BREMAS

BETTER SWITCHES

LIMIT AND SAFETY SWITCHES



06

Limit switches

For standard or heavy applications

1 CABLE INPUT			2 CABLE INPUT	3 CABLE INPUT
				
Plastic body Plastic head	Plastic body Metal head	Metal body Metal head	Plastic body Metal head	Metal body Metal head
E100 series			**E200** series	**E300** series

Safety switches

With reset


Plastic body
Metal head


Metal body
Metal head


Plastic body
Metal head

E100 series — **E200** series

Pull wire


Plastic body
Metal head


Metal body
Metal head


Plastic body
Metal head

E100 series — **E200** series

1 CABLE INPUT



Plastic body
Metal head



Metal body
Metal head

E400 series

Microswitches



Plunger
actuator



Lever
actuator

M3 series

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



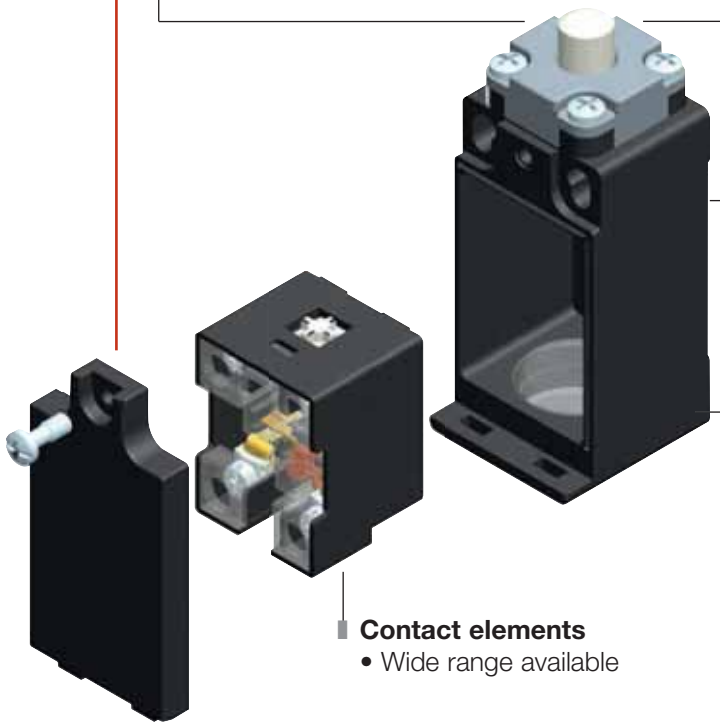
Metal body
Metal head

E400 series

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



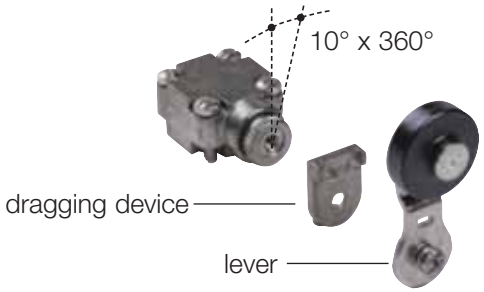
Heads
- Plastic (PA6 GF)
- Metal (cold galvanized Zama)

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.

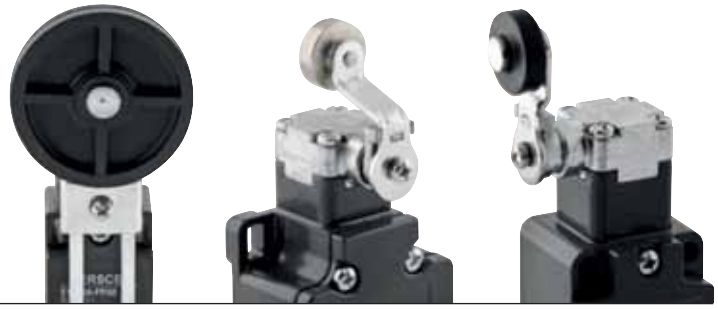
Standard and custom products

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:

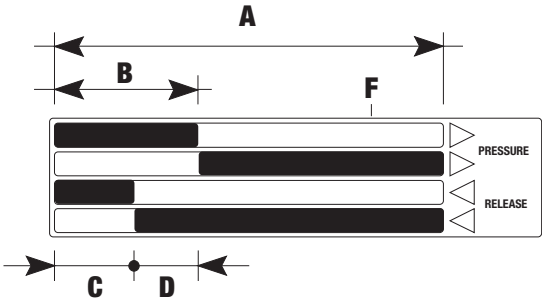
Actuators

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



Contact elements

Customized contact travel for any special application needs.







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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Multiple position limit switches

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BREMAS

BETTER SWITCHES

LIMIT SWITCHES

E100 / E200 / E300 / E400 series



06

Selection diagram

Plastic or Metal actuators

Plastic or Metal heads




A


A•S1


B


B•13


H


G


Q


L


LP


LS

Bodies

Plastic


E10…


E20…


E40…

Contact elements



- **00** 1NO+1NC snap action
- **01** 1NO+1NC slow action
- **02** 1NO+1NC slow action with overlapping
- **03** 2NO slow action
- **04** 2NC slow action
- **05** 2NC snap action
- **07** 2NC slow action for gates/lifts
- **08** 2NC slow action

Cable entry

- Pg 13,5
- M20x1,5
- 1/2" NPT
- PG11
- M16x1,5
- M12 connector


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	Ie	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
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	mm²	2x1,5
				flexible cable	mm²	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.

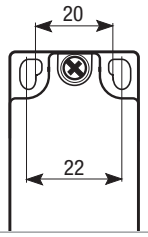
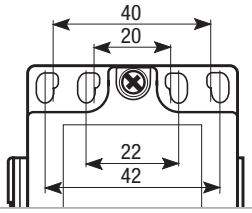
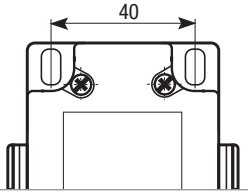
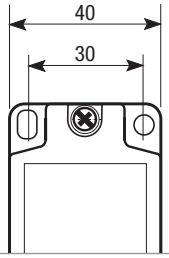
Certifications and Approvals

	c UL us LISTED	UKCA	CSA	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		Serie
Pg 13,5	 Pg13,5	Ex0**0**..
M20x1,5	 M20x1,5	Ex0**1**..
1/2 NPT	 1/2 NPT	Ex0**2**..
Pg 11	 Pg11	Ex0**3**..
M16x1,5	 M16x1,5	Ex0**4**..
M12 connector	 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

Group D



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 lenght lever with plastic roller



F•50
Variable lenght 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



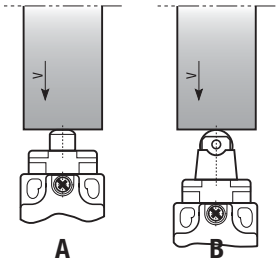
LP
Flexible rod with plastic terminal



LS
Flexible rod (cat whisker) with metal terminal

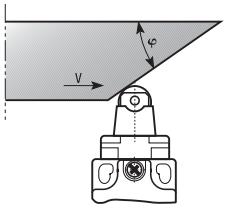
Operating features

Plunger, Roller plunger, vertical travel
Actuators: A-B



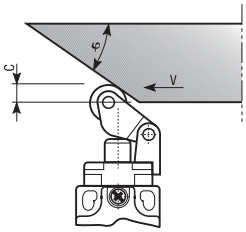
Drive cam operating parameters	
φ	V max (m/s)
Actuators A	0,5
Actuators B	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

Roller plunger, side travel
Actuators: B



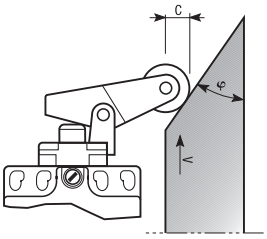
Drive cam operating parameters	
φ	V max (m/s)
30°	0,5
20°	1
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

Roller lever, side travel
Actuators: C-R



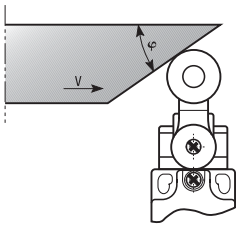
Drive cam operating parameters	
φ	V max (m/s)
30°	0,5
20°	1
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

Roller lever, vertical travel
Actuators: D-R

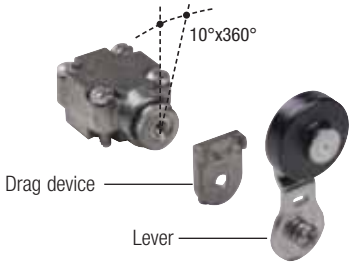


Drive cam operating parameters	
φ	V max (m/s)
30°	0,5
20°	1
Drive forces	
Minimum command force	8 N
Minimum forced opening force	26 N

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

1 Tighten the lever holding set screws with a torque of 1.2÷1.5 Nm

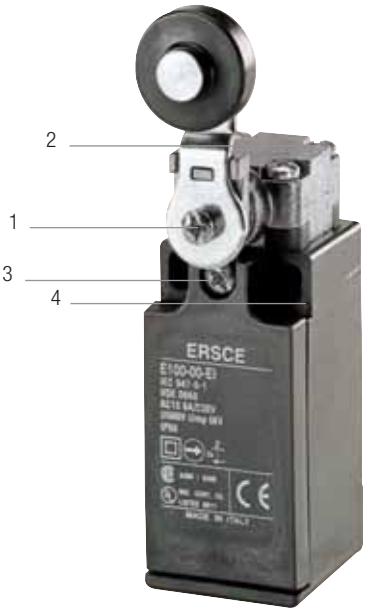
b Tighten the head with a torque of 0.7÷0.8 Nm (plastic) and 0.8÷1 Nm (metal)

c Tighten the cover with a torque of 0.7÷0.8 Nm (plastic) and 0.8÷1 Nm (metal)

d 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

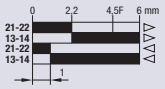
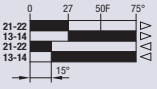
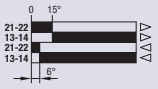
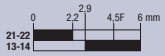
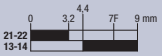
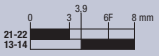
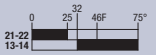
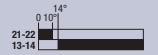
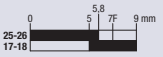
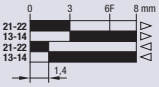
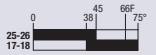
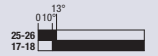
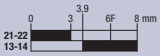
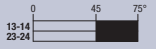
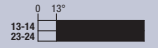
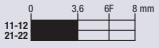
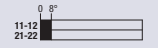
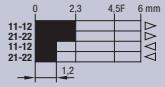
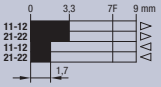
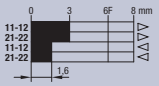
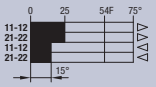
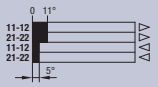
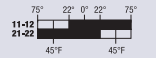
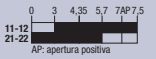
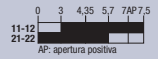
Protective screen

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 Zb 14 22					
01 1NO+1NC slow action	1NO+1NC slow action 21 13 Zb 22 14					
02 1NO+1NC slow action overlapping	1NO+1NC slow action overlap. 25 17 Zb 26 18					
03 2NO slow action	2NO slow action 13 23 X+X 14 24					
04 2NC slow action	2NC slow action 11 21 Y+Y 12 22					
05 2NC snap action	2NC snap action 11 21 Y+Y 12 22					
07 2NC slow action	2NC slow action 11 21 Y+Y 12 22					
80 3NC+1NO slow action	2NC slow action 11 21 Y+Y 12 22					

Opened contact

Closed contact

Positive opening travel

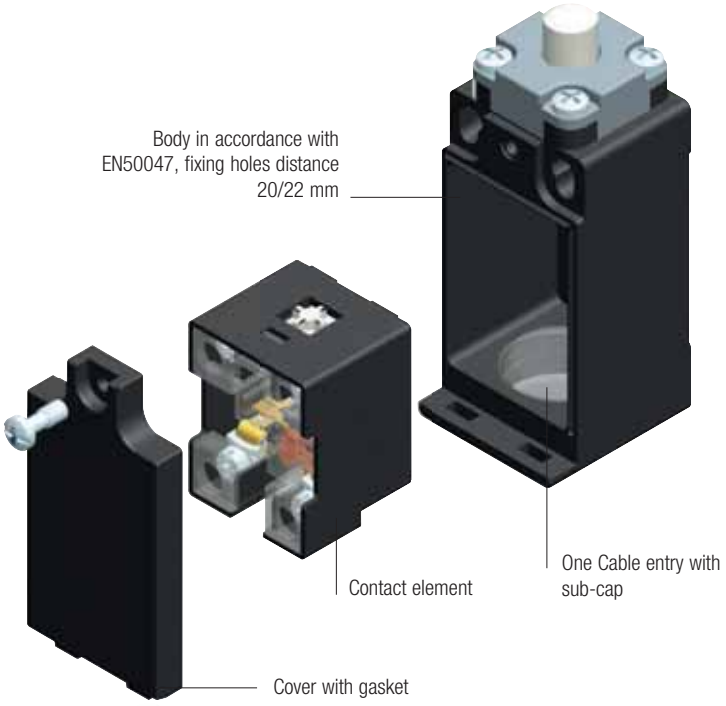
Pressure of the switch / Release of the switch

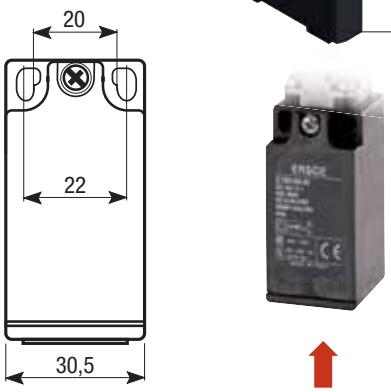
Limit switches
E100 series



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

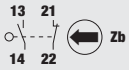
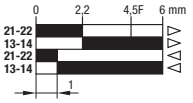
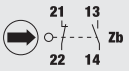
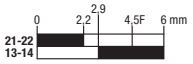
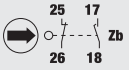
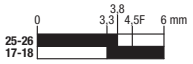
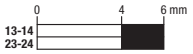
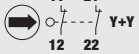
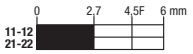
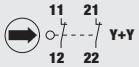
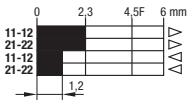
Cable entry
One Cable entry on the bottom of the switch with thread:

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

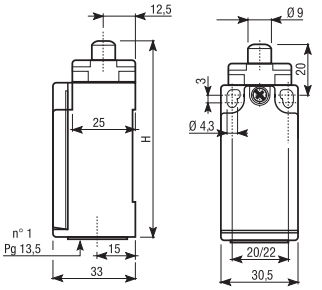
Thread	series part no.
Pg 13,5	E100…
M20x1,5	E101…
1/2" NPT (on request)	E102…
Pg 11 (on request)	E103…
M16x1,5 (on request)	E104…
M12 connector (on request)	E100…M12



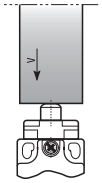
Steel plunger

Contact element		Cable entry: PG 13,5 — Plastic head Plastic body	PG 13,5 — Metal head Plastic body	PG 13,5 — Metal head Metal body	M20 x 1,5 — Plastic head Plastic body	M20 x 1,5 — Metal head Plastic body	M20 x 1,5 — Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E10000AP*	E10000AI*	E10000AM*	E10100AP*	E10100AI*	E10100AM*	
1NO+1NC slow action 	01	E10001AP*	E10001AI*	E10001AM*	E10101AP*	E10101AI*	E10101AM*	
1NO+1NC slow overlap. 	02	E10002AP	E10002AI	E10002AM	E10102AP	E10102AI	E10102AM	
2NO slow action 	03	E10003AP	E10003AI	E10003AM	E10103AP	E10103AI	E10103AM	
2NC slow action 	04	E10004AP	E10004AI	E10004AM	E10104AP	E10104AI	E10104AM	
2NC snap action 	05	E10005AP	E10005AI	E10005AM	E10105AP	E10105AI	E10105AM	
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

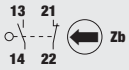
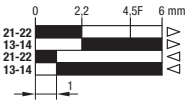
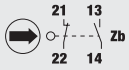
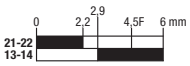
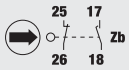
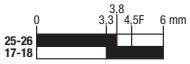
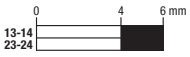
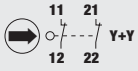
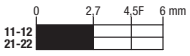
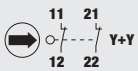
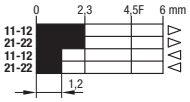


V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

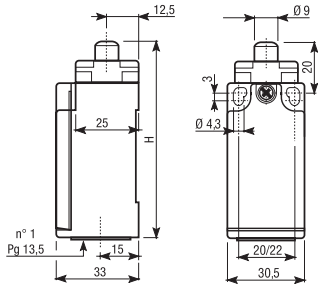
A•S1



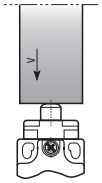
Steel plunger with rubber gasket

Contact element		Cable entry: PG 13,5 – Plastic head Plastic body	PG 13,5 – Metal head Plastic body	PG 13,5 – Metal head Metal body	M20 x 1,5 – Plastic head Plastic body	M20 x 1,5 – Metal head Plastic body	M20 x 1,5 – 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 sovrap. 	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

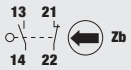
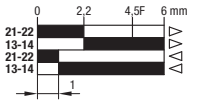
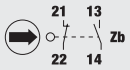
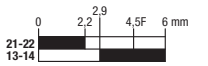
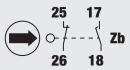
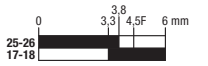
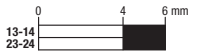
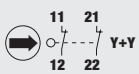
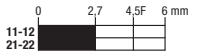
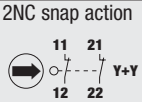
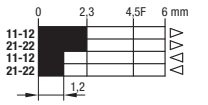


V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

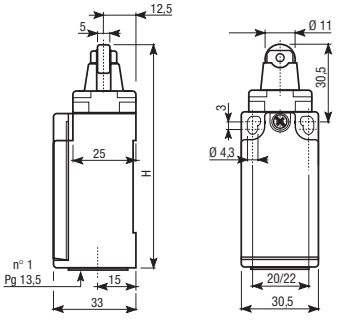
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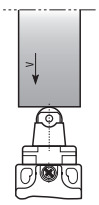
Steel roller plunger

Contact element		Cable entry: PG 13,5 – Plastic head Plastic body	PG 13,5 – Metal head Plastic body	PG 13,5 – Metal head Metal body	M20 x 1,5 – Plastic head Plastic body	M20 x 1,5 – Metal head Plastic body	M20 x 1,5 – Metal head Metal body	Contact travel
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	

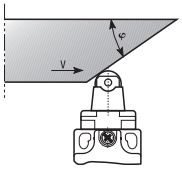
* form conforming to EN50047



Drive cam operating parameters



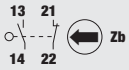
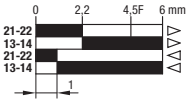
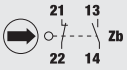
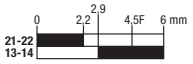
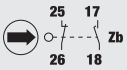
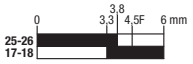
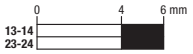
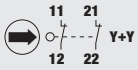
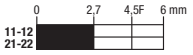
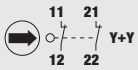
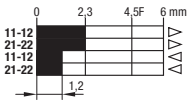
V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



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

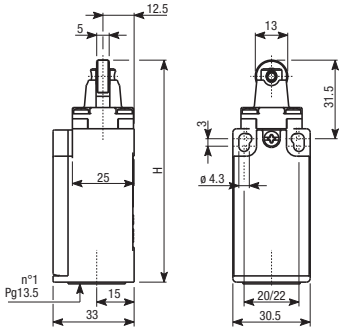


Ø13 mm steel roller plunger

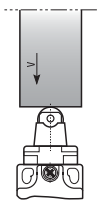
Contact element		Cable entry: PG 13,5 – Plastic head Plastic body	PG 13,5 – Metal head Plastic body	PG 13,5 – Metal head Metal body	M20 x 1,5 – Plastic head Plastic body	M20 x 1,5 – Metal head Plastic body	M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E10000BP13	E10000BI13	E10000BM13	E10100BP13	E10100BI13	E10100BM13	
1NO+1NC slow action 	01	E10001BP13	E10001BI13	E10001BM13	E10101BP13	E10101BI13	E10101BM13	
1NO+1NC slow overlap. 	02	E10002BP13	E10002BI13	E10002BM13	E10102BP13	E10102BI13	E10102BM13	
2NO slow action 	03	E10003BP13	E10003BI13	E10003BM13	E10103BP13	E10103BI13	E10103BM13	
2NC slow action 	04	E10004BP13	E10004BI13	E10004BM13	E10104BP13	E10104BI13	E10104BM13	
2NC snap action 	05	E10005BP13	E10005BI13	E10005BM13	E10105BP13	E10105BI13	E10105BM13	

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	

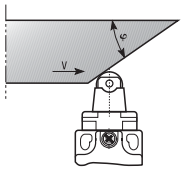
* form conforming to EN50047



Drive cam operating parameters



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



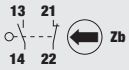
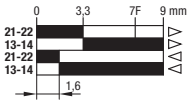
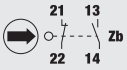
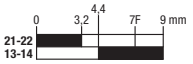
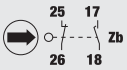
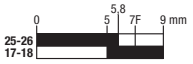
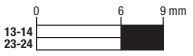
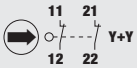
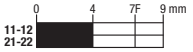
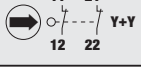
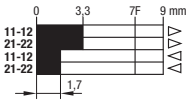
φ	V max (m/s)
20°	1
30°	0,5

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

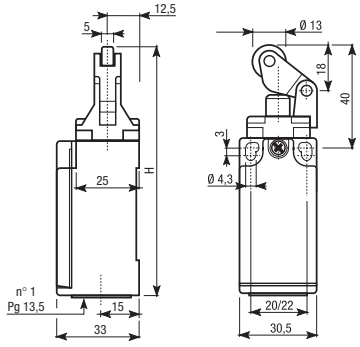
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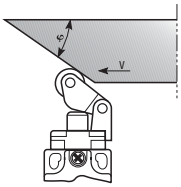
Thermoplastic roller lever, side actuation

Contact element		Cable entry: PG 13,5 — Plastic head Plastic body	PG 13,5 — Metal head Plastic body	PG 13,5 — Metal head Metal body	M20 x 1,5 — Plastic head Plastic body	M20 x 1,5 — Metal head Plastic body	M20 x 1,5 — Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E10000CP*	E10000CI*	E10000CM*	E10100CP*	E10100CI*	E10100CM*	
1NO+1NC slow action 	01	E10001CP*	E10001CI*	E10001CM*	E10101CP*	E10101CI*	E10101CM*	
1NO+1NC slow overlap. 	02	E10002CP	E10002CI	E10002CM	E10102CP	E10102CI	E10102CM	
2NO slow action 	03	E10003CP	E10003CI	E10003CM	E10103CP	E10103CI	E10103CM	
2NC slow action 	04	E10004CP	E10004CI	E10004CM	E10104CP	E10104CI	E10104CM	
2NC snap action 	05	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



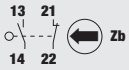
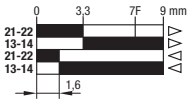
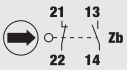
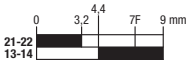
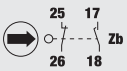
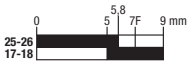
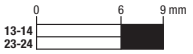
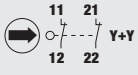
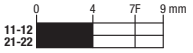
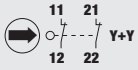
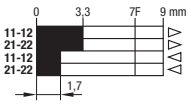
φ	V max (m/s)
20°	1
30°	0,5

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

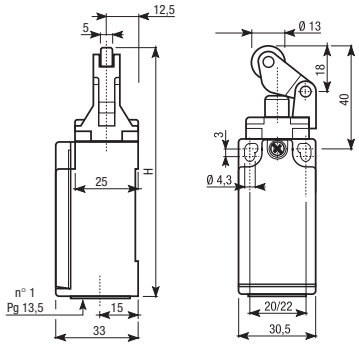
C•S1



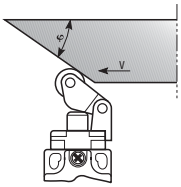
Thermoplastic roller lever with rubber gasket, side actuation

Contact element		Cable entry: PG 13,5 – Plastic head Plastic body	PG 13,5 – Metal head Plastic body	PG 13,5 – Metal head Metal body	M20 x 1,5 – Plastic head Plastic body	M20 x 1,5 – Metal head Plastic body	M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E10000CPS1*	E10000CIS1*	E10000CMS1*	E10100CPS1*	E10100CIS1*	E10100CMS1*	
1NO+1NC slow action 	01	E10001CPS1*	E10001CIS1*	E10001CMS1*	E10101CPS1*	E10101CIS1*	E10101CMS1*	
1NO+1NC slow overlap. 	02	E10002CPS1	E10002CIS1	E10002CMS1	E10102CPS1	E10102CIS1	E10102CMS1	
2NO slow action 	03	E10003CPS1	E10003CIS1	E10003CMS1	E10103CPS1	E10103CIS1	E10103CMS1	
2NC slow action 	04	E10004CPS1	E10004CIS1	E10004CMS1	E10104CPS1	E10104CIS1	E10104CMS1	
2NC snap action 	05	E10005CPS1	E10005CIS1	E10005CMS1	E10105CPS1	E10105CIS1	E10105CMS1	
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



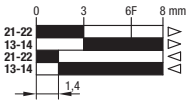
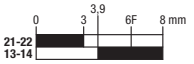
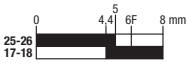
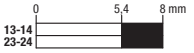
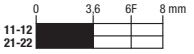
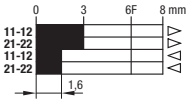
φ	V max (m/s)
20°	1
30°	0,5

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

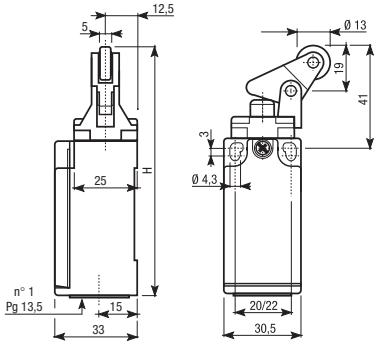
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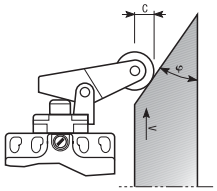
Thermoplastic roller lever, vertical actuation

Contact element		Cable entry: PG 13,5 – Plastic head Plastic body	PG 13,5 – Metal head Plastic body	PG 13,5 – Metal head Metal body	M20 x 1,5 – Plastic head Plastic body	M20 x 1,5 – Metal head Plastic body	M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action	00	E10000DP	E10000DI	E10000DM	E10100DP	E10100DI	E10100DM	
1NO+1NC slow action	01	E10001DP	E10001DI	E10001DM	E10101DP	E10101DI	E10101DM	
1NO+1NC slow overlap.	02	E10002DP	E10002DI	E10002DM	E10102DP	E10102DI	E10102DM	
2NO slow action	03	E10003DP	E10003DI	E10003DM	E10103DP	E10103DI	E10103DM	
2NC slow action	04	E10004DP	E10004DI	E10004DM	E10104DP	E10104DI	E10104DM	
2NC snap action	05	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



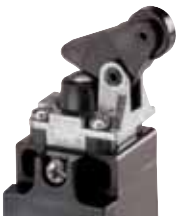
Drive cam operating parameters



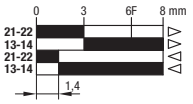
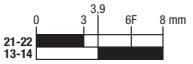
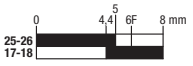
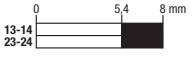
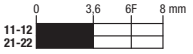
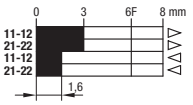
φ	V max (m/s)
20°	1
30°	0,5

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

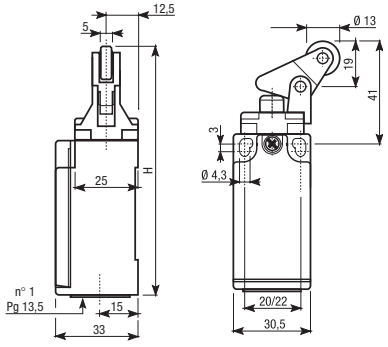
D•S1



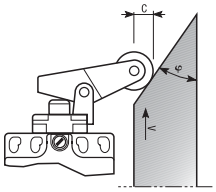
Thermoplastic roller lever with rubber gasket, vertical actuation

Contact element		Cable entry: PG 13,5 – Plastic head Plastic body	PG 13,5 – Metal head Plastic body	PG 13,5 – Metal head Metal body	M20 x 1,5 – Plastic head Plastic body	M20 x 1,5 – Metal head Plastic body	M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action	00	E10000DPS1	E10000DIS1	E10000DMS1	E10100DPS1	E10100DIS1	E10100DMS1	
1NO+1NC slow action	01	E10001DPS1	E10001DIS1	E10001DMS1	E10101DPS1	E10101DIS1	E10101DMS1	
1NO+1NC slow overlap.	02	E10002DPS1	E10002DIS1	E10002DMS1	E10102DPS1	E10102DIS1	E10102DMS1	
2NO slow action	03	E10003DPS1	E10003DIS1	E10003DMS1	E10103DPS1	E10103DIS1	E10103DMS1	
2NC slow action	04	E10004DPS1	E10004DIS1	E10004DMS1	E10104DPS1	E10104DIS1	E10104DMS1	
2NC snap action	05	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

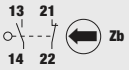
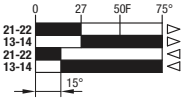
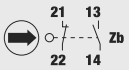
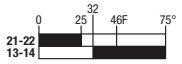
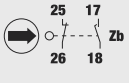
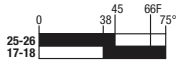
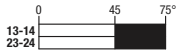
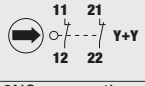
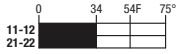
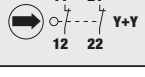
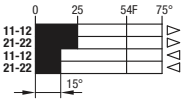


φ	V max (m/s)
20°	1
30°	0,5

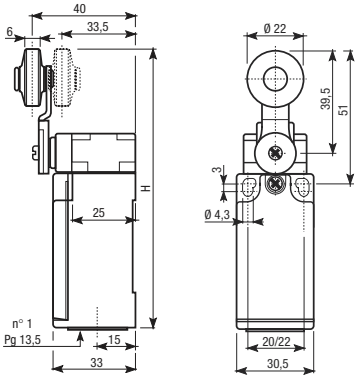
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N



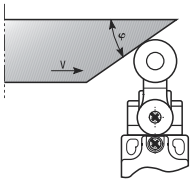
Thermoplastic roller lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E10000EI*	E10000EM*	E10100EI*	E10100EM*	
1NO+1NC slow action 	01	E10001EI*	E10001EM*	E10101EI*	E10101EM*	
1NO+1NC slow overlap. 	02	E10002EI	E10002EM	E10102EI	E10102EM	
2NO slow action 	03	E10003EI	E10003EM	E10103EI	E10103EM	
2NC slow action 	04	E10004EI	E10004EM	E10104EI	E10104EM	
2NC snap action 	05	E10005EI	E10005EM	E10105EI	E10105EM	
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



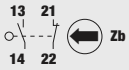
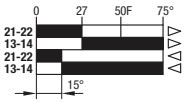
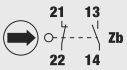
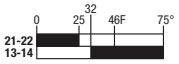
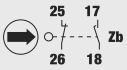
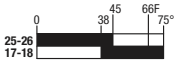
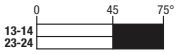
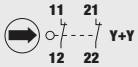
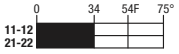
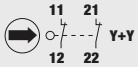
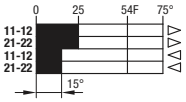
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

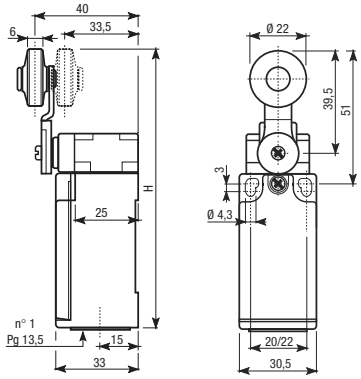
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

E•RA

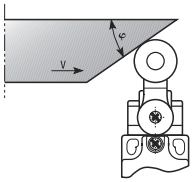


Steel roller lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	**E10000EIRA**	**E10000EMRA**	**E10100EIRA**	**E10100EMRA**	
1NO+1NC slow action 	01	**E10001EIRA**	**E10001EMRA**	**E10101EIRA**	**E10101EMRA**	
1NO+1NC slow overlap. 	02	**E10002EIRA**	**E10002EMRA**	**E10102EIRA**	**E10102EMRA**	
2NO slow action 	03	**E10003EIRA**	**E10003EMRA**	**E10103EIRA**	**E10103EMRA**	
2NC slow action 	04	**E10004EIRA**	**E10004EMRA**	**E10104EIRA**	**E10104EMRA**	
2NC snap action 	05	**E10005EIRA**	**E10005EMRA**	**E10105EIRA**	**E10105EMRA**	
Weight	kg	0,135	0,225	0,135	0,225	
Pack	pcs	1	1	1	1	
H	mm	108,5	106	108,5	106	



Drive cam operating parameters

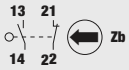
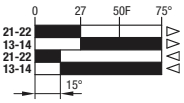
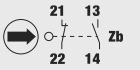
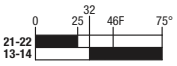
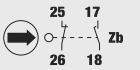
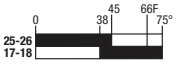
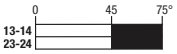
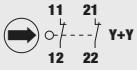
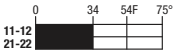
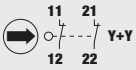
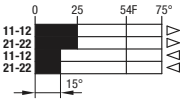


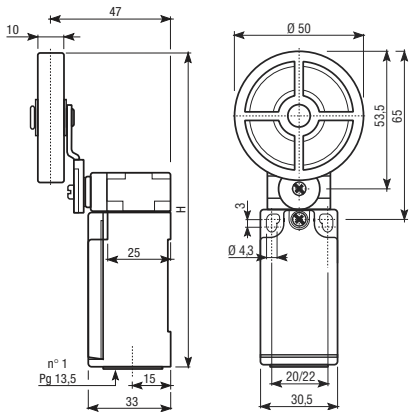
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

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

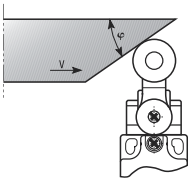


Ø50 mm rubber roller lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	**00**	**E10000EI50**	**E10000EM50**	**E10100EI50**	**E10100EM50**	
1NO+1NC slow action 	**01**	**E10001EI50**	**E10001EM50**	**E10101EI50**	**E10101EM50**	
1NO+1NC slow overlap. 	**02**	**E10002EI50**	**E10002EM50**	**E10102EI50**	**E10102EM50**	
2NO slow action 	**03**	**E10003EI50**	**E10003EM50**	**E10103EI50**	**E10103EM50**	
2NC slow action 	**04**	**E10004EI50**	**E10004EM50**	**E10104EI50**	**E10104EM50**	
2NC snap action 	**05**	**E10005EI50**	**E10005EM50**	**E10105EI50**	**E10105EM50**	
Weight	kg	0,15	0,24	0,15	0,24	
Pack	pcs	1	1	1	1	
H	mm	122,5	120	122,5	120	



Drive cam operating parameters

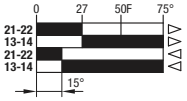
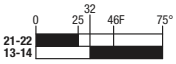
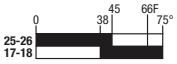
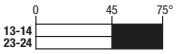
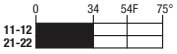
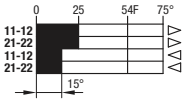


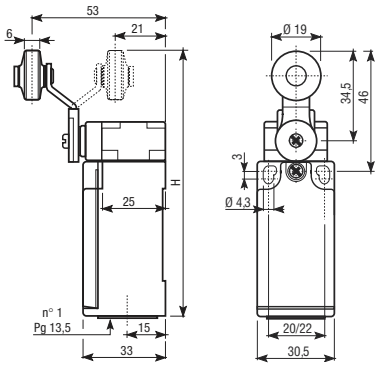
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

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

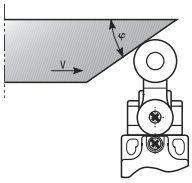


Thermoplastic roller lever

Contact element		Cable entry: PG 13,5 Metal head Plastic body	PG 13,5 Metal head Metal body	M20 x 1,5 Metal head Plastic body	M20 x 1,5 Metal head Metal body	Contact travel
1NO+1NC snap action	00	**E10000II**	**E10000IM**	**E10100II**	**E10100IM**	
1NO+1NC slow action	01	**E10001II**	**E10001IM**	**E10101II**	**E10101IM**	
1NO+1NC slow overlap.	02	**E10002II**	**E10002IM**	**E10102II**	**E10102IM**	
2NO slow action	03	**E10003II**	**E10003IM**	**E10103II**	**E10103IM**	
2NC slow action	04	**E10004II**	**E10004IM**	**E10104II**	**E10104IM**	
2NC snap action	05	**E10005II**	**E10005IM**	**E10105II**	**E10105IM**	
Weight	kg	0,13	0,225	0,13	0,225	
Pack	pcs	1	1	1	1	
H	mm	103,5	101	103,5	101	



Drive cam operating parameters



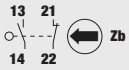
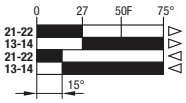
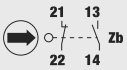
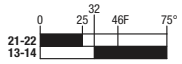
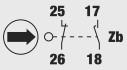
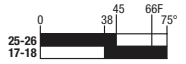
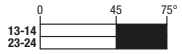
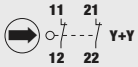
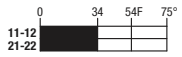
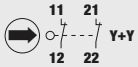
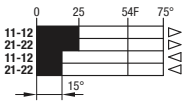
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

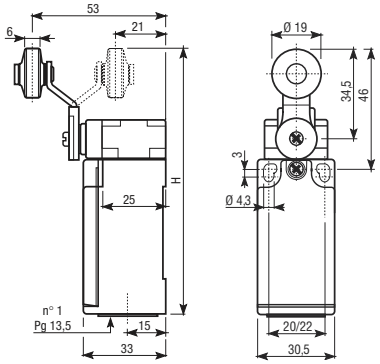
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

I•RA

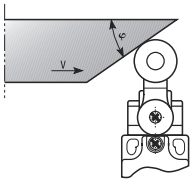


Steel roller lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E10000IIRA	E10000IMRA	E10100IIRA	E10100IMRA	
1NO+1NC slow action 	01	E10001IIRA	E10001IMRA	E10101IIRA	E10101IMRA	
1NO+1NC slow overlap. 	02	E10002IIRA	E10002IMRA	E10102IIRA	E10102IMRA	
2NO slow action 	03	E10003IIRA	E10003IMRA	E10103IIRA	E10103IMRA	
2NC slow action 	04	E10004IIRA	E10004IMRA	E10104IIRA	E10104IMRA	
2NC snap action 	05	E10005IIRA	E10005IMRA	E10105IIRA	E10105IMRA	
Weight	kg	0,13	0,225	0,13	0,225	
Pack	pcs	1	1	1	1	
H	mm	103,5	101	103,5	101	



Drive cam operating parameters

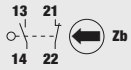
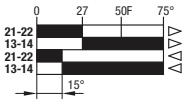
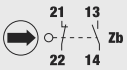
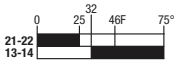
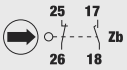
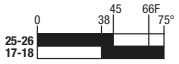
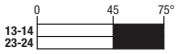
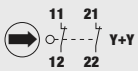
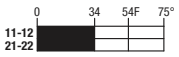
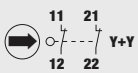
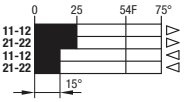


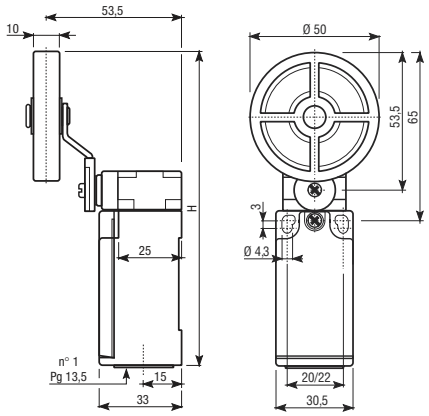
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

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

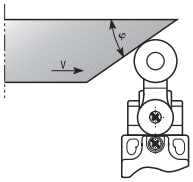


Ø50 mm rubber roller lever

Contact element		Cable entry: PG 13,5 Metal head Plastic body	PG 13,5 Metal head Metal body	M20 x 1,5 Metal head Plastic body	M20 x 1,5 Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E10000II50	E10000IM50	E10100II50	E10100IM50	
1NO+1NC slow action 	01	E10001II50	E10001IM50	E10101II50	E10101IM50	
1NO+1NC slow overlap. 	02	E10002II50	E10002IM50	E10102II50	E10102IM50	
2NO slow action 	03	E10003II50	E10003IM50	E10103II50	E10103IM50	
2NC slow action 	04	E10004II50	E10004IM50	E10104II50	E10104IM50	
2NC snap action 	05	E10005II50	E10005IM50	E10105II50	E10105IM50	
Weight	kg	0,145	0,24	0,145	0,24	
Pack	pcs	1	1	1	1	
H	mm	122,5	120	122,5	120	



Drive cam operating parameters



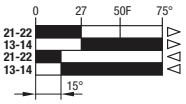
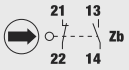
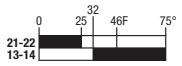
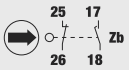
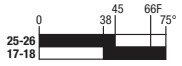
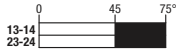
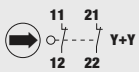
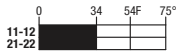
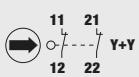
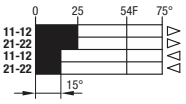
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

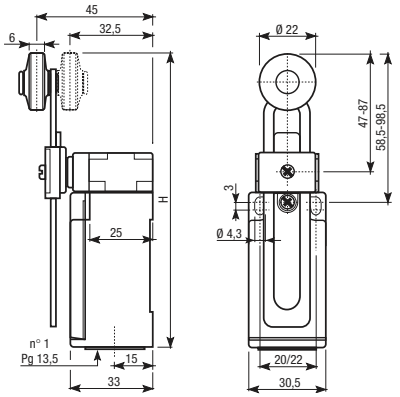
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

F

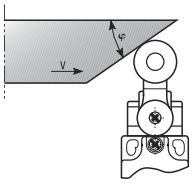


Thermoplastic roller variable length lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E10000FI	E10000FM	E10100FI	E10100FM	
1NO+1NC slow action 	01	E10001FI	E10001FM	E10101FI	E10101FM	
1NO+1NC slow overlap. 	02	E10002FI	E10002FM	E10102FI	E10102FM	
2NO slow action 	03	E10003FI	E10003FM	E10103FI	E10103FM	
2NC slow action 	04	E10004FI	E10004FM	E10104FI	E10104FM	
2NC snap action 	05	E10005FI	E10005FM	E10105FI	E10105FM	
Weight	kg	0,15	0,24	0,13	0,225	
Pack	pcs	1	1	1	1	
H	mm	116 ÷ 156	113,5 ÷ 153,5	116 ÷ 156	113,5 ÷ 153,5	



Drive cam operating parameters

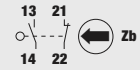
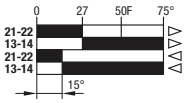
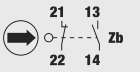
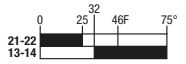
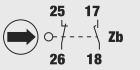
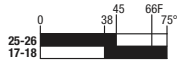
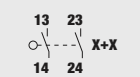
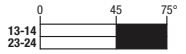
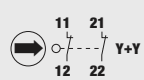
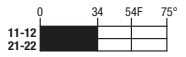
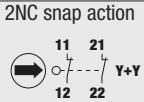
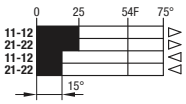


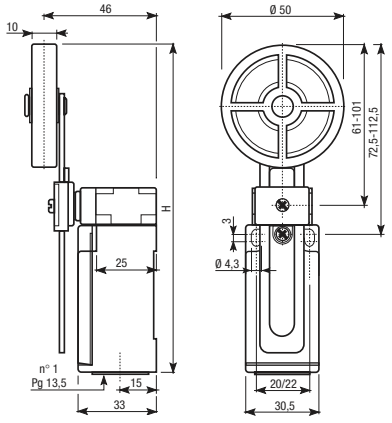
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

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

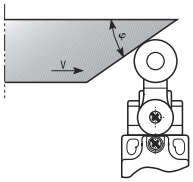


Ø50 mm rubber roller variable length lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	**E10000FI50**	**E10000FM50**	**E10100FI50**	**E10100FM50**	
1NO+1NC slow action 	01	**E10001FI50**	**E10001FM50**	**E10101FI50**	**E10101FM50**	
1NO+1NC slow overlap. 	02	**E10002FI50**	**E10002FM50**	**E10102FI50**	**E10102FM50**	
2NO slow action 	03	**E10003FI50**	**E10003FM50**	**E10103FI50**	**E10103FM50**	
2NC slow action 	04	**E10004FI50**	**E10004FM50**	**E10104FI50**	**E10104FM50**	
2NC snap action 	05	**E10005FI50**	**E10005FM50**	**E10105FI50**	**E10105FM50**	
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



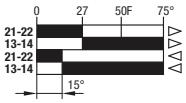
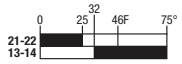
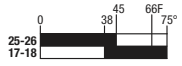
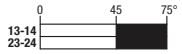
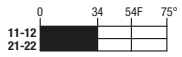
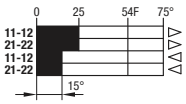
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

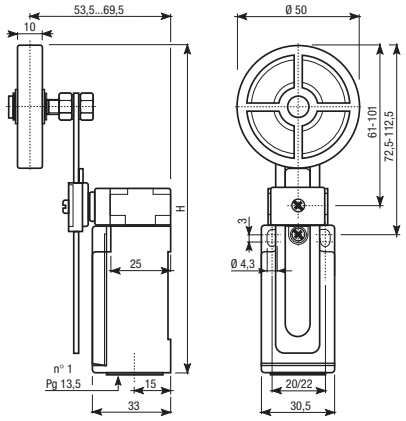
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

FR•50

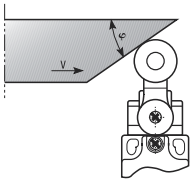


Ø50 mm rubber roller adjustable lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action	00	**E10000FRI50**	**E10000FRM50**	**E10100FRI50**	**E10100FRM50**	
1NO+1NC slow action	01	**E10001FRI50**	**E10001FRM50**	**E10101FRI50**	**E10101FRM50**	
1NO+1NC slow overlap.	02	**E10002FRI50**	**E10002FRM50**	**E10102FRI50**	**E10102FRM50**	
2NO slow action	03	**E10003FRI50**	**E10003FRM50**	**E10103FRI50**	**E10103FRM50**	
2NO+2NC slow action	04	**E10004FRI50**	**E10004FRM50**	**E10104FRI50**	**E10104FRM50**	
2NC snap action	05	**E10005FRI50**	**E10005FRM50**	**E10105FRI50**	**E10105FRM50**	
Weight	kg	0,17	0,25	0,17	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



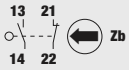
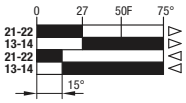
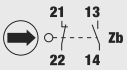
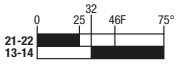
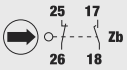
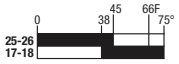
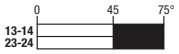
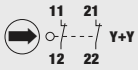
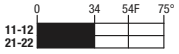
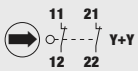
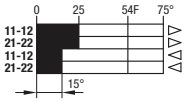
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

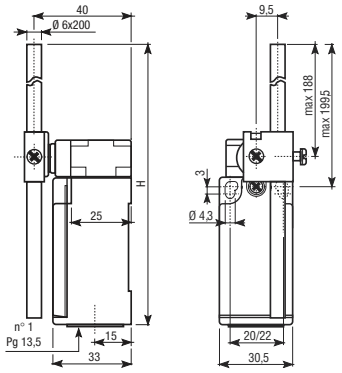
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

G

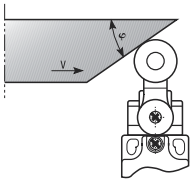


Side rotary adjustable Ø6 mm glass fiber rod

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E10000GI	E10000GM	E10100GI	E10100GM	
1NO+1NC slow action 	01	E10001GI	E10001GM	E10101GI	E10101GM	
1NO+1NC slow overlap. 	02	E10002GI	E10002GM	E10102GI	E10102GM	
2NO slow action 	03	E10003GI	E10003GM	E10103GI	E10103GM	
2NC slow action 	04	E10004GI	E10004GM	E10104GI	E10104GM	
2NC snap action 	05	E10005GI	E10005GM	E10105GI	E10105GM	
Weight	kg	0,17	0,27	0,17	0,27	
Pack	pcs	1	1	1	1	
H	mm	97,5 ÷ 257,5	95 ÷ 255	97,5 ÷ 257,5	95 ÷ 255	



Drive cam operating parameters



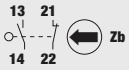
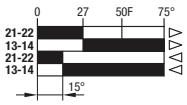
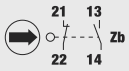
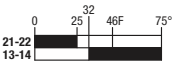
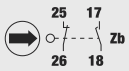
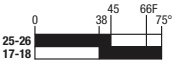
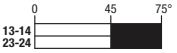
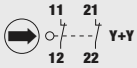
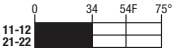
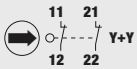
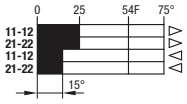
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

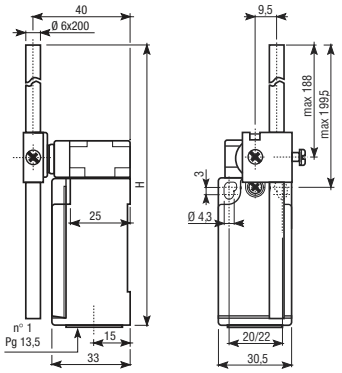
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

H



Side rotary adjustable Ø6 mm aluminium rod

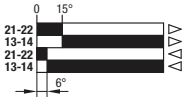
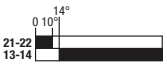
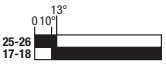
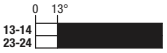
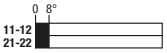
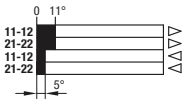
Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E10000HI	E10000HM	E10100HI	E10100HM	
1NO+1NC slow action 	01	E10001HI	E10001HM	E10101HI	E10101HM	
1NO+1NC slow overlap. 	02	E10002HI	E10002HM	E10102HI	E10102HM	
2NO slow action 	03	E10003HI	E10003HM	E10103HI	E10103HM	
2NC slow action 	04	E10004HI	E10004HM	E10104HI	E10104HM	
2NC snap action 	05	E10005HI	E10005HM	E10105HI	E10105HM	
Weight	kg	0,18	0,27	0,18	0,27	
Pack	pcs	1	1	1	1	
H	mm	97,5 ÷ 257,5	95 ÷ 255	97,5 ÷ 257,5	95 ÷ 255	

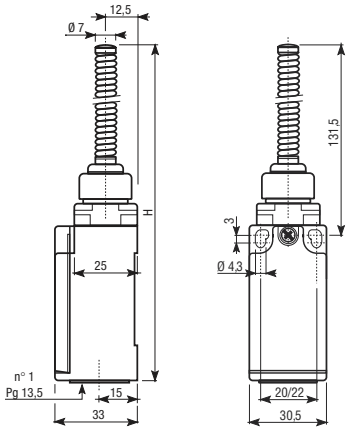


L



Flexible rod

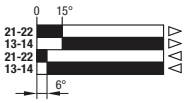
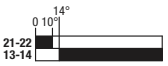
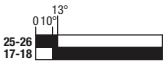
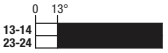
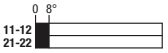
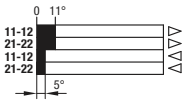
Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 13 21 Zb 14 22	00	E10000LI	E10000LM	E10100LI	E10100LM	
1NO+1NC slow action 21 13 Zb 22 14	01	E10001LI	E10001LM	E10101LI	E10101LM	
1NO+1NC slow overlap. 25 17 Zb 26 18	02	E10002LI	E10002LM	E10102LI	E10102LM	
2NO slow action 13 23 X+X 14 24	03	E10003LI	E10003LM	E10103LI	E10103LM	
2NO slow action 11 21 Y+Y 12 22	04	E10004LI	E10004LM	E10104LI	E10104LM	
2NO snap action 11 21 Y+Y 12 22	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	

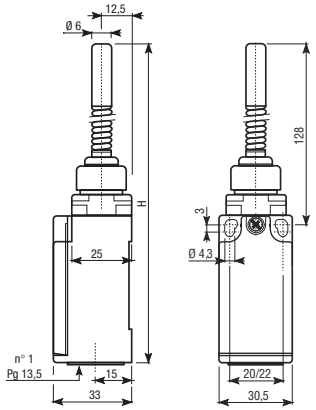


LP



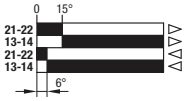
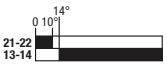
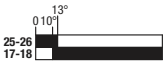
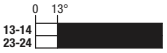
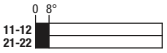
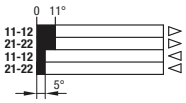
Flexible rod with plastic terminal

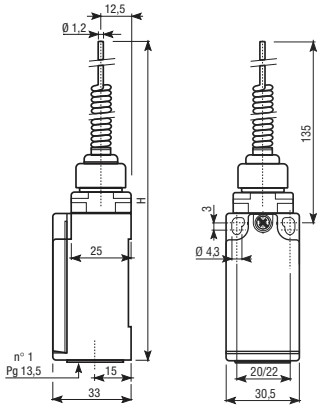
Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	**00**	**E10000LPI**	**E10000LPM**	**E10100LPI**	**E10100LPM**	
1NO+1NC slow action 	**01**	**E10001LPI**	**E10001LPM**	**E10101LPI**	**E10101LPM**	
1NO+1NC slow overlap. 	**02**	**E10002LPI**	**E10002LPM**	**E10102LPI**	**E10102LPM**	
2NO slow action 	**03**	**E10003LPI**	**E10003LPM**	**E10103LPI**	**E10103LPM**	
2NC slow action 	**04**	**E10004LPI**	**E10004LPM**	**E10104LPI**	**E10104LPM**	
2NC snap action 	**05**	**E10005LPI**	**E10005LPM**	**E10105LPI**	**E10105LPM**	
Weight	kg	0,145	0,235	0,145	0,235	
Pack	pcs	1	1	1	1	
H	mm	185,5	183	185,5	183	





Cat's whisker

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 13 21 Zb 14 22	00	E10000LSI	E10000LSM	E10100LSI	E10100LSM	
1NO+1NC slow action 21 13 Zb 22 14	01	E10001LSI	E10001LSM	E10101LSI	E10101LSM	
1NO+1NC slow overlap. 25 17 Zb 26 18	02	E10002LSI	E10002LSM	E10102LSI	E10102LSM	
2NO slow action 13 23 X+X 14 24	03	E10003LSI	E10003LSM	E10103LSI	E10103LSM	
2NC slow action 11 21 Y+Y 12 22	04	E10004LSI	E10004LSM	E10104LSI	E10104LSM	
2NC snap action 11 21 Y+Y 12 22	05	E10005LSI	E10005LSM	E10105LSI	E10105LSM	
Weight	kg	0,145	0,235	0,145	0,235	
Pack	pcs	1	1	1	1	
H	mm	192,5	190	192,5	190	

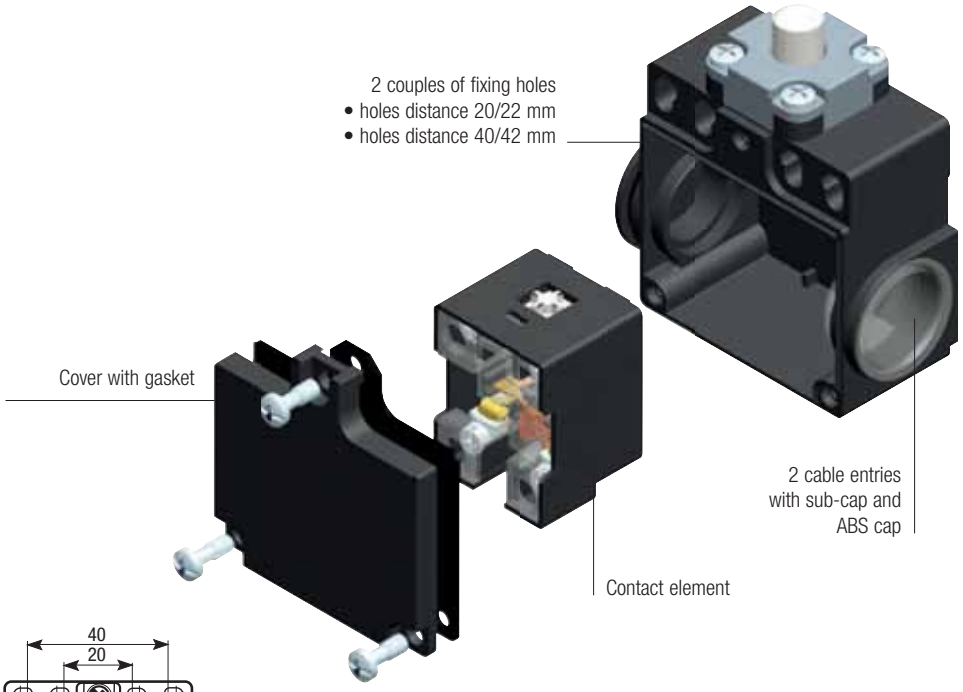


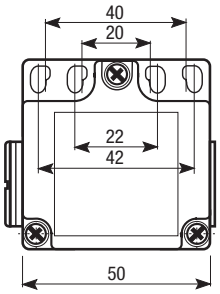
Limit switches
E200 series



E200 series

The **E200** series is designed for maximum installation flexibility, it has two diffent 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.





Fixing
Double fixing option:
20-22 mm
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
2 cable entries
on the sides
of the switch
with thread:



Thread	Series part no.
Pg 13,5	E200…
M20x1,5	E201…
1/2" NPT (on request)	E202…
M12 connector (on request)	E200…M12

A

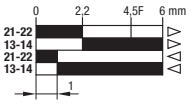
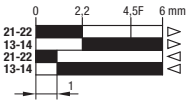
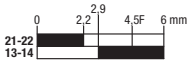
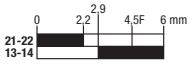
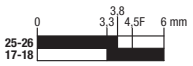
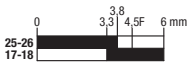
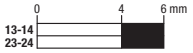
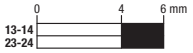
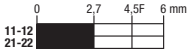
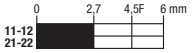
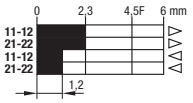
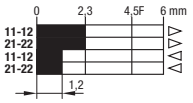


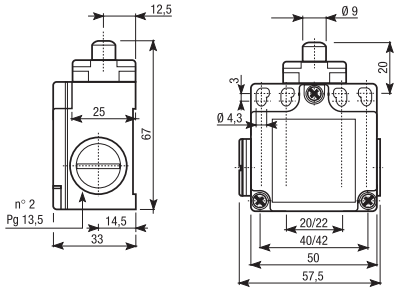
Steel plunger

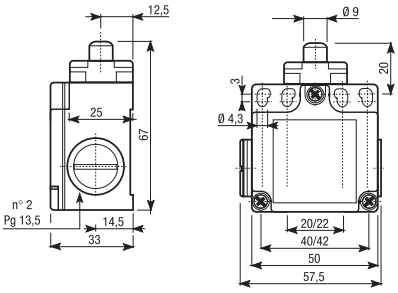
A•S1



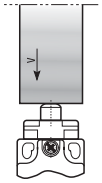
Steel plunger with rubber gasket

Contact element		Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel	Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC snap action 13 21 Zb 14 22	00	E20000AI	E20100AI		E20000AIS1	E20100AIS1	
1NO+1NC slow action 21 13 Zb 22 14	01	E20001AI	E20101AI		E20001AIS1	E20101AIS1	
1NO+1NC slow overlap. 25 17 Zb 26 18	02	E20002AI	E20102AI		E20002AIS1	E20102AIS1	
2NO slow action 13 23 X+X 14 24	03	E20003AI	E20103AI		E20003AIS1	E20103AIS1	
2NC slow action 11 21 Y+Y 12 22	04	E20004AI	E20104AI		E20004AIS1	E20104AIS1	
2NC snap action 11 21 Y+Y 12 22	05	E20005AI	E20105AI		E20005AIS1	E20105AIS1	
Weight	kg	0,11			0,11		
Pack	pcs	1			1		





Drive cam operating parameters



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



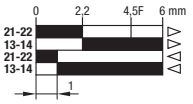
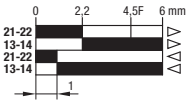
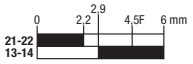
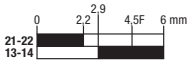
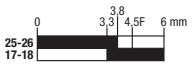
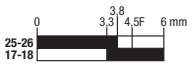
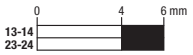
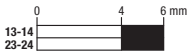
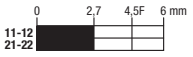
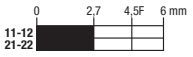
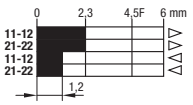
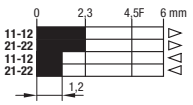
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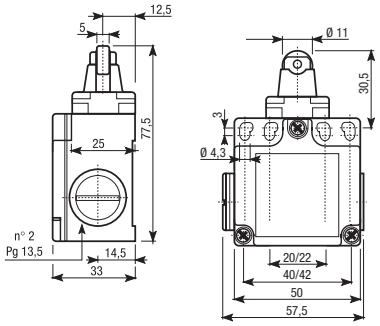
Steel roller plunger

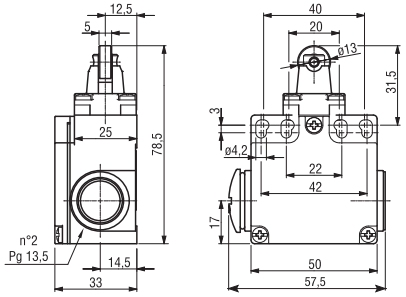


B•13

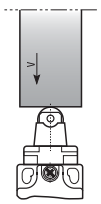
Ø13 mm steel roller plunger

Contact element		Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel	Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC snap action	00	E20000BI	E20100BI		E20000BI13	E20100BI13	
1NO+1NC slow action	01	E20001BI	E20101BI		E20001BI13	E20101BI13	
1NO+1NC slow overlap.	02	E20002BI	E20102BI		E20002BI13	E20102BI13	
2NO slow action	03	E20003BI	E20103BI		E20003BI13	E20103BI13	
2NC slow action	04	E20004BI	E20104BI		E20004BI13	E20104BI13	
2NC snap action	05	E20005BI	E20105BI		E20005BI13	E20105BI13	
Weight	kg	0,125			0,125		
Pack	pcs	1			1		

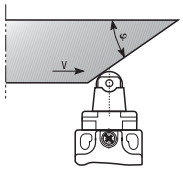




Drive cam operating parameters



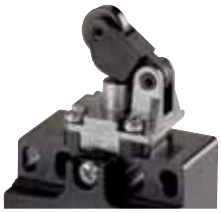
V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



φ	V max (m/s)
20°	1
30°	0,5

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

C

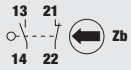
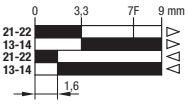
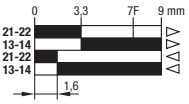
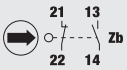
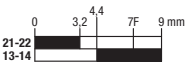
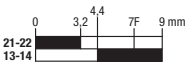
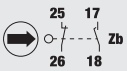
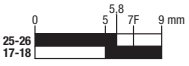
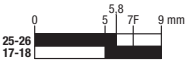
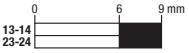
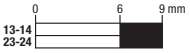
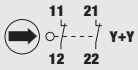
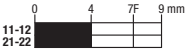
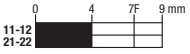
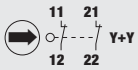
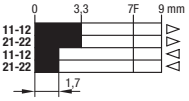
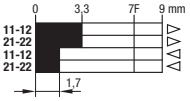


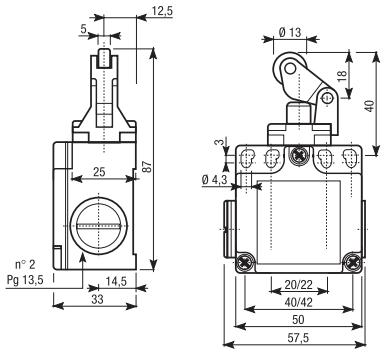
Thermoplastic roller lever, side actuation

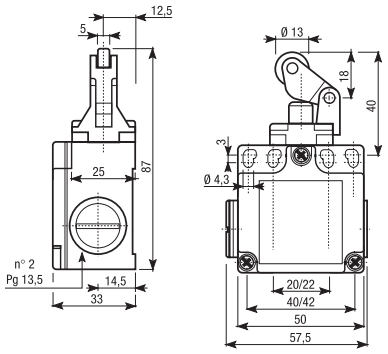
C•S1



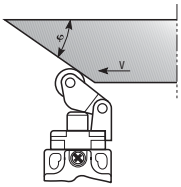
Thermoplastic roller lever with rubber gasket, side actuation

Contact element		Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel	Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC snap action 	00	E20000CI	E20100CI		E20000CIS1	E20100CIS1	
1NO+1NC slow action 	01	E20001CI	E20101CI		E20001CIS1	E20101CIS1	
1NO+1NC slow overlap. 	02	E20002CI	E20102CI		E20002CIS1	E20102CIS1	
2NO slow action 	03	E20003CI	E20103CI		E20003CIS1	E20103CIS1	
2NC slow action 	04	E20004CI	E20104CI		E20004CIS1	E20104CIS1	
2NC snap action 	05	E20005CI	E20105CI		E20005CIS1	E20105CIS1	
Weight	kg	0,13			0,13		
Pack	pcs	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	28 N

D

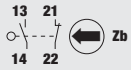
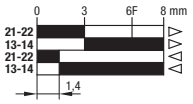
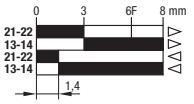
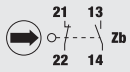
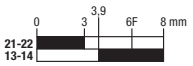
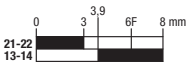
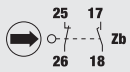
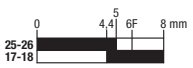
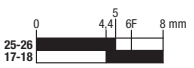
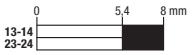
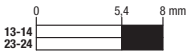
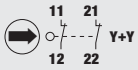
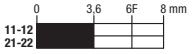
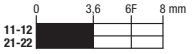
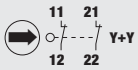
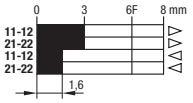
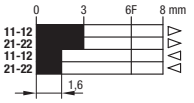


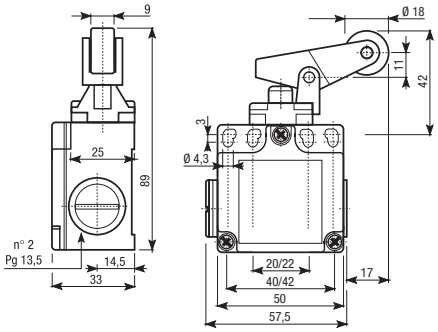
Thermoplastic roller lever, vertical actuation

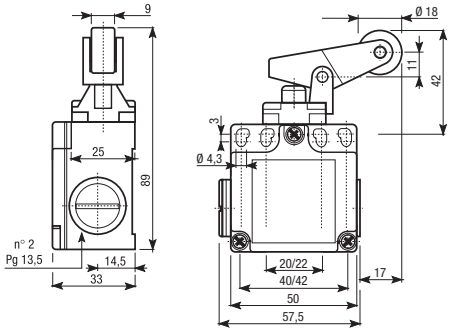
D•S1



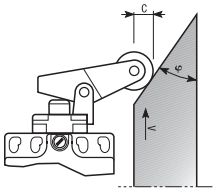
Thermoplastic roller lever with rubber gasket, vertical actuation

Contact element		Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel	Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC snap action 	00	E20000DI	E20100DI		E20000DIS1	E20100DIS1	
1NO+1NC slow action 	01	E20001DI	E20101DI		E20001DIS1	E20101DIS1	
1NO+1NC slow overlap. 	02	E20002DI	E20102DI		E20002DIS1	E20102DIS1	
2NO slow action 	03	E20003DI	E20103DI		E20003DIS1	E20103DIS1	
2NC slow action 	04	E20004DI	E20104DI		E20004DIS1	E20104DIS1	
2NC snap action 	05	E20005DI	E20105DI		E20005DIS1	E20105DIS1	
Weight	kg	0,13			0,13		
Pack	pcs	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



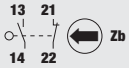
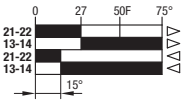
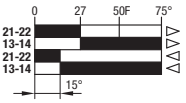
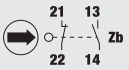
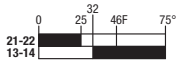
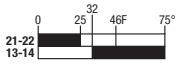
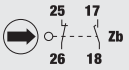
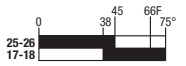
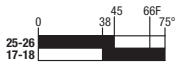
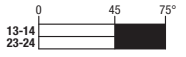
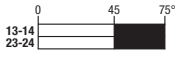
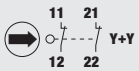
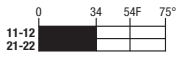
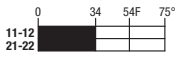
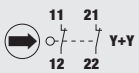
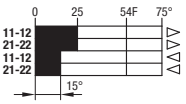
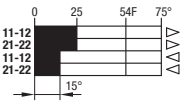
Thermoplastic roller lever

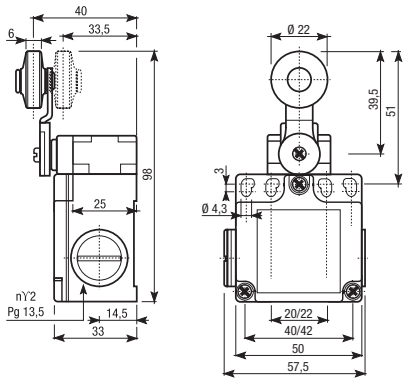
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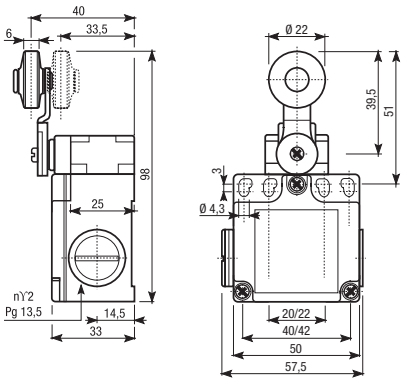


Steel roller lever

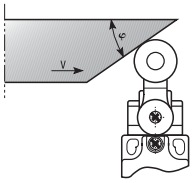
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Contact element		Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel	Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC snap action 	00	**E20000EI**	**E20100EI**		**E20000EIRA**	**E20100EIRA**	
1NO+1NC slow action 	01	**E20001EI**	**E20101EI**		**E20001EIRA**	**E20101EIRA**	
1NO+1NC slow overlap. 	02	**E20002EI**	**E20102EI**		**E20002EIRA**	**E20102EIRA**	
2NO slow action 	03	**E20003EI**	**E20103EI**		**E20003EIRA**	**E20103EIRA**	
2NC slow action 	04	**E20004EI**	**E20104EI**		**E20004EIRA**	**E20104EIRA**	
2NC snap action 	05	**E20005EI**	**E20105EI**		**E20005EIRA**	**E20105EIRA**	
Weight	kg	0,16			0,16		
Pack	pcs	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	15 Ncm
Minimum forced opening force	35 Ncm



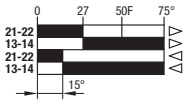
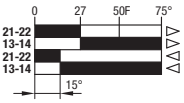
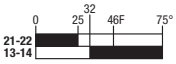
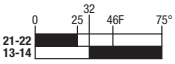
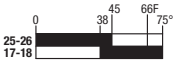
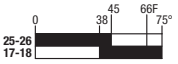
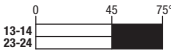
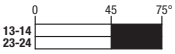
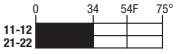
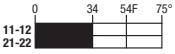
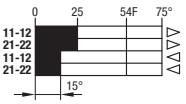
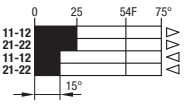
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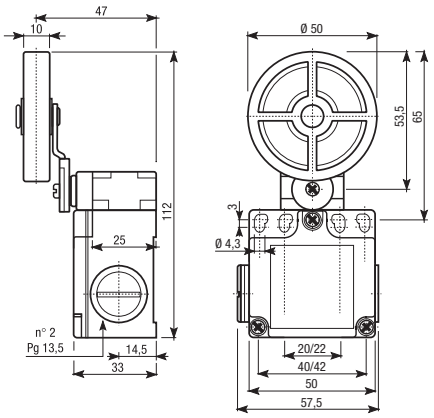
Ø50 mm rubber roller lever

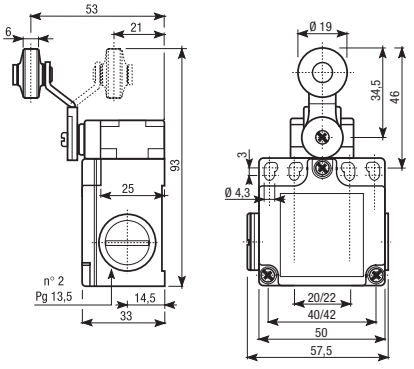


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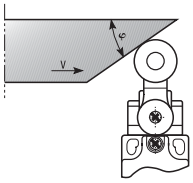
Thermoplastic roller lever

Contact element		Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel	Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC snap action	00	E20000EI50	E20100EI50		E20000II	E20100II	
1NO+1NC slow action	01	E20001EI50	E20101EI50		E20001II	E20101II	
1NO+1NC slow overlap.	02	E20002EI50	E20102EI50		E20002II	E20102II	
2NO slow action	03	E20003EI50	E20103EI50		E20003II	E20103II	
2NC slow action	04	E20004EI50	E20104EI50		E20004II	E20104II	
2NC snap action	05	E20005EI50	E20105EI50		E20005II	E20105II	
Weight	kg	0,175			0,16		
Pack	pcs	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	15 Ncm
Minimum forced opening force	35 Ncm



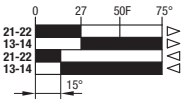
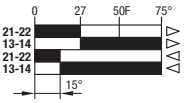
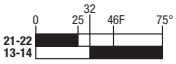
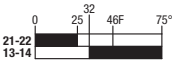
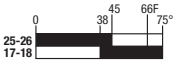
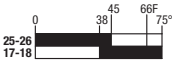
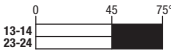
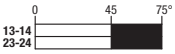
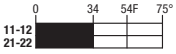
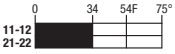
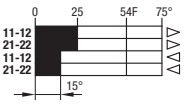
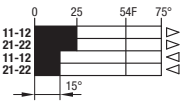
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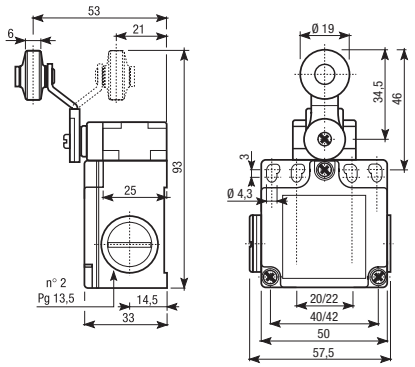
Steel roller lever

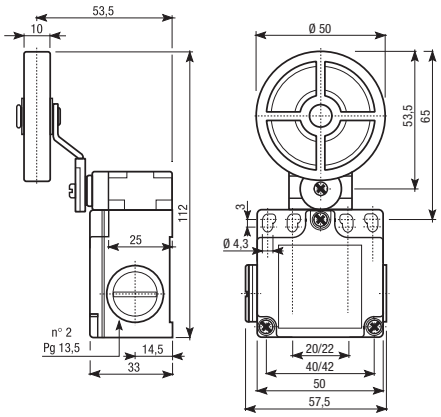


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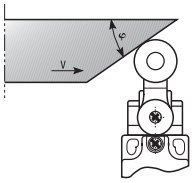
Ø50 mm rubber roller lever

Contact element		Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel	Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC snap action	00	E20000IIRA	E20100IIRA		E20000II50	E20100II50	
1NO+1NC slow action	01	E20001IIRA	E20101IIRA		E20001II50	E20101II50	
1NO+1NC slow overlap.	02	E20002IIRA	E20102IIRA		E20002II50	E20102II50	
2NO slow action	03	E20003IIRA	E20103IIRA		E20003II50	E20103II50	
2NC slow action	04	E20004IIRA	E20104IIRA		E20004II50	E20104II50	
2NC snap action	05	E20005IIRA	E20105IIRA		E20005II50	E20105II50	
Weight	kg	0,16			0,17		
Pack	pcs	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	15 Ncm
Minimum forced opening force	35 Ncm



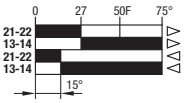
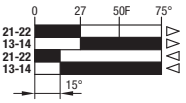
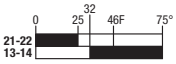
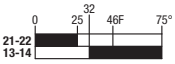
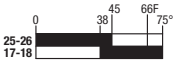
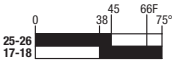
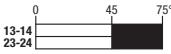
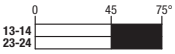
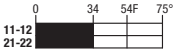
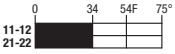
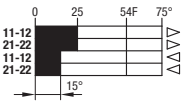
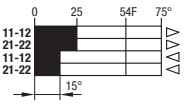
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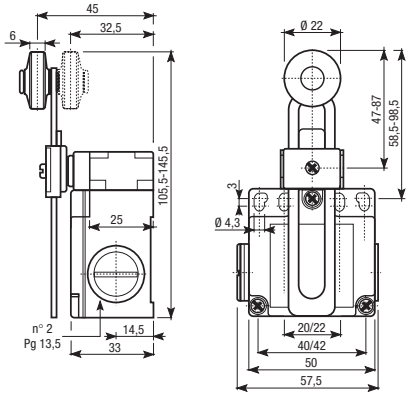
Thermoplastic roller variable length lever

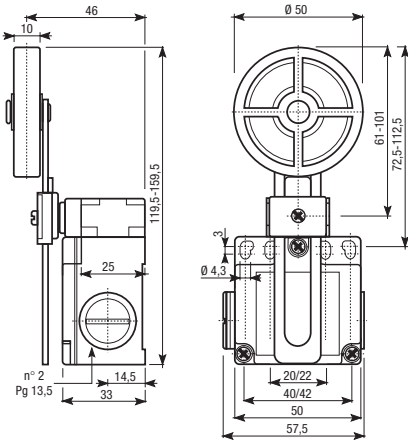


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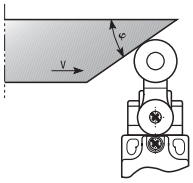
Ø50 mm rubber roller variable length lever

Contact element		Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel	Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC snap action	00	E20000FI	E20100FI		E20000FI50	E20100FI50	
1NO+1NC slow action	01	E20001FI	E20101FI		E20001FI50	E20101FI50	
1NO+1NC slow overlap.	02	E20002FI	E20102FI		E20002FI50	E20102FI50	
2NO slow action	03	E20003FI	E20103FI		E20003FI50	E20103FI50	
2NC slow action	04	E20004FI	E20104FI		E20004FI50	E20104FI50	
2NC snap action	05	E20005FI	E20105FI		E20005FI50	E20105FI50	
Weight	kg	0,175			0,195		
Pack	pcs	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	15 Ncm
Minimum forced opening force	35 Ncm



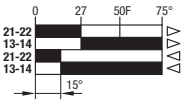
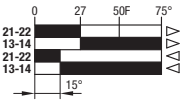
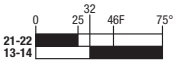
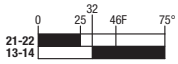
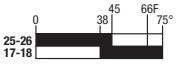
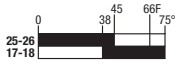
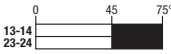
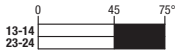
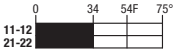
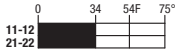
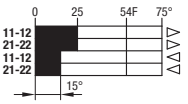
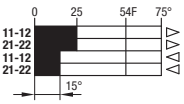
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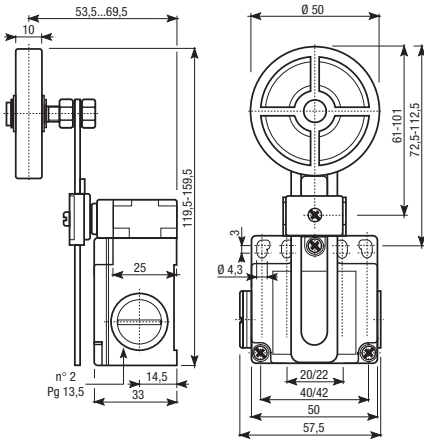
Ø50 mm rubber roller adjustable lever

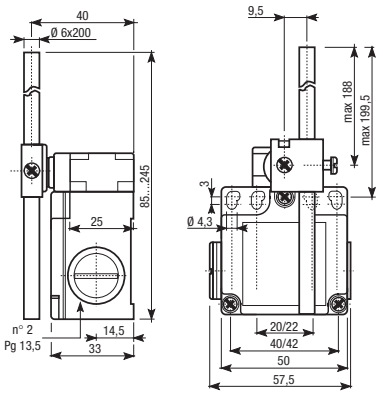


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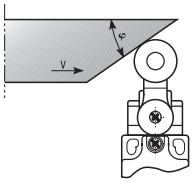
Side rotary adjustable Ø6 mm glass fiber rod

Contact element		Cable entry: PG 13,5 Metal head Plastic body	Cable entry: M20 x 1,5 Metal head Plastic body	Contact travel	Cable entry: PG 13,5 Metal head Plastic body	Cable entry: M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC snap action	00	E20000FRI50	E20100FRI50		E20000GI	E20100GI	
1NO+1NC slow action	01	E20001FRI50	E20101FRI50		E20001GI	E20101GI	
1NO+1NC slow overlap.	02	E20002FRI50	E20102FRI50		E20002GI	E20102GI	
2NO slow action	03	E20003FRI50	E20103FRI50		E20003GI	E20103GI	
2NC slow action	04	E20004FRI50	E20104FRI50		E20004GI	E20104GI	
2NC snap action	05	E20005FRI50	E20105FRI50		E20005GI	E20105GI	
Weight	kg	0,21			0,19		
Pack	pcs	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	15 Ncm
Minimum forced opening force	35 Ncm

H

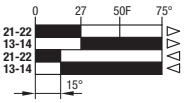
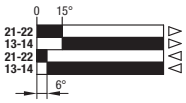
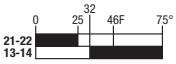
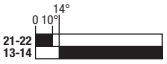
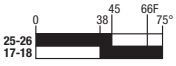
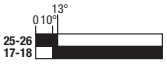
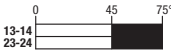
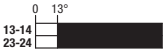
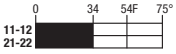
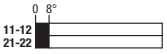
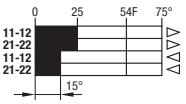
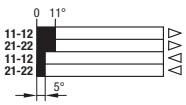


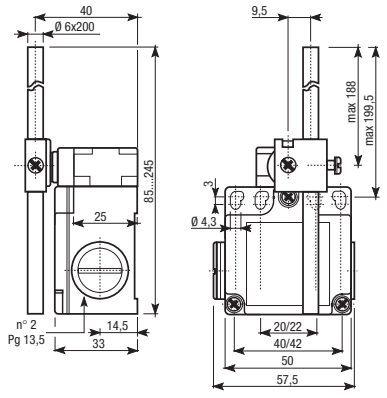
Side rotary adjustable
Ø6 mm aluminium rod

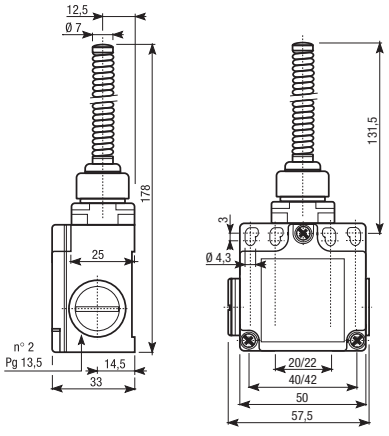
L



Flexible rod

Contact element		Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel	Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC snap action 13 21 Zb 14 22	00	E20000HI	E20100HI		E20000LI	E20100LI	
1NO+1NC slow action 21 13 Zb 22 14	01	E20001HI	E20101HI		E20001LI	E20101LI	
1NO+1NC slow overlap. 25 17 Zb 26 18	02	E20002HI	E20102HI		E20002LI	E20102LI	
2NO slow action action 13 23 X+X 14 24	03	E20003HI	E20103HI		E20003LI	E20103LI	
2NC slow action action 11 21 Y+Y 12 22	04	E20004HI	E20104HI		E20004LI	E20104LI	
2NC snap action 11 21 Y+Y 12 22	05	E20005HI	E20105HI		E20005LI	E20105LI	
Weight	kg	0,19			0,16		
Pack	pcs	1			1		







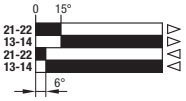
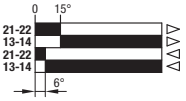
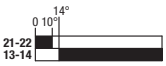
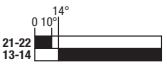
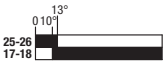
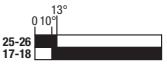
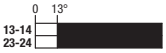
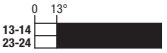
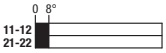
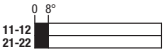
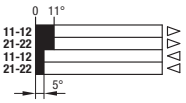
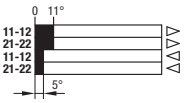
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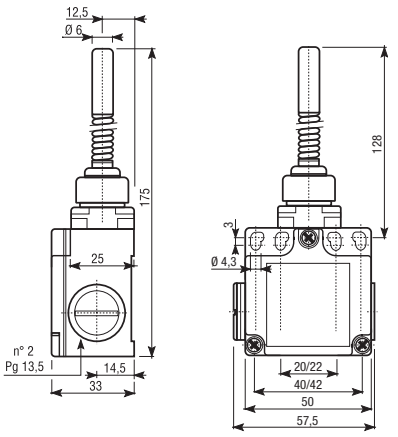
Flexible rod with plastic terminal

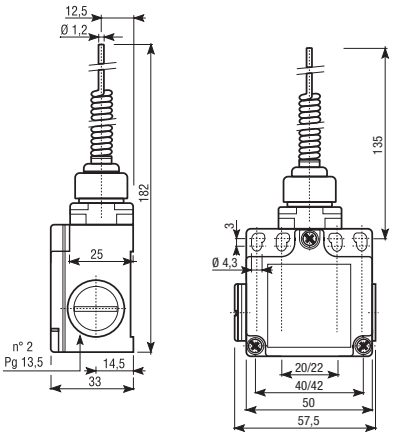


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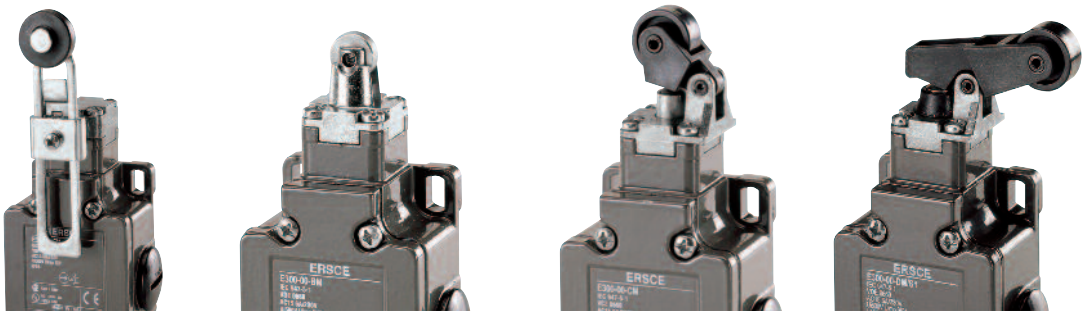
Cat's whisker

Contact element		Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel	Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC snap action 13 21 Zb 14 22	00	E20000LPI	E20100LPI		E20000LSI	E20100LSI	
1NO+1NC slow action 21 13 Zb 22 14	01	E20001LPI	E20101LPI		E20001LSI	E20101LSI	
1NO+1NC slow overlap. 25 17 Zb 26 18	02	E20002LPI	E20102LPI		E20002LSI	E20102LSI	
2NO slow action 13 23 X+X 14 24	03	E20003LPI	E20103LPI		E20003LSI	E20103LSI	
2NC slow action 11 21 Y+Y 12 22	04	E20004LPI	E20104LPI		E20004LSI	E20104LSI	
2NC snap action 11 21 Y+Y 12 22	05	E20005LPI	E20105LPI		E20005LSI	E20105LSI	
Weight	kg	0,16			0,16		
Pack	pcs	1			1		



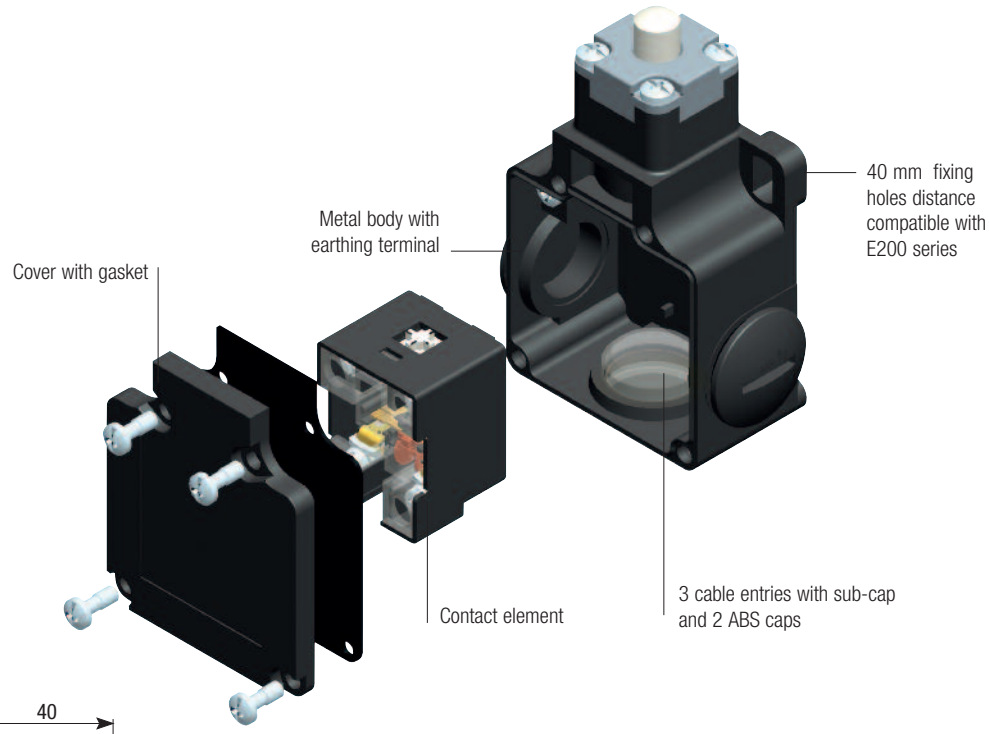


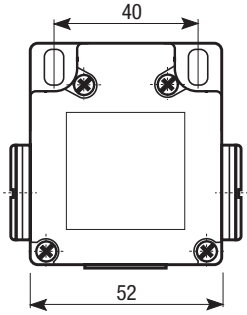
Limit switches
E300 series



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.





Fixing
2 fixing holes with 40 mm distance



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	Series part no.
Pg 13,5	E300…
M20x1,5	E301…
1/2" NPT (on request)	E302…
M12 connector (on request)	E300…M12

A

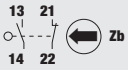
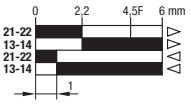
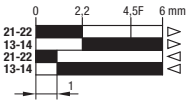
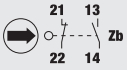
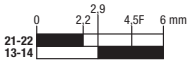
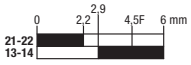
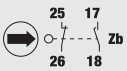
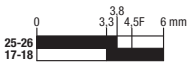
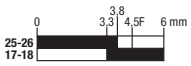
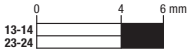
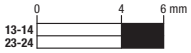
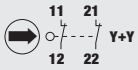
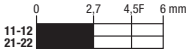
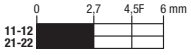
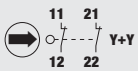
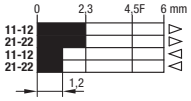
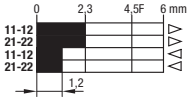


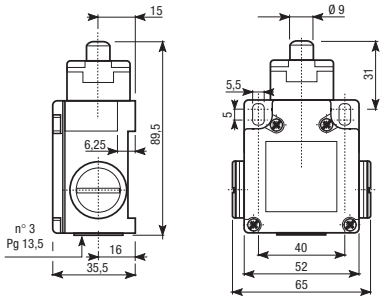
Steel plunger

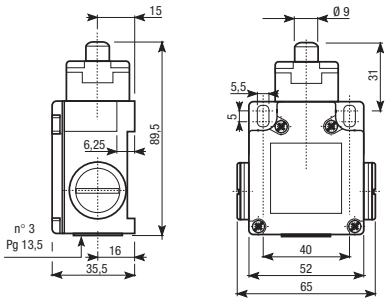
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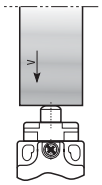
Steel plunger with rubber gasket

Contact element		Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel	Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E30000AM	E30100AM		E30000AMS1	E30100AMS1	
1NO+1NC slow action 	01	E30001AM	E30101AM		E30001AMS1	E30101AMS1	
1NO+1NC slow overlap. 	02	E30002AM	E30102AM		E30002AMS1	E30102AMS1	
2NO slow action 	03	E30003AM	E30103AM		E30003AMS1	E30103AMS1	
2NC slow action 	04	E30004AM	E30104AM		E30004AMS1	E30104AMS1	
2NC snap action 	05	E30005AM	E30105AM		E30005AMS1	E30105AMS1	
Weight	kg	0,32			0,32		
Pack	pcs	1			1		





Drive cam operating parameters

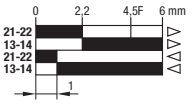
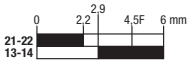
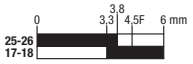
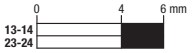
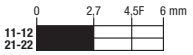
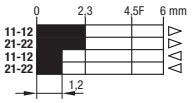


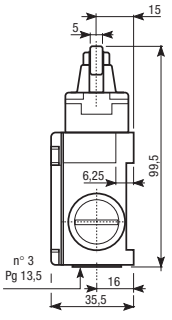
V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

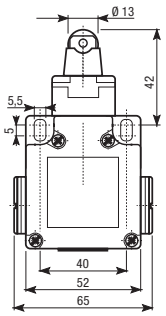
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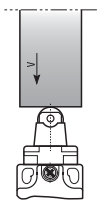
Steel roller plunger

Contact element		Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action (13 21 / 14 22 Zb)	00	**E30000BM**	**E30100BM**	
1NO+1NC slow action (21 13 / 22 14 Zb)	01	**E30001BM**	**E30101BM**	
1NO+1NC slow overlap. (25 17 / 26 18 Zb)	02	**E30002BM**	**E30102BM**	
2NO slow action (13 23 / 14 24 X+X)	03	**E30003BM**	**E30103BM**	
2NC slow action (11 21 / 12 22 Y+Y)	04	**E30004BM**	**E30104BM**	
2NC snap action (11 21 / 12 22 Y+Y)	05	**E30005BM**	**E30105BM**	
Weight	kg	0,32		
Pack	pcs	1		

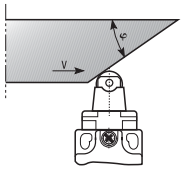




Drive cam operating parameters



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



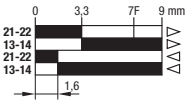
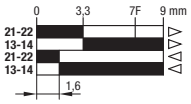
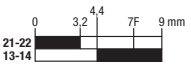
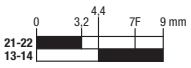
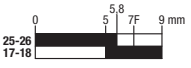
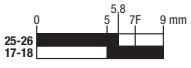
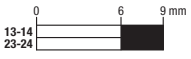
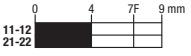
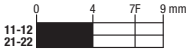
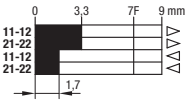
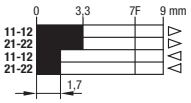
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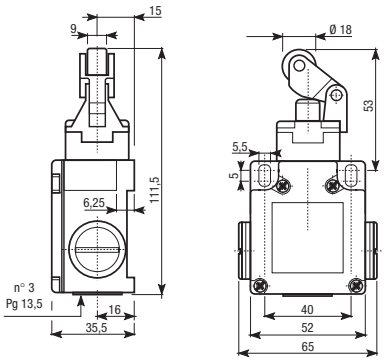
Thermoplastic roller lever, side actuation

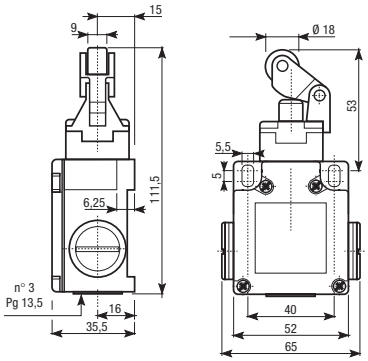


C•S1

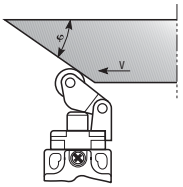
Thermoplastic roller lever with rubber gasket, side actuation

Contact element		Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel	Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel
1NO+1NC snap action	00	E30000CM	E30100CM		E30000CMS1	E30100CMS1	
1NO+1NC slow action	01	E30001CM	E30101CM		E30001CMS1	E30101CMS1	
1NO+1NC slow overlap.	02	E30002CM	E30102CM		E30002CMS1	E30102CMS1	
2NO slow action	03	E30003CM	E30103CM		E30003CMS1	E30103CMS1	
2NC slow action	04	E30004CM	E30104CM		E30004CMS1	E30104CMS1	
2NC snap action	05	E30005CM	E30105CM		E30005CMS1	E30105CMS1	
Weight	kg	0,325			0,325		
Pack	pcs	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



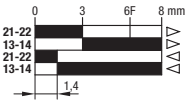
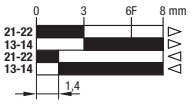
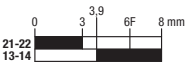
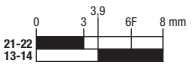
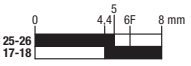
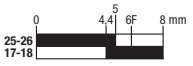
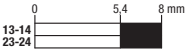
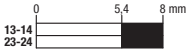
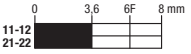
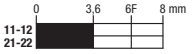
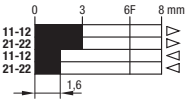
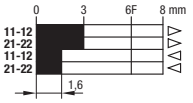
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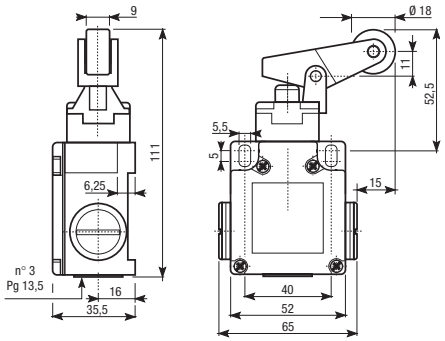
Thermoplastic roller lever, vertical actuation

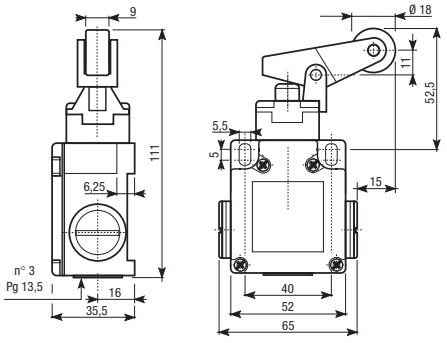


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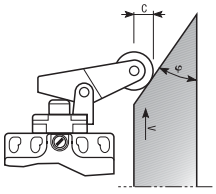
Thermoplastic roller lever with rubber gasket, vertical actuation

Contact element		Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel	Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel
1NO+1NC snap action 13 21 Zb 14 22	00	E30000DM	E30100DM		E30000DMS1	E30100DMS1	
1NO+1NC slow action 21 13 Zb 22 14	01	E30001DM	E30101DM		E30001DMS1	E30101DMS1	
1NO+1NC slow overlap. 25 17 Zb 26 18	02	E30002DM	E30102DM		E30002DMS1	E30102DMS1	
2NO slow action 13 23 X+X 14 24	03	E30003DM	E30103DM		E30003DMS1	E30103DMS1	
2NC slow action 11 21 Y+Y 12 22	04	E30004DM	E30104DM		E30004DMS1	E30104DMS1	
2NC snap action 11 21 Y+Y 12 22	05	E30005DM	E30105DM		E30005DMS1	E30105DMS1	
Weight	kg	0,325			0,325		
Pack	pcs	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



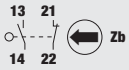
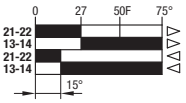
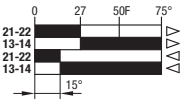
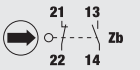
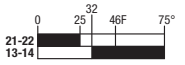
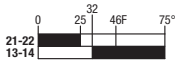
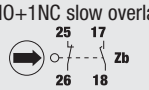
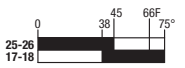
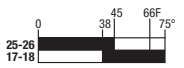
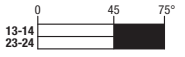
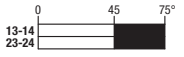
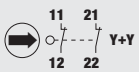
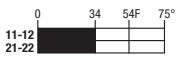
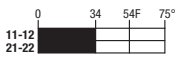
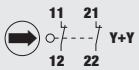
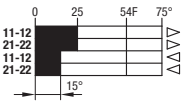
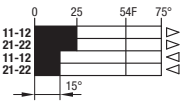
Thermoplastic roller lever

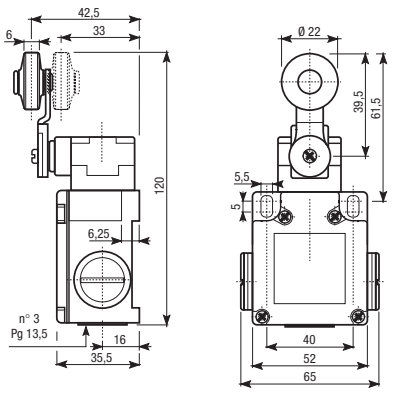
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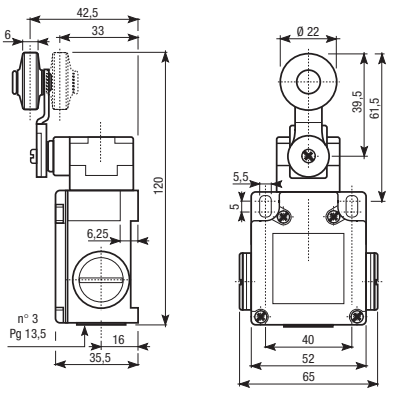


Steel roller lever

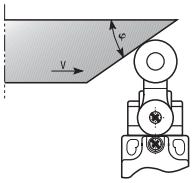
E•RA

Contact element		Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel	Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E30000EM	E30100EM		E30000EMRA	E30100EMRA	
1NO+1NC slow action 	01	E30001EM	E30101EM		E30001EMRA	E30101EMRA	
1NO+1NC slow overlap. 	02	E30002EM	E30102EM		E30002EMRA	E30102EMRA	
2NO slow action 	03	E30003EM	E30103EM		E30003EMRA	E30103EMRA	
2NC slow action 	04	E30004EM	E30104EM		E30004EMRA	E30104EMRA	
2NC snap action 	05	E30005EM	E30105EM		E30005EMRA	E30105EMRA	
Weight	kg	0,355			0,355		
Pack	pcs	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	15 Ncm
Minimum forced opening force	35 Ncm



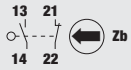
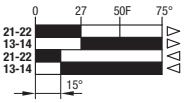
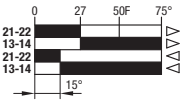
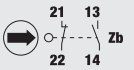
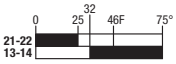
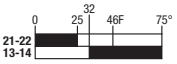
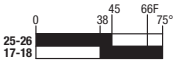
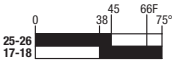
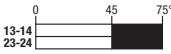
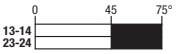
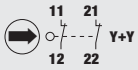
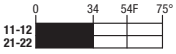
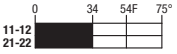
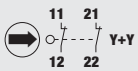
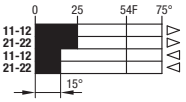
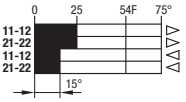
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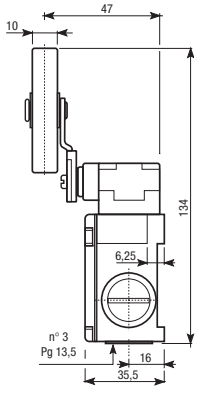
Ø50 mm rubber roller lever

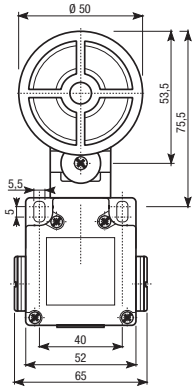


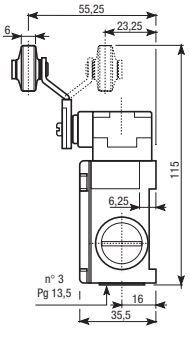
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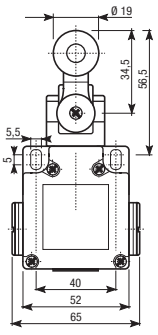
Thermoplastic roller lever

Contact element		Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel	Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E30000EM50	E30100EM50		E30000IM	E30100IM	
1NO+1NC slow action 	01	E30001EM50	E30101EM50		E30001IM	E30101IM	
1NO+1NC slow overlap. 	02	E30002EM50	E30102EM50		E30002IM	E30102IM	
2NO slow action 	03	E30003EM50	E30103EM50		E30003IM	E30103IM	
2NC slow action 	04	E30004EM50	E30104EM50		E30004IM	E30104IM	
2NC snap action 	05	E30005EM50	E30105EM50		E30005IM	E30105IM	
Weight	kg	0,365			0,365		
Pack	pcs	1			1		

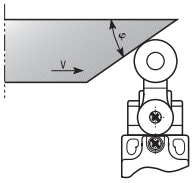








Drive cam operating parameters



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

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



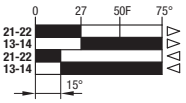
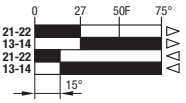
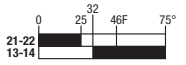
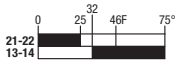
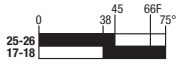
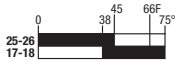
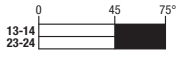
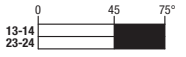
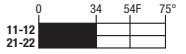
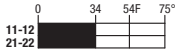
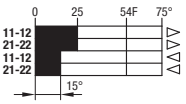
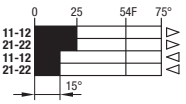
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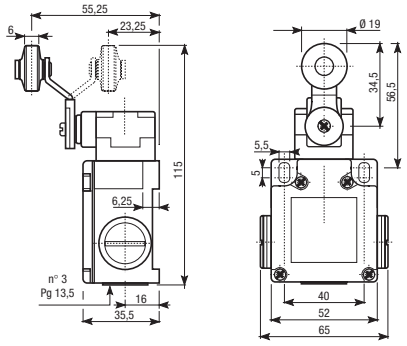
Steel roller lever

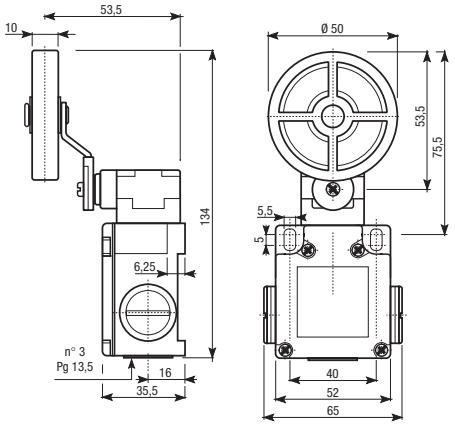


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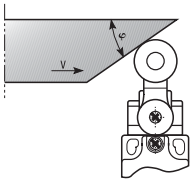
Ø50 mm rubber roller lever

Contact element		Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel	Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel
1NO+1NC snap action	00	E30000IMRA	E30100IMRA		E30000IM50	E30100IM50	
1NO+1NC slow action	01	E30001IMRA	E30101IMRA		E30001IM50	E30101IM50	
1NO+1NC slow overlap.	02	E30002IMRA	E30102IMRA		E30002IM50	E30102IM50	
2NO slow action	03	E30003IMRA	E30103IMRA		E30003IM50	E30103IM50	
2NC slow action	04	E30004IMRA	E30104IMRA		E30004IM50	E30104IM50	
2NC snap action	05	E30005IMRA	E30105IMRA		E30005IM50	E30105IM50	
Weight	kg	0,355			0,365		
Pack	pcs	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	15 Ncm
Minimum forced opening force	35 Ncm



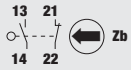
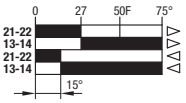
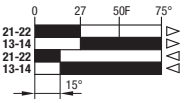
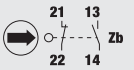
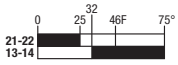
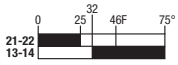
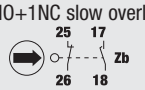
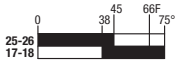
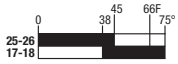
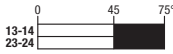
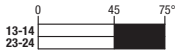
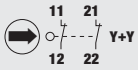
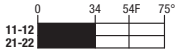
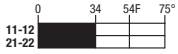
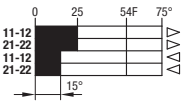
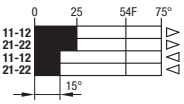
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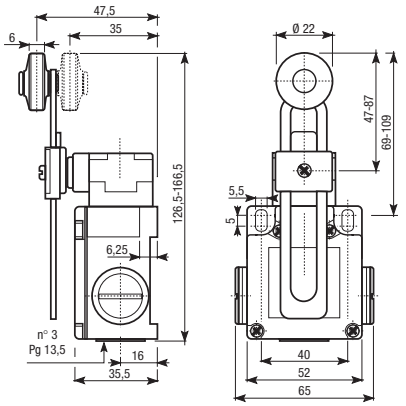
Thermoplastic roller variable length lever

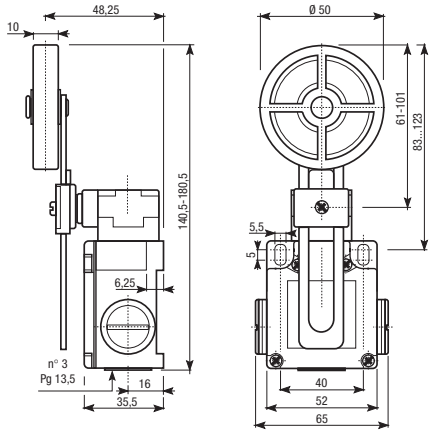


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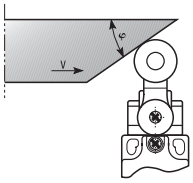
Ø50 mm rubber roller variable length lever

Contact element		Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel	Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E30000FM	E30100FM		E30000FM50	E30100FM50	
1NO+1NC slow action 	01	E30001FM	E30101FM		E30001FM50	E30101FM50	
1NO+1NC slow overlap. 	02	E30002FM	E30102FM		E30002FM50	E30102FM50	
2NO slow action 	03	E30003FM	E30103FM		E30003FM50	E30103FM50	
2NC slow action 	04	E30004FM	E30104FM		E30004FM50	E30104FM50	
2NC snap action 	05	E30005FM	E30105FM		E30005FM50	E30105FM50	
Weight	kg	0,375			0,385		
Pack	pcs	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	15 Ncm
Minimum forced opening force	35 Ncm



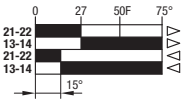
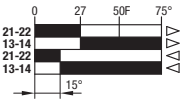
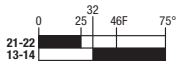
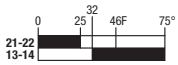
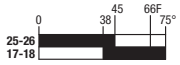
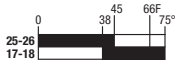
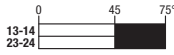
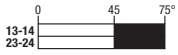
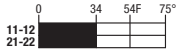
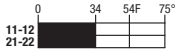
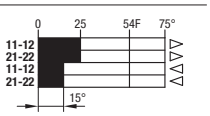
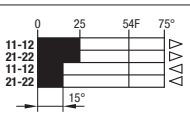
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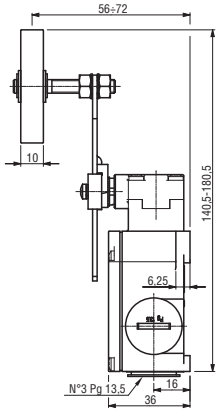
Ø50 mm rubber roller adjustable lever

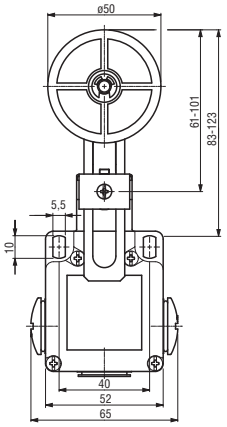


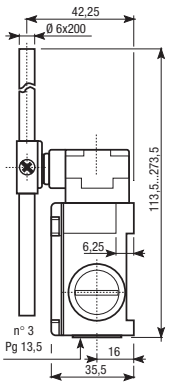
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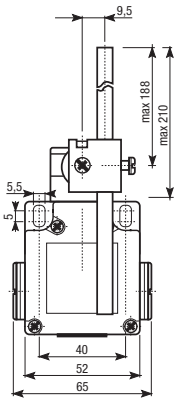
Side rotary adjustable Ø6 mm glass fiber rod

Contact element		Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel	Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel
1NO+1NC snap action	00	E30000FRM50	E30100FRM50		E30000GM	E30100GM	
1NO+1NC slow action	01	E30001FRM50	E30101FRM50		E30001GM	E30101GM	
1NO+1NC slow overlap.	02	E30002FRM50	E30102FRM50		E30002GM	E30102GM	
2NO slow action	03	E30003FRM50	E30103FRM50		E30003GM	E30103GM	
2NC slow action	04	E30004FRM50	E30104FRM50		E30004GM	E30104GM	
2NC snap action	05	E30005FRM50	E30105FRM50		E30005GM	E30105GM	
Weight	kg	0,395			0,385		
Pack	pcs	1			1		

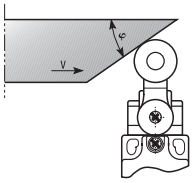








Drive cam operating parameters



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

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



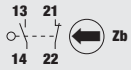
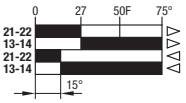
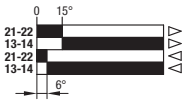
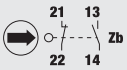
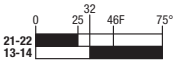
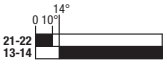
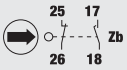
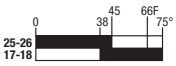
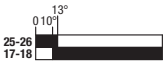
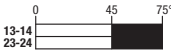
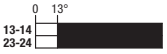
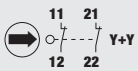
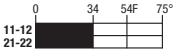
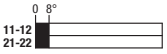
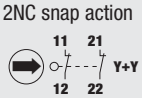
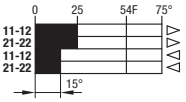
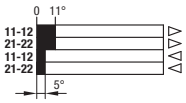
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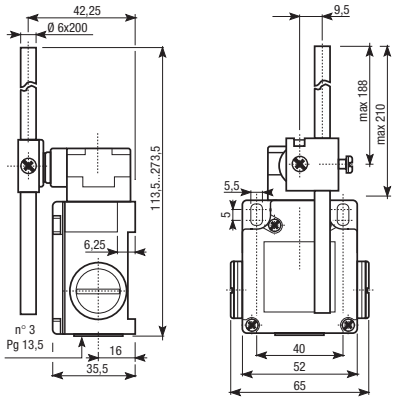
Side rotary adjustable Ø6 mm aluminium rod

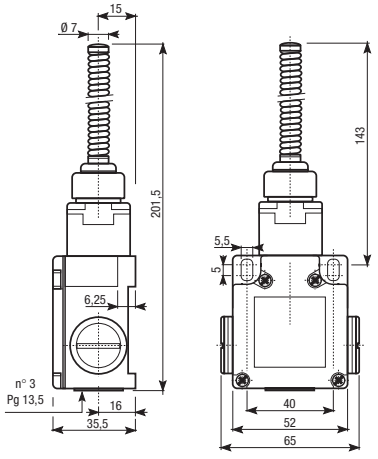


L

Flexible rod

Contact element		Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel	Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E30000HM	E30100HM		E30000LM	E30100LM	
1NO+1NC slow action 	01	E30001HM	E30101HM		E30001LM	E30101LM	
1NO+1NC slow overlap. 	02	E30002HM	E30102HM		E30002LM	E30102LM	
2NO slow action 	03	E30003HM	E30103HM		E30003LM	E30103LM	
2NC slow action 	04	E30004HM	E30104HM		E30004LM	E30104LM	
2NC snap action 	05	E30005HM	E30105HM		E30005LM	E30105LM	
Weight	kg	0,385			0,35		
Pack	pcs	1			1		







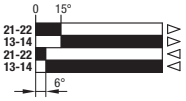
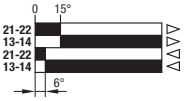
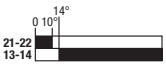
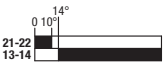
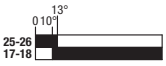
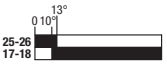
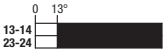
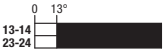
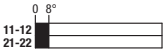
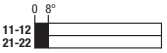
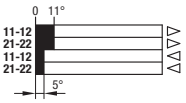
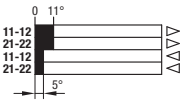
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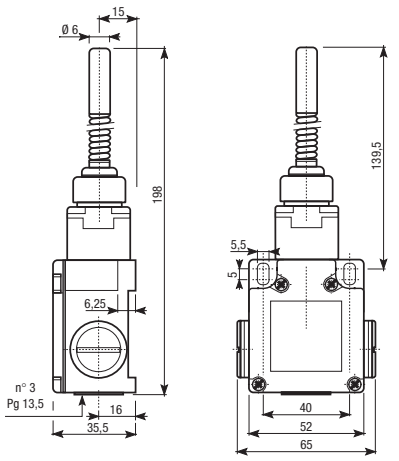
Flexible rod with plastic terminal

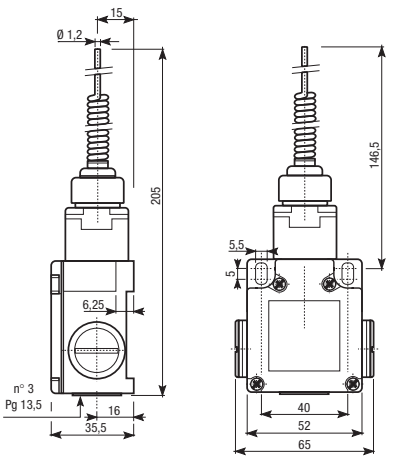


LS

Cat's whisker

Contact element		Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel	Cable entry PG 13,5 Metal head Metal body	Cable entry M20 x 1,5 Metal head Metal body	Contact travel
1NO+1NC snap action 13 21 Zb 14 22	00	E30000LPM	E30100LPM		E30000LSM	E30100LSM	
1NO+1NC slow action 21 13 Zb 22 14	01	E30001LPM	E30101LPM		E30001LSM	E30101LSM	
1NO+1NC slow overlap. 25 17 Zb 26 18	02	E30002LPM	E30102LPM		E30002LSM	E30102LSM	
2NO slow action 13 23 X+X 14 24	03	E30003LPM	E30103LPM		E30003LSM	E30103LSM	
2NC slow action 11 21 Y+Y 12 22	04	E30004LPM	E30104LPM		E30004LSM	E30104LSM	
2NC snap action 11 21 Y+Y 12 22	05	E30005LPM	E30105LPM		E30005LSM	E30105LSM	
Weight	kg	0,35			0,35		
Pack	pcs	1			1		



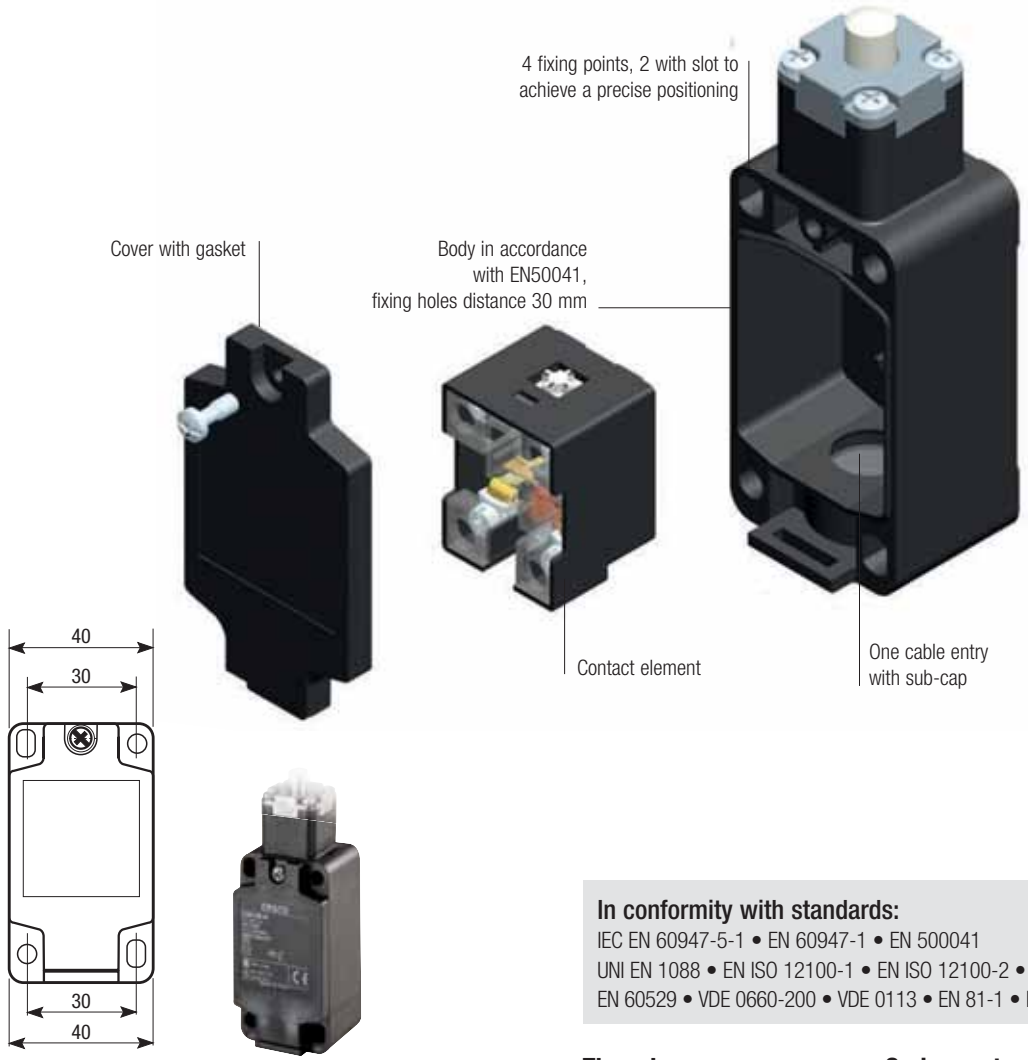


Limit switches
E400 series



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:

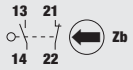
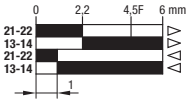
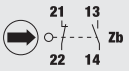
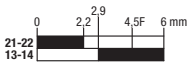
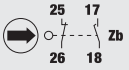
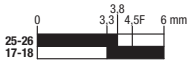
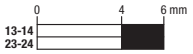
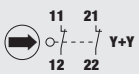
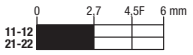
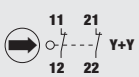
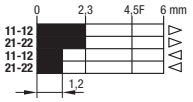
In conformity with standards:
IEC EN 60947-5-1 • EN 60947-1 • EN 500041
UNI EN 1088 • EN ISO 12100-1 • EN ISO 12100-2 • IEC 529
EN 60529 • VDE 0660-200 • VDE 0113 • EN 81-1 • EN 81-2

Thread	Series part no.
Pg 13,5	E400…
M20x1,5	E401…
1/2" NPT (on request)	E402…
M12 connector (on request)	E400…M12

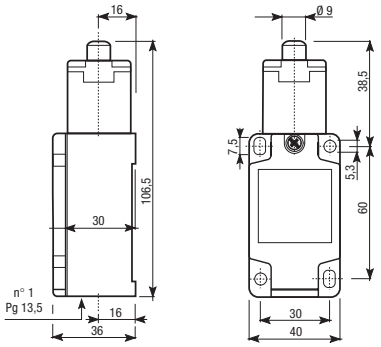
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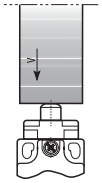
Steel plunger

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC azione rapida 	00	E40000AI*	E40000AM*	E40100AI*	E40100AM*	
1NO+1NC azione lenta 	01	E40001AI*	E40001AM*	E40101AI*	E40101AM*	
1NO+1NC lenta sovrap. 	02	E40002AI	E40002AM	E40102AI	E40102AM	
2NO azione lenta 	03	E40003AI	E40003AM	E40103AI	E40103AM	
2NC azione lenta 	04	E40004AI	E40004AM	E40104AI	E40104AM	
2NC azione rapida 	05	E40005AI	E40005AM	E40105AI	E40105AM	
Weight	kg	0,245	0,36	0,245	0,36	
Pack	pcs	1	1	1	1	

* form conforming to EN 50041



Drive cam operating parameters

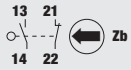
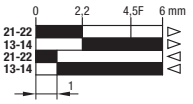
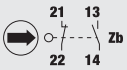
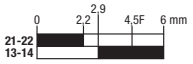
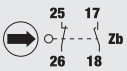
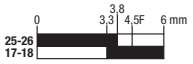
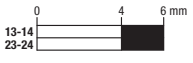
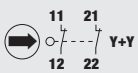
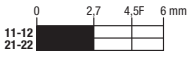
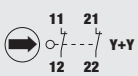
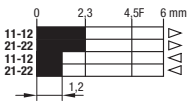


V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

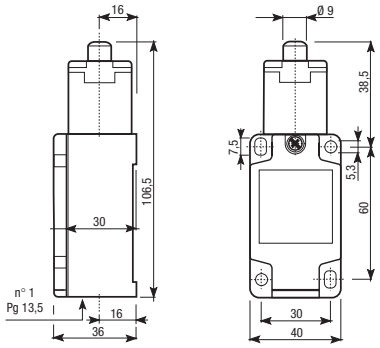
A•S1



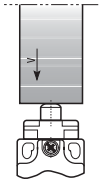
Steel plunger with rubber gasket

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	**E40000AIS1***	**E40000AMS1***	**E40100AIS1***	**E40100AMS1***	
1NO+1NC slow action 	01	**E40001AIS1***	**E40001AMS1***	**E40101AIS1***	**E40101AMS1***	
1NO+1NC slow overlap. 	02	**E40002AIS1**	**E40002AMS1**	**E40102AIS1**	**E40102AMS1**	
2NO slow action 	03	**E40003AIS1**	**E40003AMS1**	**E40103AIS1**	**E40103AMS1**	
2NC slow action 	04	**E40004AIS1**	**E40004AMS1**	**E40104AIS1**	**E40104AMS1**	
2NC snap action 	05	**E40005AIS1**	**E40005AMS1**	**E40105AIS1**	**E40105AMS1**	
Weight	**kg**	0,245	0,36	0,245	0,36	
Pack	**pcs**	1	1	1	1	

* form conforming to EN 50041



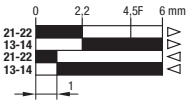
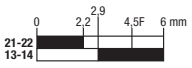
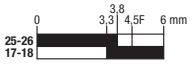
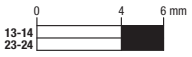
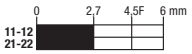
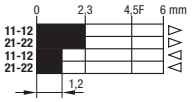
Drive cam operating parameters



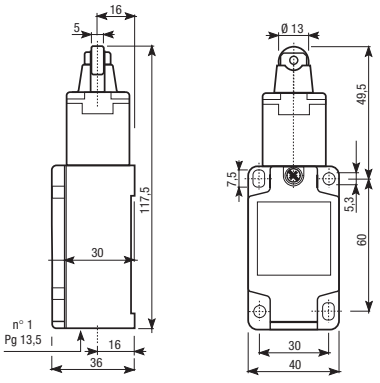
V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



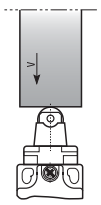
Steel roller plunger

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action	00	**E40000BI***	**E40000BM***	**E40100BI***	**E40100BM***	
1NO+1NC slow action	01	**E40001BI***	**E40001BM***	**E40101BI***	**E40101BM***	
1NO+1NC slow overlap.	02	**E40002BI**	**E40002BM**	**E40102BI**	**E40102BM**	
2NO slow action	03	**E40003BI**	**E40003BM**	**E40103BI**	**E40103BM**	
2NC slow action	04	**E40004BI**	**E40004BM**	**E40104BI**	**E40104BM**	
2NC snap action	05	**E40005BI**	**E40005BM**	**E40105BI**	**E40105BM**	
Weight	kg	0,255	0,37	0,255	0,37	
Pack	pcs	1	1	1	1	

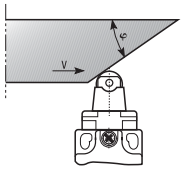
* form conforming to EN 50041



Drive cam operating parameters



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



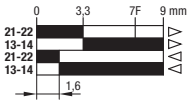
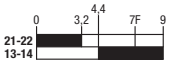
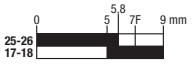
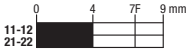
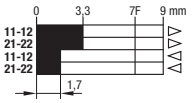
φ	V max (m/s)
20°	1
30°	0,5

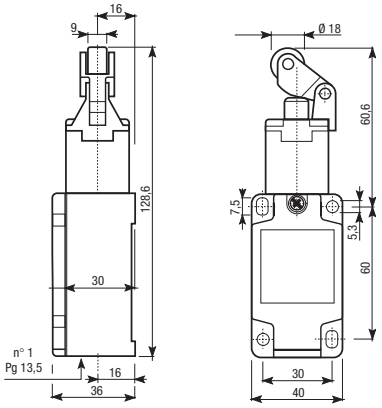
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

C

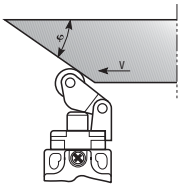


Thermoplastic roller lever, side actuation

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action (13 21 / 14 22 Zb)	00	E40000CI	E40000CM	E40100CI	E40100CM	
1NO+1NC slow action (21 13 / 22 14 Zb)	01	E40001CI	E40001CM	E40101CI	E40101CM	
1NO+1NC slow overlap. (25 17 / 26 18 Zb)	02	E40002CI	E40002CM	E40102CI	E40102CM	
2NO slow action (13 23 / 14 24 X+X)	03	E40003CI	E40003CM	E40103CI	E40103CM	
2NO slow action (11 21 / 12 22 Y+Y)	04	E40004CI	E40004CM	E40104CI	E40104CM	
2NO snap action (11 21 / 12 22 Y+Y)	05	E40005CI	E40005CM	E40105CI	E40105CM	
Weight	kg	0,255	0,37	0,255	0,37	
Pack	pcs	1	1	1	1	



Drive cam operating parameters



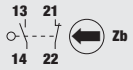
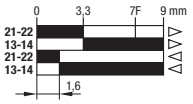
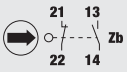
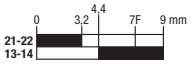
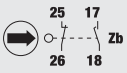
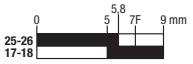
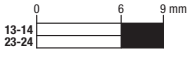
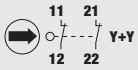
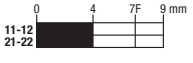
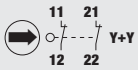
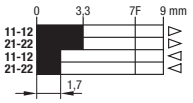
φ	V max (m/s)
20°	1
30°	0,5

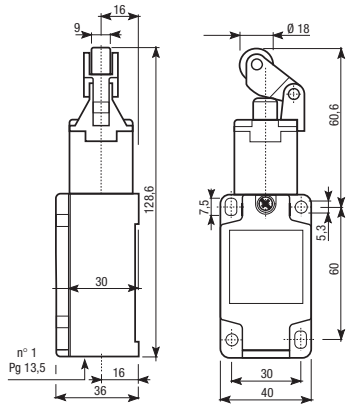
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

C•S1

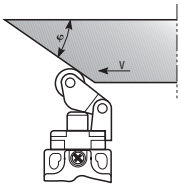


Thermoplastic roller lever with rubber gasket, side actuation

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E40000CIS1	E40000CMS1	E40100CIS1	E40100CMS1	
1NO+1NC slow action 	01	E40001CIS1	E40001CMS1	E40101CIS1	E40101CMS1	
1NO+1NC slow overlap. 	02	E40002CIS1	E40002CMS1	E40102CIS1	E40102CMS1	
2NO slow action 	03	E40003CIS1	E40003CMS1	E40103CIS1	E40103CMS1	
2NC slow action 	04	E40004CIS1	E40004CMS1	E40104CIS1	E40104CMS1	
2NC snap action 	05	E40005CIS1	E40005CMS1	E40105CIS1	E40105CMS1	
Weight	kg	0,255	0,37	0,255	0,37	
Pack	pcs	1	1	1	1	



Drive cam operating parameters



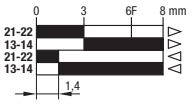
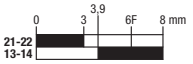
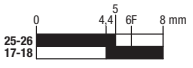
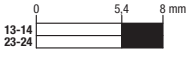
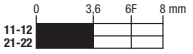
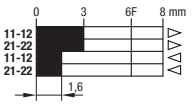
φ	V max (m/s)
20°	1
30°	0,5

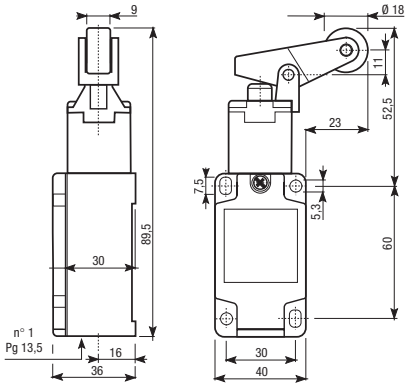
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

D

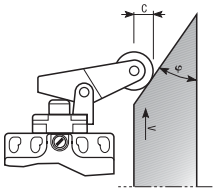


Thermoplastic roller lever, vertical actuation

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action	00	**E40000DI**	**E40000DM**	**E40100DI**	**E40100DM**	
1NO+1NC slow action	01	**E40001DI**	**E40001DM**	**E40101DI**	**E40101DM**	
1NO+1NC slow overlap.	02	**E40002DI**	**E40002DM**	**E40102DI**	**E40102DM**	
2NO slow action	03	**E40003DI**	**E40003DM**	**E40103DI**	**E40103DM**	
2NC slow action	04	**E40004DI**	**E40004DM**	**E40104DI**	**E40104DM**	
2NC snap action	05	**E40005DI**	**E40005DM**	**E40105DI**	**E40105DM**	
Weight	kg	0,255	0,37	0,255	0,37	
Pack	pcs	1	1	1	1	



Drive cam operating parameters



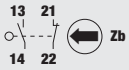
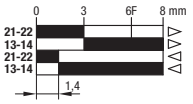
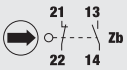
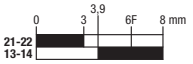
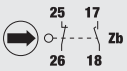
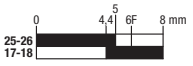
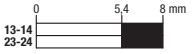
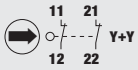
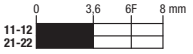
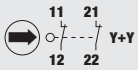
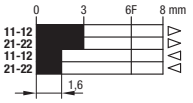
φ	V max (m/s)
20°	1
30°	0,5

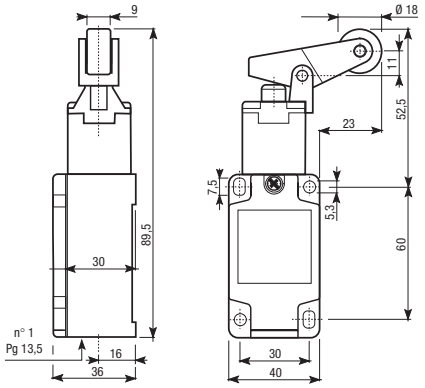
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

D•S1

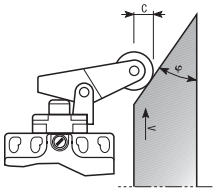


Thermoplastic roller lever with rubber gasket, vertical actuation

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E40000DIS1	E40000DMS1	E40100DIS1	E40100DMS1	
1NO+1NC slow action 	01	E40001DIS1	E40001DMS1	E40101DIS1	E40101DMS1	
1NO+1NC slow overlap. 	02	E40002DIS1	E40002DMS1	E40102DIS1	E40102DMS1	
2NO slow action 	03	E40003DIS1	E40003DMS1	E40103DIS1	E40103DMS1	
2NC slow action 	04	E40004DIS1	E40004DMS1	E40104DIS1	E40104DMS1	
2NC snap action 	05	E40005DIS1	E40005DMS1	E40105DIS1	E40105DMS1	
Weight	kg	0,255	0,37	0,255	0,37	
Pack	pcs	1	1	1	1	



Drive cam operating parameters

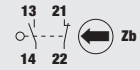
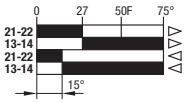
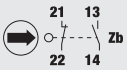
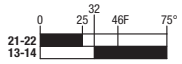
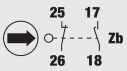
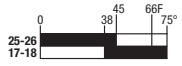
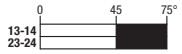
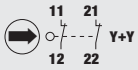
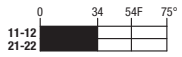
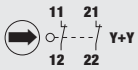
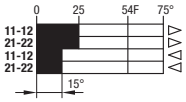


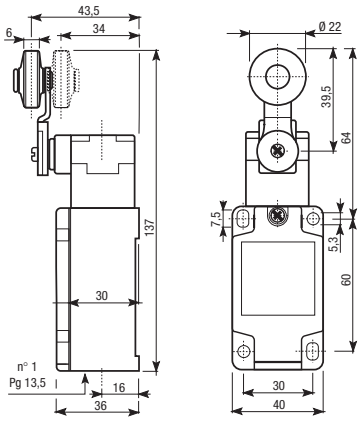
φ	V max (m/s)
20°	1
30°	0,5

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

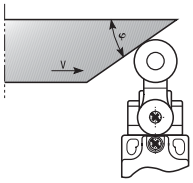


Thermoplastic roller lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E40000EI	E40000EM	E40100EI	E40100EM	
1NO+1NC slow action 	01	E40001EI	E40001EM	E40101EI	E40101EM	
1NO+1NC slow overlap. 	02	E40002EI	E40002EM	E40102EI	E40102EM	
2NO slow action 	03	E40003EI	E40003EM	E40103EI	E40103EM	
2NC slow action 	04	E40004EI	E40004EM	E40104EI	E40104EM	
2NC snap action 	05	E40005EI	E40005EM	E40105EI	E40105EM	
Weight	kg	0,285	0,4	0,285	0,4	
Pack	pcs	1	1	1	1	



Drive cam operating parameters



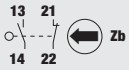
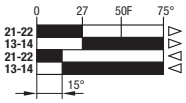
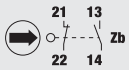
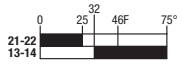
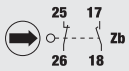
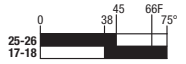
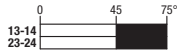
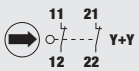
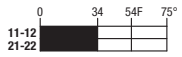
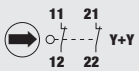
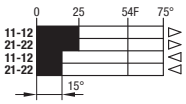
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

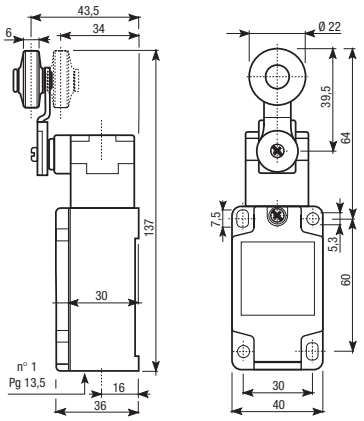
Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

E•RA

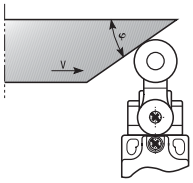


Steel roller lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E40000EIRA	E40000EMRA	E40100EIRA	E40100EMRA	
1NO+1NC slow action 	01	E40001EIRA	E40001EMRA	E40101EIRA	E40101EMRA	
1NO+1NC slow overlap. 	02	E40002EIRA	E40002EMRA	E40102EIRA	E40102EMRA	
2NO slow action 	03	E40003EIRA	E40003EMRA	E40103EIRA	E40103EMRA	
2NC slow action 	04	E40004EIRA	E40004EMRA	E40104EIRA	E40104EMRA	
2NC snap action 	05	E40005EIRA	E40005EMRA	E40105EIRA	E40105EMRA	
Weight	kg	0,285	0,4	0,285	0,4	
Pack	pcs	1	1	1	1	



Drive cam operating parameters



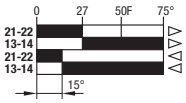
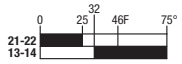
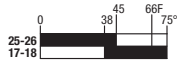
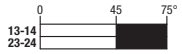
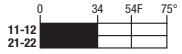
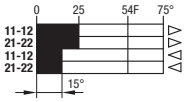
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

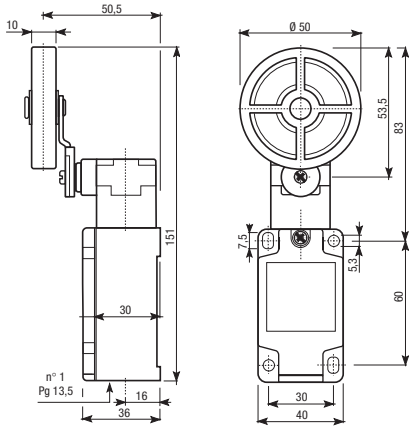
Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

E•50

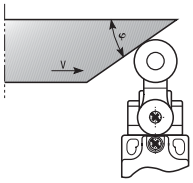


Ø50 mm rubber roller lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action (13 21 / 14 22 Zb)	00	E40000EI50	E40000EM50	E40100EI50	E40100EM50	
1NO+1NC slow action (21 13 / 22 14 Zb)	01	E40001EI50	E40001EM50	E40101EI50	E40101EM50	
1NO+1NC slow overlap. (25 17 / 26 18 Zb)	02	E40002EI50	E40002EM50	E40102EI50	E40102EM50	
2NO slow action (13 23 / 14 24 X+X)	03	E40003EI50	E40003EM50	E40103EI50	E40103EM50	
2NO slow action (11 21 / 12 22 Y+Y)	04	E40004EI50	E40004EM50	E40104EI50	E40104EM50	
2NC snap action (11 21 / 12 22 Y+Y)	05	E40005EI50	E40005EM50	E40105EI50	E40105EM50	
Weight	kg	0,295	0,41	0,295	0,41	
Pack	pcs	1	1	1	1	



Drive cam operating parameters

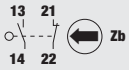
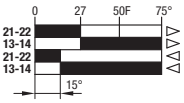
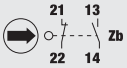
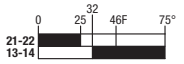
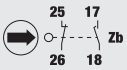
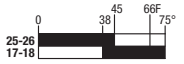
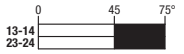
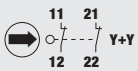
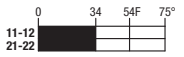
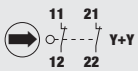
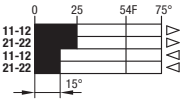


φ	V max (m/s)
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45°	1
60°	0,75
60-90°	0,25

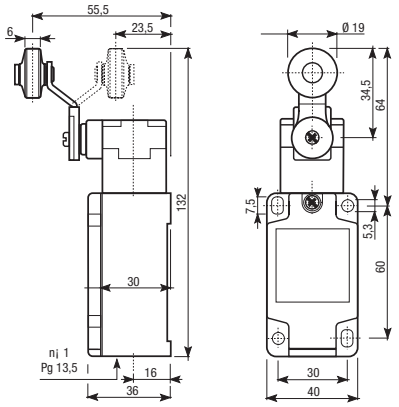
Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm



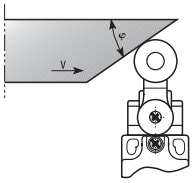
Leva piegata con rotella in plastica

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC azione rapida 	00	E40000II*	E40000IM*	E40100II*	E40100IM*	
1NO+1NC azione lenta 	01	E40001II*	E40001IM*	E40101II*	E40101IM*	
1NO+1NC lenta sovrap. 	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



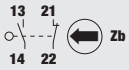
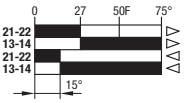
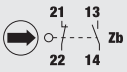
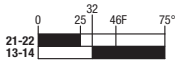
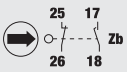
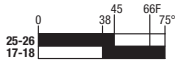
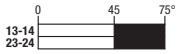
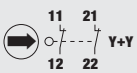
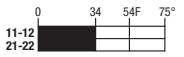
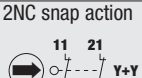
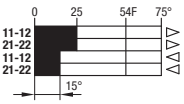
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

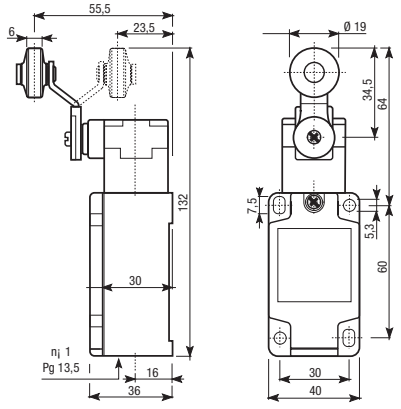
Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

I•RA

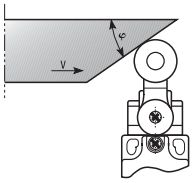


Steel roller lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	**E40000IIRA**	**E40000IMRA**	**E40100IIRA**	**E40100IMRA**	
1NO+1NC slow action 	01	**E40001IIRA**	**E40001IMRA**	**E40101IIRA**	**E40101IMRA**	
1NO+1NC slow overlap. 	02	**E40002IIRA**	**E40002IMRA**	**E40102IIRA**	**E40102IMRA**	
2NO slow action 	03	**E40003IIRA**	**E40003IMRA**	**E40103IIRA**	**E40103IMRA**	
2NC slow action 	04	**E40004IIRA**	**E40004IMRA**	**E40104IIRA**	**E40104IMRA**	
2NC snap action 	05	**E40005IIRA**	**E40005IMRA**	**E40105IIRA**	**E40105IMRA**	
Weight	kg	0,285	0,4	0,285	0,4	
Pack	pcs	1	1	1	1	



Drive cam operating parameters

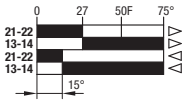
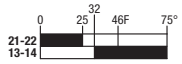
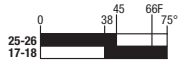
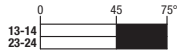
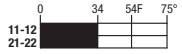
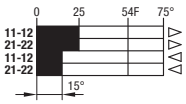


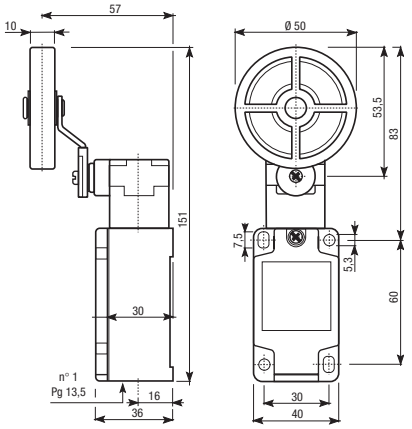
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

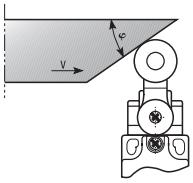


Ø50 mm rubber roller lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 13 21 Zb 14 22	00	**E40000II50**	**E40000IM50**	**E40100II50**	**E40100IM50**	
1NO+1NC slow action 21 13 Zb 22 14	01	**E40001II50**	**E40001IM50**	**E40101II50**	**E40101IM50**	
1NO+1NC slow overlap. 25 17 Zb 26 18	02	**E40002II50**	**E40002IM50**	**E40102II50**	**E40102IM50**	
2NO slow action 13 23 X+X 14 24	03	**E40003II50**	**E40003IM50**	**E40103II50**	**E40103IM50**	
2NC slow action 11 21 Y+Y 12 22	04	**E40004II50**	**E40004IM50**	**E40104II50**	**E40104IM50**	
2NC snap action 11 21 Y+Y 12 22	05	**E40005II50**	**E40005IM50**	**E40105II50**	**E40105IM50**	
Weight	kg	0,295	0,41	0,295	0,41	
Pack	pcs	1	1	1	1	



Drive cam operating parameters



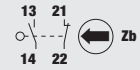
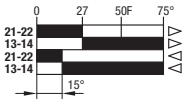
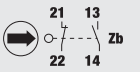
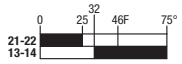
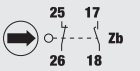
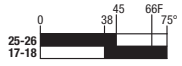
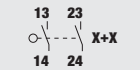
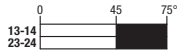
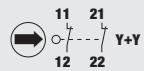
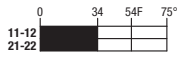
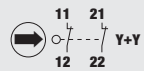
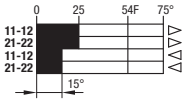
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

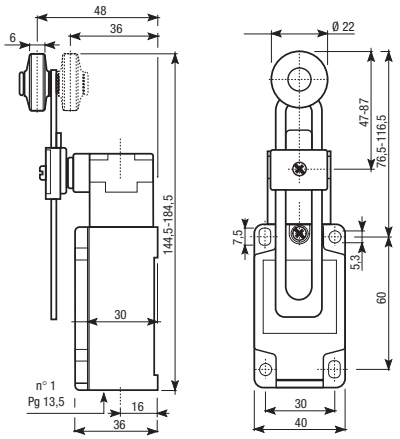
Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

F

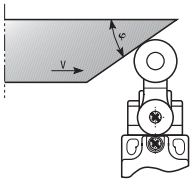


Thermoplastic roller variable length lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E40000FI	E40000FM	E40100FI	E40100FM	
1NO+1NC slow action 	01	E40001FI	E40001FM	E40101FI	E40101FM	
1NO+1NC slow overlap. 	02	E40002FI	E40002FM	E40102FI	E40102FM	
2NO slow action 	03	E40003FI	E40003FM	E40103FI	E40103FM	
2NC slow action 	04	E40004FI	E40004FM	E40104FI	E40104FM	
2NC snap action 	05	E40005FI	E40005FM	E40105FI	E40105FM	
Weight	kg	0,305	0,42	0,305	0,42	
Pack	pcs	1	1	1	1	



Drive cam operating parameters

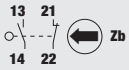
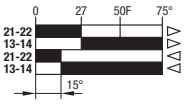
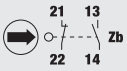
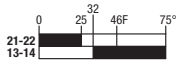
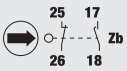
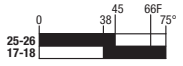
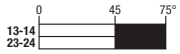
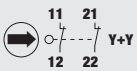
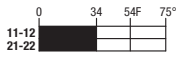
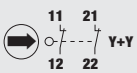
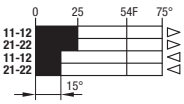


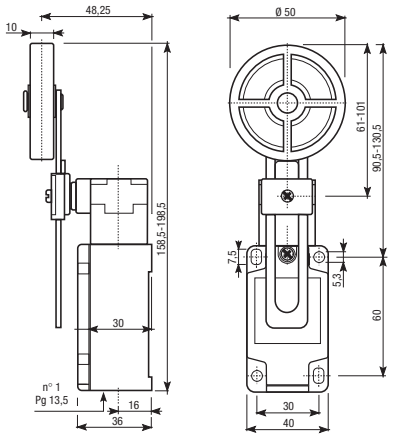
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

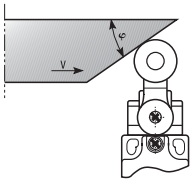


Ø50 mm rubber roller variable length lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
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



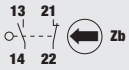
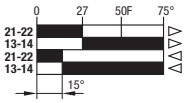
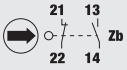
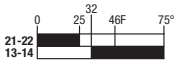
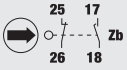
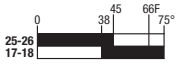
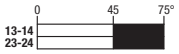
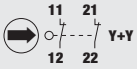
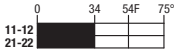
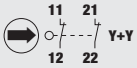
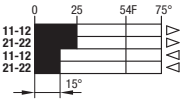
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

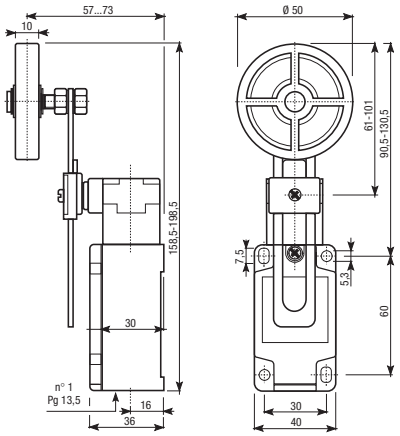
Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

FR•50

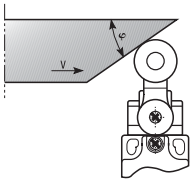


Ø50 mm rubber roller adjustable lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC azione rapida 	00	E40000FRI50	E40000FRM50	E40100FRI50	E40100FRM50	
1NO+1NC azione lenta 	01	E40001FRI50	E40001FRM50	E40101FRI50	E40101FRM50	
1NO+1NC lenta sovrap. 	02	E40002FRI50	E40002FRM50	E40102FRI50	E40102FRM50	
2NO azione lenta 	03	E40003FRI50	E40003FRM50	E40103FRI50	E40103FRM50	
2NC azione lenta 	04	E40004FRI50	E40004FRM50	E40104FRI50	E40104FRM50	
2NC azione rapida 	05	E40005FRI50	E40005FRM50	E40105FRI50	E40105FRM50	
Weight	kg	0,325	0,44	0,325	0,44	
Pack	pcs	1	1	1	1	



Drive cam operating parameters

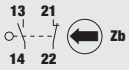
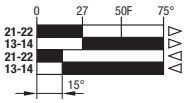
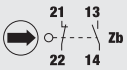
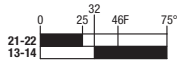
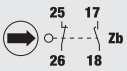
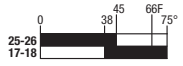
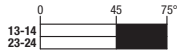
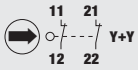
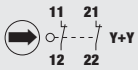
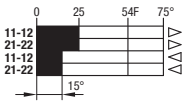


φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

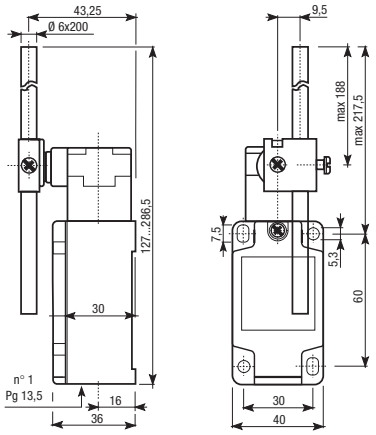
Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm



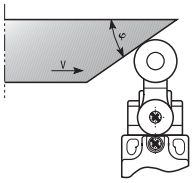
Side rotary adjustable Ø6 mm glass fiber rod

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E40000GI*	E40000GM*	E40100GI*	E40100GM*	
1NO+1NC slow action 	01	E40001GI*	E40001GM*	E40101GI*	E40101GM*	
1NO+1NC slow overlap. 	02	E40002GI	E40002GM	E40102GI	E40102GM	
2NO slow action 	03	E40003GI	E40003GM	E40103GI	E40103GM	
2NC slow action 	04	E40004GI	E40004GM	E40104GI	E40104GM	
2NC snap action 	05	E40005GI	E40005GM	E40105GI	E40105GM	
Weight	kg	0,21	0,425	0,21	0,425	
Pack	pcs	1	1	1	1	

* form conforming to EN 50041



Drive cam operating parameters



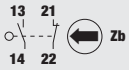
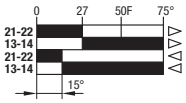
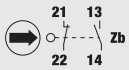
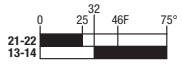
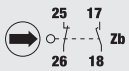
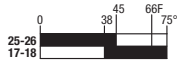
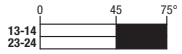
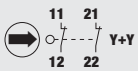
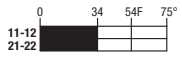
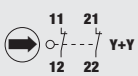
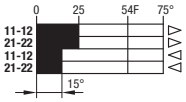
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

Drive forces	
Minimum command force	25 Ncm
Minimum forced opening force	45 Ncm

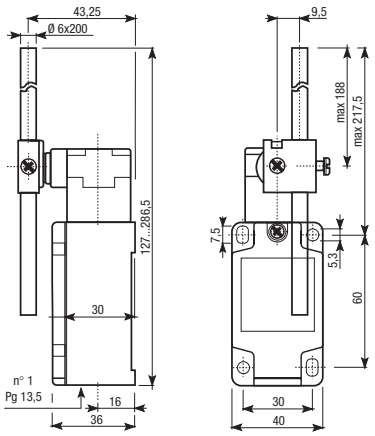
H



Side rotary adjustable Ø6 mm aluminium rod

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E40000HI*	E40000HM*	E40100HI*	E40100HM*	
1NO+1NC slow action 	01	E40001HI*	E40001HM*	E40101HI*	E40101HM*	
1NO+1NC slow overlap. 	02	E40002HI	E40002HM	E40102HI	E40102HM	
2NO slow action 	03	E40003HI	E40003HM	E40103HI	E40103HM	
2NC slow action 	04	E40004HI	E40004HM	E40104HI	E40104HM	
2NC snap action 	05	E40005HI	E40005HM	E40105HI	E40105HM	
Weight	kg	0,21	0,425	0,21	0,425	
Pack	pcs	1	1	1	1	

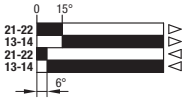
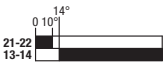
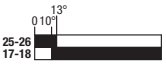
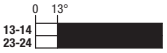
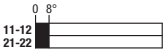
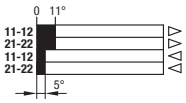
* form conforming to EN 50041

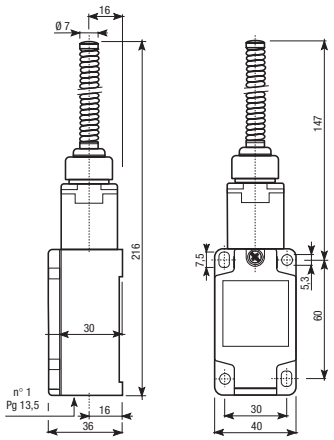


L



Flexible rod

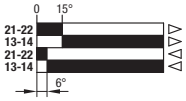
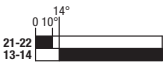
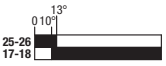
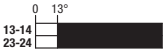
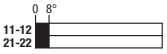
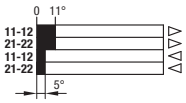
Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 13 21 Zb 14 22	00	E40000LI	E40000LM	E40100LI	E40100LM	
1NO+1NC slow action 21 13 Zb 22 14	01	E40001LI	E40001LM	E40101LI	E40101LM	
1NO+1NC slow overlap. 25 17 Zb 26 18	02	E40002LI	E40002LM	E40102LI	E40102LM	
2NO slow action 13 23 X+X 14 24	03	E40003LI	E40003LM	E40103LI	E40103LM	
2NC slow action 11 21 Y+Y 12 22	04	E40004LI	E40004LM	E40104LI	E40104LM	
2NC snap action 11 21 Y+Y 12 22	05	E40005LI	E40005LM	E40105LI	E40105LM	
Weight kg		0,28	0,395	0,28	0,395	
Pack pcs		1	1	1	1	

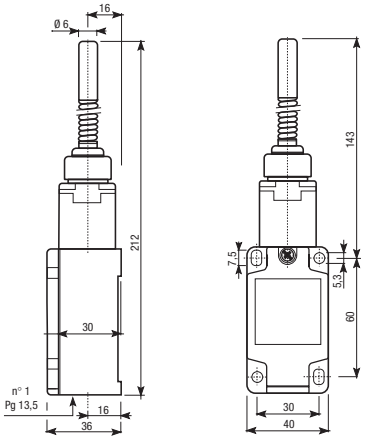


LP



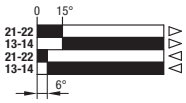
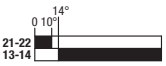
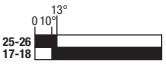
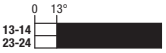
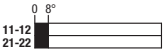
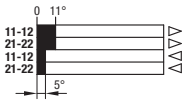
Flexible rod with plastic terminal

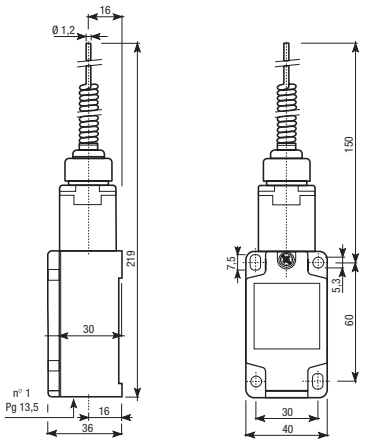
Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 13 21 Zb 14 22	00	E40000LPI	E40000LPM	E40100LPI	E40100LPM	
1NO+1NC slow action 21 13 Zb 22 14	01	E40001LPI	E40001LPM	E40101LPI	E40101LPM	
1NO+1NC slow overlap. 25 17 Zb 26 18	02	E40002LPI	E40002LPM	E40102LPI	E40102LPM	
2NO slow action 13 23 X+X 14 24	03	E40003LPI	E40003LPM	E40103LPI	E40103LPM	
2NC slow action 11 21 Y+Y 12 22	04	E40004LPI	E40004LPM	E40104LPI	E40104LPM	
2NC snap action 11 21 Y+Y 12 22	05	E40005LPI	E40005LPM	E40105LPI	E40105LPM	
Weight	kg	0,28	0,395	0,28	0,395	
Pack	pcs	1	1	1	1	





Cat's whisker

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 13 21 Zb 14 22	00	E40000LSI	E40000LSM	E40100LSI	E40100LSM	
1NO+1NC slow action 21 13 Zb 22 14	01	E40001LSI	E40001LSM	E40101LSI	E40101LSM	
1NO+1NC slow overlap. 25 17 Zb 26 18	02	E40002LSI	E40002LSM	E40102LSI	E40102LSM	
2NO slow action 13 23 X+X 14 24	03	E40003LSI	E40003LSM	E40103LSI	E40103LSM	
2NC slow action 11 21 Y+Y 12 22	04	E40004LSI	E40004LSM	E40104LSI	E40104LSM	
2NC snap action 11 21 Y+Y 12 22	05	E40005LSI	E40005LSM	E40105LSI	E40105LSM	
Weight kg		0,28	0,395	0,28	0,395	
Pack pcs		1	1	1	1	

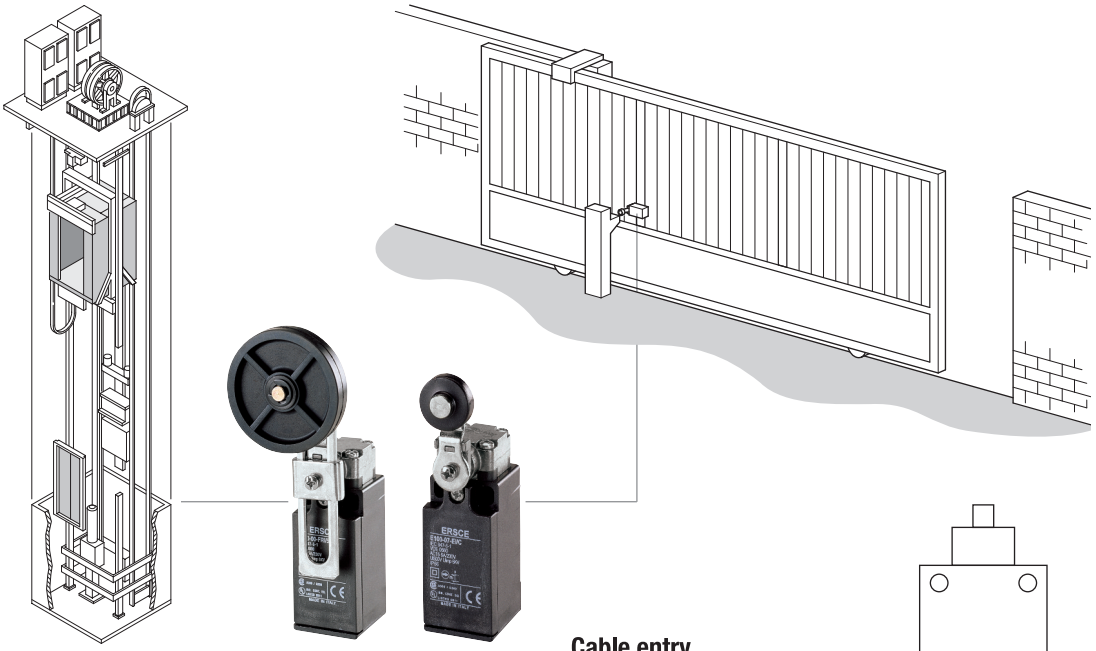


Limit switches for gates and lifts



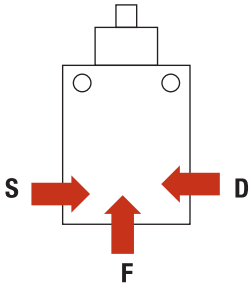
Product for gates and lifts

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.



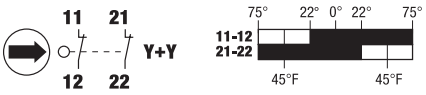
Cable entry

	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:

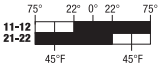
IEC EN 60947-5-1 • EN 60947-1 • UNI EN 1088
EN ISO 12100-1 • EN ISO 12100-2 • IEC 529 • EN 60529
VDE 0660-200 • VDE 0113 • EN 81-1 • EN 81-2

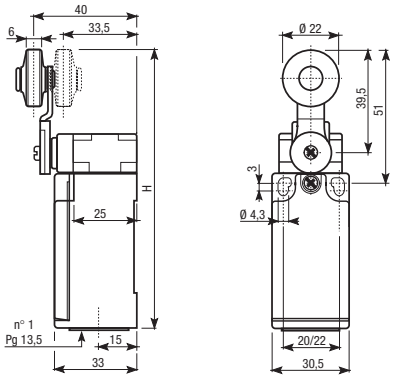
Thread	Series part no.	
Pg 13,5	E100…	E200…
M20x1,5	E101…	E201…
1/2" NPT (on request)	E102…	E202…
Pg 11 (on request)	E103…	
M16x1,5 (on request)	E104…	
M12 connector (on request)	E100…M12	E200…M12

E•C

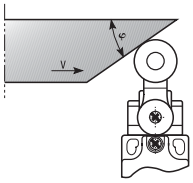


Thermoplastic roller lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
2NC slow action 11 21 Y+Y 12 22	**07**	**E10007EIC**	**E10007EMC**	**E10107EIC**	**E10107EMC**	
Weight	kg	0,081	0,135	0,225	0,081	0,135	0,225
Pack	pcs	1	1	1	1	1	1
H	mm	108,5	108,5	106	108,5	108,5	106



Drive cam operating parameters



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

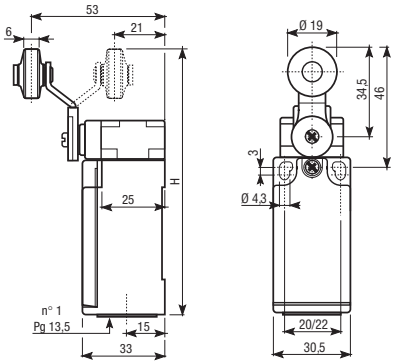
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

I•C

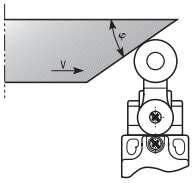


Thermoplastic roller lever

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	
2NC slow action 11 21 12 22 Y+Y	07	**E10007IIC**	**E10007IMC**	**E10107IIC**	**E10107IMC**	75° 22° 0° 22° 75° 11-12 21-22 45°F 45°F
Weight	kg	0,13	0,225	0,13	0,225	
Pack	pcs	1	1	1	1	
H	mm	103,5	101	103,5	101	



Drive cam operating parameters



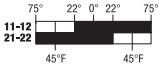
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

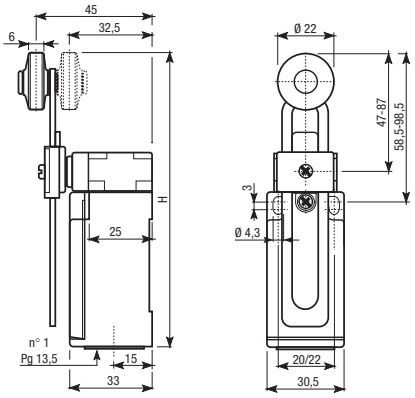
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

F•C

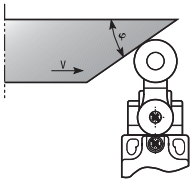


Thermoplastic roller variable length lever

Contact element		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	
2NC slow action 11 21 12 22 Y+Y	07	E10007FIC	E10007FMC	E10107FIC	E10107FMC	
Weight	kg	0,15	0,24	0,15	0,24	
Pack	pcs	1	1	1	1	
H	mm	116 ÷ 156	113,5 ÷ 153,5	103,5	101	



Drive cam operating parameters



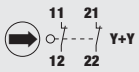
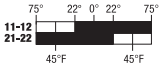
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

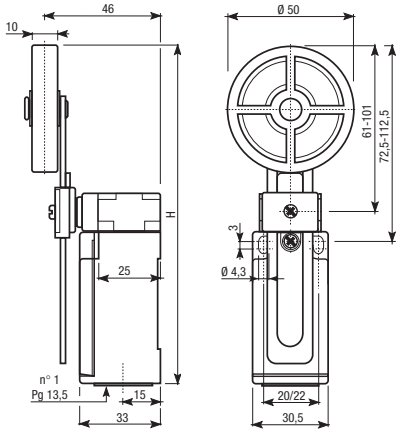
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

F•50C

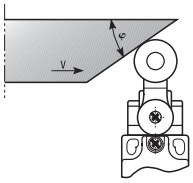


Ø50 mm rubber roller variable length lever

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	
2NC slow action 	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



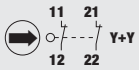
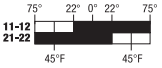
φ	V max (m/s)
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45°	1
60°	0,75
60-90°	0,25

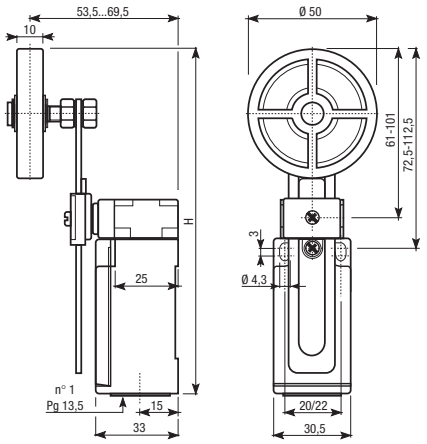
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

FR•50C

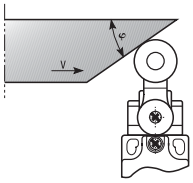


Ø50 mm rubber roller adjustable lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
2NC slow action 	**07**	**E10007FRI50C**	**E10007FRM50C**	**E10107FRI50C**	**E10107FRM50C**	
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



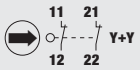
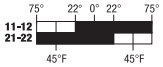
φ	V max (m/s)
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45°	1
60°	0,75
60-90°	0,25

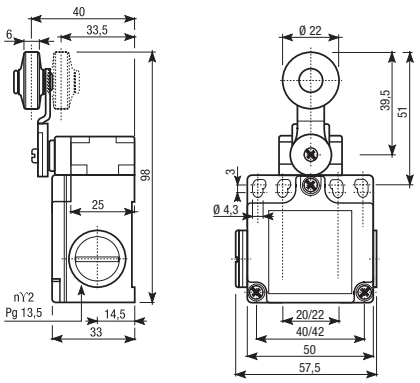
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

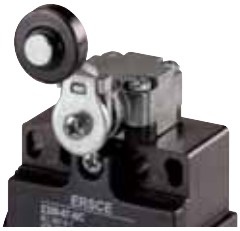


E•C

Thermoplastic roller lever

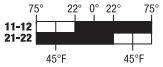
Contact element		Cable entry			
		PG 13,5	M20 x 1,5		
		Metal head Plastic body	Metal head Plastic body	Contact travel	
2NC slow action 	07	E20007EIC	E20107EIC		
Weight	kg	0,16			
Pack	pcs	1			

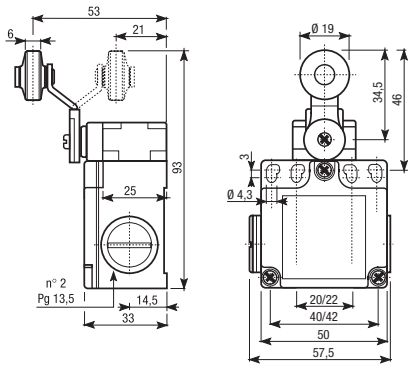




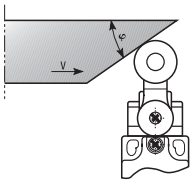
I•C

Thermoplastic roller lever

Cable entry			
PG 13,5	M20 x 1,5		
Metal head Plastic body	Metal head Plastic body	Contact travel	
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

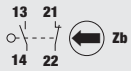
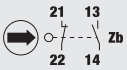
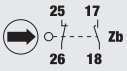
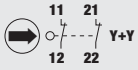
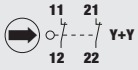
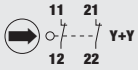
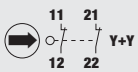
Accessories



Contact element

Available for series: E100
E200
E300
E400

In conformity with standards:
IEC/EN 60947-1
IEC/EN 60947-5-1

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

BREMAS

BETTER SWITCHES

SAFETY SWITCHES



06

Selection diagram

Plastic or Metal actuators


AB


BB


CB


RB

Plastic or Metal head


TB


T


S5


SC



Bodies

Plastic


E10…I


E20…I


E40…I

Contact elements



01 1NO+1NC slow action
04 2NC slow action
08 2NC slow action (for pull-wire switches)

Cable entry

- Pg 13,5
- M20x1,5
- 1/2" NPT
- PG11
- M16x1,5
- M12 connector



DB



EB



IB



IB•50



FB



FB•50



FBR•50

Metal



E10…**M**



E30…**M**



E40…**M**

Product code structure

E10 **0** **01** **FB** **I** **50**

Series

E10	1 cable entry
E20	2 cable entry
E30	3 cable entry
E40	4 cable entry

Ingresso cavi

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

Contact element

01	1NO+1NC slow action
04	2NC slow action
…	

Opzioni

50	With Ø50 mm roller
P	With cable gland Pg13,5
Q	With cable gland Pg11
M12	With M12 connector
R	With membrane M20x1,5

Construction material

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

Actuator type

AB	Steel plunger with reset
BB	Steel roller plunger with reset
…	

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	Ie	IEC947-5-1/EN60947-5-1	24V	A	10
	A300			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
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	mm²	2x1,5
				flexible cable	mm²	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.

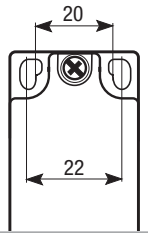
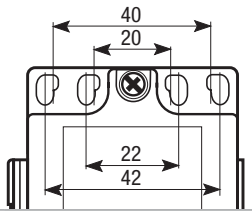
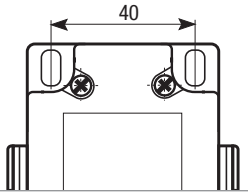
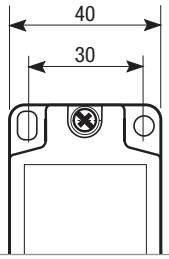
Certifications and Approvals

	c UL us LISTED	UKCA	CSA	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	 Pg13,5	Ex00..
M20x1,5	 M20x1,5	Ex01..
1/2 NPT	 1/2 NPT	Ex02..
Pg 11	 Pg11	Ex03..
M16x1,5	 M16x1,5	Ex04..
M12 connector	 M12 connector	Ex00..M12

Actuation heads

Safety switches with reset

Group AB-BB



AB
Plunger



BB
Roller plunger

Group CB-RB



CB
Plastic roller lever, side actuation



RB
Reversible and adjustable lever with plastic roller

Group DB



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 lenght lever with plastic roller



FB•50
Variable lenght 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

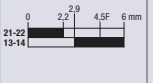
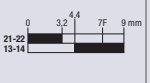
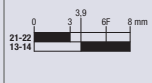
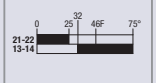
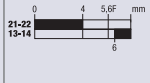
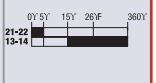
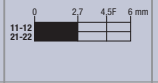
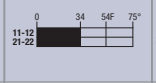
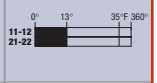
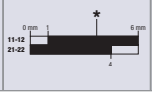
Protective screen

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 21 13 Zb 22 14							
04 2NC slow action	2NC slow action 11 21 Y+Y 12 22							
08 2NC slow action	2NC slow action 11 21 12 22							

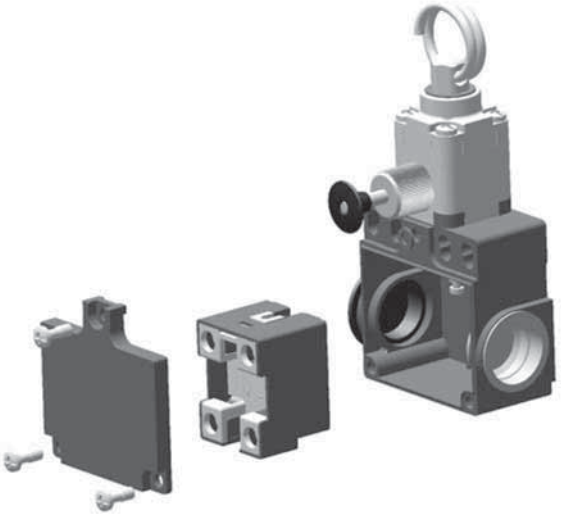
Opened contact

Closed contact

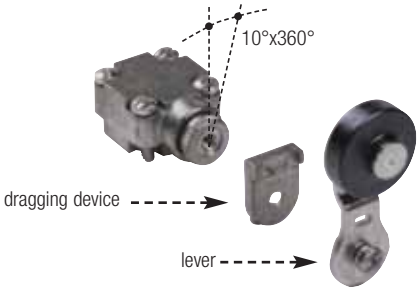
Pressure of the switch / Release of the switch

General characteristics

Safety switches are conceived for applications related to the protection of automated installations and are avaiable 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



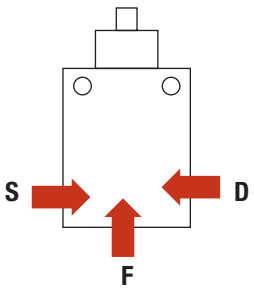
Escalators



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

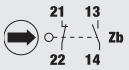
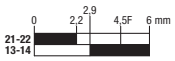
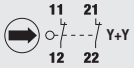
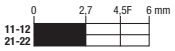
	F	S	D
E100	•		
E200		•	•

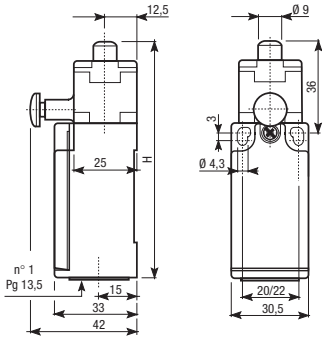
Thread	Series part no.	
Pg 13,5	E100	E200
M20x1,5	E101	E201
1/2" NPT (on request)	E102	E202
Pg 11 (on request)	E103	
M16x1,5 (on request)	E104	
M12 connector (on request)	E100/M12	E200/M12

A

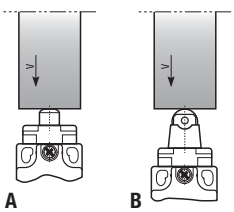


Steel plunger

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 slow action 	01	**E10001ABI**	**E10001ABM**	**E10101ABI**	**E10101ABM**	
2NC slow action 	04	**E10004ABI**	**E10004ABM**	**E10104ABI**	**E10104ABM**	
Weight	kg	0,16	0,245	0,16	0,245	
Pack	pcs	1	1	1	1	
H	mm	93,5	91	93,5	91	



Drive cam operating parameters



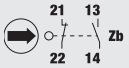
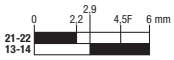
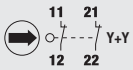
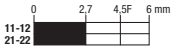
	V max (m/s)
Actuator A	0,5
Actuator B	0,5

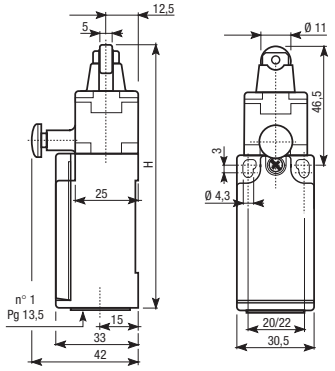
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

B

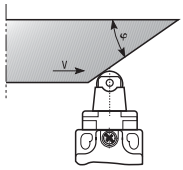


Steel roller plunger

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC slow action 	**01**	**E10001BBI**	**E10001BBM**	**E10101BBI**	**E10101BBM**	
2NC slow action 	**04**	**E10004BBI**	**E10004BBM**	**E10104BBI**	**E10104BBM**	
Weight	kg	0,165	0,255	0,165	0,255	
Pack	pcs	1	1	1	1	
H	mm	104	101,5	104	101,5	



Drive cam operating parameters



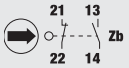
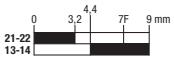
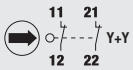
φ	V max (m/s)
20°	1
30°	0,5

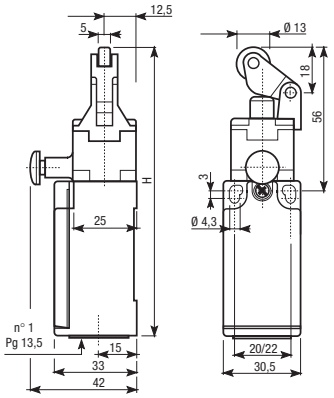
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

C

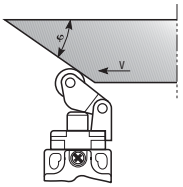


Thermoplastic roller lever, vertical actuation

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 slow action 	01	**E10001CBI**	**E10001CBM**	**E10101CBI**	**E10101CBM**	
2NC slow action 	04	**E10004CBI**	**E10004CBM**	**E10104CBI**	**E10104CBM**	
Weight	kg	0,165	0,255	0,165	0,255	
Pack	pcs	1	1	1	1	
H	mm	113,5	111	113,5	111	



Drive cam operating parameters



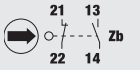
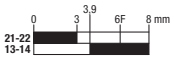
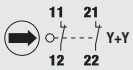
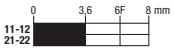
φ	V max (m/s)
20°	1
30°	0,5

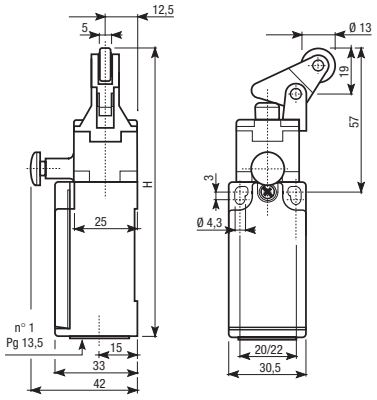
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

D

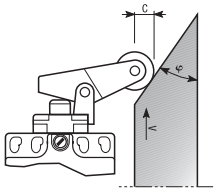


Thermoplastic roller lever, vertical actuation

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC slow action 	**01**	**E10001DBI**	**E10001DBM**	**E10101DBI**	**E10101DBM**	
2NC slow action 	**04**	**E10004DBI**	**E10004DBM**	**E10104DBI**	**E10104DBM**	
Weight	kg	0,165	0,255	0,165	0,255	
Pack	pcs	1	1	1	1	
H	mm	114,5	112	114,5	112	



Drive cam operating parameters



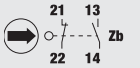
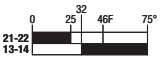
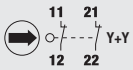
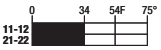
φ	V max (m/s)
20°	1
30°	0,5

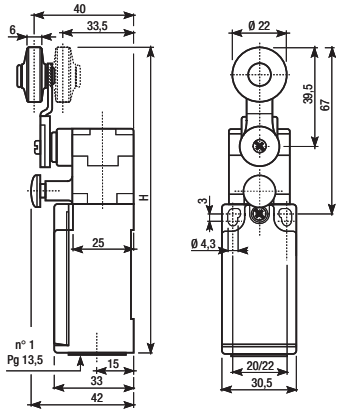
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

E

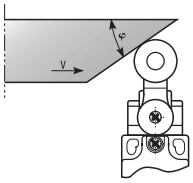


Thermoplastic roller lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC slow action 	01	E10001EBI	E10001EBM	E10101EBI	E10101EBM	
2NC slow action 	04	E10004EBI	E10004EBM	E10104EBI	E10104EBM	
Weight	kg	0,195	0,285	0,195	0,285	
Pack	pcs	1	1	1	1	
H	mm	124,5	122	124,5	122	



Drive cam operating parameters

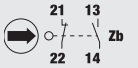
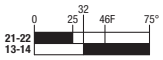
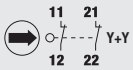
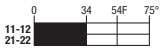


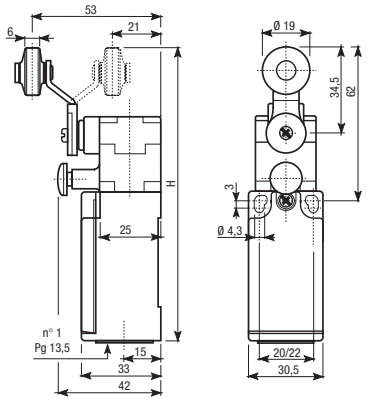
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

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

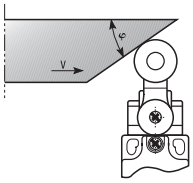


Thermoplastic roller lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC slow action 	**01**	**E10001IBI**	**E10001IBM**	**E10101IBI**	**E10101IBM**	
2NC slow action 	**04**	**E10004IBI**	**E10004IBM**	**E10104IBI**	**E10104IBM**	
Weight	kg	0,205	0,295	0,205	0,295	
Pack	pcs	1	1	1	1	
H	mm	119,5	117	119,5	117	



Drive cam operating parameters



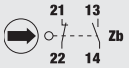
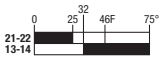
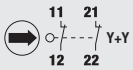
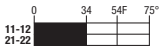
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

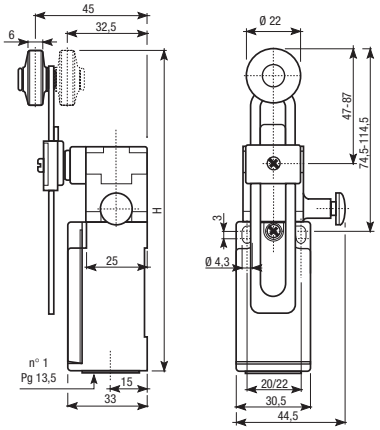
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

F

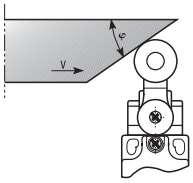


Thermoplastic roller variable length lever

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 slow action 	01	**E10001FBI**	**E10001FBM**	**E10101FBI**	**E10101FBM**	
2NC slow action 	04	**E10004FBI**	**E10004FBM**	**E10104FBI**	**E10104FBM**	
Weight	kg	0,22	0,305	0,22	0,305	
Pack	pcs	1	1	1	1	
H	mm	132 ÷ 172	129,5 ÷ 169,5	132 ÷ 172	129,5 ÷ 169,5	



Drive cam operating parameters



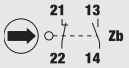
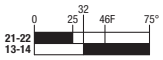
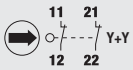
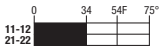
φ	V max (m/s)
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45°	1
60°	0,75
60-90°	0,25

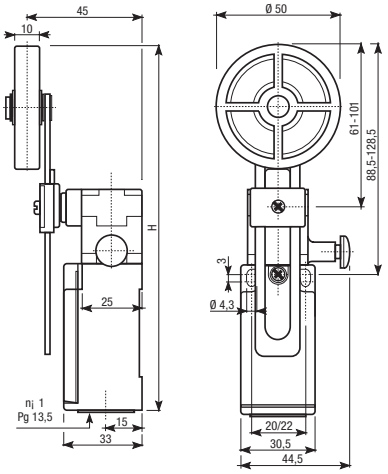
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

F•50

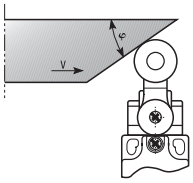


Ø50 mm rubber roller variable length lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Metal body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC slow action 	**01**	**E10001FBI50**	**E10001FBM50**	**E10101FBI50**	**E10101FBM50**	
2NC slow action 	**04**	**E10004FBI50**	**E10004FBM50**	**E10104FBI50**	**E10104FBM50**	
Weight	**kg**	0,24	0,325	0,24	0,325	
Pack	**pcs**	1	1	1	1	
H	**mm**	146 ÷ 186	143,5 ÷ 183,5	146 ÷ 186	143,5 ÷ 183,5	



Drive cam operating parameters



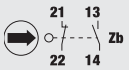
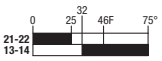
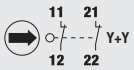
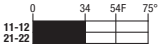
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

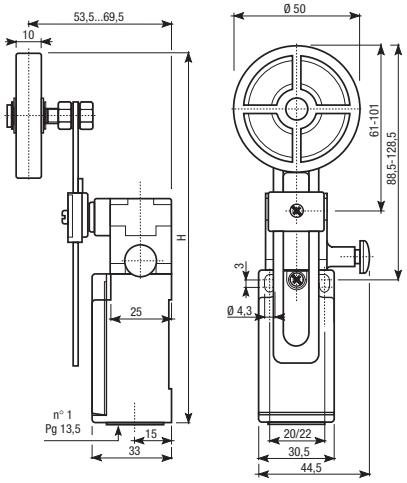
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

FBR•50

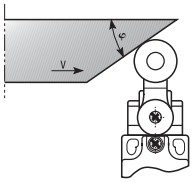


Ø50 mm rubber roller adjustable lever

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 slow action 	**01**	**E10001FBRI50**	**E10001FBRM50**	**E10101FBRI50**	**E10101FBRM50**	
2NC slow action 	**04**	**E10004FBRI50**	**E10004FBRM50**	**E10104FBRI50**	**E10104FBRM50**	
Weight	**kg**	0,24	0,33	0,24	0,33	
Pack	**pcs**	1	1	1	1	
H	**mm**	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

A

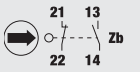
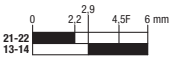
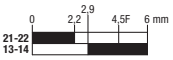
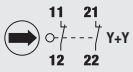
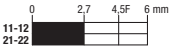
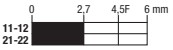


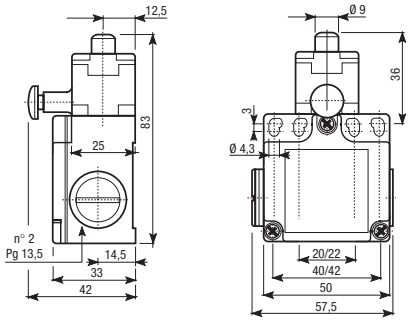
Steel plunger

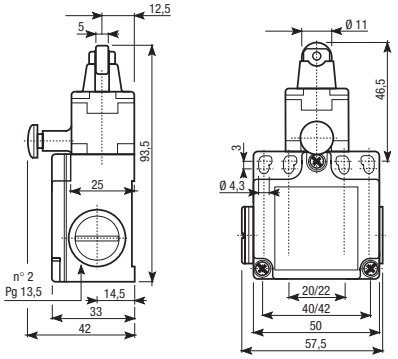
B



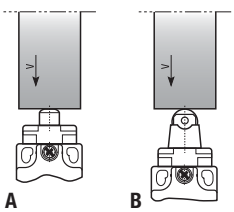
Steel roller plunger

Contact element		Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel	Cable entry PG 13,5 Metal head Plastic body	Cable entry M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC scatto lento 	**01**	**E20001ABI**	**E20101ABI**		**E20001BBI**	**E20101BBI**	
2NC scatto lento 	**04**	**E20004ABI**	**E20104ABI**		**E20004BBI**	**E20104BBI**	
Weight	kg	0,18			0,185		
Pack	pcs	1			1		

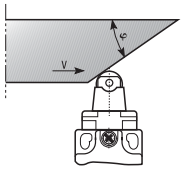




Drive cam operating parameters



	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

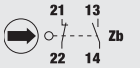
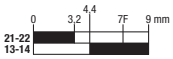
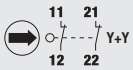
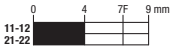


φ	V max (m/s)
20°	1
30°	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

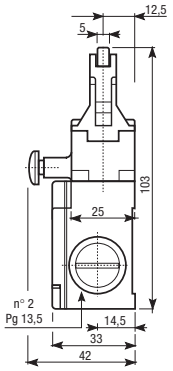
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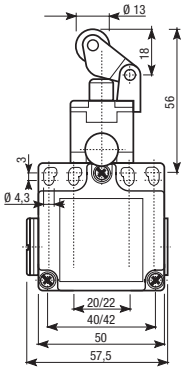


Thermoplastic roller lever, side actuation

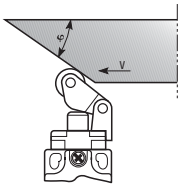
Contact element		Cable entry: PG 13,5 — Metal head, Plastic body	Cable entry: M20 x 1,5 — Metal head, Plastic body	Contact travel
1NO+1NC slow action 	**01**	**E20001CBI**	**E20101CBI**	
2NC slow action 	**04**	**E20004CBI**	**E20104CBI**	

Weight	kg	0,19
Pack	pcs	1





Drive cam operating parameters



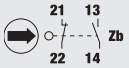
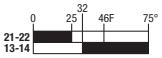
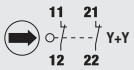
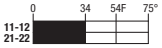
φ	V max (m/s)
20°	1
30°	0,5

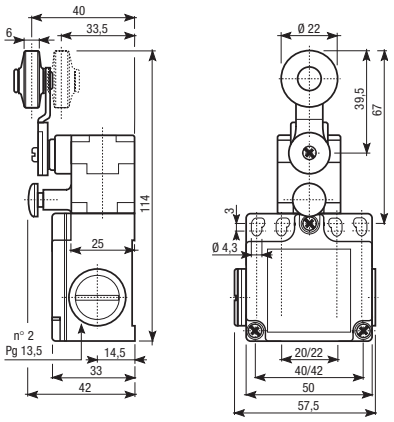
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

E

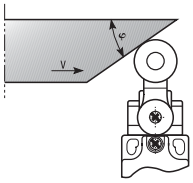


Thermoplastic roller lever

Contact element		Cable entry: PG 13,5 Metal head Plastic body	Cable entry: M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC slow action 	**01**	**E20001EBI**	**E20101EBI**	
2NC slow action 	**04**	**E20004EBI**	**E20104EBI**	
Weight	kg	0,215		
Pack	pcs	1		



Drive cam operating parameters

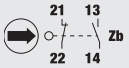
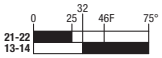
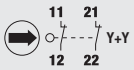
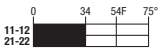


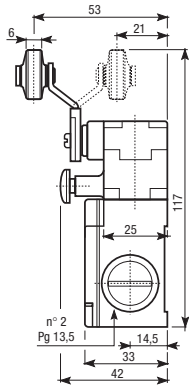
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

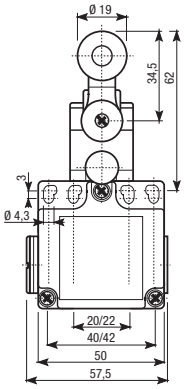
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm



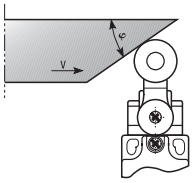
Thermoplastic roller lever

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Plastic body	Contact travel
1NO+1NC slow action 	**01**	**E20001IBI**	**E20101IBI**	
2NC slow action 	**04**	**E20004IBI**	**E20104IBI**	
Weight	**kg**	0,215		
Pack	**pcs**	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 ways 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

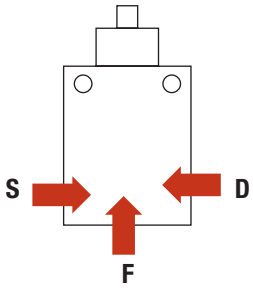
The device has been designed to permit limited key vibrations in case of mechanical disturbances.

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

Applications:



Machines with safety barriers



Cable entry

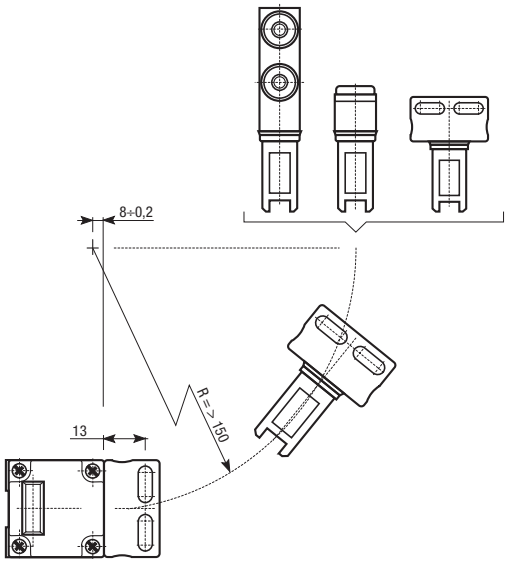
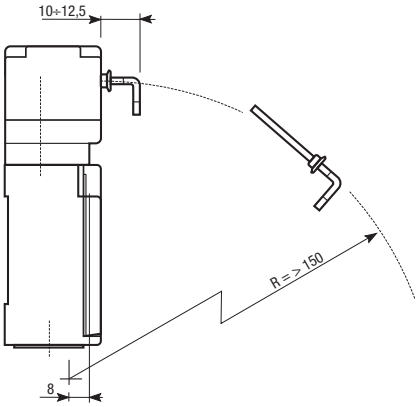
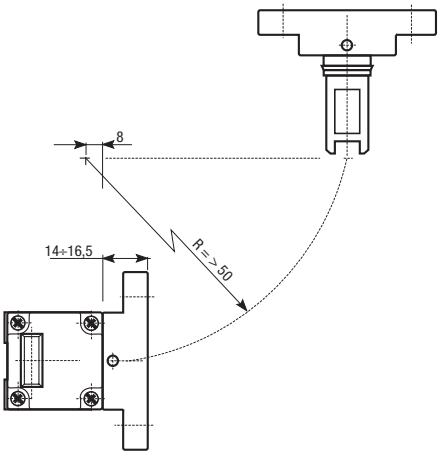
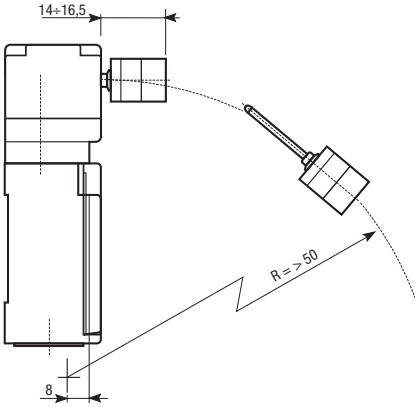
	F	S	D
E100	•		
E200		•	•
E300	•	•	•
E400	•		

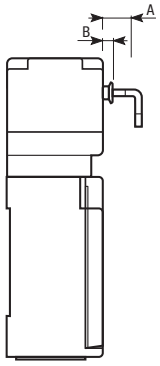
Fixing

E100	20/22 mm
E200	20/22 and 40/42 mm

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

Instructions for correct installation
Assembly of the driver on a rotating protective device (allow space for the pivot radius).

Key type	Horizontal mouting	Vertical mounting
Z5 **Z5-1** **Z5-3** **Z5-4**		
Z52		



Recommended position for correct operation:

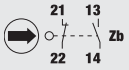
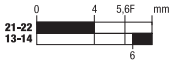
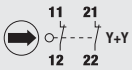
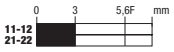
A (contact switching point) = 4 mm
B (actuator limit switch point) = 0 ÷ 1 mm max

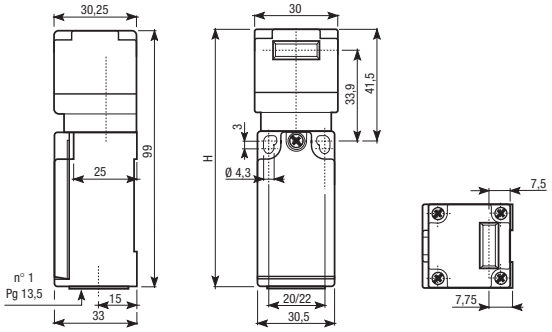
The contacts remain closed from point A to point B (4 mm max travel)

Never use the safety switch as a mechanical travel stop



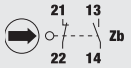
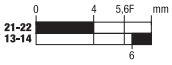
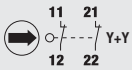
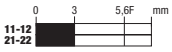
E100 5 way key

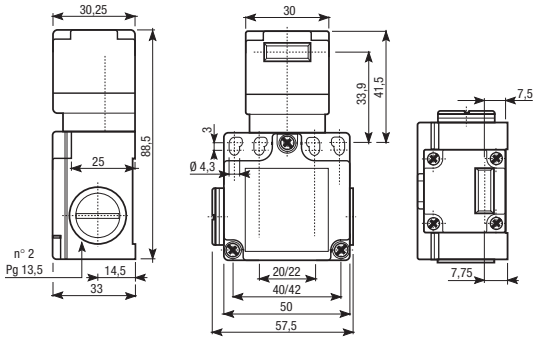
Contact element		Cable entry: PG 13,5 — Plastic head Plastic body	Cable entry: M20 x 1,5 — Plastic head Plastic body	Contact travel
1NO+1NC slow action 	**01**	**E10001S5I**	**E10101S5I**	
2NC slow action 	**04**	**E10004S5I**	**E10104S5I**	
Weight	kg	0,115	0,115	
Pack	pcs	1	1	
H	mm	99	99	





E200 5 way key

Contact element		Cable entry: PG 13,5 — Plastic head Plastic body	Cable entry: M20 x 1,5 — Plastic head Plastic body	Contact travel
1NO+1NC slow action 	**01**	**E20001S5I**	**E20101S5I**	
2NC slow action 	**04**	**E20004S5I**	**E20104S5I**	
Weight	kg	0,14	0,14	
Pack	pcs	1	1	



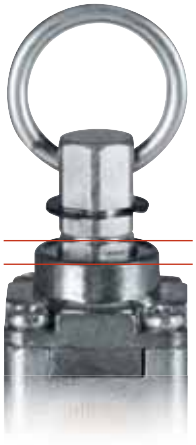
Pull wire safety switches



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.

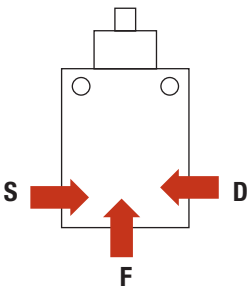


In conformity with standards:
IEC EN 60947-5-1 • EN 60947-1 • UNI EN 1088
EN ISO 12100-1 • EN ISO 12100-2 • IEC 529
EN 60529 • VDE 0660-200 • VDE 0113 • UNI EN 13850

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

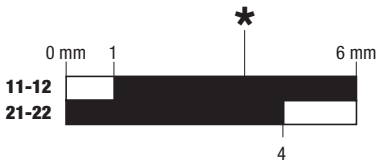
Cable entry

	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.



closed contacts
opened contacts

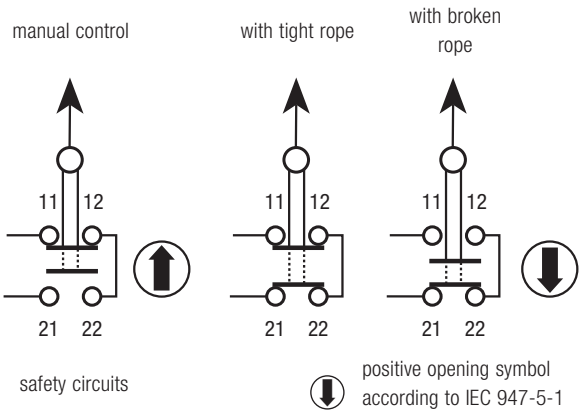
*tight rope
Tension force: 50N / final 60 N

* Installation travel: any cable vibrations will have no influence on the correct operation of the limit switch.

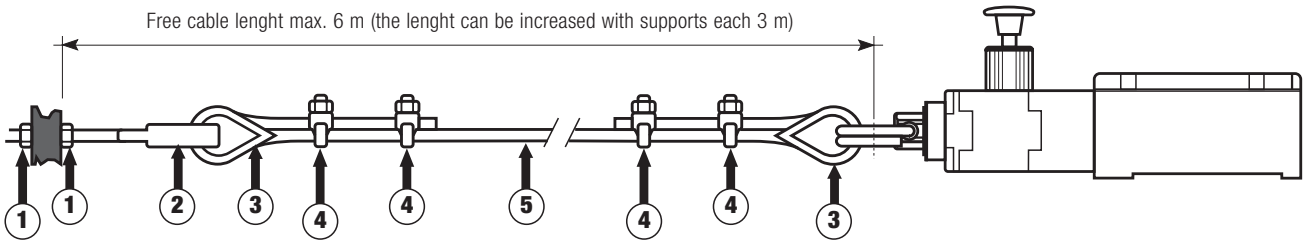
Indications for correct operation

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

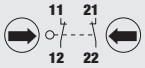
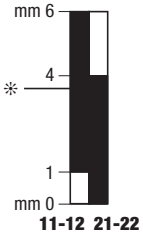
Free cable lenght max. 6 m (increase the lenght with supports each 3 m).

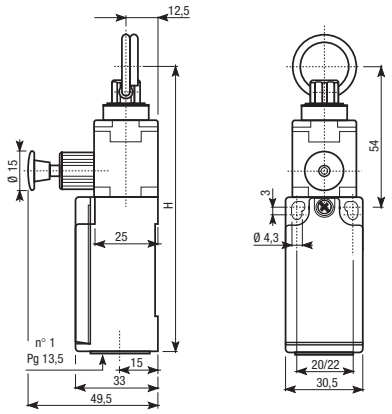
Notes

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



E100

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	
2NC slow action 	08	**E10008TBI**	**E10008TBM**	**E10108TBI**	**E10108TBM**	
Weight	kg	0,195	0,29	0,195	0,29	
Pack	pcs	1	1	1	1	
H	mm	111,5	109	111,5	109	



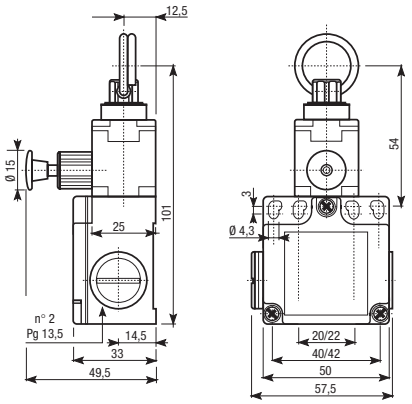


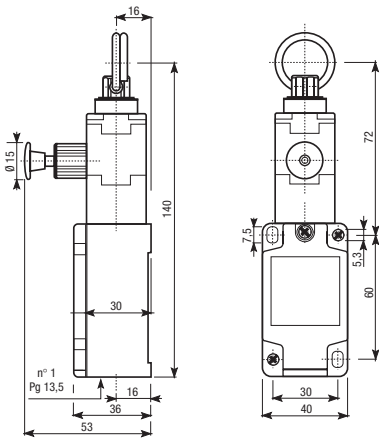
E200



E400

Contact element		Cable entry						Contact travel
		PG 13,5	M20 x 1,5	PG 13,5		M20 x 1,5		
		Metal head Plastic body	Metal head Plastic body	Metal head Plastic body	Metal head Metal body	Metal head Plastic body	Metal head Metal body	
2NC slow action 11 21 12 22	08	**E20008TBI**	**E20108TBI**	**E40008TBI**	**E40008TBM**	**E40108TBI**	**E40108TBM**	mm 6 4 1 mm 0 **11-12 21-22**
Weight	kg	0,22		0,24	0,465	0,24	0,465	
Pack	pcs	1		1		1		





Hinges operating safety switches

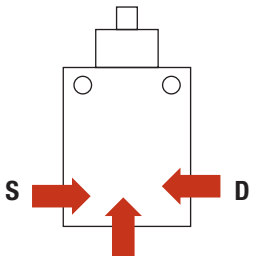


Hinges operating safety switches

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



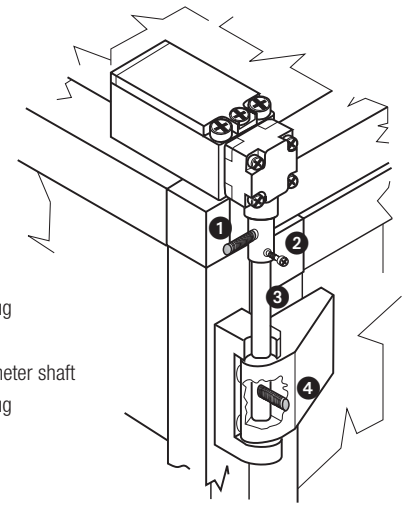
Cable entry

	F	S	D
E100	•		

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



❶ Locking plug
❷ M4 screw
❸ 8 mm diameter shaft
❹ Locking plug

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 ❸ protruding from the door hinge, in the shaft of the switch and fix it in place temporarily with the M4 screw ❷
- Adjust the opening point of the NC contact by rotating the shaft to reduce the standard opening angle (5°)
- Drill the pin ❸ through one of the two holes in the shaft and fix it in place with the locking plug ❶

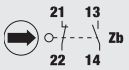
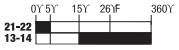
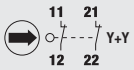
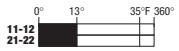
Applications:

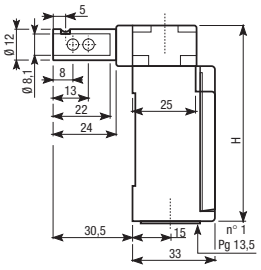


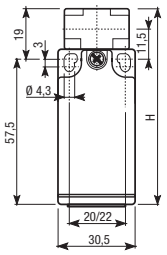
Machines with safety barriers



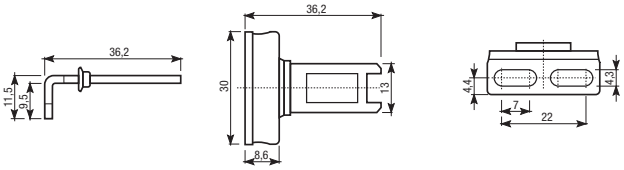
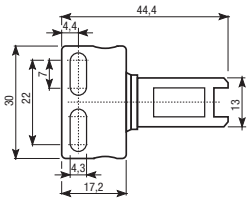
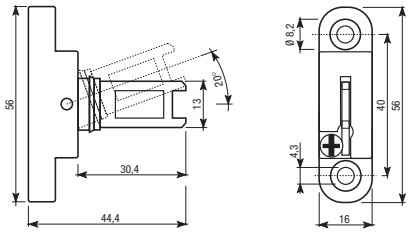
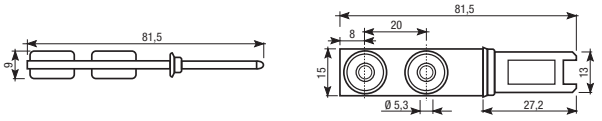
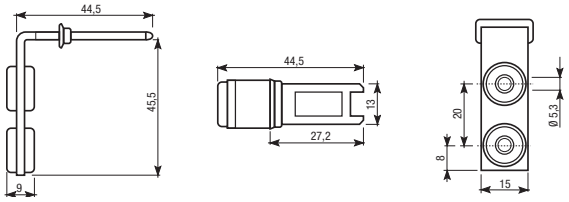
E100

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 slow action 	**01**	**E10001SCI**	**E10001SCM**	**E10101SCI**	**E10101SCM**	
2NC slow action 	**04**	**E10004SCI**	**E10004SCM**	**E10104SCI**	**E10104SCM**	
Weight	**kg**	0,125	0,215	0,125	0,215	
Pack	**pcs**	1	1	1	1	
H	**mm**	76,5	74	76,5	74	





Accessories

	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	
	**005**	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	

BREMAS

BETTER SWITCHES

MICROSWITCHES

M3 series



06

Selection diagram

Actuators



04



05



06

Bodies

Plastic



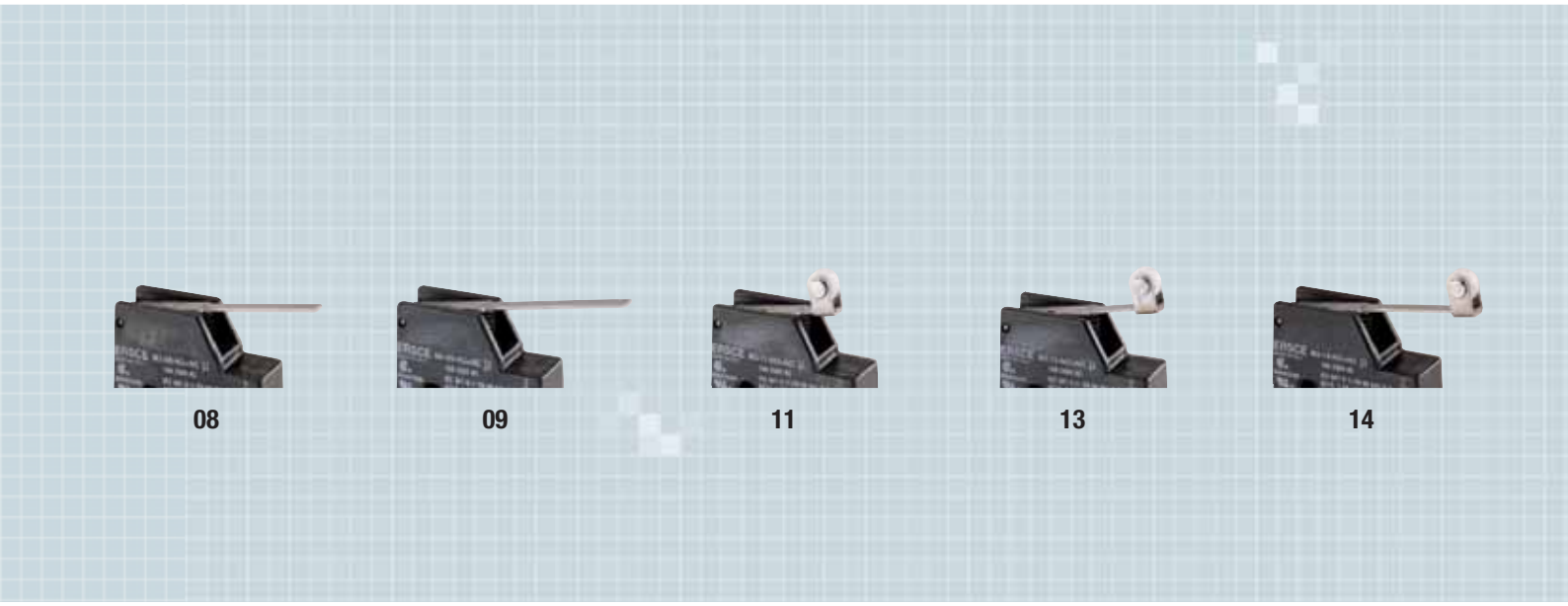
M3

Contact elements

NONC 1NO+1NC snap action

Cable entry

With screw



Product code structure

M3 **04** **NONC**

Series
M3 Screw terminals

Actuators
04 Steel plunger
05 Steel roller plunger
...

Contact blocks
NONC 1NO+1NC snap action

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	Ie	IEC947-5-1/EN60947-5-1		24V	A	5
	A300				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	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	-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

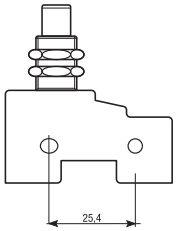
Certifications and Approvals

	c®us	UKCA	CSA	IEC EN 60947
M3	•	•	•	+

- 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		

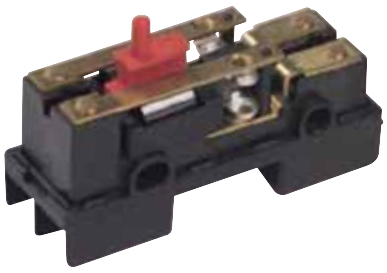
Galvanically separated contacts type Zb

The NO and NC contacts are galvanically separated with positive opening: it is possibile to use the contacts independently.



High performance contacs

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



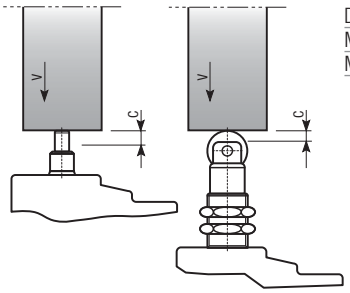
14

Thermoplastic roller lever, length 50,5

Operating characteristics

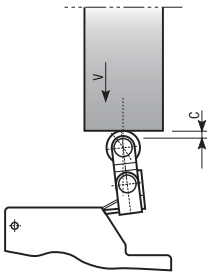
Plungers, roller plunger, vertical travel

Actuators: M...04-05-06



Drive force	
Minimum operating force	4 N
Minimum positive opening force	16 N

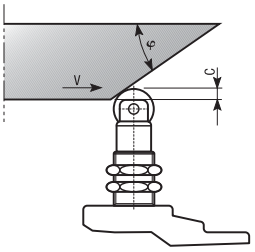
Levers, roller lever, vertical action



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

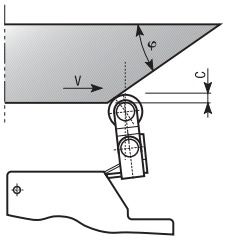
Actuators: M...05-06



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

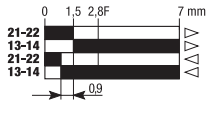
04



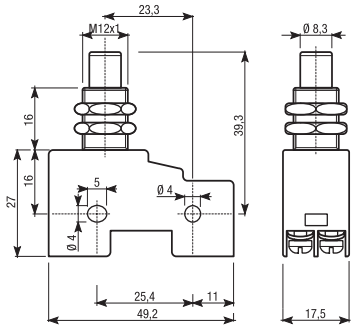
Steel plunger Ø8,3 mm

Contact element
1NO+1NC snap action 13 21 Zb 14 22

Weight pack	kg
Pack	pcs

Plastic	Contact travel
M304NONC	

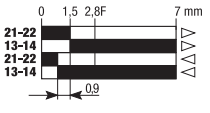
0,925	
5	



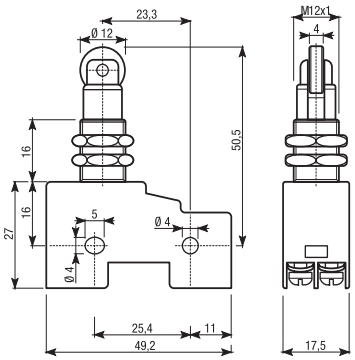
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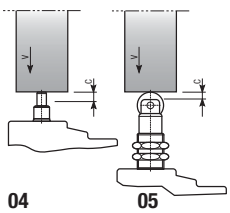
Steel roller plunger

Plastic	Contact travel
M305NONC	

1,105	
5	



Drive cam operating parameters

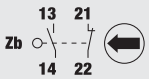


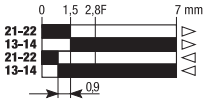
04 05

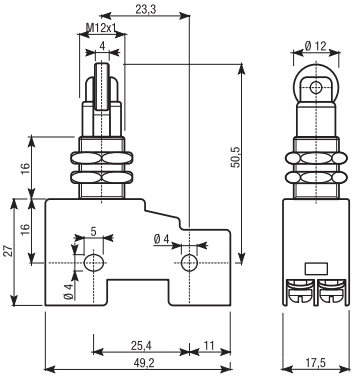
Min. force (N)	
for tripping	4
for positive opening	16



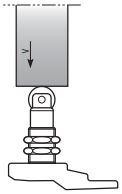
Steel roller plunger turned 90°

Contact element	
1NO+1NC snap action  	
Weight pack	kg
Pack	pcs

Plastic	Contact travel
M306NONC	
1,105	
5	



Drive cam operating parameters



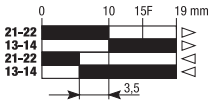
Min. force (N)	
for tripping	4
for positive opening	16

08

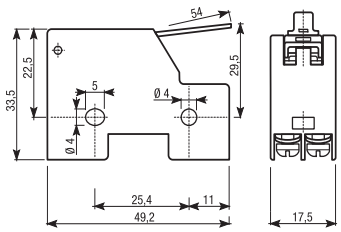


Lever length 54 mm

Contact element
1NO+1NC snap action 13 21 Zb 14 22

Plastic	Contact travel
M308NONC	

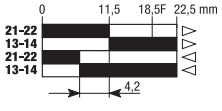
Weight pack	kg	0,360
Pack	pcs	5



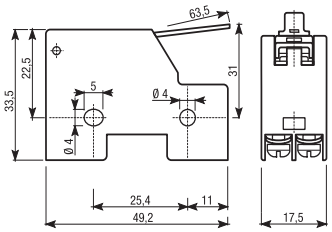
09



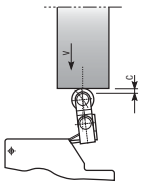
Lever length 63,5 mm

Plastic	Contact travel
M309NONC	

0,365	
5	



Drive cam operating parameters



Min. force (cNm)	
for tripping	1,6
for positive opening	12

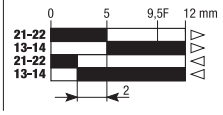
Contact element
1NO+1NC snap action 13 21 Zb 14 22

Weight pack	kg
Pack	pcs

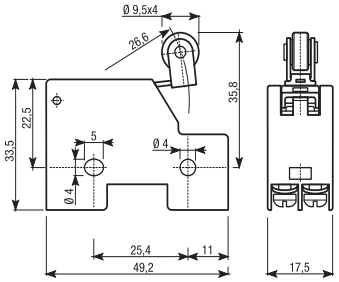
11



Thermoplastic roller lever length 26,6 mm

Plastic	Contact travel
M311NONC	

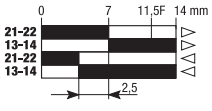
Weight pack	0,735
Pack	5



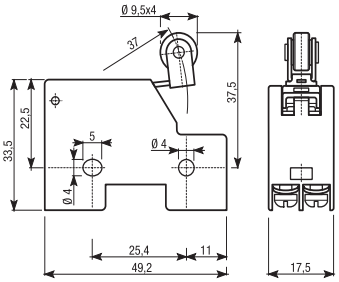
13



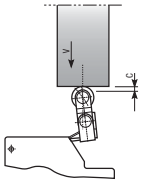
Thermoplastic roller lever length 37 mm

Plastic	Contact travel
M313NONC	

Weight pack	0,745
Pack	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

14

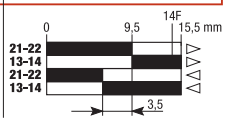


Thermoplastic roller lever
length 50,5 mm



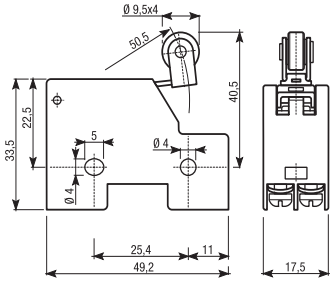
Accessory:
terminal cover for M3 series

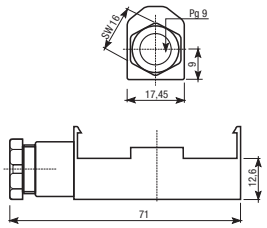
Contact element
1NO+1NC azione rapida 13 21 Zb 14 22

Plastic	Contact travel
M314NONC	

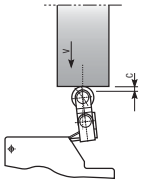
Plastic
M3PROTA

Weight pack	kg	0,755	0,195
Pack	pcs	5	5





Drive cam operating parameters



Min. force (cNm)	
for tripping	1,3
for positive opening	11

BREMAS

BETTER SWITCHES

MULTIPLE POSITION SWITCHES FMV



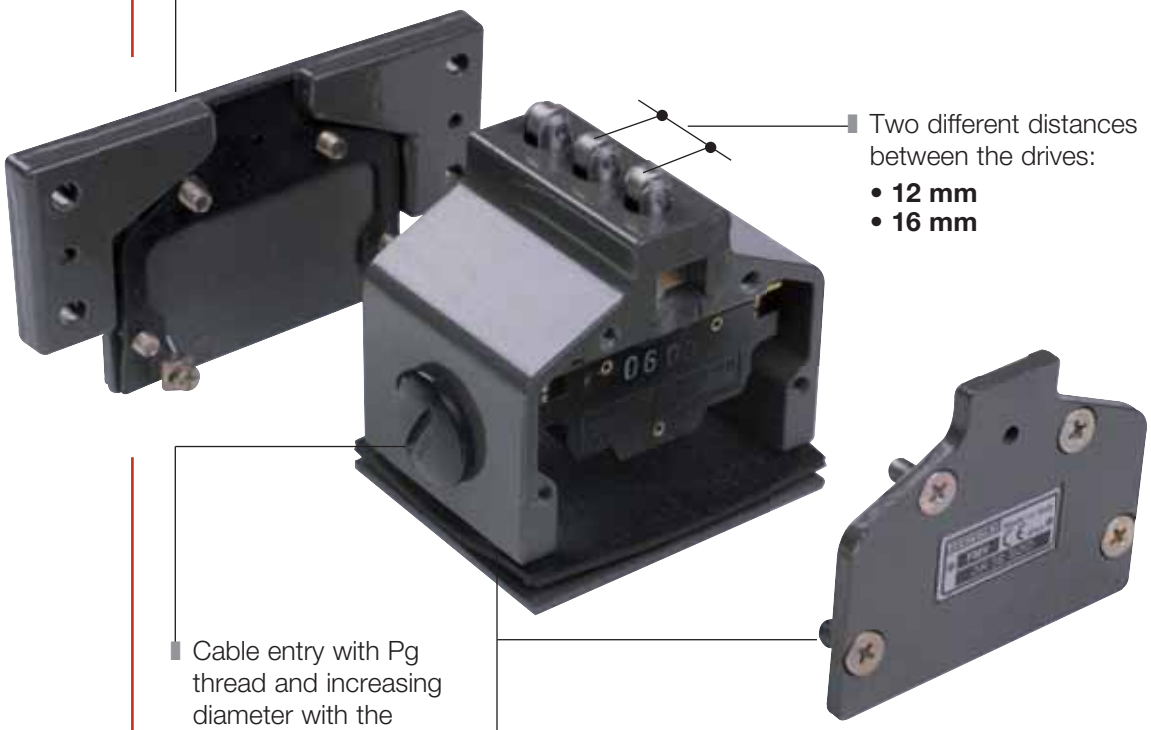
06

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)



Two different distances between the drives:

- **12 mm**
- **16 mm**

Cable entry with Pg thread and increasing diameter with the number of actuators (Pg 11 / Pg 13.5)

The casing is closed in the lower and upper parts with metal closure plates with gasket and steel screws

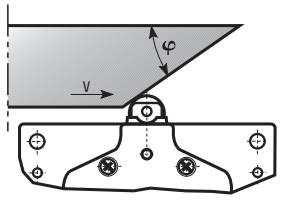
Technical data

						TYPE
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	Ie	IEC947-5-1/EN60947-5-1	24V	A	10
	A300			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	mm²	2x1,5
				flexible cable	mm²	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

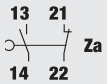
Drive forces	
Minimum command force	10 N
Minimum force on lateral travel	18 N

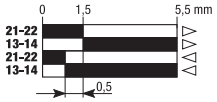
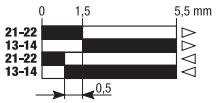
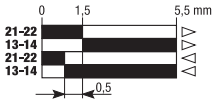


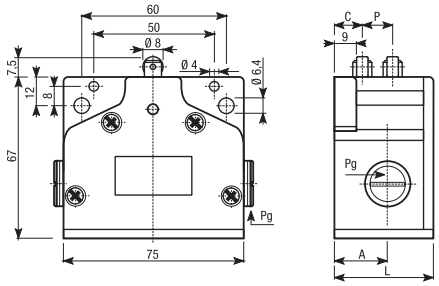
Start 30
Pitch 12



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

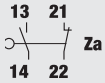
Code	No. of actuators	P	C	L	Pg	A
FMV2R12130	2	12	30	54	11	30
FMV3R12130	3	12	30	66	13,5	35
FMV4R12130	4	12	30	78	13,5	35

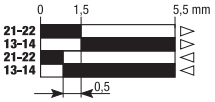
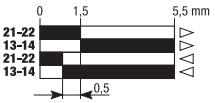
Notes:
P = Pitch (distance between two actuators)
C = Distance between bracket and first actuator
L = Overall dimensions
A = Distance between bracket and input/output holes

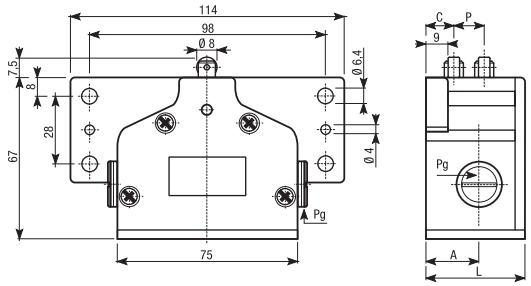
Start 30
Pitch 12



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

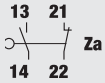
Code	No. of actuators	P	C	L	Pg	A
FMV3R12230	3	12	30	66	13,5	35
FMV4R12230	4	12	30	78	13,5	35

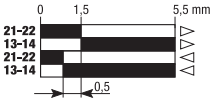
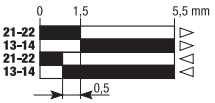
Notes:
P = Pitch (distance between two actuators)
C = Distance between bracket and first actuator
L = Overall dimensions
A = Distance between bracket and input/output holes

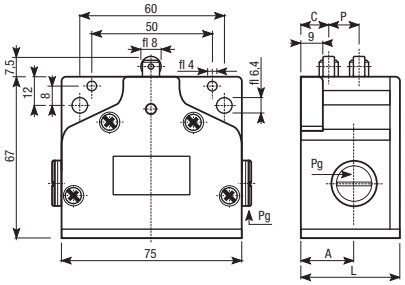
Start 30
Pitch 16



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

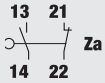
Code	No. of actuators	P	C	L	Pg	A
FMV2R16130	2	16	30	62	11	30
FMV3R16130	3	16	30	78	13,5	35

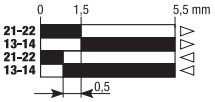
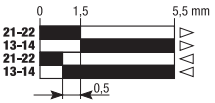
Notes:
P = Pitch (distance between two actuators)
C = Distance between bracket and first actuator
L = Overall dimensions
A = Distance between bracket and input/output holes

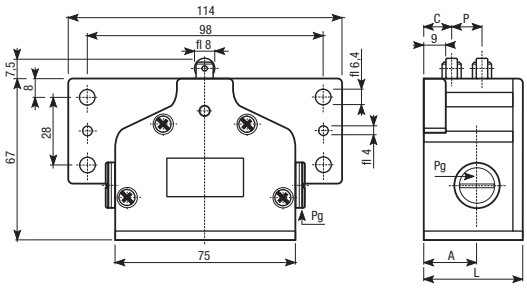
Start 30
Pitch 16



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

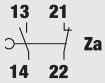
Code	No. of actuators	P	C	L	Pg	A
FMV3R16230	3	16	30	78	13,5	35
FMV4R16230	4	16	30	94	13,5	35

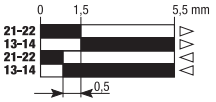
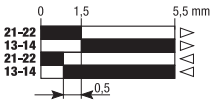
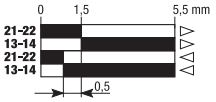
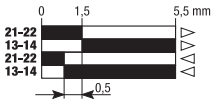
Notes:
P = Pitch (distance between two actuators)
C = Distance between bracket and first actuator
L = Overall dimensions
A = Distance between bracket and input/output holes

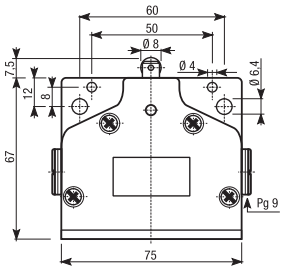
Start 12
Pitch 12

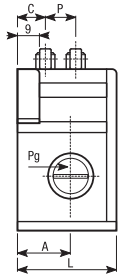


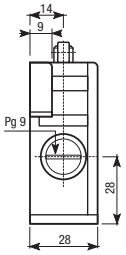
Vertical mounting bracket 100

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	







FMV 1R 100

Characteristics

Distance between the actuators 12 mm, start 12 mm

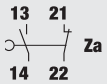
Code	No. of actuators	P	C	L	Pg	A
FMV2R12100	2	12	12	41	11	22
FMV3R12100	3	12	12	53	13,5	30
FMV4R12100	4	12	12	60	13,5	30

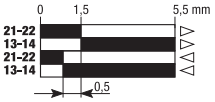
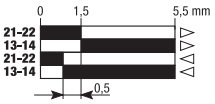
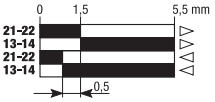
Notes:
P = Pitch (distance between two actuators)
C = Distance between bracket and first actuator
L = Overall dimensions
A = Distance between bracket and input/output holes

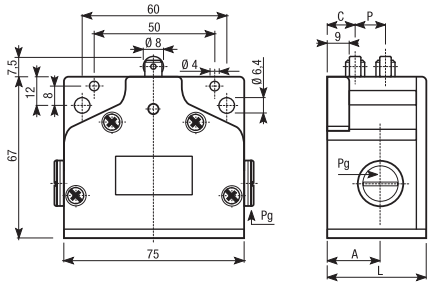
Start 16
Pitch 16



Vertical mounting bracket 100

Contact element	
snap action 1NO+1NC  	**FM**

Metal	No. of roller actuators	Weight (kg)	Pack (pcs)	Travel diagram
FMV2R16100	**2 R**	0,405	1	
FMV3R16100	**3 R**	0,521	1	
FMV4R16100	**4 R**	0,642	1	



Characteristics

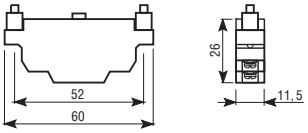
Distance between the actuators 16 mm, start 16 mm

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

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

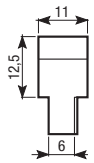
Contact element	Code	Description	Weight (kg)	Pack (pcs)	
13 21 14 22 Za	FM	Mechanical contact element	0,025	5	



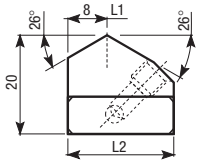
Cams

Code	Description	Form	Weight (kg)	Pack (pcs)
C1N	Tempered grinded steel cam according to DIN 69639	UA	0,025	1
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

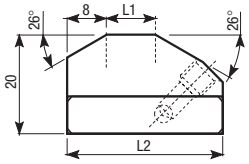
Side view



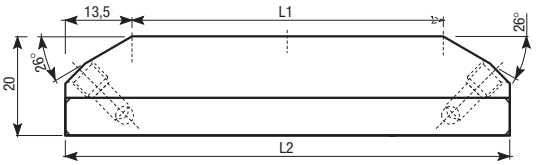
C1N



C2N-C3N-C4N-C5N



C6N-C7N-C8N-C9N-C10N



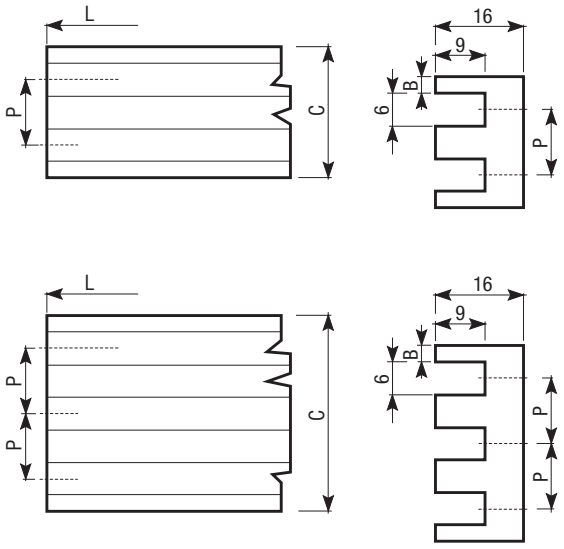
Characteristics

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