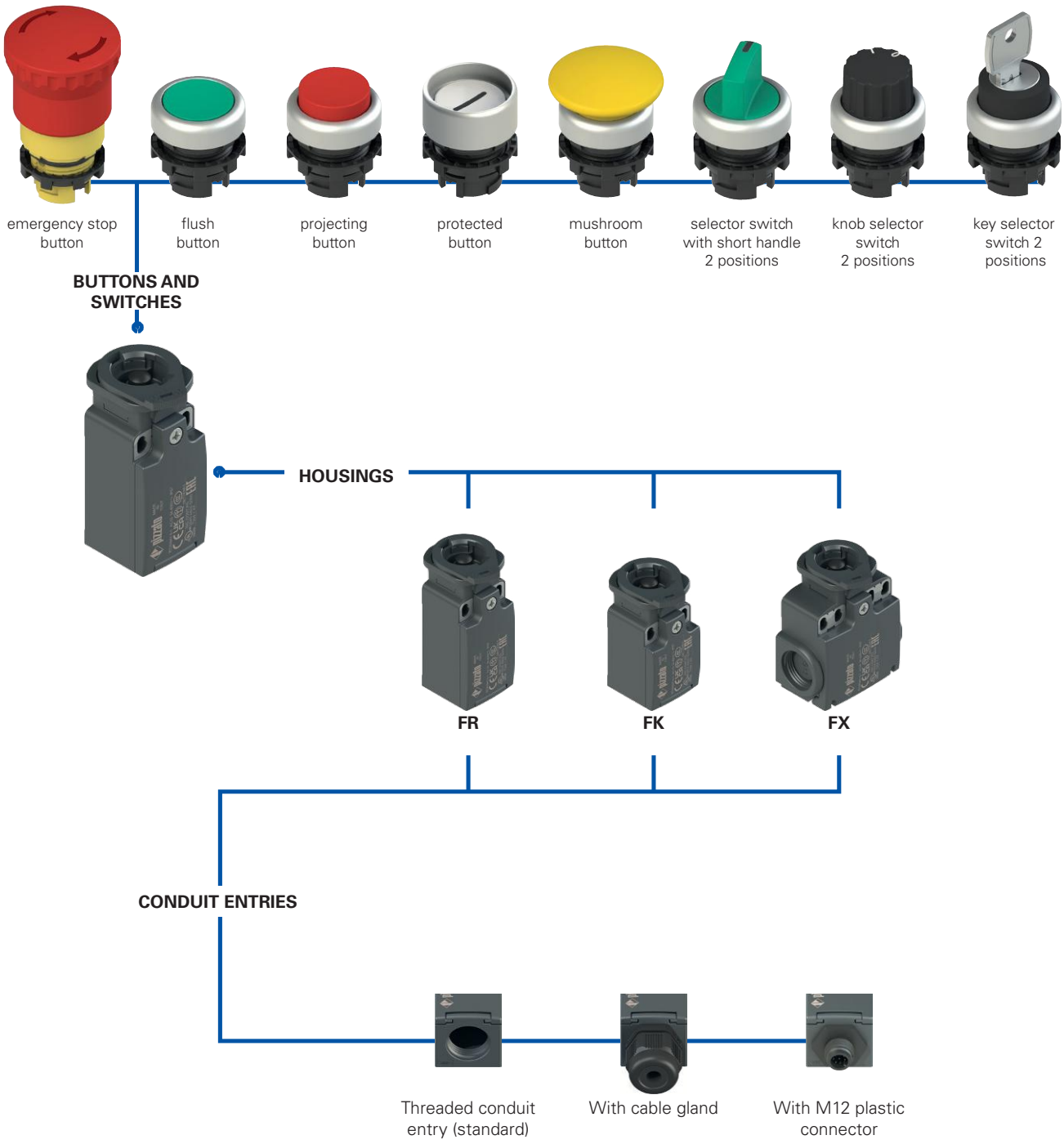
Selection diagram



Code structure

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

article option option

FR 6E2-GM2K23T6

Housing	
FR	technopolymer, one conduit entry
FX	technopolymer, two conduit entries

Contact block	
6	1NO+1NC, slow action
9	2NC, slow action
20	1NO+2NC, slow action

Contact type	
	silver contacts (standard)
G	silver contacts with 1 µm gold coating
G1	silver contacts with 2.5 µm gold plating (not for contact block 20)

Pre-installed cable glands or connectors	
	no cable gland or connector (standard)
K23	cable gland for cables Ø 6 … 12 mm
...	...
K70	M12 plastic connector, 4-pole
...	...

For the complete list of possible combinations please contact our technical department.

Threaded conduit entry	
M2	M20x1.5

Ambient temperature	
	-25°C … +80°C (standard)
T6	-40°C … +80°C

article option option

FK 33E2-GM2K24T6

Housing	
FK	technopolymer, one conduit entry

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

Contact type	
	silver contacts (standard)
G	silver contacts with 1 µm gold coating

Pre-installed cable glands or connectors	
	no cable gland or connector (standard)
K24	cable gland for cables Ø 5 … 10°mm
K70	M12 plastic connector, 4-pole

For the complete list of possible combinations please contact our technical department.

Threaded conduit entry	
M2	M20x1.5 (standard)
	PG 11

Ambient temperature	
	-25°C … +80°C (standard)
T6	-40°C … +80°C



Main features

- Protection degrees IP67 and IP69K
- Technopolymer housing
- Versions with gold-plated silver contacts

Quality marks:

IMQ approval:	EG610
UL approval:	E131787
CCC approval:	2024010305656753
EAC approval:	RU Д-IT.PA07.B.37848/24

Compliance with the requirements of:
Low Voltage Directive 2014/35/EU,
EMC Directive 2014/30/EU,
RoHS Directive 2011/65/EU.
Positive contact opening in conformity with standards:
IEC 60947-5-1, EN 60947-5-1.

In compliance with standards:
IEC 60947-5-1, EN 60947-5-1, EN 60947-1, EN 50047, IEC 60204-1, EN 60204-1, EN ISO 14119, EN ISO 12100, IEC 60529, EN 60529, EN IEC 63000, UL 508, CSA C22.2 No. 14, GB/T14048.5.

Technical data

General data

Housing made of glass fibre reinforced technopolymer, self-extinguishing, shock-proof and with double insulation	⧈
FR series, one conduit entry:	M20x1.5
FK series: one threaded conduit entry:	M20x1.5
FX series, two knock-out threaded conduit entries:	M20x1.5
Protection degree:	IP67 acc. to EN 60529 with cable gland of equal or higher protection degree IP69K acc. to ISO 20653 with cable gland of equal or higher protection degree
Ambient temperature:	-25°C … +80°C (standard) -40°C … +80°C (T6 option)
Safety parameter B_{10D}:	40,000,000
Max. actuation frequency:	3600 operating cycles/hour
Mechanical endurance:	20 million operating cycles
Utilization requirements:	See page 179

Contact block

Switching force, FR, FX series contacts	
1NO+1NC:	3.3 N (NC) / 6 N (NO)
2NC:	6.5 N
1NO+2NC:	5.8 N (NC) / 6.5 N (NO)
Switching force, FK series contacts	
1NO+1NC:	4.5 N (NC) / 5.3 N (NO)
2NC:	4.4 N
FR, FX series limit of travel force	
1NO+1NC:	9 N
2NC:	8.5 N
1NO+2NC:	10.3 N
FK series limit of travel force	
1NO+1NC:	9.3 N
2NC:	8 N
Positive opening force	25 N
Actuation speed	min 1 mm/s max. 0.5 m/s
Material of the contacts:	Normal: silver contacts (standard) Low current: silver contacts with gold plating (on request)
Cable cross section (flexible copper strands)	
Contact blocks 20, 33, 34:	min. 1 x 0.34 mm² (1 x AWG 22) max. 2 x 1.5 mm² (2 x AWG 16)
Contact blocks 6, 9:	min. 1 x 0.5 mm² (1 x AWG 20) max. 2 x 2.5 mm² (2 x AWG 14)
Cable stripping length:	7 mm for contact blocks 20, 33, 34 8 mm for contact blocks 6, 9
Tightening torque of the terminal screws:	0.6 … 0.8 Nm
Wiring diagrams of the assembled connectors:	see page 212

⚠ **Installation for safety applications:**
Use only contact blocks marked with the symbol ⊖. The safety circuit must always be connected to **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32).

Electrical data			Utilization category
without connector	Thermal current (I_{th}):	10 A	Alternating 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) 3 0.55 0.3
	Rated insulation voltage (U_i):	500 Vac 600 Vdc 400 Vac 500 Vdc (contact blocks 20, 33, 34)	
	Rated impulse withstand voltage (U_{imp}):	6 kV / 4 kV (contact blocks 20, 33, 34)	
	Conditional short circuit current:	1000 A acc. to EN 60947-5-1	
	Protection against short circuits:	type aM fuse 10 A 500 V	
	Pollution degree:	3	
with M12 connector, 4-pole	Thermal current (I_{th}):	4 A	Alternating 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) 3 0.55 0.3
	Rated insulation voltage (U_i):	250 Vac 300 Vdc	
	Protection against short circuits:	type gG fuse 4 A 500 V	
	Pollution degree:	3	
with M12 connector, 8-pole	Thermal current (I_{th}):	2 A	Alternating current: AC15 (50÷60 Hz) Ue (V) 24 Ie (A) 2 Direct current: DC13 Ue (V) 24 Ie (A) 2
	Rated insulation voltage (U_i):	30 Vac 36 Vdc	
	Protection against short circuits:	type gG fuse 2 A 500 V	
	Pollution degree:	3	

Features approved by UL

Electrical ratings: Q300 (69 VA, 125-250 Vdc)
A600 (720 VA, 120-600 Vac)
Housing features type: FR types 1, 4X
FX, FK types 1, 4X, 12, 13

For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductors, rigid or flexible, wire size 12, 14 AWG. Tightening torque for terminal screws of 7.1 lb in (0.8 Nm).
For contact blocks 2 and 3 use 60 or 75 °C copper (Cu) conductors, rigid or flexible, wire size 14 AWG. Tightening torque for terminal screws of 12 lb in (1.4 Nm).

In compliance with standard: UL 508, CSA 22.2 No.14

Please contact our technical department for the list of approved products.

Features approved by IMQ

Rated insulation voltage (U_i): 500 Vac
400 Vac (for contact blocks 20, 33, 34)
Conventional free air thermal current (I_{th}): 10 A
Protection against short circuits: type aM fuse 10 A 500 V
Rated impulse withstand voltage (U_{imp}): 6 kV
4 kV (for contact blocks 20, 33, 34)
Protection degree of the housing: IP67
MV terminals (screw terminals)
Pollution degree: 3
Utilization category: AC15
Operating voltage (Ue): 400 Vac (50 Hz)
Operating current (Ie): 3 A

Forms of the contact element: Zb, Y+Y, Y+Y+X
Positive opening of contacts on contact blocks 6, 9, 20, 33, 34
In compliance with standards: EN 60947-1, EN 60947-5-1, fundamental requirements of the Low Voltage Directive 2014/35/EU.

Please contact our technical department for the list of approved products.

Description



The protected contact block makes it possible to achieve IP67 and IP69K protection degrees also in the contact area. This is essential if there is dust inside the panel (for example, in equipment used in the timber sector).
The buttons, the 2-position selectors and the emergency stop buttons of the EROUND series can be used as normal actuators in the FR, FK, and FX protected contact blocks.

Applications



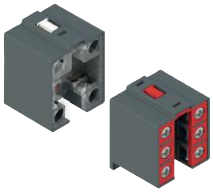
Protected contact block for control devices fitted in switching cabinets with the presence of dust also inside the cabinet. The block ensures IP67 and IP69K protection degrees for internal electric contacts.

Extended temperature range

-40°C

These devices are also available in a special version suitable for an ambient operating temperature range from -40°C up to +80°C.
They can therefore be used for applications in cold stores, sterilisers and other equipment with low temperature environments. The special materials used to produce these versions retain their characteristics even under these conditions, thereby expanding the installation possibilities.

Contact block



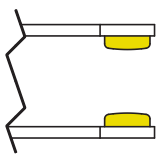
Contact blocks with captive screws, finger protection, twin bridge contacts and double interruption for higher contact reliability. They are available in multiple variants with shifted activation travels, simultaneous or overlapping. They are suitable for many different applications.

Protection degrees IP67 and IP69K

IP69K
IP67

These devices are designed to be used under the toughest environmental conditions, and they pass the IP67 immersion test acc. to EN 60529. They can therefore be used in all environments where the maximum degree of protection is required for the housing. All switches with actuator that do not have an external rubber hood also have a protection degree of IP69K in accordance with ISO 20653, and can be used on machinery subject to washing with water jets at 100 bar and 80°C.

Gold-plated contacts



The contact blocks of these devices can be supplied gold-plated upon request. Ideal for applications with low voltages or currents; it ensures increased contact reliability. Available in two thicknesses (1 or 2.5 microns), it adapts perfectly to the various fields of application, ensuring a long endurance over time.

Selection table for contact blocks



Contact block	Article
1NO+1NC, slow action	FR 6E2-M2
2NC, slow action	FR 9E2-M2
1NO+2NC, slow action	FR 20E2-M2



Contact block	Article
1NO+1NC, slow action	FX 6E2-M2
2NC, slow action	FX 9E2-M2
1NO+2NC, slow action	FX 20E2-M2

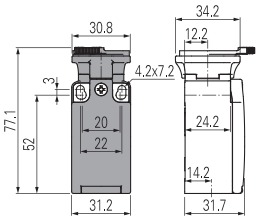


Contact block	Article
1NO+1NC, slow action	FK 33E2-M2
2NC, slow action	FK 34E2-M2

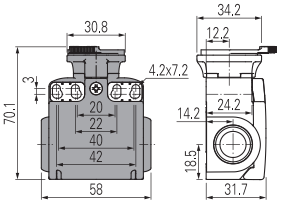
Dimensional drawings

All values in the drawings are in mm

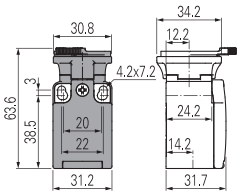
FR series



FX series



FK series



➔ The 2D and 3D files are available at **www.pizzato.com**

Limits of use

The protected contact block protects exclusively the electric contacts from fine dust or water coming from the switching cabinet.
The protected contact block can be combined only with following devices:
- E2 •PU•••••• buttons
- E2 •PE•••••• emergency stop buttons
- E2 •SE•2•••••••• two-position selector switches
- E2 •SC2•••••••• two-position key selector switches.

The protected contact block must be wired before the coupling with its actuator.
After the wiring, excessive traction on the cable or impacts on the housing can cause the detachment of the contact block from the actuator.
Do not use in environments with presence of explosive or flammable gas. In these cases, use ATEX products (see dedicated Pizzato catalogue).

Notes