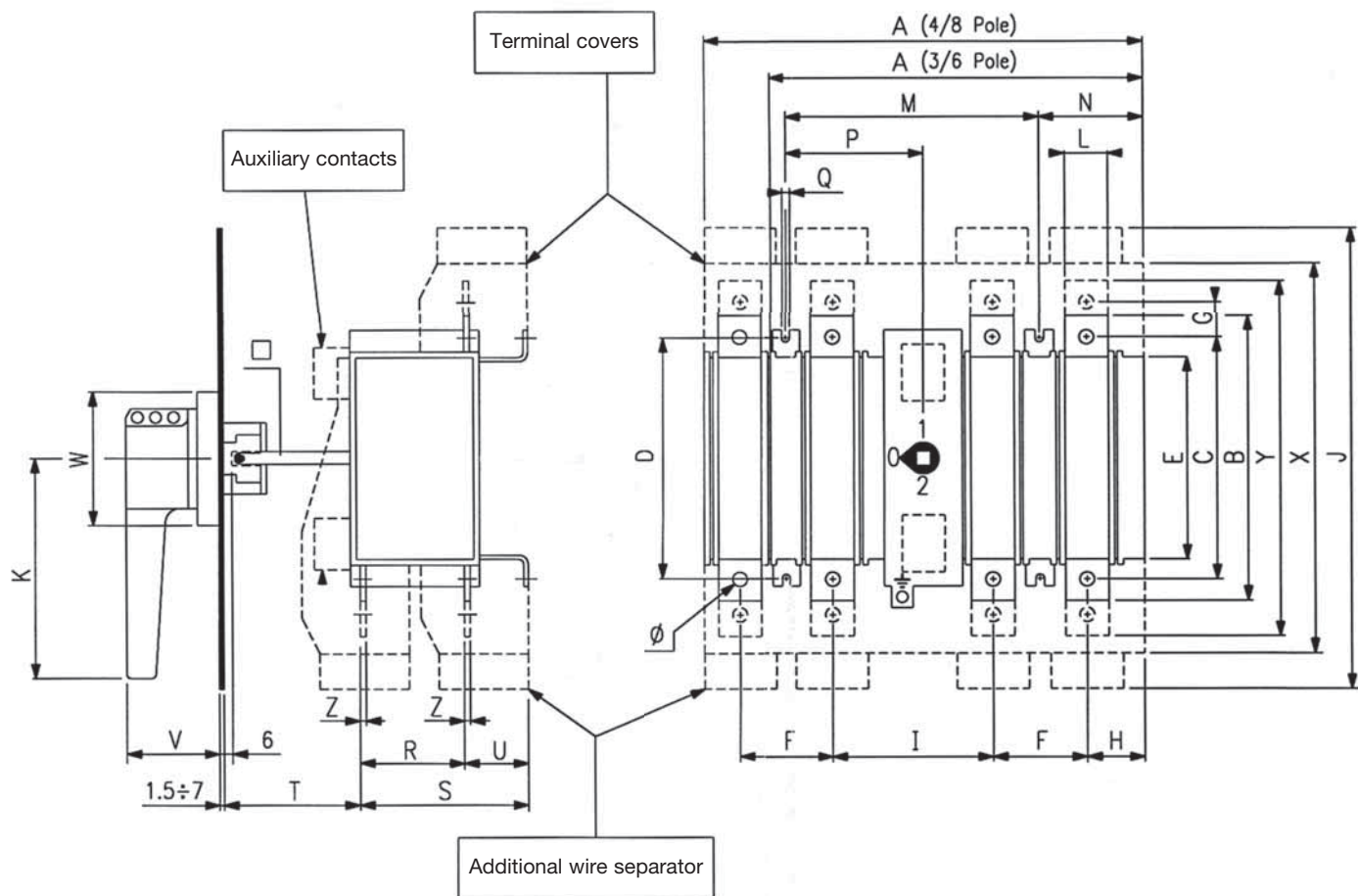
TS	B	C	L
250A	161	136	25
400A	161	136	30
630A	187	156	35

TS 800A÷1000A 3-4 pole - Measures in mm
TS Size S4



Change-over and deviator switches

TSC / TSD - Measures in mm



	TYPE	A 3 pole	A 4 pole	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	R	S	T	U	V	W	X	Y	Z	☐	Ø
Size S1	250A	260	307	218	193	168	142	65	-	39.5	112.3	320	125	25	177	72	96	6.5	77	121	115	43	59	94	274	-	4	10	10.5
	30													78					122	5									
	35													79					123	6									
Size S2	800A	320	392	292	252	230	208	87	-	49	134	435	165	40	221	89	112	6.5	86	137	107	48	59	94	384	-	8	12	13
	30								88										139	10									
																										352	12		

DISCONNECT SWITCHES WITH FUSE-HOLDERS

XNF series
TF series



04

XNF series

TF series

■ Disconnect switches with fuse-holders

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■ XNF 16A and 32A series **195**

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■ Handles and plates*

Base mounting handles IP66	124
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* Handles and plates for XNF 16A and 32A series

Overview

The range of Bremas disconnect switches with fuse holders includes the **XNF and TF series** with current ratings from 16A to 630A.

The double break contacts, have positive opening to guarantee high electrical efficiency and security. The terminals of the XNF series have IP20 protection degree and are provided with captive screws in open position to reduce wiring time.

TF have bolt connection for ring lugs, but a specific version TF_S is available with screw terminals. Terminal covers and additional accessories are optionally available.

	XNF	16A 32A	• Ui/Ue 690V • 3 - 4 pole • Max 10/16 mm² (flex/solid wire) • Screw cage terminals with captive screws • Base mount • 1 additional pole and/or 1 auxiliary contact can be added • For cylindrical fuses type gG or aM - size 10,3x38 for series XNF16 - size 14x51 for series XNF32
		63A 80A 100A 125A	• Ui/Ue 1000V/690V • 690V AC 23A IEC 60947-3 • 600V DC 23A IEC 60947-3 • 3 - 4 pole • Bolt connection for ring lugs or screw terminals • Base mount
	TF	160A 250A 400A 630A	



BETTER SWITCHES

DISCONNECT SWITCHES WITH FUSE-HOLDERS

XNF series



04

Main features

The **XNF series** allows to add the protection of fuses to the operative functionality of a switch disconnecter. The double break contacts, have positive opening to guarantee high electrical efficiency and security. The terminals of the XNF series are provided with captive screws in open position to reduce wiring time. The terminals have IP20 protection degree.



■ 1 additional pole and/or 1 auxiliary contact can be added

Fuses are not included

The fuse holders are suitable for cylindrical fuses type gG or aM:

- size 10,3x38mm for series XNF16
- size 14x51mm for series XNF32

Plates and knobs



BL6

Yellow plate 67x67mm (2.64x2.64"), red padlockable knob (max 3 padlocks), door interlock in "ON" position, IP66



BK6

Grey plate 67x67mm (2.64x2.64"), black padlockable knob (max 3 padlocks), door interlock in "ON" position, IP66

International Standards and approvals

Country	Germany	UK	Switzerland	Denmark	Norway	Sweden	Finland	Austria	Great Britain	IEC International electrical Commission
Authority	Verband Deutscher Elektrotechniker		Schweizerischer Elektrotechnischer Verein	Danmarks Elektriske Materielkontrol	Norges Elektriske Materielkontrol	Svenska Elektriske Materielkontroll-anstalten	Sähötar-kastuskusku	Österreichischer Verband für Elektrotechnik	British Standards Institution	
Mark of standard	VDE 0660 ⁽¹⁾	UK CA	Ⓢ	ⓓ	Ⓝ	Ⓢ	ⓕ	ⓞⓞⓔ	BS EN 60947 ⁽¹⁾	IEC 60947 ⁽²⁾
XNF016	+	+	+	+	+	+	+	+	+	+
XNF032	+	+	+	+	+	+	+	+	+	+

+ Conforms to requirements

Notes:

- 1) It is not required to bear a symbol but switches must conform to requirements.
- 2) IEC does not operate an approval scheme

Technical data IEC/EN 60947-3

XNF16

XNF32

Main characteristics

Rated operating voltage	Ue	V	690	690
Rated insulation voltage	Ui	V	690	690
Rated impulse withstand voltage	Uimp	kV	6	6
Rated thermal current for open switch	Ith	A	16	32
Rated thermal current for enclosed switch	Ithe	A	16	32
Rated operation frequency	Hz		50	50
Power dissipation for each pole	W		1,8*	3,5*

Rated operating current Ie

AC-21A Switching resistive loads, including moderate overloads	690V	A	16	32
AC-22A Switching of mixed resistive and inductive loads, including moderate overloads	690V	A	16	32

Rated operating power

AC-23A Switching of motor loads or other highly inductive loads	230V	Kw (A)	7,5 (24)	10 (33)
	400V	Kw (A)	13 (24)	18,5 (33)
	500V	Kw (A)	13 (16)	18,5 (32)
	690V	Kw (A)	15 (16)	22 (23)
AC-3 Squirrel cage motors: starting, switching off motors during running	230V	Kw (A)	16 (19)	9 (28)
	400V	Kw (A)	10 (18)	15 (27)
	500V	Kw (A)	10 (14)	15 (27)
	690V	Kw (A)	12 (13)	18,5 (23)
Rated breaking capability in category AC-23A (cos φ= 0.45)	230V	A	192	256
	400V	A	240	330

Short circuit protection

Rated short time withstand	Icw	A	400	800
Rated conditional short-circuit		kA	10	10
With fuses class gG	500V	A	16	32

Mechanical characteristics

Mechanical life (120 cycles/hour)	Mil.Man		2	2
Connecting capability with flexible wires	Min-Max	mm ²	1,5-10	1,5-10
Connecting capability with solid wires	Min-Max	mm ²	1,5-16	1,5-16
Connection terminal screw type			M4	M4
Screw tightening torque		Nm	1,4	1,4

Protection degree IEC 529 EN 60529

Terminals			IP20
Handle			IP66

Ambient conditions

Operating ambient temperature	°C	-25 /+ 55
Storage ambient temperature	°C	-30 /+70
Withstand to constant humid according to IEC 60068		sec. IEC 60068 2-78
Withstand to cyclic humid according to IEC 60068		sec. IEC 60068 2-30

Auxiliary contacts

			XC16AN	XC32AN
			XC16CN	XC32CN
Rated insulation voltage	Ui	V	690	
Rated thermal current for open switch	Ith	A	20	40
AC-21A Switching resistive loads, including moderate overloads	690V	A	6	6
AC-15 Control of a.c. elettromagnetic loads	230V	A	20	40

* power dissipated from each fuse

Base mounting *



BL6



BK6

XNF

Rated nom. current	Pole	Part no.	Pack	Part no.	Pack
16A	3	XNF0163BL6	1	XNF0163BK6	1
	4	XNF0164BL6	1	XNF0164BK6	1
32A	3	XNF0323BL6	1	XNF0323BK6	1
	4	XNF0324BL6	1	XNF0324BK6	1

* Base mounting switches are supplied with standard 175mm (6.89") shaft.

Additional pole and auxiliary contacts for XNF 16-32A



Part no.	Description	Pack
<u>XC16AN</u>	4th pole / NO auxiliary contact for 16A base mounting	5
<u>XC16CN</u>	4th pole / NC auxiliary contact for 16A rear mounting	5
<u>XC32AN</u>	4th pole / NO auxiliary contact for 32A base mounting	5
<u>XC32CN</u>	4th pole / NC auxiliary contact for 32A rear mounting	5
<u>XC32GN</u>	Earth pole for XNF 16-32A rear mounting	5

Optional extension shafts



Shafts

Part no.	Description	Pack
PALBL055	Shaft L=55mm - Square section 5 mm	5
PALBL075	Shaft L=75mm - Square section 5 mm	5
PALBL095	Shaft L=95mm - Square section 5 mm	5
PALBL115	Shaft L=115mm - Square section 5 mm	5
PALBL135	Shaft L=135mm - Square section 5 mm	5
PALBL155	Shaft L=155mm - Square section 5 mm	5
PALBL175	Shaft L=175mm - Square section 5 mm	5
PALBL300	Shaft L=300mm - Square section 5 mm	5
PALBL500	Shaft L=500mm - Square section 5 mm	5

Terminal covers

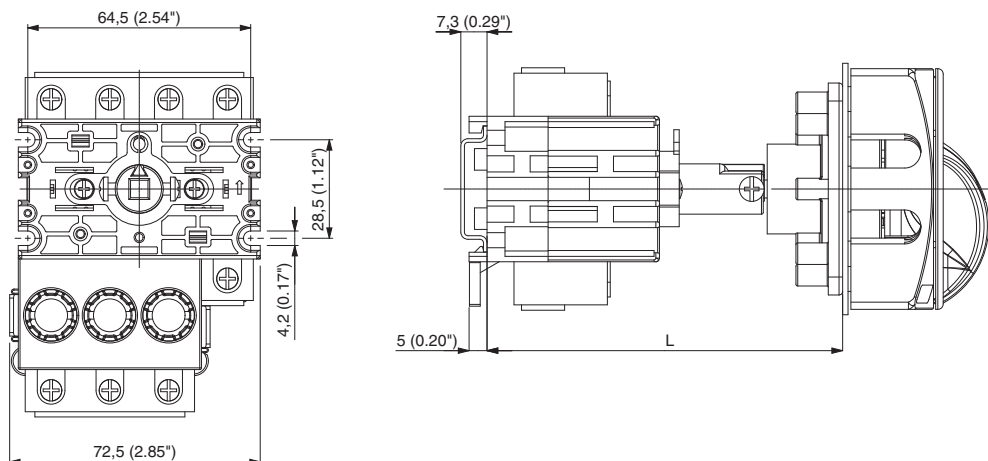


XNF G813

Part no.	Description	Pack.
XNAG813	Couple of terminal covers for XNF 16-32A 3 or 4 pole	5

■ Base mounting

(XNF 16A) - Measures in mm (in)



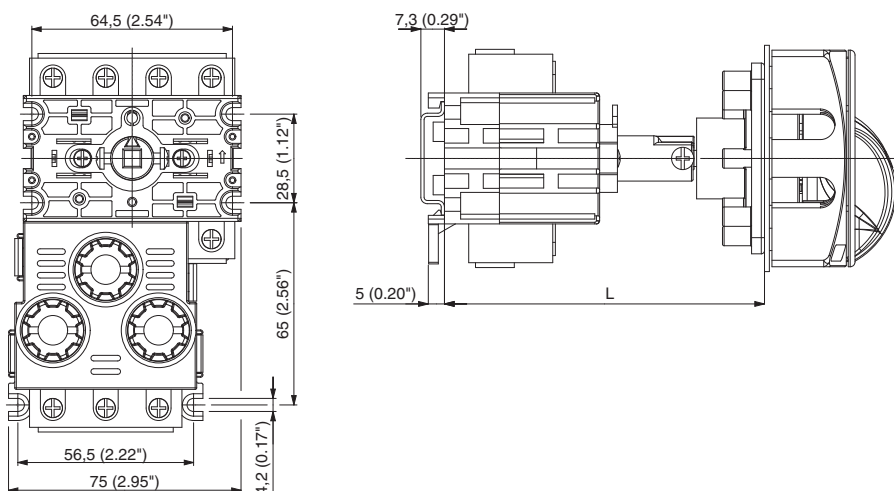
Overall length (min-max)**
for different shaft length (L1):

L1		
175*	L (mm)	99 - 243
6.89*	L (in)	3.90 - 9.57
300	L (mm)	99 - 368
11.81	L (in)	3.90 - 14.49
500	L (mm)	99 - 568
19.68	L (in)	3.90 - 22.36

* Standard shaft, bundled

** Minimum length obtainable
by cutting the shaft.

(XNF 32A)



Overall length (min-max)**
for different shaft length (L1):

L1		
175*	L (mm)	99 - 243
6.89*	L (in)	3.90 - 9.57
300	L (mm)	99 - 368
11.81	L (in)	3.90 - 14.49
500	L (mm)	99 - 568
19.68	L (in)	3.90 - 22.36

* Standard shaft, bundled

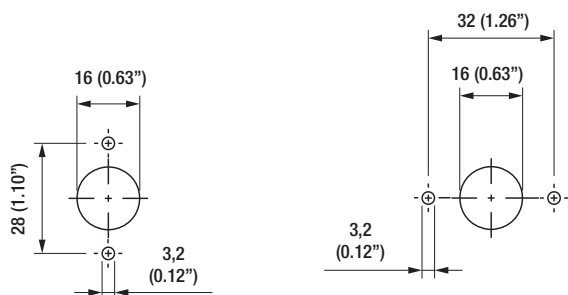
** Minimum length obtainable
by cutting the shaft.

Drilling templates

disconnect switches

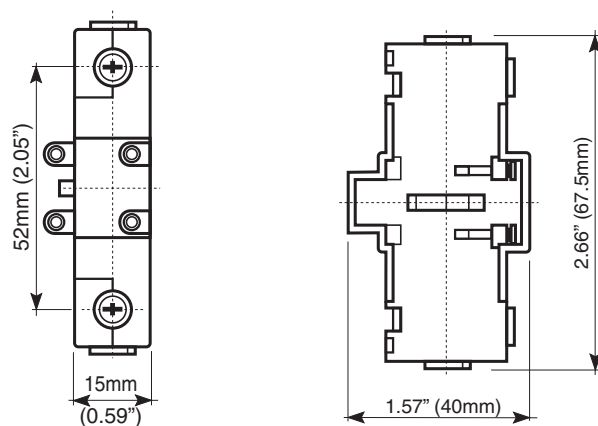
(BL6 - BK6) - Measures in mm (in)

Escutcheon plate



■ Additional pole and auxiliary contacts for XNF 16-32A

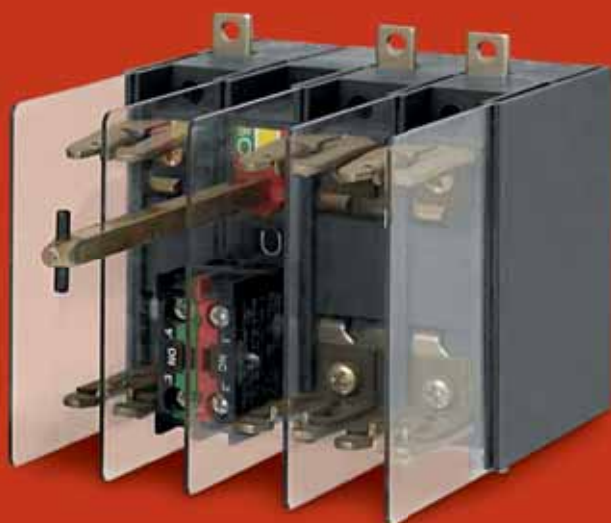
Measures in mm (in)





DISCONNECT SWITCHES WITH FUSE-HOLDERS

TF series



04

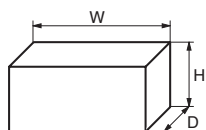
Overview

The switches **series TF** have the following main design features:

- Polyester self-extinguishing and anti-trace insulating housing
- Silver plated electrolytic copper fix and moving contacts
- Double breaking for pole.
- High closing and opening speed, independent from the operator
- Feeder connection is possible either in the upper in on the lower side

Size S0 (63A), Size S1 (80A; 100A)
and Size S2 (125A; 160A)

Size S3 (250; 400A) and
Size S4 (630A)



Measures * in mm (in)		H	W	D
Size S0	3 pole	86	100 (3.94")	103
	4 pole	(3.39")	126 (4.96")	(4.06")
Size S1	3 pole	100	129 (5.08")	136
	4 pole	(3.94")	160 (6.30")	(5.35")
Size S2	3 pole	125	174 (6.85")	157
	4 pole	(4.92")	204 (8.03")	(6.18")

Measures * in mm (in)		H	W	D
Size S3	3 - 4 pole	161 (6.34")	251 (9.88")	197 (7.76")
Size S4	3 - 4 pole	238 (9.37")	325 (12.79")	230 (9.05")

Note: * dimension D is comprehensive of the fuse separators, does not consider the shaft or other installed accessories

Fuses are not
included

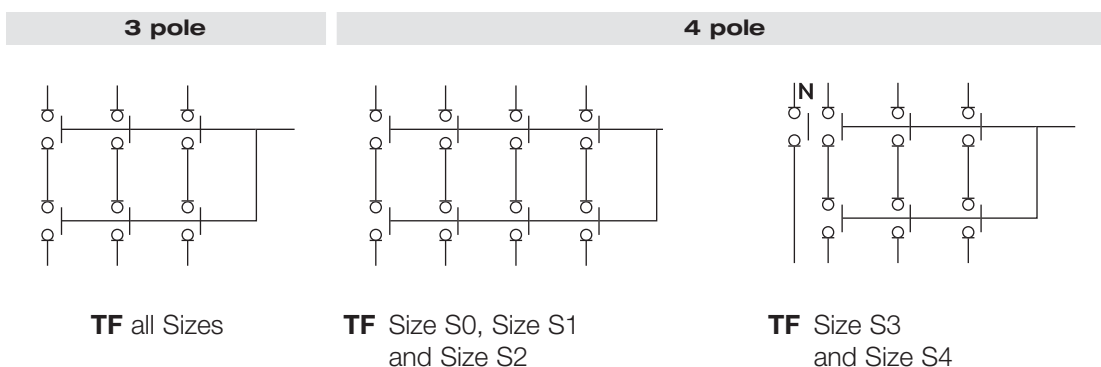
Suitable DIN type fuses* for the different ratings:

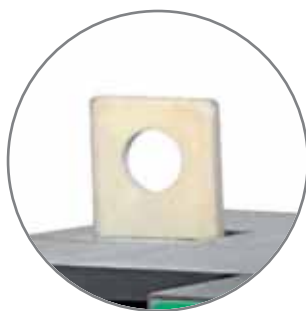
- 63A: DIN/NH00C
- 80A, 100A, 125A, 160A : DIN/NH00
- 250A: size DIN/NH1-2
- 400A: size DIN/NH1-2
- 630A: size DIN/NH3

Versions for BS and NFC type fuses are
available on request.



Two contact
blocks in series
result in
4 breaking
for phase





Bolt connection
is standard on
all the TS range



Screw connection
available up to 100A
rating (TS_S execution)

A complete range of optional accessories allows the use of TF switch-disconnectors with fuse-holders in several installations.

Standard bundle handle with door interlock in closed position and possibility to install a legend with 0-1 positions (IEC Standard) or ON-OFF positions (BS Standard).

Standard handle is IP54 (IP55 using an optional handle washer) and can be locked in open position with max 3 padlocks. Optional handles are available that are padlockable both in open and closed position (door interlock override optional as well).



Handle M601 for TF switches in Size S0.



Handle M801 for TF switches in Size S1 and Size S2.



Handle M1201 for TF switches in Size S3.



Handle M1301 for TF switches in Size S4.

Technical data IEC/EN 60947-3

SIZE

Rated insulation voltage	Ui	V (a.c.)
	Ui	V (d.c.)
Rated impulse withstand voltage	Uimp	kV
Rated thermal current for open switch	Ith	A
Rated thermal current for enclosed switches	Ithe	A
Number of poles		
Power dissipation each pole	W	
Rated operating current Ie		
AC-22A Switching of mixed resistive loads, including moderate overloads	690V	A
	1000V	A
Rated operating power		
AC-23A Switching of motor loads or other highly inductive loads 3 phase - 3 pole	415V	Kw (A)
	500V	Kw (A)
	690V	Kw (A)
DC-23A Switching of motor loads or other highly inductive loads	220V	Kw (A)
	440V	Kw (A)
	600V	Kw (A)
Reactive power ¹	380V	kVAr
Rated short-circuit make capacity	Icw	kA
Mechanical life (no. of operations)	operations	nr.
Electrical life (no. of operations)	operations	nr.
Fuse type	DIN 43620	
Weight		
3 pole	DIN 43620	Kg
4 pole	DIN 43620	Kg

Note:

¹ = due to the presence of harmonics and to the tolerances of capacitors, nominal values must be reduced by 33%

Normal service, mounting and transportation conditions

- storage and transport ambient temperature -25° C + 55° C
- operative ambient temperature -5° C + 40° C
- relative humidity max 95%
- rated frequency 50-60 Hz
- altitude max 2000 m a.s.l.
- mounting in enclosure:

In case of utilisation at full load and without adequate ventilation, ensure a volume of about 5 time the volume of the switch.

Performances shall be derated up to 40% according to the environmental temperature.

For other operating conditions please contact Bremas.

disconnect switches

TF063	TF080	TF100	TF125	TF160	TF250	TF400	TF630
S0	S1	S1	S2	S2	S3	S3	S4
1000	1000	1000	1000	1000	1000	1000	1000
600	600	600	1000	1000	1000	1000	1000
6	6	6	8	9	10	11	12
63	80	100	125	160	250	400	630
50	80	80	110	150	200	340	550
3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4
2,2	3,5	5,5	4,8	6,6	12	28	40
63	80	100	-	-	-	-	-
-	-	-	125	160	250	400	630
30 (63)	35 (80)	45 (100)	55 (125)	75 (160)	132 (250)	200 (400)	355 (630)
40 (63)	40 (80)	63 (100)	75 (125)	100 (160)	160 (250)	280 (400)	425 (630)
45 (63)	55 (80)	80 (100)	90 (125)	140 (160)	220 (250)	375 (400)	560 (630)
14(63)	18(80)	22(100)	28(125)	35(160)	55(250)	88(400)	139(630)
28(63)	35(80)	44(100)	55(125)	70(160)	110(250)	176(400)	277(630)
30(50)	48(80)	48(80)	75(125)	96(160)	150(250)	240(400)	378(630)
31	40	50	60	75	125	250	315
100	100	100	100	100	100	100	100
10000	10000	10000	8000	8000	8000	5000	5000
1500	1500	1500	1000	1000	1000	1000	1000
00-C	0	0	00-0	00-0	1-2	1-2	3
0,8	1,4	1,4	2,1	2,1	5	5,2	9,5
0,9	1,5	1,5	2,8	2,8	5,2	5,4	10,2

with bolt connections



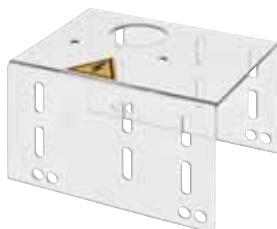
with bolt connections



Disconnect switches with fuse-holders

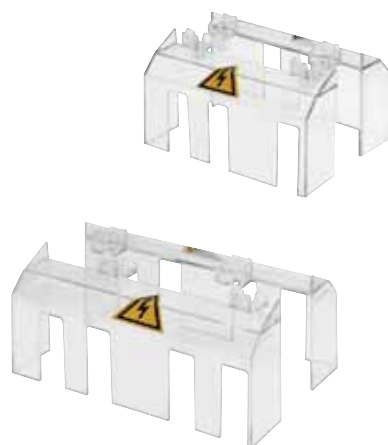
	Size	Ie AC21	poles	Code	Model	Pack	Code	Model	Pack
	S0	63	3	VC307700	TF0633M6010C	1	VC315000	TF0633SM6010C	1
			4	VC308500	TF0634M6010C	1	VC316800	TF0634SM6010C	1
	S1	80	3	VC309300	TF0803M80102	1	VC317600	TF0803SM80102	1
			4	VC310100	TF0804M80102	1	VC318400	TF0804SM80102	1
		100	3	VC311900	TF1003M80102	1	VC319200	TF1003SM80102	1
			4	VC312700	TF1004M80102	1	VC320000	TF1004SM80102	1
	S2	125	3	VD500600	TF1253M80102	1	-	-	-
			4	VD501400	TF1254M80102	1	-	-	-
		160	3	VD502200	TF1603M80102	1	-	-	-
			4	VD503000	TF1604M80102	1	-	-	-
	S3	250	3	VC357200	TF2503M120102	1	-	-	-
			4	VC358000	TF2504M120102	1	-	-	-
		400	3	VC359800	TF4003M120103	1	-	-	-
			4	VC360600	TF4004M120103	1	-	-	-
	S4	630	3	VC361400	TF6303M120104	1	-	-	-
			4	VC362200	TF6304M120104	1	-	-	-

Code	Model	Description	Pack
------	-------	-------------	------



VC714400	SD3F	fuse protection shield DIN 3 pole for TF Size S0	1
VC715100	SD4F	fuse protection shield DIN 4 pole for TF Size S0	1
VC718500	SD31	fuse protection shield DIN 3 pole for TF Size S1	1
VD689700	SD41	fuse protection shield DIN 4 pole for TF Size S1	1
VD690500	SD32	fuse protection shield DIN 3 pole for TF Size S2	1
VD691300	SD42	fuse protection shield DIN 4 pole for TF Size S2	1
VC815900	S33	fuse protection shield 3 pole o 4 pole add. for TF Size S3	1
VC816700	S333	fuse protection shield 3 pole o 4 pole add. for TF Size S4	1

disconnect switches

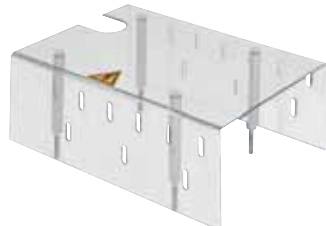


Code	Model	Description	Pack
VC719300	S03	upper terminal cover 3 pole for TF Size S0	1
VC720100	S04	upper terminal cover 4 pole for TF Size S0	1
VC721900	I03	lower terminal cover 3 pole for TF Size S0	1
VC722700	I04	lower terminal cover 4 pole for TF Size S0	1
VC723500	S31	upper terminal cover 3 pole for TF / TS Size S1	1
VD692100	I31	lower terminal cover 3 pole for TF / TS Size S1	1
VC724300	S41	upper terminal cover 4 pole for TF / TS Size S1	1
VD693900	I41	lower terminal cover 4 pole for TF / TS Size S1	1
VD694700	S32	upper terminal cover 3 pole for TF / TS Size S2	1
VD696200	I32	lower terminal cover 3 pole for TF / TS Size S2	1
VD695400	S42	upper terminal cover 4 pole for TF / TS Size S2	1
VD697000	I42	lower terminal cover 4 pole for TF / TS Size S2	1
VC804300	S123	upper terminal cover 3 pole and 4 pole add. for TF / TS Size S3	1
VC805000	I123	lower terminal cover 3 pole and 4 pole add. for TF / TS Size S3	1
VC806800	S203	upper terminal cover 3 pole and 4 pole add. for TF / TS Size S4	1
VC807600	I203	lower terminal cover 3 pole and 4 pole add. for TF / TS Size S4	1



Code	Model	Description	Pack
VC727600	T6	standard extension shaft L=180mm Q6 for TF Size S0	1
VD699600	T6/1	extension shaft L=280mm Q6 for TF Size S0	1
VC728400	T8	standard extension shaft L=180mm Q8 for TF / TS Sizes S1-S2	1
VD700200	T8/1	extension shaft L=280mm Q8 for TF / TS Sizes S1-S2	1
VC797900	T12	standard extension shaft L=180mm Q12 for TF / TS Sizes S3-S4 and TSC / TSD Size S2	1
VC798700	T12/1	standard extension shaft L=280mm Q12 for TF / TS Sizes S3-S4 and TSC / TSD Size S2	1

	Code	Model	Description	Pack
	VC730000	M601	short black handle 0-1 standard for TF Size S0	1
	VC732600	M601DS	short black handle 0-I with door-interlock override for TF Size S0	1
	VC741700	M601RDS	short red handle 0-I with door-interlock override for TF Size S0	1
	VC733400	M801	long black handle 0-1 standard for TF/ TS Size S1-S2	1
	VC735900	M801DS	long black handle 0-1 with door-interlock override for TF / TS Size S1-S2	1
	VC739100	M601R	short red handle 0-1 standard for TF Size S0	1
	VC742500	M801R	long red handle 0-1 standard for TF / TS Size S1-S2	1
	VC744100	M801RDS	long red handle 0-1 with door-interlock override for TF / TS Size S1-S2	1
	VC756500	M1201	short black handle 0-1 standard for TF / TS Size S3	1
	VC757300	M12C01	short black handle 0-1 with key lock for TF / TS Size S3	1
	VC758100	M12DS01	short black handle 0-1 with door-interlock override for TF / TS Size S3	1
	VC768000	M12R01	short red handle 0-1 standard for TF / TS Size S3	1
	VC770600	M12RDS01	short red handle 0-1 with door-interlock override for TF / TS Size S3	1
	VC771400	M1301	long black handle 0-I standard for TF / TS Size S4	1
	VC772200	M13C01	short black handle 0-I with key lock for TF / TS Size S4	1
	VC773000	M13DS01	short black handle 0-I with door-interlock override for TF / TS Size S4	1
	VC783900	M13R01	short red handle 0-I standard for TF / TS Size S4	1
	VC785400	M13RDS01	long red handle 0-I with door-interlock override for TF / TS Size S4	1

	Code	Model	Description	Pack
	VC822500	S55	protection shield 3 pole o 4 pole add. for TS / TF Size S3	1
	VC824100	S555	protection shield 3 pole o 4 pole add. for TS / TF Size S4	1

disconnect switches



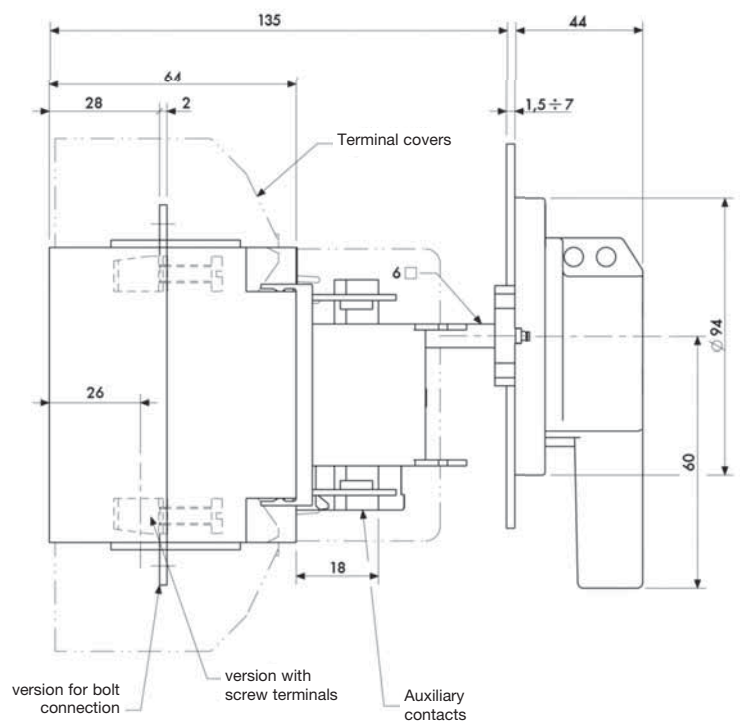
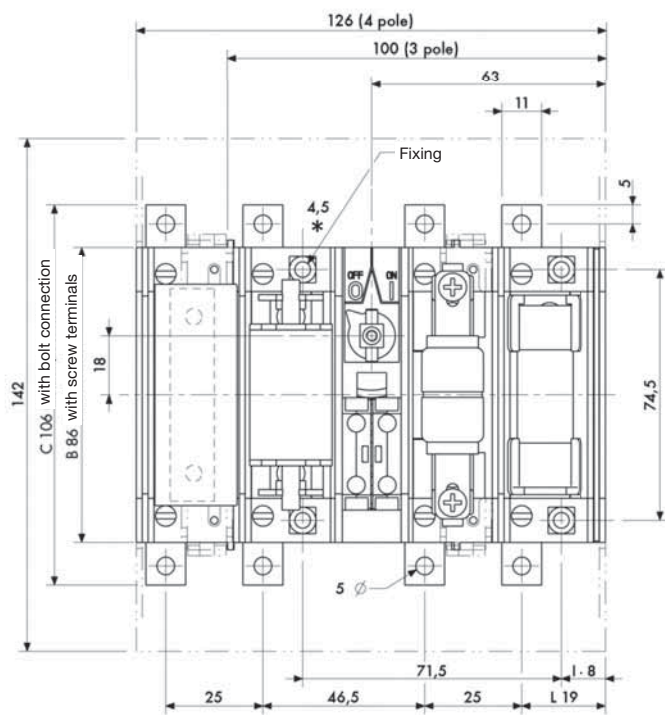
Code	Model	Description	Pack
VC792000	G12	handle washer IP55 for TF / TS (S3-S4); TSC / TSD (S1-S2)	1
VC748200	G8	handle washer IP55 for TF (S0-S1-S2); TS (S1-S2)	1



Code	Model	Description	Pack
C10B	C10B	auxiliary contact 1NO for TF size S0-S1-S2	5
C01B	C01B	auxiliary contact 1NC for TF size S0-S1-S2	5
VC846400	AU1	auxiliary contacts 1NO for TF / TS / TSC / TSD size S3-S4	1
VC847200	AU2	auxiliary contacts 1NC for TF / TS / TSC / TSD size S3-S4	1
VC848000	AU3	auxiliary contacts 1NO+1NC for TF / TS / TSC / TSD size S3-S4	1
VC849800	AU4	auxiliary contacts 1NO+1NO for TF / TS / TSC / TSD size S3-S4	1
VC851400	AU6	auxiliary contacts 2NO+2NC for TF / TS / TSC / TSD size S3-S4	1
VC852200	AU7	auxiliary contacts 2NO+2NO for TF / TS / TSC / TSD size S3-S4	1
VC853000	AU8	auxiliary contacts 2NC+2NC for TF / TS / TSC / TSD size S3-S4	1

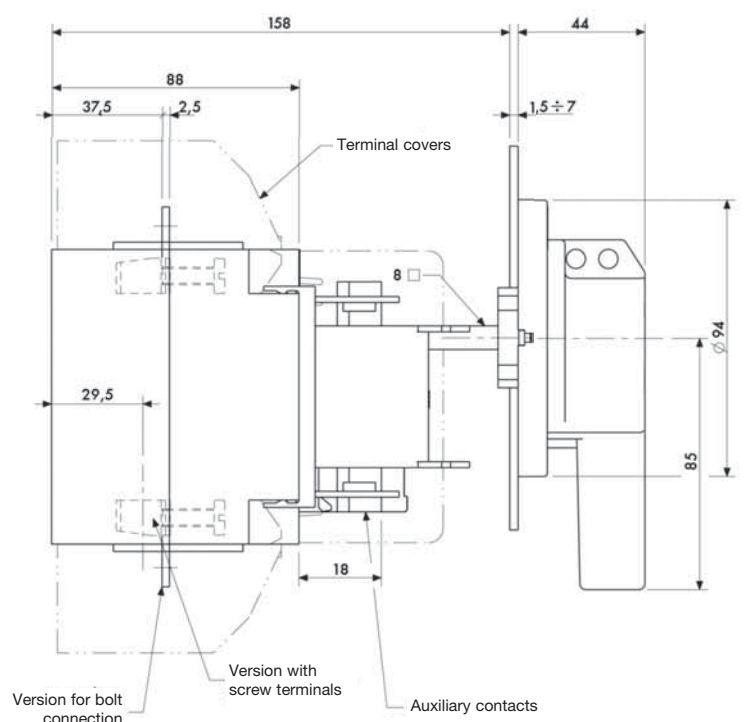
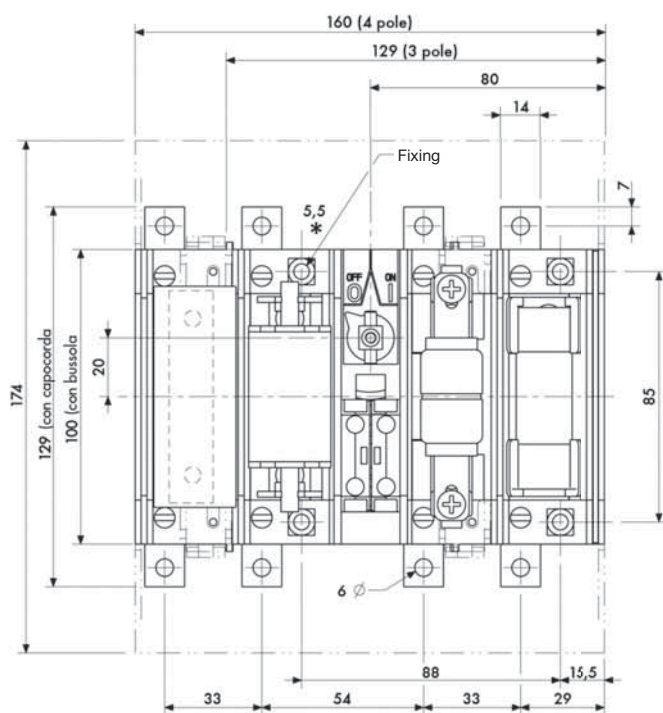
TF 63A - Measures in mm

TF Size S0



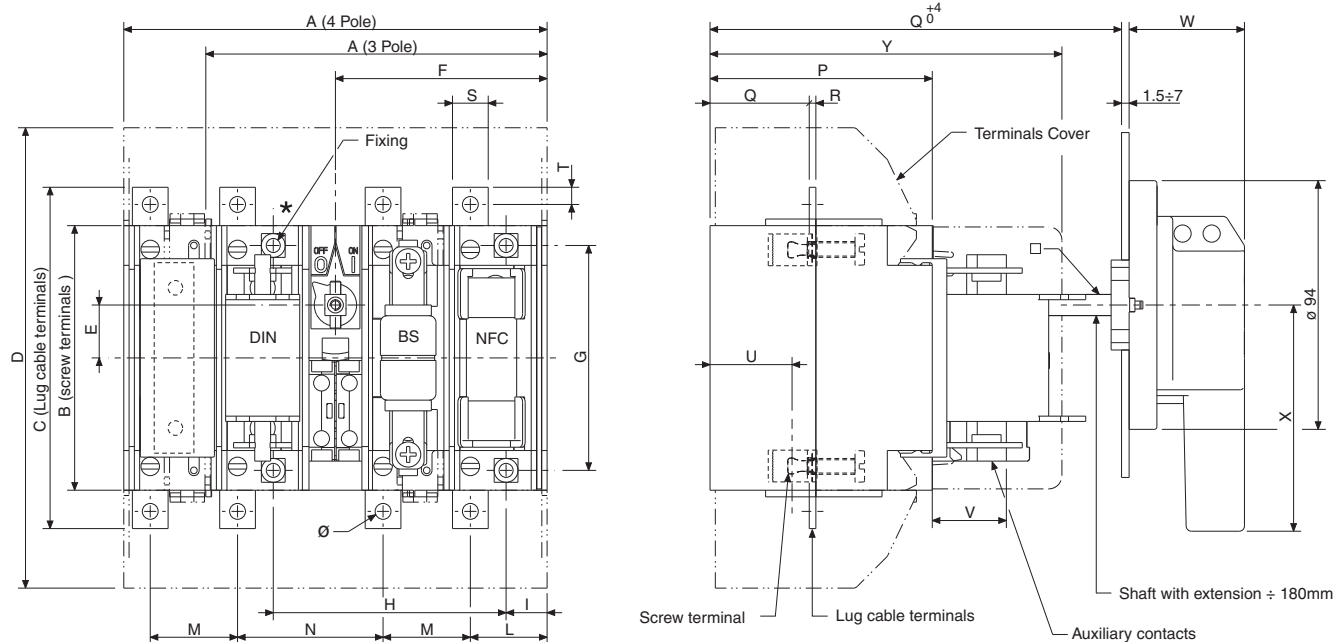
TF 80A ÷ 100A - Measures in mm

TF Size S1



TF 125A ÷ 160A - Measures in mm

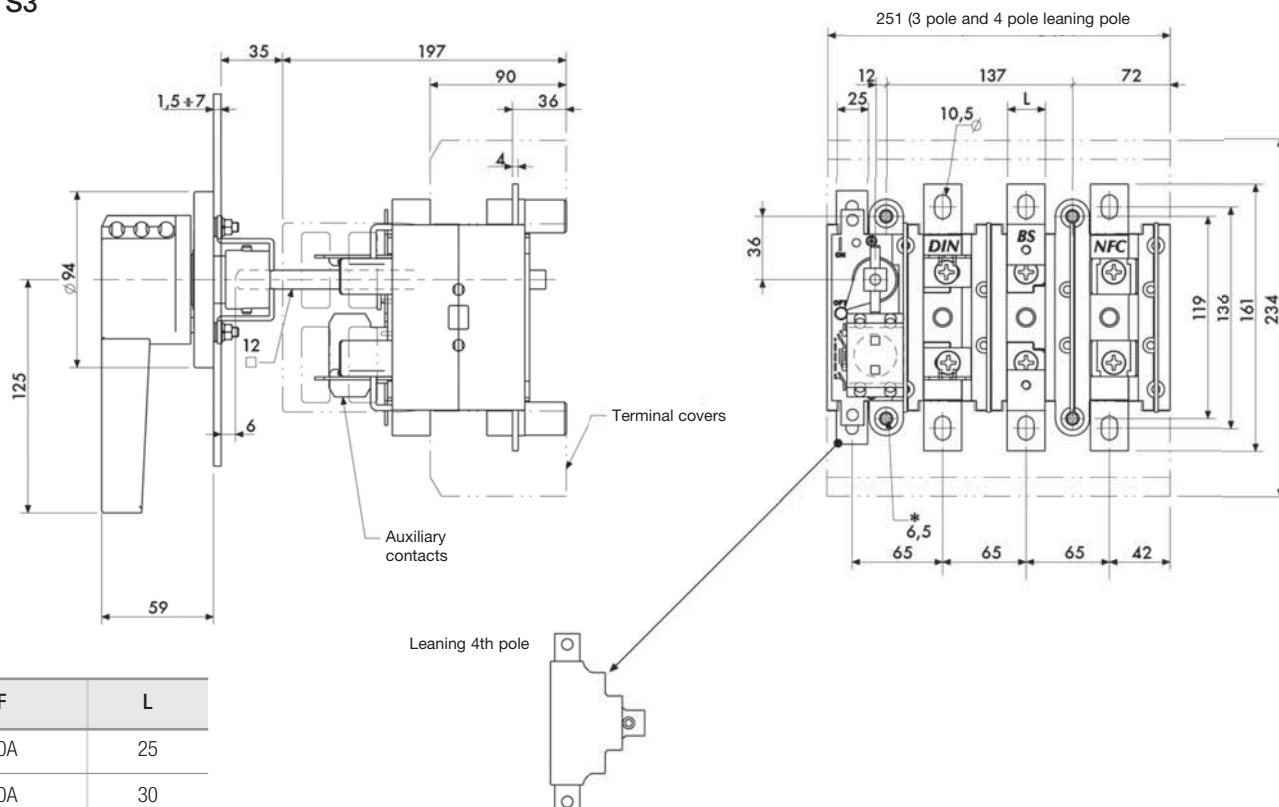
TF Size S2



A 3 pole	A 4 pole	B	C	D	E	F	G	H	I	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	*	Ø	∇
174	204	125	175	219	24	102	110	110	12	35	44	66	186	105	44.5	3	25	10	37	18	44	85	157	5.5	8.5	8

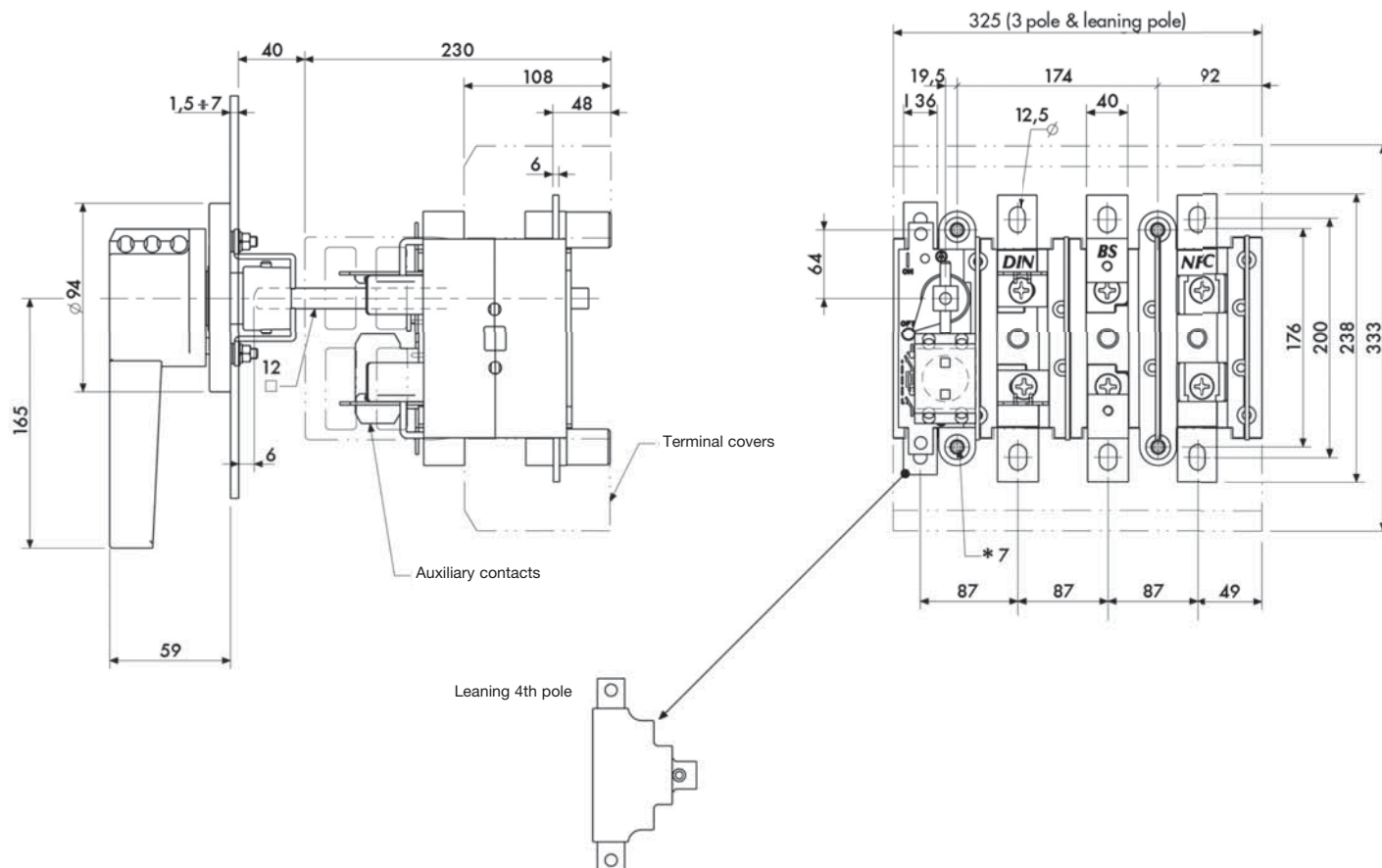
TF 250A ÷ 400A - Measures in mm

TF Size S3



TF	L
250A	25
400A	30

TF 630A - Measures in mm
TF Size S4





ENCLOSED SOLUTIONS



04

Bremas offers a complete range of enclosed solutions with cutting-edge construction details and in line with market needs, which guarantee suitability in multiple applications: motor control, line sectioning, commutation. All boxes are made with ABS material and offer IP65 degree of protection. Versions with front drive or lateral lever drive are available.



- Protection degree up to IP65
- Front or Lateral lever drive
- Double insulated thermoplastic enclosures
- Terminals for 4 wires systems
- Padlockable handle in "OFF" position and Cover interlock in "ON" position for the Front drive operated versions
- Trace and knock-outs to easy the wiring in the installation

Thermoplastic enclosures

	Type	Dimensions	Handle type		Additional	Characteristics	
	B95	120 x 95 x 78 mm 4.72 x 3.74 x 3.07 in	Front drive. Padlockable handle in "OFF" position	ABS IP65 Double insulated	Cover interlock in "ON" position	Terminals for 4 wires systems (3 phase+PE)	2xM20 knock-outs on two sides, 2xPg16 on one side and on the base of the enclosure
	B110	125 x 110 x 78 mm 4.92 x 4.33 x 3.07 in	Front drive. Padlockable handle in "OFF" position	ABS IP65 Double insulated	Cover interlock in "ON" position	Terminals for 4 wires systems (3 phase+PE)	2xM20 knock-outs on two sides, 2xPg16/M20 on the lower and upper sides of the enclosure
	B140	140x165x80,5 mm 5.51 x 6.50 x 3.17 in	Front drive. Padlockable handle in "OFF" position	ABS IP65 Double insulated	Cover interlock in "ON" position	Terminals for 4 wires systems (3 phase+PE)	2xPg 16 /21 traces on each side of the enclosure
	S31	120 x 95 x 78 mm 4.72 x 3.74 x 3.07 in	Lateral lever drive	ABS IP65 Double insulated	-	Terminals for 4 wires systems (3 phase+PE)	2xM20 knock-outs on two sides, 2xPg16 on one side and on the base of the enclosure



B95

120 x 95 x 78 mm
4.72 x 3.74 x 3.07 in

Plate type



RL6

Yellow plate 67x67mm (2.64x2.64"),
red padlockable knob (max 3 padlocks)

■ IP65, ABS enclosures with front drive, padlockable handle

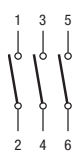
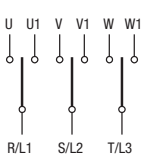
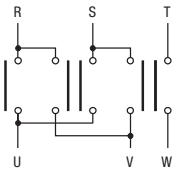
	Circuit diagram	Function	I _e	Part no.	Pack
 00G3		ON-OFF switch 3 pole with padlockable handle	12A	CA01200G3B95RL6	1
			16A	CA01600G3B95RL6	1
			20A	CA02000G3B95RL6	1
			25A	CA02500G3B95RL6	1
			32A	CA03200G3B95RL6	1
 00G4		ON-OFF switch 4 pole with padlockable handle	12A	-	-
			16A	CA01600G4B95RL6	1
			20A	CA02000G4B95RL6	1
			25A	-	-
			32A	CA03200G4B95RL6	1
 0007		Change-over switch with padlockable handle	12A	CA0120007B95RL6	1
			16A	CA0160007B95RL6	1
			20A	CA0200007B95RL6	1
			25A	-	-
			32A	-	-
 0008		Reversing switch with padlockable handle	12A	CA0120008B95RL6	1
			16A	CA0160008B95RL6	1
			20A	CA0200008B95RL6	1
			25A	-	-
			32A	-	-

	Plate type		
			
B110 125 x 110 x 78mm (4.92 x 4.33 x 3.07 in)	AL6 Yellow plate 67x67mm (2.64 x 2.64"), red padlockable knob (max 3 padlocks)	AK6 Grey plate 67x67mm (2.64 x 2.64"), black padlockable knob (max 3 padlocks)	

■ IP65, ABS enclosures with front drive, padlockable handle and cover interlock

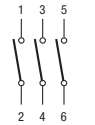
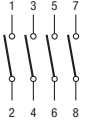
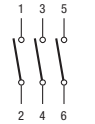
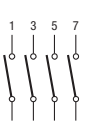
	Circuit diagram	Poles	I _e	Part no.	Pack	Part no.	Pack
		3	20A	SB0203B110AL6	1	SB0203B110AK6	1
			32A	SB0323B110AL6	1	SB0323B110AK6	1
			40A	SB0403B110AL6	1	SB0403B110AK6	1
		3+N	20A	SB0204B110AL6	1	SB0204B110AK6	1
			32A	SB0324B110AL6	1	SB0324B110AK6	1
			40A	SB0404B110AL6	1	SB0404B110AK6	1

	Plate type		
			
B140 140 x 165 x 80,5 mm (5.51 x 6.50 x 3.17 in)	AL6 Yellow plate 67x67mm (2.64 x 2.64"), red padlockable knob (max 3 padlocks)	AK6 Grey plate 67x67mm (2.64 x 2.64"), black padlockable knob (max 3 padlocks)	

■ IP65, ABS enclosures with front drive, padlockable handle and cover interlock

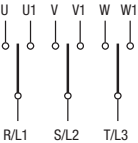
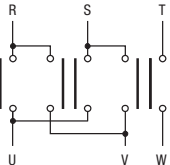
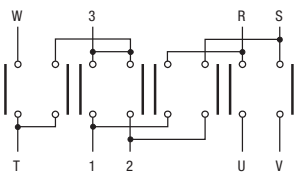
	Circuit diagram	Poles	I _e	Part no.	Pack	Part no.	Pack
		3	63A	SB0633B140AL6	1	SB0633B140AK6	1
			100A	SB1003B140AL6	1	SB1003B140AK6	1
		3+N	63A	SB0634B140AL6	1	SB0634B140AK6	1
			100A	SB1004B140AL6	1	SB1004B140AK6	1



S31

120 x 95 x 78 mm
4.72 x 3.74 x 3.07 in

■ IP40, ABS enclosures with lateral lever drive

	Circuit diagram	Function	I _e	Part no.	Pack
 0003		ON-OFF switch 3 pole	12A	CA0120003S31	1
			16A	CA0160003S31	1
			20A	CA0200003S31	1
			25A	CA0250003S31	1
			32A	CA0320003S31	1
			40A	CA0400003S31	1
 0007		Change-over switch 3 pole	12A	CA0120007S31	1
			16A	CA0160007S31	1
			20A	CA0200007S31	1
			25A	CA0250007S31	1
			32A	CA0320007S31	1
 0008		Reversing switch 3 pole	12A	CA0120008S31	1
			16A	CA0160008S31	1
			20A	CA0200008S31	1
			25A	CA0250008S31	1
			32A	CA0320008S31	1
 0009		Changing switch Dahlander pole	12A	CA0120009S31	1
			16A	CA0160009S31	1
			20A	CA0200009S31	1
			25A	CA0250009S31	1
			32A	CA0320009S31	1



S31

120 x 95 x 78 mm
4.72 x 3.74 x 3.07 in

■ IP65, ABS enclosures with lateral lever drive

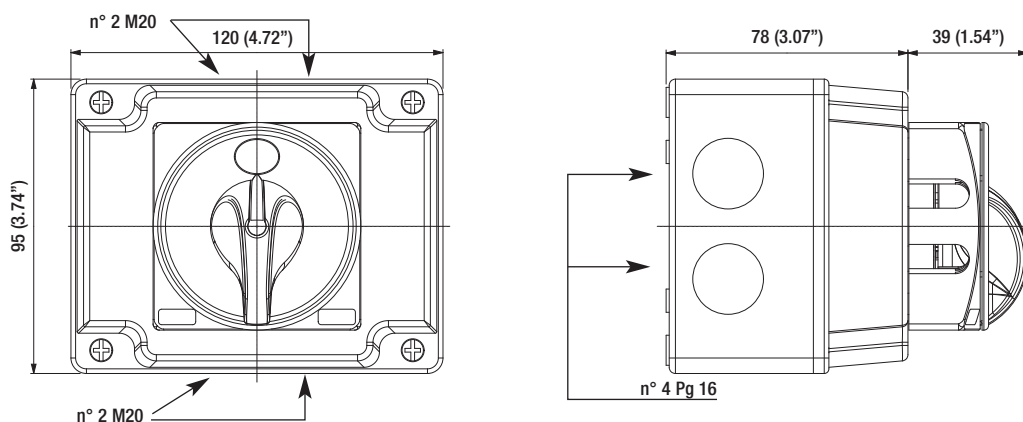
	Circuit diagram	Function	I _e	Part no.	Pack
 0010		STAR-DELTA Starter	12A	CA0120010S31	1
			16A	CA0160010S31	1
			20A	CA0200010S31	1
			25A	CA0250010S31	1
			32A	CA0320010S31	1
 0036		Reversing switch 3 pole with spring return to "off"	16A	CA0160036S31	1
			20A	CA0200036S31	1
			25A	CA0250036S31	1
 0039		Change-over switch 4 pole	12A	CA0120039S31	1
			16A	CA0160039S31	1
			20A	CA0200039S31	1
			25A	CA0250039S31	1
			32A	CA0320039S31	1

■ Plastic enclosures, with handles

Code	Description		Pack
S31	ABS enclosure, IP65 with lateral lever drive	120 x 95 x 78 mm (4,72 x 3,74 x3,07 in)	1
B95	ABS enclosure, IP65 with front drive and RL6 padlockable	120 x 95 x 78 mm (4,72 x 3,74 x3,07 in)	1

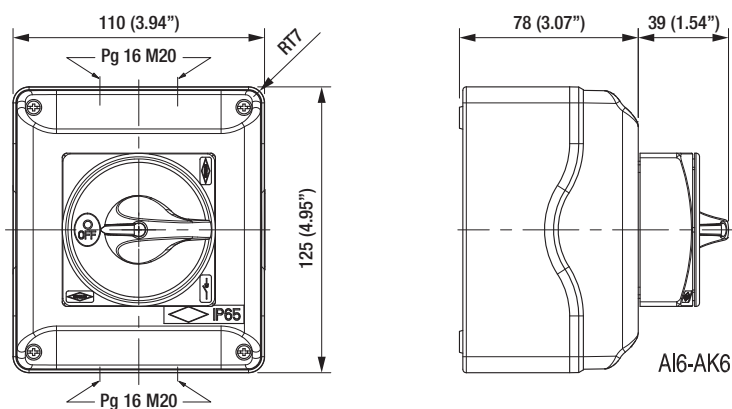
■ B95

Measures in mm (in)



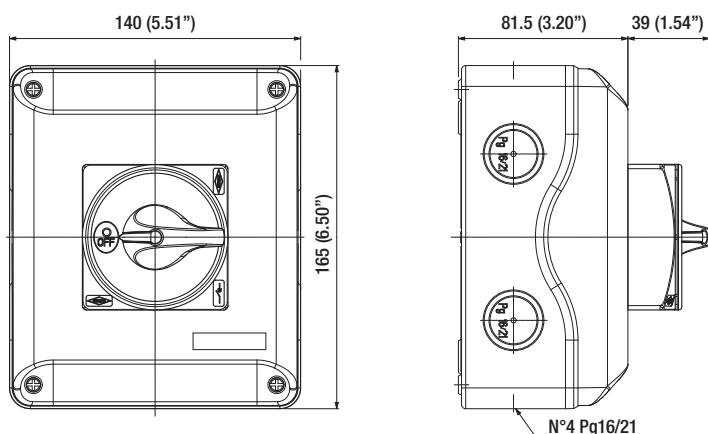
■ B110

Measures in mm (in)



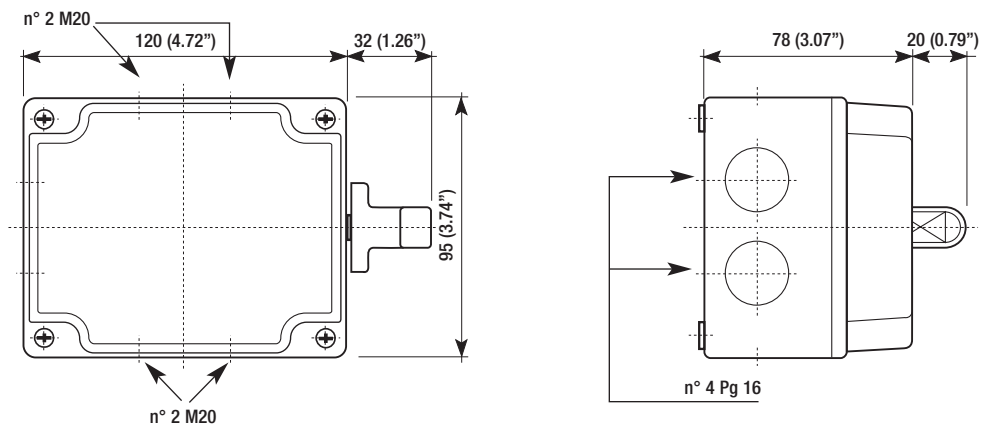
■ B140

Measures in mm (in)



■ S31

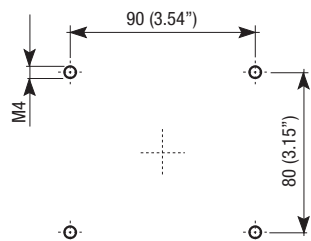
Measures in mm (in)



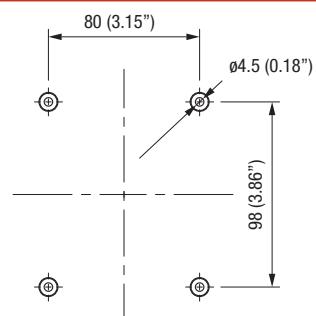
■ Drilling templates

Measures in mm (in)

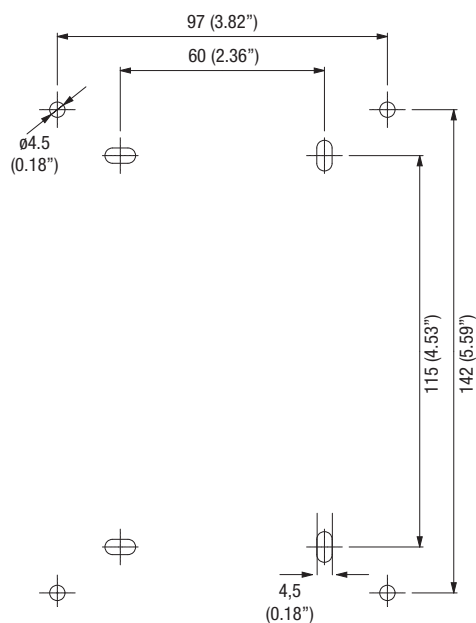
S31 - B95



B110



B140



POWER TOOL SWITCHES



05

International standards and approvals

Country	Canada	UK	Germany	Switzerland	Denmark	Norway	Sweden	Finland	Austria	Great Britain	IEC International Electrical Commission
Authority	CSA International		Verband Deutscher Elektrotechniker	Schweizerischer Elektrotechnischer Verein	Danmarks Elektriske Materielkontrol	Norges Elektriske Materielkontrol	Svenska Elektriske Materielkontroll-anstalten	Sähkötar-kastuskeskus	Österreichischer Verband für Elektrotechnik	British Standards Institution	
Mark of standard	 ⁽¹⁾		VDE 0660 ⁽²⁾							BS ⁽²⁾ EN 60947	IEC 60947 ⁽³⁾
LEA202		•	+	+	+	+	+	+	+	+	+
LFA203		•	+	+	+	+	+	+	+	+	+
LLA42	•	•	+	+	+	+	+	+	+	+	+
LLA43	•	•	+	+	+	+	+	+	+	+	+
LNA45		•	+	+	+	+	+	+	+	+	+
LAA65		•	+	+	+	+	+	+	+	+	+
LAA88		•	+	+	+	+	+	+	+	+	+

• Approved

+ Conforms to requirements

Notes:

1) CSA Approval File 039540-0-000

2) It is not required to bear a symbol but switches must conform to requirements.

3) IEC does not operate an approval scheme

Technical data

			LLA65	LAA88	LEA202R	LLA42	LLA43	LFA203	LNA45
Rated insulation voltage	Ui	V	250	250	380	250	380	380	380
Rated operating voltage	Ue	V	250	250	380	250	380	380	380
Rated operation frequency		Hz	50/60	50/60	50/60	50/60	50/60	50/60	50/60
Rated Current									
Resistive load	In	A	6	8	10 (Ue=250V)	15	15	10 (Ue=250V)	20 (Ue=250V)
Inductive load	In	A	5	8	6 (Ue=250V)	10	10	6 (Ue=250V)	10 (Ue=250V)

Technical data CSA (Sec. CSA 22.2 n.55)

Rated insulation voltage	Ui	V	-	-	-	250	250	-	-
Rated operating voltage	Ue	V	-	-	-	250	250	-	-
Rated thermal current	Ith		-	-	-	15	15	-	-
General Use current (Resistive loads or low inductives)		-	-	-	15	15	-	-	
Standard motor load	3 phase - 3 poles	Hp	-	-	-	-	2	-	-
	1 phase - 2 poles	Hp	-	-	-	2	-	-	-

Mechanical characteristics

Mechanical life (120 cycles/hour)			1E5	1E5	1E5	1E5	1E5	1E5	1E5
Electrical life	EN61058		5E4	5E4	5E4	5E4	5E4	5E4	5E4
Insulation class	EN61058		II	II	II	II	II	II	II
Tipo di isolamento	EN61058		Reinforced	Reinforced	Reinforced	Reinforced	Reinforced	Standard	Reinforced
Terminal dimension			2	2	2	2	2	2	4
Connecting capability with flexible wires	Min-Max	mm ²	0,75-2,5	0,75-2,5	0,75-2,5	0,75-2,5	0,75-2,5	0,75-2,5	1,5-4
Connecting capability with solid wires	Min-Max	mm ²	1-2,5	1-2,5	1-2,5	1-2,5	1-2,5	1-2,5	2,5-6
Connecting capability with flexible wires	Min-Max	AWG	19-14	19-14	19-14	19-14	19-14	19-14	16-12
Connecting capability with solid wires	Min-Max	AWG	18-14	18-14	18-14	18-14	18-14	18-14	14-10
Terminal screw		M3	M3	M3,5	M3,5	M3,5	M3,5	M4	
Protection degree IEC 529 EN 60529	IP00		IP00	IP00	IP00	IP00	IP00	IP00	

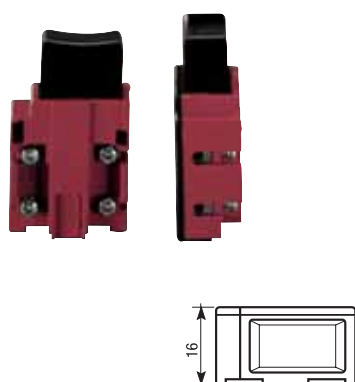
Ambient conditions

Operational ambient temperature	°C	T55	T55	T55	T55	T55	T55	T55
Storage ambient temperature	°C	-25 ÷ +70		-30 ÷ +70				
Withstand to constant humid		sec. IEC 60068-2-8						
Withstand to cycling humid		sec. IEC 60068-2-30						

2 pole trigger switches

LAA65-LAA88 series

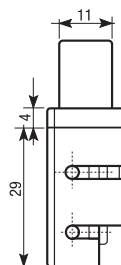
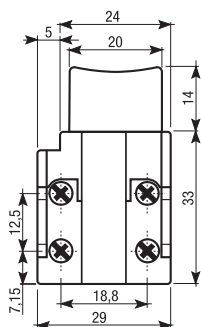
Part no.	Description	Pack
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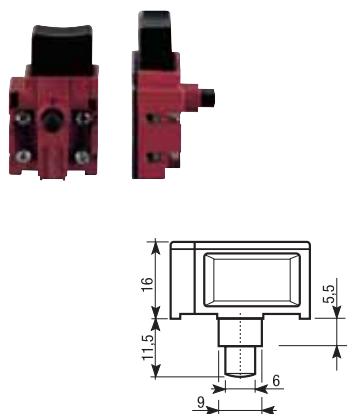
LAA65301

2 pole switch, command button without lock, 4 screw terminals

10



Diagram



LAA65311

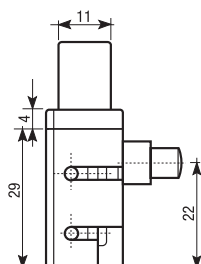
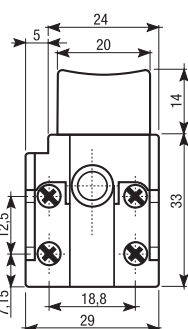
2 pole switch, command button with lock in ON Ø 6mm, 4 screw terminals

10

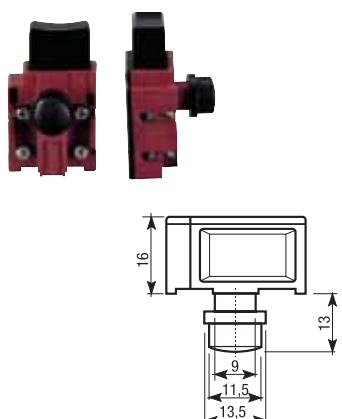
LAA88311

2 pole switch, command button with lock in ON Ø 6mm, 4 silver screw terminals

10



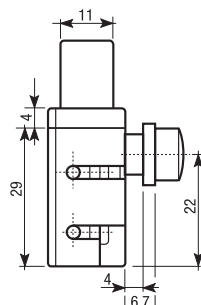
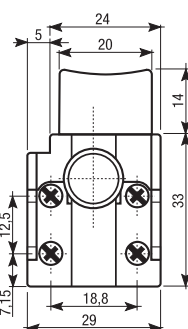
Diagram



LAA65331

2 pole switch, command button with lock in ON Ø 11,5mm, 4 screw terminals

10



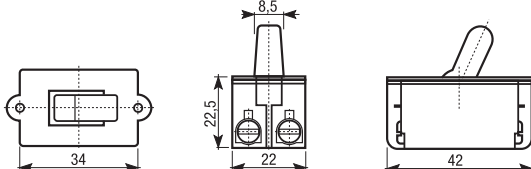
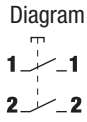
Diagram



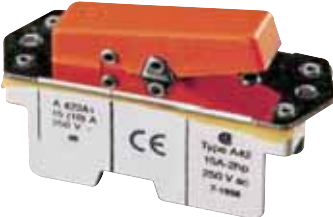
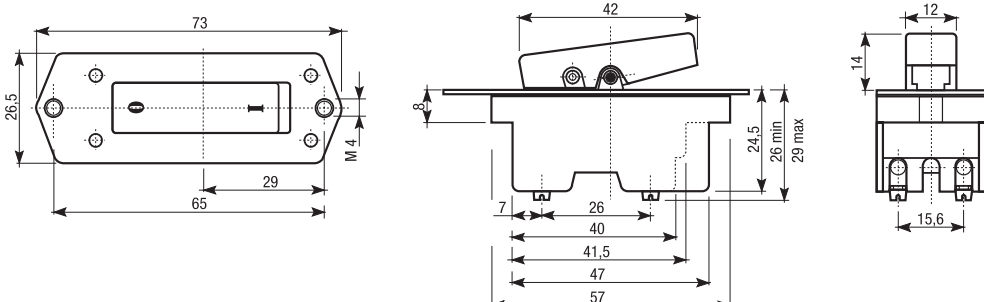
2 poles switches with lever

power tool switches

LEA202R series

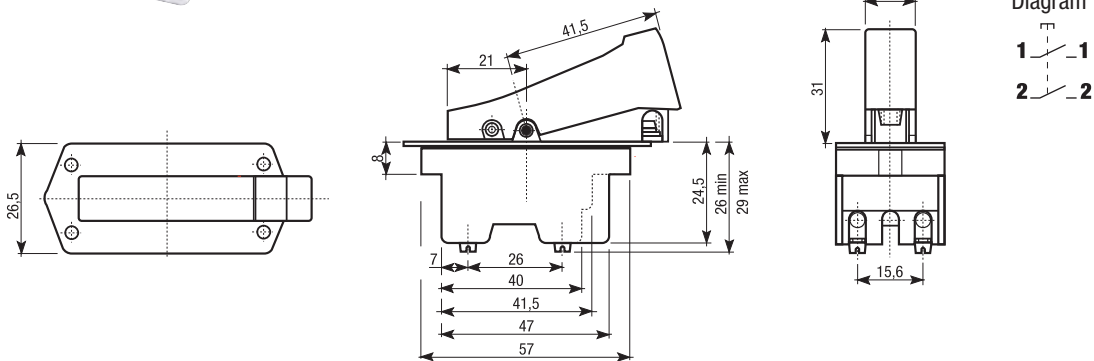
	Part no.	Description	Pack
	LEA202R	2 pole switch with stable lever	10
			
			
	Diagram		

LLA42 series

	Part no.	Description	Pack
	LLA422N1	2 pole switch with black lever, fixing holes distance 55mm	10
	LLA422A1	2 pole switch with orange lever, fixing holes distance 55mm	10
	LLA422N3	2 pole switch with black lever, fixing holes distance 65mm	10
			
Diagram			

2 poles switches with lever

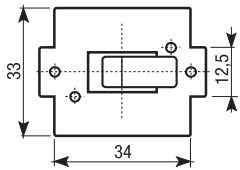
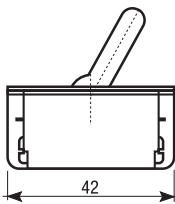
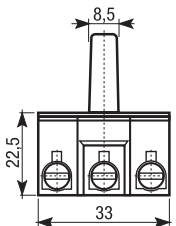
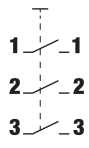
Part no.	Description	Pack
LLA424N0	2 pole switch with black unstable lever, without fixing holes, L=41,5 mm	10
LLA424N0A	2 pole switch with special lever	10



3 pole switches with lever

power tool switches

LFA203 series

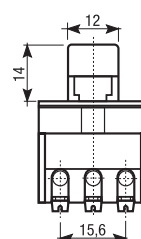
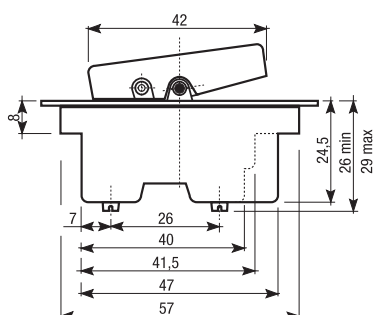
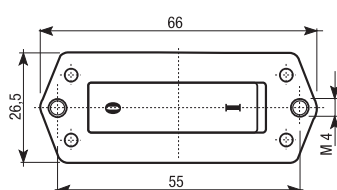
	Part no.	Description	Pack
	LFA203R	3 pole switch with stable lever	10
	   Diagram 		

3 pole switches with lever

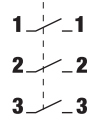
■ LLA43 series

Part no.	Description	Pack
----------	-------------	------

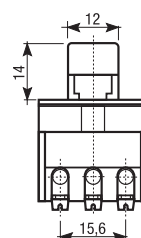
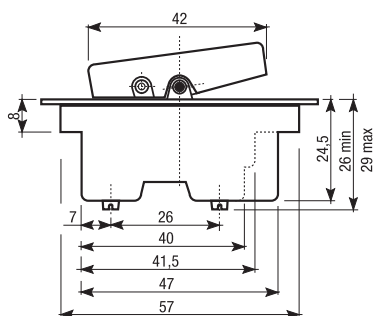
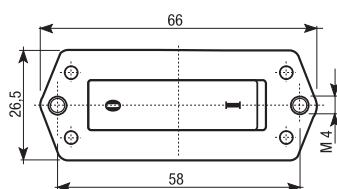
LLA432N1	3 pole switch with black stable lever, fixing holes distance 55mm, L=26,5 mm	10
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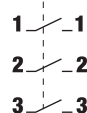
Diagram



LLA432N2	3 pole switch with black stable lever, fixing holes distance 58mm, L=26,5 mm	10
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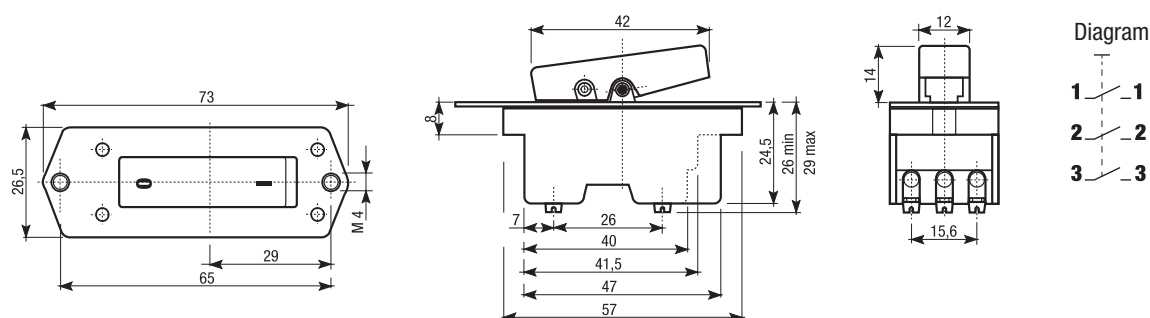
Diagram



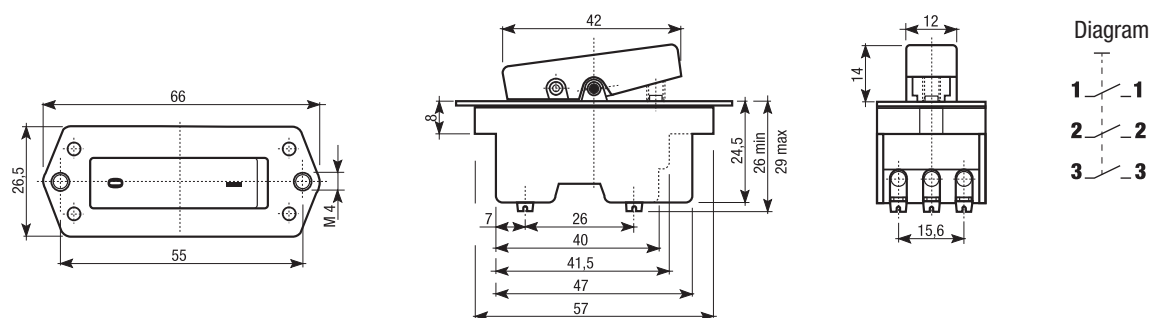
■ LLA43 series

Part no.	Description	Pack
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LLA432N3	3 pole switch with black stable lever, fixing holes distance 65mm	10
----------	---	----

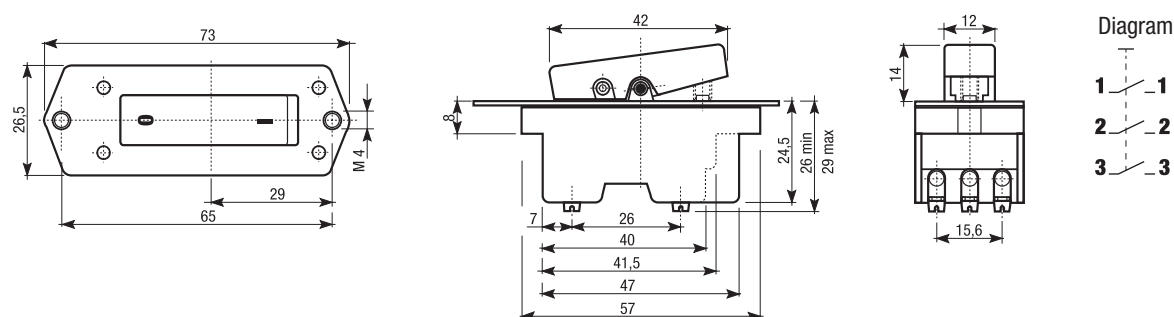


LLA438N1	3 pole switch with black unstable lever, fixing holes distance 55mm	10
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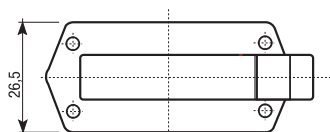


LLA438N3	3 pole switch with black unstable lever, fixing holes distance 65mm	10
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LLA438A3	3 pole switch with orange unstable lever, fixing holes distance 65mm	10
----------	--	----



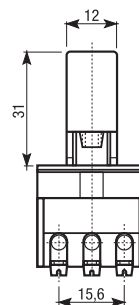
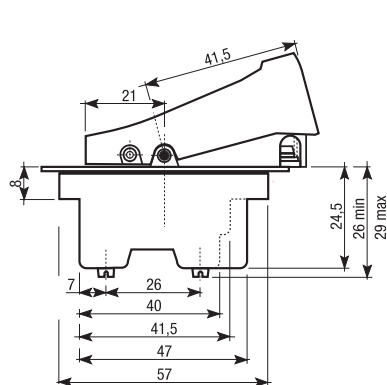
3 pole switches with lever



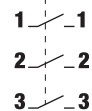
LLA439A0

3 pole switch with orange unstable lever, without fixing holes

10



Diagram



LNA45 series

Part no.

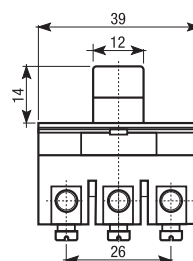
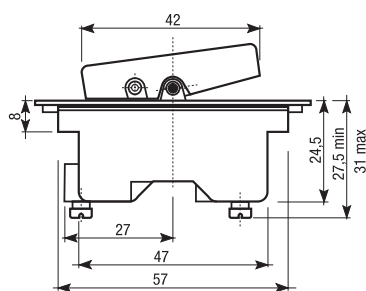
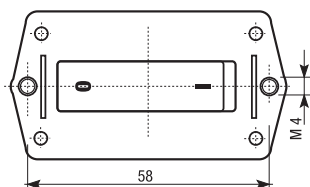
Description

Pack

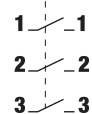
LNA452N2B

3 pole switch with black stable lever, fixing holes distance 58mm, L=39mm

10

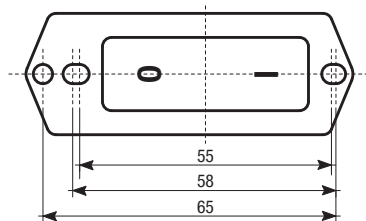
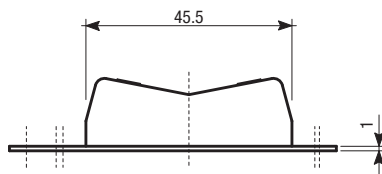
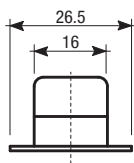


Diagram



■ Dustproof cover

Part no.	Description	Pack
PROTG4198	Dustproof cover	10



LIMIT AND SAFETY SWITCHES



06

Limit switches

For standard or heavy applications

1 CABLE INPUT



Plastic body
Plastic head



Plastic body
Metal head



Metal body
Metal head

E100 series

2 CABLE INPUT



Plastic body
Metal head

E200 series

3 CABLE INPUT



Metal body
Metal head

E300 series

Safety switches

With reset



Plastic body
Metal head

E100 series



Metal body
Metal head

E200 series



Plastic body
Metal head

Pull wire



Plastic body
Metal head

E100 series



Metal body
Metal head

E200 series



Plastic body
Metal head

1 CABLE INPUT



Plastic body
Metal head

E400 series



Metal body
Metal head

Microswitches



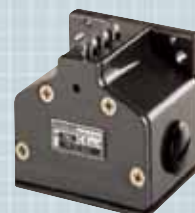
Plunger
actuator

M3 series



Lever
actuator

Multiple position



Roller
actuator

FMV series

Key actuation



Plastic body
Plastic head

E100 series



Plastic body
Plastic head

E200 series

For hinges



With metal
pin

E100 series



Plastic body
Metal head

E400 series



Metal body
Metal head

Solutions for every need

The Bremas position and safety switches are suitable for many different areas of use. Thanks to their solid construction, high reliability and durability over the time, they are usable in light applications but also where the environmental conditions are severe.

■ Actuators

- Steel AVP plungers
- Cold galvanized steel lever
- Plastic (PA6), metal (Stainless steel) or rubber (NRB) rollers
- Glass fiber and aluminum rods, steel for springs

■ Heads

- Plastic (PA6 GF)
- Metal (cold galvanized Zama)

■ Body

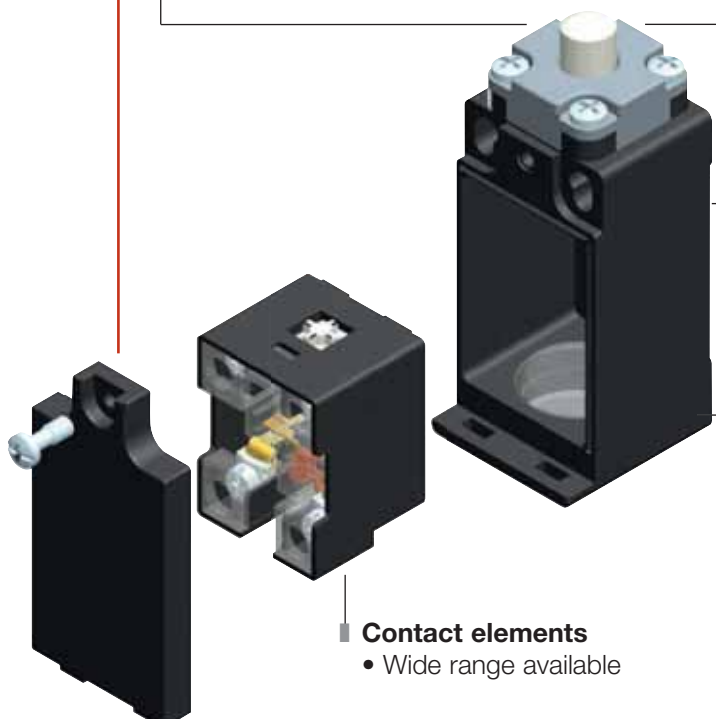
- Plastic (PA6 GF)
- Metal (cold galvanized Zama)

■ Cable Input/Output

- PG13,5
- M20x1,5
- ½ NPT
- Pg11
- M16x1,5
- M12 connector
- More solutions on request

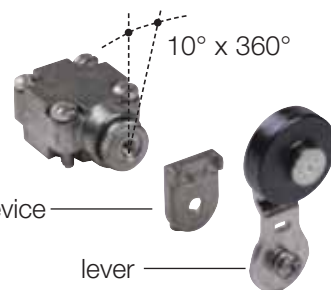
■ Contact elements

- Wide range available



■ Overturning levers

Possibility to fasten the lever on the straight or reverse side, maintaining the positive opening of the NC contact.



■ Adjustable lever

Possibility to adjust the lever every 10°, for 360°, by moving the lever and the dragging device.

Standard and custom products

Bremas has over 50 years of experience in the production of standard and customized solutions that allow to the uses to have a wide range of products and a large installation versatility.

It is possible to customize:

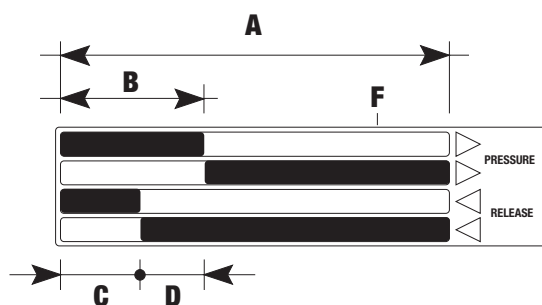
■ Actuators

- Lever
- Rollers
- Rods
- Inclinations
- Switching angles
- Construction sizes
- Materials



■ Contact elements

Customized contact travel for any special application needs.



 Opened contact
 Closed contact



A = Max travel, for linear (mm) or angular (degree) movement
 B = Travel before the opening of the NC contact
 C = Travel before the closing of the NO contact
 D = B-C = Difference on the travel (snap action elements)
 F = Min. travel for positive opening

■ Cable Inputs/Outputs

In addition to standard solutions Pg 13.5 or 20x1.5 and solutions on request ½ NPT, Pg 11, M16x1.5 and M12 connector, can be realized limit switches with different types of cable input/output.



E100 series

E200 series

E300 series

E400 series

M3 series

FMV series

■ Limit and Safety switches

■ Limit switches

E100-E200-E300-E400 series

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Technical specifications	246
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E100 series	252
E200 series	276
E300 series	288
E400 series	300
Limit switches for gates and lifts	322
Accessories for limit switches	329

■ Safety switches

Selection diagram	332
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Safety switches with reset	336
5 ways key actuation safety switches	354
Pull-wire safety switches	358
Hinges operating safety switches	362
Accessories for safety switches	364

■ Microswitches

Selection diagram	366
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Order codes M3 series	372

■ Multiple position limit switches

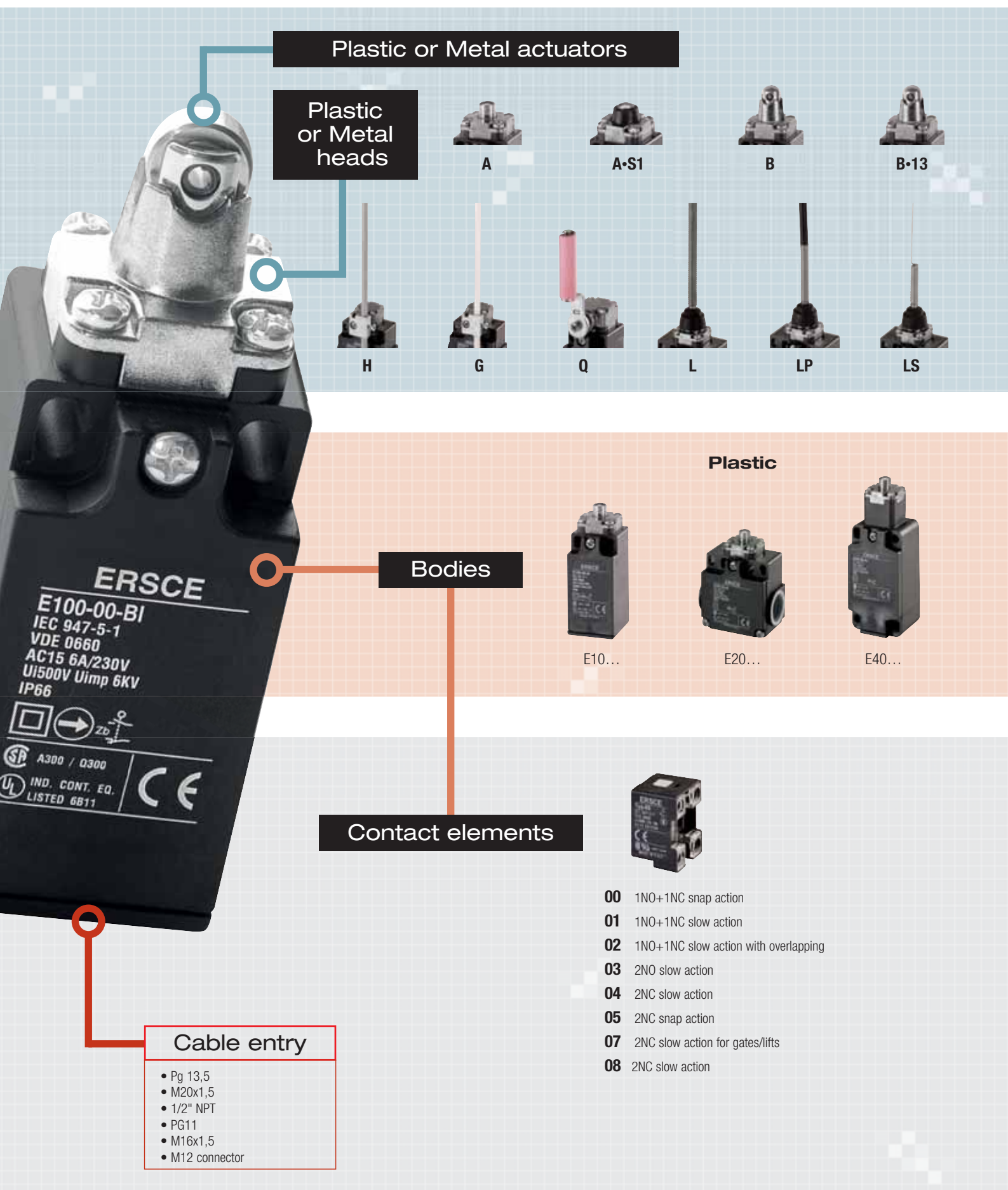
Overview	378
Technical specifications	379
Order codes FMV series	380
Accessories	366

LIMIT SWITCHES

E100 / E200 / E300 / E400 series



06





C



C-S1



R



D



D-S1



F-50



FR-50



E



E-RA



E-50



I



I-RA



I-50



F

Metal



E10...



E30...



E40...

Product code structure

E10 0 00 A I S1

Series

E10	1 cable entry
E20	2 cable entry
E30	3 cable entry
E40	1 cable entry

Cable entry

0	PG 13,5
1	M20x1,5
2	1/2" NPT
3	PG 11
4	M16x1,5

Contact elements

00	1NO+1NC snap action
01	1NO+1NC slow action
...	

Options

S1	With rubber gasket
50	With roller Ø50 mm
13	With roller Ø13 mm
C	For gates/lifts
50C	With roller Ø50 mm for gates/lifts

RA	With steel roller
P	With cable gland Pg13,5
Q	With cable gland Pg11
M12	With M12 connector
R	With membrane M20x1,5

Construction material

P	Plastic body / Plastic head
I	Plastic body / Metal head
M	Metal body / Metal head

Actuator type

A	Steel plunger
B	Steel roller plunger
...	

Technical data

				TYPE	E100 / E200 / E300 / E400
Maximum operating frequency				operat./hour ¹	3600
Insulation resistance			500 V DC	MΩ	100
Dielectric strenght			50/60 Hz for 1'	V AC	2500 ²
Rated insulation voltage	Ui	IEC947-5-1		V AC	500
Rated thermal current	Ithe	IEC947-5-1		A	10
Rated operating current	Category AC15 A300	IEC947-5-1/EN60947-5-1	24V	A	10
			125V	A	6
			230 V	A	6
			400 V	A	3
Contact resistance		IEC255-7 cat.3	initial value	mΩ	25
Short circuit protective devices	IEC269 (IEC947-5-1)				
	fuse type gL or gG			A	10
Rated conditionals short circuit current		IEC947-5-1		A	1000
Pollution degree		IEC947-5-1		A	3
Protection degree		EN 60529			IP66
Protection against electric shock			plastic	class	II
			metal	class	I
Vibration resistance		IEC68-2-6	mm		0,35 ± 15% (10 ÷ 55 Hz ± 1 Hz)
Shock resistance		IEC68-2-27	11ms	g	30
Mechanical life				cycles	20.000.000
Electric life	at 250V AC 6A with resistance load cosφ=1			cycles	500.000
	at 250V AC 6A with inductive load cosφ=0,4			cycles	500.000
				cycles	500.000
Distance between contacts	Snap action type			mm	2x1,25
	Low action type			mm	2x2
Terminals	Type				Screw with combined notch and retractable plate (notch Ph. Size 1)
	Screw			M	3,5
	Protection degree				IP20
	Material				Steel class 8,8 / Galvanized
	Max screw tightening torque				120 (12,24)
	Max connecting capacity	rigid cable		mm ²	2x1,5
		flexible cable		mm ²	2x1,5
Terminal numbering					In accordance with EN50013
Air ambient temperature			operational	°C	-35 ÷ +85 (without formation of ice)
Relative umidity			operational		95% max

¹ One operation cycle means two movements, one to close and one to open as required by EN 60947-5.

² Between terminals of the same polarity; between terminals with different polarity; between live mechanical parts and ground; between live mechanical parts and non-current-carrying metal parts.

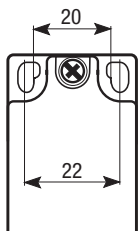
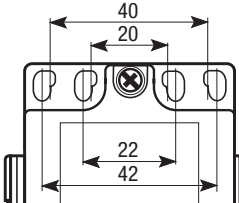
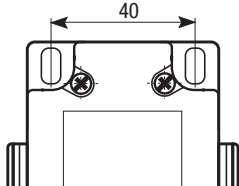
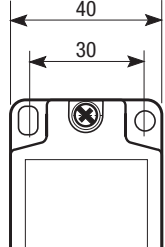
Certifications and Approvals

	UL LISTED	UK CA	SP IEC EN 60947	
E100	•	•	•	+
E200	•	•	•	+
E300	•	•	•	+
E400	•	•	•	+

- UL approval file E72861
- CSA approval file 026716-0-000
- Approved
- + Conforms to requirements

**E100-E200
E300-E400
series**

- Plastic or Metal body
- Plastic or Metal head and actuators
- IP66 protection degree
- Contact elements with positive opening of the NC contact in accordance to IEC EN 60947-5-1 and VDE 0660-200
- Dimensions and travels in accordance to EN 50047 (E100 series) and EN 50041 (E400 series)

Series	Product	Fixing holes
E100		
E200		
E300		
E400		

Cable inputs/outputs

Series	Nr.
E100	1 on the bottom 
E200	2 on the sides 
E300	2 on the sides + 1 on the bottom 
E400	1 on the bottom 

Series	Ex
Pg 13,5 	Ex00..
M20x1,5 	Ex01..
1/2 NPT 	Ex02..
Pg 11 	Ex03..
M16x1,5 	Ex04..
M12 connector 	Ex00.. M12

Actuation heads

Rectilinear actuation

Group A-B



A

Plunger



A/S1

Plunger with rubber gasket



B/B•13

Roller plunger Ø11 or Ø13mm



D

Plastic roller lever, vertical actuation



D•S1

Plastic roller lever with rubber gasket, vertical actuation

Group C-R



C

Plastic roller lever with rubber gasket, side actuation



C•S1

Plastic roller lever, side actuation



R

Reversible and adjustable lever with plastic roller

Angular actuation

Group E-I-F-G-H-Q



E - E•RA

Straight lever with plastic or metal roller



I - I•RA

Bent lever with plastic or metal roller



E•50

Straight lever with Ø50mm rubber roller



I•50

Bent lever with Ø50mm rubber roller



F

Variable length lever with plastic roller



F•50

Variable length lever with Ø50mm rubber roller



FRB•50

Adjustable lever with Ø50mm rubber roller



G/H

Glass fiber Ø6mm, G, or aluminum, H, adjustable round rod



Q

Lever with ceramic roller



IS

Internally bend lever with plastic roller

Multidirectional actuation

Group L



L

Flexible rod



LP

Flexible rod with plastic terminal



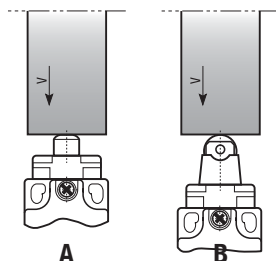
LS

Flexible rod (cat whisker) with metal terminal

Operating features

Plunger, Roller plunger, vertical travel

Actuators: A-B



Drive cam operating parameters

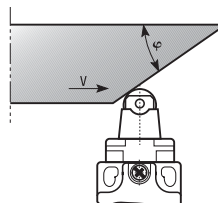
φ	V max (m/s)
Actuators A	0,5
Actuators B	0,5

Drive forces

Minimum command force	9 N
Minimum forced opening force	28 N

Roller plunger, side travel

Actuators: B



Drive cam operating parameters

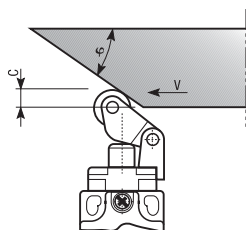
φ	V max (m/s)
30°	0,5
20°	1

Drive forces

Minimum command force	9 N
Minimum forced opening force	28 N

Roller lever, side travel

Actuators: C-R



Drive cam operating parameters

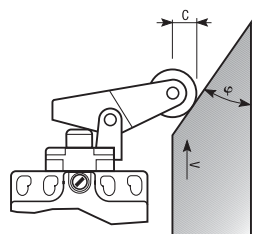
φ	V max (m/s)
30°	0,5
20°	1

Drive forces

Minimum command force	9 N
Minimum forced opening force	26 N

Roller lever, vertical travel

Actuators: D-R



Drive cam operating parameters

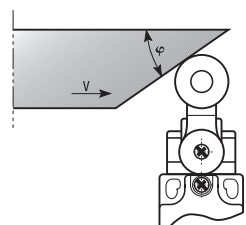
φ	V max (m/s)
30°	0,5
20°	1

Drive forces

Minimum command force	8 N
Minimum forced opening force	26 N

Roller lever

Actuators: E-I-F-FR•50-Q-IS-FR-F•50



Drive cam operating parameters

φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60°-90°	0,25

Drive forces (E100-E200-E300)

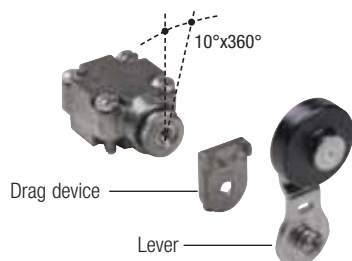
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

Drive forces (E400)

Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

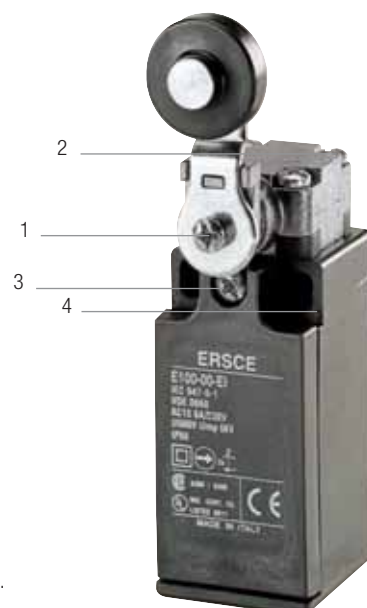
Tightening torque of screw

- Tighten the lever holding set screws with a torque of 1.2÷1.5 Nm
- Tighten the head with a torque of 0.7÷0.8 Nm (plastic) and 0.8÷1 Nm (metal)
- Tighten the cover with a torque of 0.7÷0.8 Nm (plastic) and 0.8÷1 Nm (metal)
- Tighten the fixing screws of the unit with a torque of 2÷2.5 Nm



Lever drive heads

The lever can be adjusted by shifting the lever and drag device.



Contact elements

Protective screen

Protective natural polycarbonate screen to prevent the entry of materials and access to the test finger (IP20 – EN60529)

Mobile and fixed contacts

Ag/Ni mobile and fixed contacts galvanically separated (acc. IEC 947-5-1, EN 60204, VDE 0660, VDE 0113)



Contact unit	Actuator	Group A-B	Group C-R	Group D	Group E-I-F-G-H-Q	Group L
00 1NO+1NC snap action	1NO+1NC snap action 13 21 14 22					
01 1NO+1NC slow action	1NO+1NC slow action 13 21 22 14					
02 1NO+1NC slow action overlapping	1NO+1NC slow action overlap. 25 17 26 18					
03 2NO slow action	2NO slow action 13 23 14 24					
04 2NC slow action	2NC slow action 11 21 12 22					
05 2NC snap action	2NC snap action 11 21 12 22					
07 2NC slow action	2NC slow action 11 21 12 22					
80 3NC+1NO slow action	2NC slow action 11 21 12 22					

□ Opened contact

■ Closed contact

➡ Positive opening travel

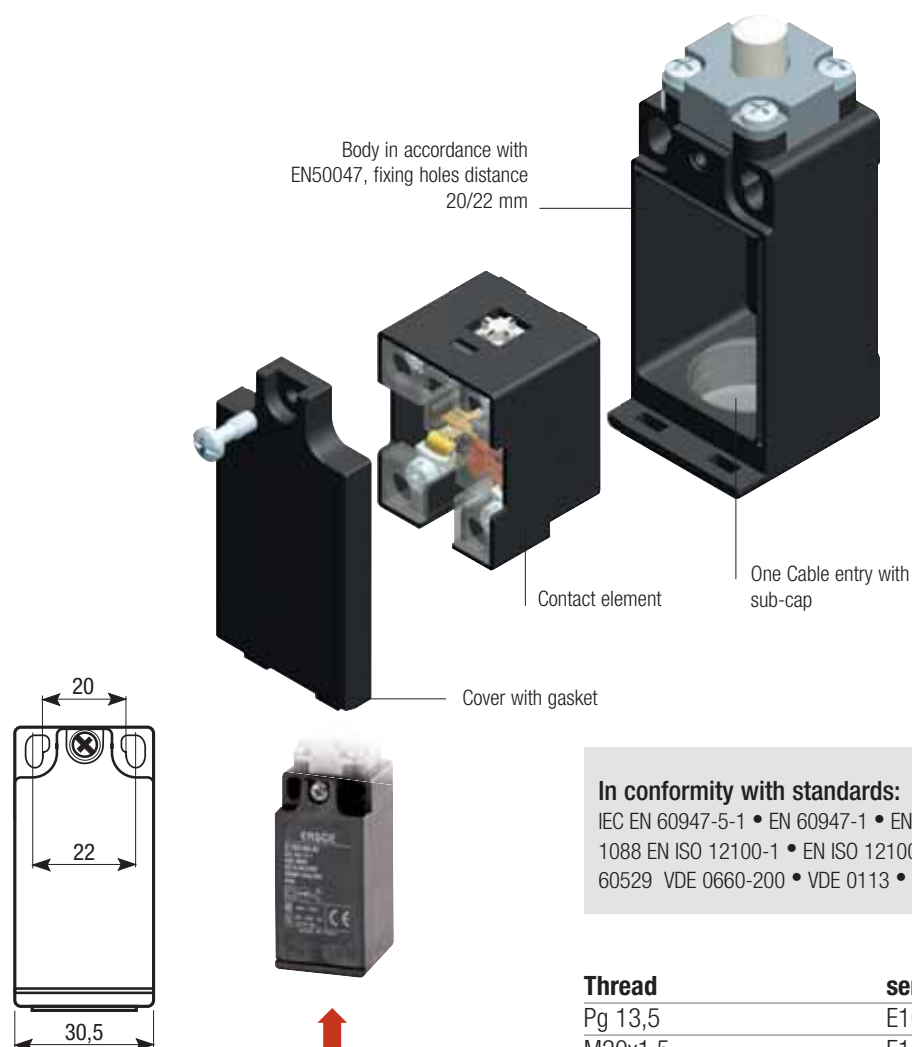
Δ Pressure of the switch / Release of the switch

Limit switches E100 series



E100 series

The **E100** series is the most compact of Bremas position switches. Dimensions are in accordance with CENELEC EN50047 that provides two fixing holes with distance 20 or 22mm. There is one hole for Cable entry on the bottom of the switch. Available with thermoplastic or diecast metal alloy body.



Fixing

Body in accordance with CENELEC EN50047, fixing holes distance 20/22 mm

Cable entry

One Cable entry on the bottom of the switch with thread:

In conformity with standards:

IEC EN 60947-5-1 • EN 60947-1 • EN 50047 • UNI EN 1088 EN ISO 12100-1 • EN ISO 12100-2 • IEC 529 • EN 60529 VDE 0660-200 • VDE 0113 • EN 81-1 • EN 81-2

Thread

series part no.

Pg 13,5	E100...
M20x1,5	E101...
1/2" NPT (on request)	E102...
Pg 11 (on request)	E103...
M16x1,5 (on request)	E104...
M12 connector (on request)	E100...M12



Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05

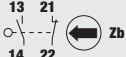
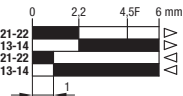
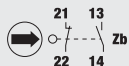
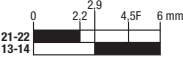
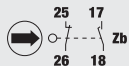
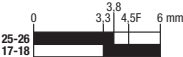
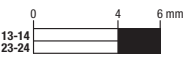
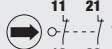
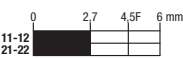
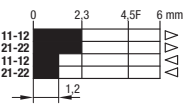
Weight	kg
Pack	pcs
H	mm

Cable entry						
PG 13,5			M20 x 1,5			
Plastic head Plastic body	Metal head Plastic body	Metal head Metal body	Plastic head Plastic body	Metal head Plastic body	Metal head Metal body	Contact travel
E10000AP*	E10000AI*	E10000AM*	E10100AP*	E10100AI*	E10100AM*	
E10001AP*	E10001AI*	E10001AM*	E10101AP*	E10101AI*	E10101AM*	
E10002AP	E10002AI	E10002AM	E10102AP	E10102AI	E10102AM	
E10003AP	E10003AI	E10003AM	E10103AP	E10103AI	E10103AM	
E10004AP	E10004AI	E10004AM	E10104AP	E10104AI	E10104AM	
E10005AP	E10005AI	E10005AM	E10105AP	E10105AI	E10105AM	
0,067	0,095	0,185	0,067	0,095	0,185	
1	1	1	1	1	1	
77,5	77,5	75	77,5	77,5	75	

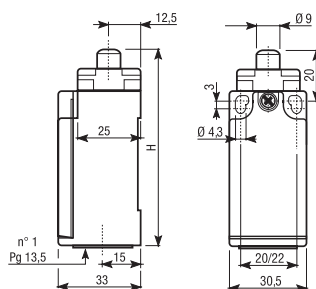
V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N



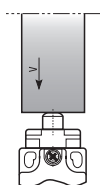
Steel plunger with rubber gasket

Contact element		Cable entry							
		PG 13,5			M20 x 1,5				
		Plastic head Plastic body	Metal head Plastic body	Metal head Metal body	Plastic head Plastic body	Metal head Plastic body	Metal head Metal body	Contact travel	
1NO+1NC snap action		00	E10000APS1*	E10000AIS1*	E10000AMS1*	E10100APS1*	E10100AIS1*	E10100AMS1*	
1NO+1NC slow action		01	E10001APS1*	E10001AIS1*	E10001AMS1*	E10101APS1*	E10101AIS1*	E10101AMS1*	
1NO+1NC lenta sovrapp.		02	E10002APS1	E10002AIS1	E10002AMS1	E10102APS1	E10102AIS1	E10102AMS1	
2NO slow action		03	E10003APS1	E10003AIS1	E10003AMS1	E10103APS1	E10103AIS1	E10103AMS1	
2NC slow action		04	E10004APS1	E10004AIS1	E10004AMS1	E10104APS1	E10104AIS1	E10104AMS1	
2NC snap action		05	E10005APS1	E10005AIS1	E10005AMS1	E10105APS1	E10105AIS1	E10105AMS1	
Weight	kg	0,067	0,095	0,185	0,067	0,095	0,185		
Pack	pcs	1	1	1	1	1	1		
H	mm	77,5	77,5	75	77,5	77,5	75		

* form conforming to EN50047



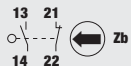
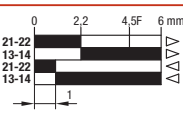
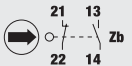
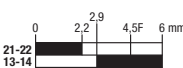
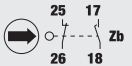
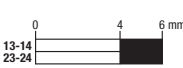
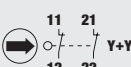
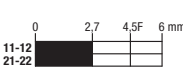
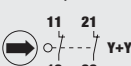
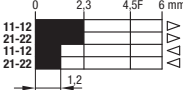
Drive cam operating parameters



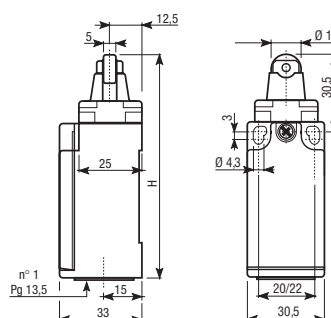
V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



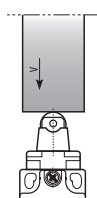
Steel roller plunger

Contact element		Cable entry						Contact travel	
		PG 13,5			M20 x 1,5				
		Plastic head Plastic body	Metal head Plastic body	Metal head Metal body	Plastic head Plastic body	Metal head Plastic body	Metal head Metal body		
1NO+1NC snap action		00	E10000BP*	E10000BI*	E10000BM*	E10100BP*	E10100BI*	E10100BM*	
1NO+1NC slow action		01	E10001BP*	E10001BI*	E10001BM*	E10101BP*	E10101BI*	E10101BM*	
1NO+1NC slow overlap.		02	E10002BP	E10002BI	E10002BM	E10102BP	E10102BI	E10102BM	
2NO slow action		03	E10003BP	E10003BI	E10003BM	E10103BP	E10103BI	E10103BM	
2NC slow action		04	E10004BP	E10004BI	E10004BM	E10104BP	E10104BI	E10104BM	
2NC snap action		05	E10005BP	E10005BI	E10005BM	E10105BP	E10105BI	E10105BM	
Weight	kg	0,07	0,105	0,195	0,07	0,105	0,195		
Pack	pcs	1	1	1	1	1	1		
H	mm	88	88	85,5	88	88	85,5		

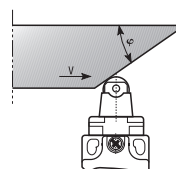
* form conforming to EN50047



Drive cam operating parameters



V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



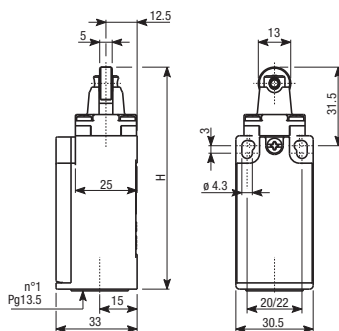
φ	V max (m/s)
20°	1
30°	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



Ø13 mm steel roller plunger

Contact element		Cable entry						
		PG 13,5			M20 x 1,5			
		Plastic head Plastic body	Metal head Plastic body	Metal head Metal body	Plastic head Plastic body	Metal head Plastic body	Metal head Metal body	Contact travel
1NO+1NC snap action		00						
1NO+1NC slow action		01						
1NO+1NC slow overlap.		02						
2NO slow action		03						
2NC slow action		04						
2NC snap action		05						
Weight	kg	0,07	0,105	0,195	0,07	0,105	0,195	
Pack	pcs	1	1	1	1	1	1	
H	mm	89	89	85,5	89	89	86,5	

* form conforming to EN50047

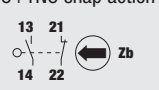
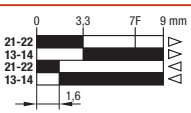
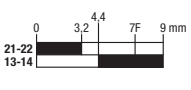
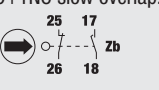
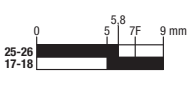
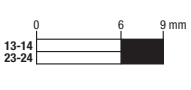
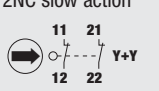
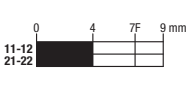
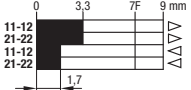


Drive cam operating parameters			
	V max (m/s)	0,5	
	Drive forces		
	Minimum command force	9 N	
	Minimum forced opening force	28 N	
	φ	V max (m/s)	
	20°	1	
	30°	0,5	
	Drive forces		
	Minimum command force	9 N	
	Minimum forced opening force	28 N	

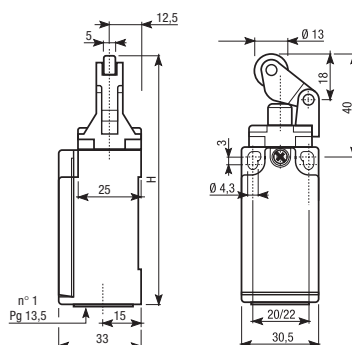


C

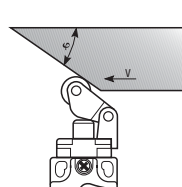
Thermoplastic roller lever, side actuation

Contact element		Cable entry						Contact travel	
		PG 13,5			M20 x 1,5				
		Plastic head Plastic body	Metal head Plastic body	Metal head Metal body	Plastic head Plastic body	Metal head Plastic body	Metal head Metal body		
1NO+1NC snap action		00	E10000CP*	E10000CI*	E10000CM*	E10100CP*	E10100CI*	E10100CM*	
1NO+1NC slow action			E10001CP*	E10001CI*	E10001CM*	E10101CP*	E10101CI*	E10101CM*	
1NO+1NC slow overlap.		02	E10002CP	E10002CI	E10002CM	E10102CP	E10102CI	E10102CM	
2NO slow action			E10003CP	E10003CI	E10003CM	E10103CP	E10103CI	E10103CM	
2NC slow action		04	E10004CP	E10004CI	E10004CM	E10104CP	E10104CI	E10104CM	
2NC snap action			E10005CP	E10005CI	E10005CM	E10105CP	E10105CI	E10105CM	
Weight	kg	0,071	0,105	0,195	0,071	0,105	0,195		
Pack	pcs	1	1	1	1	1	1		
H	mm	97,5	97,5	95	97,5	97,5	95		

* form conforming to EN50047



Drive cam operating parameters



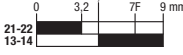
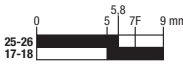
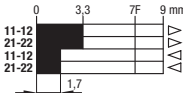
φ	V max (m/s)
20°	1
30°	0,5

Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

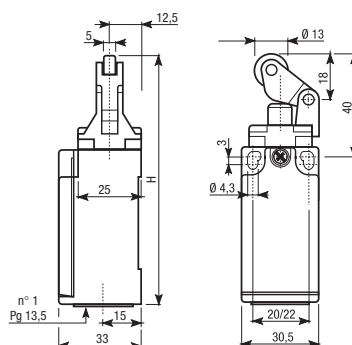


Thermoplastic roller lever with rubber gasket, side actuation

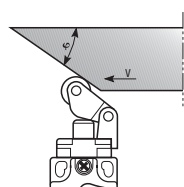
Contact element	
1NO+1NC snap action 13 21 14 22 Zb	00
1NO+1NC slow action 21 13 22 14 Zb	01
1NO+1NC slow overlap. 25 17 26 18 Zb	02
2NO slow action 13 23 14 24 X+X	03
2NC slow action 11 21 12 22 Y+Y	04
2NC snap action 11 21 12 22 Y+Y	05
Weight	kg
Pack	pcs
H	mm

Cable entry						
PG 13,5			M20 x 1,5			
Plastic head Plastic body	Metal head Plastic body	Metal head Metal body	Plastic head Plastic body	Metal head Plastic body	Metal head Metal body	Contact travel
E10000CPS1*	E10000CIS1*	E10000CMS1*	E10100CPS1*	E10100CIS1*	E10100CMS1*	
E10001CPS1*	E10001CIS1*	E10001CMS1*	E10101CPS1*	E10101CIS1*	E10101CMS1*	
E10002CPS1	E10002CIS1	E10002CMS1	E10102CPS1	E10102CIS1	E10102CMS1	
E10003CPS1	E10003CIS1	E10003CMS1	E10103CPS1	E10103CIS1	E10103CMS1	
E10004CPS1	E10004CIS1	E10004CMS1	E10104CPS1	E10104CIS1	E10104CMS1	
E10005CPS1	E10005CIS1	E10005CMS1	E10105CPS1	E10105CIS1	E10105CMS1	
0,071	0,105	0,195	0,071	0,105	0,195	
1	1	1	1	1	1	
97,5	97,5	95	97,5	97,5	95	

* form conforming to EN50047



Drive cam operating parameters

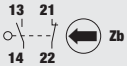
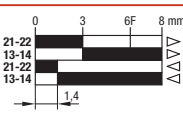
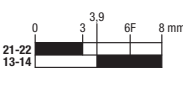
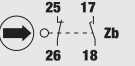
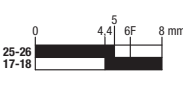
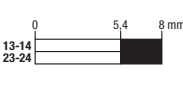
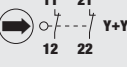
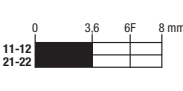
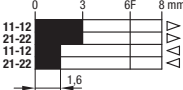


Φ	V max (m/s)
20°	1
30°	0,5

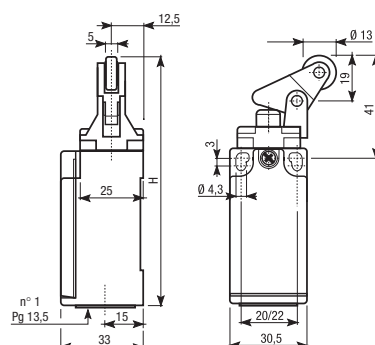
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N



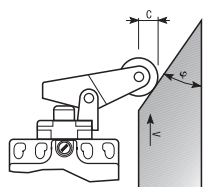
Thermoplastic roller lever, vertical actuation

Contact element		Cable entry						Contact travel	
		PG 13,5			M20 x 1,5				
		Plastic head Plastic body	Metal head Plastic body	Metal head Metal body	Plastic head Plastic body	Metal head Plastic body	Metal head Metal body		
1NO+1NC snap action		00	E10000DP	E10000DI	E10000DM	E10100DP	E10100DI	E10100DM	
1NO+1NC slow action			E10001DP	E10001DI	E10001DM	E10101DP	E10101DI	E10101DM	
1NO+1NC slow overlap.		02	E10002DP	E10002DI	E10002DM	E10102DP	E10102DI	E10102DM	
2NO slow action			E10003DP	E10003DI	E10003DM	E10103DP	E10103DI	E10103DM	
2NC slow action		04	E10004DP	E10004DI	E10004DM	E10104DP	E10104DI	E10104DM	
2NC snap action			E10005DP	E10005DI	E10005DM	E10105DP	E10105DI	E10105DM	
Weight	kg		0,072	0,105	0,195	0,072	0,105	0,195	
Pack	pcs		1	1	1	1	1	1	
H	mm		98,5	96	96	98,5	96	96	

* form conforming to EN50047



Drive cam operating parameters

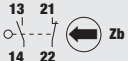
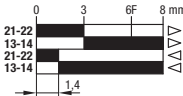
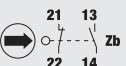
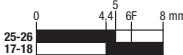
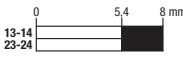
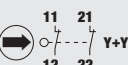
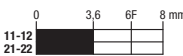
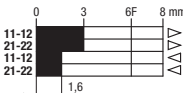


φ	V max (m/s)
20°	1
30°	0,5

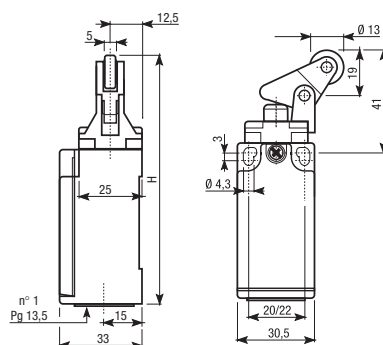
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N



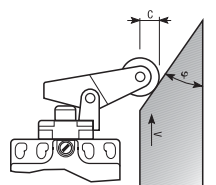
Thermoplastic roller lever with rubber gasket, vertical actuation

Contact element		Cable entry						Contact travel	
		PG 13,5			M20 x 1,5				
		Plastic head Plastic body	Metal head Plastic body	Metal head Metal body	Plastic head Plastic body	Metal head Plastic body	Metal head Metal body		
1NO+1NC snap action		00	E10000DPS1	E10000DIS1	E10000DMS1	E10100DPS1	E10100DIS1	E10100DMS1	
1NO+1NC slow action			E10001DPS1	E10001DIS1	E10001DMS1	E10101DPS1	E10101DIS1	E10101DMS1	
1NO+1NC slow overlap.		01	E10002DPS1	E10002DIS1	E10002DMS1	E10102DPS1	E10102DIS1	E10102DMS1	
2NO slow action			E10003DPS1	E10003DIS1	E10003DMS1	E10103DPS1	E10103DIS1	E10103DMS1	
2NC slow action		04	E10004DPS1	E10004DIS1	E10004DMS1	E10104DPS1	E10104DIS1	E10104DMS1	
2NC snap action			E10005DPS1	E10005DIS1	E10005DMS1	E10105DPS1	E10105DIS1	E10105DMS1	
Weight	kg	0,072	0,105	0,195	0,072	0,105	0,195		
Pack	pcs	1	1	1	1	1	1		
H	mm	98,5	96	96	98,5	96	96		

* form conforming to EN50047



Drive cam operating parameters



Φ	V max (m/s)
20°	1
30°	0,5

Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

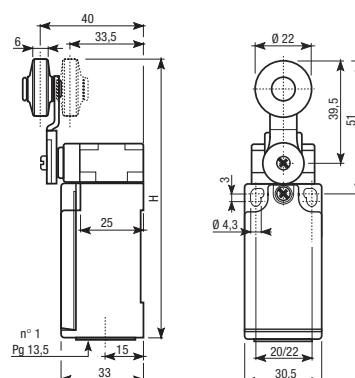


E

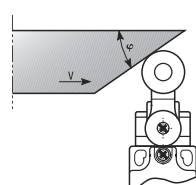
Thermoplastic roller lever

Contact element		Cable entry				Contact travel
		PG 13,5		M20 x 1,5		
		Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
1NO+1NC snap action	00					
1NO+1NC slow action		01				
1NO+1NC slow overlap.	02					
2NO slow action		03				
2NC slow action	04					
2NC snap action		05				
Weight	kg	0,135	0,225	0,135	0,225	
Pack	pcs	1	1	1	1	
H	mm	108,5	106	108,5	106	

* form conforming to EN50047



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

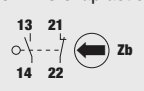
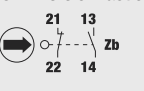
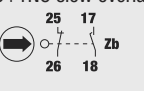
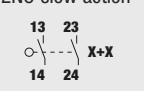
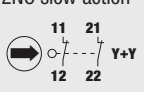
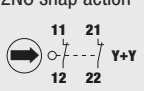
Drive forces

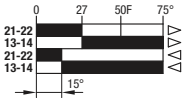
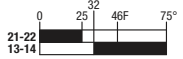
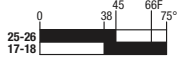
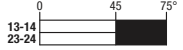
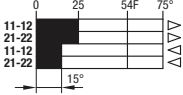
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

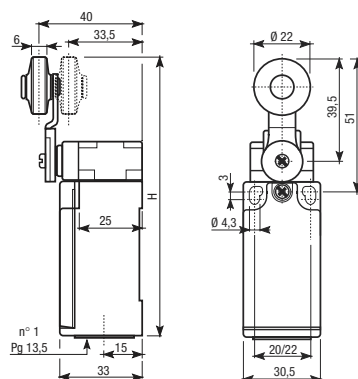


Steel roller lever

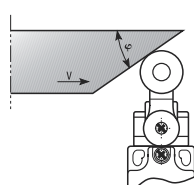
E•RA

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10000EIRA	E10000EMRA	E10100EIRA	E10100EMRA	
E10001EIRA	E10001EMRA	E10101EIRA	E10101EMRA	
E10002EIRA	E10002EMRA	E10102EIRA	E10102EMRA	
E10003EIRA	E10003EMRA	E10103EIRA	E10103EMRA	
E10004EIRA	E10004EMRA	E10104EIRA	E10104EMRA	
E10005EIRA	E10005EMRA	E10105EIRA	E10105EMRA	
0,135	0,225	0,135	0,225	
1	1	1	1	
108,5	106	108,5	106	



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces

Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

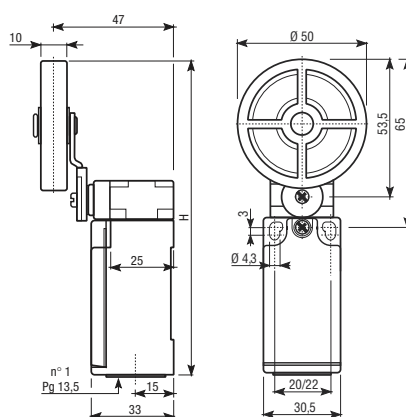


Ø50 mm rubber roller lever

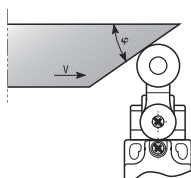
E•50

Contact element	
1NO+1NC snap action 00	
1NO+1NC slow action 01	
1NO+1NC slow overlap. 02	
2NO slow action 03	
2NC slow action 04	
2NC snap action 05	
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10000EI50	E10000EM50	E10100EI50	E10100EM50	
E10001EI50	E10001EM50	E10101EI50	E10101EM50	
E10002EI50	E10002EM50	E10102EI50	E10102EM50	
E10003EI50	E10003EM50	E10103EI50	E10103EM50	
E10004EI50	E10004EM50	E10104EI50	E10104EM50	
E10005EI50	E10005EM50	E10105EI50	E10105EM50	
0,15	0,24	0,15	0,24	
1	1	1	1	
122,5	120	122,5	120	



Drive cam operating parameters



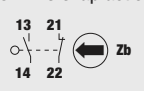
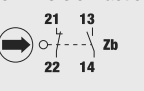
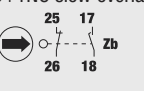
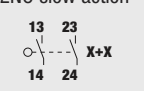
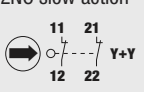
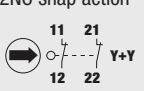
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

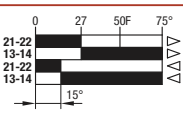
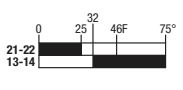
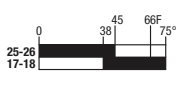
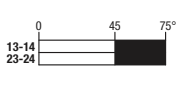
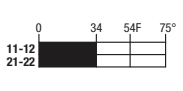
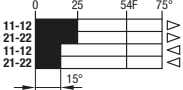
Drive forces

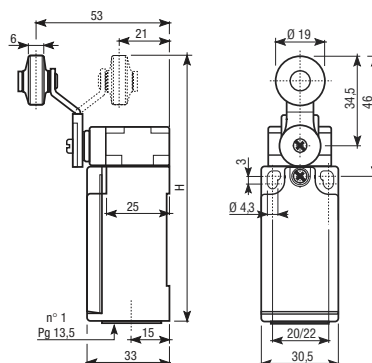
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm



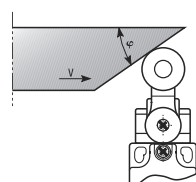
Thermoplastic roller lever

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10000II	E10000IM	E10100II	E10100IM	
E10001II	E10001IM	E10101II	E10101IM	
E10002II	E10002IM	E10102II	E10102IM	
E10003II	E10003IM	E10103II	E10103IM	
E10004II	E10004IM	E10104II	E10104IM	
E10005II	E10005IM	E10105II	E10105IM	
0,13	0,225	0,13	0,225	
1	1	1	1	
103,5	101	103,5	101	



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

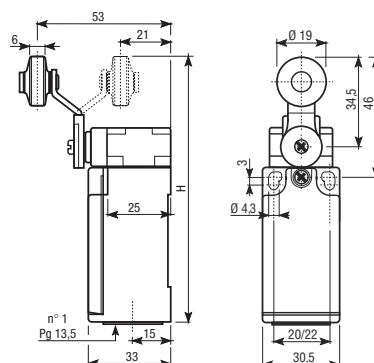
Drive forces
 Minimum command force 15 Ncm
 Minimum forced opening force 35 Ncm



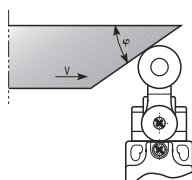
Steel roller lever

Contact element	
1NO+1NC snap action 00	
1NO+1NC slow action 01	
1NO+1NC slow overlap. 02	
2NO slow action 03	
2NC slow action 04	
2NC snap action 05	
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10000IIRA	E10000IMRA	E10100IIRA	E10100IMRA	
E10001IIRA	E10001IMRA	E10101IIRA	E10101IMRA	
E10002IIRA	E10002IMRA	E10102IIRA	E10102IMRA	
E10003IIRA	E10003IMRA	E10103IIRA	E10103IMRA	
E10004IIRA	E10004IMRA	E10104IIRA	E10104IMRA	
E10005IIRA	E10005IMRA	E10105IIRA	E10105IMRA	
0,13	0,225	0,13	0,225	
1	1	1	1	
103,5	101	103,5	101	



Drive cam operating parameters

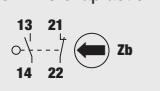
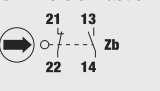
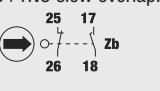
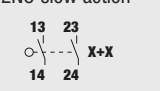
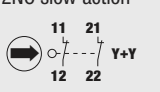
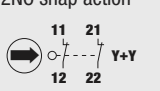


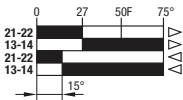
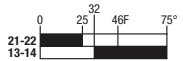
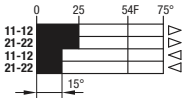
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

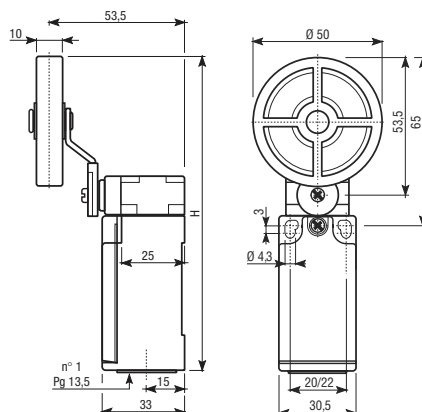
Drive forces
 Minimum command force 15 Ncm
 Minimum forced opening force 35 Ncm



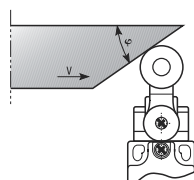
Ø50 mm rubber roller lever

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs
H	mm

Cable entry				Contact travel
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E10000II50	E10000IM50	E10100II50	E10100IM50	
E10001II50	E10001IM50	E10101II50	E10101IM50	
E10002II50	E10002IM50	E10102II50	E10102IM50	
E10003II50	E10003IM50	E10103II50	E10103IM50	
E10004II50	E10004IM50	E10104II50	E10104IM50	
E10005II50	E10005IM50	E10105II50	E10105IM50	
0,145	0,24	0,145	0,24	
1	1	1	1	
122,5	120	122,5	120	



Drive cam operating parameters



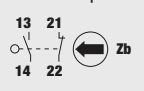
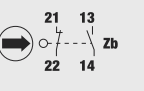
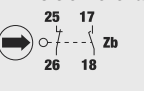
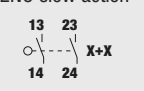
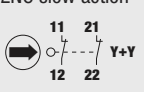
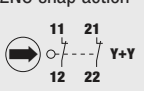
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

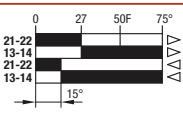
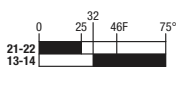
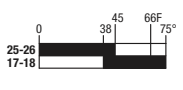
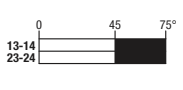
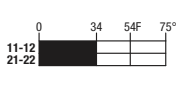
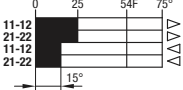
Drive forces
 Minimum command force 15 Ncm
 Minimum forced opening force 35 Ncm

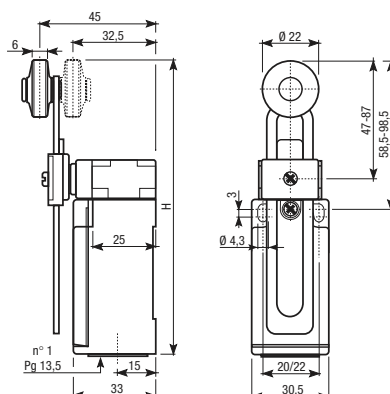


F

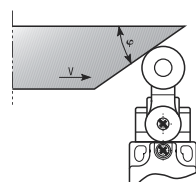
Thermoplastic roller variable length lever

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs
H	mm

Cable entry				Contact travel
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E10000FI	E10000FM	E10100FI	E10100FM	
E10001FI	E10001FM	E10101FI	E10101FM	
E10002FI	E10002FM	E10102FI	E10102FM	
E10003FI	E10003FM	E10103FI	E10103FM	
E10004FI	E10004FM	E10104FI	E10104FM	
E10005FI	E10005FM	E10105FI	E10105FM	
0,15	0,24	0,13	0,225	
1	1	1	1	
116 ÷ 156	113,5 ÷ 153,5	116 ÷ 156	113,5 ÷ 153,5	



Drive cam operating parameters



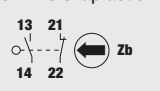
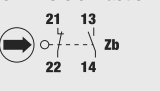
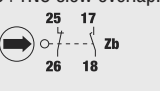
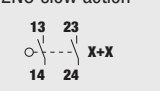
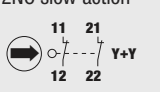
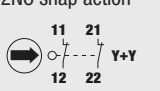
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces
 Minimum command force 15 Ncm
 Minimum forced opening force 35 Ncm

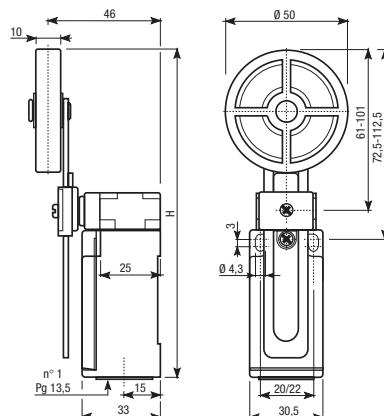


F•50

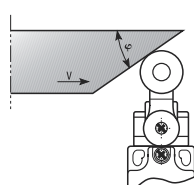
Ø50 mm rubber roller variable length lever

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10000FI50	E10000FM50	E10100FI50	E10100FM50	
E10001FI50	E10001FM50	E10101FI50	E10101FM50	
E10002FI50	E10002FM50	E10102FI50	E10102FM50	
E10003FI50	E10003FM50	E10103FI50	E10103FM50	
E10004FI50	E10004FM50	E10104FI50	E10104FM50	
E10005FI50	E10005FM50	E10105FI50	E10105FM50	
0,16	0,25	0,16	0,25	
1	1	1	1	
130 ÷ 170	127,5 ÷ 167,5	130 ÷ 170	127,5 ÷ 167,5	



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces

Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

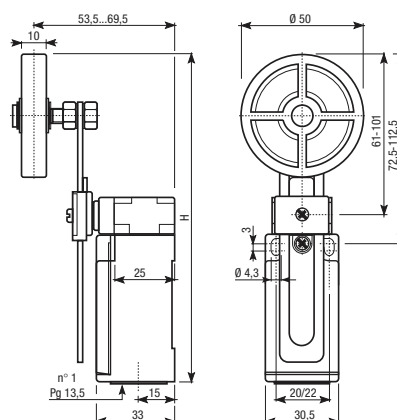
FR•50



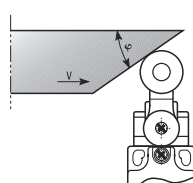
Ø50 mm rubber roller adjustable lever

Contact element	
1NO+1NC snap action 00	
1NO+1NC slow action 01	
1NO+1NC slow overlap. 02	
2NO slow action 03	
2NC slow action 04	
2NC snap action 05	
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10000FRI50	E10000FRM50	E10100FRI50	E10100FRM50	
E10001FRI50	E10001FRM50	E10101FRI50	E10101FRM50	
E10002FRI50	E10002FRM50	E10102FRI50	E10102FRM50	
E10003FRI50	E10003FRM50	E10103FRI50	E10103FRM50	
E10004FRI50	E10004FRM50	E10104FRI50	E10104FRM50	
E10005FRI50	E10005FRM50	E10105FRI50	E10105FRM50	
0,17	0,25	0,17	0,25	
1	1	1	1	
130 ÷ 170	127,5 ÷ 167,5	130 ÷ 170	127,5 ÷ 167,5	



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

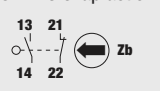
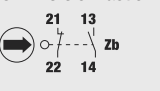
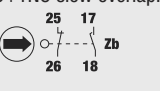
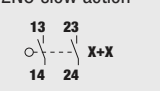
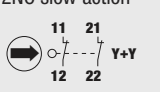
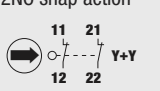
Drive forces

Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

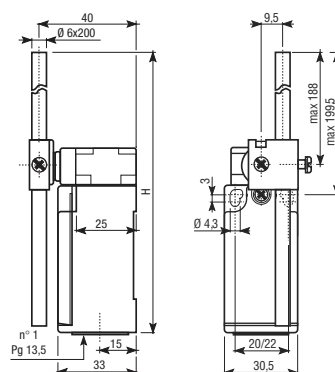


G

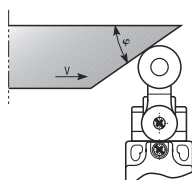
Side rotary adjustable Ø6 mm glass fiber rod

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10000GI	E10000GM	E10100GI	E10100GM	
E10001GI	E10001GM	E10101GI	E10101GM	
E10002GI	E10002GM	E10102GI	E10102GM	
E10003GI	E10003GM	E10103GI	E10103GM	
E10004GI	E10004GM	E10104GI	E10104GM	
E10005GI	E10005GM	E10105GI	E10105GM	
0,17	0,27	0,17	0,27	
1	1	1	1	
97,5 ÷ 257,5	95 ÷ 255	97,5 ÷ 257,5	95 ÷ 255	



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

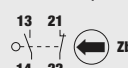
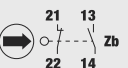
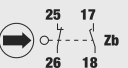
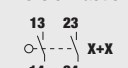
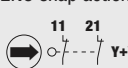
Drive forces

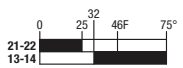
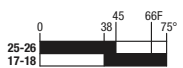
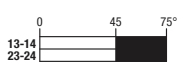
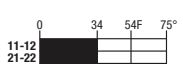
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

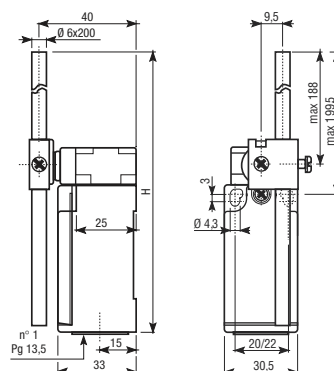
H



Side rotary adjustable Ø6 mm aluminium rod

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs
H	mm

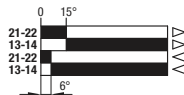
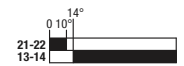
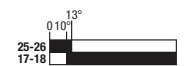
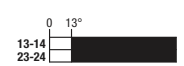
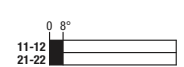
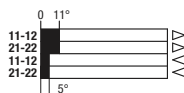
Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10000HI	E10000HM	E10100HI	E10100HM	
E10001HI	E10001HM	E10101HI	E10101HM	
E10002HI	E10002HM	E10102HI	E10102HM	
E10003HI	E10003HM	E10103HI	E10103HM	
E10004HI	E10004HM	E10104HI	E10104HM	
E10005HI	E10005HM	E10105HI	E10105HM	
0,18	0,27	0,18	0,27	
1	1	1	1	
97,5 ÷ 257,5	95 ÷ 255	97,5 ÷ 257,5	95 ÷ 255	

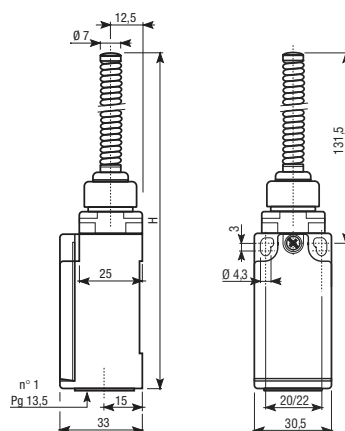




Flexible rod

L

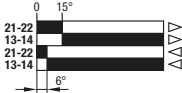
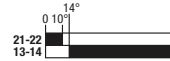
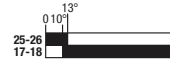
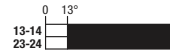
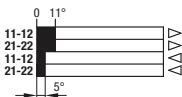
Contact element		Cable entry					
		PG 13,5		M20 x 1,5			
		Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel	
1NO+1NC snap action		00	E10000LI	E10000LM	E10100LI	E10100LM	
1NO+1NC slow action		01	E10001LI	E10001LM	E10101LI	E10101LM	
1NO+1NC slow overlap.		02	E10002LI	E10002LM	E10102LI	E10102LM	
2NO slow action		03	E10003LI	E10003LM	E10103LI	E10103LM	
2NC slow action		04	E10004LI	E10004LM	E10104LI	E10104LM	
2NC snap action		05	E10005LI	E10005LM	E10105LI	E10105LM	
Weight	kg	0,145	0,235	0,145	0,235		
Pack	pcs	1	1	1	1		
H	mm	189	186,5	189	186,5		

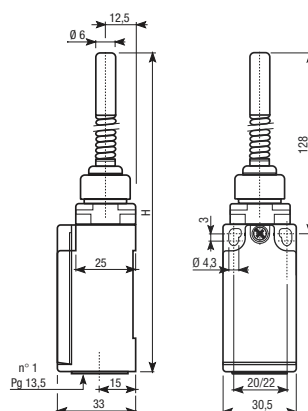




Flexible rod with plastic terminal

Contact element	
1NO+1NC snap action 00	
1NO+1NC slow action 01	
1NO+1NC slow overlap. 02	
2NO slow action 03	
2NC slow action 04	
2NC snap action 05	
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10000LPI	E10000LPM	E10100LPI	E10100LPM	
E10001LPI	E10001LPM	E10101LPI	E10101LPM	
E10002LPI	E10002LPM	E10102LPI	E10102LPM	
E10003LPI	E10003LPM	E10103LPI	E10103LPM	
E10004LPI	E10004LPM	E10104LPI	E10104LPM	
E10005LPI	E10005LPM	E10105LPI	E10105LPM	
0,145	0,235	0,145	0,235	
1	1	1	1	
185,5	183	185,5	183	



LS

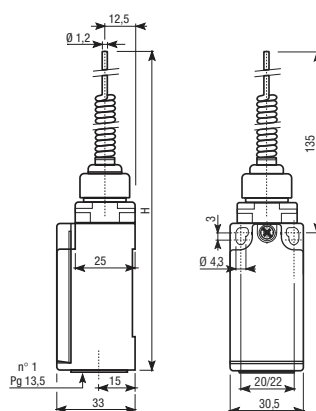


Cat's whisker

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05

Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10000LSI	E10000LSM	E10100LSI	E10100LSM	
E10001LSI	E10001LSM	E10101LSI	E10101LSM	
E10002LSI	E10002LSM	E10102LSI	E10102LSM	
E10003LSI	E10003LSM	E10103LSI	E10103LSM	
E10004LSI	E10004LSM	E10104LSI	E10104LSM	
E10005LSI	E10005LSM	E10105LSI	E10105LSM	
0,145	0,235	0,145	0,235	
1	1	1	1	
192,5	190	192,5	190	



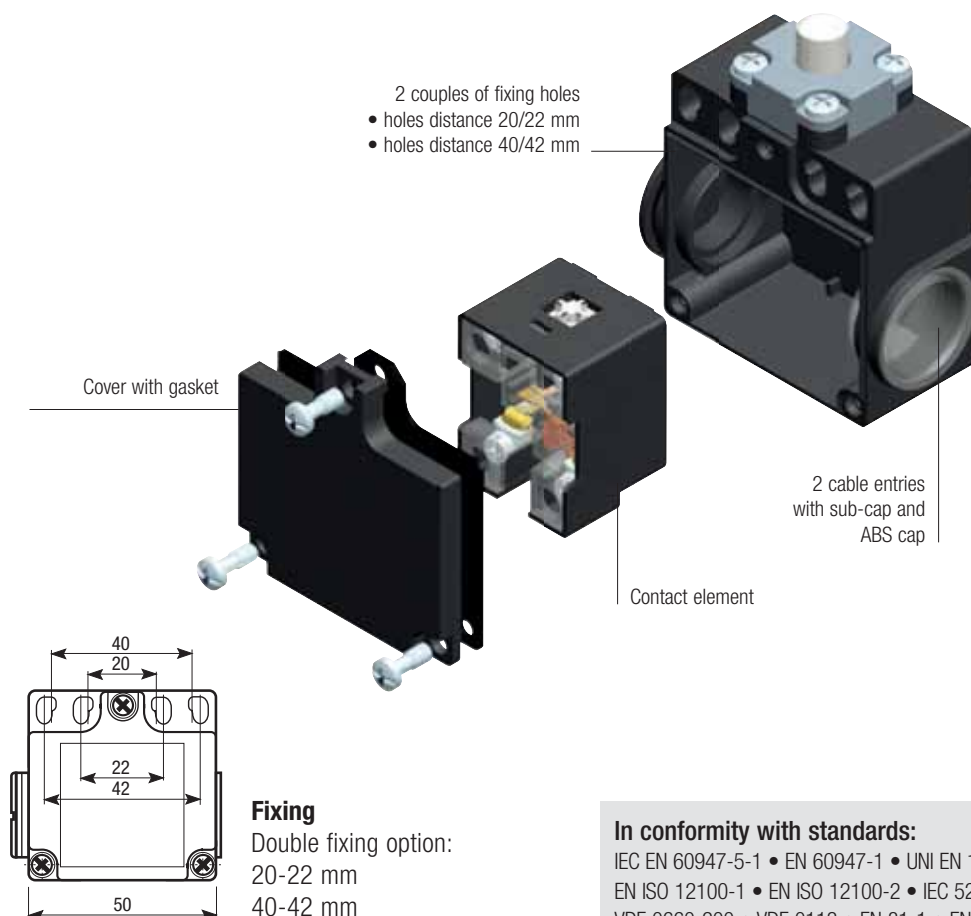
Limit switches

E200 series



E200 series

The **E200** series is designed for maximum installation flexibility, it has two different fixing templates to maintain compatibility with both E100 series (fixing holes distance 20-22mm) and E300 series (fixing holes distance 40-42 mm). E200 series provides 2 cable entries on both sides of the switch and is available with metal actuators and thermoplastic body.



Cable entry
2 cable entries
on the sides
of the switch
with thread:



In conformity with standards:

IEC EN 60947-5-1 • EN 60947-1 • UNI EN 1088
EN ISO 12100-1 • EN ISO 12100-2 • IEC 529 • EN 60529
VDE 0660-200 • VDE 0113 • EN 81-1 • EN 81-2

Thread

Pg 13,5
M20x1,5
1/2" NPT (on request)
M12 connector (on request)

Series part no.

E200...
E201...
E202...
E200...M12

A

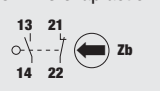
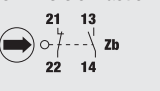
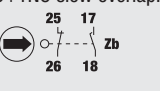
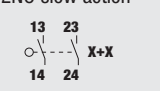
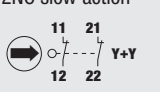
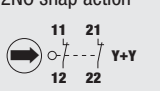


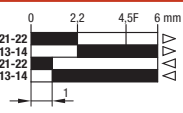
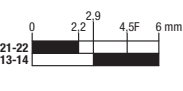
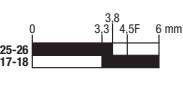
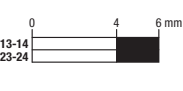
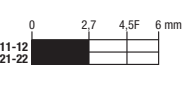
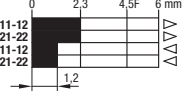
Steel plunger

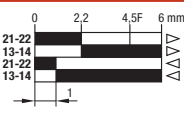
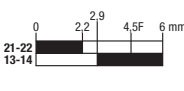
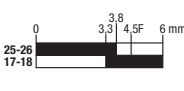
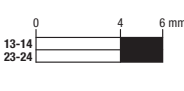
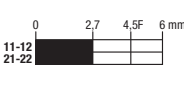
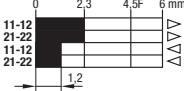
A•S1

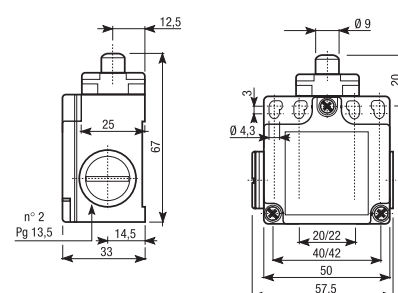
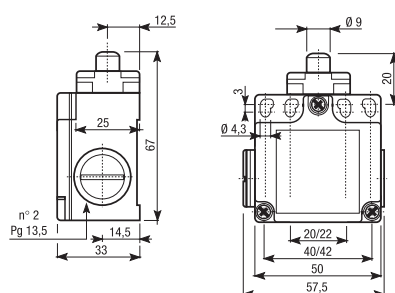


Steel plunger with rubber gasket

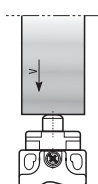
Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head Plastic body	Metal head Plastic body	
E20000AI	E20100AI	
E20001AI	E20101AI	
E20002AI	E20102AI	
E20003AI	E20103AI	
E20004AI	E20104AI	
E20005AI	E20105AI	
0,11		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head Plastic body	Metal head Plastic body	
E20000AIS1	E20100AIS1	
E20001AIS1	E20101AIS1	
E20002AIS1	E20102AIS1	
E20003AIS1	E20103AIS1	
E20004AIS1	E20104AIS1	
E20005AIS1	E20105AIS1	
0,11		
1		



Drive cam operating parameters



V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



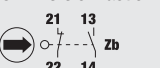
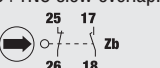
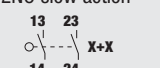
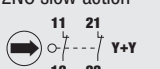
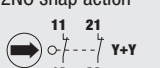
Steel roller plunger

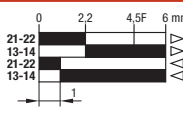
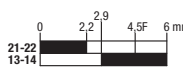
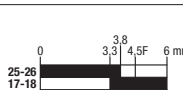
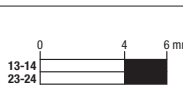
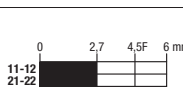
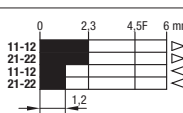
B

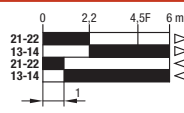
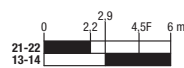
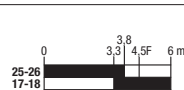
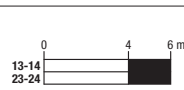
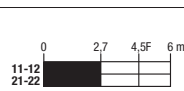
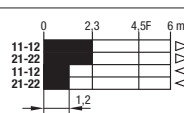


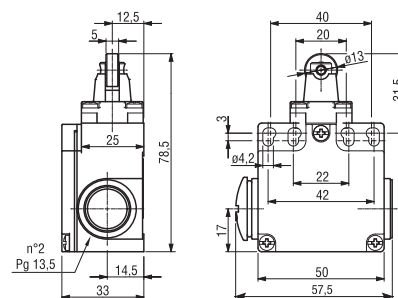
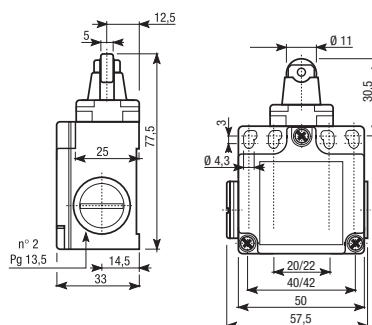
Ø13 mm steel roller plunger

B•13

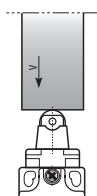
Contact element	
	00
	01
	02
	03
	04
	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Plastic body	Plastic body	
E20000BI	E20100BI	
E20001BI	E20101BI	
E20002BI	E20102BI	
E20003BI	E20103BI	
E20004BI	E20104BI	
E20005BI	E20105BI	
0,125		
1		

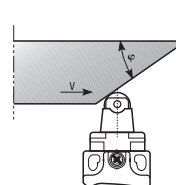
Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Plastic body	Plastic body	
E20000BI13	E20100BI13	
E20001BI13	E20101BI13	
E20002BI13	E20102BI13	
E20003BI13	E20103BI13	
E20004BI13	E20104BI13	
E20005BI13	E20105BI13	
0,125		
1		



Drive cam operating parameters



V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



Φ	V max (m/s)
20°	1
30°	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



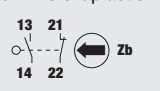
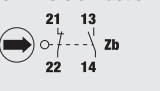
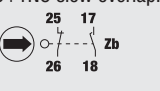
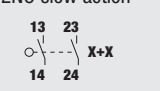
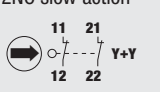
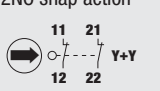
Thermoplastic roller lever,
side actuation

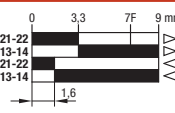
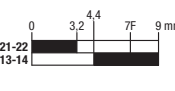
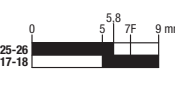
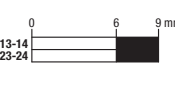
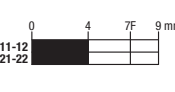
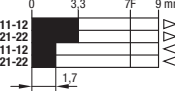
C

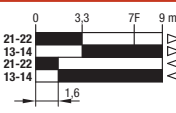
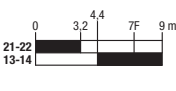
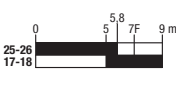
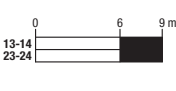
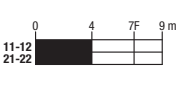


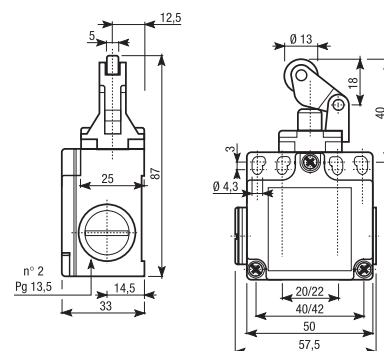
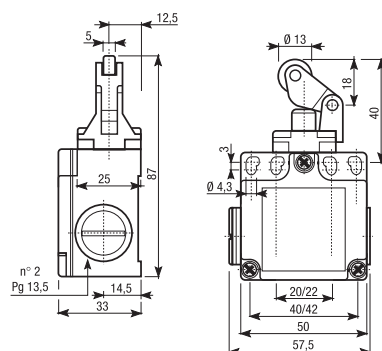
Thermoplastic roller lever with rubber gasket,
side actuation

C•S1

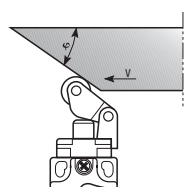
Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head Plastic body	Metal head Plastic body	
E20000CI	E20100CI	
E20001CI	E20101CI	
E20002CI	E20102CI	
E20003CI	E20103CI	
E20004CI	E20104CI	
E20005CI	E20105CI	
0,13		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head Plastic body	Metal head Plastic body	
E20000CIS1	E20100CIS1	
E20001CIS1	E20101CIS1	
E20002CIS1	E20102CIS1	
E20003CIS1	E20103CIS1	
E20004CIS1	E20104CIS1	
E20005CIS1	E20105CIS1	
0,13		
1		



Drive cam operating parameters



φ	V max (m/s)
20°	1
30°	0,5

Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

Limit switches - **E200** series



Thermoplastic roller lever,
vertical actuation

D



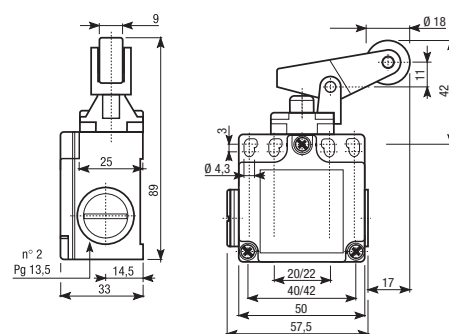
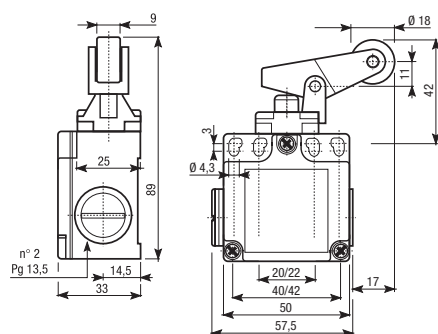
Thermoplastic roller lever with rubber gasket, vertical actuation

D•S1

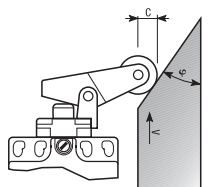
Contact element	
1NO+1NC snap action	00
1NO+1NC slow action	01
1NO+1NC slow overlap.	02
2NO slow action	03
2NC slow action	04
2NC snap action	05
Weight	kg
Pack	pcs

Cable entry		
PG 13,5	M20 x 1,5	
Metal head Plastic body	Metal head Plastic body	Contact travel
E20000DI	E20100DI	
E20001DI	E20101DI	
E20002DI	E20102DI	
E20003DI	E20103DI	
E20004DI	E20104DI	
E20005DI	E20105DI	

Cable entry		
PG 13,5	M20 x 1,5	
Metal head Plastic body	Metal head Plastic body	Contact travel
E20000DIS1	E20100DIS1	
E20001DIS1	E20101DIS1	
E20002DIS1	E20102DIS1	
E20003DIS1	E20103DIS1	
E20004DIS1	E20104DIS1	
E20005DIS1	E20105DIS1	



Drive cam operating parameters



φ	$V_{\max}$ (m/s)
20°	1
30°	0,5

Drive forces

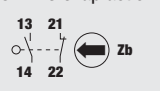
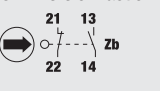
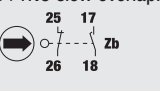
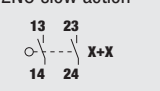
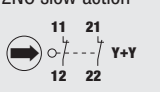
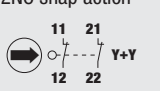
Minimum command force	9 N
Minimum forced opening force	26 N

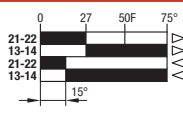
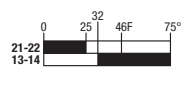
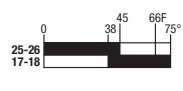
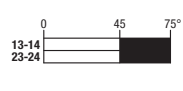
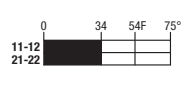
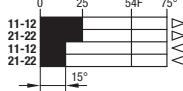


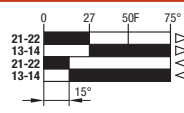
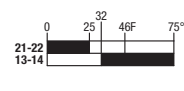
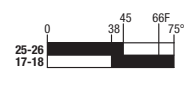
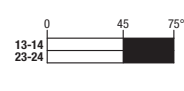
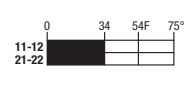
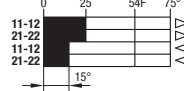
E

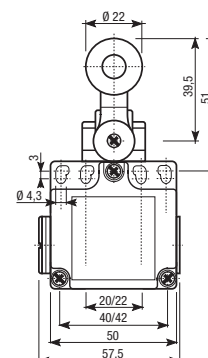
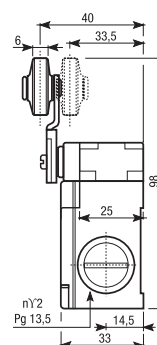
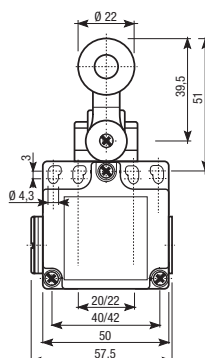
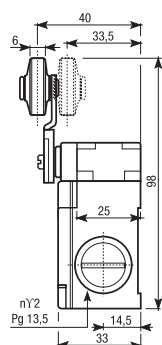


E•RA

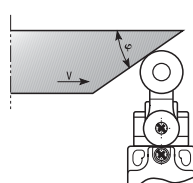
Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Plastic body	Plastic body	
E20000EI	E20100EI	
E20001EI	E20101EI	
E20002EI	E20102EI	
E20003EI	E20103EI	
E20004EI	E20104EI	
E20005EI	E20105EI	
0,16		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Plastic body	Plastic body	
E20000EIRA	E20100EIRA	
E20001EIRA	E20101EIRA	
E20002EIRA	E20102EIRA	
E20003EIRA	E20103EIRA	
E20004EIRA	E20104EIRA	
E20005EIRA	E20105EIRA	
0,16		
1		



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm



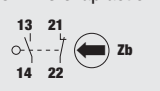
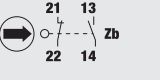
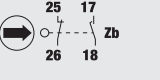
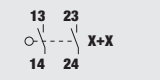
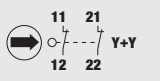
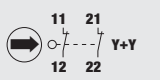
Ø50 mm rubber roller lever

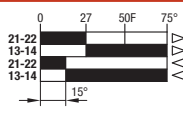
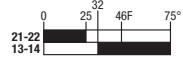
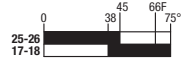
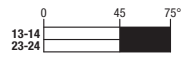
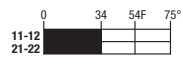
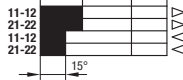
E•50

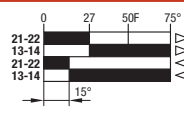
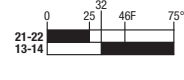
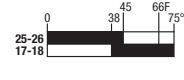
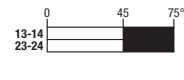
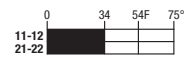


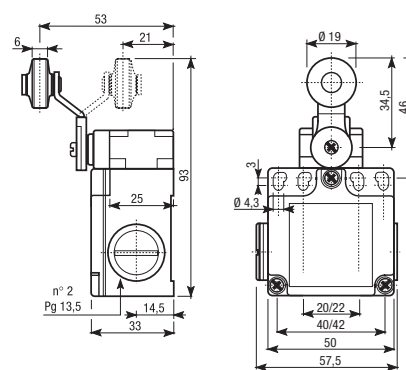
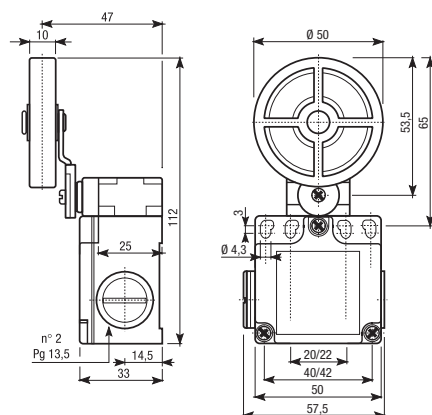
Thermoplastic roller lever

I

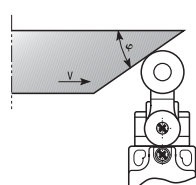
Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Plastic body	Plastic body	
E20000E150	E20100E150	
E20001E150	E20101E150	
E20002E150	E20102E150	
E20003E150	E20103E150	
E20004E150	E20104E150	
E20005E150	E20105E150	
0,175		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Plastic body	Plastic body	
E20000II	E20100II	
E20001II	E20101II	
E20002II	E20102II	
E20003II	E20103II	
E20004II	E20104II	
E20005II	E20105II	
0,16		
1		

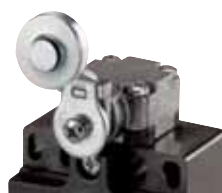


Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm



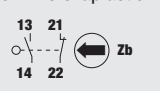
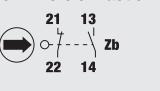
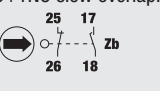
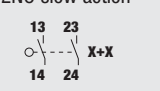
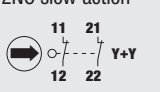
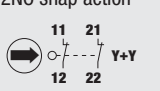
Steel roller lever

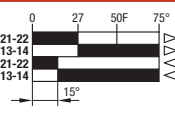
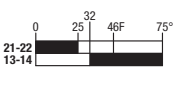
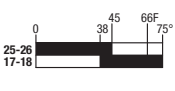
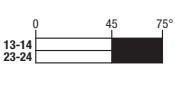
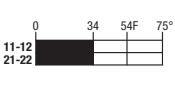
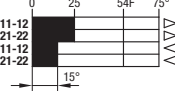
I•RA

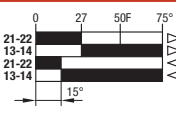
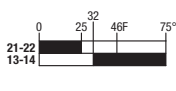
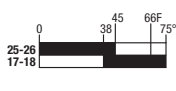
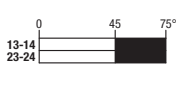
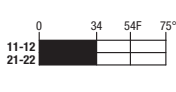
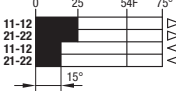


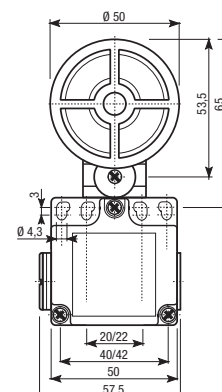
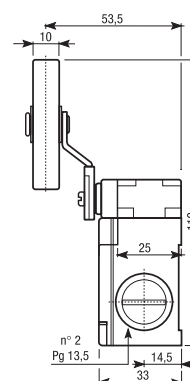
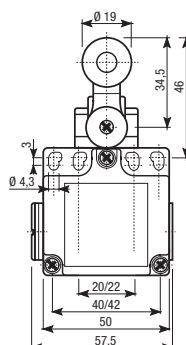
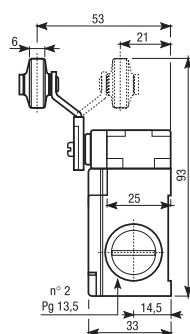
Ø50 mm rubber roller lever

I•50

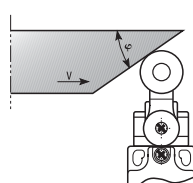
Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Plastic body	Plastic body	
E20000IIRA	E20100IIRA	
E20001IIRA	E20101IIRA	
E20002IIRA	E20102IIRA	
E20003IIRA	E20103IIRA	
E20004IIRA	E20104IIRA	
E20005IIRA	E20105IIRA	
0,16		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Plastic body	Plastic body	
E20000I50	E20100I50	
E20001I50	E20101I50	
E20002I50	E20102I50	
E20003I50	E20103I50	
E20004I50	E20104I50	
E20005I50	E20105I50	
0,17		
1		



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm



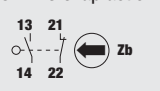
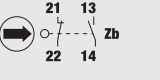
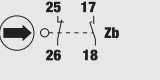
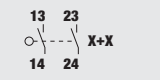
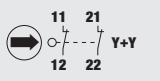
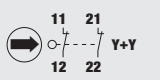
Thermoplastic roller variable length lever

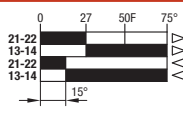
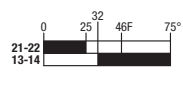
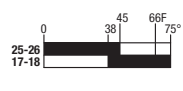
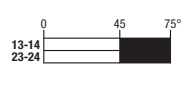
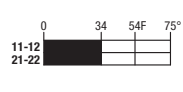
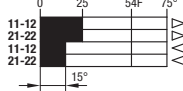
F

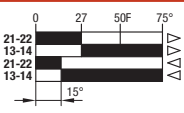
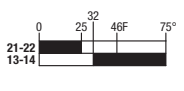
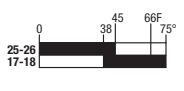
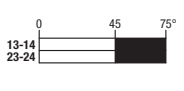
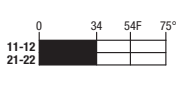
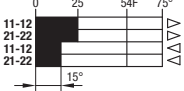


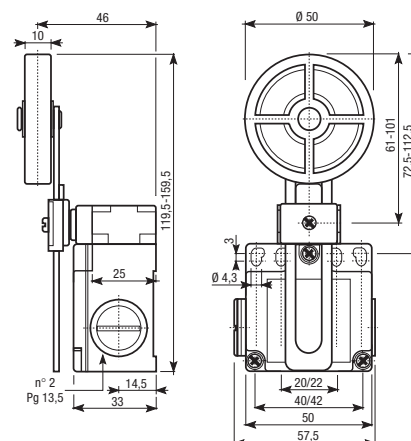
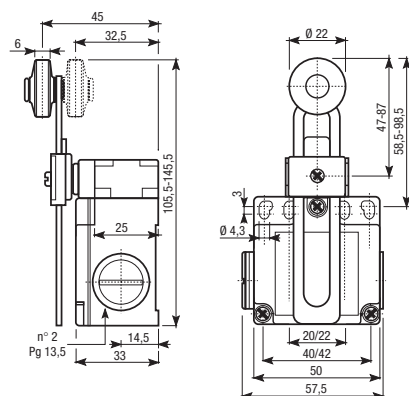
Ø50 mm rubber roller variable length lever

F•50

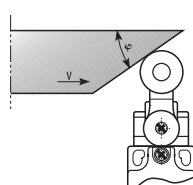
Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	Plastic body
Plastic body	Plastic body	
E20000FI	E20100FI	
E20001FI	E20101FI	
E20002FI	E20102FI	
E20003FI	E20103FI	
E20004FI	E20104FI	
E20005FI	E20105FI	
0,175		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	Plastic body
Plastic body	Plastic body	
E20000FI50	E20100FI50	
E20001FI50	E20101FI50	
E20002FI50	E20102FI50	
E20003FI50	E20103FI50	
E20004FI50	E20104FI50	
E20005FI50	E20105FI50	
0,195		
1		



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm



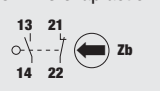
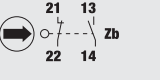
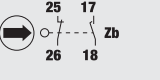
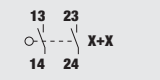
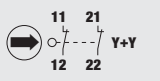
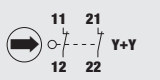
FR•50

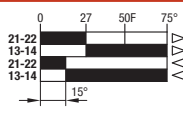
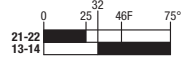
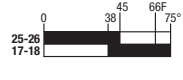
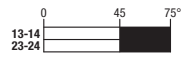
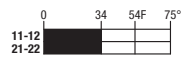
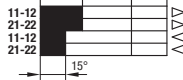
Ø50 mm rubber roller
adjustable lever

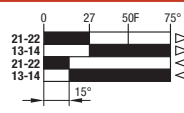
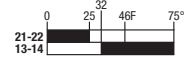
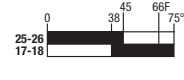
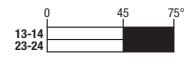
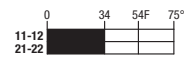


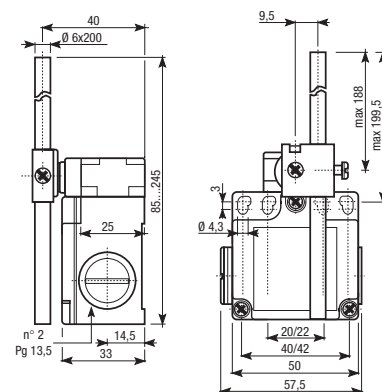
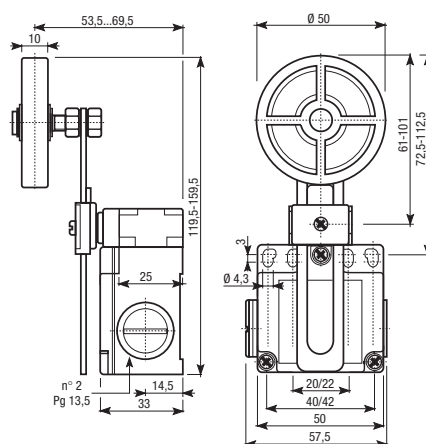
G

Side rotary adjustable
Ø6 mm glass fiber rod

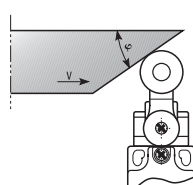
Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Plastic body	Plastic body	
E20000FRI50	E20100FRI50	
E20001FRI50	E20101FRI50	
E20002FRI50	E20102FRI50	
E20003FRI50	E20103FRI50	
E20004FRI50	E20104FRI50	
E20005FRI50	E20105FRI50	
0,21		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Plastic body	Plastic body	
E20000GI	E20100GI	
E20001GI	E20101GI	
E20002GI	E20102GI	
E20003GI	E20103GI	
E20004GI	E20104GI	
E20005GI	E20105GI	
0,19		
1		



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

Limit switches - E200 series



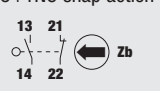
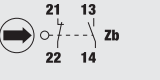
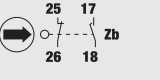
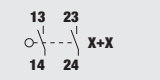
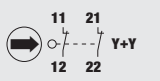
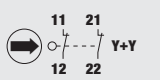
Side rotary adjustable
Ø6 mm aluminium rod

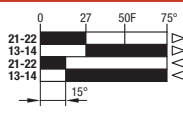
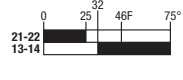
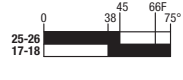
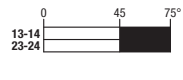
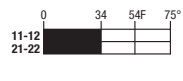
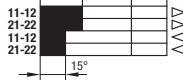
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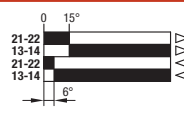
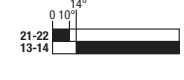
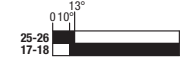
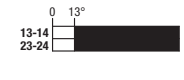
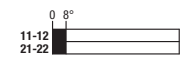
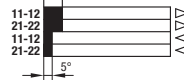


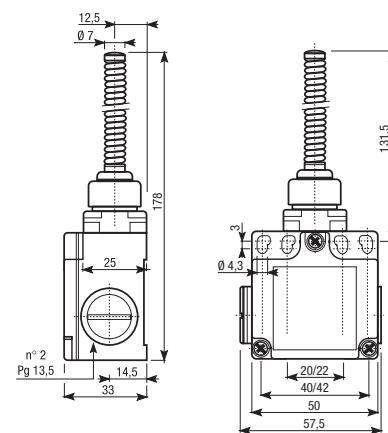
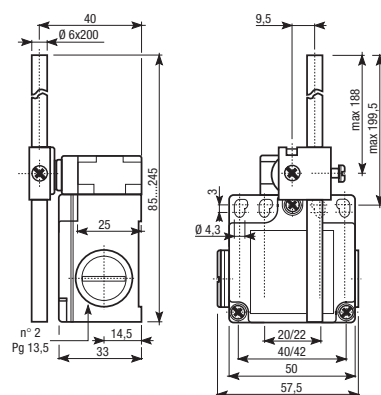
Flexible rod

L

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action action 	03
2NC slow action action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head Plastic body	Metal head Plastic body	
E20000HI	E20100HI	
E20001HI	E20101HI	
E20002HI	E20102HI	
E20003HI	E20103HI	
E20004HI	E20104HI	
E20005HI	E20105HI	
0,19		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head Plastic body	Metal head Plastic body	
E20000LI	E20100LI	
E20001LI	E20101LI	
E20002LI	E20102LI	
E20003LI	E20103LI	
E20004LI	E20104LI	
E20005LI	E20105LI	
0,16		
1		





Flexible rod with plastic terminal

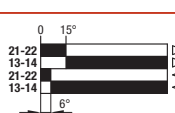
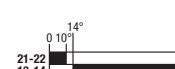
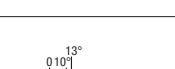
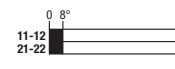
LP

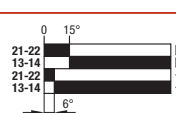
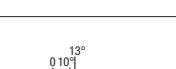
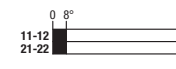


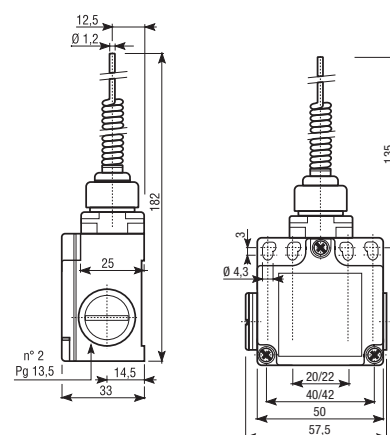
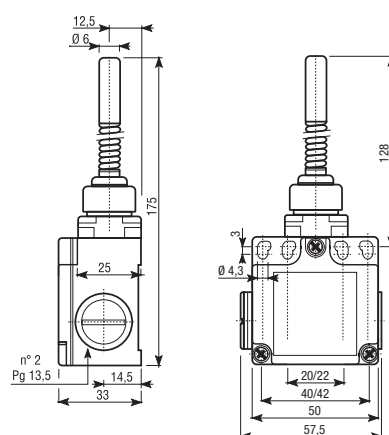
Cat's whisker

LS

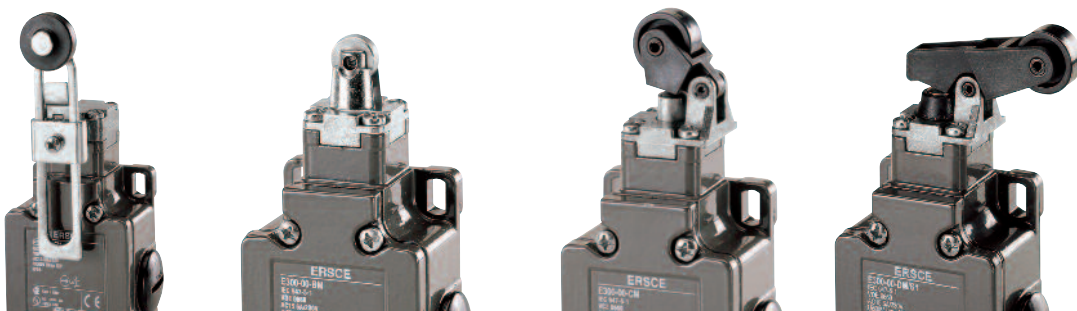
Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head Plastic body	Metal head Plastic body	
E20000LPI	E20100LPI	
E20001LPI	E20101LPI	
E20002LPI	E20102LPI	
E20003LPI	E20103LPI	
E20004LPI	E20104LPI	
E20005LPI	E20105LPI	
0,16		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head Plastic body	Metal head Plastic body	
E20000LSI	E20100LSI	
E20001LSI	E20101LSI	
E20002LSI	E20102LSI	
E20003LSI	E20103LSI	
E20004LSI	E20104LSI	
E20005LSI	E20105LSI	
0,16		
1		

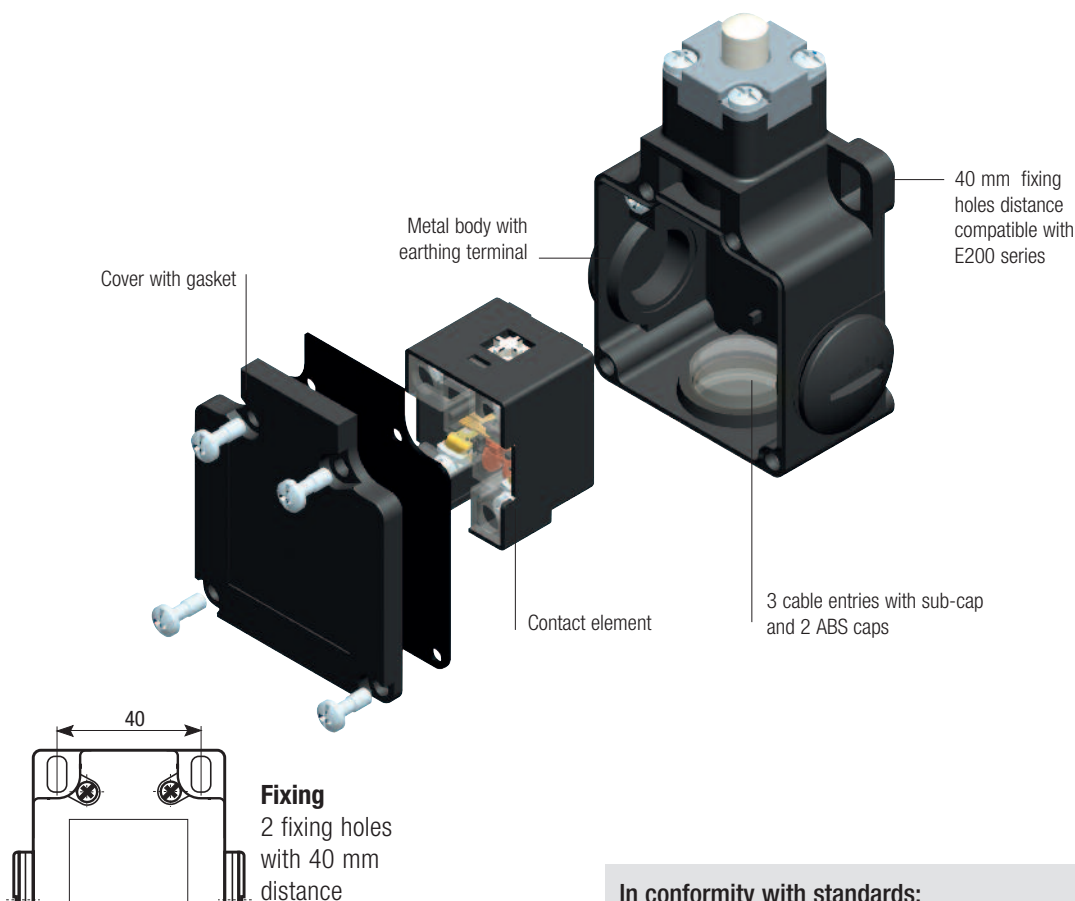


Limit switches E300 series



E300 series

The **E300** series is designed to withstand the most severe conditions. It has two fixing holes with distance 40mm. Each switch has three cable entries, two on each side and one on the bottom, for maximum wiring flexibility. Available with metal body and actuators.



Cable entry
3 cable entries, 2 on the sides and one the bottom of the switch with thread:



In conformity with standards:

IEC EN 60947-5-1 • EN 60947-1 • UNI EN 1088
EN ISO 12100-1 • EN ISO 12100-2 • IEC 529 • EN 60529
VDE 0660-200 • VDE 0113 • EN 81-1 • EN 81-2

Thread

Pg 13,5
M20x1,5
1/2" NPT (on request)
M12 connector (on request)

Series part no.

E300...
E301...
E302...
E300...M12



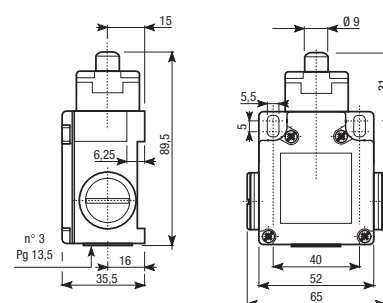
A•S1



Cable entry		
PG 13,5	M20 x 1,5	
Metal head Metal body	Metal head Metal body	Contact travel
E30000AMS1	E30100AMS1	
E30001AMS1	E30101AMS1	
E30002AMS1	E30102AMS1	
E30003AMS1	E30103AMS1	
E30004AMS1	E30104AMS1	
E30005AMS1	E30105AMS1	

0,32

1



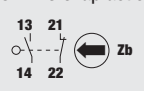
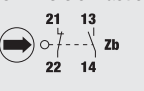
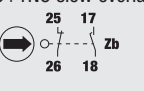
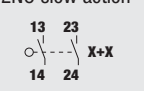
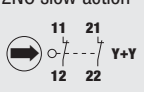
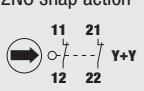
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

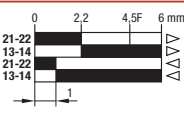
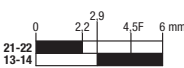
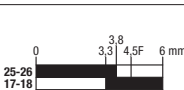
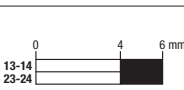
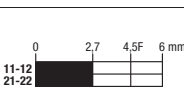
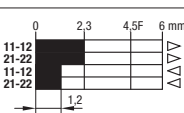
Limit switches - E300 series

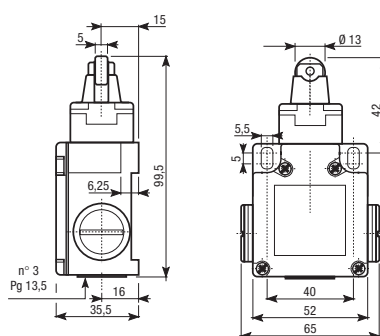


Steel roller plunger

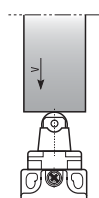
B

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

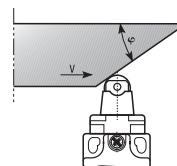
Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Metal body	Metal body	
E30000BM	E30100BM	
E30001BM	E30101BM	
E30002BM	E30102BM	
E30003BM	E30103BM	
E30004BM	E30104BM	
E30005BM	E30105BM	
0,32		
1		



Drive cam operating parameters



V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



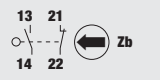
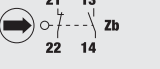
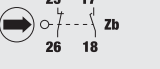
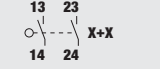
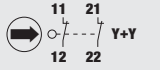
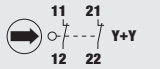
Φ	V max (m/s)
20°	1
30°	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

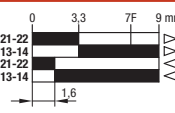
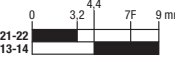
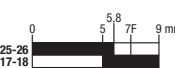
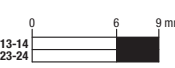
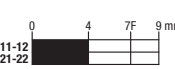
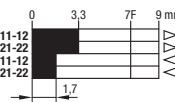
Thermoplastic roller lever,
side actuation

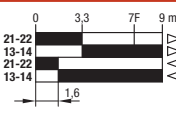
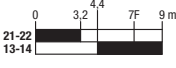
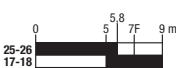
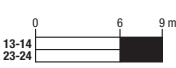
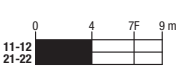
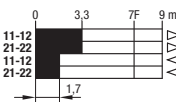
C

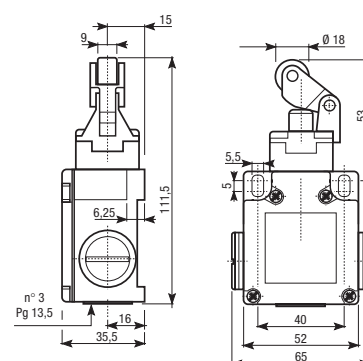
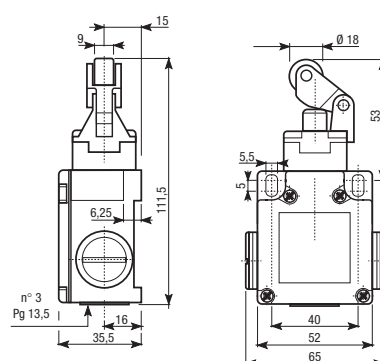
Thermoplastic roller lever with rubber gasket,
side actuation

C•S1

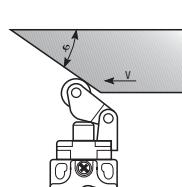
Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	Contact travel
Metal body	Metal body	
E30000CM	E30100CM	
E30001CM	E30101CM	
E30002CM	E30102CM	
E30003CM	E30103CM	
E30004CM	E30104CM	
E30005CM	E30105CM	
0,325		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	Contact travel
Metal body	Metal body	
E30000CMS1	E30100CMS1	
E30001CMS1	E30101CMS1	
E30002CMS1	E30102CMS1	
E30003CMS1	E30103CMS1	
E30004CMS1	E30104CMS1	
E30005CMS1	E30105CMS1	
0,325		
1		



Drive cam operating parameters



φ	V max (m/s)
20°	1
30°	0,5

Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

Limit switches - **E300** series



Thermoplastic roller lever,
vertical actuation

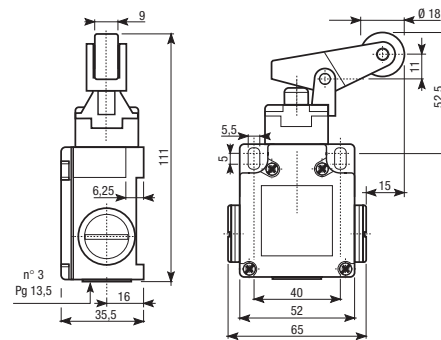
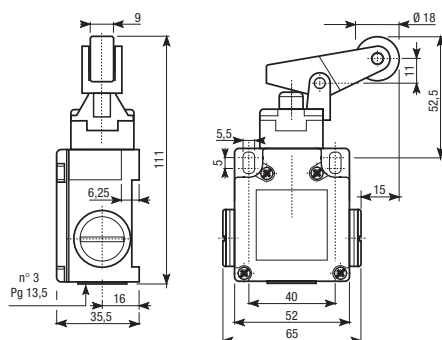


Thermoplastic roller lever with rubber gasket,
vertical actuation

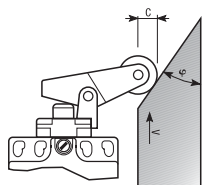
Contact element	
1NO+1NC snap action	00
1NO+1NC slow action	01
1NO+1NC slow overlap.	02
2NO slow action	03
2NC slow action	04
2NC snap action	05
Weight	kg
Pack	pcs

Cable entry		
PG 13,5	M20 x 1,5	
Metal head Metal body	Metal head Metal body	Contact travel
E30000DM	E30100DM	
E30001DM	E30101DM	
E30002DM	E30102DM	
E30003DM	E30103DM	
E30004DM	E30104DM	
E30005DM	E30105DM	

Cable entry		
PG 13,5	M20 x 1,5	
Metal head Metal body	Metal head Metal body	Contact travel
E30000DMS1	E30100DMS1	
E30001DMS1	E30101DMS1	
E30002DMS1	E30102DMS1	
E30003DMS1	E30103DMS1	
E30004DMS1	E30104DMS1	
E30005DMS1	E30105DMS1	



Drive cam operating parameters



φ	V max (m/s)
20°	1
30°	0,5

Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N



Thermoplastic roller lever

E



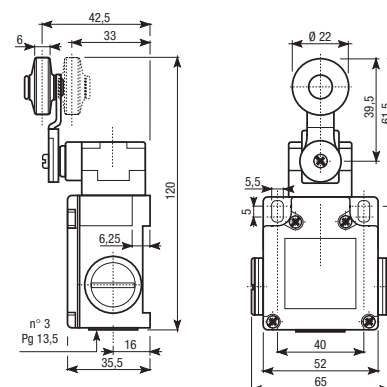
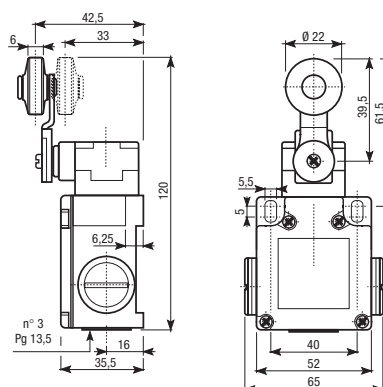
Steel roller lever

E•RA

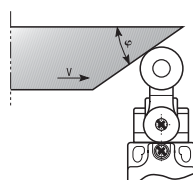
Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	Contact travel
Metal body	Metal body	
E30000EM	E30100EM	
E30001EM	E30101EM	
E30002EM	E30102EM	
E30003EM	E30103EM	
E30004EM	E30104EM	
E30005EM	E30105EM	
0,355		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	Contact travel
Metal body	Metal body	
E30000EMRA	E30100EMRA	
E30001EMRA	E30101EMRA	
E30002EMRA	E30102EMRA	
E30003EMRA	E30103EMRA	
E30004EMRA	E30104EMRA	
E30005EMRA	E30105EMRA	
0,355		
1		



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

Limit switches - E300 series



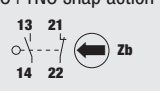
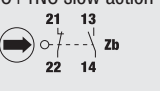
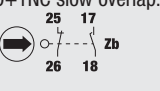
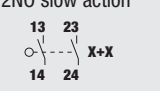
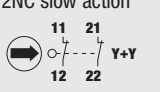
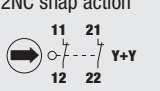
Ø50 mm rubber roller lever

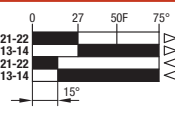
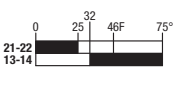
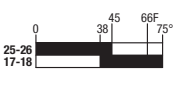
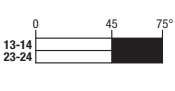
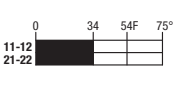
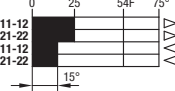
E•50

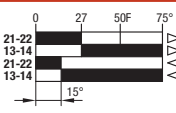
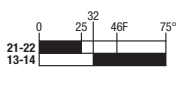
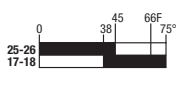
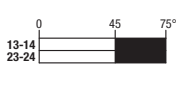
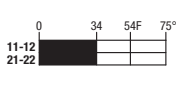
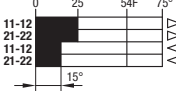


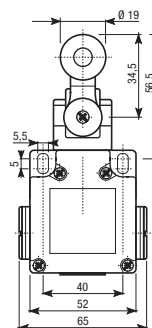
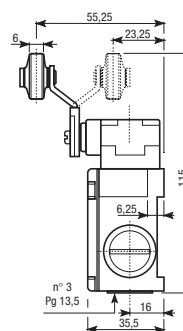
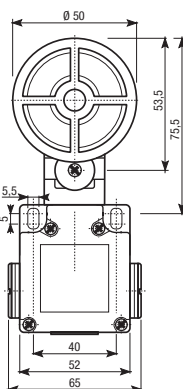
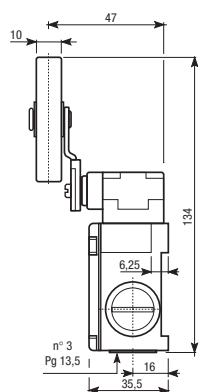
Thermoplastic roller lever

I

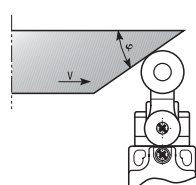
Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	Contact travel
Metal body	Metal body	
E30000EM50	E30100EM50	
E30001EM50	E30101EM50	
E30002EM50	E30102EM50	
E30003EM50	E30103EM50	
E30004EM50	E30104EM50	
E30005EM50	E30105EM50	
0,365		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	Contact travel
Metal body	Metal body	
E30000IM	E30100IM	
E30001IM	E30101IM	
E30002IM	E30102IM	
E30003IM	E30103IM	
E30004IM	E30104IM	
E30005IM	E30105IM	
0,365		
1		



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm



Steel roller lever

I•RA



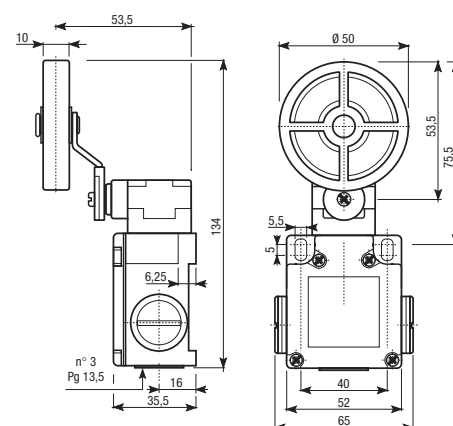
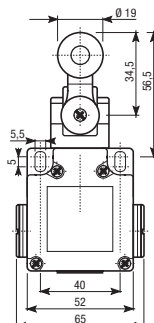
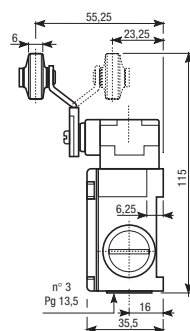
Ø50 mm rubber roller lever

I•50

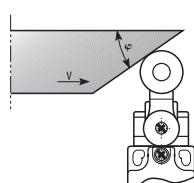
Contact element	
1NO+1NC snap action 00	
1NO+1NC slow action 01	
1NO+1NC slow overlap. 02	
2NO slow action 03	
2NC slow action 04	
2NC snap action 05	
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	Contact travel
Metal body	Metal body	
E30000IMRA	E30100IMRA	
E30001IMRA	E30101IMRA	
E30002IMRA	E30102IMRA	
E30003IMRA	E30103IMRA	
E30004IMRA	E30104IMRA	
E30005IMRA	E30105IMRA	
0,355		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	Contact travel
Metal body	Metal body	
E30000IM50	E30100IM50	
E30001IM50	E30101IM50	
E30002IM50	E30102IM50	
E30003IM50	E30103IM50	
E30004IM50	E30104IM50	
E30005IM50	E30105IM50	
0,365		
1		



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

Limit switches - **E300** series



Thermoplastic roller variable length lever



Ø50 mm rubber roller variable
length lever

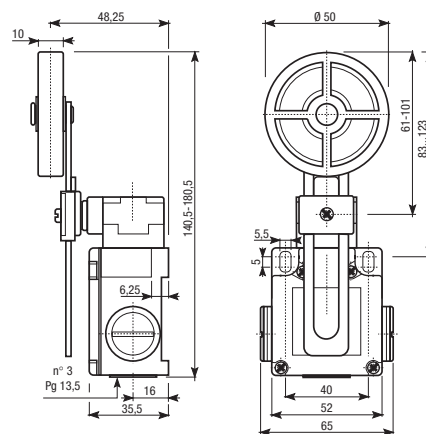
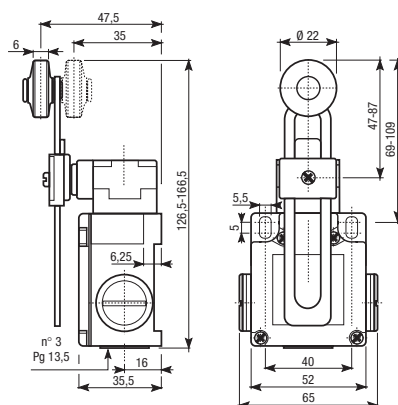
Contact element	
1NO+1NC snap action	00
1NO+1NC slow action	01
1NO+1NC slow overlap.	02
2NO slow action	03
2NC slow action	04
2NC snap action	05
Weight	kg
Pack	pcs

Cable entry		
PG 13,5	M20 x 1,5	
Metal head Metal body	Metal head Metal body	Contact travel
E30000FM	E30100FM	
E30001FM	E30101FM	
E30002FM	E30102FM	
E30003FM	E30103FM	
E30004FM	E30104FM	
E30005FM	E30105FM	

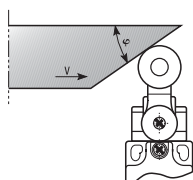
Cable entry		
PG 13,5	M20 x 1,5	
Metal head Metal body	Metal head Metal body	Contact travel
E30000FM50	E30100FM50	
E30001FM50	E30101FM50	
E30002FM50	E30102FM50	
E30003FM50	E30103FM50	
E30004FM50	E30104FM50	
E30005FM50	E30105FM50	

0,385

1



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm



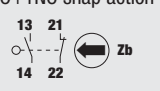
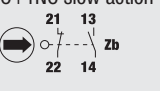
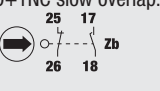
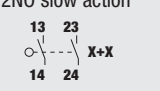
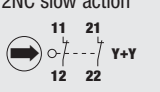
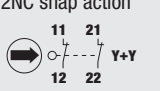
FR•50

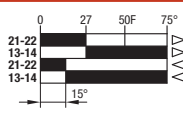
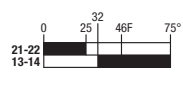
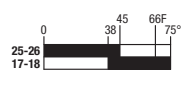
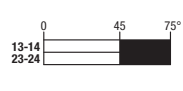
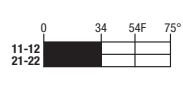
Ø50 mm rubber roller adjustable lever

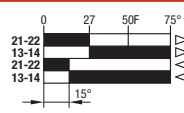
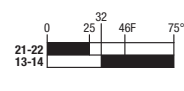
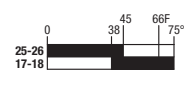
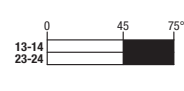
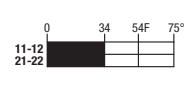
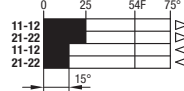


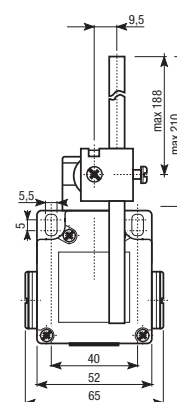
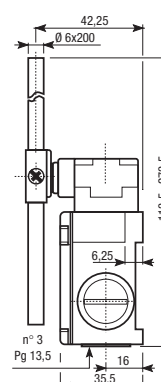
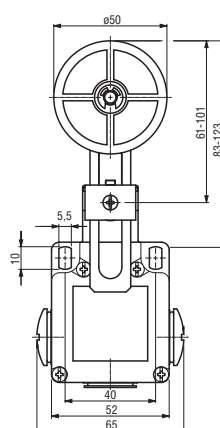
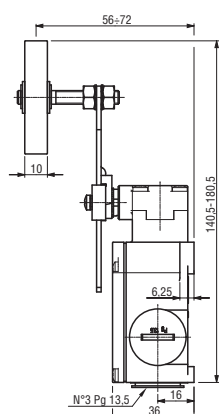
G

Side rotary adjustable Ø6 mm glass fiber rod

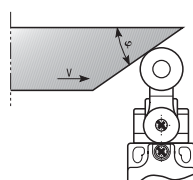
Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	Contact travel
Metal body	Metal body	
E30000FRM50	E30100FRM50	
E30001FRM50	E30101FRM50	
E30002FRM50	E30102FRM50	
E30003FRM50	E30103FRM50	
E30004FRM50	E30104FRM50	
E30005FRM50	E30105FRM50	
0,395		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	Contact travel
Metal body	Metal body	
E30000GM	E30100GM	
E30001GM	E30101GM	
E30002GM	E30102GM	
E30003GM	E30103GM	
E30004GM	E30104GM	
E30005GM	E30105GM	
0,385		
1		



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces

Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

Limit switches - E300 series



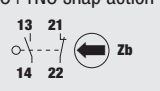
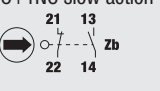
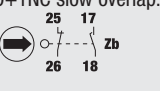
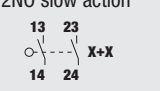
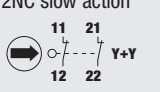
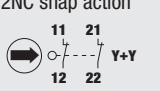
Side rotary adjustable Ø6 mm
aluminium rod

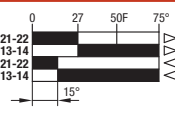
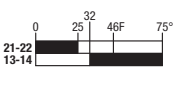
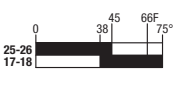
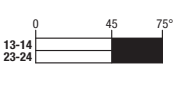
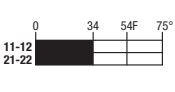
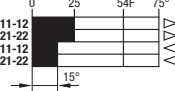
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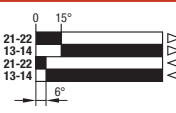
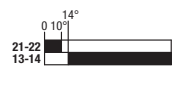
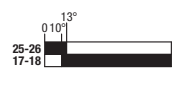
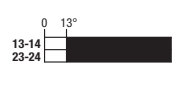
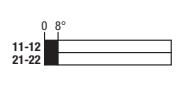
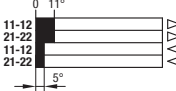


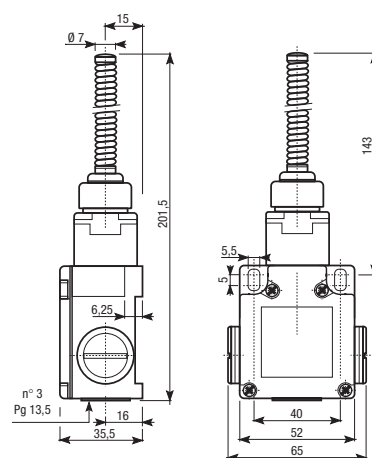
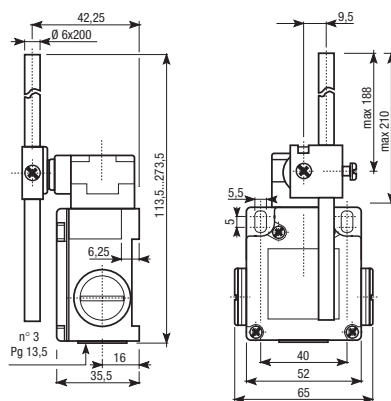
Flexible rod

L

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	Contact travel
Metal body	Metal body	
E30000HM	E30100HM	
E30001HM	E30101HM	
E30002HM	E30102HM	
E30003HM	E30103HM	
E30004HM	E30104HM	
E30005HM	E30105HM	
0,385		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	Contact travel
Metal body	Metal body	
E30000LM	E30100LM	
E30001LM	E30101LM	
E30002LM	E30102LM	
E30003LM	E30103LM	
E30004LM	E30104LM	
E30005LM	E30105LM	
0,35		
1		





Flexible rod with plastic terminal

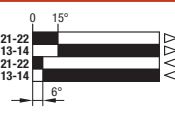
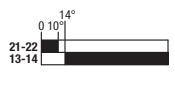
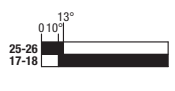
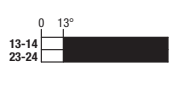
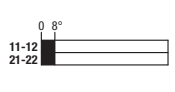
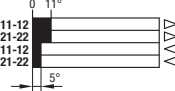
LP

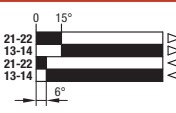
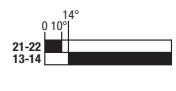
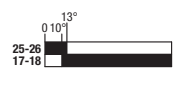
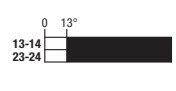
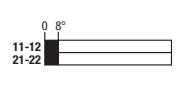
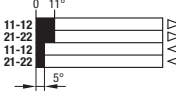


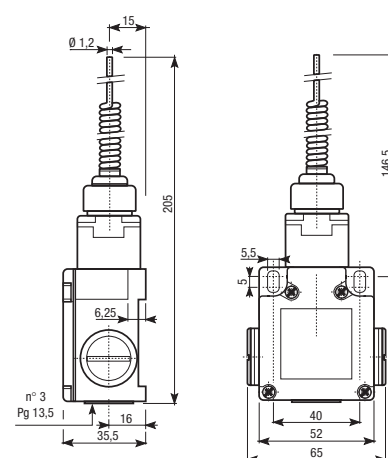
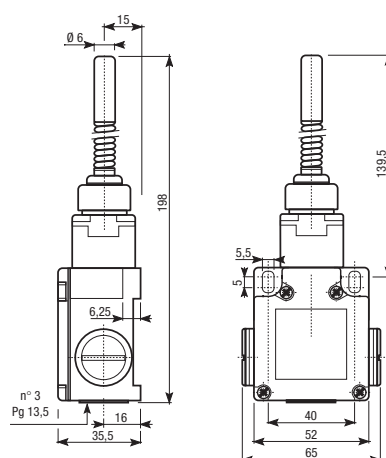
Cat's whisker

LS

Contact element	
1NO+1NC snap action  13 21 14 22 Zb	00
1NO+1NC slow action  21 13 22 14 Zb	01
1NO+1NC slow overlap.  25 17 26 18 Zb	02
2NO slow action  13 23 14 24 X+X	03
2NC slow action  11 21 12 22 Y+Y	04
2NC snap action  11 21 12 22 Y+Y	05
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Metal body	Metal body	
E30000LPM	E30100LPM	
E30001LPM	E30101LPM	
E30002LPM	E30102LPM	
E30003LPM	E30103LPM	
E30004LPM	E30104LPM	
E30005LPM	E30105LPM	
0,35		
1		

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Metal body	Metal body	
E30000LSM	E30100LSM	
E30001LSM	E30101LSM	
E30002LSM	E30102LSM	
E30003LSM	E30103LSM	
E30004LSM	E30104LSM	
E30005LSM	E30105LSM	
0,35		
1		

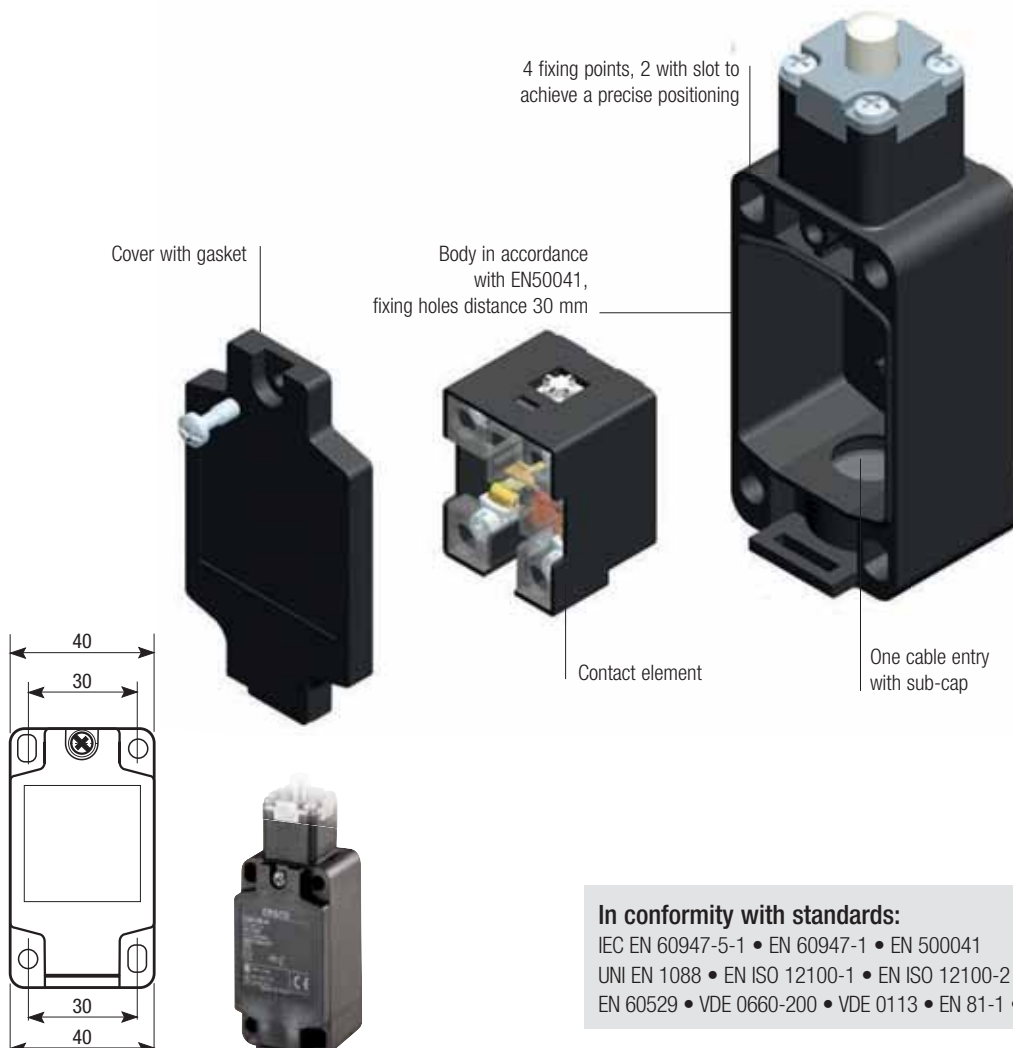


Limit switches E400 series



E400 series

The **E400** series is the most robust of Bremas position switches. Dimensions are in accordance with CENELEC EN 50041, 4 fixing holes with distance 30 mm. It is equipped with one hole for cable entry on the bottom of the switch. Available with metal actuators and thermoplastic or metal body.



Fixing

body in accordance with CENELEC EN50041, with 4 fixing holes with 30 mm horizontal distance.



Cable entry

1 cable entry on the bottom of the switch with thread:

In conformity with standards:

IEC EN 60947-5-1 • EN 60947-1 • EN 500041
UNI EN 1088 • EN ISO 12100-1 • EN ISO 12100-2 • IEC 529
EN 60529 • VDE 0660-200 • VDE 0113 • EN 81-1 • EN 81-2

Thread

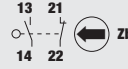
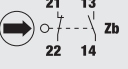
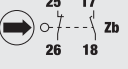
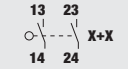
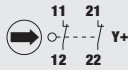
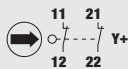
Pg 13,5
M20x1,5
1/2" NPT (on request)
M12 connector (on request)

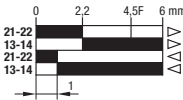
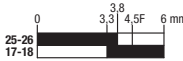
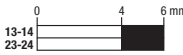
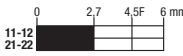
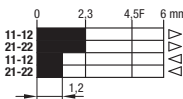
Series part no.

E400...
E401...
E402...
E400...M12

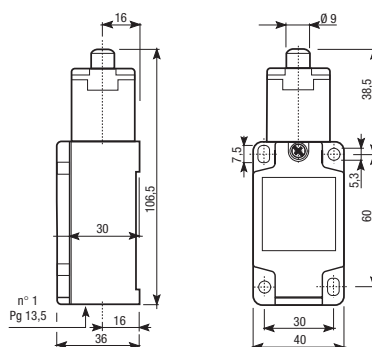


Steel plunger

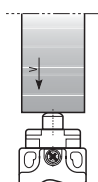
Contact element	
1NO+1NC azione rapida  00	
1NO+1NC azione lenta  01	
1NO+1NC lenta sovrapp.  02	
2NO azione lenta  03	
2NC azione lenta  04	
2NC azione rapida  05	
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000AI*	E40000AM*	E40100AI*	E40100AM*	
E40001AI*	E40001AM*	E40101AI*	E40101AM*	
E40002AI	E40002AM	E40102AI	E40102AM	
E40003AI	E40003AM	E40103AI	E40103AM	
E40004AI	E40004AM	E40104AI	E40104AM	
E40005AI	E40005AM	E40105AI	E40105AM	
0,245	0,36	0,245	0,36	
1	1	1	1	

* form conforming to EN 50041



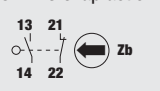
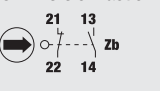
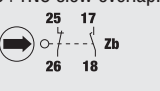
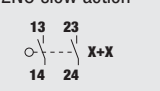
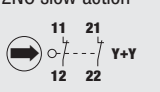
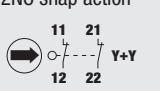
Drive cam operating parameters

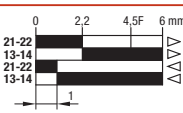
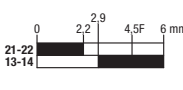
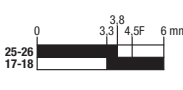
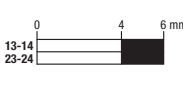
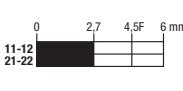


V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

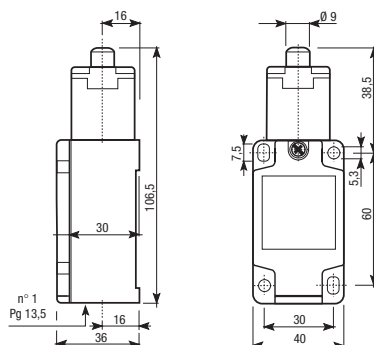


Steel plunger with rubber gasket

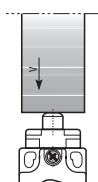
Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000AIS1*	E40000AMS1*	E40100AIS1*	E40100AMS1*	
E40001AIS1*	E40001AMS1*	E40101AIS1*	E40101AMS1*	
E40002AIS1	E40002AMS1	E40102AIS1	E40102AMS1	
E40003AIS1	E40003AMS1	E40103AIS1	E40103AMS1	
E40004AIS1	E40004AMS1	E40104AIS1	E40104AMS1	
E40005AIS1	E40005AMS1	E40105AIS1	E40105AMS1	
0,245	0,36	0,245	0,36	
1	1	1	1	

* form conforming to EN 50041



Drive cam operating parameters

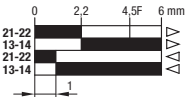
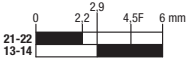
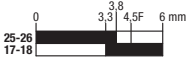
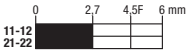
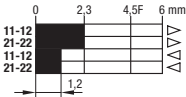


V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

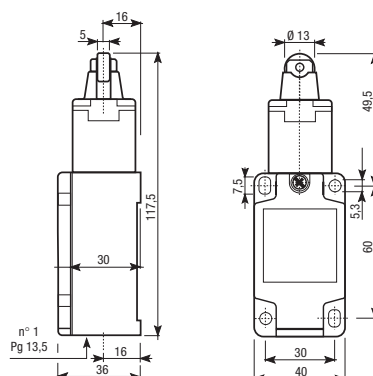


Steel roller plunger

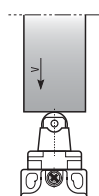
Contact element	
1NO+1NC snap action 00	
1NO+1NC slow action 01	
1NO+1NC slow overlap. 02	
2NO slow action 03	
2NC slow action 04	
2NC snap action 05	
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000BI*	E40000BM*	E40100BI*	E40100BM*	
E40001BI*	E40001BM*	E40101BI*	E40101BM*	
E40002BI	E40002BM	E40102BI	E40102BM	
E40003BI	E40003BM	E40103BI	E40103BM	
E40004BI	E40004BM	E40104BI	E40104BM	
E40005BI	E40005BM	E40105BI	E40105BM	
0,255	0,37	0,255	0,37	
1	1	1	1	

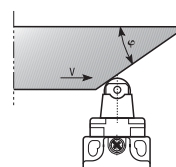
* form conforming to EN 50041



Drive cam operating parameters



V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

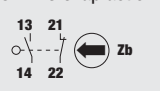
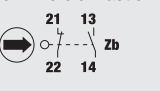
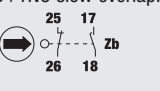
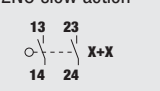
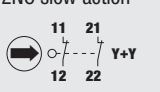
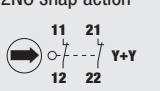


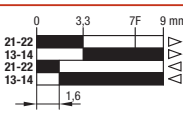
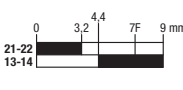
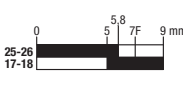
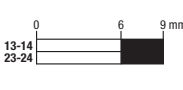
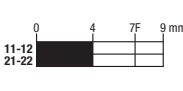
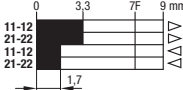
φ	V max (m/s)
20°	1
30°	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

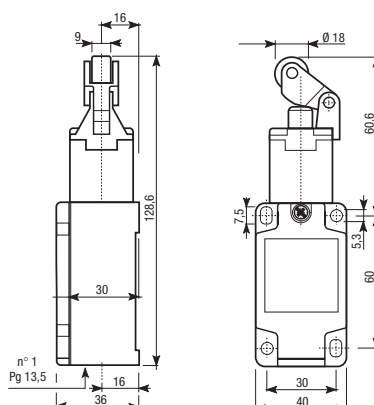


C

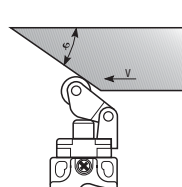
Thermoplastic roller lever, side actuation

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000CI	E40000CM	E40100CI	E40100CM	
E40001CI	E40001CM	E40101CI	E40101CM	
E40002CI	E40002CM	E40102CI	E40102CM	
E40003CI	E40003CM	E40103CI	E40103CM	
E40004CI	E40004CM	E40104CI	E40104CM	
E40005CI	E40005CM	E40105CI	E40105CM	
0,255	0,37	0,255	0,37	
1	1	1	1	



Drive cam operating parameters



Φ	V max (m/s)
20°	1
30°	0,5

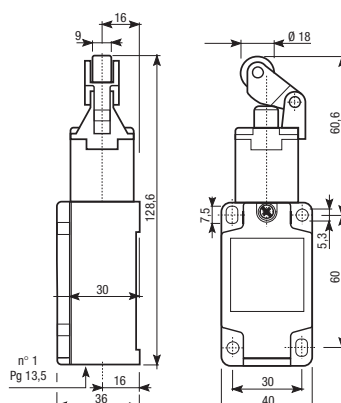
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N



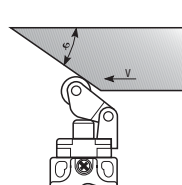
Thermoplastic roller lever with rubber gasket, side actuation

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000CIS1	E40000CMS1	E40100CIS1	E40100CMS1	
E40001CIS1	E40001CMS1	E40101CIS1	E40101CMS1	
E40002CIS1	E40002CMS1	E40102CIS1	E40102CMS1	
E40003CIS1	E40003CMS1	E40103CIS1	E40103CMS1	
E40004CIS1	E40004CMS1	E40104CIS1	E40104CMS1	
E40005CIS1	E40005CMS1	E40105CIS1	E40105CMS1	
0,255	0,37	0,255	0,37	
1	1	1	1	



Drive cam operating parameters

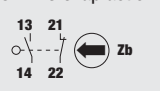
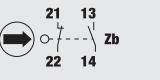
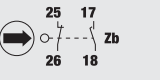
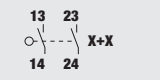
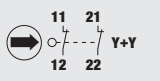
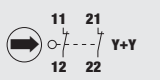


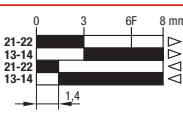
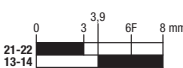
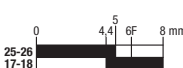
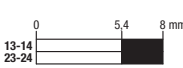
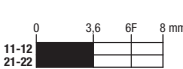
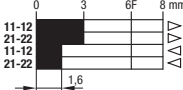
Φ	V max (m/s)
20°	1
30°	0,5

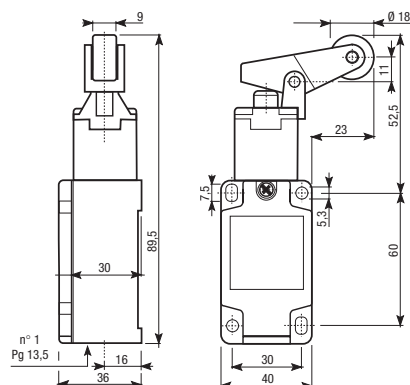
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N



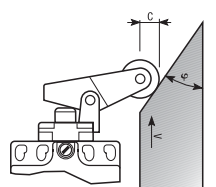
Thermoplastic roller lever, vertical actuation

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000DI	E40000DM	E40100DI	E40100DM	
E40001DI	E40001DM	E40101DI	E40101DM	
E40002DI	E40002DM	E40102DI	E40102DM	
E40003DI	E40003DM	E40103DI	E40103DM	
E40004DI	E40004DM	E40104DI	E40104DM	
E40005DI	E40005DM	E40105DI	E40105DM	
0,255	0,37	0,255	0,37	
1	1	1	1	



Drive cam operating parameters



φ	V max (m/s)
20°	1
30°	0,5

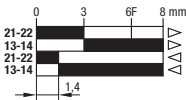
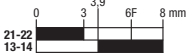
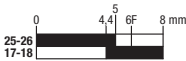
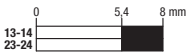
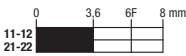
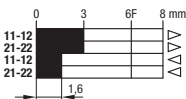
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

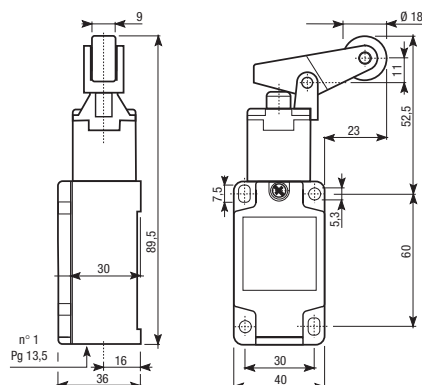
D•S1



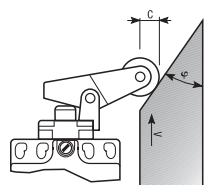
Thermoplastic roller lever with rubber gasket, vertical actuation

Contact element	
1NO+1NC snap action 00	
1NO+1NC slow action 01	
1NO+1NC slow overlap. 02	
2NO slow action 03	
2NC slow action 04	
2NC snap action 05	
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000DIS1	E40000DMS1	E40100DIS1	E40100DMS1	
E40001DIS1	E40001DMS1	E40101DIS1	E40101DMS1	
E40002DIS1	E40002DMS1	E40102DIS1	E40102DMS1	
E40003DIS1	E40003DMS1	E40103DIS1	E40103DMS1	
E40004DIS1	E40004DMS1	E40104DIS1	E40104DMS1	
E40005DIS1	E40005DMS1	E40105DIS1	E40105DMS1	
0,255	0,37	0,255	0,37	
1	1	1	1	



Drive cam operating parameters



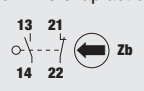
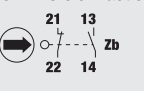
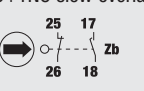
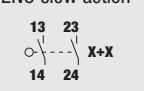
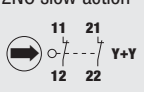
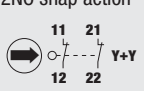
φ	V max (m/s)
20°	1
30°	0,5

Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

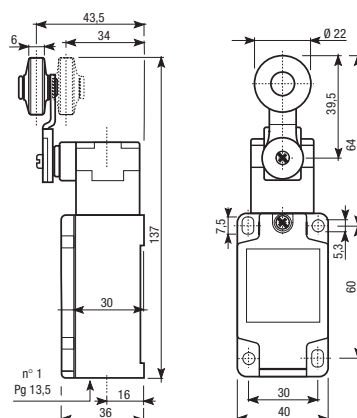


Thermoplastic roller lever

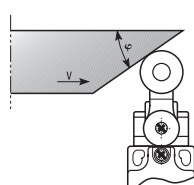
E

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry				Contact travel
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E40000EI	E40000EM	E40100EI	E40100EM	
E40001EI	E40001EM	E40101EI	E40101EM	
E40002EI	E40002EM	E40102EI	E40102EM	
E40003EI	E40003EM	E40103EI	E40103EM	
E40004EI	E40004EM	E40104EI	E40104EM	
E40005EI	E40005EM	E40105EI	E40105EM	
0,285	0,4	0,285	0,4	
1	1	1	1	



Drive cam operating parameters



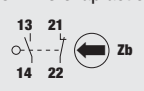
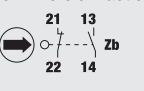
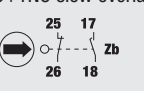
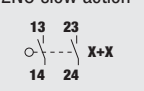
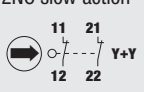
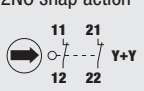
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

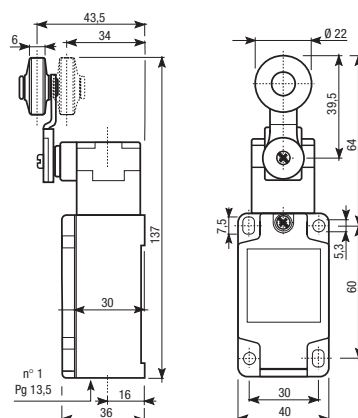


Steel roller lever

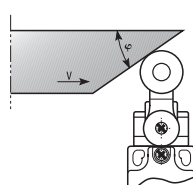
E•RA

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000EIRA	E40000EMRA	E40100EIRA	E40100EMRA	
E40001EIRA	E40001EMRA	E40101EIRA	E40101EMRA	
E40002EIRA	E40002EMRA	E40102EIRA	E40102EMRA	
E40003EIRA	E40003EMRA	E40103EIRA	E40103EMRA	
E40004EIRA	E40004EMRA	E40104EIRA	E40104EMRA	
E40005EIRA	E40005EMRA	E40105EIRA	E40105EMRA	
0,285	0,4	0,285	0,4	
1	1	1	1	



Drive cam operating parameters



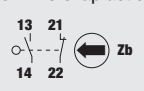
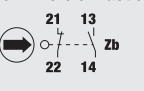
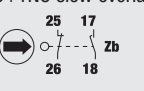
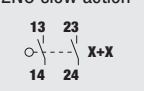
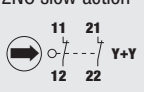
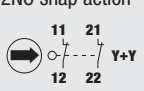
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

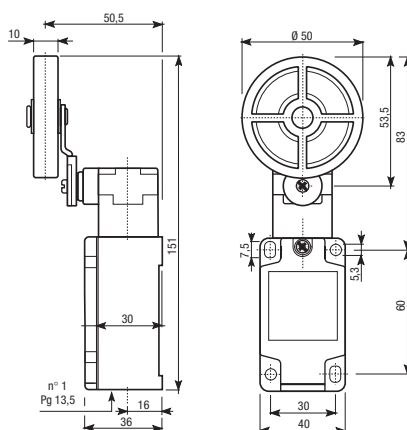


Ø50 mm rubber roller lever

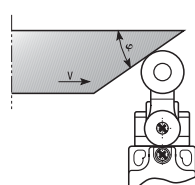
E•50

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000EI50	E40000EM50	E40100EI50	E40100EM50	
E40001EI50	E40001EM50	E40101EI50	E40101EM50	
E40002EI50	E40002EM50	E40102EI50	E40102EM50	
E40003EI50	E40003EM50	E40103EI50	E40103EM50	
E40004EI50	E40004EM50	E40104EI50	E40104EM50	
E40005EI50	E40005EM50	E40105EI50	E40105EM50	
0,295	0,41	0,295	0,41	
1	1	1	1	



Drive cam operating parameters

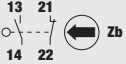
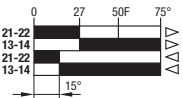
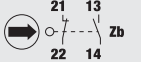
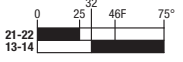
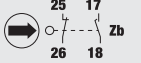
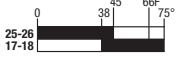
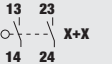
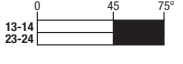
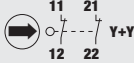
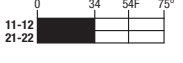
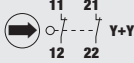
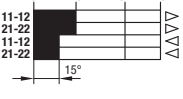


φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

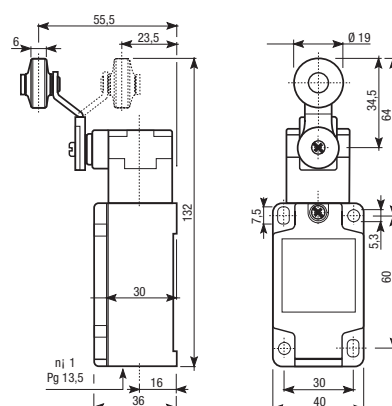
Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm



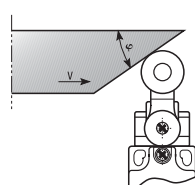
Leva piegata con rotella in plastica

Contact element		Cable entry				Contact travel	
		PG 13,5		M20 x 1,5			
		Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body		
1NO+1NC azione rapida		00	E40000II*	E40000IM*	E40100II*	E40100IM*	
1NO+1NC azione lenta		01	E40001II*	E40001IM*	E40101II*	E40101IM*	
1NO+1NC lenta sovrapp.		02	E40002II	E40002IM	E40102II	E40102IM	
2NO azione lenta		03	E40003II	E40003IM	E40103II	E40103IM	
2NC azione lenta		04	E40004II	E40004IM	E40104II	E40104IM	
2NC azione rapida		05	E40005II	E40005IM	E40105II	E40105IM	
Weight	kg	0,285	0,4	0,285	0,4		
Pack	pcs	1	1	1	1		

* form conforming to EN 50041



Drive cam operating parameters



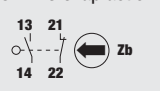
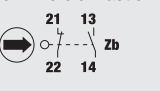
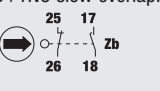
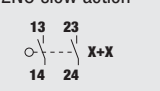
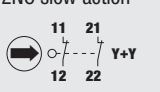
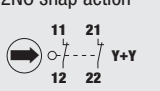
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

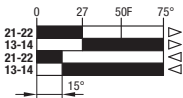
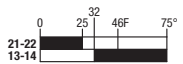
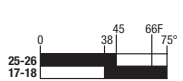
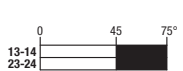
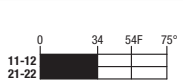
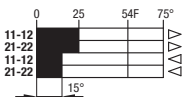
Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

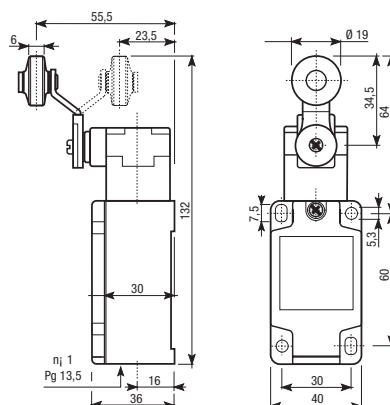


Steel roller lever

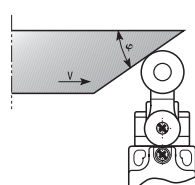
I-RA

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000IIRA	E40000IMRA	E40100IIRA	E40100IMRA	
E40001IIRA	E40001IMRA	E40101IIRA	E40101IMRA	
E40002IIRA	E40002IMRA	E40102IIRA	E40102IMRA	
E40003IIRA	E40003IMRA	E40103IIRA	E40103IMRA	
E40004IIRA	E40004IMRA	E40104IIRA	E40104IMRA	
E40005IIRA	E40005IMRA	E40105IIRA	E40105IMRA	
0,285	0,4	0,285	0,4	
1	1	1	1	



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

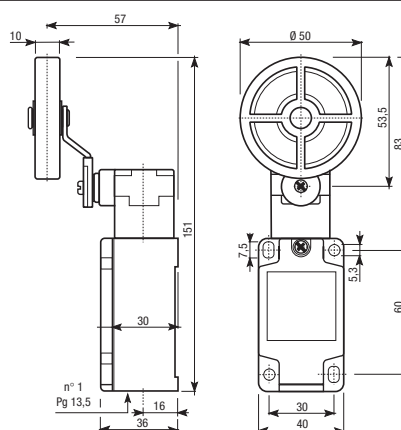
Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm



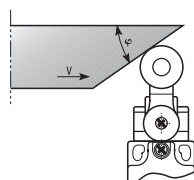
Ø50 mm rubber roller lever

Contact element	
1NO+1NC snap action 00	
1NO+1NC slow action 01	
1NO+1NC slow overlap. 02	
2NO slow action 03	
2NC slow action 04	
2NC snap action 05	
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000II50	E40000IM50	E40100II50	E40100IM50	
E40001II50	E40001IM50	E40101II50	E40101IM50	
E40002II50	E40002IM50	E40102II50	E40102IM50	
E40003II50	E40003IM50	E40103II50	E40103IM50	
E40004II50	E40004IM50	E40104II50	E40104IM50	
E40005II50	E40005IM50	E40105II50	E40105IM50	
0,295	0,41	0,295	0,41	
1	1	1	1	



Drive cam operating parameters



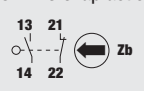
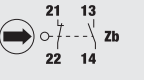
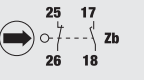
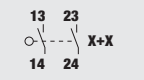
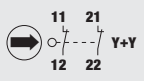
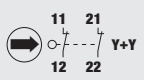
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

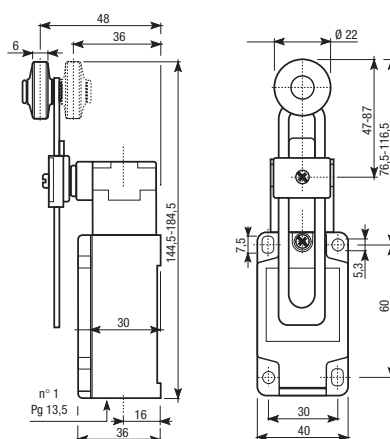


F

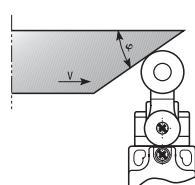
Thermoplastic roller variable length lever

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry				Contact travel
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E40000FI	E40000FM	E40100FI	E40100FM	
E40001FI	E40001FM	E40101FI	E40101FM	
E40002FI	E40002FM	E40102FI	E40102FM	
E40003FI	E40003FM	E40103FI	E40103FM	
E40004FI	E40004FM	E40104FI	E40104FM	
E40005FI	E40005FM	E40105FI	E40105FM	
0,305	0,42	0,305	0,42	
1	1	1	1	



Drive cam operating parameters



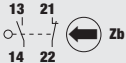
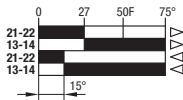
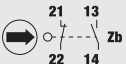
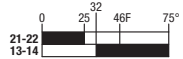
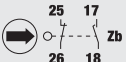
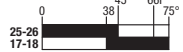
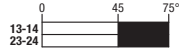
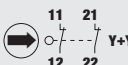
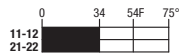
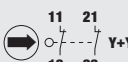
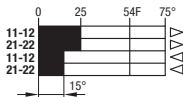
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

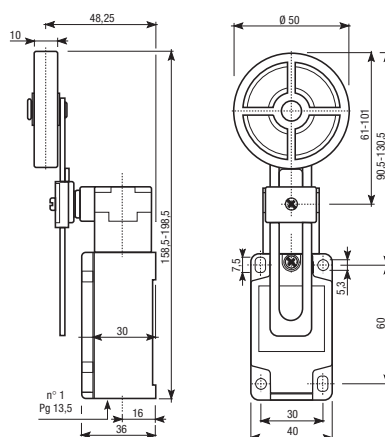
Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm



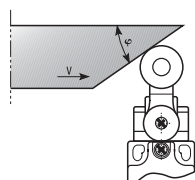
F•50

Ø50 mm rubber roller variable length lever

Contact element		Cable entry				Contact travel	
		PG 13,5		M20 x 1,5			
		Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body		
1NO+1NC snap action		00	E40000FI50	E40000FM50	E40100FI50	E40100FM50	
1NO+1NC slow action		01	E40001FI50	E40001FM50	E40101FI50	E40101FM50	
1NO+1NC slow overlap.		02	E40002FI50	E40002FM50	E40102FI50	E40102FM50	
2NO slow action		03	E40003FI50	E40003FM50	E40103FI50	E40103FM50	
2NC slow action		04	E40004FI50	E40004FM50	E40104FI50	E40104FM50	
2NC snap action		05	E40005FI50	E40005FM50	E40105FI50	E40105FM50	
Weight	kg	0,315	0,43	0,315	0,43		
Pack	pcs	1	1	1	1		



Drive cam operating parameters



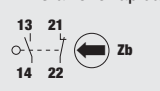
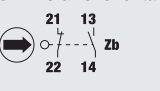
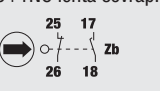
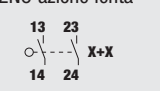
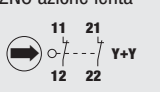
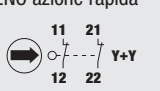
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

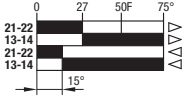
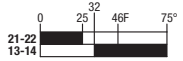
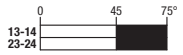
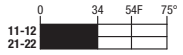
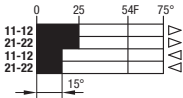
Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

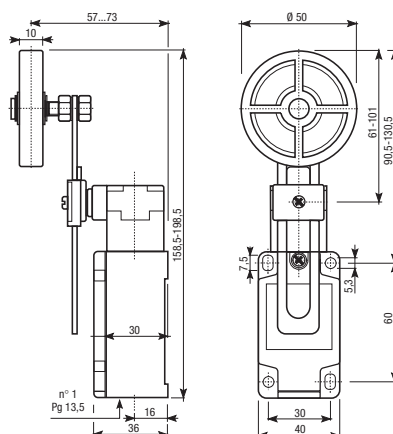


FR•50

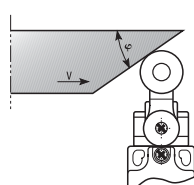
Ø50 mm rubber roller adjustable lever

Contact element	
1NO+1NC azione rapida 	00
1NO+1NC azione lenta 	01
1NO+1NC lenta sovrapp. 	02
2NO azione lenta 	03
2NC azione lenta 	04
2NC azione rapida 	05
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000FRI50	E40000FRM50	E40100FRI50	E40100FRM50	
E40001FRI50	E40001FRM50	E40101FRI50	E40101FRM50	
E40002FRI50	E40002FRM50	E40102FRI50	E40102FRM50	
E40003FRI50	E40003FRM50	E40103FRI50	E40103FRM50	
E40004FRI50	E40004FRM50	E40104FRI50	E40104FRM50	
E40005FRI50	E40005FRM50	E40105FRI50	E40105FRM50	
0,325	0,44	0,325	0,44	
1	1	1	1	



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

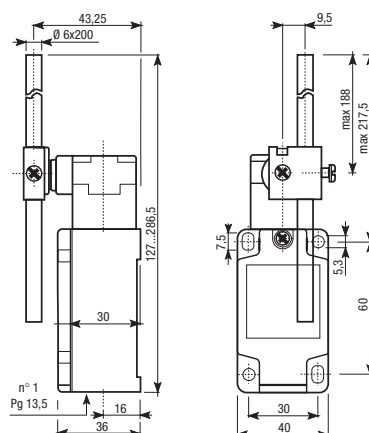


Side rotary adjustable Ø6 mm glass fiber rod

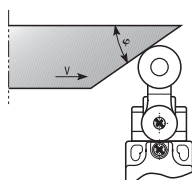
Contact element	
1NO+1NC snap action 00	
1NO+1NC slow action 01	
1NO+1NC slow overlap. 02	
2NO slow action 03	
2NC slow action 04	
2NC snap action 05	
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000GI*	E40000GM*	E40100GI*	E40100GM*	
E40001GI*	E40001GM*	E40101GI*	E40101GM*	
E40002GI	E40002GM	E40102GI	E40102GM	
E40003GI	E40003GM	E40103GI	E40103GM	
E40004GI	E40004GM	E40104GI	E40104GM	
E40005GI	E40005GM	E40105GI	E40105GM	
0,21	0,425	0,21	0,425	
1	1	1	1	

* form conforming to EN 50041



Drive cam operating parameters

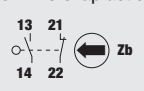
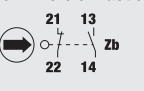
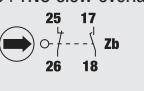
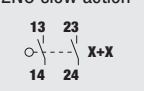
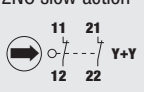
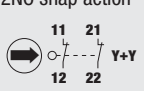


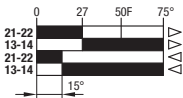
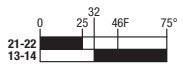
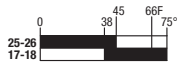
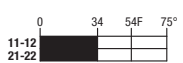
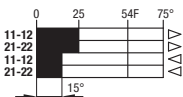
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

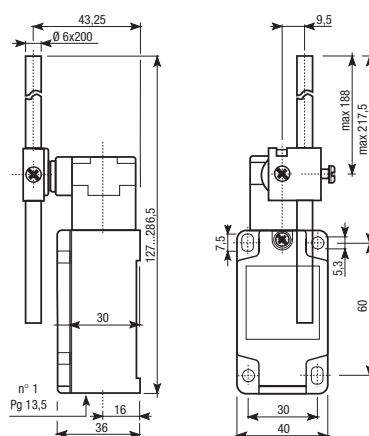


Side rotary adjustable Ø6 mm aluminium rod

Contact element	
1NO+1NC snap action 	00
1NO+1NC slow action 	01
1NO+1NC slow overlap. 	02
2NO slow action 	03
2NC slow action 	04
2NC snap action 	05
Weight	kg
Pack	pcs

Cable entry				Contact travel
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E40000HI*	E40000HM*	E40100HI*	E40100HM*	
E40001HI*	E40001HM*	E40101HI*	E40101HM*	
E40002HI	E40002HM	E40102HI	E40102HM	
E40003HI	E40003HM	E40103HI	E40103HM	
E40004HI	E40004HM	E40104HI	E40104HM	
E40005HI	E40005HM	E40105HI	E40105HM	
0,21	0,425	0,21	0,425	
1	1	1	1	

* form conforming to EN 50041

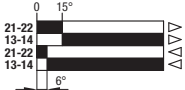
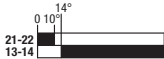
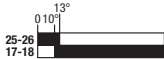
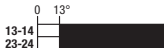
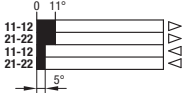


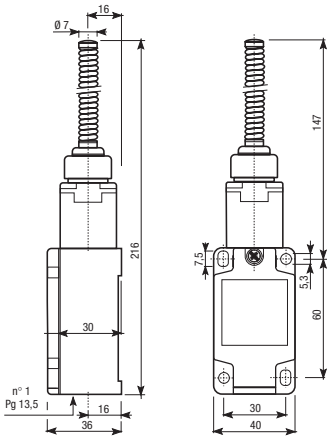


L

Flexible rod

Contact element	
1NO+1NC snap action  13 21 14 22 Zb	00
1NO+1NC slow action  21 13 22 14 Zb	01
1NO+1NC slow overlap.  25 17 26 18 Zb	02
2NO slow action  13 23 14 24 X+X	03
2NC slow action  11 21 12 22 Y+Y	04
2NC snap action  11 21 12 22 Y+Y	05
Weight	kg
Pack	pcs

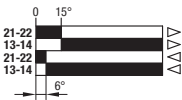
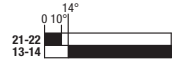
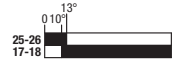
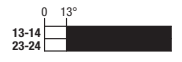
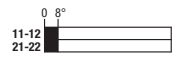
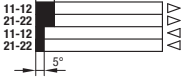
Cable entry				
PG 13,5		M20 x 1,5		Contact travel
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E40000LI	E40000LM	E40100LI	E40100LM	
E40001LI	E40001LM	E40101LI	E40101LM	
E40002LI	E40002LM	E40102LI	E40102LM	
E40003LI	E40003LM	E40103LI	E40103LM	
E40004LI	E40004LM	E40104LI	E40104LM	
E40005LI	E40005LM	E40105LI	E40105LM	
0,28	0,395	0,28	0,395	
1	1	1	1	

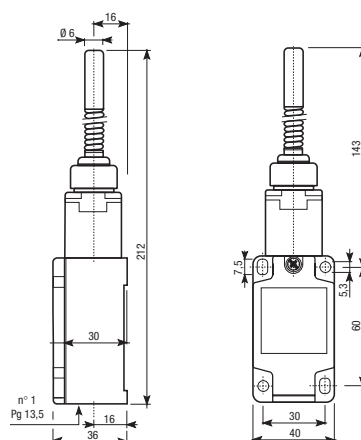




Flexible rod with plastic terminal

Contact element	
1NO+1NC snap action  00	
1NO+1NC slow action  01	
1NO+1NC slow overlap.  02	
2NO slow action  03	
2NC slow action  04	
2NC snap action  05	
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000LPI	E40000LPM	E40100LPI	E40100LPM	
E40001LPI	E40001LPM	E40101LPI	E40101LPM	
E40002LPI	E40002LPM	E40102LPI	E40102LPM	
E40003LPI	E40003LPM	E40103LPI	E40103LPM	
E40004LPI	E40004LPM	E40104LPI	E40104LPM	
E40005LPI	E40005LPM	E40105LPI	E40105LPM	
0,28	0,395	0,28	0,395	
1	1	1	1	

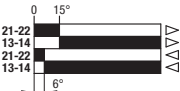
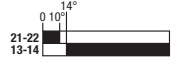
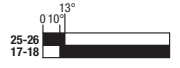
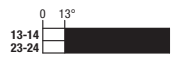
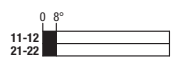


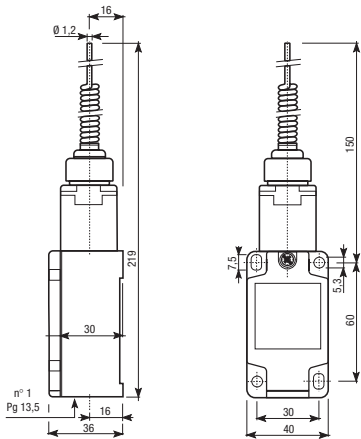
LS



Cat's whisker

Contact element	
1NO+1NC snap action  00	
1NO+1NC slow action  01	
1NO+1NC slow overlap.  02	
2NO slow action  03	
2NC slow action  04	
2NC snap action  05	
Weight	kg
Pack	pcs

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E40000LSI	E40000LSM	E40100LSI	E40100LSM	
E40001LSI	E40001LSM	E40101LSI	E40101LSM	
E40002LSI	E40002LSM	E40102LSI	E40102LSM	
E40003LSI	E40003LSM	E40103LSI	E40103LSM	
E40004LSI	E40004LSM	E40104LSI	E40104LSM	
E40005LSI	E40005LSM	E40105LSI	E40105LSM	
0,28	0,395	0,28	0,395	
1	1	1	1	

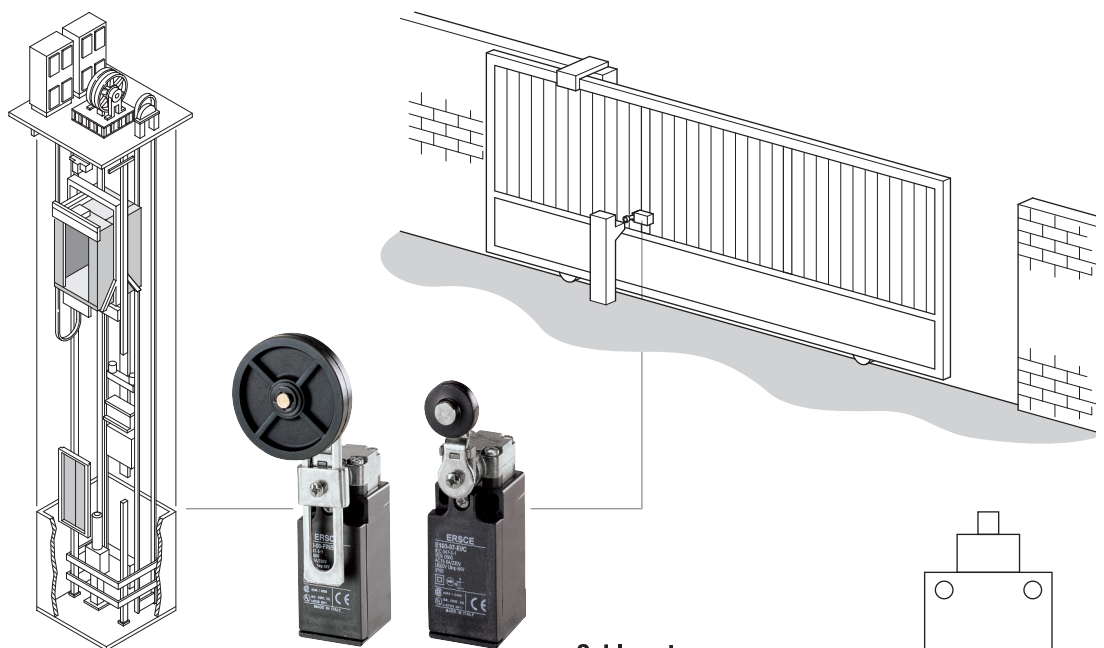


Limit switches for gates and lifts



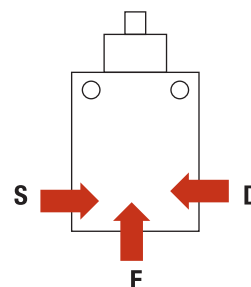
Product for gates and lifts

For gates and lifts applications Bremas provides a dedicated contact block, 2NC slow action with asymmetric working, to allow the detection of position and direction of the moving part. It is available for E100 and E200 series with plastic or metal body and actuators.



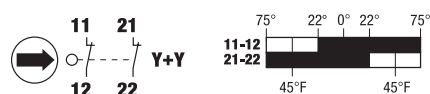
Cable entry

	F	S	D
E100	•		
E200		•	•



Dedicated contact block

Dedicated contact block 07 for gates/lifts



Fixing

E100	20/22 mm
E200	20/22 and 40/42 mm

In conformity with standards:

IEC EN 60947-5-1 • EN 60947-1 • UNI EN 1088
EN ISO 12100-1 • EN ISO 12100-2 • IEC 529 • EN 60529
VDE 0660-200 • VDE 0113 • EN 81-1 • EN 81-2

Thread

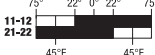
Thread	Series part no.	
Pg 13,5	E100...	E200...
M20x1,5	E101...	E201...
1/2" NPT (on request)	E102...	E202...
Pg 11 (on request)	E103...	
M16x1,5 (on request)	E104...	
M12 connector (on request)	E100...M12	E200...M12

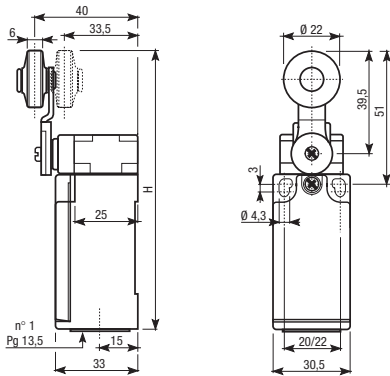
E•C



Thermoplastic roller lever

Contact element	
2NC slow action	07
Weight	kg
Pack	pcs
H	mm

Cable entry						Contact travel
PG 13,5			M20 x 1,5			
Metal head Plastic body		Metal head Metal body	Metal head Plastic body		Metal head Metal body	
E10007EIC		E10007EMC	E10107EIC		E10107EMC	
0,081	0,135	0,225	0,081	0,135	0,225	
1	1	1	1	1	1	
108,5	108,5	106	108,5	108,5	106	



Drive cam operating parameters			
	φ	V max (m/s)	Drive forces
	30°	1,5	Minimum command force
	45°	1	Minimum forced
	60°	0,75	opening force
	60-90°	0,25	35 Ncm

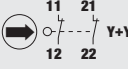
Limit switches for gates and lifts

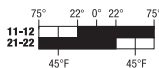
E100 series

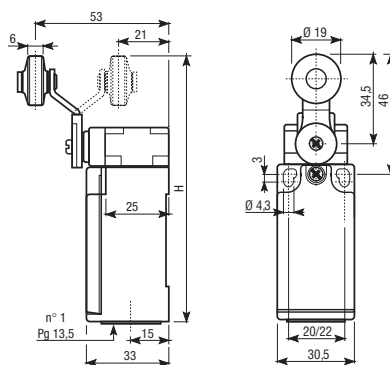
I·C



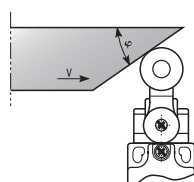
Thermoplastic roller lever

Contact element	
2NC slow action	07
	
Weight	kg
Pack	pcs
H	mm

Cable entry				Contact travel
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E10007IIC	E10007IMC	E10107IIC	E10107IMC	
0,13	0,225	0,13	0,225	
1	1	1	1	
103,5	101	103,5	101	



Drive cam operating parameters



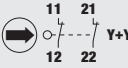
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

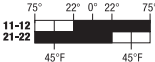
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

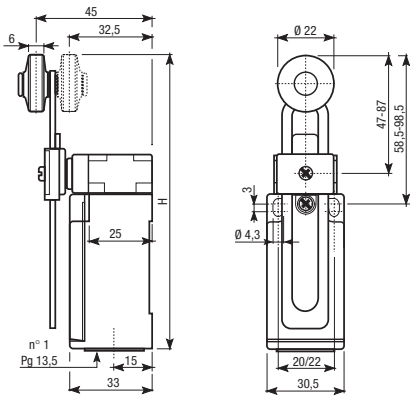
F•C



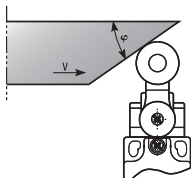
Thermoplastic roller variable length lever

Contact element	
2NC slow action	07
	
Weight	kg
Pack	pcs
H	mm

Cable entry				Contact travel
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E10007FIC	E10007FMC	E10107FIC	E10107FMC	
0,15	0,24	0,15	0,24	
1	1	1	1	
116 ÷ 156	113,5 ÷ 153,5	103,5	101	



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

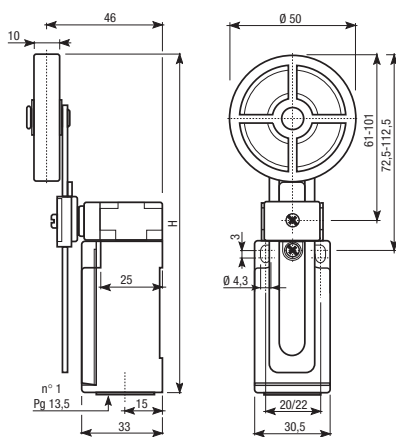
Limit switches for gates and lifts



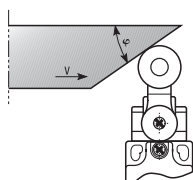
F•50C

Ø50 mm rubber roller variable length lever

Contact element		Cable entry				Contact travel
		PG 13,5		M20 x 1,5		
2NC slow action		Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
 Y+Y	07	E10007FI50C	E10007FM50C	E10107FI50C	E10107FM50C	
Weight	kg	0,16	0,25	0,16	0,25	
Pack	pcs	1	1	1	1	
H	mm	130 ÷ 170	127,5 ÷ 167,5	130 ÷ 170	127,5 ÷ 167,5	



Drive cam operating parameters



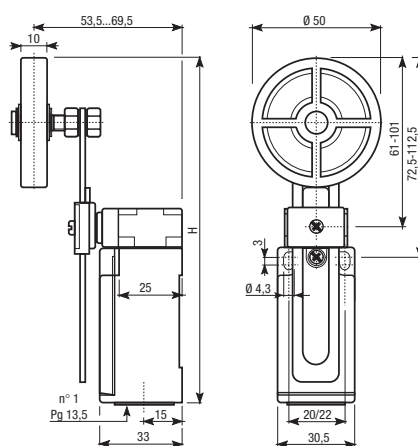
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm



Cable entry

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10007FRI50C	E10007FRM50C	E10107FRI50C	E10107FRM50C	
0,16	0,25	0,16	0,25	
1	1	1	1	
130 ÷ 170	127,5 ÷ 167,5	130 ÷ 170	127,5 ÷ 167,5	



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

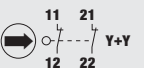
Limit switches for gates and lifts

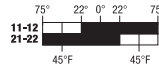
E100 series

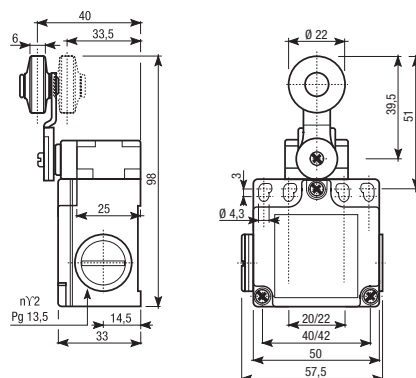


E•C

Thermoplastic roller lever

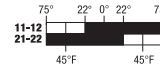
Contact element	
2NC slow action	
	07
Weight	kg
Pack	pcs

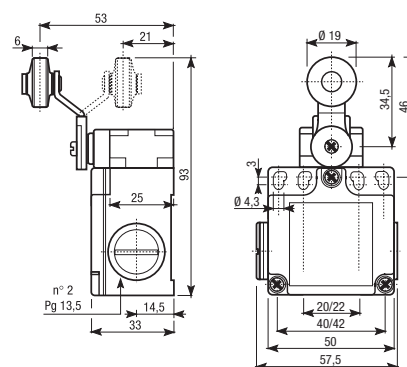
Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Plastic body	Plastic body	
E20007EIC	E20107EIC	
0,16		
1		



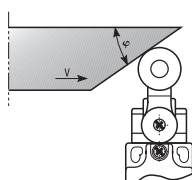
I•C

Thermoplastic roller lever

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Plastic body	Plastic body	
E20007IIC	E20107IIC	
0,16		
1		



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm



Available for series: E100
E200
E300
E400

In conformity with standards:
IEC/EN 60947-1
IEC/EN 60947-5-1

Contact element

Contact element		Code	Description	Pack	Weight conf. (kg)
1NO+1NC snap action	00	ELEM00	snap action 1NO+1NC	5	0,495
1NO+1NC slow action	01	ELEM01	slow action 1NO+1NC	5	0,485
1NO+1NC slow overlap.	02	ELEM02	slow action overlap 1NO+1NC	5	0,485
2NO slow action	03	ELEM03	slow action 2NO	5	0,485
2NC slow action	04	ELEM04	slow action 2NC	5	0,485
2NC snap action	05	ELEM05	snap action 2NC	5	0,485
2NC slow action	07	ELEM07	slow action 2NC	5	0,485
2NC slow action	08	ELEM08	slow action 2NC	5	0,485

* for E400 serie

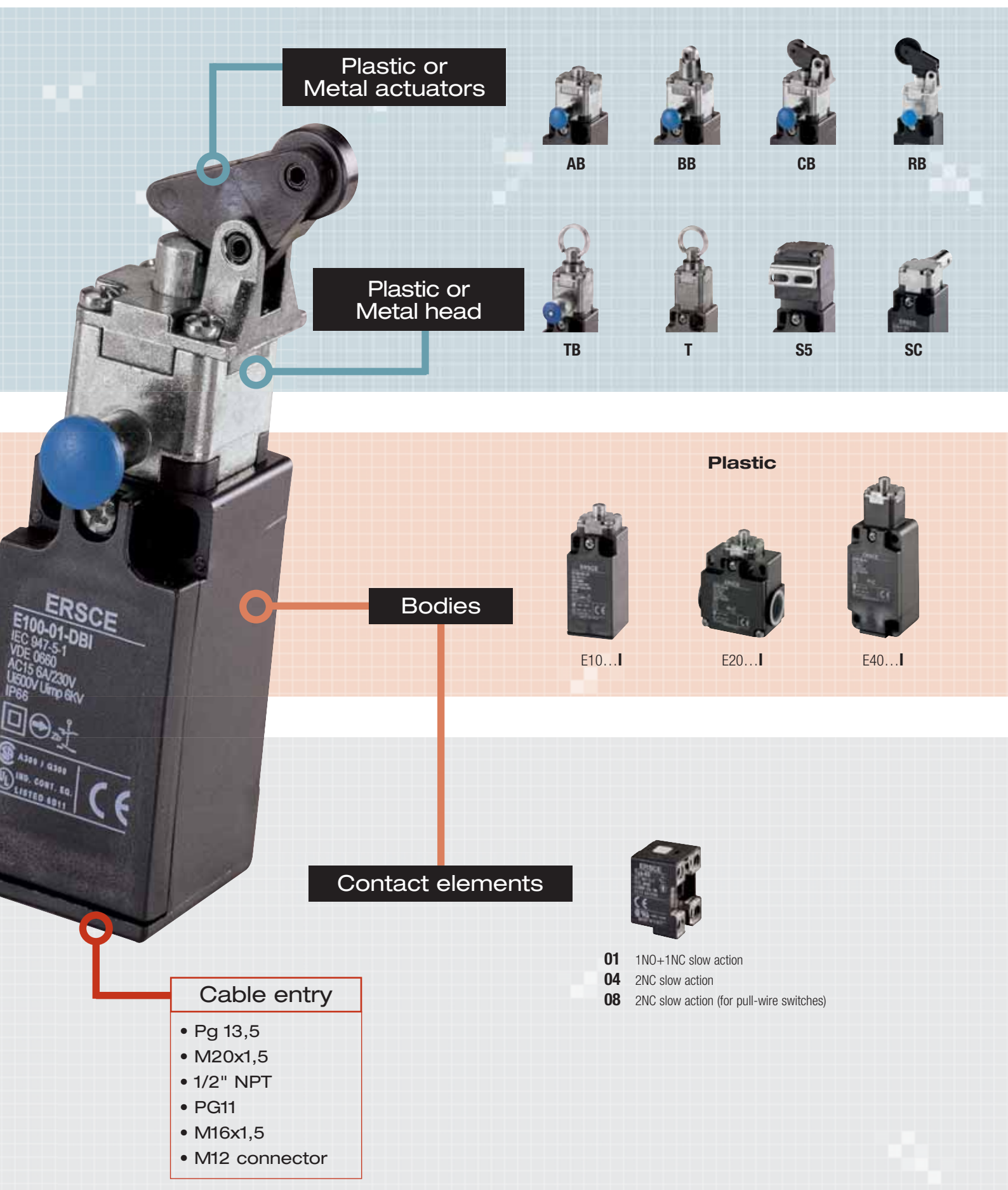


BETTER SWITCHES

SAFETY SWITCHES



06





DB



EB



IB



IB•50



FB



FB•50



FBR•50

Metal



E10...M

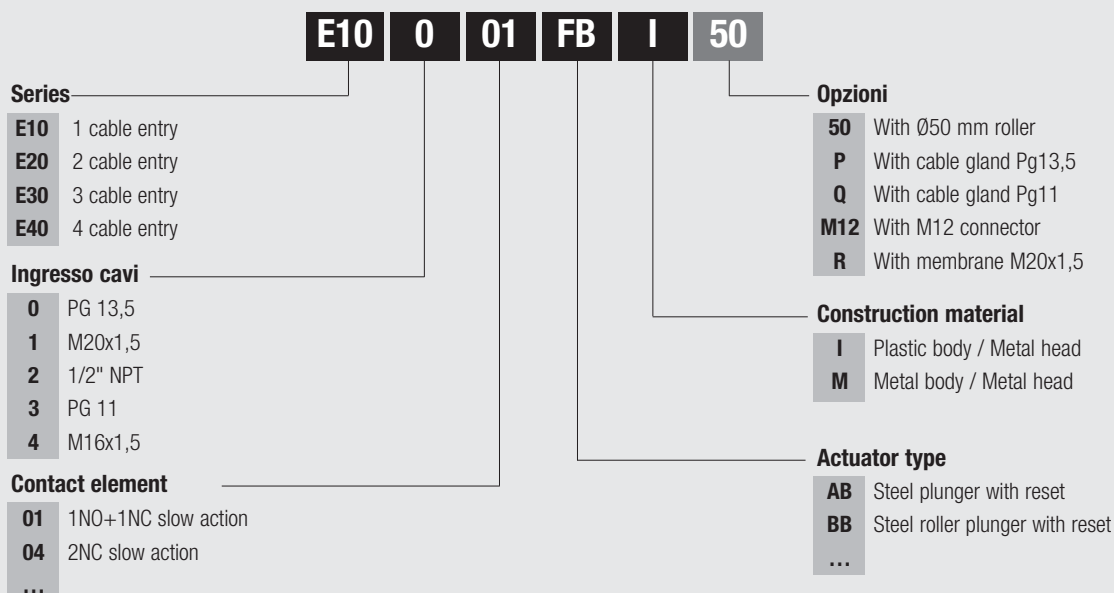


E30...M



E40...M

Product code structure



Note: Please verify the effective availability of a product before ordering.

Technical data

				TYPE	E100 / E200 / E300 / E400
Maximum operating frequency				operat./hour ¹	3600
Insulation resistance			500 V DC	MΩ	100
Dielectric strenght			50/60 Hz for 1'	V AC	2500 ²
Rated insulation voltage	Ui	IEC947-5-1		V AC	500
Rated thermal current	Ithe	IEC947-5-1		A	10
Rated operating current	Category AC15 A300	IEC947-5-1/EN60947-5-1	24V	A	10
			125V	A	6
			230 V	A	6
			400 V	A	3
Contact resistance		IEC255-7 cat.3	initial value	mΩ	25
Short circuit protective devices	IEC269 (IEC947-5-1)				
	fuse type gL or gG			A	10
Rated conditionals short circuit current		IEC947-5-1		A	1000
Pollution degree		IEC947-5-1		A	3
Protection degree		EN 60529			IP66
Protection against electric shock			plastic	class	II
			metal	class	I
Vibration resistance		IEC68-2-6	mm		0,35 ± 15% (10 ÷ 55 Hz ± 1 Hz)
Shock resistance		IEC68-2-27	11ms	g	30
Mechanical life				cycles	20.000.000
Electric life	at 250V AC 6A with resistance load cosφ=1			cycles	500.000
	at 250V AC 6A with inductive load cosφ=0,4			cycles	500.000
				cycles	500.000
Distance between contacts	Snap action type			mm	2x1,25
	Low action type			mm	2x2
Terminals	Type				Screw with combined notch and retractable plate (notch Ph. Size 1)
	Screw				M3,5
	Protection degree				IP20
	Material				Steel class 8,8 / Galvanized
	Max screw tightening torque				120 (12,24)
	Max connecting capacity	rigid cable	mm ²		2x1,5
		flexible cable	mm ²		2x1,5
Terminal numbering					In accordance with EN50013
Air ambient temperature			operational	°C	-35 ÷ +85 (without formation of ice)
Relative umidity			operational		95% max

¹ One operation cycle means two movements, one to close and one to open as required by EN 60947-5.

² Between terminals of the same polarity; between terminals with different polarity; between live mechanical parts and ground; between live mechanical parts and non-current-carrying metal parts.

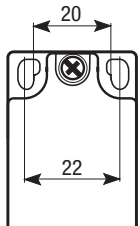
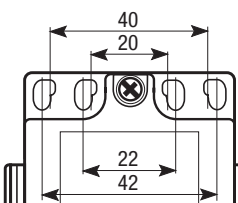
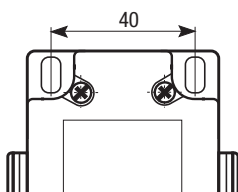
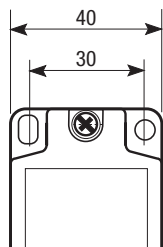
Certifications and Approvals

				IEC EN 60947
E100	•	•	•	+
E200	•	•	•	+
E300	•	•	•	+
E400	•	•	•	+

- UL approval file E72861
- CSA approval file 026716-0-000
- Approved
- + Conforms to requirements

**E100-E200
E300-E400
series**

- Plastic or Metal body
- Plastic* or Metal head and actuators
- IP66 protection degree
- Contact elements with positive opening of the NC contact in accordance to IEC EN 60947-5-1 and VDE 0660-200

Series	Product	Fixing holes
E100		
E200		
E300		
E400		

* On key actuated switches

Cable inputs/outputs

Series	Nr.
E100	1 on the bottom 
E200	2 on the sides 
E300	2 on the sides + 1 on the bottom 
E400	1 on the bottom 

Type	Series
Pg 13,5 	Ex00..
M20x1,5 	Ex01..
1/2 NPT 	Ex02..
Pg 11 	Ex03..
M16x1,5 	Ex04..
M12 connector 	Ex00.. M12

Actuation
heads

■ Safety switches with reset

Group AB-BB

**AB**
Plunger**BB**
Roller plunger**CB**
Plastic roller lever,
side actuation**RB**
Reversible
and adjustable lever
with plastic roller**DB**
Plastic roller lever,
vertical actuation

Group EB-IB-FB-FRB

**EB**
Straight lever
with plastic roller**IB**
Bent lever
with plastic roller**IB•50**
Bent lever
with Ø50mm
rubber roller**FB**
Variable length
lever with plastic
roller**FB•50**
Variable length
lever with Ø50mm
rubber roller**FRB•50**
Adjustable lever
with Ø50mm
rubber roller

■ Key actuation safety switches

Group S5

**S5**
5 ways keys
actuation

■ Pull wire safety switches

Group T

**TB**
Pull wire
with reset**T**
Pull wire
without reset

■ Hinges operating safety switches

Group SC

**SC**
Metal pin

Contact elements

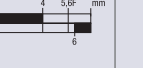
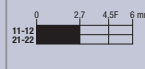
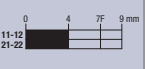
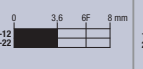
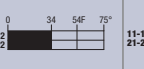
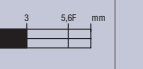
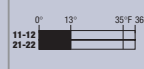
Protective screen

Protective natural polycarbonate screen to prevent the entry of materials and access to the test finger (IP20 – EN60529)

Mobile and fixed contacts

Ag/Ni mobile and fixed contacts galvanically separated (acc. IEC 947-5-1, EN 60204, VDE 0660, VDE 0113)



Contact unit	Actuator	Group AB-BB	Group CB-RB	Group DB	Group EB-IB-FB-FRB	Group S5	Group T	Group SC
01 1NO+1NC slow action	1NO+1NC slow action 							
04 2NC slow action	2NC slow action 							
08 2NC slow action	2NC slow action 							

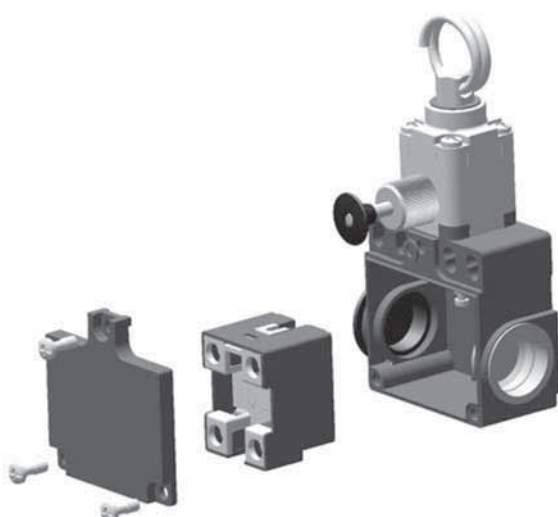
 Opened contact

 Closed contact

 Pressure of the switch / Release of the switch

General characteristics

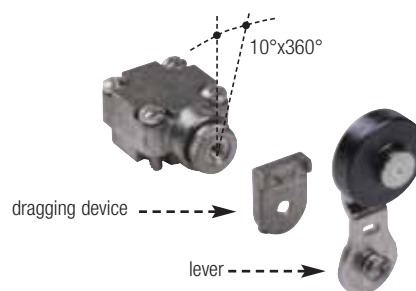
Safety switches are conceived for applications related to the protection of automated installations and are available in 4 different product families: with reset, pull-wire, 5 way key and for hinge actuation.



- thermoplastic or metal body
- IP66
- contact blocks with positive opening of the NC contact according to IEC EN 60947-5-1 e VD 0660-200

Adjustable levers

Possibility to adjust the lever in 10° steps for 360° by moving the lever and the dragging device.



Overturning levers

all the levers can be fastened on switches on straight or reverse side, to obtain two different work plans of the lever.



Safety switches with reset



Safety switches with reset

Switches **with reset** are safety appliances that guarantee the opening of the NC contact upon a single manoeuvre and its retention in that position with the locking head. This means that the activation of the switch will have no effect on the contact element until the reset button is pressed manually (the release or reset take place by pressing the blue reset button). The range is available for the **E100-200** series in both the thermoplastic and metal bodies, with metal head and **IP66** protection degree. Both versions are available with two types of contact blocks, 1NO + 1NC and 2NC, with slow action and positive opening of the NC contact

Applications



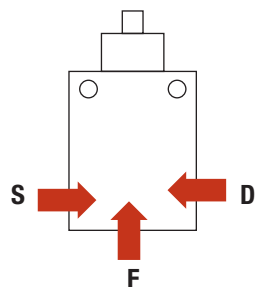
Escalators



Lifts



Lifting machines



Fixing

E100	20/22 mm
E200	20/22 and 40/42 mm

In conformity with standards

IEC EN 60947-5-1 • EN 60947-1 • UNI EN 1088
EN ISO 12100-1 • EN ISO 12100-2 • IEC 529 • EN 60529
VDE 0660-200 • VDE 0113 • EN 81-1 • EN 81-2

Cable entry

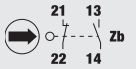
	F	S	D
E100	•		
E200		•	•

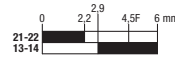
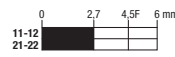
Thread

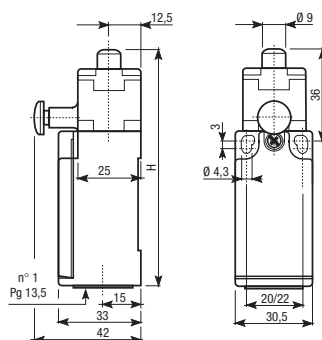
Thread	Series part no.	
Pg 13,5	E100	E200
M20x1,5	E101	E201
1/2" NPT (on request)	E102	E202
Pg 11 (on request)	E103	
M16x1,5 (on request)	E104	
M12 connector (on request)	E100/M12	E200/M12



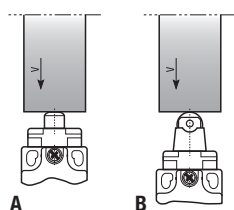
Steel plunger

Contact element	
1NO+1NC slow action 	01
2NC slow action 	04
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10001ABI	E10001ABM	E10101ABI	E10101ABM	
E10004ABI	E10004ABM	E10104ABI	E10104ABM	
0,16	0,245	0,16	0,245	
1	1	1	1	
93,5	91	93,5	91	



Drive cam operating parameters

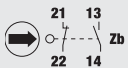
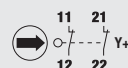


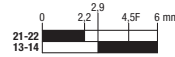
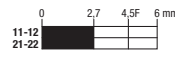
	V max (m/s)
Actuator A	0,5
Actuator B	0,5

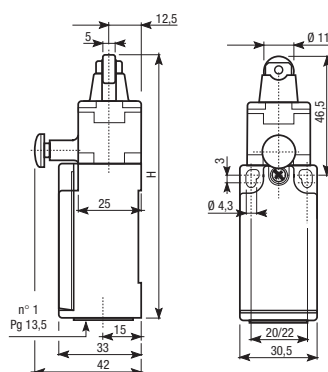
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



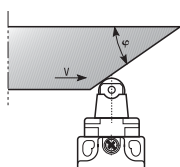
Steel roller plunger

Contact element	
1NO+1NC slow action 	01
2NC slow action 	04
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10001BBI	E10001BBM	E10101BBI	E10101BBM	
E10004BBI	E10004BBM	E10104BBI	E10104BBM	
0,165	0,255	0,165	0,255	
1	1	1	1	
104	101,5	104	101,5	



Drive cam operating parameters



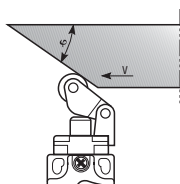
φ	V max (m/s)
20°	1
30°	0,5

Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



Thermoplastic roller lever, vertical actuation

Drive cam operating parameters

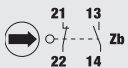
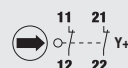


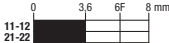
φ	$V_{\max}$ (m/s)
20°	1
30°	0,5

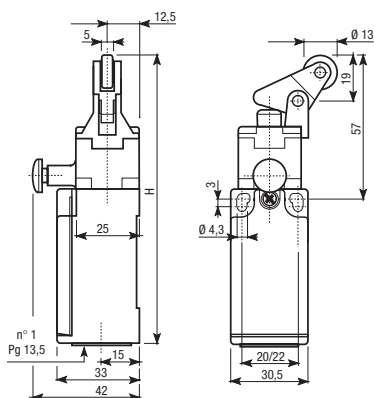
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N



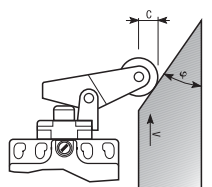
Thermoplastic roller lever, vertical actuation

Contact element	
1NO+1NC slow action 	01
2NC slow action 	04
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10001DBI	E10001DBM	E10101DBI	E10101DBM	
E10004DBI	E10004DBM	E10104DBI	E10104DBM	
0,165	0,255	0,165	0,255	
1	1	1	1	
114,5	112	114,5	112	



Drive cam operating parameters



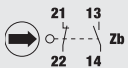
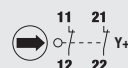
φ	V max (m/s)
20°	1
30°	0,5

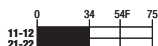
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

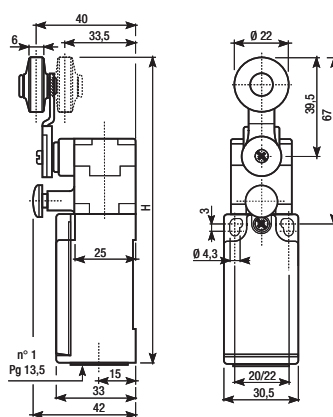


Thermoplastic roller lever

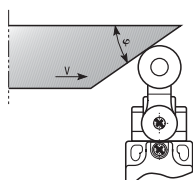
E

Contact element	
1NO+1NC slow action 	01
2NC slow action 	04
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		Contact travel
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E10001EBI	E10001EBM	E10101EBI	E10101EBM	
E10004EBI	E10004EBM	E10104EBI	E10104EBM	
0,195	0,285	0,195	0,285	
1	1	1	1	
124,5	122	124,5	122	



Drive cam operating parameters



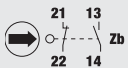
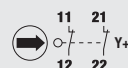
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

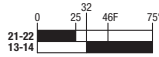
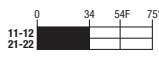
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

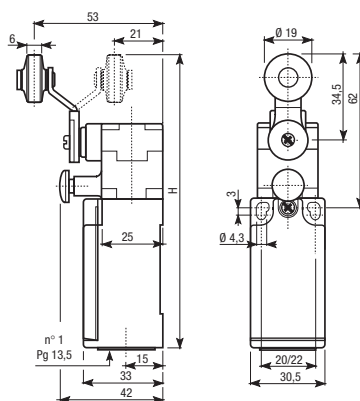
Safety switches with reset - **E100** series



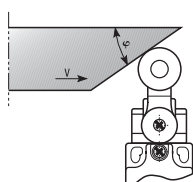
Thermoplastic roller lever

Contact element	
1NO+1NC slow action 	01
2NC slow action 	04
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		Contact travel
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E10001IBI	E10001IBM	E10101IBI	E10101IBM	
E10004IBI	E10004IBM	E10104IBI	E10104IBM	
0,205	0,295	0,205	0,295	
1	1	1	1	
119,5	117	119,5	117	



Drive cam operating parameters



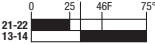
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

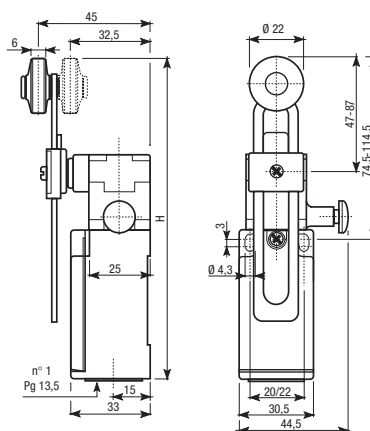
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm



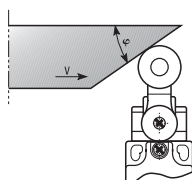
Thermoplastic roller variable length lever

Contact element	
1NO+1NC slow action 	01
2NC slow action 	04
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10001FBI	E10001FBM	E10101FBI	E10101FBM	
E10004FBI	E10004FBM	E10104FBI	E10104FBM	
0,22	0,305	0,22	0,305	
1	1	1	1	
132 ÷ 172	129,5 ÷ 169,5	132 ÷ 172	129,5 ÷ 169,5	



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

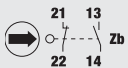
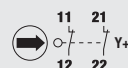
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

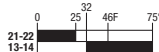
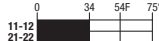
Safety switches with reset - **E100** series

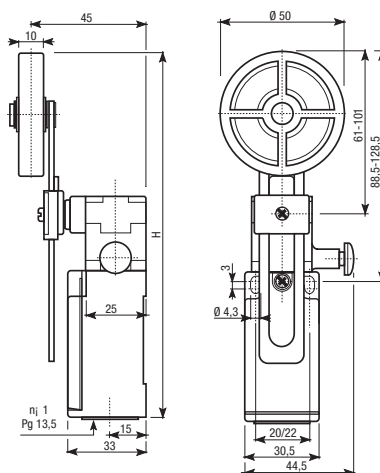
F•50



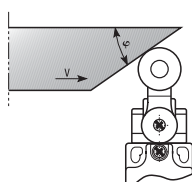
Ø50 mm rubber roller variable length lever

Contact element	
1NO+1NC slow action 	01
2NC slow action 	04
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10001FBI50	E10001FBM50	E10101FBI50	E10101FBM50	
E10004FBI50	E10004FBM50	E10104FBI50	E10104FBM50	
0,24	0,325	0,24	0,325	
1	1	1	1	
146 ÷ 186	143,5 ÷ 183,5	146 ÷ 186	143,5 ÷ 183,5	



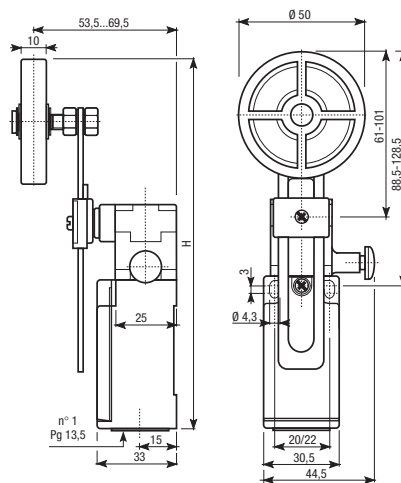
Drive cam operating parameters



Φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	Contact travel
E10001FBR150	E10001FBRM50	E10101FBR150	E10101FBRM50	
E10004FBR150	E10004FBRM50	E10104FBR150	E10104FBRM50	
0,24	0,33	0,24	0,33	
1	1	1	1	
146 ÷ 186	143,5 ÷ 183,5	146 ÷ 186	143,5 ÷ 183,5	



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

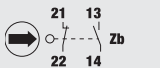
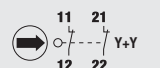
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

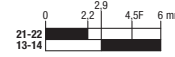
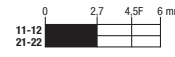
Safety switches with reset - **E200** series

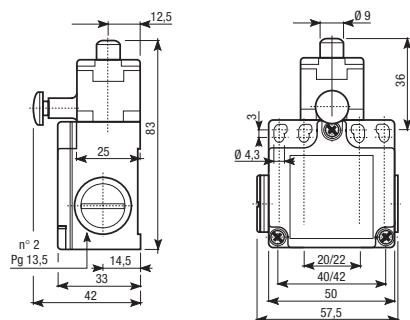
A



Steel plunger

Contact element	
1NO+1NC scatto lento 	01
2NC scatto lento 	04
Weight	kg
Pack	pcs

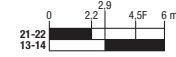
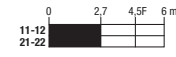
Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Plastic body	Plastic body	
E20001ABI	E20101ABI	
E20004ABI	E20104ABI	
0,18		
1		

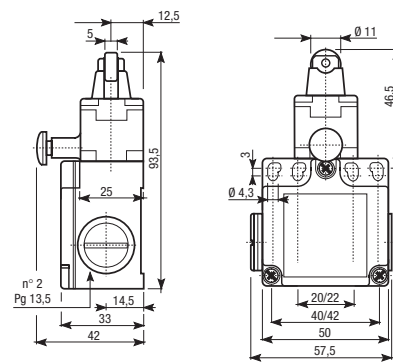


B

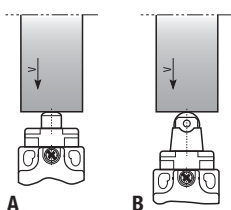


Steel roller plunger

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head	Metal head	
Plastic body	Plastic body	
E20001BBI	E20101BBI	
E20004BBI	E20104BBI	
0,185		
1		



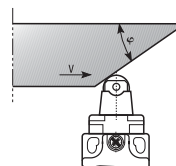
Drive cam operating parameters



A

B

	V max (m/s)
Actuators A	0,5
Actuators B	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



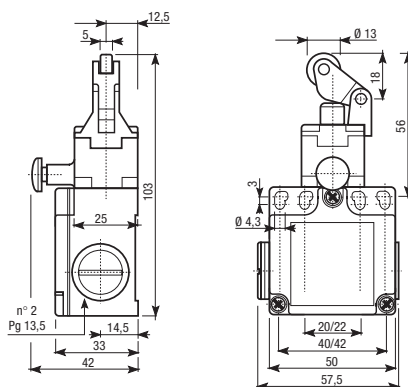
Φ	V max (m/s)
20°	1
30°	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



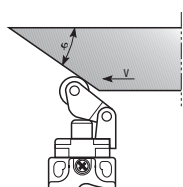
Thermoplastic roller lever, side actuation

Contact element	
1NO+1NC slow action 	01
2NC slow action 	04
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head Plastic body	Metal head Plastic body	
E20001CBI	E20101CBI	
E20004CBI	E20104CBI	
0,19		
1		



Drive cam operating parameters



φ	V max (m/s)
20°	1
30°	0,5

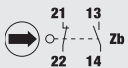
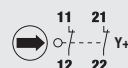
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

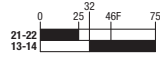
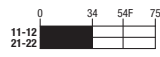
Safety switches with reset - **E200** series

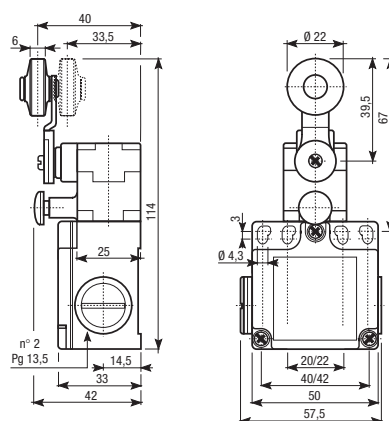


Thermoplastic roller lever

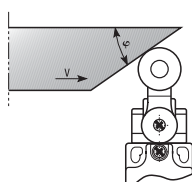
E

Contact element	
1NO+1NC slow action 	01
2NC slow action 	04
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Metal head Plastic body	Metal head Plastic body	
E20001EBI	E20101EBI	
E20004EBI	E20104EBI	
0,215		
1		



Drive cam operating parameters

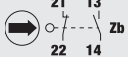
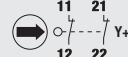


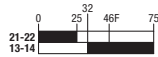
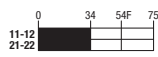
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

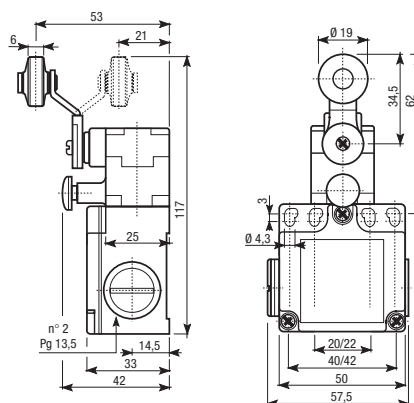
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm



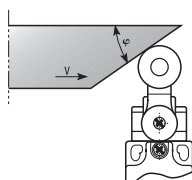
Thermoplastic roller lever

Contact element	
1NO+1NC slow action 	01
2NC slow action 	04
Weight	kg
Pack	pcs

Cable entry		
PG 13,5	M20 x 1,5	
Metal head Plastic body	Metal head Plastic body	Contact travel
E20001IBI	E20101IBI	
E20004IBI	E20104IBI	
0,215		
1		



Drive cam operating parameters



φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

Key actuation safety switches



5 way key actuation safety switches

The **5 way key** actuated safety switches are used on gates, sliding doors and other devices to protect the access to dangerous parts of machines. The key is applied to the moving protection barrier so it has to be removed from the switch on every opening thus operating a positive opening of the NC contact. This kind of actuator is available on the **E100-E200** series with thermoplastic or metal body and thermoplastic head, with **IP66** protection degree.

Safety for the operator

The command circuit authorizing the start-up of the process is closed only by the complete insertion of the safety key, and the circuit is opened when this is removed. This prevents intentional tampering with the machine by the operator until the safety protection device is opened.

Resistance to vibrations

The device has been designed to permit limited key vibrations in case of mechanical disturbances.

In conformity with standards:

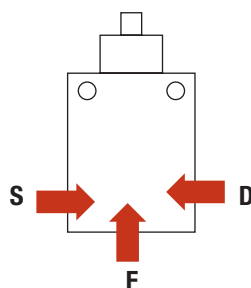
IEC EN 60947-5-1 • EN 60947-1 • UNI EN 1088
EN ISO 12100-1 • EN ISO 12100-2 • IEC 529
EN 60529 • VDE 0660-200 • VDE 0113 • UNI EN 13850

Cable entry

	F	S	D
E100	•		
E200		•	•
E300	•	•	•
E400	•		

Thread

	Series part no.	
Pg 13,5	E100	E200
M20x1,5	E101	E201
1/2" NPT (on request)	E102	E202
Pg 11 (on request)	E103	
M16x1,5 (on request)	E104	
M12 connector (on request)	E100/M12	E200/M12



Fixing

E100	20/22 mm
E200	20/22 and 40/42 mm

Applications:

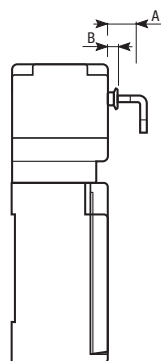


Machines with safety barriers

Instructions for correct installation

Assembly of the driver on a rotating protective device (allow space for the pivot radius).

Key type	Horizontal mounting	Vertical mounting
Z5 Z5-1 Z5-3 Z5-4		
Z52		

**Recommended position for correct operation:**

A (contact switching point) = 4 mm

B (actuator limit switch point) = 0 ÷ 1 mm max

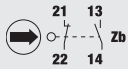
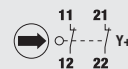
The contacts remain closed from point A to point B (4 mm max travel)

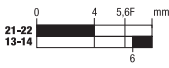
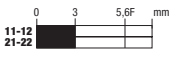
Never use the safety switch as a mechanical travel stop

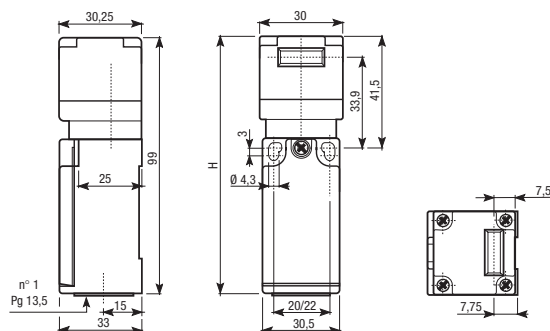
key actuation safety switches



E100 5 way key

Contact element	
1NO+1NC slow action 	01
2NC slow action 	04
Weight	kg
Pack	pcs
H	mm

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Plastic head Plastic body	Plastic head Plastic body	
E10001S5I	E10101S5I	
E10004S5I	E10104S5I	
0,115	0,115	
1	1	
99	99	

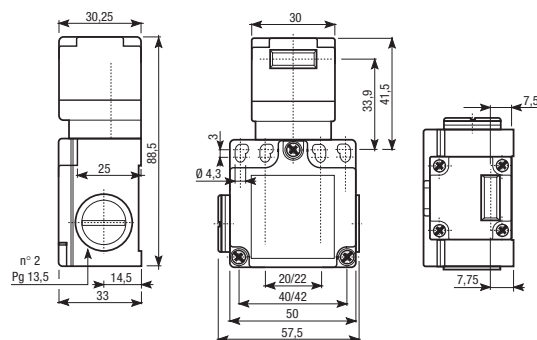




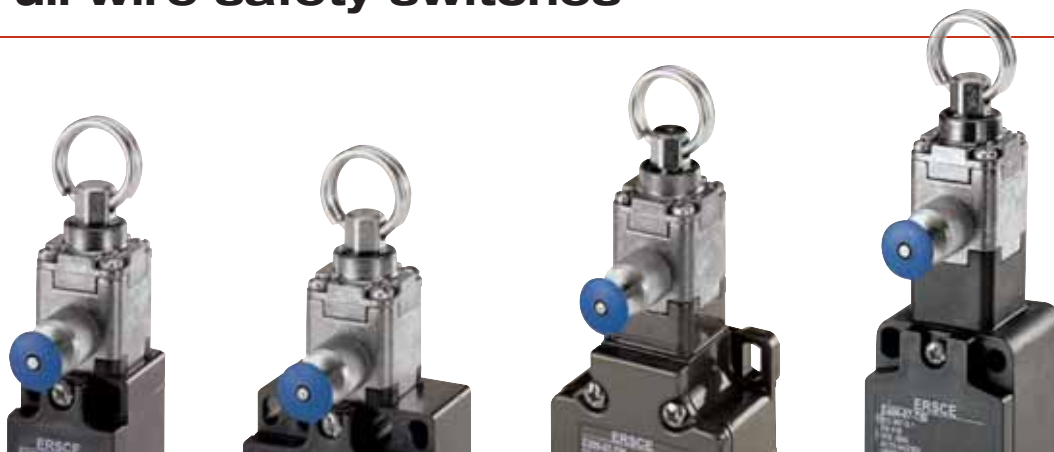
E200 5 way key

Contact element	
1NO+1NC slow action 	01
2NC slow action 	04
Weight	kg
Pack	pcs

Cable entry		Contact travel
PG 13,5	M20 x 1,5	
Plastic head Plastic body	Plastic head Plastic body	
E20001S5I	E20101S5I	
E20004S5I	E20104S5I	
0,14	0,14	
1	1	



Pull wire safety switches

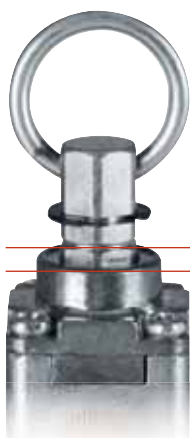


Pull wire safety switches

Pull wire safety switches are essential for the continuous control of a long line of machines or parts extending over a considerable length. They guarantee the safety of the operator, who is able to control the immediate stop of the machinery from any point in the operating zone when no or few automatic systems to cut off the power supply are present. This kind of actuator is available on the series **E100-E200-E400** with thermoplastic or metal body and metal head, with **IP66** protection degree.

Wire tension indicator

For the exact cable tension, check that the notch on the drive shaft is in line with the head.



Reset button

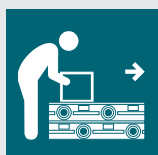
Block reset that guarantees the locking of the NC head in the open position after a single operation.



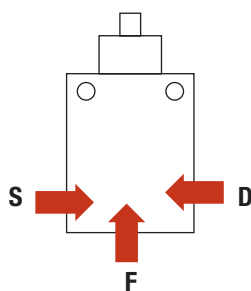
In conformity with standards:

IEC EN 60947-5-1 • EN 60947-1 • UNI EN 1088
EN ISO 12100-1 • EN ISO 12100-2 • IEC 529
EN 60529 • VDE 0660-200 • VDE 0113 • UNI EN 13850

Applications:



Long lines of machines:
conveyor belts,
textile machines,
printing machines,
etc...



Fixing

E100	20/22 mm
E200	20/22 and 40/42 mm
E300	40 mm
E400	30 mm

Cable entry

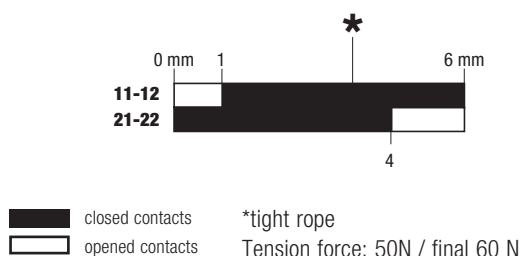
	F	S	D
E100	•		
E200		•	•
E300	•	•	•
E400	•		

Thread

	Series part no.			
Pg 13,5	E100	E200	E300	E400...
M20x1,5	E101	E201	E301	E401...
1/2" NPT (on request)	E102	E202	E302	E402...
Pg 11 (on request)	E103			
M16x1,5 (on request)	E104			
M12 connector (on request)	E100/M12	E200/M12	E300/M12	E400/M12

Dedicated contact block

Dedicated contact block 08 with longer travel for pull-wire switches: cable vibrations will have no influence on the correct operation of the limit switch.

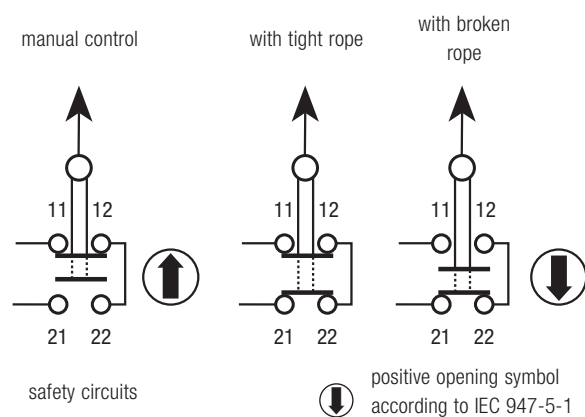


* Installation travel: any cable vibrations will have no influence on the correct operation of the limit switch.

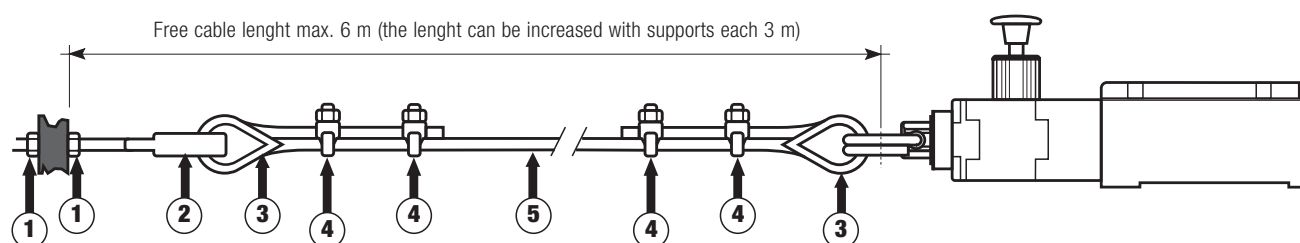
Indications for correct operation

The switch has to be fitted in such a way that the cable is sufficiently taut and closes both contacts.

For the exact cable tension, check that the notch on the drive shaft is in line with the head.

Contacts position during operation for contact block 08

NOTE: the contacts 11-12 and 21-22 have to be connected in series

**Examples of connection**

Free cable length max. 6 m (increase the length with supports each 3 m).

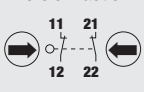
Notes

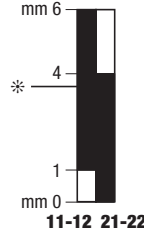
- ① BM 10 DIN 439 hexagonal nut
- ② part no. 005 - BM 10 DIN 439 ring with thread
- ③ part no. R05 - B - 5 mm DIN 6899 noose
- ④ part no. M05 - 5 mm DIN 1480 clamp
- ⑤ part no. F05 - PVC steel cable, Ø 5 mm

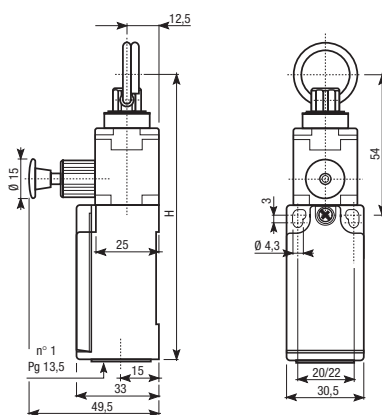
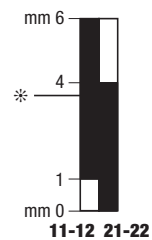
Pull wire safety switches



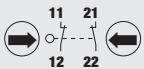
E100

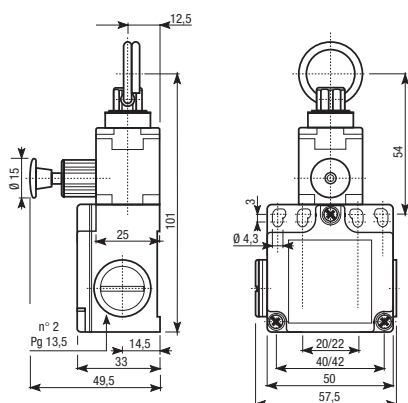
Contact element	
2NC slow action  08	
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E10008TBI	E10008TBM	E10108TBI	E10108TBM	
0,195	0,29	0,195	0,29	
1	1	1	1	
111,5	109	111,5	109	

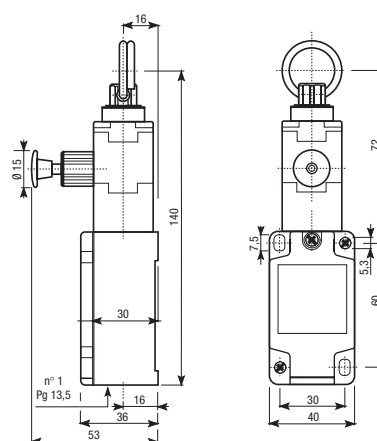


**E200**

Contact element		Cable entry	
		PG 13,5	M20 x 1,5
2NC slow action 	08	Metal head	Metal head
		Plastic body	Plastic body
		E20008TBI	E20108TBI
Weight	kg	0,22	
Pack	pcs	1	

**E400**

Cable entry				mm 6 4 * 1 mm 0 11-12 21-22
PG 13,5		M20 x 1,5		
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E40008TBI	E40008TBM	E40108TBI	E40108TBM	
0,24	0,465	0,24	0,465	
1		1		



Hinges operating safety switches



Safety switches for hinges are devices used to guarantee operator safety, applied to machines fitted with protection barriers. Metal shaft switches are ideal for the control of doors and gates, with application directly to the hinge. This kind of actuator is available on the series **E100** with thermoplastic or metal body and metal head, with **IP66** protection degree.

Reduced angle of operation

they guarantee stopping of dangerous movement when **the lever reaches an angle of 4° 30'.**

In conformity with standards:

IEC EN 60947-5-1 • EN 60947-1 • UNI EN 1088
EN ISO 12100-1 • EN ISO 12100-2 • IEC 529 • EN 60529
VDE 0660-200 • VDE 0113 • UNI EN 13850

Fixing

E100 20/22 mm

Thread

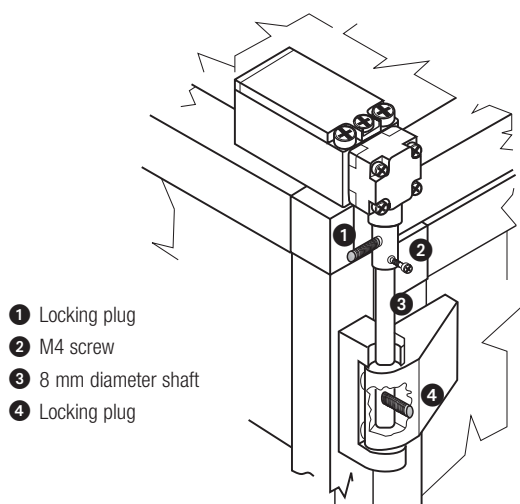
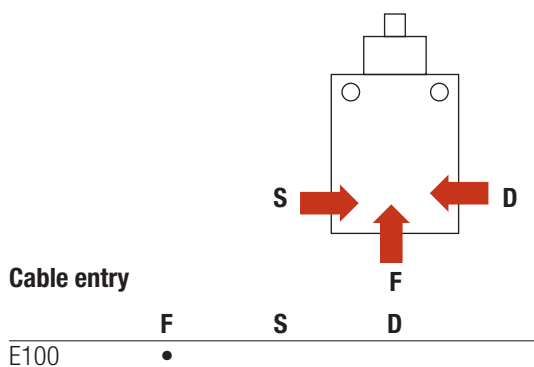
Series part no.

Pg 13,5	E100
M20x1,5	E101
1/2" NPT (on request)	E102
Pg 11 (on request)	E103
M16x1,5 (on request)	E104
M12 connector (on request)	E100/M12

Notes for installation

Instructions for correct installation:

- Fix the switch in place to the door frame with two screws
Connect the safety circuit to the NC contact (21-22, 01/11-12, 04)
- Insert an 8 mm diameter shaft **3** protruding from the door hinge, in the shaft of the switch and fix it in place temporarily with the M4 screw **2**
- Adjust the opening point of the NC contact by rotating the shaft to reduce the standard opening angle (5°)
- Drill the pin **3** through one of the two holes in the shaft and fix it in place with the locking plug **1**



Applications:



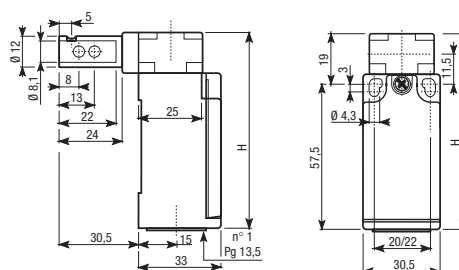
Machines with safety barriers

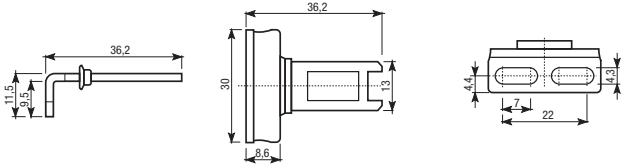
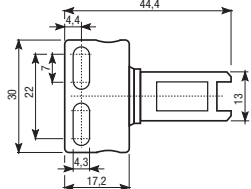
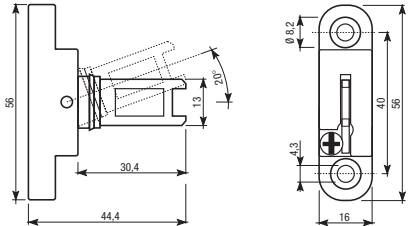
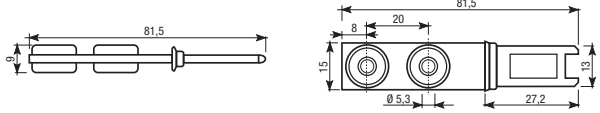
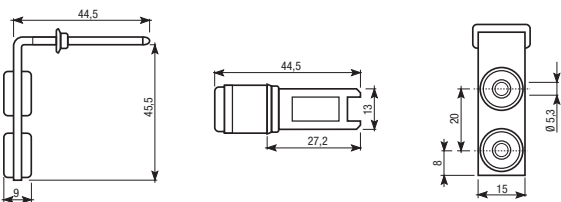


E100

Contact element	
1NO+1NC slow action 	01
2NC slow action 	04
Weight	kg
Pack	pcs
H	mm

Cable entry				
PG 13,5		M20 x 1,5		Contact travel
Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
E10001SCI	E10001SCM	E10101SCI	E10101SCM	
E10004SCI	E10004SCM	E10104SCI	E10104SCM	
0,125	0,215	0,125	0,215	
1	1	1	1	
76,5	74	76,5	74	



	Part no.	Description	Pack	Weight conf. (kg)	Dimensions
	Z5	Angle key mounting perpendicular to operating direction (key provided with the switch)	5	0,128	
	Z51	Straight key	5	0,128	
	Z52	Adjustable key	5	0,153	
	Z53	Straight key	5	0,128	
	Z54	Angle key mounting perpendicular to operating direction	5	0,128	
	M05	Clamp for Ø 5mm cable	5	0,140	
	R05	Wire rope thimble, shape A, for rope Ø5 mm - DIN 6899	5	0,050	
	T05	Wrought iron tension screw M6 x 60	5	0,320	
	O05	M8 eyelet with thread	5	0,155	
	F05	Ø 5mm Red safety cable	1	21,025	
	ELEM01	Slow action 1NO+1NC	5	0,485	
	ELEM04	Slow action 2NC	5	0,485	
	ELEM08	Slow action 2NC	5	0,485	



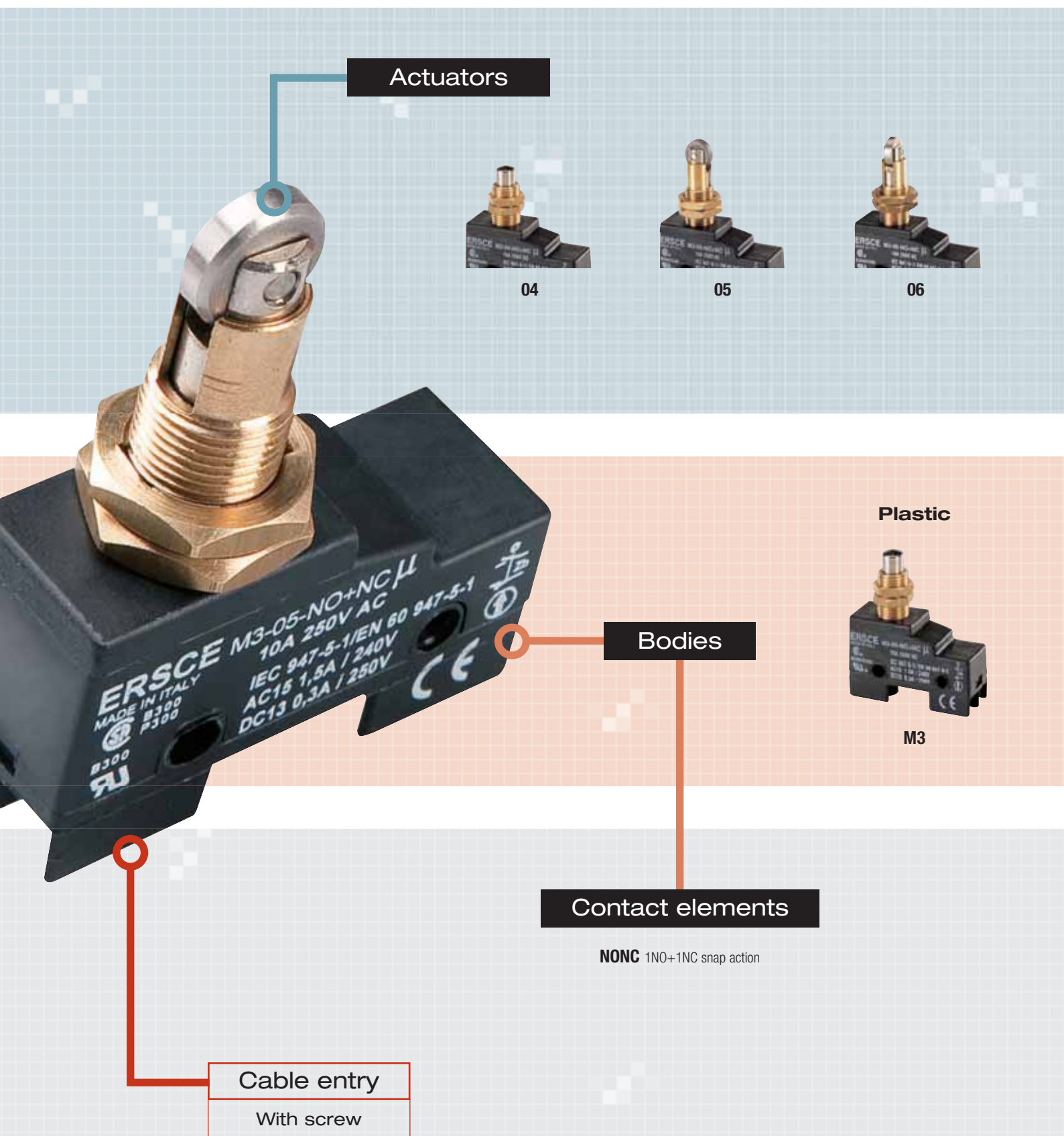
BETTER SWITCHES

MICROSWITCHES

M3 series



06





08



09



11

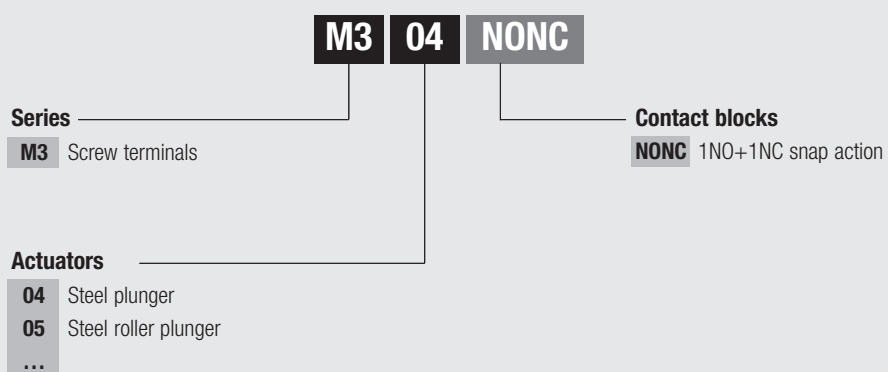


13



14

Product code structure



Note: Please verify the effective availability of a product before ordering.

Technical information

				TIPO	M3
Maximum operating frequency				operat./hour ¹	1800
Insulation resistance			500 V DC	MΩ	100
Dielectric strenght			50/60 Hz per 1'	V AC	2500 ²
Rated insulation voltage	Ui	IEC947-5-1		V AC	250
Rated thermal current	Ithe	IEC947-5-1		A	10
Rated operating current	Category AC15 A300	Ie IEC947-5-1/EN60947-5-1	24V	A	5
			125V	A	3
			230 V	A	1,5
Contact resistance		IEC255-7 cat.3	initial value	mΩ	25 max
Short circuit protective devices		IEC269 (IEC947-5-1) fuse type gL or gG		A	3
Pollution degree		IEC947-5-1		A	3
Protection degree		EN 60529			IP40
Vibration resistance		IEC68-2-6	mm		0,35 ± 15% (10 ÷ 55 Hz ± 1 Hz)
Shock resistance		IEC68-2-27	11ms	g	30
Mechanical life				cycles	15.000.000
Electric life		at 250V AC 6A with resistance load cosφ=1		cycles	500.000
		at 250V AC 6A with inductive load cosφ=0,4		cycles	500.000
Terminals		Type			Screw with combined notch and retractable plate (notch Ph. Size 1)
		Screw			M3,5
		Protection degree			IP00 (IP40 with terminals cover)
		Material			Steel class 8,8 / Galvanized
		Max. screw tightening torque			120 (12,24)
		Max connecting capacity			
			rigid cable	mm²	2x1,5
			flexible cable	mm²	2x1,5
			with prod terminal		1x1,5
Terminal numbering					In accordance with EN50013
Air ambient temperature			operational	°C	-25 ÷ +85 (without formation of ice)
Relative umidity			operational		95% max

¹ One operation cycle means two movements, one to close and one to open as required by EN 60947-5

² Between terminals with different polarity; between live mechanical parts and ground; between live mechanical parts and non-current-carrying metal parts

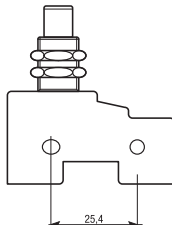
Certifications and Approvals



- UL approval file E72861
- CSA approval file 026716-0-00
- Approved
- + Conforms to requirements

**M3
series**

- Extremely compact
- Plastic body
- Metal actuators
- Galvanically separated contacts type Zb
- Gold plated contacts (on request)
- Contact elements 1NO+1NC snap action with positive opening of the NC contact in accordance to IEC EN 60947-5-1 and VDE 0660-200

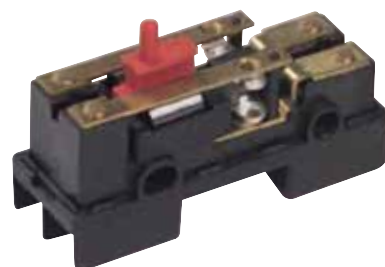
Series	Product	Fixing holes
M3		

Galvanically separated contacts type Zb

The NO and NC contacts are galvanically separated with positive opening: it is possible to use the contacts independently.

**High performance contacts**

Ag/Ni.



Actuation heads

■ Plunger actuation



04

Steel and
plunger Ø 8,3



05

Steel roller
plunger



06

Steel roller
plunger
turned 90°

■ Lever actuation



08

Lever,
length 54 mm



09

Lever,
length 63.5 mm



10

Steel and lever



11

Thermoplastic
roller lever,
length 26,6



13

Thermoplastic
roller lever,
length 37



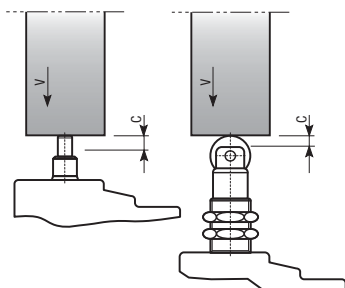
14

Thermoplastic
roller lever,
length 50,5

■ Operating characteristics

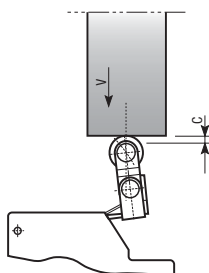
Plungers, roller plunger, vertical travel

Actuators: M...04-05-06



Drive force	
Minimum operating force	4 N
Minimum positive opening force	16 N

Levers, roller lever, vertical action



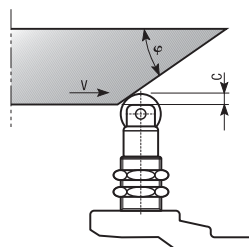
Drive forces	
Actuators: M...11	
Minimum operating force	2 Ncm
Minimum positive opening force	13 Ncm

Actuators : M...08-13	
Minimum operating force	1,6 Ncm
Minimum positive opening force	12 Ncm

Actuators : M...09-14	
Minimum operating force	1,3 Ncm
Minimum positive opening force	11 Ncm

Roller plunger, side travel

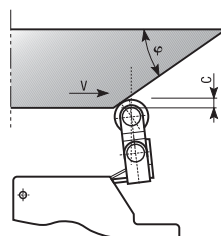
Actuators: M...05-06



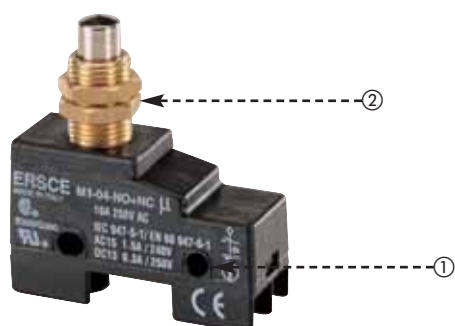
Operating parameters of the drive cam	
φ	V max (m/s)
30°	0,2
20°	0,5

Roller lever, side action

Actuators: M...11-13-14



Operating parameters of the drive cam	
φ	V max (m/s)
30°	0,5
45°	0,3
60°	0,2



Tightening torque

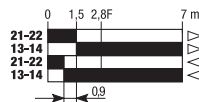
- ① Tighten the fixing screws of the appliance with a torque of 1.2÷1.5 Nm
- ② Max tightening torque 4 Nm for drives fixed in place with hexagonal nuts

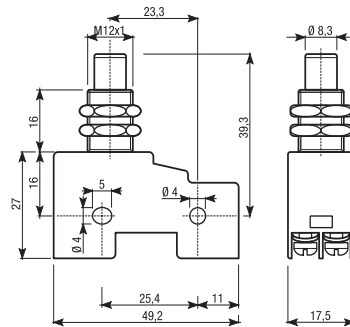
04



Steel plunger Ø8,3 mm

Contact element	
1NO+1NC snap action	
	
Weight pack	kg
Pack	pcs

Plastic	Contact travel
M304N0NC	
0,925	
5	

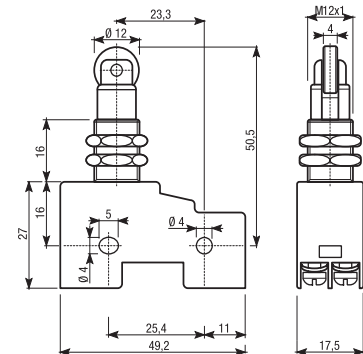


05

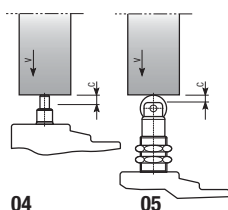


Steel roller plunger

Plastic	Contact travel
M305N0NC	
1,105	
5	



Drive cam operating parameters



Min. force (N)	
for tripping	4
for positive opening	16

04

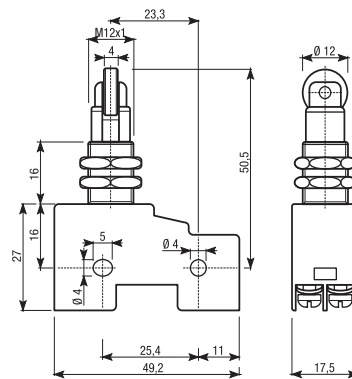
05



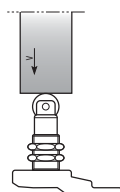
Steel roller plunger turned 90°

Contact element	
1NO+1NC snap action	
Weight pack	kg
Pack	pcs

Plastic	Contact travel
M306NONC	
1,105	
5	



Drive cam operating parameters



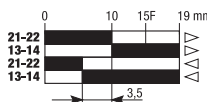
Min. force (N)	
for tripping	4
for positive opening	16

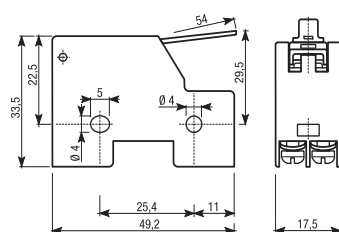
08



Lever length 54 mm

Contact element	
1NO+1NC snap action	
	
Weight pack	kg
Pack	pcs

Plastic	Contact travel
M308N0NC	
0,360	
5	

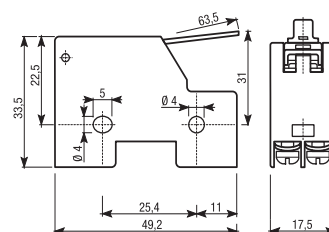


09

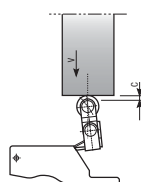


Lever length 63,5 mm

Plastic	Contact travel
M309N0NC	
0,365	
5	



Drive cam operating parameters



Min. force (cNm)	
for tripping	1,6
for positive opening	12

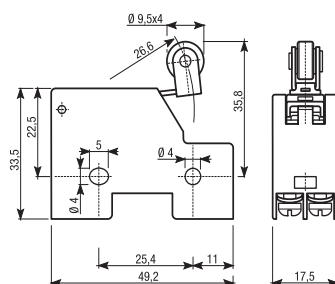
11



Thermoplastic roller lever
length 26,6 mm

Contact element	
1NO+1NC snap action	
Weight pack	kg
Pack	pcs

Plastic	Contact travel
M311N0NC	
0,735	
5	

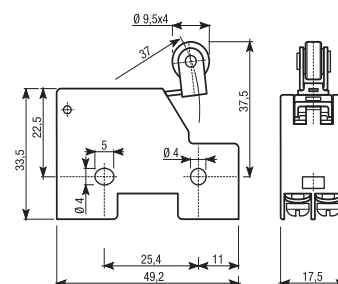


13

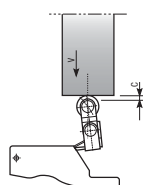


Thermoplastic roller lever
length 37 mm

Plastic	Contact travel
M313N0NC	
0,745	
5	



Drive cam operating parameters

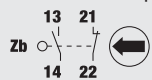


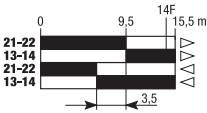
Min. force (cNm)	
for tripping	2
for positive opening	13

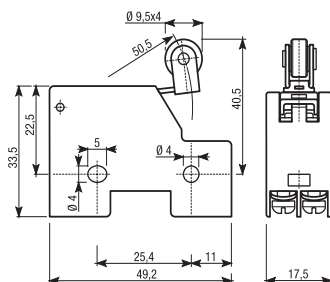
Min. force (cNm)	
for tripping	1,6
for positive opening	12



Thermoplastic roller lever
length 50,5 mm

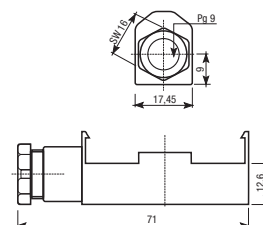
Contact element	
1NO+1NC azione rapida	
	
Weight pack	kg
Pack	pcs

Plastic	Contact travel
M314NONC	
0,755	
5	

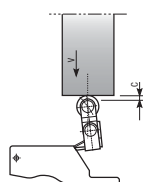


Accessory:
terminal cover for M3 series

Plastic
M3PROTA
0,195
5



Drive cam operating parameters



Min. force (cNm)	
for tripping	1,3
for positive opening	11



MULTIPLE POSITION SWITCHES FMV



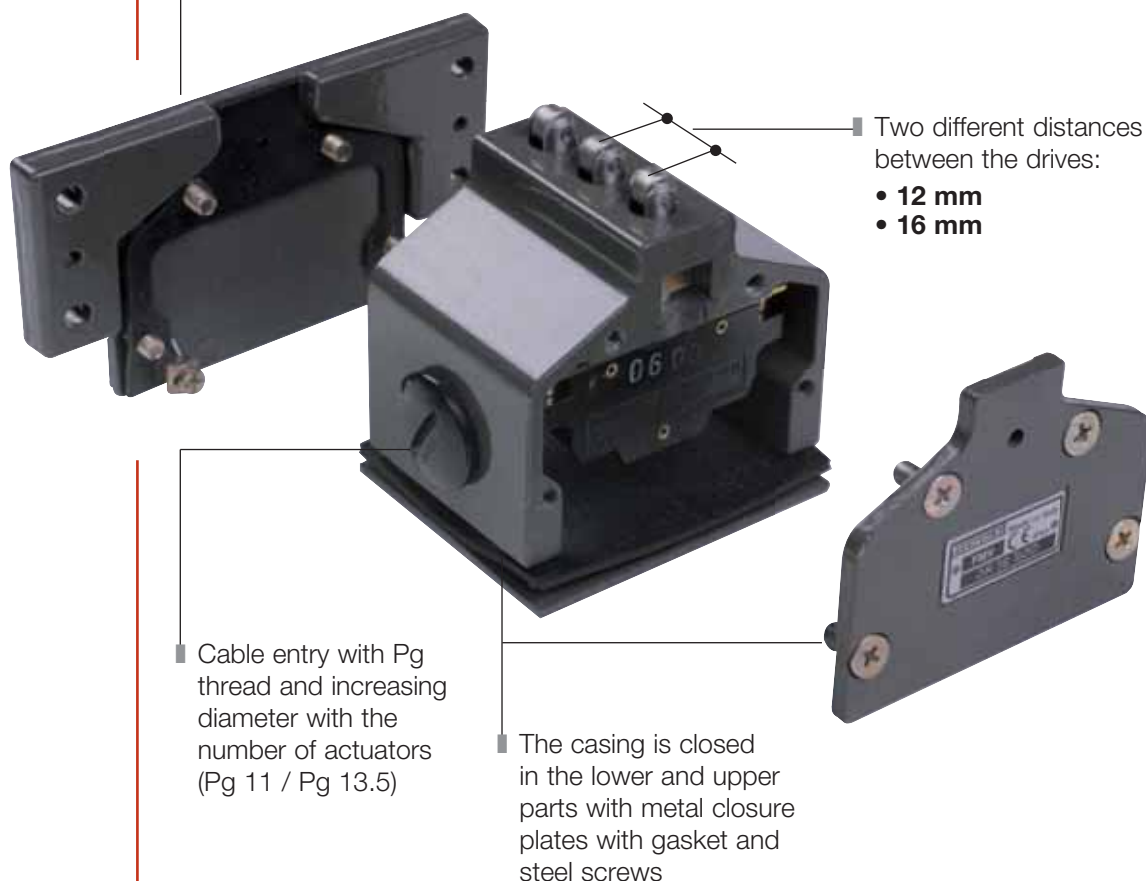
06

General features

The **FMV** series vertical mounting multiple position switches, are an important accessory in the automatic production process for monitoring the moving parts of a machine. Due to their limited dimensions in proportion to the functions performed, the multiple position switches offer the ideal solution to command automatic machines. The body of the multiple position switches is made of die cast metal alloy, while the roller plunger actuators are made of tempered steel.

■ Two different mounting brackets:

- 100 (130 for the start of the first actuators at 30 mm)
- 200 (230 for the start of the first actuators at 30 mm)



Technical data

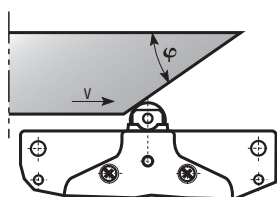
				TYPE	FMV
Maximum operating frequency			operat./hour ¹		1800
Insulation resistance		500 V DC	MΩ		100
Dielectric strenght		50/60 Hz for 1'	V AC		2000 ²
Rated insulation voltage	Ui	IEC947-5-1	V AC		500
Rated thermal current	Ithe	IEC947-5-1	A		10
Rated operating current	Category AC15 A300	IEC947-5-1/EN60947-5-1	24V	A	10
			125V	A	10
			230 V	A	6
			400 V	A	4
Contact resistance		IEC255-7 cat.3	initial value	mΩ	25
Short circuit protective devices		IEC269 (IEC947-5-1)			
		fuse type gL or gG		A	10
Pollution degree		IEC947-5-1		A	3
Protection degree		EN 60529			IP64
Protection against electric shock			metal	class	I
Vibration resistance		IEC68-2-6		mm	0,35 ± 15% (10 ÷ 55 Hz ± 1 Hz)
Shock resistance		IEC68-2-27	11ms	g	30
Mechanical life				cycles	30.000.000
Electric life		at 250V AC 6A with resistance load cosφ=1		cycles	500.000
		at 250V AC 6A with inductive load coφ=0,4		cycles	500.000
Terminals	Type				Screw with combined notch and retractable plate (notch Ph. Size 1)
	Screw				M3,5
	Material				Steel class 8,8 / Galvanized
	Max. screw tightening torque		Ncm (Kg cm)		120 (12,24)
	Max connecting capacity	rigid cable	mm ²		2x1,5
		flexible cable	mm ²		2x1,5
		with prod terminal			1x1,5
Terminal numbering					In accordance with EN50013
Air ambient temperature			operational	°C	-10 ÷ +70
					(without formation of ice)
Relative umidity			operational		95% max

¹ One operation cycle means two movements, one to close and one to open as required by EN 60947-5

² Between terminals with different polarity; between live mechanical parts and ground; between live mechanical parts and non-current-carrying metal parts

Operating characteristics

Roller side travel



Drive cam operating parameters

φ	V max (m/s)
30°	1
20°	1,5

Drive forces

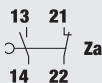
Minimum command force	10 N
Minimum force on lateral travel	18 N

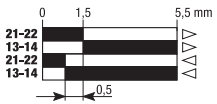
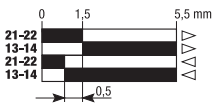
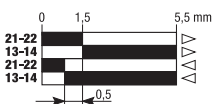


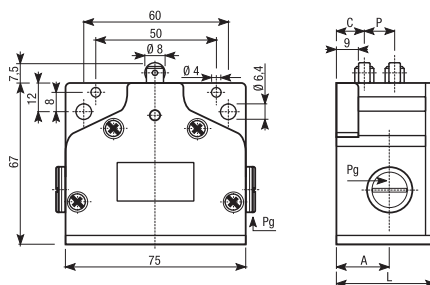
Start 30
Pitch 12



Vertical mounting bracket 100

Contact element	
snap action 1NO+1NC 	FM

Metal	No. of roller actuators	Weight (kg)	Pack (pcs)	Travel diagram
FMV2R12130	2 R	0,421	1	
FMV3R12130	3 R	0,523	1	
FMV4R12130	4 R	0,621	1	



Characteristics

Distance between the actuators 12 mm, start 30 mm

Code	No. of actuators	P	C	L	Pg	A
FMV2R12130	2	12	30	54	11	30
FMV3R12130	3	12	30	66	13,5	35
FMV4R12130	4	12	30	78	13,5	35

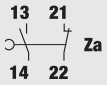
Notes:

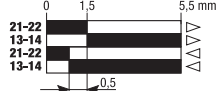
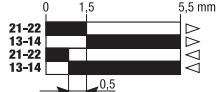
P = Pitch (distance between two actuators)
C = Distance between bracket and first actuator
L = Overall dimensions
A = Distance between bracket and input/output holes

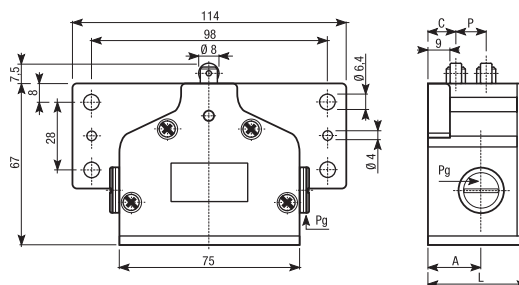
■ Start 30
Pitch 12



Vertical mounting bracket 200

Contact element	
snap action 1NO+1NC 	FM

Metal	No. of roller actuators	Weight (kg)	Pack (pcs)	Travel diagram
FMV3R12230	3 R	0,563	1	
FMV4R12230	4 R	0,662	1	



Characteristics

Distance between the actuators 12 mm, start 30 mm

Code	No. of actuators	P	C	L	Pg	A
FMV3R12230	3	12	30	66	13,5	35
FMV4R12230	4	12	30	78	13,5	35

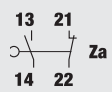
Notes:

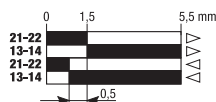
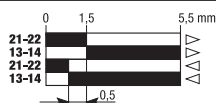
P = Pitch (distance between two actuators)
 C = Distance between bracket and first actuator
 L = Overall dimensions
 A = Distance between bracket and input/output holes

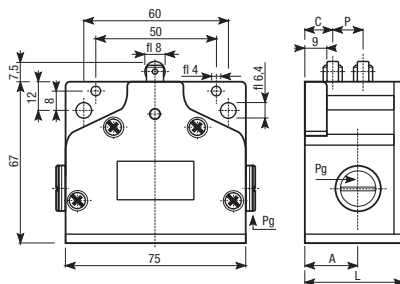
Start 30
Pitch 16



Vertical mounting bracket 100

Contact element	
snap action 1NO+1NC 	FM

Metal	No. of roller actuators	Weight (kg)	Pack (pcs)	Travel diagram
FMV2R16130	2 R	0,470	1	
FMV3R16130	3 R	0,584	1	



Characteristics

Distance between the actuators 16 mm, start 30 mm

Code	No. of actuators	P	C	L	Pg	A
FMV2R16130	2	16	30	62	11	30
FMV3R16130	3	16	30	78	13,5	35

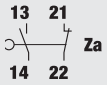
Notes:

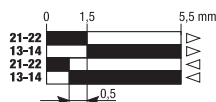
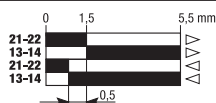
- P = Pitch (distance between two actuators)
- C = Distance between bracket and first actuator
- L = Overall dimensions
- A = Distance between bracket and input/output holes

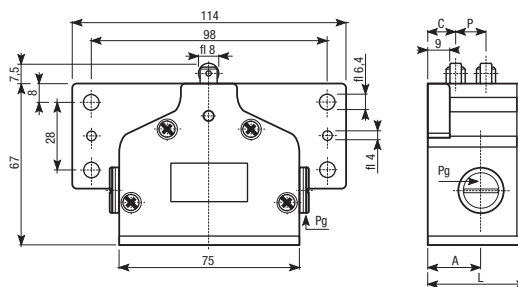
■ Start 30
Pitch 16



Vertical mounting bracket 200

Contact element	
snap action 1NO+1NC 	FM

Metal	No. of roller actuators	Weight (kg)	Pack (pcs)	Travel diagram
FMV3R16230	3 R	0,629	1	
FMV4R16230	4 R	0,748	1	



Characteristics

Distance between the actuators 16 mm, start 30 mm

Code	No. of actuators	P	C	L	Pg	A
FMV3R16230	3	16	30	78	13,5	35
FMV4R16230	4	16	30	94	13,5	35

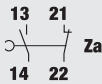
Notes:

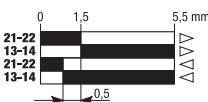
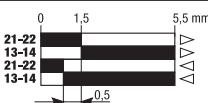
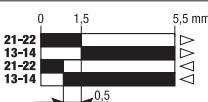
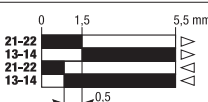
- P = Pitch (distance between two actuators)
- C = Distance between bracket and first actuator
- L = Overall dimensions
- A = Distance between bracket and input/output holes

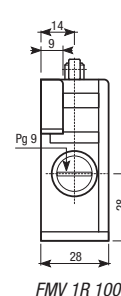
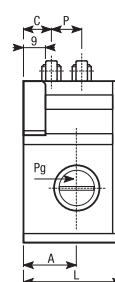
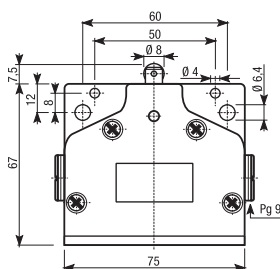
Start 12
Pitch 12



Vertical mounting bracket 100

Contact element	
snap action 1NO+1NC 	FM

Metal	No. of roller actuators	Weight (kg)	Pack (pcs)	Travel diagram
FMV1R100	1 R	0,266	1	
FMV2R12100	2 R	0,363	1	
FMV3R12100	3 R	0,455	1	
FMV4R12100	4 R	0,528	1	



Characteristics

Distance between the actuators 12 mm, start 12 mm

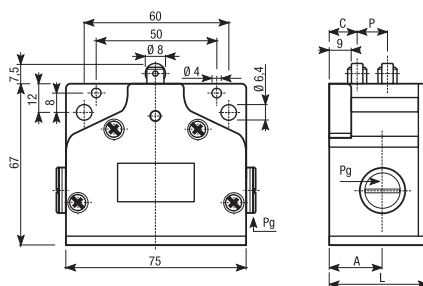
Code	No. of actuators	P	C	L	Pg	A
FMV2R12100	2	12	12	41	11	22
FMV3R12100	3	12	12	53	13,5	30
FMV4R12100	4	12	12	60	13,5	30

Notes:

P = Pitch (distance between two actuators)
C = Distance between bracket and first actuator
L = Overall dimensions
A = Distance between bracket and input/output holes



Contact element		Metal	No. of roller actuators	Weight (kg)	Pack (pcs)	Travel diagram
snap action 1NO+1NC 	FM	FMV2R16100	2 R	0,405	1	
		FMV3R16100	3 R	0,521	1	
		FMV4R16100	4 R	0,642	1	



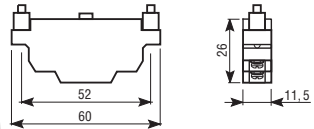
Code	No. of actuators	P	C	L	Pg	A
FMV2R16100	2	16	16	48	11	22
FMV3R16100	3	16	16	64	13,5	30
FMV4R16100	4	16	16	80	13,5	30

P = Pitch (distance between two actuators)
C = Distance between bracket
and first actuator
L = Overall dimensions
A = Distance between bracket
and input/output holes



Contact element

Contact element
1321 1422 Za

Code	Description	Weight (kg)	Pack (pcs)		
FM	Mechanical contact element	0,025	5		

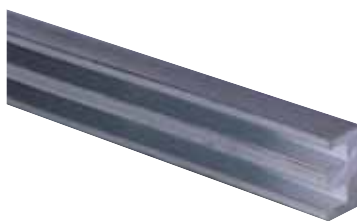


Cams

Code	Description	Form	Weight (kg)	Pack (pcs)	
C1N	Tempered grinded steel cam according to DIN 69639	UA	0,025	1	Side view C1N C2N-C3N-C4N-C5N C6N-C7N-C8N-C9N-C10N
C2N	Tempered grinded steel cam according to DIN 69639	UA	0,030	1	
C3N	Tempered grinded steel cam		0,033	1	
C4N	Tempered grinded steel cam	UA	0,033	1	
C5N	Tempered grinded steel cam	UA	0,044	1	
C6N	Tempered grinded steel cam	UB	0,062	1	
C7N	Tempered grinded steel cam according to DIN 69639	UB	0,081	1	
C8N	Tempered grinded steel cam according to DIN 69639	UB	0,127	1	
C9N	Tempered grinded steel cam according to DIN 69639	UB	0,150	1	
C10N	Tempered grinded steel cam according to DIN 69639		0,179	1	

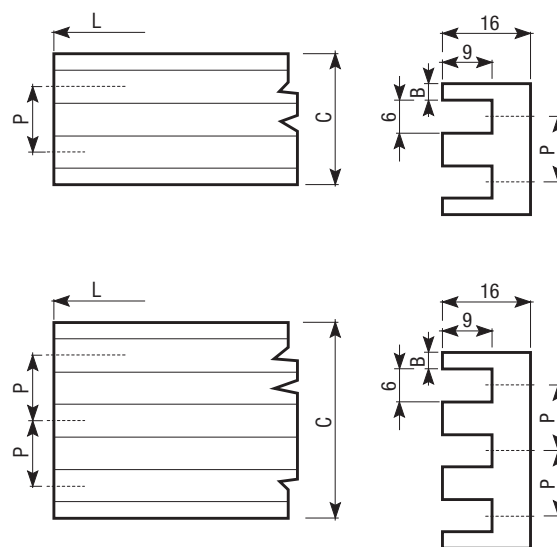
Characteristics

Code	L1	L2	Form	Code	L1	L2	Form
C1N	0	25	UA	C6N	25	59,5	UB
C2N	4	29	UA	C7N	40	74	UB
C3N	6,3	31		C8N	63	114,5	UB
C4N	10	35	UA	C9N	100	134	UB
C5N	16	41	UA	C10N	125	147,5	



Assembly profile

Code	Description	Weight (kg)	Pack (pcs)	
G2121	Assembly profile in accordance with DIN 69368	0,713	1	
G2122	Assembly profile in accordance with DIN 69368	1,428	1	
G2161	Assembly profile in accordance with DIN 69368	1,080	1	
G2162	Assembly profile in accordance with DIN 69368	2,149	1	
G3121	Assembly profile in accordance with DIN 69368	1,080	1	
G3122	Assembly profile in accordance with DIN 69368	2,147	1	
G3161	Assembly profile in accordance with DIN 69368	1,613	1	
G3162	Assembly profile in accordance with DIN 69368	3,220	1	



Characteristics

Code	P	B	C	L
G2121	12	3	24	1000
G2122	12	3	24	2000
G2161	16	5	32	1000
G2162	16	5	32	2000
G3121	12	3	36	1000
G3122	12	3	36	2000
G3161	16	5	48	1000
G3162	16	5	48	2000

Notes:

P = Pitch, distance between two channels
 L = Overall rail length
 C = Overall rail width
 B = Lateral thickness
 G2 = Linear cam tray with 2 channels
 G3 = Linear cam tray with 3 channels

CONTROL SIGNALLING DEVICES AND ACCESSORIES



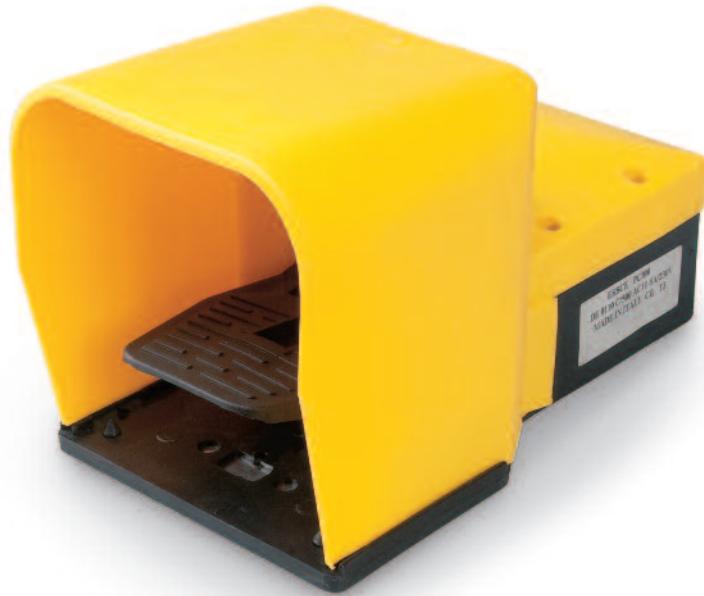
07

General characteristics

Our foot switches range are designed to ensure accuracy, reliability, high mechanical and electrical life. Degree of protection is IP54.

The NC contacts are made to guarantee positive opening for safety function.

The terminal screws with self-raising plate are supplied in open position for an easier and quicker wiring operation.



■ Thermoplastic foot switches

(IP54)



Without protection

Contact element

Code	Description		Pack	Weight (kg)
PSI00M20	Thermoplastic foot switches without protection		1	0,749



With protection

(IP54)

Contact element

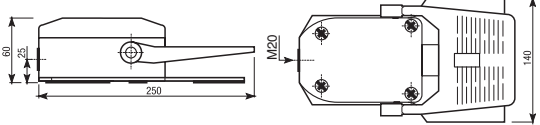
Code	Description		Pack	Weight (kg)
PCI00M20	Thermoplastic foot switches with protection w/o lock		1	1,034
PCI00PIM20	Thermoplastic foot switches with protection with lock		1	1,024

Metal foot switches

(IP54)



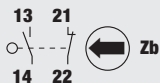
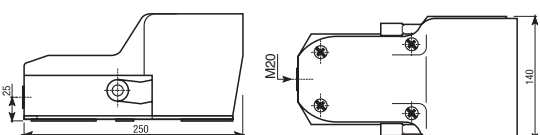
Without protection

Contact element	Code	Description		Pack	Weight (kg)
	PSA00M20	Metal foot switches w/o protection and w/o lock		1	1,328



With protection

(IP54)

Contact element	Code	Description		Pack	Weight (kg)
	PCA00M20	Metal foot switches protection and w/o lock		1	1,969
	PCA00PIM20	Metal foot switches with protection and with lock		1	1,981

Contact block

Code	Description	Pack	Weight pack (kg)
KIT00	Additional contact block 00 kit for foot switches	5	0,343
ELEM00	Contact block 1NO+1NC snap action	5	0,495
ELEM01	Contact block 1NO+1NC slow action	5	0,485

RELAY SOCKETS



08

A complete range

Bremas relay sockets range includes DIN rail sockets, plug-in input/interference suppression modules, securing springs, and the matching marking labels.

The modules are largely compatible with the usual standards on the market and have the major international approvals.

Easy, fast and flexible wiring is guaranteed by different options for cable management and connections: besides the screw connection method, relay sockets with the

spring-cage connection are also available for PCB relays with one or two PDT contacts and for industrial relays with two or four PDT contacts.

Double spring-cage connections guarantee easy operations for bridging of different contacts. Sockets with coil terminals and contact terminals on different sides to keep supply and signal wires separated are also available.





■ Socket for octal and undecal relays

Series ES8÷12

Sockets for octal relays with 2 PDT contacts and for undecal relays with 3 PDT contacts. This family is characterized by large cross section terminals arranged on one level for good accessibility.

■ Socket for industrial relays

Series ES15

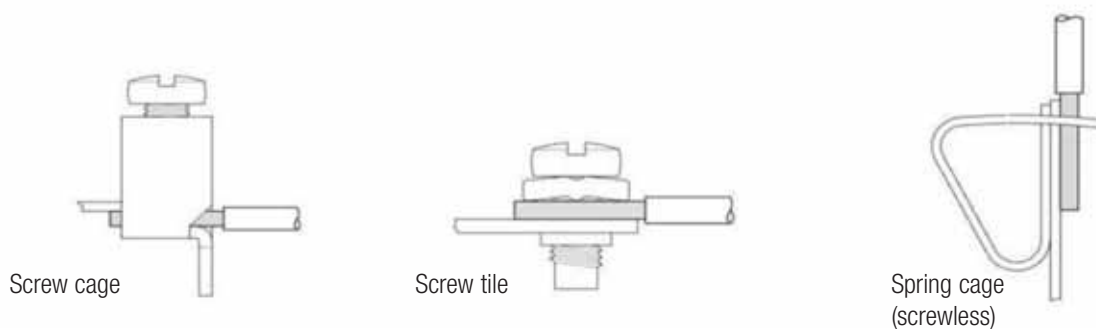
Sockets for plug-in industrial relays with 2, 3 or 4 PDT contacts. These sockets are also available with the spring-cage connection method for 2 or 4 PDT versions. Besides traditional 2/2-level sockets there is also a choice of modern "logical" 1/3-level versions with fully opposite coil and contact connections.

■ Socket for PCB relays

Series ES25÷50 and EC25÷50

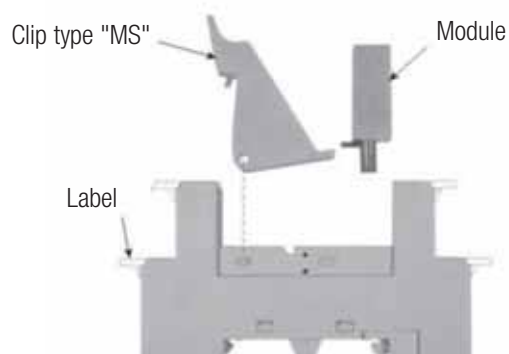
Narrow 16 mm sockets for PCB relays with one or two contacts. The spring-cage connection technology is available for socket relays with 5 mm pinning for DIN rails. Two options for terminals arrangement: 2/2-level and modern "logical" 1/3-level versions.

Wire locking systems



Accessories assembling layout

Relay fixed with "MS" spring disassembling layout



Relay socket assembling layout

Relay socket disassembling layout



SOCKETS FOR OCTAL AND UNDECAL RELAYS



08

Socket model ES 8

ES8CNER - Pack. 10/220 pcs

Relay socket type ES 8, for octal relays (8 pins) with 2 PDT, screw connections, for mounting on NS 35/7,5.

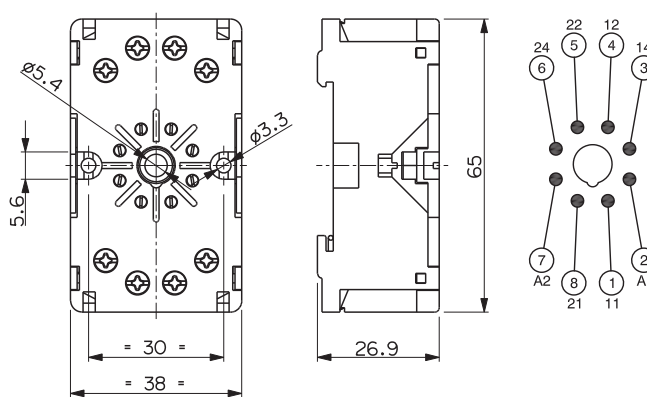
Rated current / Rated voltage	12 A / 300 VAC (CSA)
	10 A / 300 VAC (UL)
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 2,5 mm ²
Conductor cross section AWG	min. 26
Conductor cross section AWG	max 20
Stripping length	7 mm
Screw thread	M3

General data

Width	38 mm
Height	65 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model MH 60

MH60 - Pack. 10/200 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 58-60 mm

Model MH 55

MH55 - Pack. 10/200 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 53-55 mm

Socket model ES 11

ES11CNER - Pack. 10/220 pcs

Relay socket type ES 11, for undecal relays (11 pins) with 3 PDT, screw connections, for mounting on NS 35/7,5.

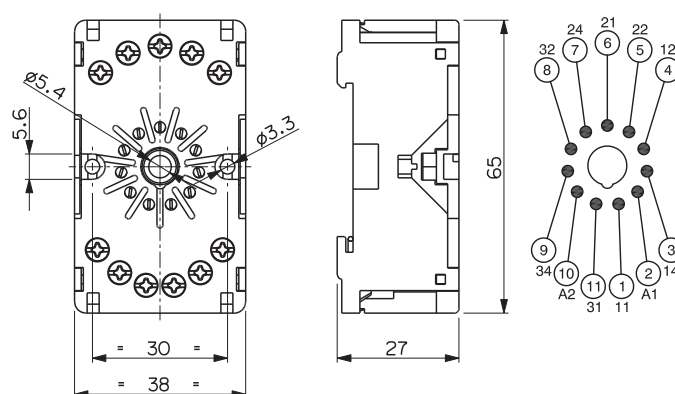
Rated current / Rated voltage	12 A / 300 VAC (CSA)
	10 A / 300 VAC (UL)
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 2,5 mm ²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data

Width	38 mm
Height	65 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model MH 60

MH60 - Pack. 10/200 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 58-60 mm

Model MH 55

MH55 - Pack. 10/200 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 53-55 mm

Socket model ES 11X

ES11XCNER - Pack. 10/220 pcs

Relay socket type ES 11X, for undecal relays (11 pins) with 3 PDT, screw connections, for mounting on NS 35/7,5.

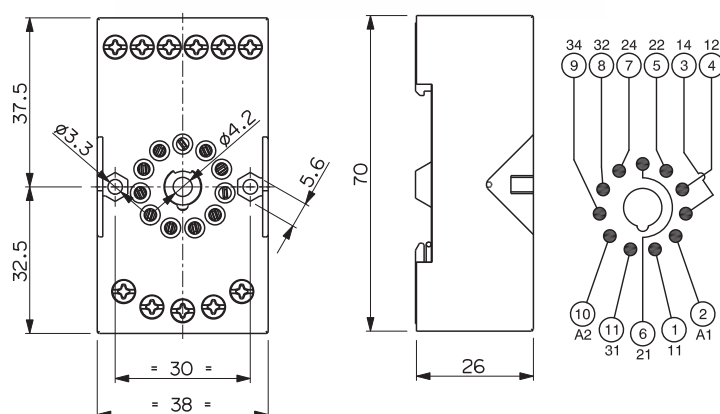
Rated current / Rated voltage	12 A / 300 VAC (CSA)
	10 A / 300 VAC (UL)
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 2,5 mm ²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data

Width	38 mm
Height	70 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model MH 60

MH60 - Pack. 10/200 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 58-60 mm

Model MH 55

MH55 - Pack. 10/200 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 53-55 mm

Socket model ES 9

ES9CNER - Pack. 10/220 pcs

Relay socket type ES 9, for octal relays (8 pins) with 2 PDT and double A2 contact, screw connections, connection facility for input interference suppression modules, for mounting on NS 35/7,5.

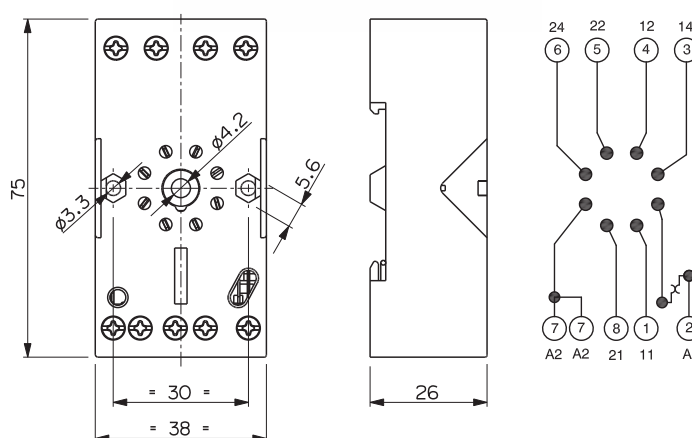
Rated current / Rated voltage	12 A / 300 VAC (CSA)
	10 A / 300 VAC (UL)
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 2,5 mm ²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data

Width	38 mm
Height	75 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model MH 60

MH60 - Pack. 10/200 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 58-60 mm

Model MH 55

MH55 - Pack. 10/200 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 53-55 mm

Socket model ES 12

ES12CNER - Pack. 10/220 pcs

Relay socket type ES 12, for undecal relays (11 pins) with 3 PDT and double A2 contact, screw connections, connection facility for input interference suppression modules, for mounting on NS 35/7,5.

Rated current / Rated voltage	12 A / 300 VAC (CSA)
	10 A / 300 VAC (UL)

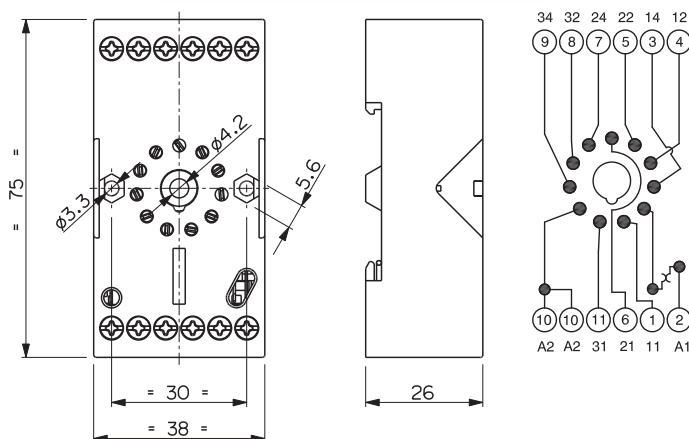
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 2,5 mm ²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data

Width	38 mm
Height	75 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model MH 60

MH60 - Pack. 10/200 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 58-60 mm

Model MH 55

MH55 - Pack. 10/200 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 53-55 mm

Modules for octal and undecal relay sockets

relay sockets



Modules with protection against polarity inversion

model type 21

TYPE21 - Pack. 10/100 pcs

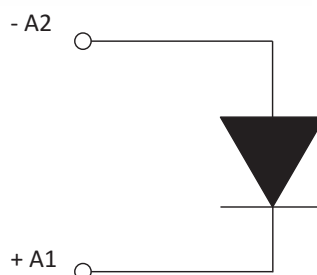
Plug-in module, for mounting on ES9 - ES12 with damping diode.

Electrical data

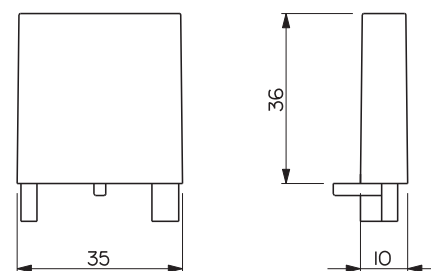
Polarity	A1+ / A2-
Input voltage	6/230 VDC



circuit diagram



dimension



model type 41

TYPE41 - Pack. 10/100 pcs

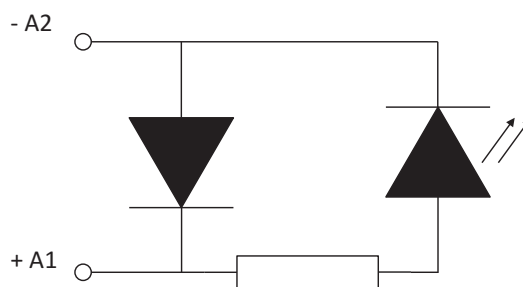
Plug-in module, for mounting on ES9 - ES12 with damping diode and red LED.

Electrical data

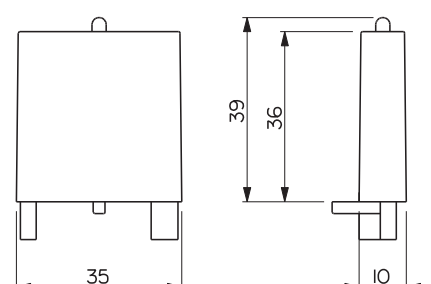
Polarity	A1+ / A2-
Input voltage	6/24 VDC



circuit diagram



dimension



model type 41V

TYPE41V - Pack. 10/200 pcs

Plug-in module, for mounting on ES9 - ES12 with damping diode and green LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	6/24 VDC





SOCKETS FOR INDUSTRIAL RELAYS



08

Socket model ES 15/2B

ES152BCNER - Pack. 10/240 pcs

Relay socket model ES 15/2B for industrial relay with 2 PDT, screw clamp terminals, connection facility for input interference suppression modules.

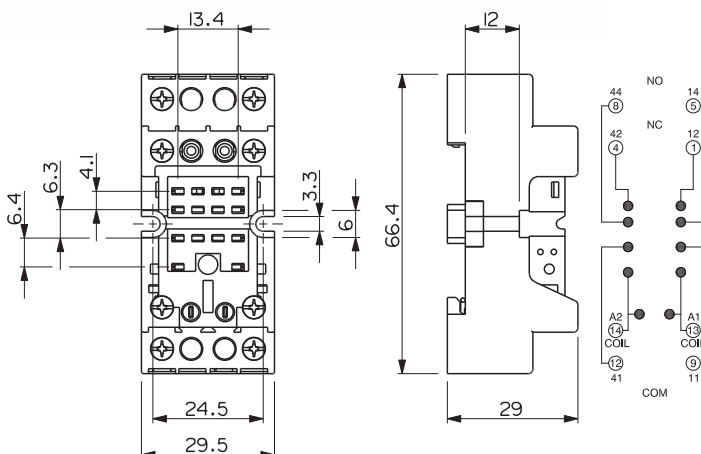
Rated voltage	300 VAC
Rated current	10 A
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	1,5 mm ²
Conductor cross section AWG	16
Screw thread	M3

General data

Width	29 mm
Height	66,4 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model MH 35

MH35 - Pack. 10/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 33,5-35,5 mm

Model MH 30

MH30 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 28-30 mm



Model TR

TR - Pack. 10/1000 pcs

Plate for ES50, ES35, ES32, ES25, ES50/3G, ES50/3S, ES35/3S, ES15/4-2B, ES15/4-2G



Model MS 30 B

MS30B - Pack. 10/100 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 30 C

MS30C - Pack. 10/100 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 35 B

MS35B - Pack. 10/100 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm



Model MS 35 C

MS35C - Pack. 10/100 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm

Socket model ES 15/4B

ES154BCNER - Pack. 10/240 pcs

Relay socket model ES 15/4B for industrial relay with 4 PDT, screw clamp terminals, connection facility for input interference suppression modules.

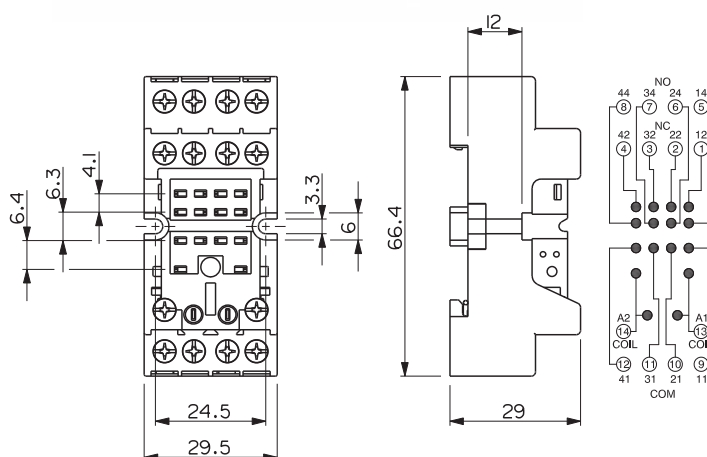
Rated voltage	300 VAC
Rated current	10 A
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	1,5 mm ²
Conductor cross section AWG	16
Screw thread	M3

General data

Width	29 mm
Height	66,4 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model MH 35

MH35 - Pack. 10/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 33,5-35,5 mm

Model MH 30

MH30 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 28-30 mm



Model TR

TR - Pack. 10/1000 pcs

Plate for ES50, ES35, ES32, ES25, ES50/3G, ES50/3S, ES35/3S, ES15/4-2B, ES15/4-2G



Model MS 30 B

MS30B - Pack. 10/100 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 30 C

MS30C - Pack. 10/100 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 35 B

MS35B - Pack. 10/100 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm



Model MS 35 C

MS35C - Pack. 10/100 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm

Socket model ES 15/2N

ES152NCNER - Pack. 10/220 pcs

Relay socket model ES 15/2N for industrial relay with 2 PDT, 2/2 - level, screw connections, connection facility for input interference suppression modules.

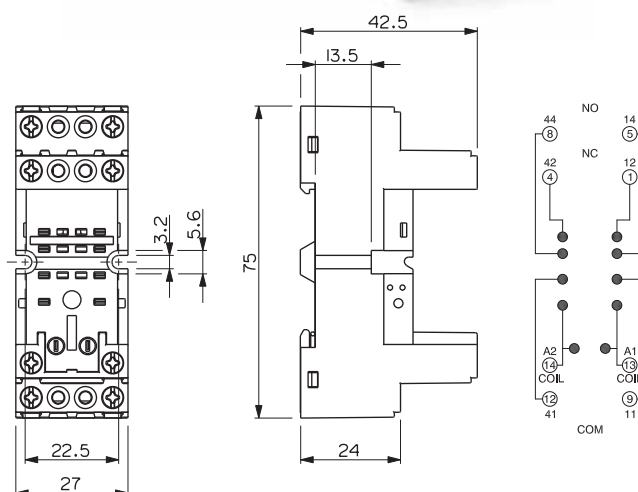
Rated current / Rated voltage	12 A / 300V (CSA)
	10 A / 300V (UL)
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 2,5 mm ²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data

Width	27 mm
Height	75 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model MH 35

MH35 - Pack. 10/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 33,5-35,5 mm

Model MH 30

MH30 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 28-30 mm



Model TR1

TR1 - Pack. 10/1000 pcs

Plate for ES15/4-3-2N,
ES15/4-3-2S



Model MS 30 B

MS30B - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 30 C

MS30C - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 35 B

MS35B - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm



Model MS 35 C

MS35C - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm

Socket model ES 15/3N

ES153NCNER - Pack. 10/220 pcs

Relay socket model ES 15/3N for industrial relay with 3 PDT, 2/2 - level, screw connections, connection facility for input/interference suppression modules.

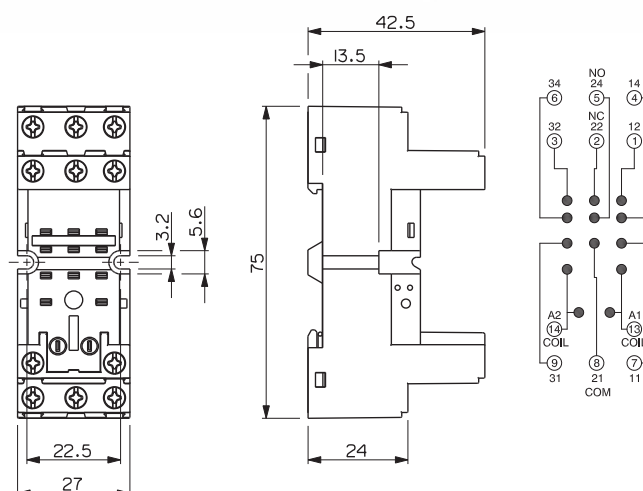
Rated current / Rated voltage	12 A / 300V (CSA)
	10 A / 300V (UL)
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 2,5 mm ²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data

Width	27 mm
Height	75 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model MH 35

MH35 - Pack. 10/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 33,5-35,5 mm

Model MH 30

MH30 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 28-30 mm



Model TR1

TR1 - Pack. 10/1000 pcs

Plate for ES15/4-3-2N,
ES15/4-3-2S



Model MS 30 B

MS30B - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 30 C

MS30C - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 35 B

MS35B - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm



Model MS 35 C

MS35C - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm

Socket model ES 15/4N

ES154NCNER - Pack. 10/220 pcs

Relay socket model ES 15/4N for industrial relay with 4 PDT, 2/2 level, screw connections, connection facility for input interference suppression modules.

Rated current / Rated voltage	12 A / 300 VAC (CSA)
	10 A / 300 VAC (UL)

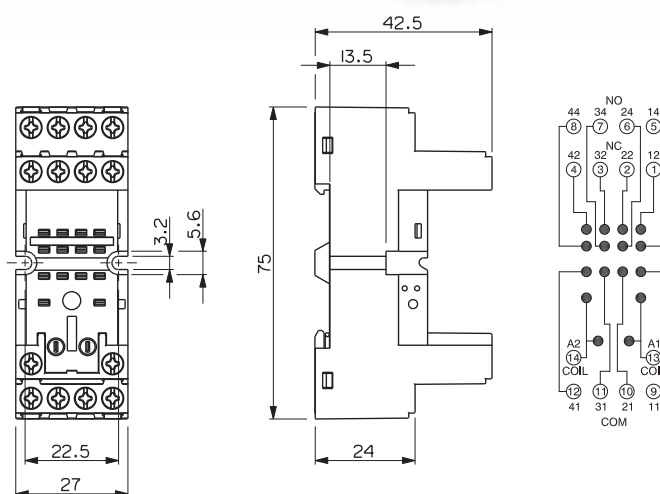
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 2,5 mm ²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data

Width	27 mm
Height	75 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model MH 35

MH35 - Pack. 10/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 33,5-35,5 mm

Model MH 30

MH30 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 28-30 mm



Model TR1

TR1 - Conf. 10/1000 pz.

Plate for ES15/4-3-2N,
ES15/4-3-2S



Model MS 30 B

MS30B - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 30 C

MS30C - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 35 B

MS35B - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm



Model MS 35 C

MS35C - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm

Socket model ES 15/2S

ES152SCNER - Pack. 10/220 pcs

Relay socket model ES 15/2S for industrial relay with 2 PDT, 1/3 level, screw connections, connection facility for input interference suppression modules.

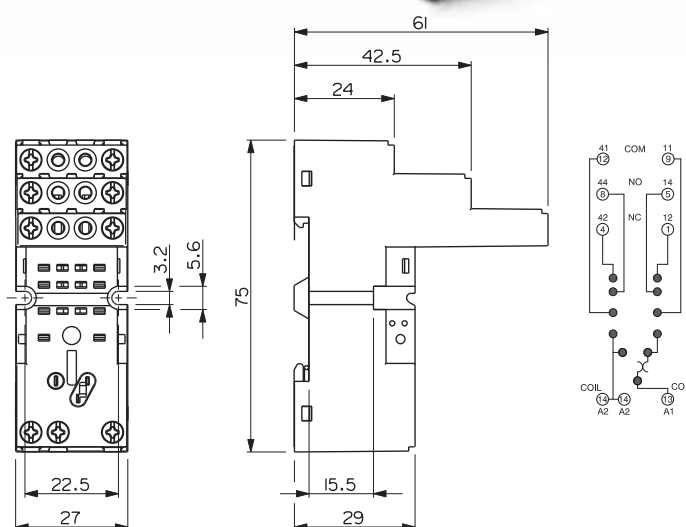
Rated voltage	300 VAC
Rated current	12 A
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 2,5 mm ²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data

Width	27 mm
Height	75 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model MH 35

MH35 - Pack. 10/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 33,5-35,5 mm

Model MH 30

MH30 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 28-30 mm



Model TR1

TR1 - Pack. 10/1000 pcs

Plate for ES15/4-3-2N,
ES15/4-3-2S



Model MS 30 B

MS30B - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 30 C

MS30C - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 35 B

MS35B - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm



Model MS 35 C

MS35C - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm

Socket model ES 15/3S

ES153SCNER - Pack. 10/220 pcs

Relay socket model ES 15/3S for industrial relay with 3 PDT, 1/3 level, screw connections, connection facility for input interference suppression modules.

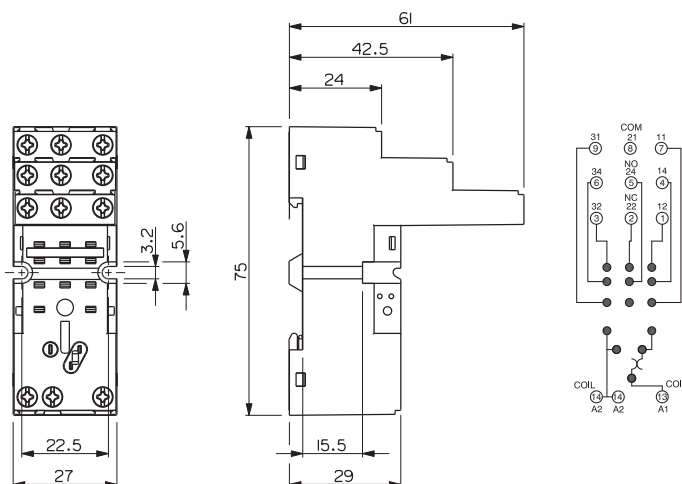
Rated voltage	300 VAC
Rated current	12 A
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 2,5 mm ²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data

Width	27 mm
Height	75 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model MH 35

MH35 - Pack. 10/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 33,5-35,5 mm

Model MH 30

MH30 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 28-30 mm



Model TR1

TR1 - Pack. 10/1000 pcs

Plate for ES15/4-3-2N,
ES15/4-3-2S



Model MS 30 B

MS30B - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 30 C

MS30C - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 35 B

MS35B - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm



Model MS 35 C

MS35C - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm

Socket model ES 15/4S

ES154SCNER - Pack. 10/220 pcs

Relay socket model ES 15/4S for industrial relay with 4 PDT, 1/3 level, screw connections, connection facility for input interference suppression modules.

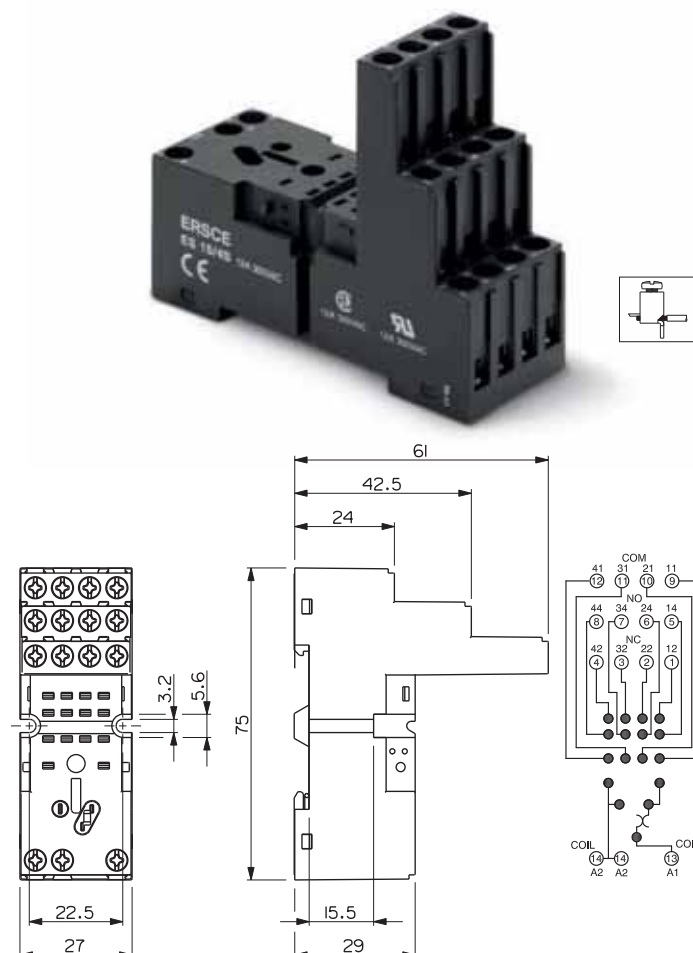
Rated voltage	300 VAC
Rated current	12 A
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 2,5 mm ²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data

Width	27 mm
Height	75 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model MH 35

MH35 - Pack. 10/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 33,5-35,5 mm

Model MH 30

MH30 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 28-30 mm



Model TR1

TR1 - Pack. 10/1000 pcs

Plate for ES15/4-3-2N,
ES15/4-3-2S



Model MS 30 B

MS30B - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 30 C

MS30C - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 35 B

MS35B - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm



Model MS 35 C

MS35C - Pack. 10/100 pcs

Spring for relay securing and
releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm

Socket model ES 15/2G

ES152GCNER - Pack. 10/150 pcs

Relay socket model ES 15/2G for industrial relay with 2 PDT, 1/3 level, spring-cage connections, connection facility for input interference suppression modules.

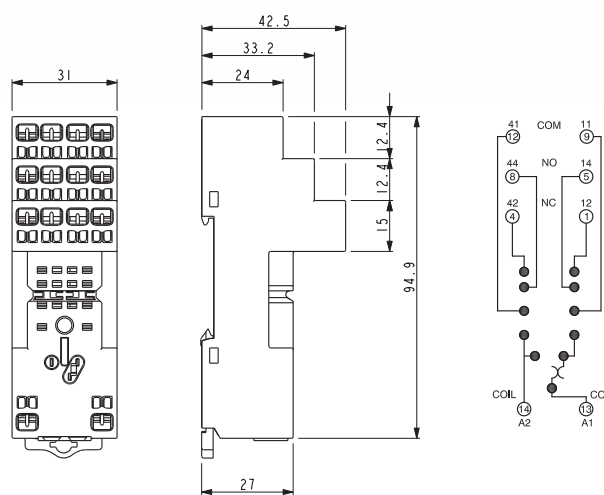
Rated voltage	300 VAC
Rated current	10 A
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 1,5 mm ²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 16
Stripping length	10 mm

General data

Width	31 mm
Height	95 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model MH 35

MH35 - Pack. 10/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 33,5-35,5 mm

Model MH 30

MH30 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 28-30 mm



Model TR

TR - Pack. 10/1000 pcs

Plate for ES50, ES35, ES32, ES25, ES50/3G, ES50/3S, ES35/3S, ES15/4-2B, ES15/4-2G



Model MS 30 B

MS30B - Pack. 10/100 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 30 C

MS30C - Pack. 10/100 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 28-30 mm



Model MS 35 B

MS35B - Pack. 10/100 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm



Model MS 35 C

MS35C - Pack. 10/100 pcs

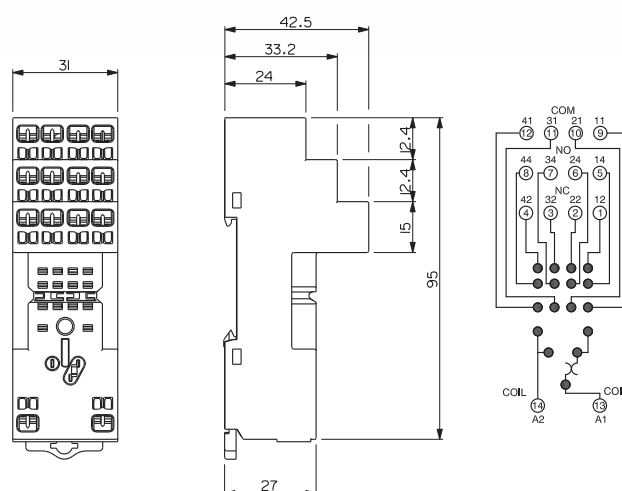
Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 33,5-35,5 mm

ES154GCNER - Pack. 10/150 pcs

General data	
Width	31 mm
Height	95 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Spring for relay securing
Material: X Cr Ni Steel
Relay height: 33,5-35.5 mm

Spring for relay securing
Material: X Cr Ni Steel
Relay height: 28-30 mm



Plate for ES50, ES35, ES32,
ES25, ES50/3G, ES50/3S,
ES35/3S, ES15/4-2B,
ES15/4-2G



Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 28-30 mm



Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 28-30 mm



Spring for relay securing and releasing
Material: Thermoplastic
Relay height: 33,5-35,5 mm



Spring for relay securing and releasing
Material: Thermoplastic
Relay height: 33.5-35.5 mm



Modules with protection against polarity inversion

Model type 22

TYPE22 - Pack. 10/200 pcs

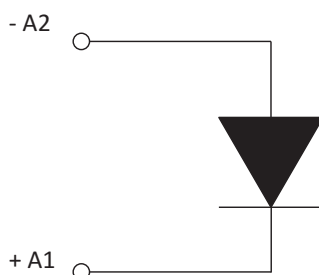
Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with damping diode

Electrical data

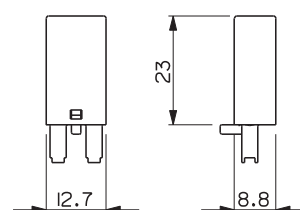
Polarity	A1+ / A2-
Input voltage	6/230 VDC



circuit diagram



dimension



Model type 42

TYPE42 - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S ES50
- ES35 - ES32 - ES25 - ES50/3 -
ES50/3S - ES35/3S - ES-50/3G
with damping diode and red LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	6/24 VDC



Model type 42V

TYPE42V - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S ES50
- ES35 - ES32 - ES25 - ES50/3 -
ES50/3S - ES35/3S - ES-50/3G
with damping diode and green LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	6/24 VDC



Model type 42B

TYPE42B - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S ES50
- ES35 - ES32 - ES25 - ES50/3 -
ES50/3S - ES35/3S - ES-50/3G
with damping diode and red LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	24/60 VDC



Model type 42BV

TYPE42BV - Pack. 10/200 pcs

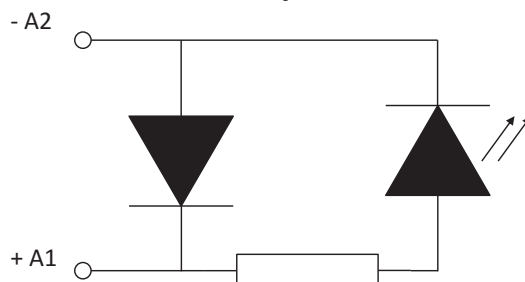
Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S ES50
- ES35 - ES32 - ES25 - ES50/3 -
ES50/3S - ES35/3S - ES-50/3G
with damping diode and green LED.

Electrical data

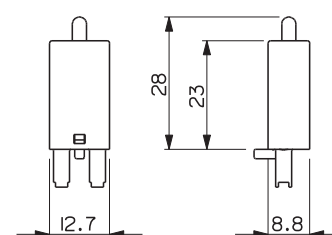
Polarity	A1+ / A2-
Input voltage	24/60 VDC



circuit diagram



dimension



Modules with RC Circuit

Model type 52C

TYPE52C - Pack. 10/200 pcs

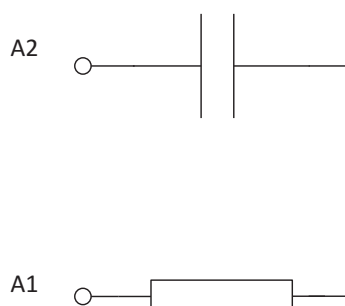
Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with RC circuit.

Electrical data

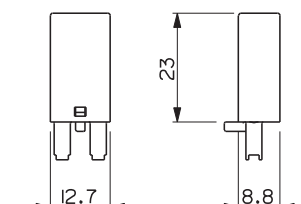
Polarity	A1+ / A2-
Input voltage	110/230 VAC



circuit diagram



dimension



Modules with signaling circuits

Model type 62

TYPE62 - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with red LED and
without protections against
polarity inversion.

Electrical data

Polarity	A1+ / A2-
Input voltage	6/24 VAC\VDC



Model type 62V

TYPE62V - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with green LED and
without protections against
polarity inversion.

Electrical data

Polarity	A1+ / A2-
Input voltage	6/24 VAC\VDC



Model type 62B

TYPE62B - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with red LED and
without protections against
polarity inversion.

Electrical data

Polarity	A1+ / A2-
Input voltage	24/60 VDC



Model type 62E

TYPE62E - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with red LED and
without protections against
polarity inversion.

Electrical data

Polarity	A1+ / A2-
Input voltage	24/60 VAC\VDC



Model type 92

TYPE92 - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with red LED and
without protections against
polarity inversion.

Electrical data

Polarity	A1+ / A2-
Input voltage	110/230VAC\VDC



Model type 92V

TYPE92V - Pack. 10/200 pcs

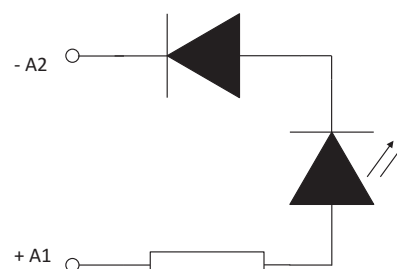
Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with green LED and
without protections against
polarity inversion.

Electrical data

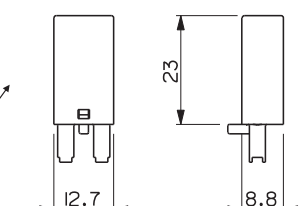
Polarity	A1+ / A2-
Input voltage	110/230 VAC\VDC



circuit diagram



dimension



Modules with signaling circuits and varistor

Model type 62C TYPE62C - Pack. 10/200 pcs

Plug-in module, for mounting on ES15/4/2B - ES15/4/2G - ES15/4/3/2N - ES15/4/3/2S ES50 - ES35 - ES32 - ES25 - ES50/3 - ES50/3S - ES35/3S - ES-50/3G with varistor and red LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	6/24 VAC\VDC



Model type 62CV TYPE62CV - Pack. 10/200 pcs

Plug-in module, for mounting on ES15/4/2B - ES15/4/2G - ES15/4/3/2N - ES15/4/3/2S ES50 - ES35 - ES32 - ES25 - ES50/3 - ES50/3S - ES35/3S - ES-50/3G with varistor and green LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	6/24 VAC\VDC



Model type 62DV TYPE62DV - Pack. 10/200 pcs

Plug-in module, for mounting on ES15/4/2B - ES15/4/2G - ES15/4/3/2N - ES15/4/3/2S ES50 - ES35 - ES32 - ES25 - ES50/3 - ES50/3S - ES35/3S - ES-50/3G with varistor and green LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	24/60 VAC\VDC



Model type 92C TYPE92C - Pack. 10/200 pcs

Plug-in module, for mounting on ES15/4/2B - ES15/4/2G - ES15/4/3/2N - ES15/4/3/2S ES50 - ES35 - ES32 - ES25 - ES50/3 - ES50/3S - ES35/3S - ES-50/3G with varistor and red LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	110/230 VAC\VDC



Model type 92CV TYPE92CV - Pack. 10/200 pcs

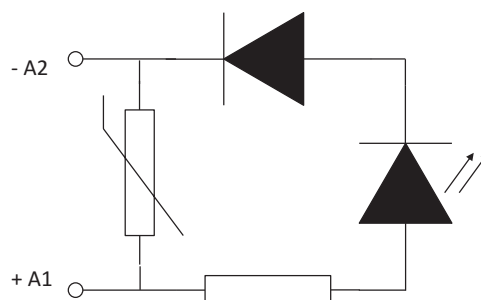
Plug-in module, for mounting on ES15/4/2B - ES15/4/2G - ES15/4/3/2N - ES15/4/3/2S ES50 - ES35 - ES32 - ES25 - ES50/3 - ES50/3S - ES35/3S - ES-50/3G with varistor and green LED.

Electrical data

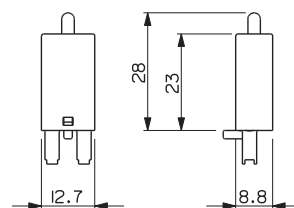
Polarity	A1+ / A2-
Input voltage	110/230 VAC\VDC



circuit diagram



dimension



Modules with varistor

Model type 72 TYPE72 - Pack. 10/200 pcs

Plug-in module, for mounting on ES15/4/2B - ES15/4/2G - ES15/4/3/2N - ES15/4/3/2S ES50 - ES35 - ES32 - ES25 - ES50/3 - ES50/3S - ES35/3S - ES-50/3G with varistor.

Electrical data

Polarity	A1+ / A2-
Input voltage	24 VAC



Model type 82V TYPE82V - Pack. 10/200 pcs

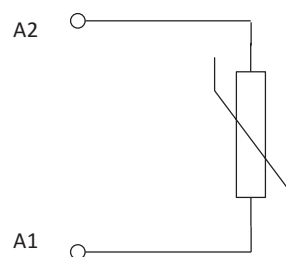
Plug-in module, for mounting on ES15/4/2B - ES15/4/2G - ES15/4/3/2N - ES15/4/3/2S ES50 - ES35 - ES32 - ES25 - ES50/3 - ES50/3S - ES35/3S - ES-50/3G with varistor.

Electrical data

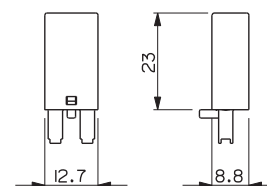
Polarity	A1+ / A2-
Input voltage	230 VAC



circuit diagram



dimension





BETTER SWITCHES

SOCKETS FOR PCB RELAYS



08

Socket model ES 25

ES25CNER - Pack. 10/240 pcs

Relay socket Model ES 25, for miniature power relay, miniature switching relay or solid-state relay with 1 PDT and 2,5 mm pinning, 2/2 level design, screw connections, connection facility for input interference suppression modules.

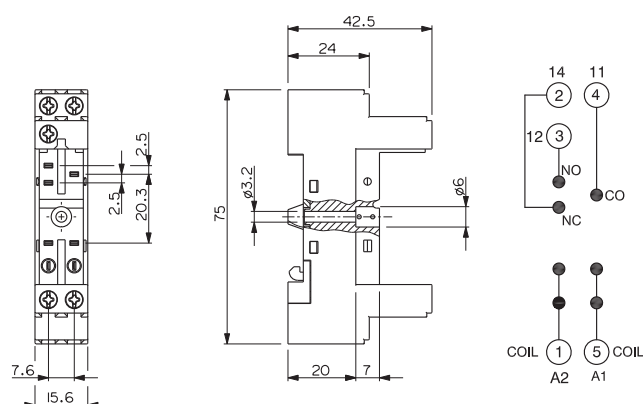
Rated current / Rated voltage	12 A / 300 VAC (CSA)
	10 A / 300 VAC (UL)
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm²
Conductor cross section solid and stranded	max. 2,5 mm²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data

Width	15,6 mm
Height	75,5 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model TR

TR - Pack. 10/1000 pcs

Plate for ES50, ES35, ES32,
ES25, ES50/3G, ES50/3S,
ES35/3S, ES15/4-2B, ES15/4-2G



Model MS 16

MS16 - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15,5-16,5 mm

Supported sockets:

ES50-35-32-25, ES50/3,
ES50/3S, ES35/3S, ES50/3G

**Model MS 16 C**

MS16C - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15,5-16,5 mm

Supported sockets:

ES50-35-32-25, ES50/3,
ES50/3S, ES35/3S, ES50/3G

**Model MS 25**

MS25 - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 25-25,5 mm

Supported sockets:

ES50-35-32-25, ES50/3,
ES50/3S, ES35/3S, ES50/3G

Socket model ES 32

ES32CNER - Pack. 10/240 pcs

Relay socket Model ES 32, for miniature power relay, miniature switching relay or solid-state relay with 1 PDT and 3,2 mm pinning, 2/2 level design, screw connections, connection facility for input interference suppression modules.

Rated current / Rated voltage

12 A / 300 VAC (CSA)

10 A / 300 VAC (UL)

Dielectric strength adjacent contact circuits

2500V

Dielectric strength coil contact circuits

2500V

Connection data

Conductor cross section solid and stranded

min. 0,5 mm²

Conductor cross section solid and stranded

max. 2,5 mm²

Conductor cross section AWG

min. 20

Conductor cross section AWG

max 14

Stripping length

7 mm

Screw thread

M3

General data

Width

15,6 mm

Height

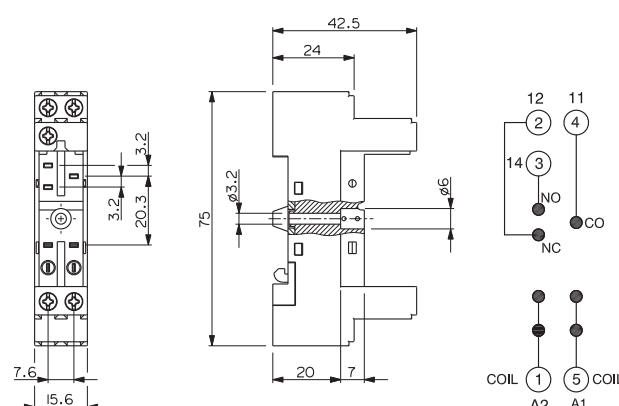
75,5 mm

Color

Black

Ambient temperature (operation)

-25 °C ... 85 °C



Accessories



Model TR

TR - Pack. 10/1000 pcs

Plate for ES50, ES35, ES32, ES25, ES50/3G, ES50/3S, ES35/3S, ES15/4-2B, ES15/4-2G



Model MS 16

MS16 - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15,5-16,5 mm

Supported sockets:

ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G



Model MS 16 C

MS16C - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15,5-16,5 mm

Supported sockets:

ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G



Model MS 25

MS25 - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 25-25,5 mm

Supported sockets:

ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G

Socket model ES 35

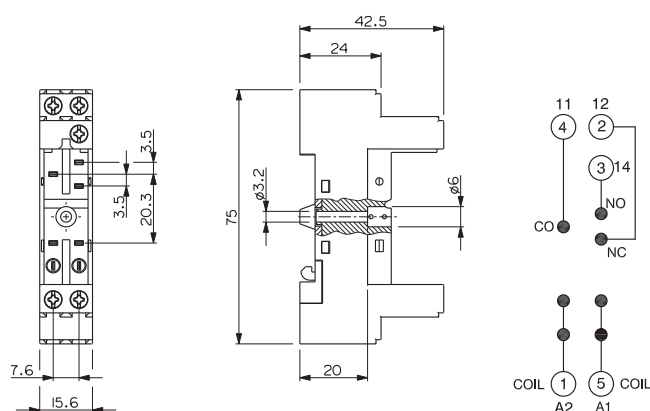
ES35CNER - Pack. 10/240 pcs

Relay socket Model ES 35, for miniature power relay or miniature switching relay or solid-state relay with 1 PDT and 3,5 mm pinning, 2/2 level design, screw connections, connection facility for input interference suppression modules.

Rated current / Rated voltage	12 A / 300 VAC (CSA)
	10 A / 300 VAC (UL)
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data	
Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 2,5 mm ²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data	
Width	15,6 mm
Height	75,5 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model TR

TR - Pack. 10/1000 pcs

Plate for ES50, ES35, ES32, ES25, ES50/3G, ES50/3S, ES35/3S, ES15/4-2B, ES15/4-2G



Model MS 16

MS16 - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15,5-16,5 mm

Supported sockets:

ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G



Model MS 16 C

MS16C - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15,5-16,5 mm

Supported sockets:

ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G



Model MS 25

MS25 - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 25-25,5 mm

Supported sockets:

ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G

Socket model ES 35/3S

ES353SCNER - Pack. 10/240 pcs

Relay socket Model ES 35/3 S, for miniature power relay or miniature switching relay or solid-state relay with 1 PDT and 3,5 mm pinning, 1/3 level design, screw connections, connection facility for input interference suppression modules.

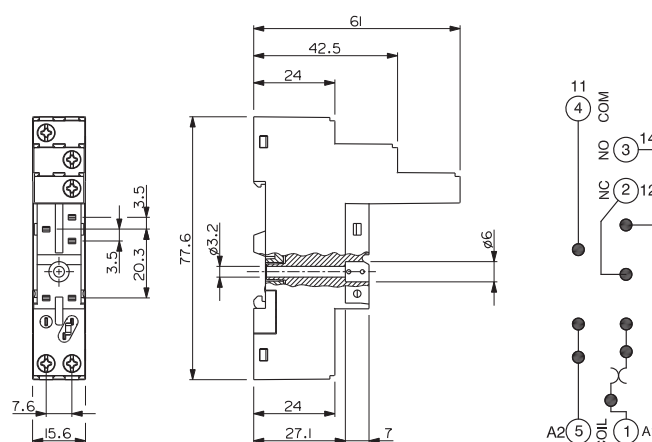
Rated voltage	300 VAC
Rated current	12 A
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 2,5 mm ²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data

Width	15,6 mm
Height	77,6 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model TR

TR - Pack. 10/1000 pcs

Plate for ES50, ES35, ES32, ES25, ES50/3G, ES50/3S, ES35/3S, ES15/4-2B, ES15/4-2G



Model MS 16

MS16 - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15,5-16,5 mm

Supported sockets:

ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G



Model MS 16 C

MS16C - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15,5-16,5 mm

Supported sockets:

ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G



Model MS 25

MS25 - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 25-25,5 mm

Supported sockets:

ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G

Socket model ES 50

ES50CNER - Pack. 10/240 pcs

Relay socket Model ES 50, for miniature power relay or miniature switching relay or solid-state relay with 1 or 2 PDT and 5 mm pinning, 2/2 level design, screw connections, connection facility for input interference suppression modules.

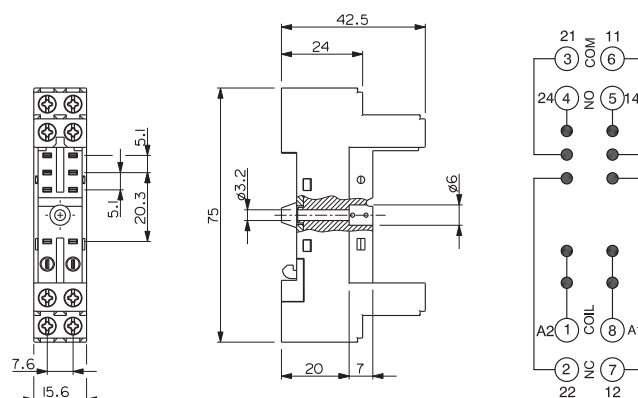
Rated current / Rated voltage	12 A / 300 V (CSA)
	10 A / 300 V (UL)
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data

Conductor cross section solid and stranded	min. 0,5 mm ²
Conductor cross section solid and stranded	max. 2,5 mm ²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data

Width	15,6 mm
Height	75,5 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model TR

TR - Pack. 10/1000 pcs

Plate for ES50, ES35, ES32, ES25, ES50/3G, ES50/3S, ES35/3S, ES15/4-2B, ES15/4-2G



Model MS 16

MS16 - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15,5-16,5 mm

Supported sockets:

ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G



Model MS 16 C

MS16C - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15,5-16,5 mm

Supported sockets:

ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G



Model MS 25

MS25 - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 25-25,5 mm

Supported sockets:

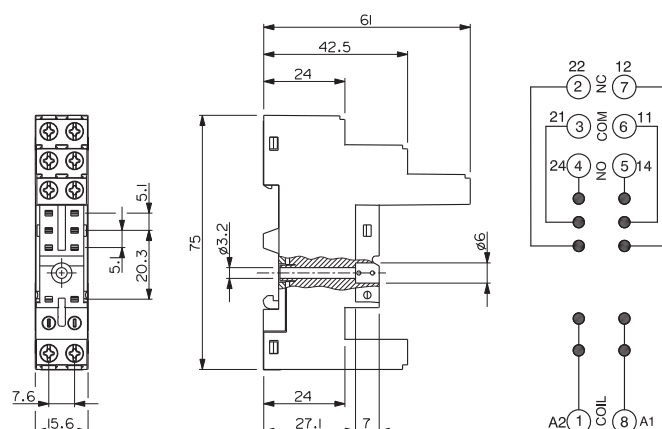
ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G

ES503CNER - Pack. 10/240 pcs

Rated voltage	300 VAC
Rated current	12 A
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data	
Conductor cross section solid and stranded	min. 0,5 mm²
Conductor cross section solid and stranded	max. 2,5 mm²
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 14
Stripping length	7 mm
Screw thread	M3

General data	
Width	15,6 mm
Height	75,6 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



TR - Pack, 10/1000 pcs

Plate for ES50, ES35, ES32,
ES25, ES50/3G, ES50/3S,
ES35/3S, ES15/4-2B, ES15/4-2G



MS16 - Pack, 10/200 pcs

Spring for relay securing and releasing
Material: Thermoplastic
Relay height: 15,5-16,5 mm
Supported sockets:
ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G



MS16C - Pack, 10/200 pcs

Spring for relay securing and releasing
Material: Thermoplastic
Relay height: 15,5-16,5 mm
Supported sockets:
ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G



MS25 - Pack. 10/200 pcs

Spring for relay securing and releasing
Material: Thermoplastic
Relay height: 25-25,5 mm
Supported sockets:
ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G

Socket model **ES 50/3S**

ES503SCNER - Pack. 10/240 pcs

Relay socket Model ES 50/3 S, for miniature power relay or miniature switching relay or solid-state relay with 2 PDT and 5 mm pinning, 1/3 level design, screw connections, connection facility for input interference suppression modules.

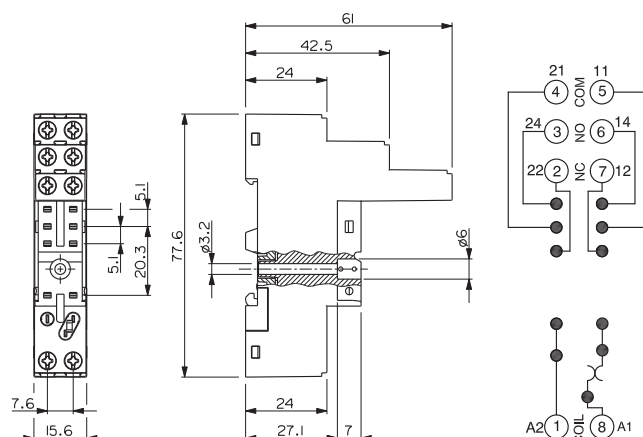
Rated voltage	300 VAC
Rated current	12 A
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Dati sulle connessioni

Sezione conduttori rigidi e flessibili	min. 0,5 mm²
Sezione conduttori rigidi e flessibili	max. 2,5 mm²
Sezione conduttori AWG	min. 20
Sezione conduttori AWG	max 14
Lunghezza di spelatura	7 mm
Tipo vite	M3

General data

Width	15,6 mm
Height	77,6 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Accessories



Model **TR**

TR - Pack. 10/1000 pcs

Plate for ES50, ES35, ES32, ES25, ES50/3G, ES50/3S, ES35/3S, ES15/4-2B, ES15/4-2G



Model **MS 16**

MS16 - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15,5-16,5 mm

Supported sockets:

ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G



Model **MS 16 C**

MS16C - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15,5-16,5 mm

Supported sockets:

ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G



Model **MS 25**

MS25 - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 25-25,5 mm

Supported sockets:

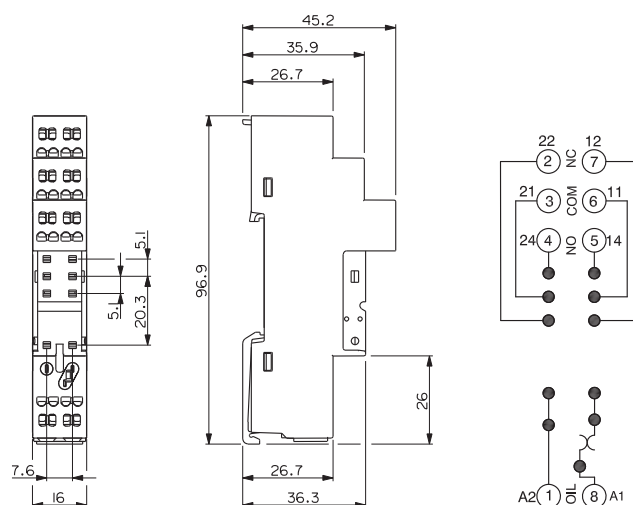
ES50-35-32-25, ES50/3, ES50/3S, ES35/3S, ES50/3G

ES503GCNER - Pack. 10/240 pcs

Rated voltage	300 VAC
Rated current	10 A
Dielectric strength adjacent contact circuits	2500V
Dielectric strength coil contact circuits	2500V

Connection data	
Conductor cross section solid and stranded	min. 0,2 mm ² two wires for terminal
Conductor cross section solid and stranded	max. 1,5 mm ² two wires for terminal
Conductor cross section AWG	min. 20
Conductor cross section AWG	max 16
Stripping length	11 mm

General data	
Width	16 mm
Height	97 mm
Color	Black
Ambient temperature (operation)	-25 °C ... 85 °C



Model TR

TR - Pack. 10/1000 pcs

Plate for ES50, ES35, ES32,
ES25, ES50/3G, ES50/3S,
ES35/3S, ES15/4-2B, ES15/4-2G

**Model MS 16**

MS16 - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15,5-16,5 mm

Supported sockets:

ES50-35-32-25, ES50/3,
ES50/3S, ES35/3S, ES50/3G

**Model MS 16 C**

MS16C - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15,5-16,5 mm

Supported sockets:

ES50-35-32-25, ES50/3,
ES50/3S, ES35/3S, ES50/3G

**Model MS 25**

MS25 - Pack. 10/200 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 25-25,5 mm

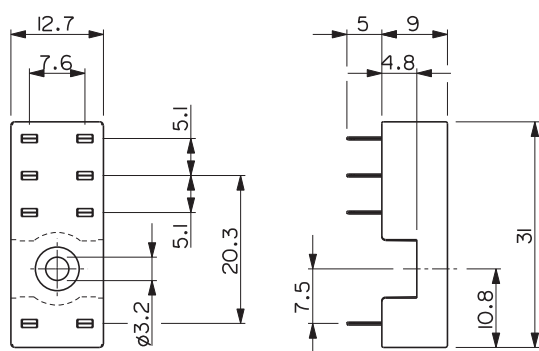
Supported sockets:

ES50-35-32-25, ES50/3,
ES50/3S, ES35/3S, ES50/3G

■ Socket model EC 50

EC50CNER - Pack. 100 pcs

Relay socket model EC 50, for miniature power relay or miniature switching relay with 2 PDT and 5mm pinning.



Accessories



■ Model MP 12

MP12 - Pack. 100/2000 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 25-25,5 mm

Supported sockets: EC 50-35-32-25



■ Model MH 16

MH16 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 15-16,5mm

Supported sockets:

EC 50-35-32-25

■ Model MP 16

MP16 - Pack. 100/2000 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15-16,5 mm

Supported sockets: EC 50-35-32-25

■ Model MH 25

MH25 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 25-25,5mm

Supported sockets:

EC 50-35-32-25

■ Model MP 25

MP25 - Pack. 100/1500 pcs

Spring for relay securing and releasing

Material: Thermoplastic

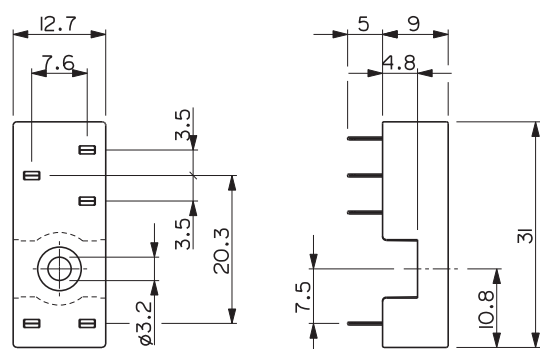
Relay height: 25-25,5 mm

Supported sockets: EC 50-35-32-25

Socket model EC 35

EC35CNER - Pack. 100 pcs

Relay socket model EC 35, for miniature power relay or miniature switching relay with 1 PDT and 3,5mm pinning.



Accessories



Model MP 12

MP12 - Pack. 100/2000 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 25-25,5 mm

Supported sockets: EC 50-35-32-25

Model MH 16

MH16 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 15-16,5mm

Supported sockets:

EC 50-35-32-25

Model MP 16

MP16 - Pack. 100/2000 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15-16,5 mm

Supported sockets: EC 50-35-32-25

Model MH 25

MH25 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 25-25,5mm

Supported sockets:

EC 50-35-32-25

Model MP 25

MP25 - Pack. 100/1500 pcs

Spring for relay securing and releasing

Material: Thermoplastic

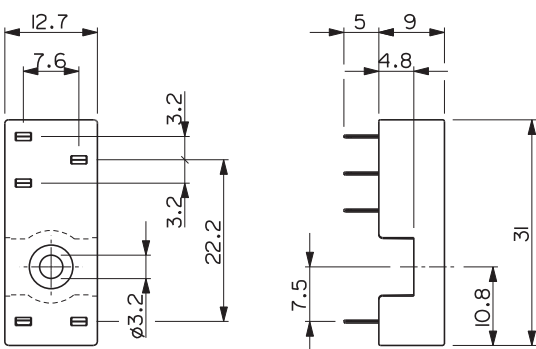
Relay height: 25-25,5 mm

Supported sockets: EC 50-35-32-25

■ Socket model EC 32

EC32CNER - Pack. 100 pcs

Relay socket model EC 32, for miniature power relay or miniature switching relay with 1 PDT and 3,2mm pinning.



Accessories



■ Model MP 12

MP12 - Pack. 100/2000 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 25-25,5 mm

Supported sockets: EC 50-35-32-25



■ Model MH 16

MH16 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 15-16,5mm

Supported sockets:

EC 50-35-32-25

■ Model MP 16

MP16 - Pack. 100/2000 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15-16,5 mm

Supported sockets: EC 50-35-32-25

■ Model MH 25

MH25 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 25-25,5mm

Supported sockets:

EC 50-35-32-25

■ Model MP 25

MP25 - Pack. 100/1500 pcs

Spring for relay securing and releasing

Material: Thermoplastic

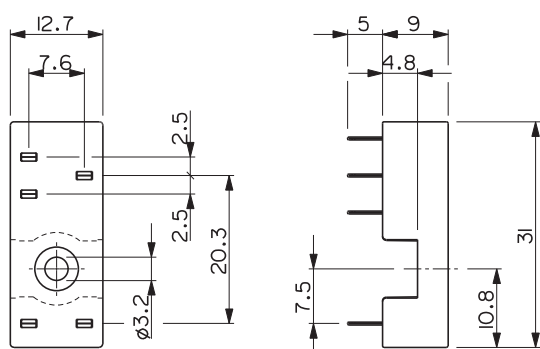
Relay height: 25-25,5 mm

Supported sockets: EC 50-35-32-25

Socket model EC 25

EC25CNER - Pack. 100 pcs

Relay socket model EC 25, for miniature power relay or miniature switching relay with 1 PDT and 2,5mm pinning.



Accessories



Model MP 12

MP12 - Pack. 100/2000 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 25-25,5 mm

Supported sockets: EC 50-35-32-25



Model MH 16

MH16 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 15-16,5mm

Supported sockets:

EC 50-35-32-25

Model MP 16

MP16 - Pack. 100/2000 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 15-16,5 mm

Supported sockets: EC 50-35-32-25

Model MH 25

MH25 - Pack. 100/1000 pcs

Spring for relay securing

Material: X Cr Ni Steel

Relay height: 25-25,5mm

Supported sockets:

EC 50-35-32-25

Model MP 25

MP25 - Pack. 100/1500 pcs

Spring for relay securing and releasing

Material: Thermoplastic

Relay height: 25-25,5 mm

Supported sockets: EC 50-35-32-25



Modules with protection against polarity inversion

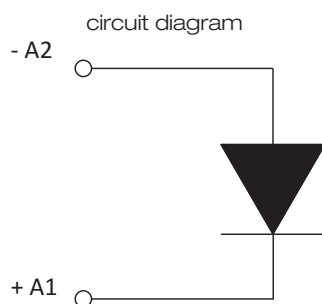
Model type 22

TYPE22 - Pack. 10/200 pcs

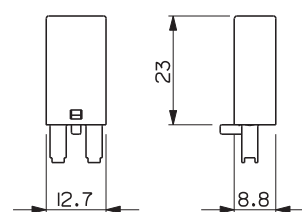
Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with damping diode.

Electrical data

Polarity	A1+ / A2-
Input voltage	6/230 VDC



dimension



Model type 42

TYPE42 - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S ES50
- ES35 - ES32 - ES25 - ES50/3 -
ES50/3S - ES35/3S - ES-50/3G
with damping diode and red LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	6/24 VDC



Model type 42V

TYPE42V - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S ES50
- ES35 - ES32 - ES25 - ES50/3 -
ES50/3S - ES35/3S - ES-50/3G
with damping diode and green LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	6/24 VDC



Model type 42B

TYPE42B - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S ES50
- ES35 - ES32 - ES25 - ES50/3 -
ES50/3S - ES35/3S - ES-50/3G
with damping diode and red LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	24/60 VDC



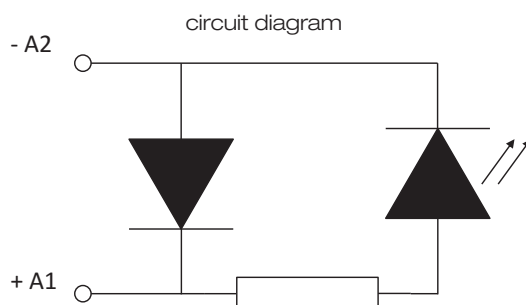
Model type 42BV

TYPE42BV - Pack. 10/200 pcs

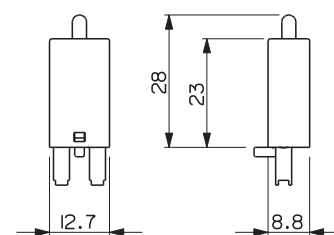
Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S ES50
- ES35 - ES32 - ES25 - ES50/3 -
ES50/3S - ES35/3S - ES-50/3G
with damping diode and green LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	24/60 VDC



dimension



Modules with RC Circuit

Model type 52C

TYPE52C - Pack. 10/200 pcs

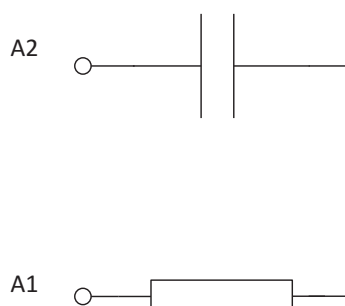
Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with RC circuit.

Electrical data

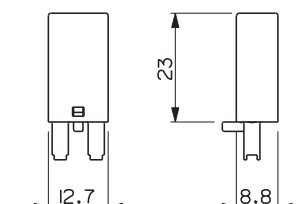
Polarity	A1+ / A2-
Input voltage	110/230 VAC



circuit diagram



dimension



Modules with signaling circuits

Model type 62

TYPE62 - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with red LED and
without protections against
polarity inversion.

Electrical data

Polarity	A1+ / A2-
Input voltage	6/24 VAC\VDC



Model type 62V

TYPE62V - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with green LED and
without protections against
polarity inversion.

Electrical data

Polarity	A1+ / A2-
Input voltage	6/24 VAC\VDC



Model type 62B

TYPE62B - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with red LED and
without protections against
polarity inversion.

Electrical data

Polarity	A1+ / A2-
Input voltage	24/60 VDC



Model type 62E

TYPE62E - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with red LED and
without protections against
polarity inversion.

Electrical data

Polarity	A1+ / A2-
Input voltage	24/60 VAC\VDC



Model type 92

TYPE92 - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with red LED and
without protections against
polarity inversion.

Electrical data

Polarity	A1+ / A2-
Input voltage	110/230 VAC\VDC



Model type 92V

TYPE92V - Pack. 10/200 pcs

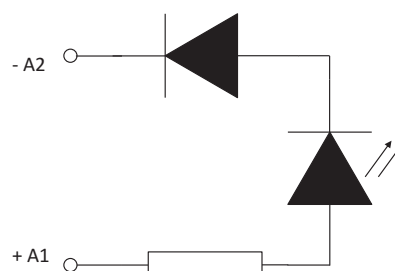
Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with green LED and
without protections against
polarity inversion.

Electrical data

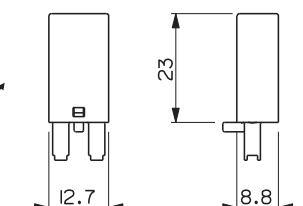
Polarity	A1+ / A2-
Input voltage	110/230 VAC\VDC



circuit diagram



dimension



Modules with signaling circuits and varistor

Model type 62C TYPE62C - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S ES50
- ES35 - ES32 - ES25 - ES50/3 -
ES50/3S - ES35/3S - ES-50/3G
with varistor and red LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	6/24 VAC\VDC



Model type 62CV TYPE62CV - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S ES50
- ES35 - ES32 - ES25 - ES50/3 -
ES50/3S - ES35/3S - ES-50/3G
with varistor and green LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	6/24 VAC\VDC



Model type 62DV TYPE62DV - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S ES50
- ES35 - ES32 - ES25 - ES50/3 -
ES50/3S - ES35/3S - ES-50/3G
with varistor and green LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	24/60 VAC\VDC



Model type 92C TYPE92C - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S ES50
- ES35 - ES32 - ES25 - ES50/3 -
ES50/3S - ES35/3S - ES-50/3G
with varistor and red LED.

Electrical data

Polarity	A1+ / A2-
Input voltage	110/230 VAC\VDC



Model type 92CV TYPE92CV - Pack. 10/200 pcs

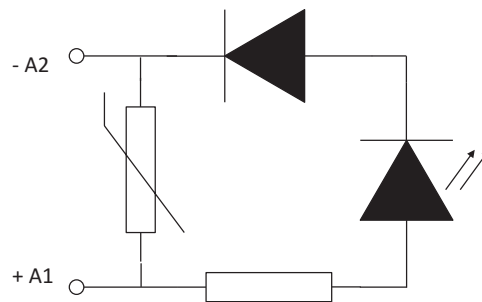
Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S ES50
- ES35 - ES32 - ES25 - ES50/3 -
ES50/3S - ES35/3S - ES-50/3G
with varistor and green LED.

Electrical data

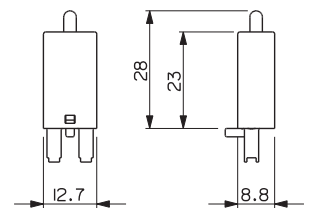
Polarity	A1+ / A2-
Input voltage	110/230 VAC\VDC



circuit diagram



dimension



Modules with varistor

Model type 72 TYPE72 - Pack. 10/200 pcs

Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with varistor.

Electrical data

Polarity	A1+ / A2-
Input voltage	24 VAC



Model type 82V TYPE82V - Pack. 10/200 pcs

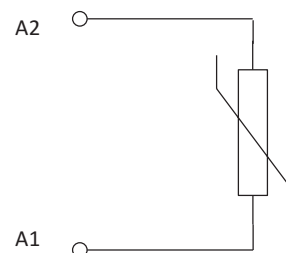
Plug-in module, for mounting on
ES15/4/2B - ES15/4/2G -
ES15/4/3/2N - ES15/4/3/2S
ES50 - ES35 - ES32 - ES25 -
ES50/3 - ES50/3S - ES35/3S -
ES-50/3G with varistor.

Electrical data

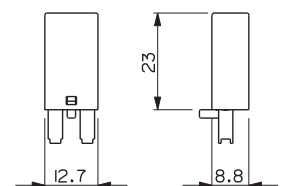
Polarity	A1+ / A2-
Input voltage	230 VAC



circuit diagram



dimension





BETTER SWITCHES

TECHNICAL CONSIDERATIONS

All our products are designed, manufactured and tested in accordance with the requirements laid down in the most important national and international specifications and standards.

In most countries, the use of electrical devices is permitted if the manufacturer, upon his own responsibility, guarantees the conformity to the requirements. In other countries, the law lays down compulsory approval procedures.

For better understanding of the subject, the information set out below deals with requirement, conformity, approval.

REQUIREMENTS

This refers to the definitions contained in a standard relating to normal operating conditions, constructional and performance requirements, test procedures, etc. Requirements can be subdivided into:

International Requirements

These are the requirements issued by the following Authorities:

IEC International Electrotechnical Commission
This international commission contains members from the most important industrialised countries. It issues recommendations that are taken as the basis for the single national standards.

CENELEC Comité Européen de Normalisation Electrotechnique
This committee issues the EN standards to which the European countries refer.

National Provisions

These include the standards issued by the following approval bodies:

CEI Comitato Elettrotecnico Italiano, Italy
VDE Verband Deutscher Elektrotechniker, Germany
NF Normes Francaises, France
CSA Canadian Standards Association, Canada
UL Underwriter's Laboratories, USA
BIA-BG Berufsgenossenschaften, Germany
GOST Gosudarstvennyj Standart, Russia

CONFORMITY

Conformity to a Standard consists of a declaration, made by the manufacturer and under his own responsibility, that a specific product meets all the requirements of this Standard.

The **CE marking** was introduced, on the basis of which the manufacturer declares that a particular product complies with all the CEE directives applicable to it. In particular, for electrical material, the applicable directives are the LOW VOLTAGE directive (**2014/35/EU**) on the safety of electrical products and the E.M.C directive (**2014/30/EU**) on electromagnetic compatibility.

APPROVAL

In some countries, approval of electric materials is compulsory by law.

This consists of a certificate of conformity with the requirements issued not by the manufacturer, but by an independent Testing Laboratory legally recognized. Each approved item has to carry the mark of approval, such as **CSA** or **UL**. For this last, two different levels of acceptance are required:

RECOGNIZED = The device should be marked with the letters **UR** only, and can be used in electrical equipment only by qualified personnel who are fully aware of the limits of use of the product.

The sale of this equipment for general use is not permitted.

LISTED = The device should be marked with the letters **UL** alongside the mark of approval and can be fitted in electrical appliances or sold loose, as it complies with all the requirements in the relevant standard.

Command auxiliaries

A mechanical manoeuvre device which controls the operations of equipment, including signalling, interlocks, and so on. The category therefore includes position and safety switches, microswitches, pushbuttons and pedal switches.

Utilization Category

The standards define a certain number of categories regarding the normal use of switches. Each category of use defines the current and voltage values (expressed as multiples of the rated values) corresponding to the various load closure and switching situations.

Operations cycle

A sequence of two operations with movement from rest to operating position and vice versa.

Auxiliary circuit

All the conductor parts (auxiliary contacts) of a switch designed to be included in a circuit separate from the main one and the switch command circuit. Used for supplementary functions such as signalling, interlocks, measurements, regulation, and so on.

Command circuit

An electrical circuit separate from the main one which handles the closing or opening operations of the switch, or both.

Main circuit

All the conductor parts (main contacts) of a switch included in the circuit that the switch has to open and close.

Admissible short term current

The maximum current the switch is able to support during a specified brief period of time, within the context of the specified conditions of use and behaviour.

Rated operational current I_e

A current that characterises the switch in accordance with the conditions of use, mainly defined on the basis of the rated voltage, category of use and type of service.

Rated thermal current I_{th}

The maximum current that the switch is able to support for a duration of 8 hours without causing the excess temperature of the various parts to exceed the value laid down by the standards.

Time constant or power factor

Ratio between inductance and resistance, that is, $L/R = \text{mH}/\Omega = \text{ms}$.

Clearance

The shortest permitted distance between two conductor parts.

The shortest distance along the surface of an insulating material between two conductive parts.

Creepage distance

The shortest permitted distance between two conductor parts laid on a surface of insulating material. The shortest distance along the surface of an insulating material between two conductive parts.

Electrical durability

The number of manoeuvres under load that the contacts may carry out without maintenance. Depending on the category of use, this is determined by the rated current and voltage. The shortest distance along the surface of an insulating material between two conductive parts.

Mechanical durability

Number of manoeuvres without the movement of current that the switch is able to carry out before the overhaul or replacement of mechanical parts becomes necessary.

Contact element

Fixed or mobile, conductor or insulating, parts of a command auxiliary necessary to close or open a single conductor route of a circuit.

Double switching contact element

A contact element that opens or closes the conductor length of its circuit in two points positioned in series

Electrically separate contact elements

Contacts belonging to the same contact element, but suitably insulated from each other in such a way that they can be connected in electrically separate circuits.

Contact element in exchange

The combination of stabilisation and switching contacts in a contact element.

Position (safety) switches

A command auxiliary whose control system is activated by a moving part of the machine, when this part reaches a predetermined position. Known as a safety switch when the control action switches the power supply circuit of the machine.

Closure or switching power

The highest current that the switch is able to stabilise or switch at a given voltage and in the specific conditions of the circuit and its operation.

Air ambient temperature

This is the air temperature measured around the appliance. For devices installed inside a casing, this is the air temperature outside the casing.

The minimum and maximum values determine the temperature interval within which a device is able to perform in a satisfactory manner.

Rated voltage of the command circuit U_c

The voltage on which the operating and heating characteristics of the command circuit are based.

Rated operational voltage U_e

The voltage that, together with the rated operating current, determines the operating characteristics of the switch, and to which the closure and switching powers refer. The operating voltage cannot be greater than the insulation voltage.

Rated insulation voltage U_i

The voltage to which the insulation strength tests, escape lines and the distances in air typical of the switch refer.

Insulation resistance

The IEC 664 standard lays down four correlation criteria for the impulse voltage. It is important to determine the correct correlation for the user in accordance with the application and select the position switch as a result. The manufacturer indicates the impulse voltage (U_{imp}) that can be supported among the information set out on the product plate.

Connector terminals

Mechanical tests carried out using the maximum connection sections of the terminals to determine the mechanical resistance and safety of the terminal connection holding. The terminals are identified in accordance with the EN 50013 standards.

Contact element diagrams

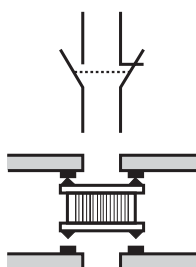
There are various types of contact element classified in accordance with the CEI EN 60947-5-1 standard, with different technical features and consequently different, more or less safe, electrical properties.

Breakage power

This corresponds to the maximum admissible electrical load. A simple name (such as A300) informs the user on the features of the switch depending on its category of use.

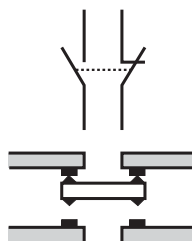
Forced NC contact opening (IEC 947-5-1, section 3)

In the case of switches used in command circuits with safety functions, the safe opening of the NC contacts is required (see IEC 204 and EN 60204). The forced opening of the NC contacts has to be confirmed with an impulse voltage test (2500 V).



Zb Form

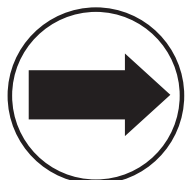
Double switching exchange contact element with four terminals. (The two mobile contacts are electrically separated).



Other 4 terminal forms:

Za Form

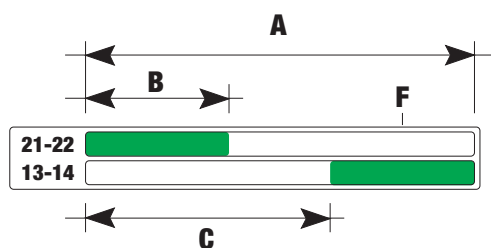
Dual switching exchange contact element with four terminals. (The contacts have the same polarity).



Forced or positive opening symbol

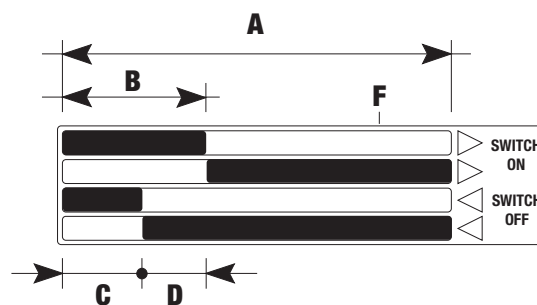
The term positive opening means the complete and safe separation of the closed contacts (NC), as a result of the specific movement of the driver by means of inelastic elements. The positive opening travel is indicated by the manufacturer.

Example of travel diagram, slow action element



A = maximum driver travel in mm or degrees
B = drive travel up to the opening of the NC 21-22 command
C = drive travel up to the closure of the NO 13-14 command
F = total travel necessary for the complete forced opening

Example of travel diagram, fast action element



A = maximum driver travel in mm or degrees
B = drive travel up to the opening of the NC 21-22 command
C = drive travel up to the closure of the NO 13-14 command
D = B - C: differential travel
F = total travel necessary for the complete forced opening

Utilization with alternating current

Power equipment, switchgear and controlgear according to EN 60947-4 and IEC 947-4

(contactors, equipment for starting of motors)

- AC1** Connection or disconnection of non-inductive or slightly inductive loads (e.g. resistance furnaces).
This equipment should have a $\cos\phi$ no less than 0,95.
- AC2** Starting, counter-current braking and switching off of slip-ring motors. The contactor makes and breaks the starting current, which can reach $1,5 \div 3$ times the rated current of the motor.
- AC3** Starting and switching off of squirrel-cage motors during running. The contactor makes the starting current, which can reach $4 \div 8$ times the rated current of the motor, and breaks the rated current absorbed by the motor.
The switching conditions are easy, as the voltage at the motor terminals is approximately $20 \div 30\%$ of the supply voltage.
- AC4** Starting, plugging and inching of squirrel-cage motors. The contactor makes and breaks the starting current, which can reach $4 \div 88$ times the rated current of the motor.
The switching conditions are severe, as the voltage at the motor terminals can be equal to that of the supply voltage.
- AC5a** Switching of electric discharge lamp controls.
- AC5b** Switching of incandescent lamps.
The peaks of current at the connection of the lighting circuits and the power factor are function of the type of lamp, the wiring system and the presence or not of the compensation.
- AC6a** Switching of transformers.
High peaks of current characterize the commutation of transformers during the connection phase, due to the phenomenon of magnetization.
- AC6b** Switching of capacitor banks.
High peaks of current characterize the commutation of capacitor banks during the connection phase, due to the presence of harmonic currents.

Power equipment, switchgear and controlgear according to EN 60947-3 and IEC 947-3

(switches, disconnectors, switch-disconnectors, fuse-combination units)

- AC20** Connecting and disconnecting under no-load conditions..
- AC21** Switching of resistive loads including moderate overloads.
- AC22** Switching of mixed resistive and inductive loads, including moderate overloads.
- AC23** Switching of motor loads or other highly inductive loads.

Control circuit devices and switching elements according to EN 60947-5 and IEC 947-5

(control relays, auxiliary contacts, units for control and signalling)

- AC12** Control of resistive loads and solid-state loads with isolation by optocouplers.
- AC13** Control of solid state loads with transformer isolation.
- AC14** Control of small electromagnetic loads ($\leq 72\text{VA}$).
- AC15** Control of electromagnetic loads ($> 72\text{VA}$).

Utilization with direct current

Power equipment, switchgear and controlgear according to EN 60947-4 and IEC 947-4

(contactors, equipment for starting of motors)

- DC1** Connection or disconnection of non-inductive or slightly inductive loads (e.g. resistance furnaces).
This equipment should operate with a L/R time-constant less than or equal to 1ms.
- DC3** Starting, plugging and inching of shunt-motors. Dynamic breaking of DC motors. This equipment should operate with a L/R time-constant less than or equal to 2,5ms. The contactor makes and breaks the starting current, which is close to 2,5 times the rated current of the motor.
The switching conditions are severe, as the voltage at the motor terminals can be equal to that of the supply voltage.
- DC5** Starting, plugging and inching of series-motors. Dynamic breaking of DC motors. This equipment should operate with a L/R time-constant less than or equal to 15ms.
The contactor makes and breaks the starting current, which is close to 2,5 times the rated current of the motor.
The switching conditions are severe, as the voltage at the motor terminals can be equal to that of the supply voltage.
- DC6** Switching of incandescent lamps.

Power equipment, switchgear and controlgear according to EN 60947-3 and IEC 947-3

(switches, disconnectors, switch-disconnectors, fuse-combination units)

- DC20** Connecting and disconnecting under no-load conditions.
- DC21** Switching of resistive loads including moderate overloads.
- DC22** Switching of mixed resistive and inductive loads, including moderate overloads (e.g. shunt-motors).
- DC23** Switching of highly inductive loads (e.g. series-motors).

Utilization category for direct current photovoltaic applications

- DC-PV0** Opening and closing a PV circuit to provide disconnection when no current is flowing.
- DC-PV1** Connecting and disconnecting single PV string(s) where reverse currents and significant overcurrent cannot occur.
- DC-PV2** Connecting and disconnecting PV circuits where significant overcurrents may prevail and where current flow can be in both directions; for example, where several strings are connected in parallel and to the same inverter, or one or more strings with a battery.

Control circuit devices and switching elements according to EN 60947-5 and IEC 947-5

(control relays, auxiliary contacts, units for control and signalling)

- DC12** Control of resistive loads and solid state loads with isolation by optocouplers.
- DC13** Control of electromagnets without economy resistor in circuit.
- DC14** Control of electromagnetic loads having economy resistor in circuit.
- By plugging is understood stopping or reversing the motor rapidly by reversing motor primary connections while the motor is running.
 - By inching (jogging) is understood energizing a motor once or repeatedly for short periods to obtain small movements of the driven mechanism.
 - The designation of AC20-AC21-AC22-AC23-DC20-DC21-DC22-DC23 utilization categories is completed by the suffix A or B according to whether the intended applications require frequent or infrequent operations.
Utilization categories with suffix B are appropriate for devices which, due to design or application, are only intended for infrequent operation (e.g. disconnectors normally only operated to provide isolation for maintenance work).

Standard cross-sections of round copper conductors corresponding to the conventional thermal currents

Range of rated thermal current ☐		Section of copper conductors/cables	
A		mm ²	AWG/MCM
0	8	1	18
8	12	1,5	16
12	15	2,5	14
15	20	2,5	12
20	25	4	10
25	32	6	10
32	50	10	8
50	65	16	6
65	85	25	4
85	100	35	3
100	115	35	2
115	130	50	1
130	150	50	0
150	175	70	00
175	200	95	000
200	225	95	0000
225	250	120	250
250	275	150	300
275	300	185	350
300	350	185	400
350	400	240	500
400	500	2x150	2x250
500	630	2x185	2x350
630	800	2x240	2x300

Range of rated thermal current ☐		Section of copper bars ▲		
A		N°	mm	inches
400	500	2	30x5	1.00x0.250
500	630	2	40x5	1.25x0.250
630	800	2	50x5	1.50x0.250
800	1000	2	60x5	2.00x0.250
1000	1250	2	80x5	2.50x0.250
1250	1600	2	100x5	3.00x0.250
1600	2000	3	100x5	3.00x0.250
2000	2500	4	100x5	3.00x0.250
2500	3150	3	100x10	6.00x0.250

☐ The current value should always be greater than the left-hand value and less than or equal to the right-hand value.

▲ Bars are assumed to be arranged with their long faces vertical. Arrangements with long faces horizontal may be used if specified by the manufacturer.
Where 4 bars are used they shall be in two sets of two bars with not more than 100mm between pair centres.

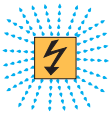
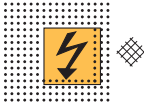
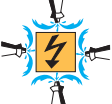
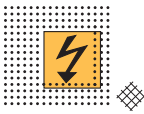
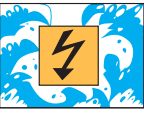
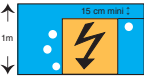
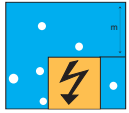
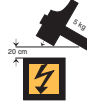
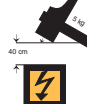
The International Recommendations IEC 529 to which the single national standards refer, as well as the European Harmonized Standards EN 60529 and EN 50102, classify the degree of protection provided by the enclosures for electrical equipment as regards:

- protection of the persons against access to hazardous parts inside the enclosure (e.g. low-voltage live parts, mechanical parts).
- protection of the equipment inside the enclosure against ingress of solid foreign objects.

c) protection of the equipment inside the enclosure against the harmful effects due to the ingress of water.

d) protection of the enclosure against damage due to harmful external mechanical impacts.

The degrees of protection relating to the first three items are designed by the IP code, followed by a combination of two characteristic numerals, to which a first additional letter and a second supplementary letter, both optional, can be added.

IP Code First characteristic numeral			Second characteristic numeral			IK Code Characteristic group numeral		
Protection against ingress of solid objects. Protection of persons against access to hazardous parts.			Protection against harmful ingress of water.			Protection against harmful external mechanical impacts.		
0		No protection.	0		No protection.	0		No protection.
1		Full penetration of 50 mm diameter sphere not allowed. Protection against access with the back of a hand.	1		Protection against vertically falling drops of water. Limited ingress permitted.	01		Resistance to impact of a mass of 200 g with a striking energy of 0,15 J.
2		Full penetration of 12,5 mm diameter sphere not allowed. Protection against access with a finger.	2		Protected against vertically falling drops of water with enclosure tilted 15° from the vertical. Limited ingress permitted. Dripping up to 15° from the vertical.	02		Resistance to impact of a mass of 200 g with a striking energy of 0,20 J.
3		The access probe of 2,5 mm diameter shall not penetrate. Protection against access with a tool.	3		Protected against sprays to 60° from the vertical. Limited ingress permitted. Limited spraying.	03		Resistance to impact of a mass of 200 g with a striking energy of 0,35 J.
4		The access probe of 1,0 mm diameter shall not penetrate. Protection against access with a wire.	4		Protected against water splashed from all directions. Limited ingress permitted. Splashing from all directions.	04		Resistance to impact of a mass of 200 g with a striking energy of 0,50 J.
5		Limited ingress of dust permitted (no harmful deposit). Protection against access with a wire.	5		Protected against jets of water. Limited ingress permitted. Hosing jets from all directions.	05		Resistance to impact of a mass of 200 g with a striking energy of 0,70 J.
6		Total protection against ingress of dust. Protection against access with a wire.	6		Protected against strong jets of water. Limited ingress permitted. Strong hosing jets from all directions.	06		Resistance to impact of a mass of 500 g with a striking energy of 1 J.
			7		Protected against the effects of immersion between 15 cm and 1 m. Temporary immersion.	07		Resistance to impact of a mass of 500 g with a striking energy of 2 J.
			8		Protected against long periods of immersion under pressure. Continuous immersion.	08		Resistance to impact of a mass of 1,7 kg with a striking energy of 5 J.
						09		Resistance to impact of a mass of 5 kg with a striking energy of 10 J.
						10		Resistance to impact of a mass of 5 kg with a striking energy of 20 J.

When the equipment is classified for one of the two main types of protection only, that is to say with only one numeral, the omitted numeral should be replaced with the letter X (e.g. IPX5 or IP2X).

1. Subject / sphere of application

1.1 This document constitutes the terms and conditions of sale of Bremas Ersce S.p.A, a single-member company, head office in Cambiago (MI), via Castellazzo,9.

2. Introduction

2.1 The terms and conditions of sale, unless otherwise stated in writing for any exceptions or modifications, are applied to the delivery of products manufactured and purchased by Bremas Ersce S.p.A.. Any different terms of the contract which are submitted, attached, quoted, added or modified by the Client do not apply to without written acceptance by Bremas Ersce S.p.A..

2.2 The terms and conditions of sale refer to all articles currently offered by Bremas Ersce S.p.A. together with all future models and variants which may be included and reported in its catalogues, drawings, data sheets and brochures. Bremas Ersce S.p.A. does hereby reserve the right to modify, add or vary in any time the manufacture of one or more products, without prior notice.

2.3 Every order sent by a Client and confirmed by Bremas Ersce S.p.A. is considered irrevocable and refers to these terms and conditions of sale which are considered tacitly accepted in every respect.

3. Order confirmations

3.1 All the orders shall be accepted by Bremas Ersce S.p.A. sending an order confirmation. These confirms report the codes of ordered products, the prices, the delivery terms, the payments terms and / or other information which can be useful for the definition of the contract.

3.2 No order submitted shall be deemed to be accepted unless and until confirmed by Bremas Ersce S.p.A. with the related order confirmation.

4. Prices and methods of payment

4.1 The quoted prices are those referred to the confirmation order; they can be however modified according to unforeseeable variations of costs and currency exchange.

4.2 Unless otherwise stated between the parties, all prices do not include Value Added Tax, packaging and transport costs which shall be borne by the Client.

4.3 The invoices are to be irrevocably paid in due time according to the indicated terms. In case of non-payment in due time or partial payment, the Seller may suspend further deliveries of the already ordered products. Bremas Ersce S.p.A. shall besides have the right to:

- consider the contract immediately terminated
- charge interests on delayed payments on a day to day basis at the debtor rate
- choose any options to recover the credit, as well any proceedings.

5. Delivery and transport terms

5.1 Unless otherwise agreed in writing, the delivery terms shown in the order confirmation do apply to the goods leaving from Bremas Ersce plant. Value Added Tax, insurance and transport costs are charged to the Client.

5.2 The delivery terms indicated in the order confirmations are binding except for strikes, raw materials lack, moulds breakdown or other inconveniences related to the economic activity. In case of late deliveries, the Seller does not accept any responsibilities for direct or indirect damages to the Client, unless otherwise stated between the parties.

5.3 The goods travel at the Client's risks. At the receipt of the goods, the Client shall immediately control that the delivered products are conform in their weight, number, quantity and typology with the ones described in the delivery note.

5.4 All claims for differences found in the goods must be submitted in writing by the Client to Bremas Ersce S.p.A. within eight days after date of receipt of the goods.

5.5 Bremas Ersce S.p.A. does not assume any responsibilities for transport delays, damages or goods' loss.

6. Warranty

6.1 Bremas Ersce S.p.A. warrants its components for a period of 24 months from the delivery date as for the functional conformity and the technical characteristics indicated in the drawings, data sheets or specifications issued by Bremas Ersce S.p.A..

6.2 The warranty does exclusively apply to products returned within the warranty expiration and considered as defective by Bremas Ersce S.p.A..

6.3 The warranty shall be considered the commitment of Bremas Ersce S.p.A. at its own discretion, to replace free of charge returned products considered as defective, delivering with transport to the Client's costs from the plant in Cambiago (MI). The Seller may as well credit the relevant value. Except as otherwise stated in writing by the management of Bremas Ersce S.p.A., the Client shall indemnify the Seller against any compensations for direct or indirect damages and charges such as:

- costs assumed for the replacement of the components
- costs assumed in the plants of the Client
- costs for "recall" actions
- costs assumed for the selection of materials or replacement of entire instalments

6.4 No warranty is expected for all products which will result defective due to the following circumstances which are not related to manufacture defects: carelessness; Usage non-compliant with the technical specifications; Mistakes in the project or manufacture of the advice in which the components are inserted; Incorrect maintenance; Maintenance made by non-authorized staff; Transport damages.

6.5 No warranty is moreover expected in case of wrong usage of the device.

7. Patent rights

7.1 Bremas Ersce S.p.A. assures that the supplied products do not violate any patent rights of a third party, that they are not given in pawn or mortgaged and are free from any obligations.

7.2 All knowledge and restricted information acquired by the Client and imparted to it by Bremas Ersce S.p.A. shall be treated as confidential.

8. Competent court of jurisdiction

Any disputes shall be referred to the competent court of jurisdiction in Milano.





bremas.it

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