

GET IN
TOUCH

RAMO

The universal and intelligent pushbutton





RAMO

CLOSE TO THE FUTURE

The new RAMO family of pushbuttons comes not only in two different mounting sizes (22.3 mm and 30.3 mm) but also with two different technologies: capacitive or tactile. In terms of design, the single pushbuttons are matched to the proven RAFIX series. Also with regard to reliability, they are in no way inferior to their design relatives – quite the opposite: the one-piece RAMO housing ensures maximum protection against dirt and moisture.

This singular series is equipped with a 4-pole plug & play connection in thread sizes M8 or M12, making it extremely quick and straightforward to connect. Full-surface illumination of the pushbutton is possible, as is illumination of individual symbols or letterings.

RAMO C YOUR BENEFITS AT A GLANCE:

-
- Capacitive technology
 - No switching travel – no attrition
 - All functions configurable (RAMO 22/30 C⁺)
 - One-piece housing sealed on all sides
 - Unique series with extremely simple plug & play connection
 - Two connection options: M8 and M12
 - Fully coordinated design – matching the RAFIX series of control devices
 - Two mounting sizes: 22.3 mm and 30.3 mm
 - Diverse illumination options
 - Individual labeling options, e.g. with FLEXLAB
-

RAMO T YOUR BENEFITS AT A GLANCE:

-
- Switch travel with tactile feedback
 - Based on the RAFI MICON 5 tactile switch with gold contacts – proven millions of times over
 - One-piece housing
 - Unique series with extremely simple plug & play connection
 - Two connection options: M8 and M12
 - Fully coordinated design – matching the RAFIX series of control devices
 - Two mounting sizes: 22.3 mm and 30.3 mm
 - Individual labeling options, e.g. with FLEXLAB
 - Illumination in numerous colors
 - 1 NO contact
 - Redundant version with 2 NO contacts
-

RAMO 22/30 C

CAPACITIVE PUSHBUTTON

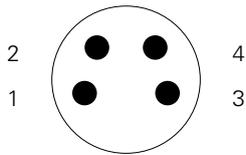


→ This capacitive pushbutton works without travel and attrition – only by touching the surface. This enables the RAMO C to perform countless functions and to meet your requirements.

The RAMO 22 C and the RAMO 30 C differ in terms of mounting hole diameter, appearance and front panel cut out.

Connection diagram M8

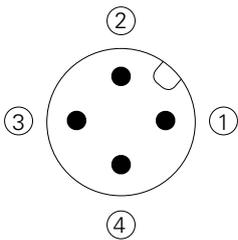
(Sight on front of pins)



Standard M8x1,5, 4-pole, a coded

Connection diagram M12

(Sight on front of pins)

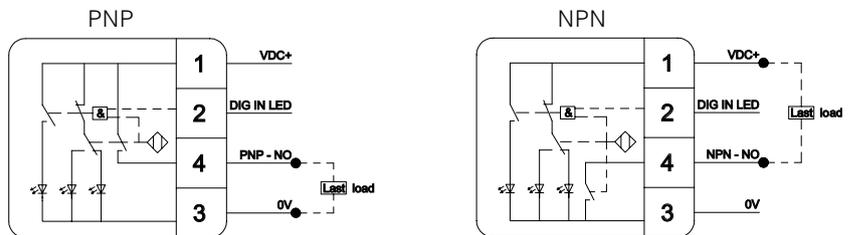


Standard M12x1,5, 4-pole, a coded

Preliminary technical data

| | |
|---------------------------------------|--|
| Rated voltage | 10–32 V |
| Current carrying capacity | 200 mA |
| Output signal | NO / NC: PNP / NPN / active output |
| Output function | momentary / latching / pulse |
| LED | RGB |
| Rated current | max. 25 mA / 24 V |
| Operating temperature | -40 °C to +70 °C |
| Degree of protection from front side | IP 66, IP 67, IP 69K |
| Degree of protection from rear side | IP 66 (according to used plug IP 67 or IP 69K) |
| Terminals | M8 (4 pole), M12 (4 pole) |
| Reverse polarity protection | yes |
| Labeling | individually with FLEXLAB |
| Illumination | not actuated red / actuated green |
| input DIG IN LED low level (0–8 V) | |
| Illumination | not actuated red flashing / actuated green |
| input DIG IN LED high level (10–32 V) | |

Transistor circuit



Standard version: PNP circuit.
NPN and version with active output signal on request.

Pin assignment

Pin 1: Power supply (10–32 V)
Pin 2: DIG IN LED

Pin 3: GND
Pin 4: Output

DIG IN LED Input

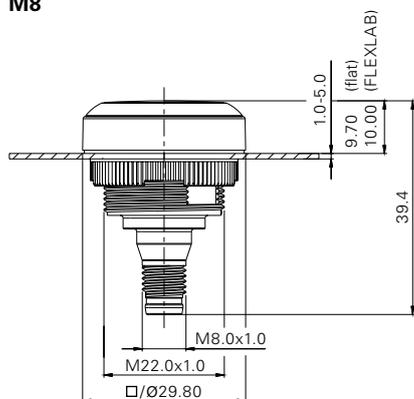
When a signal (10–32 V) is applied at pin 2, the pushbutton can indicate a changed state via a flashing illumination. Here, the button flashes red, and when pressed it illuminates green.

Signalling after power failure

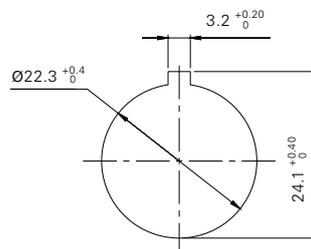
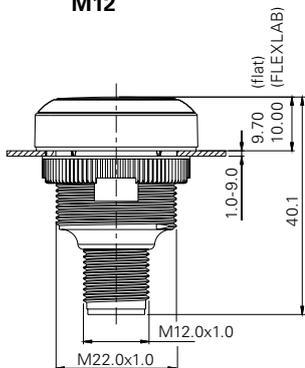
A loss of power is signaled via flashing – white in the standard version. After a single press, the keyswitch returns to the default colors.

RAMO 22 C, CAPACITIVE

M8



M12



installation opening IEC 60947-5-1



Order no.

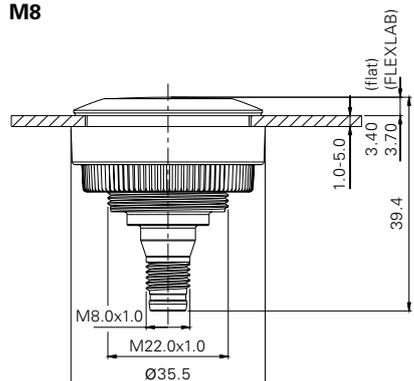
| → Lens | Function | Output | Collar round | | Collar square | |
|---------|--------------|-----------|-------------------|-------------------|-------------------|-------------------|
| | | | M8 | M12 | M8 | M12 |
| flat | momentary | 1 NO, PNP | 1.10.040.001/3521 | 1.10.041.001/3521 | 1.10.040.101/3521 | 1.10.041.101/3521 |
| flat | latching | 1 NO, PNP | 1.10.040.011/3521 | 1.10.041.011/3521 | 1.10.040.111/3521 | 1.10.041.111/3521 |
| flat | pulse 300 ms | 1 NO, PNP | 1.10.040.021/3521 | 1.10.041.021/3521 | 1.10.040.121/3521 | 1.10.041.121/3521 |
| FLEXLAB | momentary | 1 NO, PNP | 1.10.040.201/3521 | 1.10.041.201/3521 | 1.10.040.301/3521 | 1.10.041.301/3521 |
| FLEXLAB | latching | 1 NO, PNP | 1.10.040.211/3521 | 1.10.041.211/3521 | 1.10.040.311/3521 | 1.10.041.311/3521 |
| FLEXLAB | pulse 300 ms | 1 NO, PNP | 1.10.040.221/3521 | 1.10.041.221/3521 | 1.10.040.321/3521 | 1.10.041.321/3521 |

Customer-specific functions

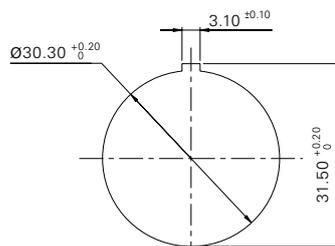
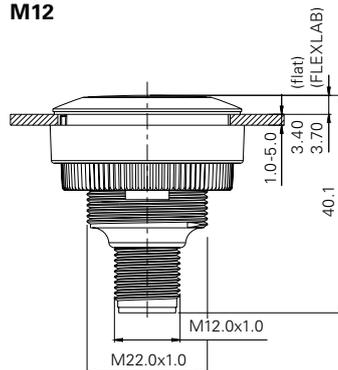
With the RAMO 22 C⁺, we will be happy to implement your specific requirements with respect to color combinations, switching mode, flashing and contact functions. Please contact us for more information.

RAMO 30 C, CAPACITIVE

M8



M12



installation opening IEC 60947-5-1



Order no.

| → Lens | Function | Output | | |
|---------|--------------|-----------|-------------------|-------------------|
| | | | M8 | M12 |
| flat | momentary | 1 NO, PNP | 1.11.040.001/3520 | 1.11.041.001/3520 |
| flat | latching | 1 NO, PNP | 1.11.040.011/3520 | 1.11.041.011/3520 |
| flat | pulse 300 ms | 1 NO, PNP | 1.11.040.021/3520 | 1.11.041.021/3520 |
| FLEXLAB | momentary | 1 NO, PNP | 1.11.040.201/3520 | 1.11.041.201/3520 |
| FLEXLAB | latching | 1 NO, PNP | 1.11.040.211/3520 | 1.11.041.211/3520 |
| FLEXLAB | pulse 300 ms | 1 NO, PNP | 1.11.040.221/3520 | 1.11.041.221/3520 |

Customer-specific functions

With the RAMO 30 C⁺, we will be happy to implement your specific requirements with respect to color combinations, switching mode, flashing and contact functions. Please contact us for more information.



RAMO 22/30 C⁺

Capacitive and individual

The RAMO 22/30 C⁺: additional functions and individuality – compiled by our sales staff together with you. Following functions can be configured by the RAFl Config Tool. The RAMO C⁺ will never forget any settings – even in the case of power failure.

COLORS AND BRIGHTNESS

The integrated RGB LED allows you to choose your preferred actuation colors from a spectrum of 16 million colors. Moreover, brightness can be adjusted according to requirements.

SWITCHING FUNCTION

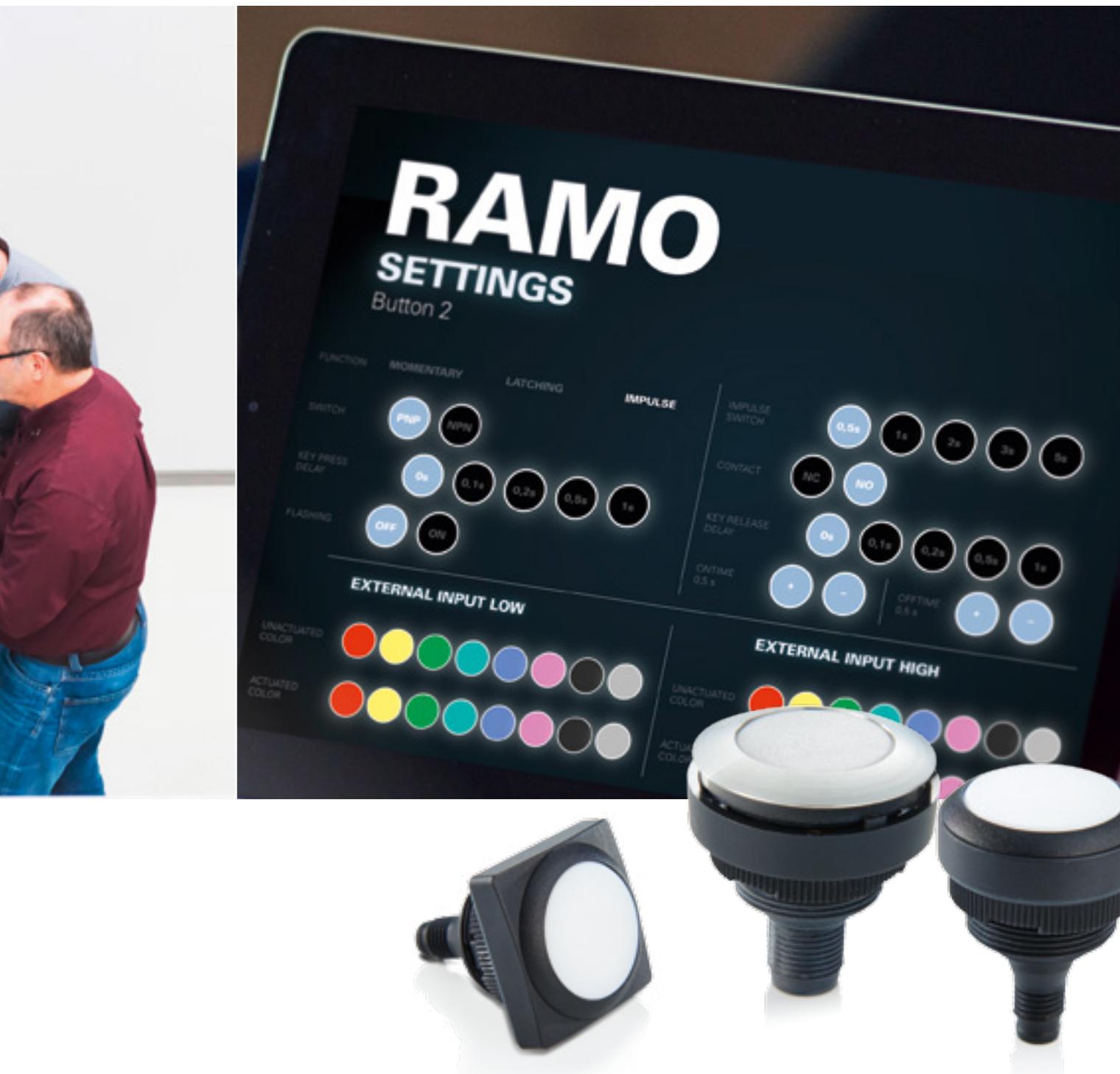
You can choose between momentary, latching or pulse. The “pulse” function discharges an output pulse of defined length, independent of the frequency and duration of actuation. The duration of the pulse can be variably set in milliseconds, up to a maximum duration of a few seconds.

CONTACT TYPE

As with conventional electromechanical switching contacts, the RAMO C⁺ can be used either as Normally Open (NO) or Normally Closed (NC).

FLASHING FUNCTION

The flashing frequency is individually configurable with two parameters (on time, off time), taking color and brightness into account. It is also possible to define when the RAMO C⁺ should flash: steadily, at high or low external input.



DIG IN LED INPUT

Further functions can be called up by applying a signal at pin 2 (10–32 V). Alongside the flashing function, color combinations for the states “not actuated” and “actuated” can be defined in this way.

SIGNALLING AFTER POWER FAILURE

The RAMO C+ can indicate a power failure via a third color or brightness, with an optional flashing function. Neither a short power failure nor a prolonged shut-down will delete the saved configuration.

TRANSISTOR CIRCUIT

Whatever the construction of your input circuit, the RAMO C+ can be integrated into PNP or NPN circuits.

DELAYS

An artificial latency in milliseconds can be defined to prevent inadvertent actuation. This ensures the deliberate actuation of the pushbutton because the state undergoes a delayed transition from “not actuated” to “actuated”. Optionally, a delay can also be defined for the transition from “actuated” to “not actuated”.

Please contact us for your individual RAMO 22/30 C+.

RAMO 22/30 T

TACTILE SWITCH



→ Using the RAFI tactile switch, the RAMO 22/30 T provides unique tactile feedback – with a distinct key click. In plant engineering and construction in particular, the RAMO T is now a medium-independent standard component – thanks to degree of protection IP 66 / IP 69K.

Preliminary technical data

→ Mechanical design

| | |
|---------------------|-------------------------------|
| Contact system | snap-action contact (MICON 5) |
| Contact arrangement | 1 NO |
| Contact materials | gold |
| Illumination | SMT LED |

→ Mechanical characteristics

| | |
|------------------------------|-----|
| Operating force F1 (+/-20 %) | 5 N |
|------------------------------|-----|

→ Electrical characteristics

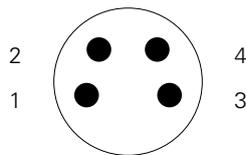
| | |
|--------------------|-------------------------------|
| Rated voltage min. | DC 0,02 V |
| Rated voltage max. | DC 35 V |
| Rated current min. | 0,01 mA |
| Rated current max. | 100 mA |
| Rated power max. | 1 W (ohmic load) |
| LED power supply | DC 24 V +/- 20%/10 mA +/- 20% |

→ Other specifications

| | |
|--------------------------------------|--------------------------------|
| Operating / storage temperature min. | -40 °C |
| Operating / storage temperature max. | +70 °C |
| Resistance to environment | IEC 60068-2 -14, -30, -33, -78 |
| Operating life cycles | 500,000 |

Connection diagram M8

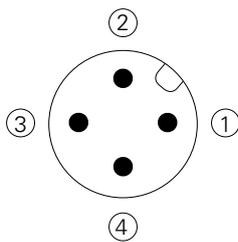
(Sight on front of pins)



Standard M8x1,5, 4-pole, a coded

Connection diagram M12

(Sight on front of pins)



Standard M12x1,5, 4-pole, a coded

Pin assignment

Pin 1: 1 NO connection

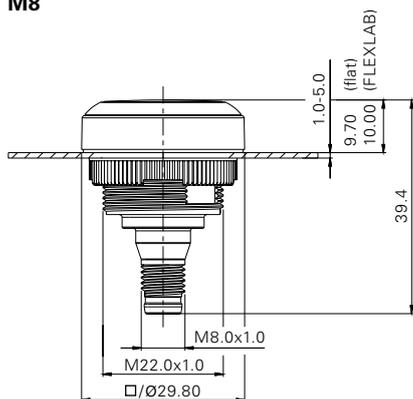
Pin 2: LED + (power supply 24 V)

Pin 3: LED - (GND)

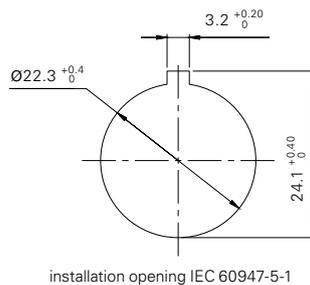
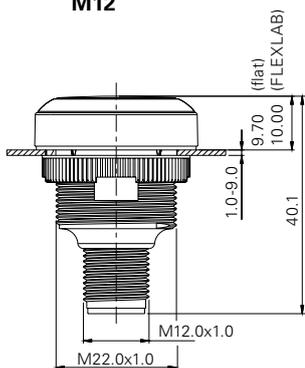
Pin 4: 1 NO connection

RAMO 22T, TACTILE

M8



M12



Order no.

| → Lens | Contact | Color LED & lens | Collar round | | Collar square | |
|----------------------|-----------------|------------------|-------------------|-------------------|-------------------|-------------------|
| | | | M8 | M12 | M8 | M12 |
| flat | momentary, 1 NO | white | 1.10.010.001/0221 | 1.10.011.001/0221 | 1.10.010.101/0221 | 1.10.011.101/0221 |
| flat | momentary, 1 NO | red | 1.10.010.001/0331 | 1.10.011.001/0331 | 1.10.010.101/0331 | 1.10.011.101/0331 |
| flat | momentary, 1 NO | yellow | 1.10.010.001/0441 | 1.10.011.001/0441 | 1.10.010.101/0441 | 1.10.011.101/0441 |
| flat | momentary, 1 NO | green | 1.10.010.001/0551 | 1.10.011.001/0551 | 1.10.010.101/0551 | 1.10.011.101/0551 |
| flat | momentary, 1 NO | blue | 1.10.010.001/0661 | 1.10.011.001/0661 | 1.10.010.101/0661 | 1.10.011.101/0661 |
| FLEXLAB without lens | momentary, 1 NO | white | 1.10.010.201/0201 | 1.10.011.201/0201 | 1.10.010.301/0201 | 1.10.011.301/0201 |

Accessories FLEXLAB

Lens, colorless: 5.49.263.062/1000

Lens, red: 5.49.263.062/1300

Lens, yellow: 5.49.263.062/1400

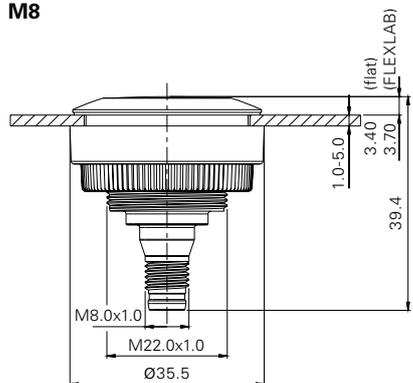
Lens, green: 5.49.263.062/1500

Lens, blue: 5.49.263.062/1600

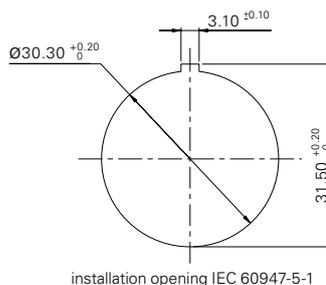
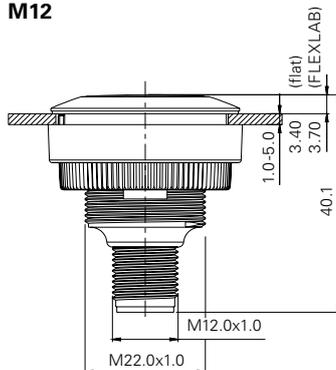
DIN A4 label sheet with 6x9 lenses in total utility: 5.70.800.200/0000

RAMO 30T, TACTILE

M8



M12



Order no.

| → Lens | Contact | Color LED & lens | M8 | M12 |
|----------------------|-----------------|------------------|-------------------|-------------------|
| | | | flat | momentary, 1 NO |
| flat | momentary, 1 NO | red | 1.11.010.001/0330 | 1.11.011.001/0330 |
| flat | momentary, 1 NO | yellow | 1.11.010.001/0440 | 1.11.011.001/0440 |
| flat | momentary, 1 NO | green | 1.11.010.001/0550 | 1.11.011.001/0550 |
| flat | momentary, 1 NO | blue | 1.11.010.001/0660 | 1.11.011.001/0660 |
| FLEXLAB without lens | momentary, 1 NO | white | 1.11.010.201/0200 | 1.11.011.201/0200 |

Accessories FLEXLAB

Lens, colorless: 5.49.263.062/1000

Lens, red: 5.49.263.062/1300

Lens, yellow: 5.49.263.062/1400

Lens, green: 5.49.263.062/1500

Lens, blue: 5.49.263.062/1600

DIN A4 label sheet with 6x9 lenses in total utility: 5.70.800.200/0000



M8/12 CONNECTION OPTIONS

For the applications of the future

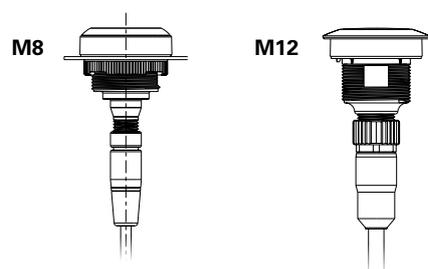
Machines are becoming more and more intelligent thanks to the constantly growing use of electronics. Via complex wiring, control in the control cabinet is increasingly being replaced by intelligent fieldbuses. Here, sensors and actuators are frequently connected and programmed directly in the field. The tough environmental conditions encountered there are easily handled by the RAMO series, thanks to its one-piece housing and sealed M8 and M12 connectors. They have proved their worth in sensor engineering, and have become a standard component in almost all fieldbus applications.

As a result, connecting RAMO single pushbuttons is as simple as it can be – the technology rules out any incorrect connections.

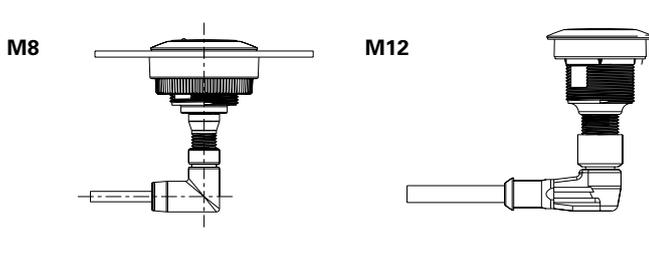
International standards for M8/M12 connectors

- IEC 60947-5-2 low-voltage switchgear Sensors
- IEC 61076-2-101 M12 form factor, further codings for M12
- IEC 61076-2-104 M8 form factor, further codings for M8

FLAT INSTALLATION WITH PLUG IN-LINE



FLAT INSTALLATION WITH ANGLEPLUG





FLEXLAB

Formidable possibilities

With the FLEXLAB technology from RAFI, you have the option of appending your individual icon to each and every keyswitch. Ready-made labelling sheets can be ordered as an option. They can be printed at your workplace using a MS Word template. Simply cut out the perforated labels and place them under the cap of the keyswitch with a single click.

Also available on request are printed sheets or pad-printed FLEXLAB caps in the following colors: red, green, yellow, blue, white.



Technical specifications are only approximate and should be used only for product selection. Subject to change and errors excepted. Images and other depictions alike. For more information go to www.rafi.de Imprint

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