Rope safety switches without reset for simple stop

Selection diagram

ACTUATORS
FP 874
FD 874
FL 874
FR 874
FM 874
FX 874
FZ 874

CONDUIT ENTRIES
Threaded conduit entries (standard)
With cable gland assembled
With M12 plastic connector assembled and wired
With M12 metal connector assembled and wired

CONTACT BLOCKS
18 1NO+1NC slow action
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
**Code structure**

**FD 1879-GM2K50**

**Housing**
- **FD**: metal housing, one conduit entry
- **FL**: metal housing, three conduit entries
- **FP**: polymer housing, one conduit entry

**Contact blocks**
- 18: 1NO+1NC, slow action
- 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

**Actuating head**
- 79: longitudinal head
- 80: transversal head (only for FD-FL housing)

**Preinstalled cable gland or connectors**
- **K21**: no cable gland or connector (standard)
- **K50**: with 5 poles M12 metal connector

**Threaded conduit entry**
- **PG 13,5** (standard)
  - **M2**: PG13,5

**Contacts type**
- **silver contacts (standard)**
- **G**: silver contacts gold plated 1 µm

**FC 3379-GM1K22**

**Housing**
- **FC**: metal housing, one conduit entry

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

**Actuating head**
- 79: longitudinal head
- 80: transversal head

**Preinstalled cable gland or connectors**
- **K22**: no cable gland or connector (standard)
- **K26**: with assembled cable gland suitable for Ø 5 to Ø 10 mm cables range

**Threaded conduit entry**
- **PG 11** (standard)
  - **M1**: PG11

**Contacts type**
- **silver contacts (standard)**
- **G**: silver contacts gold plated 1 µm

**FD 874-M2K50**

**Housing**
- **FD**: metal housing, one conduit entry
- **FL**: metal housing, three conduit entries
- **FP**: polymer housing, one conduit entry
- **FM**: metal housing, one conduit entry
- **FX**: polymer housing, two conduit entries
- **FZ**: metal housing, two conduit entries

**Contact blocks**
- 8: 1NC, slow action

**Preinstalled cable gland or connectors**
- **K21**: no cable gland or connector (standard)
- **K50**: with 5 poles M12 metal connector

**Threaded conduit entry**
- **PG 13,5** (standard)
  - **A**: PG13,5
  - **M1**: M16x1,5
  - **M2**: M20x1,5

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

#### Housing

- Housing type FP, FR and FX made of glass-reinforced polymer, self-extinguishing, shock-proof thermoplastic.
- Housing type FD, FL, FC, FM and FZ made of metal, coated with baked epoxy powder.
- FD, FP, FC, FR and FM series one conduit entry
- FX and FZ series two conduit entries
- FL series three conduit entries
- Protection degree: IP67 according to EN 60529

#### General data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety parameters:</td>
<td>see page 6/32</td>
</tr>
<tr>
<td>Ambient temperature:</td>
<td>from -25°C to +80°C</td>
</tr>
<tr>
<td>Version for operation in ambient temperature from -40°C to +80°C on request</td>
<td></td>
</tr>
<tr>
<td>Max operating frequency:</td>
<td>1 operation cycles / 6 s</td>
</tr>
<tr>
<td>Mechanical endurance:</td>
<td>1 million of operations cycles¹</td>
</tr>
<tr>
<td>Max actuating speed:</td>
<td>0,5 m/s</td>
</tr>
<tr>
<td>Min. actuating speed:</td>
<td>1 mm/s</td>
</tr>
<tr>
<td>Driving torque for installation:</td>
<td>see pages 6/1-6/10</td>
</tr>
</tbody>
</table>

¹ One operation cycle means two movements, one to close and one to open contacts, as foreseen by EN 60947-5-1 standard.

#### Cross section of the conductors (flexible copper wire)

<table>
<thead>
<tr>
<th>Contact blocks</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>20, 21, 22, 33, 34</td>
<td>1 x 0,34 mm² (1 x AWG 22)</td>
<td>2 x 1,5 mm² (2 x AWG 16)</td>
</tr>
<tr>
<td>18, 8, 9</td>
<td>1 x 0,5 mm² (1 x AWG 20)</td>
<td>2 x 2,5 mm² (2 x AWG 14)</td>
</tr>
</tbody>
</table>

### Electrical data

**Thermal current (Ith):**

- **Without connector:** 10 A
- **With 4 or 6 poles, M12 connector:** 4 A
- **With 8 poles, M12 connector:** 2 A

**Rated insulation voltage (U):**

- **Without connector:** 500 Vac 600 Vdc
- **With 4 or 6 poles, M12 connector:** 250 Vac 300 Vdc
- **With 8 poles, M12 connector:** 30 Vac 36 Vdc

**Protection against short circuits:**

- **Without connector:** 10 A 500 V type aM
- **With 4 or 6 poles, M12 connector:** 4 A 500 V type gG
- **With 8 poles, M12 connector:** 2 A 500 V type gG

**Pollution degree:**

- **Without connector:** 3
- **With 4 or 6 poles, M12 connector:** 3
- **With 8 poles, M12 connector:** 3

**Utilization categories**

<table>
<thead>
<tr>
<th>Usage</th>
<th>Ue (V)</th>
<th>Ie (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC15 (50...60 Hz)</td>
<td>250</td>
<td>6</td>
</tr>
<tr>
<td>400</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>500</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>DC13</td>
<td>125</td>
<td>4</td>
</tr>
<tr>
<td>250</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

### 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 60529, 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:

- Positive contact opening in conformity with standards: IEC 60947-5-1, EN 60947-5-1, VDE 0660-206.
These rope operated safety switches are installed on machines or conveyor belts, to activate the simple stop of the machine on every hand intervention on the rope, from any point. Provided with self-control function, they constantly check their correct working operation, signalling with the opening of the contacts an eventual loosening or breaking of the rope.

Rotating heads

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

Rope regulation point indicator

The switches (head 79 and 80) are provided with a green ring that shows the area of the correct stretching of the rope. The installer has only to stretch the rope until the black indicator will be in the middle of the green area. If a traction (or loosening) of the rope it is high enough to permit the black indicator to go outside the correct stretching area, there will be the opening of the safety contacts.

Data type approved by IMQ, CCC and EZU

- Rated insulation voltage (Ui): 500 Vac
- Thermal current (Ith): 10 A
- Protection against short circuits: fuse 10 A, 500 V type aM
- Protection degree: IP67
- MV terminals (screw clamps)
- Pollution degrees 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 18, 8, 9, 20, 21, 22, 33, 34

In conformity with standards: EN 60947-1, EN 60947-5-1 and subsequent modifications and completions, fundamental requirements of the Low Voltage Directive 2006/95/CE and subsequent modifications and completions.

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

For all contact blocks use 60 or 75 °C copper (Cu) conductor and wire size No. 12-14 AWG. Terminal tightening torque of 71 lb in (0.8 Nm).

In conformity with standard: UL 508

Please contact our technical service for the list of approved products.
Rope safety switches without reset for simple stop

### Dimensional drawings

#### Contact blocks

<table>
<thead>
<tr>
<th>Min. force</th>
<th>Travel diagrams</th>
</tr>
</thead>
<tbody>
<tr>
<td>FP 1879</td>
<td>Initial 63 N...Final 79 N (90 N)</td>
</tr>
<tr>
<td>FP 979</td>
<td>Initial 63 N...Final 79 N (90 N)</td>
</tr>
<tr>
<td>FP 2079</td>
<td>Initial 63 N...Final 79 N (90 N)</td>
</tr>
<tr>
<td>FP 2179</td>
<td>Initial 63 N...Final 79 N (90 N)</td>
</tr>
<tr>
<td>FP 2279</td>
<td>Initial 63 N...Final 79 N (90 N)</td>
</tr>
<tr>
<td>FP 3379</td>
<td>Initial 63 N...Final 79 N (90 N)</td>
</tr>
<tr>
<td>FP 3479</td>
<td>Initial 63 N...Final 79 N (90 N)</td>
</tr>
</tbody>
</table>

| FD 1879    | Initial 147 N...Final 235 N (250 N) |
| FD 979     | Initial 147 N...Final 235 N (250 N) |
| FD 2079    | Initial 147 N...Final 235 N (250 N) |
| FD 2179    | Initial 147 N...Final 235 N (250 N) |
| FD 2279    | Initial 147 N...Final 235 N (250 N) |
| FD 3379    | Initial 147 N...Final 235 N (250 N) |
| FD 3479    | Initial 147 N...Final 235 N (250 N) |

| FL 1879    | Initial 63 N...Final 79 N (90 N) |
| FL 979     | Initial 63 N...Final 79 N (90 N) |
| FL 2079    | Initial 63 N...Final 79 N (90 N) |
| FL 2179    | Initial 63 N...Final 79 N (90 N) |
| FL 2279    | Initial 63 N...Final 79 N (90 N) |
| FL 3379    | Initial 63 N...Final 79 N (90 N) |
| FL 3479    | Initial 63 N...Final 79 N (90 N) |

| FC 3379    | Initial 63 N...Final 79 N (90 N) |
| FC 3479    | Initial 63 N...Final 79 N (90 N) |

### How to read travel diagrams

- **NO opening**
- **NC closing**
- **Ideal rope tension point**
- **Max travel**
- **Positive opening travel**
- **Closed contact**
- **Open contact**

**Example diagram**

**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

All measures in the drawings are in mm
Contacts type:

<table>
<thead>
<tr>
<th>Contact blocks</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 1NO+1NC</td>
<td>1 2 3 4</td>
<td>5 6 7 8</td>
<td>9 10 11 12 13 14</td>
</tr>
<tr>
<td>8 1NC</td>
<td>1 2 3 4</td>
<td>5 6 7 8</td>
<td>9 10 11 12 13 14</td>
</tr>
<tr>
<td>20 1NO+2NC</td>
<td>1 2 3 4</td>
<td>5 6 7 8</td>
<td>9 10 11 12 13 14</td>
</tr>
<tr>
<td>21 3NC</td>
<td>1 2 3 4</td>
<td>5 6 7 8</td>
<td>9 10 11 12 13 14</td>
</tr>
<tr>
<td>22 2NO+1NC</td>
<td>1 2 3 4</td>
<td>5 6 7 8</td>
<td>9 10 11 12 13 14</td>
</tr>
<tr>
<td>23 1NC+1NO</td>
<td>1 2 3 4</td>
<td>5 6 7 8</td>
<td>9 10 11 12 13 14</td>
</tr>
<tr>
<td>34 2NC</td>
<td>1 2 3 4</td>
<td>5 6 7 8</td>
<td>9 10 11 12 13 14</td>
</tr>
</tbody>
</table>

In the rest position (with rope correctly tightened) the two contacts of contact block 8 are both closed and are activated respectively by actuating or loosening the rope. In order to use this contact block for safety applications is necessary to connect the two contacts in series. For this reason in wiring diagrams the contact block 8 is indicated as 1NC, whereas in travel diagrams are indicated both contacts.

Items with code on the green background are available in stock.
Rope safety switches **without reset** for simple stop

### Application examples and max rope length for switches with longitudinal heads

**Example A**

FD 1879

\[ 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \]

24 m MAX

**Example B**

FD 1879

\[ 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \]

18 m MAX

**Example C**

FD 1879

\[ 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \]

12 m MAX

6 m MAX

**Example D**

FD 1879

\[ 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \quad 2 + 3 \text{ m} \]

35 m MAX

16 m MAX

### Application examples and max rope length for switches with transversal heads

**Example E**

FD 1879

\[ 3 \text{ m} \text{ max} \quad 3 \text{ m} \text{ max} \quad 3 \text{ m} \text{ max} \]

3 m max

**Example F**

FD 1880

\[ 3 + 5 \text{ m} \quad 3 + 5 \text{ m} \quad 3 + 5 \text{ m} \quad 3 + 5 \text{ m} \quad 3 + 5 \text{ m} \]

70 m MAX

**Example G**

FD 1880

\[ 3 + 5 \text{ m} \quad 3 + 5 \text{ m} \quad 3 + 5 \text{ m} \quad 3 + 5 \text{ m} \]

50 m MAX

**Example H**

FD 1880

\[ 3 + 5 \text{ m} \quad 3 + 5 \text{ m} \quad 3 + 5 \text{ m} \quad 3 + 5 \text{ m} \]

35 m MAX

16 m MAX

**Example I**

FD 1880

\[ 3 + 5 \text{ m} \quad 3 + 5 \text{ m} \quad 3 + 5 \text{ m} \]

24 m MAX

5 m max

5 m max
Max rope length

In the diagram, the suggested max. rope lengths with regard to changes of temperature (thermal differential) to which the switch is expected to be exposed in the working area are indicated. For instance, for an example C installation which expects a thermal differential of 30°C, a max rope length of 10 meters is suggested.

Important: The above data are guaranteed only using original rope and accessories. See page 4/117.

Adjusting of intervention point

For switches with head 79 and 80: Stretch the rope connected to the switch, until the end of the indicator (1) reaches about the middle of the green ring (2).

For switches with head 74: Stretch the rope connected to the switch till the thimble will be at about 4 mm from the head.