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	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		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.

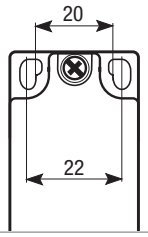
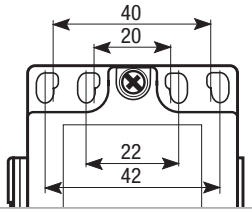
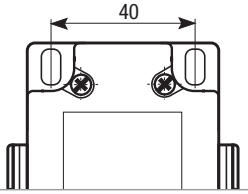
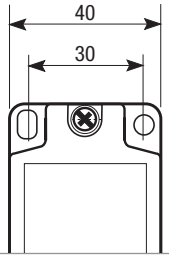
Certifications and Approvals

	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	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

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

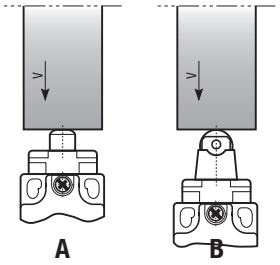
L
Flexible rod

LP
Flexible rod with plastic terminal

LS
Flexible rod (cat whisker) with metal terminal

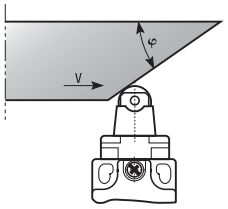
Operating features

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



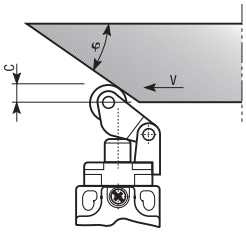
Drive cam operating parameters	
φ	V max (m/s)
Actuators A	0,5
Actuators B	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

Roller plunger, side travel
Actuators: B



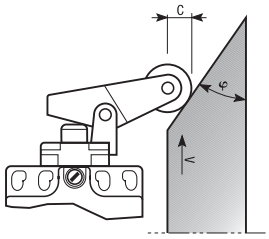
Drive cam operating parameters	
φ	V max (m/s)
30°	0,5
20°	1
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

Roller lever, side travel
Actuators: C-R



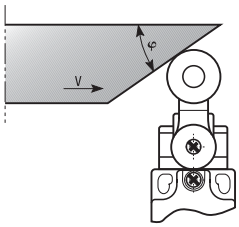
Drive cam operating parameters	
φ	V max (m/s)
30°	0,5
20°	1
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

Roller lever, vertical travel
Actuators: D-R

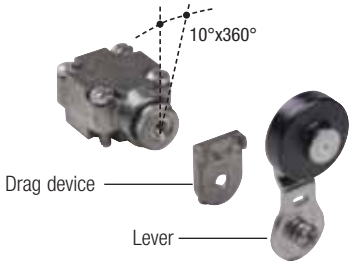


Drive cam operating parameters	
φ	V max (m/s)
30°	0,5
20°	1
Drive forces	
Minimum command force	8 N
Minimum forced opening force	26 N

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.

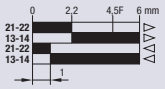
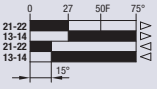
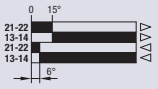
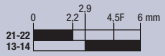
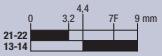
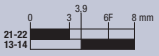
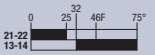
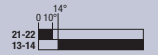
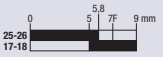
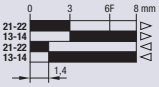
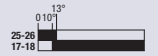
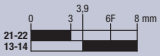
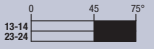
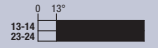
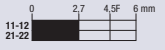
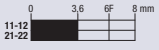
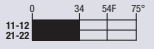
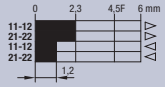
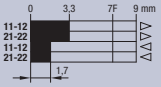
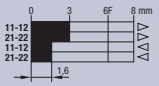
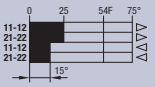
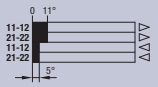
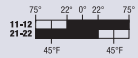
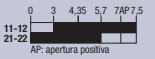
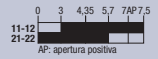
Contact elements

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

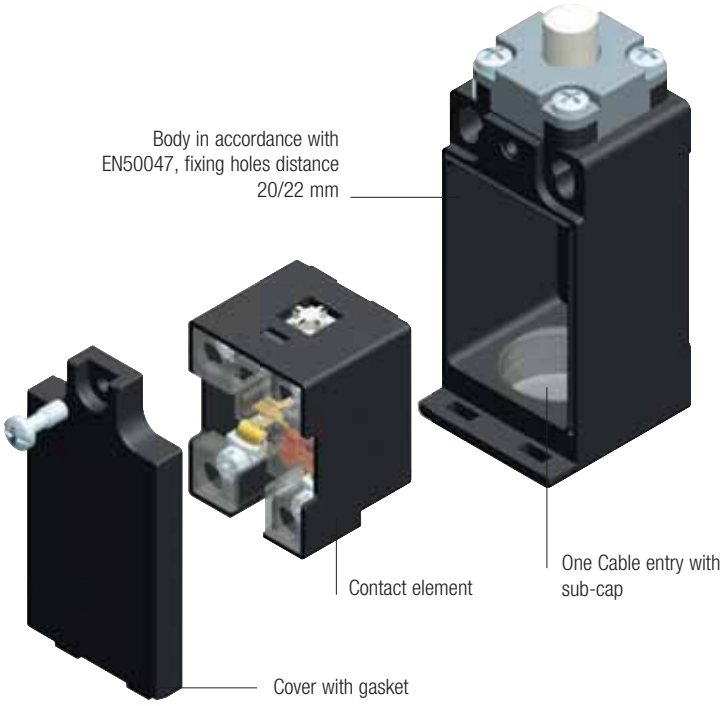
Positive opening travel

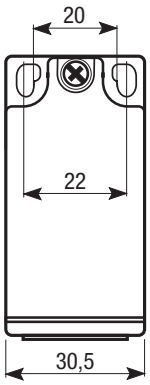
Pressure of the switch / Release of the switch

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

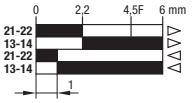
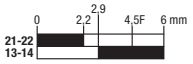
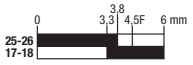
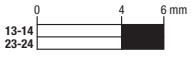
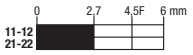
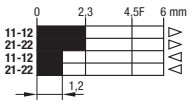
Cable entry
One Cable entry on the bottom of the switch with thread:

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

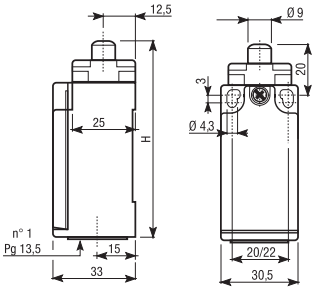
Thread	series part no.
Pg 13,5	E100…
M20x1,5	E101…
1/2" NPT (on request)	E102…
Pg 11 (on request)	E103…
M16x1,5 (on request)	E104…
M12 connector (on request)	E100…M12

A

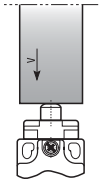
Steel plunger

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 (13 21 / 14 22, Zb)	00	E10000AP*	E10000AI*	E10000AM*	E10100AP*	E10100AI*	E10100AM*	
1NO+1NC slow action (21 13 / 22 14, Zb)	01	E10001AP*	E10001AI*	E10001AM*	E10101AP*	E10101AI*	E10101AM*	
1NO+1NC slow overlap. (25 17 / 26 18, Zb)	02	E10002AP	E10002AI	E10002AM	E10102AP	E10102AI	E10102AM	
2NO slow action (13 23 / 14 24, X+X)	03	E10003AP	E10003AI	E10003AM	E10103AP	E10103AI	E10103AM	
2NC slow action (11 21 / 12 22, Y+Y)	04	E10004AP	E10004AI	E10004AM	E10104AP	E10104AI	E10104AM	
2NC snap action (11 21 / 12 22, Y+Y)	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



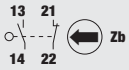
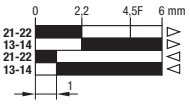
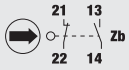
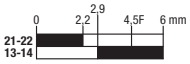
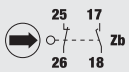
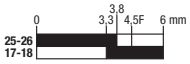
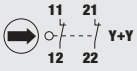
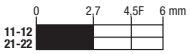
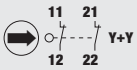
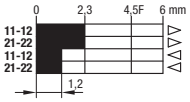
Drive cam operating parameters



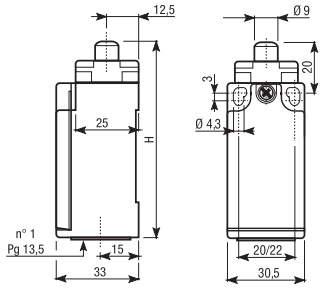
V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

A•S1

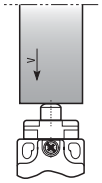
Steel plunger with rubber gasket

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



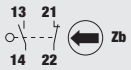
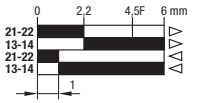
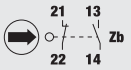
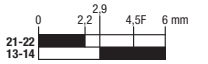
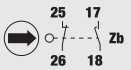
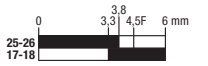
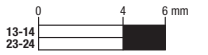
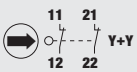
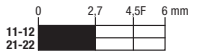
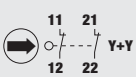
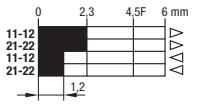
Drive cam operating parameters



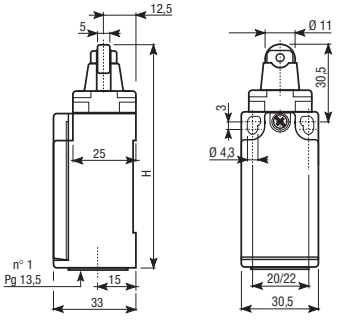
V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

B

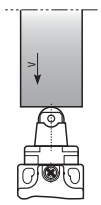
Steel roller plunger

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

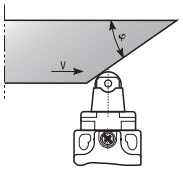
* form conforming to EN50047



Drive cam operating parameters

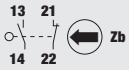
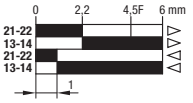
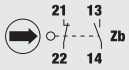
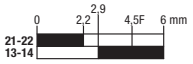
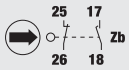
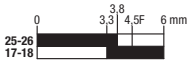
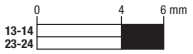
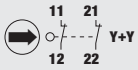
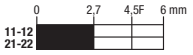
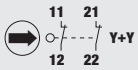
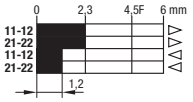


V max (m/s)	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N



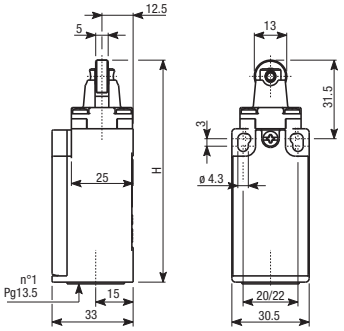
φ	V max (m/s)
20°	1
30°	0,5
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

Ø13 mm steel roller plunger

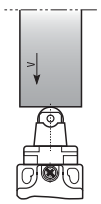
Contact element		Cable entry: PG 13,5 – Plastic head Plastic body	PG 13,5 – Metal head Plastic body	PG 13,5 – Metal head Metal body	M20 x 1,5 – Plastic head Plastic body	M20 x 1,5 – Metal head Plastic body	M20 x 1,5 – Metal head Metal body	Contact travel
1NO+1NC snap action 	00	E10000BP13	E10000BI13	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

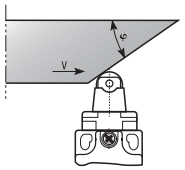
* form conforming to EN50047



Drive cam operating parameters



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

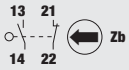
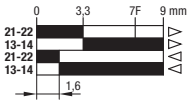
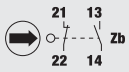
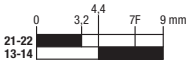
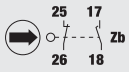
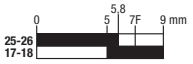
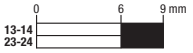
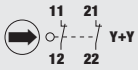
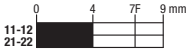
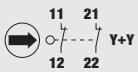
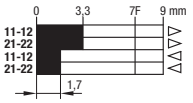


φ	V max (m/s)
20°	1
30°	0,5

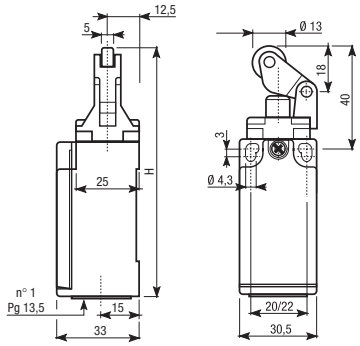
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

c

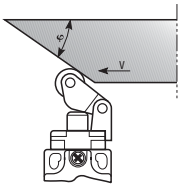
Thermoplastic roller lever, side actuation

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

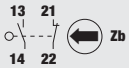
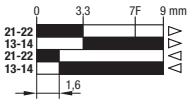
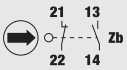
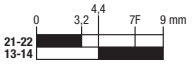
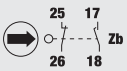
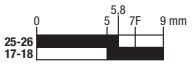
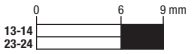
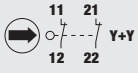
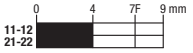
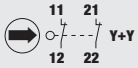
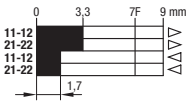


φ	V max (m/s)
20°	1
30°	0,5

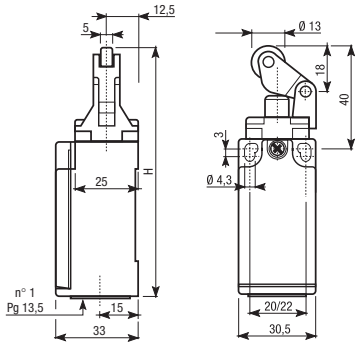
Drive forces	
Minimum command force	9 N
Minimum forced opening force	28 N

C•S1

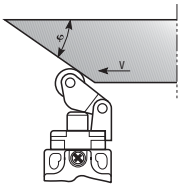
Thermoplastic roller lever with rubber gasket, side actuation

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

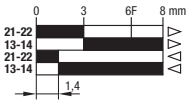
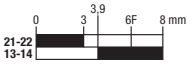
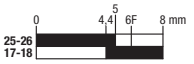
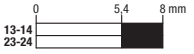
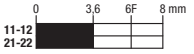
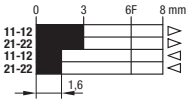


φ	V max (m/s)
20°	1
30°	0,5

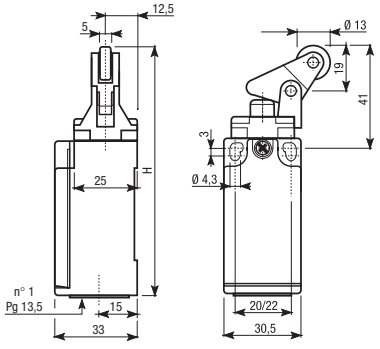
Drive forces	
Minimum command force	9 N
Minimum forced opening force	26 N

D

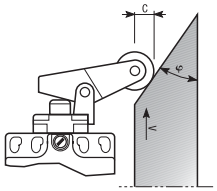
Thermoplastic roller lever, vertical actuation

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



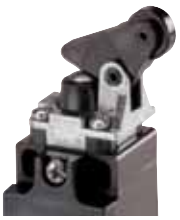
Drive cam operating parameters



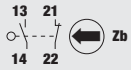
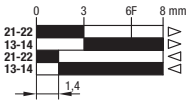
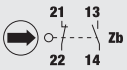
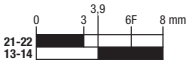
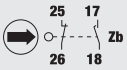
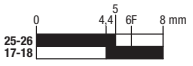
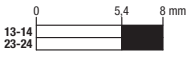
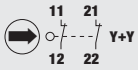
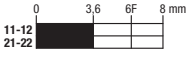
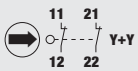
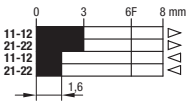
φ	V max (m/s)
20°	1
30°	0,5

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

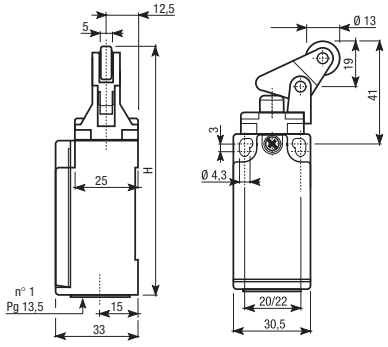
D•S1



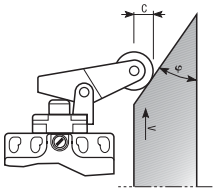
Thermoplastic roller lever with rubber gasket, vertical actuation

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



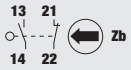
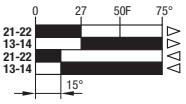
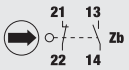
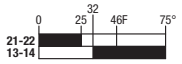
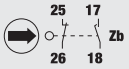
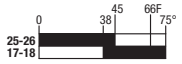
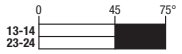
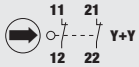
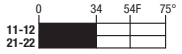
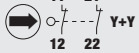
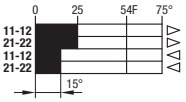
Drive cam operating parameters



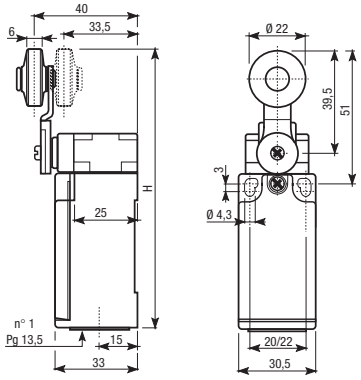
φ	V max (m/s)
20°	1
30°	0,5

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

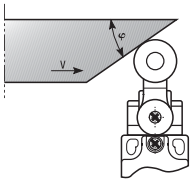
Thermoplastic roller lever

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

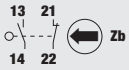
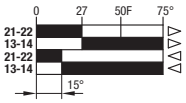
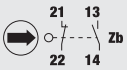
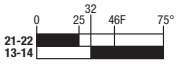
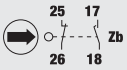
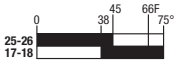
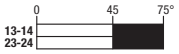
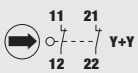
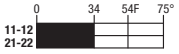
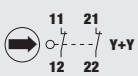
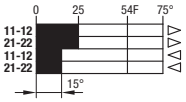


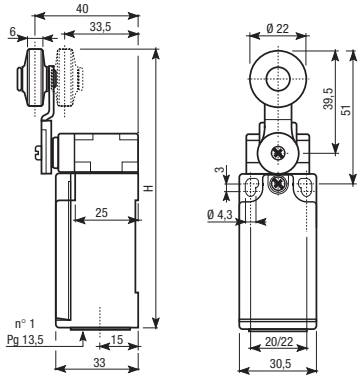
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

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

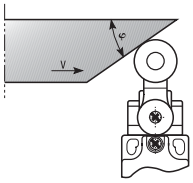
E•RA

Steel roller lever

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



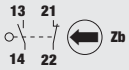
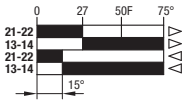
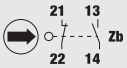
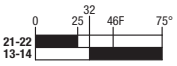
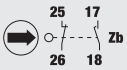
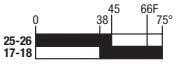
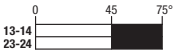
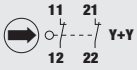
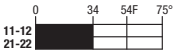
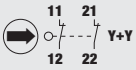
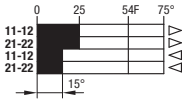
Drive cam operating parameters

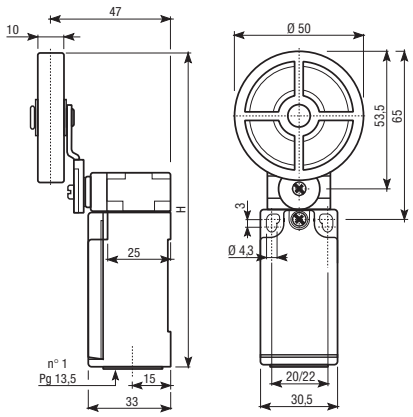


φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

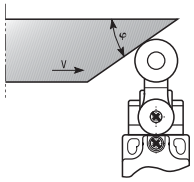
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

Ø50 mm rubber roller lever

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



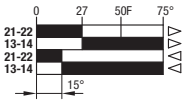
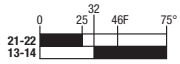
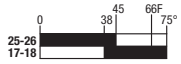
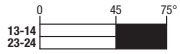
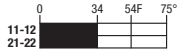
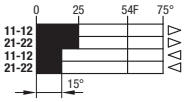
Drive cam operating parameters

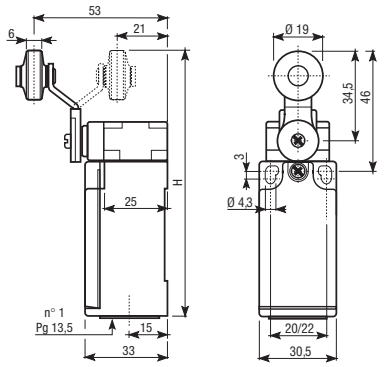


φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

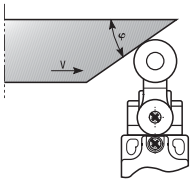
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

Thermoplastic roller lever

Contact element		Cable entry: PG 13,5 Metal head Plastic body	Cable entry: PG 13,5 Metal head Plastic body	Cable entry: M20 x 1,5 Metal head Plastic body	Cable entry: M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC snap action (13 21 / 14 22 Zb)	00	E10000II	E10000IM	E10100II	E10100IM	
1NO+1NC slow action (21 13 / 22 14 Zb)	01	E10001II	E10001IM	E10101II	E10101IM	
1NO+1NC slow overlap. (25 17 / 26 18 Zb)	02	E10002II	E10002IM	E10102II	E10102IM	
2NO slow action (13 23 / 14 24 X+X)	03	E10003II	E10003IM	E10103II	E10103IM	
2NC slow action (11 21 / 12 22 Y+Y)	04	E10004II	E10004IM	E10104II	E10104IM	
2NC snap action (11 21 / 12 22 Y+Y)	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

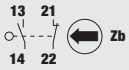
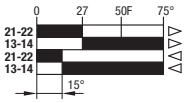
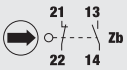
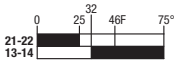
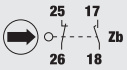
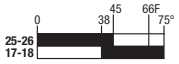
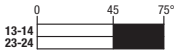
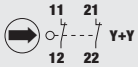
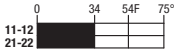
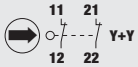
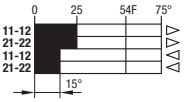


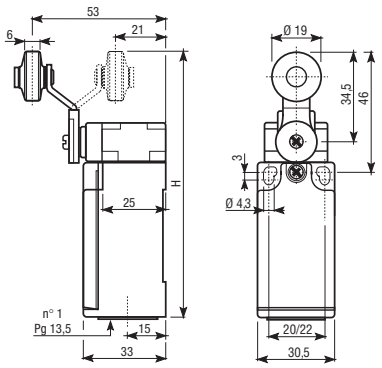
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

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

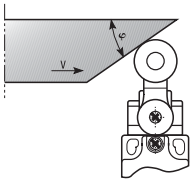
I•RA

Steel roller lever

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



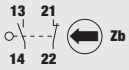
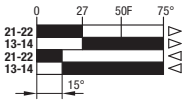
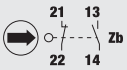
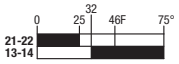
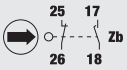
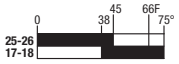
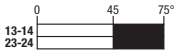
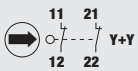
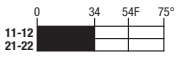
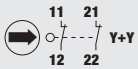
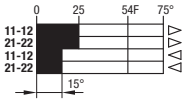
Drive cam operating parameters

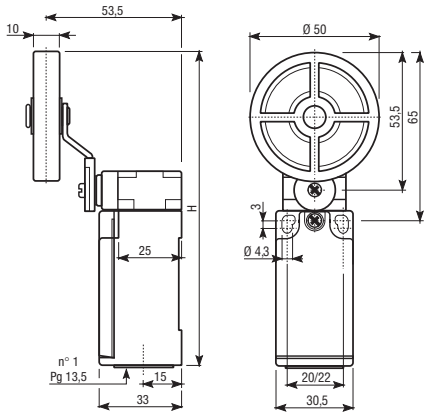


φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

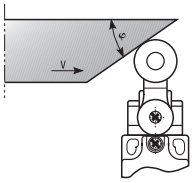
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

Ø50 mm rubber roller lever

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

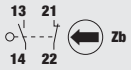
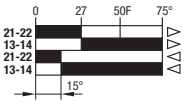
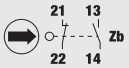
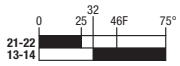
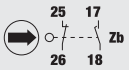
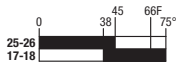
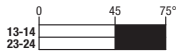
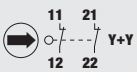
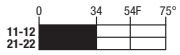
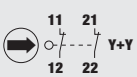
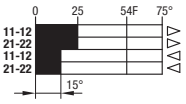


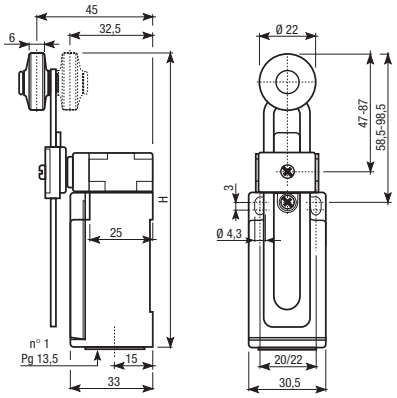
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

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

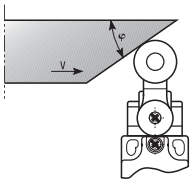
F

Thermoplastic roller variable length lever

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



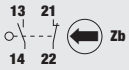
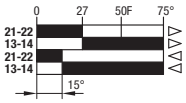
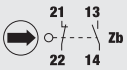
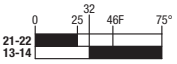
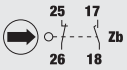
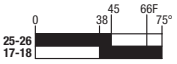
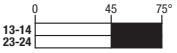
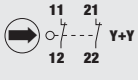
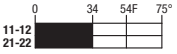
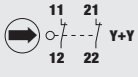
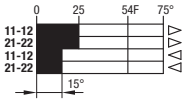
Drive cam operating parameters

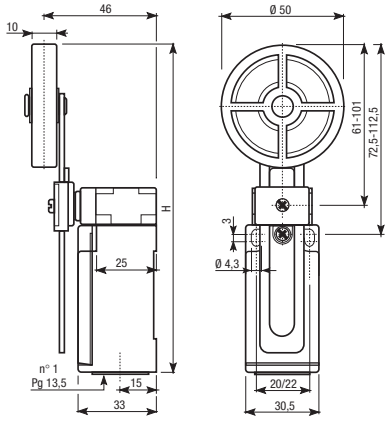


φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

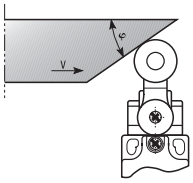
Drive forces	
Minimum command force	15 Ncm
Minimum forced opening force	35 Ncm

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 Plastic body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Plastic 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

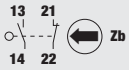
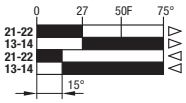
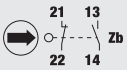
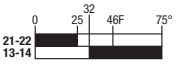
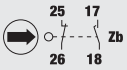
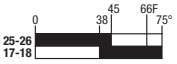
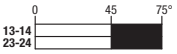
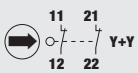
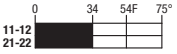
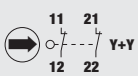
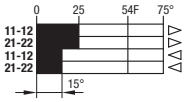


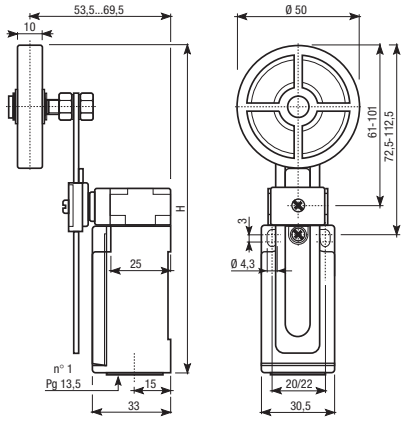
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

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

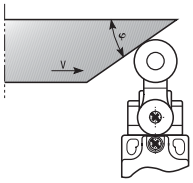
FR•50

Ø50 mm rubber roller adjustable lever

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

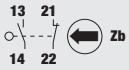
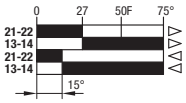
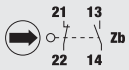
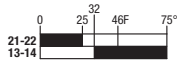
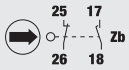
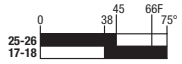
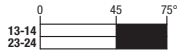
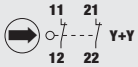
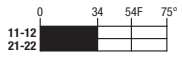
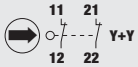
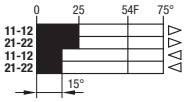


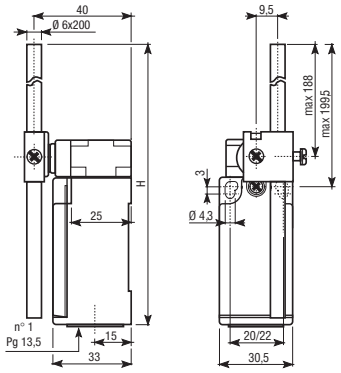
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

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

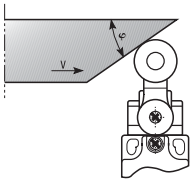
G

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 Plastic body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Plastic 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

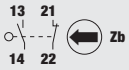
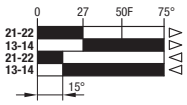
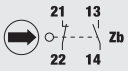
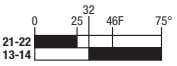
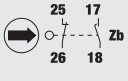
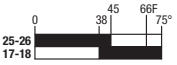
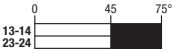
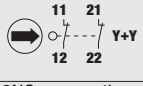
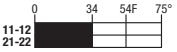
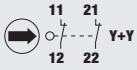
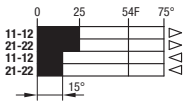


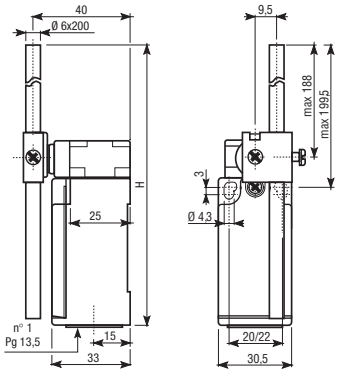
φ	V max (m/s)
30°	1,5
45°	1
60°	0,75
60-90°	0,25

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

H

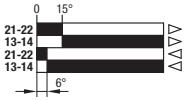
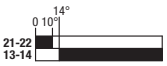
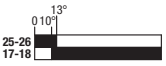
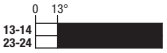
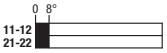
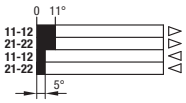
Side rotary adjustable Ø6 mm aluminium rod

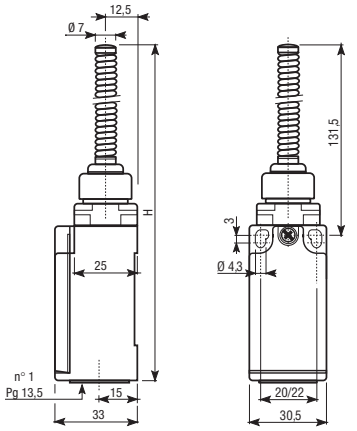
Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – Metal head Plastic body	Contact travel
1NO+1NC snap action 	00	E10000HI	E10000HM	E10100HI	E10100HM	
1NO+1NC slow action 	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	



Flexible rod

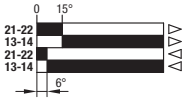
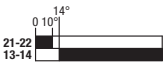
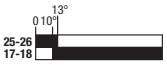
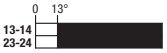
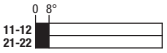
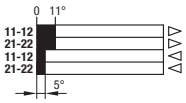
L

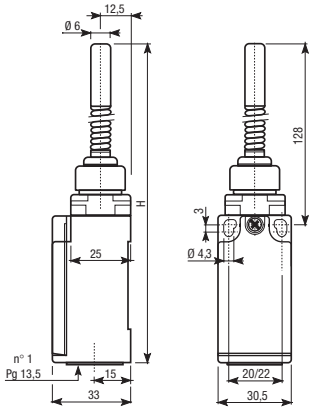
Contact element		Cable entry: PG 13,5 Metal head Plastic body	Cable entry: PG 13,5 Metal head Plastic body	Cable entry: M20 x 1,5 Metal head Plastic body	Cable entry: M20 x 1,5 Metal head Plastic body	Contact travel
1NO+1NC snap action 13 21 Zb 14 22	00	E10000LI	E10000LM	E10100LI	E10100LM	
1NO+1NC slow 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+2NC slow action 11 21 Y+Y 12 22	04	E10004LI	E10004LM	E10104LI	E10104LM	
2NC 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	



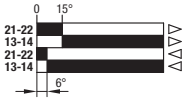
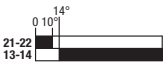
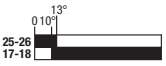
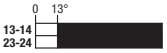
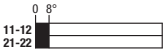
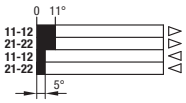
LP

Flexible rod with plastic terminal

Contact element		Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: PG 13,5 – Metal head Plastic body	Cable entry: M20 x 1,5 – 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**	**E10000LPI**	**E10000LPM**	**E10100LPI**	**E10100LPM**	
1NO+1NC slow action 21 13 Zb 22 14	**01**	**E10001LPI**	**E10001LPM**	**E10101LPI**	**E10101LPM**	
1NO+1NC slow overlap. 25 17 Zb 26 18	**02**	**E10002LPI**	**E10002LPM**	**E10102LPI**	**E10102LPM**	
2NO slow action 13 23 X+X 14 24	**03**	**E10003LPI**	**E10003LPM**	**E10103LPI**	**E10103LPM**	
2NO+2NC slow action 11 21 Y+Y 12 22	**04**	**E10004LPI**	**E10004LPM**	**E10104LPI**	**E10104LPM**	
2NC snap action 11 21 Y+Y 12 22	**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	PG 13,5 Metal head Plastic body	M20 x 1,5 Metal head Plastic body	M20 x 1,5 Metal head Plastic 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