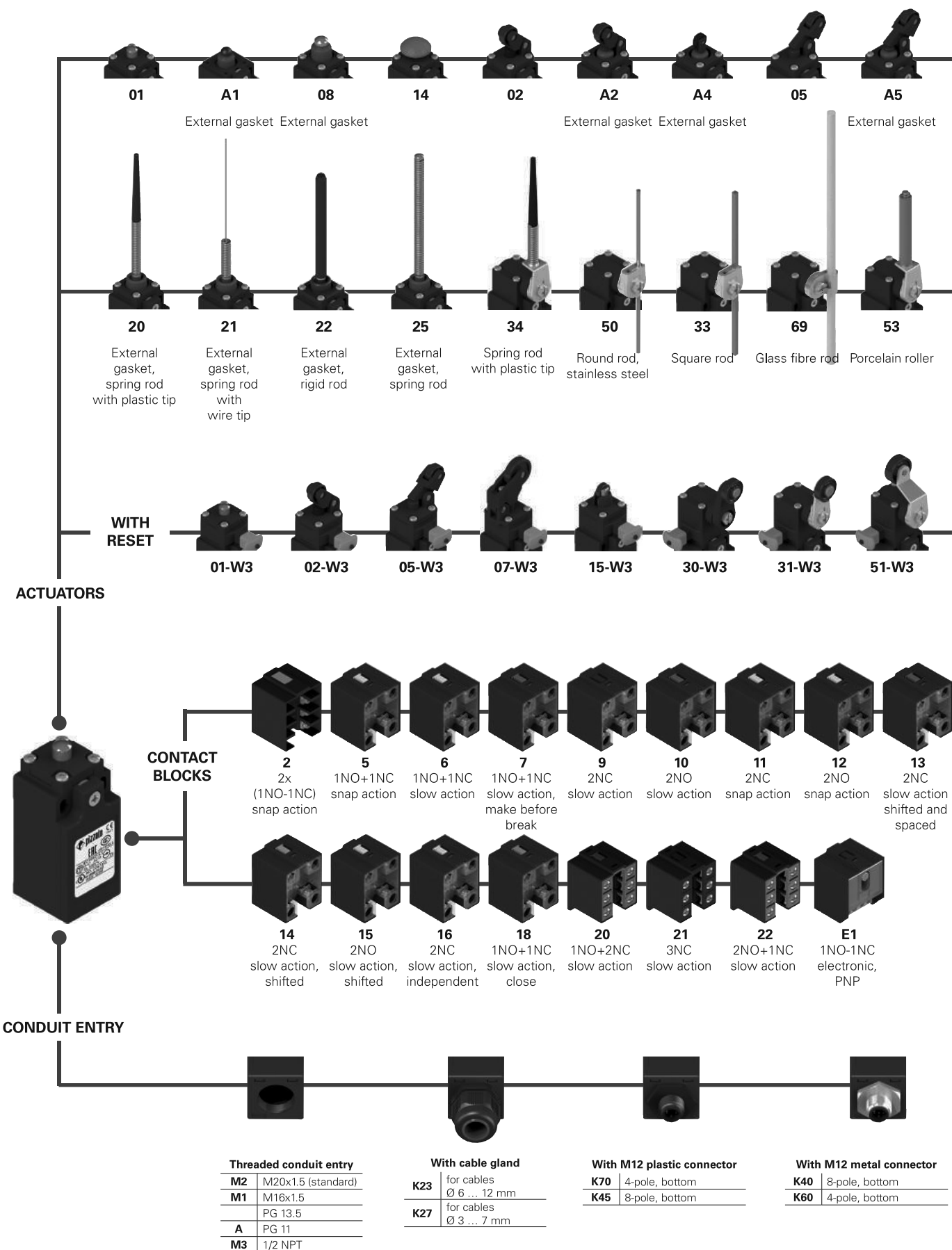
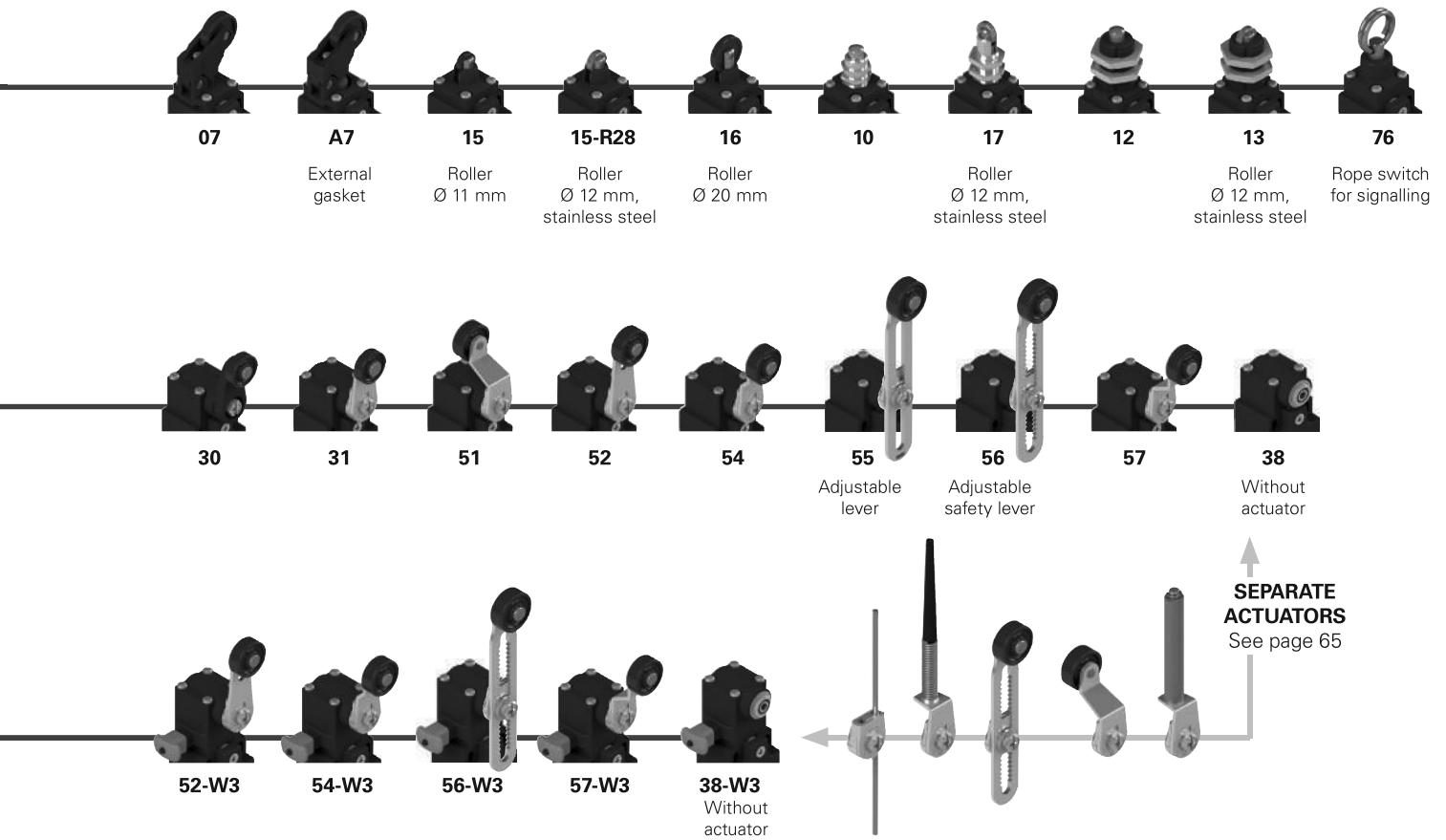


Selection diagram



● Product options
→ Sold separately as accessory


Code structure

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

article options options
FR 502-W3XGM2K70R23T6

| Housing | |
|-----------|----------------------------------|
| FR | technopolymer, one conduit entry |

| Contact block | |
|---------------|---|
| 5 | 1NO+1NC, snap action |
| 6 | 1NO+1NC, slow action |
| 7 | 1NO+1NC, slow action, make before break |
| ... | |

| Actuators | |
|-----------|--------------------------|
| 01 | short plunger |
| 02 | roller lever |
| 05 | angled lever with roller |
| ... | |

| Reset | |
|-----------|-------------------------------------|
| | without reset (standard) |
| W3 | simultaneous reset |
| W4 | simultaneous reset, increased force |

| External metallic parts | |
|-------------------------|------------------------------|
| | zinc-plated steel (standard) |
| X | stainless steel |

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

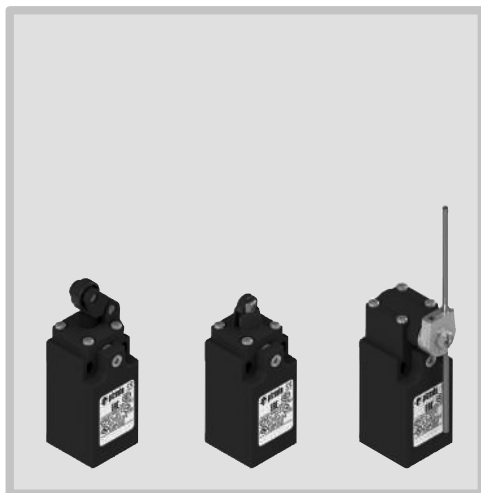
| Pre-installed cable glands or connectors | |
|--|--|
| | no cable gland or connector (standard) |
| K23 | cable gland for cables Ø 6 ... 12 mm |
| K70 | M12 plastic connector, 4-pole |

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

| Threaded conduit entry | |
|------------------------|--------------------|
| M2 | M20x1.5 (standard) |
| M1 | M16x1.5 |
| | PG 13.5 |
| A | PG 11 |
| M3 | 1/2 NPT |

| Rollers | |
|------------|--|
| | standard roller |
| R28 | stainless steel Ø 12 mm (for actuators A4, 15) |
| R23 | stainless steel Ø 14 mm (for actuators A2, 02, A5, 05, 30, 31, 51, 52, 54, 55, 56, 57) |
| R24 | stainless steel Ø 20 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57) |
| R36 | stainless steel Ø 16 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57) |
| R25 | technopolymer, Ø 35 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57) |
| R5 | rubber, Ø 40 mm (for actuators 30, 31, 51, 52, 54, 55, 56, 57) |
| R26 | rubber, Ø 50 mm (for actuators 51, 52, 54, 55, 56, 57) |
| R27 | rubber, protruding, Ø 50 mm (for actuators 55, 56) |

| Contact type | |
|--------------|--|
| | silver contacts (standard) |
| G | silver contacts, 1 µm gold coating |
| G1 | silver contacts, 2.5 µm gold coating (not for contact block 2, 20, 21, 22) |



Main features

- Technopolymer housing, one conduit entry
- Protection degree IP67
- 17 contact blocks available
- 48 actuators available
- Versions with external parts in stainless steel
- Versions with M12 connector
- Versions with gold-plated silver contacts

Quality marks:



| | |
|---------------|-------------------------|
| IMQ approval: | EG610 |
| UL approval: | E131787 |
| CCC approval: | 2020970305002284 |
| EAC approval: | RU C-IT.YT03.B.00035/19 |

Technical data

Housing

Housing made of glass fibre reinforced technopolymer, self-extinguishing, shock-proof and with double insulation: 

| | |
|-------------------------------------|--|
| One threaded conduit entry: | M20x1.5 (standard) |
| Protection degree acc. to EN 60529: | IP67 with cable gland of equal or higher protection degree |

General data

| | |
|---|---|
| Ambient temperature: | -25°C ... +80°C (standard) -40°C ... +80°C (T6 option) |
| Max. actuation frequency: | 3600 operating cycles/hour |
| Mechanical endurance: | 20 million operating cycles |
| Mounting position: | any |
| Safety parameter B _{10D} : | 40,000,000 for NC contacts |
| Mechanical interlock, not coded: | type 1 acc. to EN ISO 14119 |
| Tightening torques for installation: | see page 229 |
| Wire cross-sections and wire stripping lengths: | see page 247 |

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 22.2 No.14

Approvals:

IEC 60947-5-1, UL 508, CSA 22.2 No.14, GB/T14048.5


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.

Installation for safety applications:

Use only switches marked with the symbol  next to the product code. Always connect the safety circuit to the **NC contacts** (normally closed contacts: 11-12, 21-22 or 31-32) as required by **EN ISO 14119, paragraph 5.4** for specific interlock applications and **EN ISO 13849-2 tables D3** (well-tried components) and **D.8** (fault exclusions) for safety applications in general. Actuate the switch **at least up to the positive opening travel** shown in the travel diagrams on page 230. Actuate the switch **at least with the positive opening force**, reported in brackets below each article, next to the actuating force value.

⚠ If not expressly indicated in this chapter, for correct installation and utilization of all articles see the instructions given on pages 225 to 240.

| | Electrical data | Utilization category |
|----------------------------|---|---|
| without connector | Thermal current (I _{th}): | 10 A |
| | Rated insulation voltage (U): | 500 Vac 600 Vdc 400 Vac 500 Vdc (contact blocks 2, 11, 12, 20, 21, 22) |
| | Rated impulse withstand voltage (U _{imp}): | 6 kV 4 kV (contact blocks 20, 21, 22) |
| | Conditional short circuit current: Protection against short circuits: Pollution degree: | 1000 A acc. to EN 60947-5-1 type aM fuse 10 A 500 V 3 |
| with M12 connector, 4-pole | Thermal current (I _{th}): | 4 A |
| | Rated insulation voltage (U): | 250 Vac 300 Vdc |
| | Protection against short circuits: Pollution degree: | type gG fuse 4 A 500 V 3 |
| | | 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 |
| with M12 connector, 8-pole | Thermal current (I _{th}): | 2 A |
| | Rated insulation voltage (U): | 30 Vac 36 Vdc |
| | Protection against short circuits: Pollution degree: | type gG fuse 2 A 500 V 3 |
| | | Alternating current: AC15 (50±60 Hz) Ue (V) 24 Ie (A) 2 Direct current: DC13 Ue (V) 24 Ie (A) 2 |



Features approved by IMQ

Rated insulation voltage (U_i): 500 Vac
 400 Vac (for contact blocks 2, 11, 12, 20, 21, 22, 28, 29, 30, 37, 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, 21, 22, 28, 29, 30, 33, 34)

Protection degree of the housing: IP67

MV terminals (screw terminals)

Pollution degree: 3

Utilization category: AC15

Operating voltage (U_e): 400 Vac (50 Hz)

Operating current (I_e): 3 A

Forms of the contact element: Za, Za+Za, X+X, Zb, Y+Y, Y+Y+X, Y+Y+Y, Y+X+X, Y, X.

Positive opening of contacts on contact blocks 5, 6, 7, 8, 9, 11, 13, 14, 16, 17, 18, 19, 20, 21, 22, 28, 29, 30, 33, 34, 37, 38, 39, 66.

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.

Features approved by UL

Electrical Ratings: Q300 pilot duty (69 VA, 125-250 V dc)
 A600 pilot duty (720 VA, 120-600 V ac)

Environmental Ratings: Types 1, 4X, 12, 13

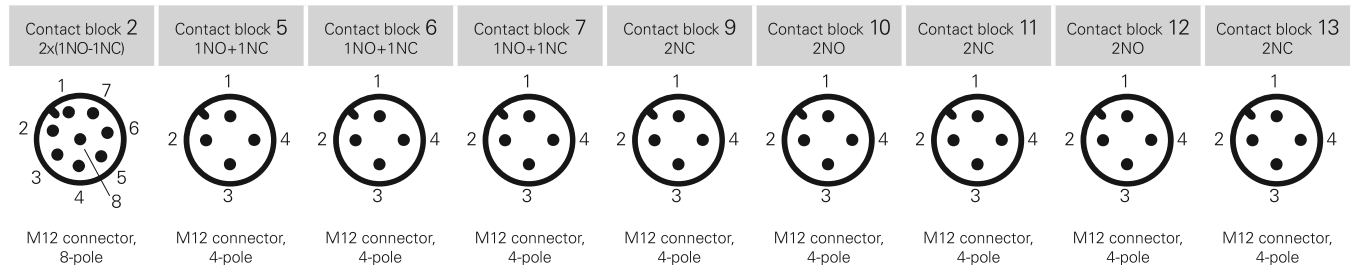
For all contact blocks except 2 and 3 use 60 or 75°C copper (Cu) conductors, rigid or flexible, wire size 12, 14 AWG. Tightening torque for terminal screws of 7.1 lb in (0.8 Nm).

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).

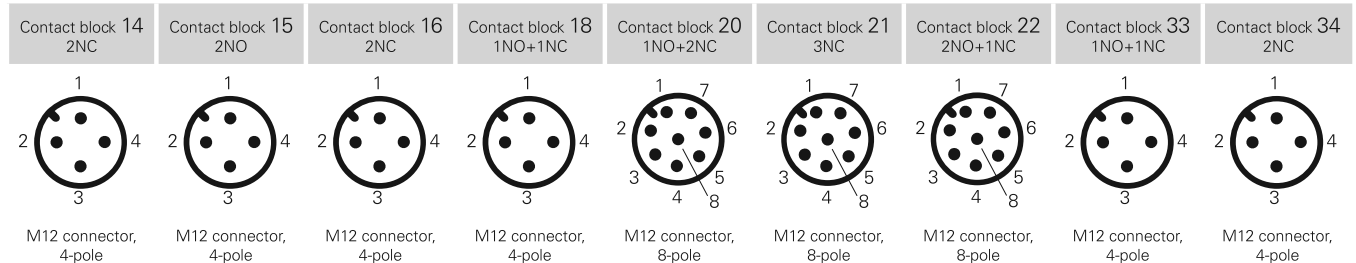
The hub is to be connected to the conduit before the hub is connected to the enclosure.

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

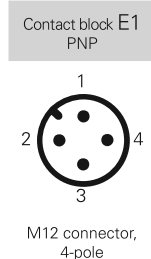
Wiring diagram for M12 connectors



| Contacts | Pin no. | Contacts | Pin no. | Contacts | Pin no. | Contacts | Pin no. | Contacts | Pin no. | Contacts | Pin no. | Contacts | Pin no. | Contacts | Pin no. |
|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| NO | 3-4 | NC | 1-2 | NC | 1-2 | NC | 1-2 | NC | 1-2 | NO | 1-2 | NC | 1-2 | NO | 1-2 |
| NC | 5-6 | NO | 3-4 | NO | 3-4 | NO | 3-4 | NC | 3-4 | NO | 3-4 | NC | 3-4 | NO | 3-4 |
| NC | 7-8 | | | | | | | | | | | | | | |
| NO | 1-2 | | | | | | | | | | | | | | |



| Contacts | Pin no. | Contacts | Pin no. | Contacts | Pin no. | Contacts | Pin no. | Contacts | Pin no. | Contacts | Pin no. | Contacts | Pin no. | Contacts | Pin no. |
|----------|---------|----------|---------|------------------------|---------|----------|---------|----------|---------|----------|---------|----------|---------|----------|---------|
| NC (1°) | 1-2 | NO (1°) | 1-2 | NC, lever to the right | 1-2 | NC | 1-2 | NC | 3-4 | NC | 3-4 | NC | 3-4 | NC | 1-2 |
| NC (2°) | 3-4 | NO (2°) | 3-4 | NC, lever to the left | 3-4 | NO | 3-4 | NC | 5-6 | NC | 5-6 | NO | 5-6 | NO | 3-4 |
| | | | | | | | | | NO | 7-8 | NC | 7-8 | NO | 7-8 | |



| Contacts | Pin no. |
|----------|---------|
| + | 1 |
| - | 3 |
| NC | 2 |
| NO | 4 |

FR series position switches

| Contact type | External gasket | | With stainless steel roller on request | | External gasket | | |
|---|--|------------|--|------------|--|-------------|---------|
| | With stainless steel roller on request | | | | With stainless steel roller on request | | |
| <ul style="list-style-type: none"> R = snap action L = slow action LO = slow action, make before break LS = slow action, shifted LV = slow action, shifted and spaced LI = slow action, independent LA = slow action, close E = electronic, PNP | | | | | | | |
| Contact block | | | | | | | |
| 2 | R | FR 201-M2 | 2x(1NO-1NC) | / | FR 202-M2 | 2x(1NO-1NC) | |
| 5 | R | FR 501-M2 | 1NO+1NC | FR 5A1-M2 | 1NO+1NC | FR 502-M2 | 1NO+1NC |
| 6 | L | FR 601-M2 | 1NO+1NC | FR 6A1-M2 | 1NO+1NC | FR 602-M2 | 1NO+1NC |
| 7 | LO | FR 701-M2 | 1NO+1NC | FR 7A1-M2 | 1NO+1NC | FR 702-M2 | 1NO+1NC |
| 9 | L | FR 901-M2 | 2NC | FR 9A1-M2 | 2NC | FR 902-M2 | 2NC |
| 10 | L | FR 1001-M2 | 2NO | FR 10A1-M2 | 2NO | FR 1002-M2 | 2NO |
| 11 | R | FR 1101-M2 | 2NC | FR 11A1-M2 | 2NC | FR 1102-M2 | 2NC |
| 12 | R | FR 1201-M2 | 2NO | FR 12A1-M2 | 2NO | FR 1202-M2 | 2NO |
| 13 | LV | FR 1301-M2 | 2NC | FR 13A1-M2 | 2NC | FR 1302-M2 | 2NC |
| 14 | LS | FR 1401-M2 | 2NC | FR 14A1-M2 | 2NC | FR 1402-M2 | 2NC |
| 15 | LS | FR 1501-M2 | 2NO | FR 15A1-M2 | 2NO | FR 1502-M2 | 2NO |
| 18 | LA | FR 1801-M2 | 1NO+1NC | FR 18A1-M2 | 1NO+1NC | FR 1802-M2 | 1NO+1NC |
| 20 | L | FR 2001-M2 | 1NO+2NC | FR 20A1-M2 | 1NO+2NC | FR 2002-M2 | 1NO+2NC |
| 21 | L | FR 2101-M2 | 3NC | FR 21A1-M2 | 3NC | FR 2102-M2 | 3NC |
| 22 | L | FR 2201-M2 | 2NO+1NC | FR 22A1-M2 | 2NO+1NC | FR 2202-M2 | 2NO+1NC |
| E1 | E | FR E101-M2 | 1NO-1NC | FR E1A1-M2 | 1NO-1NC | FR E102-M2 | 1NO-1NC |
| Max. speed | page 229 - type 4 | | page 229 - type 4 | | page 229 - type 3 | | |
| Actuating force | 8 N (25 N ⊕) | | 6 N (25 N ⊕) | | 6 N (25 N ⊕) | | |
| Travel diagrams | page 230 - group 1 | | page 230 - group 1 | | page 230 - group 2 | | |

| Contact type | External gasket | | With stainless steel roller on request | | External gasket | | |
|---|--|------------|--|------------|--|------------|-------------|
| | With Ø 12 mm stainless steel roller on request | | | | With stainless steel roller on request | | |
| <ul style="list-style-type: none"> R = snap action L = slow action LO = slow action, make before break LS = slow action, shifted LV = slow action, shifted and spaced LI = slow action, independent LA = slow action, close E = electronic, PNP | | | | | | | |
| Contact block | | | | | | | |
| 2 | R | FR 2A4-M2 | 2x(1NO-1NC) | FR 205-M2 | 2x(1NO-1NC) | FR 2A5-M2 | 2x(1NO-1NC) |
| 5 | R | FR 5A4-M2 | 1NO+1NC | FR 505-M2 | 1NO+1NC | FR 5A5-M2 | 1NO+1NC |
| 6 | L | FR 6A4-M2 | 1NO+1NC | FR 605-M2 | 1NO+1NC | FR 6A5-M2 | 1NO+1NC |
| 7 | LO | FR 7A4-M2 | 1NO+1NC | FR 705-M2 | 1NO+1NC | FR 7A5-M2 | 1NO+1NC |
| 9 | L | FR 9A4-M2 | 2NC | FR 905-M2 | 2NC | FR 9A5-M2 | 2NC |
| 10 | L | FR 10A4-M2 | 2NO | FR 1005-M2 | 2NO | FR 10A5-M2 | 2NO |
| 11 | R | FR 11A4-M2 | 2NC | FR 1105-M2 | 2NC | FR 11A5-M2 | 2NC |
| 12 | R | FR 12A4-M2 | 2NO | FR 1205-M2 | 2NO | FR 12A5-M2 | 2NO |
| 13 | LV | FR 13A4-M2 | 2NC | FR 1305-M2 | 2NC | FR 13A5-M2 | 2NC |
| 14 | LS | FR 14A4-M2 | 2NC | FR 1405-M2 | 2NC | FR 14A5-M2 | 2NC |
| 15 | LS | FR 15A4-M2 | 2NO | FR 1505-M2 | 2NO | FR 15A5-M2 | 2NO |
| 18 | LA | FR 18A4-M2 | 1NO+1NC | FR 1805-M2 | 1NO+1NC | FR 18A5-M2 | 1NO+1NC |
| 20 | L | FR 20A4-M2 | 1NO+2NC | FR 2005-M2 | 1NO+2NC | FR 20A5-M2 | 1NO+2NC |
| 21 | L | FR 21A4-M2 | 3NC | FR 2105-M2 | 3NC | FR 21A5-M2 | 3NC |
| 22 | L | FR 22A4-M2 | 2NO+1NC | FR 2205-M2 | 2NO+1NC | FR 22A5-M2 | 2NO+1NC |
| E1 | E | FR E1A4-M2 | 1NO-1NC | FR E105-M2 | 1NO-1NC | FR E1A5-M2 | 1NO-1NC |
| Max. speed | page 229 - type 5 | | page 229 - type 3 | | page 229 - type 3 | | |
| Actuating force | 6 N (25 N ⊕) | | 6 N (25 N ⊕) | | 4.3 N (25 N ⊕) | | |
| Travel diagrams | page 230 - group 1 | | page 230 - group 2 | | page 230 - group 2 | | |

All values in the drawings are in mm

Accessories See page 207

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



| Contact type | External gasket | | External gasket | | Secured only by means of threaded head in vertical position | |
|---|---------------------------|-------------|---------------------------|-------------|---|-------------|
| <ul style="list-style-type: none"> R = snap action L = slow action LO = slow action, make before break LS = slow action, shifted LV = slow action, shifted and spaced LI = slow action, independent LA = slow action, close ⚡ = electronic, PNP | | | | | | |
| Contact block | | | | | | |
| 2 R | FR 2A7-M2 | 2x(1NO-1NC) | FR 208-M2 | 2x(1NO-1NC) | FR 210-M2 | 2x(1NO-1NC) |
| 5 R | FR 5A7-M2 | 1NO+1NC | FR 508-M2 | 1NO+1NC | FR 510-M2 | 1NO+1NC |
| 6 L | FR 6A7-M2 | 1NO+1NC | FR 608-M2 | 1NO+1NC | FR 610-M2 | 1NO+1NC |
| 7 LO | FR 7A7-M2 | 1NO+1NC | FR 708-M2 | 1NO+1NC | FR 710-M2 | 1NO+1NC |
| 9 L | FR 9A7-M2 | 2NC | FR 908-M2 | 2NC | FR 910-M2 | 2NC |
| 10 L | FR 10A7-M2 | 2NO | FR 1008-M2 | 2NO | FR 1010-M2 | 2NO |
| 11 R | FR 11A7-M2 | 2NC | FR 1108-M2 | 2NC | FR 1110-M2 | 2NC |
| 12 R | FR 12A7-M2 | 2NO | FR 1208-M2 | 2NO | FR 1210-M2 | 2NO |
| 13 LV | FR 13A7-M2 | 2NC | FR 1308-M2 | 2NC | FR 1310-M2 | 2NC |
| 14 LS | FR 14A7-M2 | 2NC | FR 1408-M2 | 2NC | FR 1410-M2 | 2NC |
| 15 LS | FR 15A7-M2 | 2NO | FR 1508-M2 | 2NO | FR 1510-M2 | 2NO |
| 18 LA | FR 18A7-M2 | 1NO+1NC | FR 1808-M2 | 1NO+1NC | FR 1810-M2 | 1NO+1NC |
| 20 L | FR 20A7-M2 | 1NO+2NC | FR 2008-M2 | 1NO+2NC | FR 2010-M2 | 1NO+2NC |
| 21 L | FR 21A7-M2 | 3NC | FR 2108-M2 | 3NC | FR 2110-M2 | 3NC |
| 22 L | FR 22A7-M2 | 2NO+1NC | FR 2208-M2 | 2NO+1NC | FR 2210-M2 | 2NO+1NC |
| E1 ⚡ | FR E1A7-M2 | 1NO-1NC | FR E108-M2 | 1NO-1NC | FR E110-M2 | 1NO-1NC |
| Max. speed | page 229 - type 3 | | page 229 - type 4 | | page 229 - type 4 | |
| Actuating force | 3 N (25 N \rightarrow) | | 8 N (25 N \rightarrow) | | 8 N (25 N \rightarrow) | |
| Travel diagrams | page 230 - group 3 | | page 230 - group 1 | | page 230 - group 1 | |

| Contact type | Roller, Ø 11 mm, technopolymer | | Roller, Ø 12 mm, stainless steel | |
|---|--------------------------------|-------------|----------------------------------|-------------|
| <ul style="list-style-type: none"> R = snap action L = slow action LO = slow action, make before break LS = slow action, shifted LV = slow action, shifted and spaced LI = slow action, independent LA = slow action, close ⚡ = electronic, PNP | | | | |
| Contact block | | | | |
| 2 R | FR 213-M2 | 2x(1NO-1NC) | FR 214-M2 | 2x(1NO-1NC) |
| 5 R | FR 513-M2 | 1NO+1NC | FR 514-M2 | 1NO+1NC |
| 6 L | FR 613-M2 | 1NO+1NC | FR 614-M2 | 1NO+1NC |
| 7 LO | FR 713-M2 | 1NO+1NC | FR 714-M2 | 1NO+1NC |
| 9 L | FR 913-M2 | 2NC | FR 914-M2 | 2NC |
| 10 L | FR 1013-M2 | 2NO | FR 1014-M2 | 2NO |
| 11 R | FR 1113-M2 | 2NC | FR 1114-M2 | 2NC |
| 12 R | FR 1213-M2 | 2NO | FR 1214-M2 | 2NO |
| 13 LV | FR 1313-M2 | 2NC | FR 1314-M2 | 2NC |
| 14 LS | FR 1413-M2 | 2NC | FR 1414-M2 | 2NC |
| 15 LS | FR 1513-M2 | 2NO | FR 1514-M2 | 2NO |
| 18 LA | FR 1813-M2 | 1NO+1NC | FR 1814-M2 | 1NO+1NC |
| 20 L | FR 2013-M2 | 1NO+2NC | FR 2014-M2 | 1NO+2NC |
| 21 L | FR 2113-M2 | 3NC | FR 2114-M2 | 3NC |
| 22 L | FR 2213-M2 | 2NO+1NC | FR 2214-M2 | 2NO+1NC |
| E1 ⚡ | FR E113-M2 | 1NO-1NC | FR E114-M2 | 1NO-1NC |
| Max. speed | page 229 - type 2 | | page 229 - type 4 | |
| Actuating force | 8 N (25 N \rightarrow) | | 8 N (25 N \rightarrow) | |
| Travel diagrams | page 230 - group 1 | | page 230 - group 1 | |

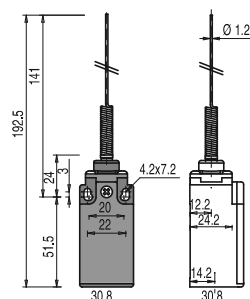
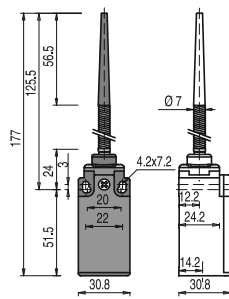
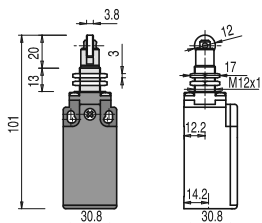
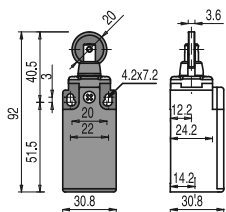
All values in the drawings are in mm

Accessories See page 207

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

FR series position switches

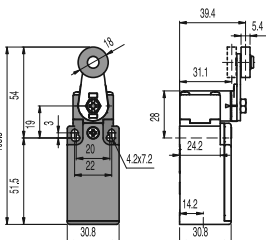
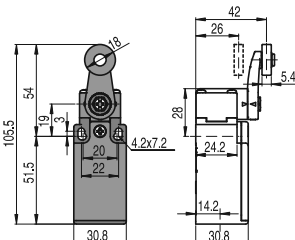
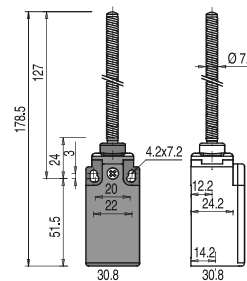
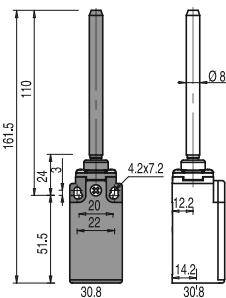
- Contact type
- R** = snap action
 - L** = slow action
 - LO** = slow action, make before break
 - LS** = slow action, shifted
 - LV** = slow action, shifted and spaced
 - LI** = slow action, independent
 - LA** = slow action, close
 - △** = electronic, PNP



Contact block

| | | | | | | | | | |
|-----------------|-----------|--------------------|-------------|--------------------|-------------|--------------------|-------------|--------------------|-------------|
| 2 | R | FR 216-M2 | 2x(1NO-1NC) | FR 217-M2 | 2x(1NO-1NC) | FR 220-M2 | 2x(1NO-1NC) | FR 221-M2 | 2x(1NO-1NC) |
| 5 | R | FR 516-M2 | 1NO+1NC | FR 517-M2 | 1NO+1NC | FR 520-M2 | 1NO+1NC | FR 521-M2 | 1NO+1NC |
| 6 | L | FR 616-M2 | 1NO+1NC | FR 617-M2 | 1NO+1NC | / | / | / | / |
| 7 | LO | FR 716-M2 | 1NO+1NC | FR 717-M2 | 1NO+1NC | / | / | / | / |
| 9 | L | FR 916-M2 | 2NC | FR 917-M2 | 2NC | / | / | / | / |
| 10 | L | FR 1016-M2 | 2NO | FR 1017-M2 | 2NO | FR 1020-M2 | 2NO | FR 1021-M2 | 2NO |
| 11 | R | FR 1116-M2 | 2NC | FR 1117-M2 | 2NC | / | / | / | / |
| 12 | R | FR 1216-M2 | 2NO | FR 1217-M2 | 2NO | FR 1220-M2 | 2NO | FR 1221-M2 | 2NO |
| 13 | LV | FR 1316-M2 | 2NC | FR 1317-M2 | 2NC | / | / | / | / |
| 14 | LS | FR 1416-M2 | 2NC | FR 1417-M2 | 2NC | / | / | / | / |
| 15 | LS | FR 1516-M2 | 2NO | FR 1517-M2 | 2NO | / | / | / | / |
| 18 | LA | FR 1816-M2 | 1NO+1NC | FR 1817-M2 | 1NO+1NC | FR 1820-M2 | 1NO+1NC | FR 1821-M2 | 1NO+1NC |
| 20 | L | FR 2016-M2 | 1NO+2NC | FR 2017-M2 | 1NO+2NC | FR 2020-M2 | 1NO+2NC | FR 2021-M2 | 1NO+2NC |
| 21 | L | FR 2116-M2 | 3NC | FR 2117-M2 | 3NC | FR 2120-M2 | 3NC | FR 2121-M2 | 3NC |
| 22 | L | FR 2216-M2 | 2NO+1NC | FR 2217-M2 | 2NO+1NC | FR 2220-M2 | 2NO+1NC | FR 2221-M2 | 2NO+1NC |
| E1 | △ | FR E116-M2 | 1NO-1NC | FR E117-M2 | 1NO-1NC | FR E120-M2 | 1NO-1NC | FR E121-M2 | 1NO-1NC |
| Max. speed | | page 229 - type 2 | | page 229 - type 2 | | 1 m/s | | 1 m/s | |
| Actuating force | | 8 N (25 N ⊕) | | 8 N (25 N ⊕) | | 0.07 Nm | | 0.07 Nm | |
| Travel diagrams | | page 230 - group 1 | | page 230 - group 1 | | page 230 - group 4 | | page 230 - group 4 | |

- Contact type
- R** = snap action
 - L** = slow action
 - LO** = slow action, make before break
 - LS** = slow action, shifted
 - LV** = slow action, shifted and spaced
 - LI** = slow action, independent
 - LA** = slow action, close
 - △** = electronic, PNP



Contact block

| | | | | | | | | | |
|-----------------|-----------|---------------------|-------------|--------------------|-------------|---------------------|-------------|---------------------|-------------|
| 2 | R | FR 222-M2 | 2x(1NO-1NC) | FR 225-M2 | 2x(1NO-1NC) | FR 230-M2 | 2x(1NO-1NC) | FR 231-M2 | 2x(1NO-1NC) |
| 5 | R | / | / | FR 525-M2 | 1NO+1NC | FR 530-M2 | 1NO+1NC | FR 531-M2 | 1NO+1NC |
| 6 | L | / | / | / | / | FR 630-M2 | 1NO+1NC | FR 631-M2 | 1NO+1NC |
| 7 | LO | / | / | / | / | FR 730-M2 | 1NO+1NC | FR 731-M2 | 1NO+1NC |
| 9 | L | / | / | / | / | FR 930-M2 | 2NC | FR 931-M2 | 2NC |
| 10 | L | FR 1022-M2 | 2NO | FR 1025-M2 | 2NO | FR 1030-M2 | 2NO | FR 1031-M2 | 2NO |
| 11 | R | / | / | / | / | FR 1130-M2 | 2NC | FR 1131-M2 | 2NC |
| 12 | R | FR 1222-M2 | 2NO | FR 1225-M2 | 2NO | FR 1230-M2 | 2NO | FR 1231-M2 | 2NO |
| 13 | LV | / | / | / | / | FR 1330-M2 | 2NC | FR 1331-M2 | 2NC |
| 14 | LS | / | / | / | / | FR 1430-M2 | 2NC | FR 1431-M2 | 2NC |
| 15 | LS | / | / | / | / | FR 1530-M2 | 2NO | FR 1531-M2 | 2NO |
| 16 | LI | / | / | / | / | FR 1630-M2 | 2NC | FR 1631-M2 | 2NC |
| 18 | LA | FR 1822-M2 | 1NO+1NC | FR 1825-M2 | 1NO+1NC | FR 1830-M2 | 1NO+1NC | FR 1831-M2 | 1NO+1NC |
| 20 | L | FR 2022-M2 | 1NO+2NC | FR 2025-M2 | 1NO+2NC | FR 2030-M2 | 1NO+2NC | FR 2031-M2 | 1NO+2NC |
| 21 | L | FR 2122-M2 | 3NC | FR 2125-M2 | 3NC | FR 2130-M2 | 3NC | FR 2131-M2 | 3NC |
| 22 | L | FR 2222-M2 | 2NO+1NC | FR 2225-M2 | 2NO+1NC | FR 2230-M2 | 2NO+1NC | FR 2231-M2 | 2NO+1NC |
| E1 | △ | FR E122-M2 | 1NO-1NC | FR E125-M2 | 1NO-1NC | FR E130-M2 | 1NO-1NC | FR E131-M2 | 1NO-1NC |
| Max. speed | | 1 m/s | | 1 m/s | | page 229 - type 1 | | page 229 - type 1 | |
| Actuating force | | 0.12 Nm (0.25 Nm ⊕) | | 0.12 Nm | | 0.06 Nm (0.25 Nm ⊕) | | 0.06 Nm (0.25 Nm ⊕) | |
| Travel diagrams | | page 230 - group 4 | | page 230 - group 4 | | page 230 - group 5 | | page 230 - group 5 | |

All values in the drawings are in mm

Accessories See page 207

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



| Contact type | Square rod, 3x3 mm | Spring rod | Round rod, Ø 3 mm, stainless steel | Other rollers available. See page 66 | | | | |
|---|----------------------|-------------|------------------------------------|--------------------------------------|--------------------|-------------|---------------------|-------------|
| <ul style="list-style-type: none"> R = snap action L = slow action LO = slow action, make before break LS = slow action, shifted LV = slow action, shifted and spaced LI = slow action, independent LA = slow action, close A = electronic, PNP | | | | | | | | |
| Contact block | | | | | | | | |
| 2 | R FR 233-M2 | 2x(1NO-1NC) | FR 234-M2 | 2x(1NO-1NC) | FR 250-M2 | 2x(1NO-1NC) | FR 251-M2 | 2x(1NO-1NC) |
| 5 | R FR 533-M2 | 1NO+1NC | FR 534-M2 | 1NO+1NC | FR 550-M2 | 1NO+1NC | FR 551-M2 | 1NO+1NC |
| 6 | L FR 633-M2 | 1NO+1NC | FR 634-M2 | 1NO+1NC | FR 650-M2 | 1NO+1NC | FR 651-M2 | 1NO+1NC |
| 7 | LO FR 733-M2 | 1NO+1NC | FR 734-M2 | 1NO+1NC | FR 750-M2 | 1NO+1NC | FR 751-M2 | 1NO+1NC |
| 9 | L FR 933-M2 | 2NC | FR 934-M2 | 2NC | FR 950-M2 | 2NC | FR 951-M2 | 2NC |
| 10 | L FR 1033-M2 | 2NO | FR 1034-M2 | 2NO | FR 1050-M2 | 2NO | FR 1051-M2 | 2NO |
| 11 | R FR 1133-M2 | 2NC | FR 1134-M2 | 2NC | FR 1150-M2 | 2NC | FR 1151-M2 | 2NC |
| 12 | R FR 1233-M2 | 2NO | FR 1234-M2 | 2NO | FR 1250-M2 | 2NO | FR 1251-M2 | 2NO |
| 13 | LV FR 1333-M2 | 2NC | FR 1334-M2 | 2NC | FR 1350-M2 | 2NC | FR 1351-M2 | 2NC |
| 14 | LS FR 1433-M2 | 2NC | FR 1434-M2 | 2NC | FR 1450-M2 | 2NC | FR 1451-M2 | 2NC |
| 15 | LS FR 1533-M2 | 2NO | FR 1534-M2 | 2NO | FR 1550-M2 | 2NO | FR 1551-M2 | 2NO |
| 16 | LI FR 1633-M2 | 2NC | FR 1634-M2 | 2NC | FR 1650-M2 | 2NC | FR 1651-M2 | 2NC |
| 18 | LA FR 1833-M2 | 1NO+1NC | FR 1834-M2 | 1NO+1NC | FR 1850-M2 | 1NO+1NC | FR 1851-M2 | 1NO+1NC |
| 20 | L FR 2033-M2 | 1NO+2NC | FR 2034-M2 | 1NO+2NC | FR 2050-M2 | 1NO+2NC | FR 2051-M2 | 1NO+2NC |
| 21 | L FR 2133-M2 | 3NC | FR 2134-M2 | 3NC | FR 2150-M2 | 3NC | FR 2151-M2 | 3NC |
| 22 | L FR 2233-M2 | 2NO+1NC | FR 2234-M2 | 2NO+1NC | FR 2250-M2 | 2NO+1NC | FR 2251-M2 | 2NO+1NC |
| E1 | A FR E133-M2 | 1NO-1NC | FR E134-M2 | 1NO-1NC | FR E150-M2 | 1NO-1NC | FR E151-M2 | 1NO-1NC |
| Max. speed | 1.5 m/s | | 1.5 m/s | | 1.5 m/s | | page 229 - type 1 | |
| Actuating force | 0.06 Nm | | 0.06 Nm | | 0.06 Nm | | 0.06 Nm (0.25 Nm ⊕) | |
| Travel diagrams | page 230 - group 5 | | page 230 - group 5 | | page 230 - group 5 | | page 230 - group 5 | |

| Contact type | Other rollers available. See page 66 | Porcelain roller | Other rollers available. See page 66 | Other rollers available. See page 66 | | | | |
|---|--------------------------------------|------------------|--------------------------------------|--------------------------------------|---------------------|-------------|---------------------|-------------|
| <ul style="list-style-type: none"> R = snap action L = slow action LO = slow action, make before break LS = slow action, shifted LV = slow action, shifted and spaced LI = slow action, independent LA = slow action, close A = electronic, PNP | | | | | | | | |
| Contact block | | | | | | | | |
| 2 | R FR 252-M2 | 2x(1NO-1NC) | FR 253-E0M2 | 2x(1NO-1NC) | FR 254-M2 | 2x(1NO-1NC) | FR 255-M2 | 2x(1NO-1NC) |
| 5 | R FR 552-M2 | 1NO+1NC | FR 553-E0M2V9 | 1NO+1NC | FR 554-M2 | 1NO+1NC | FR 555-M2 | 1NO+1NC |
| 6 | L FR 652-M2 | 1NO+1NC | FR 653-E0M2V9 | 1NO+1NC | FR 654-M2 | 1NO+1NC | FR 655-M2 | 1NO+1NC |
| 7 | LO FR 752-M2 | 1NO+1NC | FR 753-E0M2V9 | 1NO+1NC | FR 754-M2 | 1NO+1NC | FR 755-M2 | 1NO+1NC |
| 9 | L FR 952-M2 | 2NC | FR 953-E0M2V9 | 2NC | FR 954-M2 | 2NC | FR 955-M2 | 2NC |
| 10 | L FR 1052-M2 | 2NO | FR 1053-E0M2V9 | 2NO | FR 1054-M2 | 2NO | FR 1055-M2 | 2NO |
| 11 | R FR 1152-M2 | 2NC | / | | FR 1154-M2 | 2NC | FR 1155-M2 | 2NC |
| 12 | R FR 1252-M2 | 2NO | FR 1253-E0M2V9 | 2NO | FR 1254-M2 | 2NO | FR 1255-M2 | 2NO |
| 13 | LV FR 1352-M2 | 2NC | FR 1353-E0M2V9 | 2NC | FR 1354-M2 | 2NC | FR 1355-M2 | 2NC |
| 14 | LS FR 1452-M2 | 2NC | FR 1453-E0M2V9 | 2NC | FR 1454-M2 | 2NC | FR 1455-M2 | 2NC |
| 15 | LS FR 1552-M2 | 2NO | FR 1553-E0M2V9 | 2NO | FR 1554-M2 | 2NO | FR 1555-M2 | 2NO |
| 16 | LI FR 1652-M2 | 2NC | / | | FR 1654-M2 | 2NC | FR 1655-M2 | 2NC |
| 18 | LA FR 1852-M2 | 1NO+1NC | FR 1853-E0M2V9 | 1NO+1NC | FR 1854-M2 | 1NO+1NC | FR 1855-M2 | 1NO+1NC |
| 20 | L FR 2052-M2 | 1NO+2NC | FR 2053-E0M2V9 | 1NO+2NC | FR 2054-M2 | 1NO+2NC | FR 2055-M2 | 1NO+2NC |
| 21 | L FR 2152-M2 | 3NC | FR 2153-E0M2V9 | 3NC | FR 2154-M2 | 3NC | FR 2155-M2 | 3NC |
| 22 | L FR 2252-M2 | 2NO+1NC | FR 2253-E0M2V9 | 2NO+1NC | FR 2254-M2 | 2NO+1NC | FR 2255-M2 | 2NO+1NC |
| E1 | A FR E152-M2 | 1NO-1NC | FR E153-E0M2V9 | 1NO-1NC | FR E154-M2 | 1NO-1NC | FR E155-M2 | 1NO-1NC |
| Max. speed | page 229 - type 1 | | 0.5 m/s | | page 229 - type 1 | | page 229 - type 1 | |
| Actuating force | 0.06 Nm (0.25 Nm ⊕) | | 0.03 Nm (0.25 Nm ⊕) | | 0.06 Nm (0.25 Nm ⊕) | | 0.06 Nm (0.25 Nm ⊕) | |
| Travel diagrams | page 230 - group 5 | | page 230 - group 6 | | page 230 - group 5 | | page 230 - group 5 | |

(1) Positive opening only with actuator set to max. See page 66.

All values in the drawings are in mm

Accessories See page 207

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

FR series position switches

| Contact type | | Other rollers available. See page 66 | | Other rollers available. See page 66 | | Glass fibre rod | | Rope switch for signalling | |
|-----------------|-----------------------------------|--------------------------------------|-------------|--------------------------------------|-------------|--------------------|-------------|----------------------------|-------------|
| R | = snap action | | | | | | | | |
| L | = slow action | | | | | | | | |
| LO | = slow action, make before break | | | | | | | | |
| LS | = slow action, shifted | | | | | | | | |
| LV | = slow action, shifted and spaced | | | | | | | | |
| LI | = slow action, independent | | | | | | | | |
| LA | = slow action, close | | | | | | | | |
| ⚡ | = electronic, PNP | | | | | | | | |
| Contact block | | | | | | | | | |
| 2 | R | FR 256-M2 | 2x(1NO-1NC) | FR 257-M2 | 2x(1NO-1NC) | FR 269-M2 | 2x(1NO-1NC) | FR 276-M2 | 2x(1NO-1NC) |
| 5 | R | FR 556-M2 | 1NO+1NC | FR 557-M2 | 1NO+1NC | FR 569-M2 | 1NO+1NC | FR 576-M2 | 1NO+1NC |
| 6 | L | FR 656-M2 | 1NO+1NC | FR 657-M2 | 1NO+1NC | FR 669-M2 | 1NO+1NC | FR 676-M2 | 1NO+1NC |
| 7 | LO | FR 756-M2 | 1NO+1NC | FR 757-M2 | 1NO+1NC | FR 769-M2 | 1NO+1NC | FR 776-M2 | 1NO+1NC |
| 9 | L | FR 956-M2 | 2NC | FR 957-M2 | 2NC | FR 969-M2 | 2NC | FR 976-M2 | 2NO |
| 10 | L | FR 1056-M2 | 2NO | FR 1057-M2 | 2NO | FR 1069-M2 | 2NO | FR 1076-M2 | 2NC |
| 11 | R | FR 1156-M2 | 2NC | FR 1157-M2 | 2NC | FR 1169-M2 | 2NC | FR 1176-M2 | 2NO |
| 12 | R | FR 1256-M2 | 2NO | FR 1257-M2 | 2NO | FR 1269-M2 | 2NO | FR 1276-M2 | 2NC |
| 13 | LV | FR 1356-M2 | 2NC | FR 1357-M2 | 2NC | FR 1369-M2 | 2NC | FR 1376-M2 | 2NO |
| 14 | LS | FR 1456-M2 | 2NC | FR 1457-M2 | 2NC | FR 1469-M2 | 2NC | FR 1476-M2 | 2NO |
| 15 | LS | FR 1556-M2 | 2NO | FR 1557-M2 | 2NO | FR 1569-M2 | 2NO | FR 1576-M2 | 2NC |
| 16 | LI | FR 1656-M2 | 2NC | FR 1657-M2 | 2NC | FR 1669-M2 | 2NC | / | / |
| 18 | LA | FR 1856-M2 | 1NO+1NC | FR 1857-M2 | 1NO+1NC | FR 1869-M2 | 1NO+1NC | FR 1876-M2 | 1NO+1NC |
| 20 | L | FR 2056-M2 | 1NO+2NC | FR 2057-M2 | 1NO+2NC | FR 2069-M2 | 1NO+2NC | FR 2076-M2 | 2NO+1NC |
| 21 | L | FR 2156-M2 | 3NC | FR 2157-M2 | 3NC | FR 2169-M2 | 3NC | FR 2176-M2 | 3NO |
| 22 | L | FR 2256-M2 | 2NO+1NC | FR 2257-M2 | 2NO+1NC | FR 2269-M2 | 2NO+1NC | FR 2276-M2 | 1NO+2NC |
| E1 | ⚡ | FR E156-M2 | 1NO-1NC | FR E157-M2 | 1NO-1NC | FR E169-M2 | 1NO-1NC | / | / |
| Max. speed | | page 229 - type 1 | | page 229 - type 1 | | 1.5 m/s | | 0.5 m/s | |
| Actuating force | | 0.06 Nm (0.25 Nm ⊕) | | 0.06 Nm (0.25 Nm ⊕) | | 0.06 Nm | | initial 20 N - final 40 N | |
| Travel diagrams | | page 230 - group 5 | | page 230 - group 5 | | page 230 - group 5 | | page 230 - group 7 | |

FR series position switches with reset



The majority of switches can be equipped with a reset device (option W3) which enables the simultaneous actuation of actuator and contact block. The device is a module that is mounted between the body and the head of the switch that can be rotated independently from the head. The reset device has the following advantages:

- can be integrated into the majority of standard actuator heads;
- contact blocks with snap action are no more necessary because the tripping movement is executed by the reset device itself;
- can be rotated independently from the head ensuring maximum flexibility during installation;
- can be delivered with two different actuating forces: standard and increased for vibration applications;
- mechanical endurance: 1 million operating cycles.

| Contact type | | With stainless steel roller on request | | With stainless steel roller on request | | | |
|-----------------|---------------|--|-------------|--|-------------|--------------------|-------------|
| R | = snap action | | | | | | |
| L | = slow action | | | | | | |
| Contact block | | | | | | | |
| 2 | R | FR 201-W3M2 | 2x(1NO-1NC) | FR 202-W3M2 | 2x(1NO-1NC) | FR 205-W3M2 | 2x(1NO-1NC) |
| 6 | L | FR 601-W3M2 | 1NO+1NC | FR 602-W3M2 | 1NO+1NC | FR 605-W3M2 | 1NO+1NC |
| 9 | L | FR 901-W3M2 | 2NC | FR 902-W3M2 | 2NC | FR 905-W3M2 | 2NC |
| 10 | L | FR 1001-W3M2 | 2NO | FR 1002-W3M2 | 2NO | FR 1005-W3M2 | 2NO |
| 20 | L | FR 2001-W3M2 | 1NO+2NC | FR 2002-W3M2 | 1NO+2NC | FR 2005-W3M2 | 1NO+2NC |
| 21 | L | FR 2101-W3M2 | 3NC | FR 2102-W3M2 | 3NC | FR 2105-W3M2 | 3NC |
| 22 | L | FR 2201-W3M2 | 2NO+1NC | FR 2202-W3M2 | 2NO+1NC | FR 2205-W3M2 | 2NO+1NC |
| Max. speed | | page 229 - type 4 | | page 229 - type 3 | | page 229 - type 3 | |
| Actuating force | | 4.5 N (25 N ⊕) | | 4 N (25 N ⊕) | | 4 N (25 N ⊕) | |
| Travel diagrams | | page 231 - group 1 | | page 231 - group 2 | | page 231 - group 2 | |

All values in the drawings are in mm

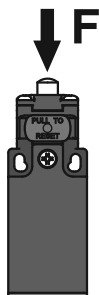
Accessories See page 207

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

| | With Ø 12 mm stainless steel roller on request | With Ø 20 mm stainless steel roller on request | Other rollers available. See page 66 | Other rollers available. See page 66 |
|---|---|---|---|--------------------------------------|
| Contact type R = snap action L = slow action | | | | |
| Contact block 2 R FR 215-W3M2 2x(1NO-1NC) 6 L FR 615-W3M2 ⊕ 1NO+1NC 9 L FR 915-W3M2 ⊕ 2NC 10 L FR 1015-W3M2 2NO 20 L FR 2015-W3M2 ⊕ 1NO+2NC 21 L FR 2115-W3M2 ⊕ 3NC 22 L FR 2215-W3M2 ⊕ 2NO+1NC Max. speed page 229 - type 2 Actuating force 4.5 N (25 N ⊕) Travel diagrams page 231 - group 1 | 2 R FR 230-W3M2 2x(1NO-1NC) 6 L FR 630-W3M2 ⊕ 1NO+1NC 9 L FR 930-W3M2 ⊕ 2NC 10 L FR 1030-W3M2 2NO 20 L FR 2030-W3M2 ⊕ 1NO+2NC 21 L FR 2130-W3M2 ⊕ 3NC 22 L FR 2230-W3M2 ⊕ 2NO+1NC Max. speed page 229 - type 1 Actuating force 0.07 Nm (0.25 Nm ⊕) Travel diagrams page 231 - group 4 | 2 R FR 231-W3M2 2x(1NO-1NC) 6 L FR 631-W3M2 ⊕ 1NO+1NC 9 L FR 931-W3M2 ⊕ 2NC 10 L FR 1031-W3M2 2NO 20 L FR 2031-W3M2 ⊕ 1NO+2NC 21 L FR 2131-W3M2 ⊕ 3NC 22 L FR 2231-W3M2 ⊕ 2NO+1NC Max. speed page 229 - type 1 Actuating force 0.07 Nm (0.25 Nm ⊕) Travel diagrams page 231 - group 4 | 2 R FR 251-W3M2 2x(1NO-1NC) 6 L FR 651-W3M2 ⊕ 1NO+1NC 9 L FR 951-W3M2 ⊕ 2NC 10 L FR 1051-W3M2 2NO 20 L FR 2051-W3M2 ⊕ 1NO+2NC 21 L FR 2151-W3M2 ⊕ 3NC 22 L FR 2251-W3M2 ⊕ 2NO+1NC Max. speed page 229 - type 1 Actuating force 0.07 Nm (0.25 Nm ⊕) Travel diagrams page 231 - group 4 | |

| | Other rollers available. See page 66 | Other rollers available. See page 66 | Other rollers available. See page 66 | Other rollers available. See page 66 |
|--|---|---|---|--------------------------------------|
| Contact type R = snap action L = slow action | | | | |
| Contact block 2 R FR 252-W3M2 2x(1NO-1NC) 6 L FR 652-W3M2 ⊕ 1NO+1NC 9 L FR 952-W3M2 ⊕ 2NC 10 L FR 1052-W3M2 2NO 20 L FR 2052-W3M2 ⊕ 1NO+2NC 21 L FR 2152-W3M2 ⊕ 3NC 22 L FR 2252-W3M2 ⊕ 2NO+1NC Max. speed page 229 - type 1 Actuating force 0.07 Nm (0.25 Nm ⊕) Travel diagrams page 231 - group 4 | 2 R FR 254-W3M2 2x(1NO-1NC) 6 L FR 654-W3M2 ⊕ 1NO+1NC 9 L FR 954-W3M2 ⊕ 2NC 10 L FR 1054-W3M2 2NO 20 L FR 2054-W3M2 ⊕ 1NO+2NC 21 L FR 2154-W3M2 ⊕ 3NC 22 L FR 2254-W3M2 ⊕ 2NO+1NC Max. speed page 229 - type 1 Actuating force 0.07 Nm (0.25 Nm ⊕) Travel diagrams page 231 - group 4 | 2 R FR 256-W3M2 2x(1NO-1NC) 6 L FR 656-W3M2 ⊕ 1NO+1NC 9 L FR 956-W3M2 ⊕ 2NC 10 L FR 1056-W3M2 2NO 20 L FR 2056-W3M2 ⊕ 1NO+2NC 21 L FR 2156-W3M2 ⊕ 3NC 22 L FR 2256-W3M2 ⊕ 2NO+1NC Max. speed page 229 - type 1 Actuating force 0.07 Nm (0.25 Nm ⊕) Travel diagrams page 231 - group 4 | 2 R FR 257-W3M2 2x(1NO-1NC) 6 L FR 657-W3M2 ⊕ 1NO+1NC 9 L FR 957-W3M2 ⊕ 2NC 10 L FR 1057-W3M2 2NO 20 L FR 2057-W3M2 ⊕ 1NO+2NC 21 L FR 2157-W3M2 ⊕ 3NC 22 L FR 2257-W3M2 ⊕ 2NO+1NC Max. speed page 229 - type 1 Actuating force 0.07 Nm (0.25 Nm ⊕) Travel diagrams page 231 - group 4 | |

Increased actuating force



The switch can be delivered with increased actuating force (option W4). Ideal for vibration applications.

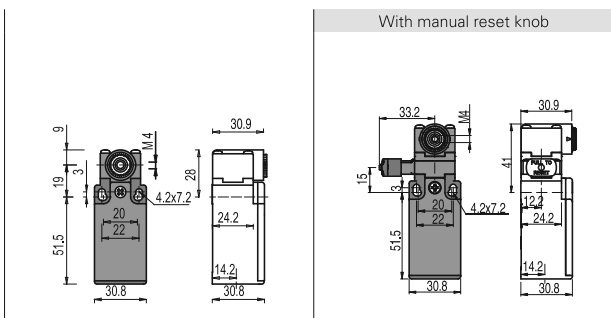
| Actuators | Actuating force |
|----------------|-----------------|
| 01, 14, 15, 16 | 7 N |
| 02, 05 | 6 N |
| 07 | 3.5 N |
| 30 ... 57 | 0.08 Nm |

To order the switch with reset and increased actuating force, replace the -W3 option with -W4 in the order code.

Example: FR 601-W3M2 → FR 601-W4M2

Position switches with swivelling lever without actuator

- Contact type
- R** = snap action
 - L** = slow action
 - LO** = slow action, make before break
 - LS** = slow action, shifted
 - LV** = slow action, shifted and spaced
 - LI** = slow action, independent
 - LA** = slow action, close
 - △** = electronic, PNP
- Contact block



IMPORTANT

For safety applications: join only switches and actuators marked with symbol ⊕ next to the product code. For more information about safety applications see details on page 225.

| | | | | | |
|-----------------|-----------|---------------------|-------------|---------------------|-------------|
| 2 | R | FR 238-M2 | 2x(1NO-1NC) | FR 238-W3M2 | 2x(1NO-1NC) |
| 5 | R | FR 538-M2 | ⊕ 1NO+1NC | / | |
| 6 | L | FR 638-M2 | ⊕ 1NO+1NC | FR 638-W3M2 | ⊕ 1NO+1NC |
| 7 | LO | FR 738-M2 | ⊕ 1NO+1NC | / | |
| 9 | L | FR 938-M2 | ⊕ 2NC | FR 938-W3M2 | ⊕ 2NC |
| 10 | L | FR 1038-M2 | 2NO | FR 1038-W3M2 | 2NO |
| 11 | R | FR 1138-M2 | ⊕ 2NC | / | |
| 12 | R | FR 1238-M2 | 2NO | / | |
| 13 | LV | FR 1338-M2 | ⊕ 2NC | / | |
| 14 | LS | FR 1438-M2 | ⊕ 2NC | / | |
| 15 | LS | FR 1538-M2 | 2NO | / | |
| 16 | LI | FR 1638-M2 | ⊕ 2NC | / | |
| 18 | LA | FR 1838-M2 | ⊕ 1NO+1NC | / | |
| 20 | L | FR 2038-M2 | ⊕ 1NO+2NC | FR 2038-W3M2 | ⊕ 1NO+2NC |
| 21 | L | FR 2138-M2 | ⊕ 3NC | FR 2138-W3M2 | ⊕ 3NC |
| 22 | L | FR 2238-M2 | ⊕ 2NO+1NC | FR 2238-W3M2 | ⊕ 2NO+1NC |
| E1 | △ | FR E138-M2 | 1NO-1NC | / | |
| Actuating force | | 0.06 Nm (0.25 Nm ⊕) | | 0.07 Nm (0.25 Nm ⊖) | |
| Travel diagrams | | page 230 - group 5 | | page 231 - group 4 | |

Separate actuators

IMPORTANT: These separate actuators can be used only with items of the FR, FM, FX, FZ and FK series.

| Technopolymer roller Ø 18 mm | Technopolymer roller Ø 18 mm | Adjustable square rod, 3x3x125 mm | Spring rod with plastic tip | Adjustable round rod Ø 3x125 mm | Technopolymer roller Ø 20 mm | |
|---------------------------------|---------------------------------|--------------------------------------|--|---|---------------------------------|----------------------------|
| | | | | | | |
| VF LE30 ⊕ | VF LE31 ⊕ | VF LE33 | VF LE34 | VF LE50 | VF LE51 ⊕ | |
| Technopolymer roller Ø 20 mm | Porcelain roller | Technopolymer roller Ø 20 mm | Adjustable actuator with technopolymer roller | Adjustable safety actuator with technopolymer roller | Technopolymer roller Ø 20 mm | Adjustable glass fibre rod |
| | | | | | | |
| VF LE52 ⊕ | VF LE53 ⊕ (2) | VF LE54 ⊕ | VF LE55 ⊕ (1) | VF LE56 ⊕ | VF LE57 ⊕ | VF LE69 |

All values in the drawings are in mm

Accessories See page 207

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

Special separate actuators

IMPORTANT: These separate actuators can be used only with items of the FR, FM, FX, FZ and FK series.

Stainless steel rollers, Ø 20 mm

| | | | | | | |
|-----------------|-----------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| | | | | | | |
| VF LE31-R24 (4) | VF LE51-R24 (4) | VF LE52-R24 (4) | VF LE54-R24 (4) | VF LE55-R24 (1) (1) | VF LE56-R24 (4) | VF LE57-R24 (4) |

Technopolymer rollers, Ø 35 mm

| | | | | | | |
|---------------------|---------------------|-----------------|---------------------|---------------------|-----------------|-----------------|
| | | | | | | |
| VF LE31-R25 (4) (4) | VF LE51-R25 (4) (4) | VF LE52-R25 (4) | VF LE54-R25 (4) (4) | VF LE55-R25 (1) (1) | VF LE56-R25 (4) | VF LE57-R25 (4) |

Rubber rollers, Ø 40 mm

| | | | | | | |
|--------------------|--------------------|----------------|--------------------|--------------------|----------------|--------------------|
| | | | | | | |
| VF LE31-R5 (4) (4) | VF LE51-R5 (4) (4) | VF LE52-R5 (4) | VF LE54-R5 (4) (4) | VF LE55-R5 (1) (1) | VF LE56-R5 (4) | VF LE57-R5 (4) (4) |

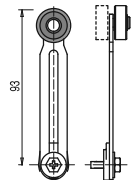
Rubber rollers, Ø 50 mm

| | | | | | |
|---------------------|---------------------|---------------------|---------------------|-----------------|---------------------|
| | | | | | |
| VF LE51-R26 (4) (4) | VF LE52-R26 (4) (4) | VF LE54-R26 (4) (4) | VF LE55-R26 (1) (1) | VF LE56-R26 (4) | VF LE57-R26 (4) (4) |

Protruding rubber rollers, Ø 50 mm

| | |
|---------------------|-----------------|
| | |
| VF LE55-R27 (1) (1) | VF LE56-R27 (4) |

- (1) Lever VF LE55 can only be used in safety applications if adjusted to its max. length, as shown in the figure to the right. If an adjustable lever is required for safety applications, use the VF LE56 adjustable safety lever.
- (2) The position switch obtained by assembling switch FR •38-M2 (e.g. FR 538-M2, FR 638-M2, ...) with actuator VF L53 will not present the same travel diagrams and actuating forces as switch FR •53-E0M2V9 (e.g. FR 553-E0M2V9, FR 653-E0M2V9, ...)
- (4) The actuator cannot be rotated to the inside because it will hit the switch head upon actuation.



All values in the drawings are in mm

Accessories See page 207

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