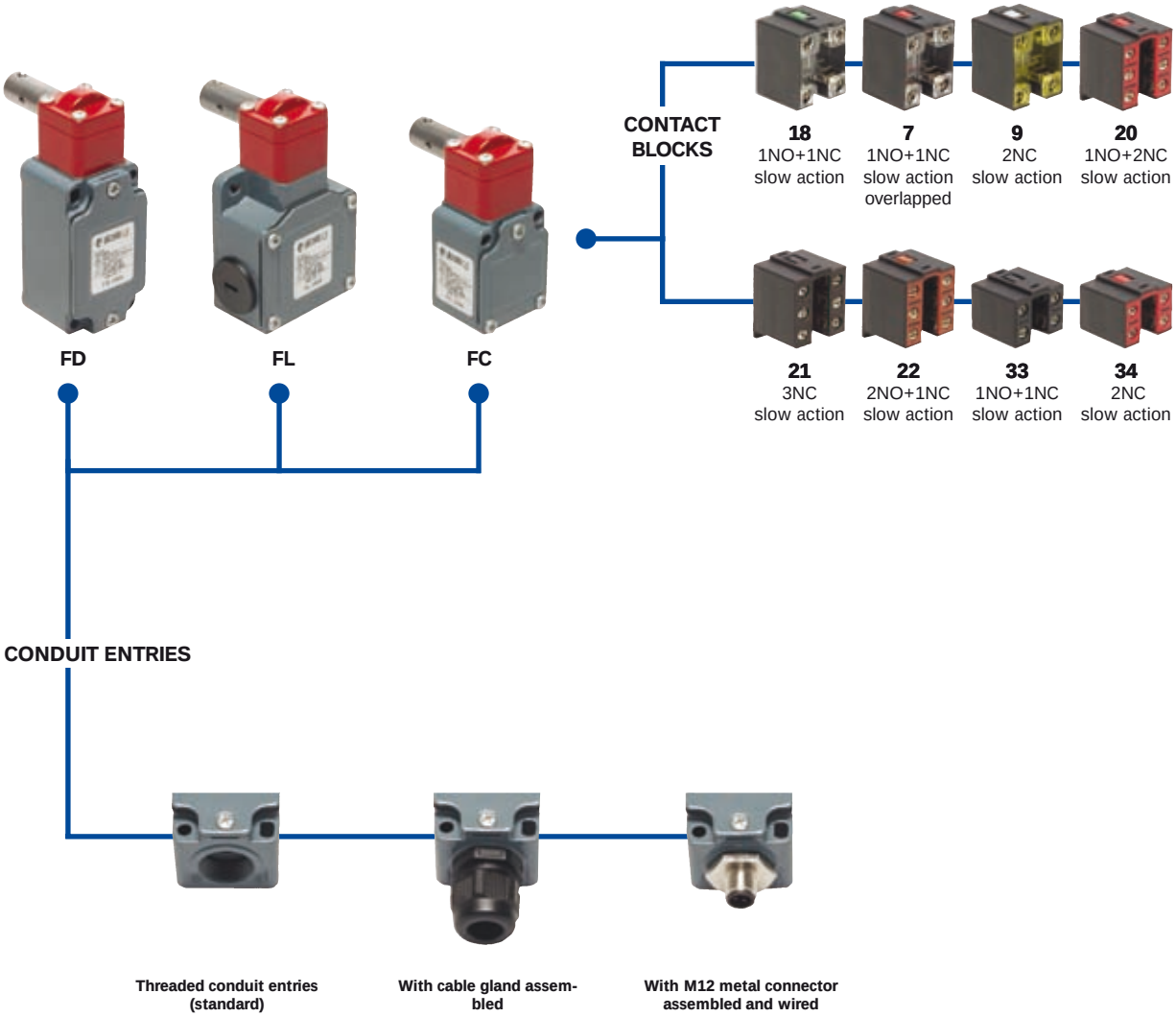
Selection diagram



product option
accessory sold separately

Code structure

Attention! The feasibility of a code number does not mean the effective availability of a product. Please contact our sales office.

article: **FD 1895** | options: **-GM2K50**

Housing

FD	metal housing, one conduit entry
FL	metal housing, three conduit entries

Contact blocks

18	1NO+1NC, slow action
7	1NO+1NC, slow action overlapped
9	2NC, slow action
20	1NO+2NC, slow action
21	3NC, slow action
22	2NO+1NC, slow action
33	1NO+1NC, slow action
34	2NC, slow action

Preinstalled cable gland or connectors

	no cable gland or connector (standard)
K21	with assembled cable gland suitable for Ø 6 to Ø 12 mm cables range
K40	with M12 metal connector assembled and wired, 8 poles (only for contact blocks 20, 21, 22)
...	.....

For the complete list of all combinations, please contact our technical office.

Contacts type

	silver contacts (standard)
G	silver contacts gold plated 1 µm

Threaded conduit entry

	PG 13,5 (standard)
M2	M20x1,5

article: **FC 3395** | options: **-M1K22**

Housing

FC	metal housing, one conduit entry

Contact blocks

33	1NO+1NC, slow action
34	2NC, slow action

Preinstalled cable gland

	no cable gland (standard)
K22	with assembled cable gland suitable for Ø 5 to Ø 10 mm cables range
K26	with assembled cable gland suitable for Ø 3 to Ø 7 mm cables range

Threaded conduit entry

	PG 11 (standard)
M1	M16x1,5



Main data

- Metal housing, from one to three conduit entries
- Protection degree IP67
- 8 contact blocks available
- Stainless steel actuator
- M12 assembled connector versions
- Silver contacts gold plated versions

Markings and quality marks:

Approval IMQ:	EG605 (FD-FL-FC series)
Approval UL:	E131787
Approval CCC:	2007010305230000 (FD-FL-FC series)
Approval EZU:	1010151

Technical data

Housing

Housing type FD, FL and FC made of metal, coated with baked epoxy powder. Stainless steel actuator.
FD, FC series one conduit entry
FL series three conduit entries
Protection degree: IP67

General data

Ambient temperature:	from -25°C to +80°C

Version for operation in ambient temperature from -40°C to +80° C on request

Max operating frequency:	3600 operations cycles[1]/hour
Mechanical endurance:	1 million of operations cycles[1]
Max actuating speed:	180°/s
Min. actuating speed:	2°/s

(1) One operation cycle means two movements, one to close and one to open contacts, as foreseen by IEC 947-5-1 standard.

Cross section of the conductors (flexible copper wire)

Contact blocks 20, 21, 22, 33, 34:	min.	1 x 0,34 mm²	(1 x AWG 22)
	max.	2 x 1,5 mm²	(2 x AWG 16)
Contact blocks 7, 9, 18:	min.	1 x 0,5 mm²	(1 x AWG 20)
	max.	2 x 2,5 mm²	(2 x AWG 14)

In conformity with standards:
IEC 60947-5-1, EN 60947-5-1, IEC 60204-1, EN 60204-1, EN 1088, EN ISO 12100-1, EN ISO 12100-2, IEC 529, EN 60529, NFC 63-140, VDE 0660-200, VDE 0113, CENELEC EN 50013.
Approvals:
IEC 60947-5-1, UL 508, GB14048.5-2001

In conformity with requirements requested by:
Low Voltage Directive 2006/95/EC, Machinery Directive 2006/42/EC and Electromagnetic Compatibility 2004/108/EC.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.

⚠ **If not expressly indicated in this chapter, for the right installation and the correct utilization of all articles see requirements indicated from page 6/1 to page 6/8.**

Electrical data

without connector	Thermal current (Ith):	10 A
	Rated insulation voltage (Ui):	500 VAC 600 VDC
		400 VAC for contact blocks 20, 21, 22, 33, 34
	Protection against short circuits:	fuse 10 A 500 V type aM
	Pollution degree:	3
with 5 poles M12 connector	Thermal current (Ith):	4 A
	Rated insulation voltage (Ui):	250 VAC 300 VDC
	Protection against short circuits:	fuse 4 A 500 V type gG
	Pollution degree:	3
with 8 poles M12 connector	Thermal current (Ith):	2 A
	Rated insulation voltage (Ui):	30 VAC 36 VDC
	Protection against short circuits:	fuse 2 A 500 V type gG
	Pollution degree:	3

Utilization categories

Alternate current: AC15 (50...60 Hz)

Ue (V)	250	400	500
Ie (A)	6	4	1

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	6	1,1	0,4

Alternate current: AC15 (50...60 Hz)

Ue (V)	24	120	250
Ie (A)	4	4	4

Direct current: DC13

Ue (V)	24	125	250
Ie (A)	4	1,1	0,4

Alternate current: AC15 (50...60 Hz)

Ue (V)	24
Ie (A)	2

Direct current: DC13

Ue (V)	24
Ie (A)	2

Description

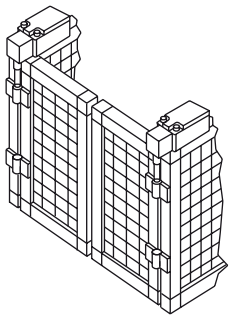
These safety switches have been designed to control gates or guards which protect against hazardous parts of the machines. They are very sensitive and positively open the contacts after few degrees of rotation, sending an immediate stop signal. The head may rotate in 90° steps, allowing its installation in a great variety of positions.
The metal housing and the stainless steel actuator allow this switch to be used even in hard environments where sedimented powder or dirty could block working of safety switches with separated actuator.

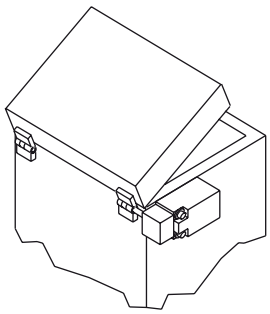
Rotating heads



Removing the four fastening screws, in all switches, it is possible to rotate the head in 90° steps.

Installation examples





Data type approved by IMQ, CCC and EZU

Rated insulation voltage (Ui): 500 VAC
400 VAC for contact blocks 20, 21, 22, 33, 34
Thermal current (Ith): 10 A
Protection against short circuits: fuse 10 A 500 V type aM
Protection degree: IP67
MV terminals (screw clamps)
Pollution degree 3
Utilization category: AC15
Operation voltage (Ue): 400 VAC (50 Hz)
Operation current (Ie): 3 A
Forms of the contact element: Zb, Y+Y, Y+Y+X, Y+Y+Y, Y+X+X
Positive opening of contacts on contact block 7, 9, 18, 20, 21, 22, 33, 34
In conformity with standards: EN60947-1, EN 60947-5-1 and subsequent modifications and completions, fundamental requirements of the Low Voltage Directive 73/23 EEC and subsequent modifications and completions.

Please contact our technical service for the list of type approved products.

Data type approved by UL

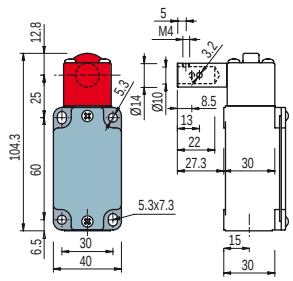
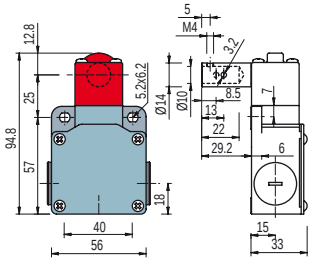
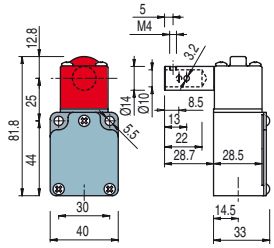
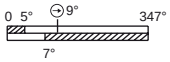
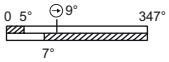
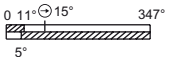
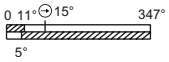
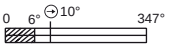
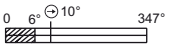
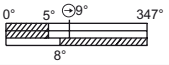
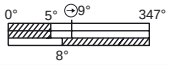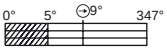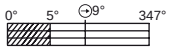
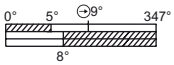
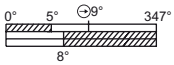
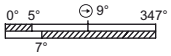
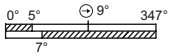
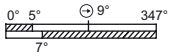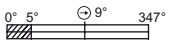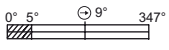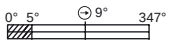
Utilization categories Q300 (69 VA, 125-250 VDC)
A600 (720 VA, 120-600 VAC)
Data of the housing type 1, 4X (indoor use only), 12, 13
In conformity with standard: UL 508
For all contact blocks use 60 or 75 °C copper (Cu) conductor and wire size No. 12-14 AWG. Terminal tightening torque of 7,1 Lb-In.

Please contact our technical service for the list of type approved products.

Dimensional drawings

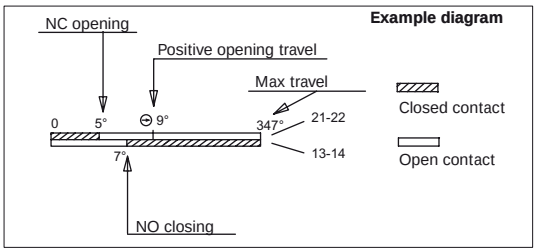
Contacts type:

L = slow action
LO = slow action overlapped

Contact blocks		metal housing Stainless steel actuator	metal housing Stainless steel actuator	metal housing Stainless steel actuator
				
18	L	FD 1895 → 1NO+1NC 	FL 1895 → 1NO+1NC 	
7	LO	FD 795 → 1NO+1NC 	FL 795 → 1NO+1NC 	
9	L	FD 995 → 2NC 	FL 995 → 2NC 	
20	L	FD 2095 → 1NO+2NC 	FL 2095 → 1NO+2NC 	
21	L	FD 2195 → 3NC 	FL 2195 → 3NC 	
22	L	FD 2295 → 2NO+1NC 	FL 2295 → 2NO+1NC 	
33	L	FD 3395 → 1NO+1NC 	FL 3395 → 1NO+1NC 	FC 3395 → 1NO+1NC 
34	L	FD 3495 → 2NC 	FL 3495 → 2NC 	FC 3495 → 2NC 
Min. force		0,15 Nm (0,4 Nm →)	0,15 Nm (0,4 Nm →)	0,15 Nm (0,4 Nm →)

How to read travel diagrams

All measures in the diagrams are in degrees



IMPORTANT:
In safety applications it is necessary to activate the switch **at least up to the positive opening point** indicated in the diagrams with the symbol →. Operate the switch **at least with the positive opening force**, indicated between brackets, below each article, next the value of minimum force.

Accessories See page 5/1

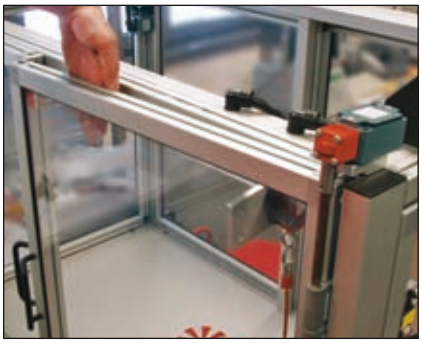
Items with code on the **green** background are available in stock

All measures in the drawings are in mm

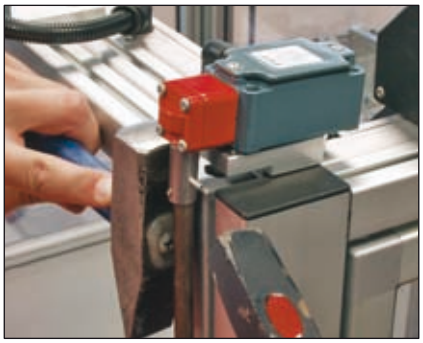
Regulation of intervention point



Temporary shaft locking (dowel provided).



Verify the operating point according to EN 294, adjust the operating point again if necessary



Switch locking (pin provided).

Notes