



INTRA 50

INT-SET-50, 51

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Betriebsanleitung

Operating Instructions

Instructions d'utilisation

Istruzioni per l'uso

English

INTRA

Switching unit with an inductive transmission system in combination with safety edges for protection from crushing and shearing hazards on automatic sliding gates.

Safety

INTRA 50 meets the Standard EN-954-1 "Safety-Relevant Parts of Controllers"

The requirements of category 3 in accordance with EN-954-1 are met, if the drive unit is directly connected with the INTRA 50. If the drive unit is connected via downstream relays, the contacts of these relays must be monitored against welding.

It complies with the European Standard for gates, EN 12978 "Protective devices for power-operated doors and gates" in combination with the corresponding safety edges. Please contact us for a selection of safety edges rated for use in the system.

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Prior to starting installation or fault rectification, take the following safety precautions:

- Disconnect the system from the power supply
- Secure the system against unintentional restarting
- Make sure that the system is not live!
- Ground the phases and short-circuit them
- Cover any neighbouring live parts or remove them
- Cover the unit during mounting! Foreign bodies (e.g. drillings) can damage the devices
- If there is a high risk of contamination or if the ambient atmosphere is aggressive, protect the device with a housing



Safety Instructions

- Mounting, startup, modification and retrofitting of the system may only be carried out by an electrician!
- Before starting work, disconnect the unit / system from the power supply!
- While electrical switching units are being operated
 - individual parts carry dangerous voltages,
 - dangerous, ionised gases can escape, e.g. if a short-circuit occurs,
 - protective covers may not be removed
- Observe the safety regulations of electrical engineering and the Trade Association!
- If safety regulations are not observed, this can lead to death, serious injury or considerable material damage!
- Keep these operating instructions for later use!

1 System Components

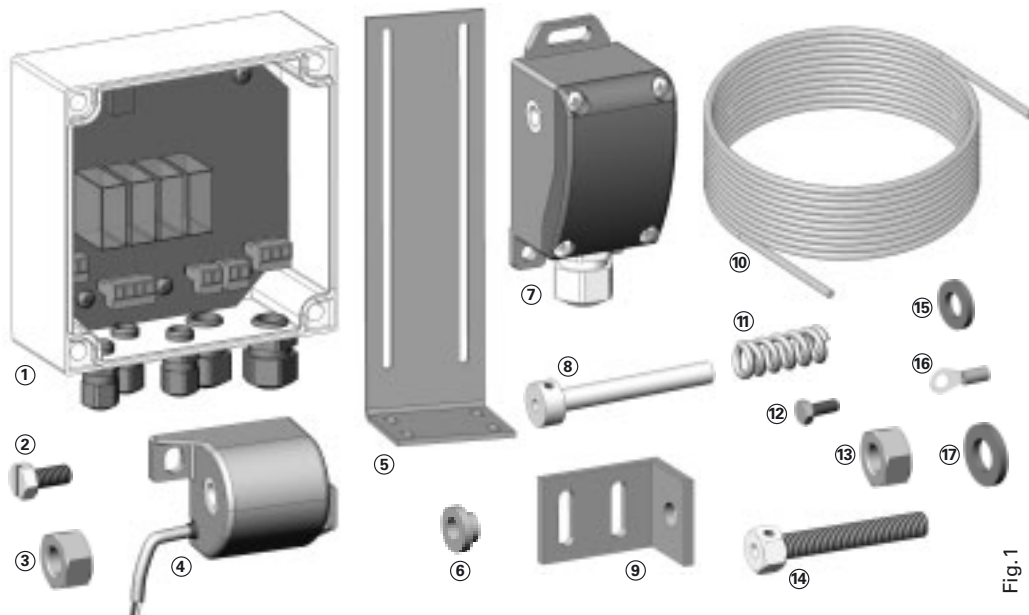


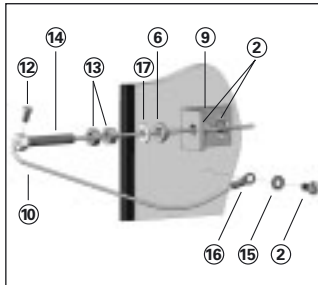
Fig. 1

- | | | | |
|--------------------------------|----------------------------|-----------------------------------|---------------------------|
| ① Switching device INT-F50, 51 | ⑤ Floor bracket INT-FMC 50 | ⑨ 2 x Mounting bracket INT-FMS 50 | ⑬ 2 x Nut/⑰ Washer for M8 |
| ② 11 x Bolt M6 x 12 | ⑥ 2 x Plastic sleeve | ⑩ 16 m steel cable | ⑭ Banjo bolt |
| ③ 2 x Nut M6 | ⑦ Converter INT-MOB 50 | ⑪ Compression spring | ⑮ 13 x Washer for M6 |
| ④ Coil INT-FIX 50 | ⑧ Hollow pin | ⑫ 2 x Bolt M4 x 10 | ⑯ 2 x Cable lug for M6 |

2 Installation

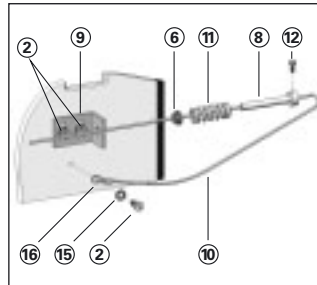
2.1 Mechanical Mounting

The instructions presented here are a recommendation only. The arrangement of the individual components depends on the particular gate design and the conditions in the building.



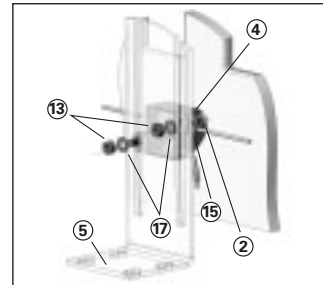
Mounting the bracket clamping side

Fig. 2



Mounting the bracket with compression spring

Fig. 3



Mounting the bracket with coil INT-FIX 50

Fig. 4

1. Align both mounting brackets ⑨ horizontally and attach them. Tighten only the bolts ② on the spring side. Do not tighten the bolts ② on the tensioning side yet.

2. Mount the converter INT-MOB 50 ⑦ on the clamping side (recommendation) cable glands downward. Alternatively it can also be installed recessed as shown below. In this type of mounting, the loose end of the cable ⑩ is passed through the converter INT-MOB 50 ⑦ and connected to the gate.

3. Mount the coil INT-FIX 50 ④ to the floor bracket ⑤ at the cable height. Do not tighten the bolts ② yet.

4. Pull the cable ⑩ through the hollow pin ⑧ with spring ⑪, plastic sleeve ⑥ and mounting bracket ⑨. Leave 0.5m of cable projecting for contacting the gate. Then pull the cable ⑩ through coil INT-FIX 50 ④, converter INT-MOB 50 ⑦, on the clamping side through mounting bracket ⑨, plastic sleeve ⑥, washer ⑰ and banjo bolt ⑭ with two screwed-on nuts ⑬ and leave approx. 0.5m projecting. Screw on the first hexagon nut ⑬ up to the head of the banjo bolt.

5. Fix the cable on the spring side using bolt ⑫. On the clamping side, tension the cable firmly by hand so the spring ⑪ is preloaded and secure with bolt ⑫.

6. Cut the cable on the left and right to the required length and press on a cable lug ⑯ on both sides. Screw the cable lugs ⑯ onto the gate using hexagon bolts ② and washer ⑮. Take particular care that the contact points on the gate make a good connection. Clean the contact point and scrape off any paint or contamination.

7. Align the coil INT-FIX 50 ④ vertically and horizontally so that the cable passes through the middle of the passage tube in the coil. Use shims underneath the floor bracket ⑤ for horizontal alignment. Tighten the bolts.

8. Clamp the cable with the first hexagon nut ⑬ on the banjo bolt ⑭ so it is firmly tightened and does not sag at any point. Lock with the second nut.

9. Mount the safety edges on the moving gate section and route the cable to the converter INT-MOB 50 ⑦.

10. Mount the safety edges on the fixed gate section and route the cable to the switching device.

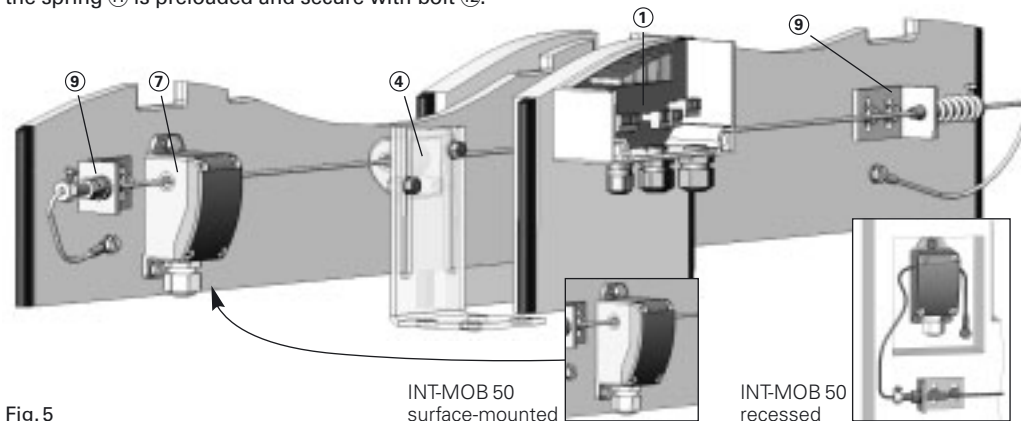


Fig. 5

INT-MOB 50 surface-mounted

INT-MOB 50 recessed

2.2 Electrical Installation

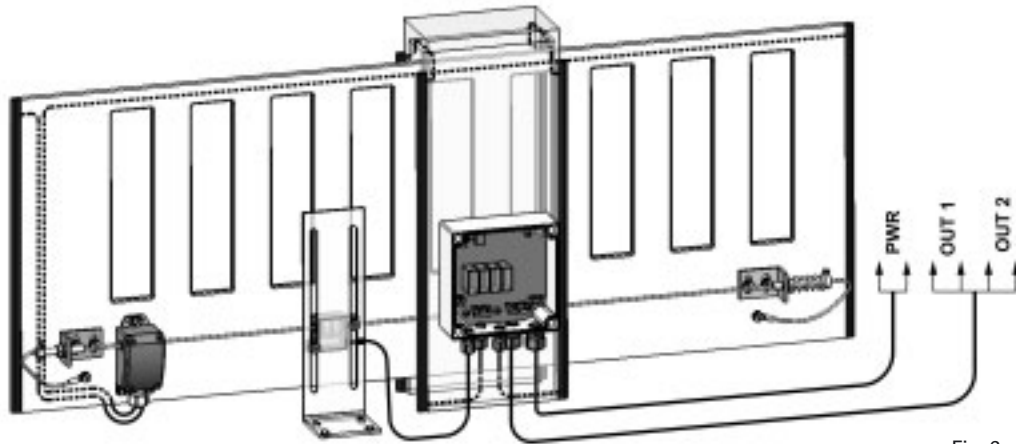


Fig. 6

- Wire the edges on the stationary gate section to the switching device ① (conn. IN3 or IN4)
- Wire the coil INT-FIX 50 ④ to the switching device (max. extension: 50 m / 164.04')
- Wire the edges on the moving gate section to the converter INT-MOB 50 ⑦ (conn. IN1 or IN2)
- If a connection is left unoccupied, it must be jumpered with an 8.2 kohm resistor
- Apply the 230VAC or 24VADC supply to the PWR connection of the control unit (center terminal not connected)
- Take particular care that the contact points between the cable and the gate make a good electrical connection
- Wire the safety edges and devices as shown in the connection diagram

2.3 Connection Diagram

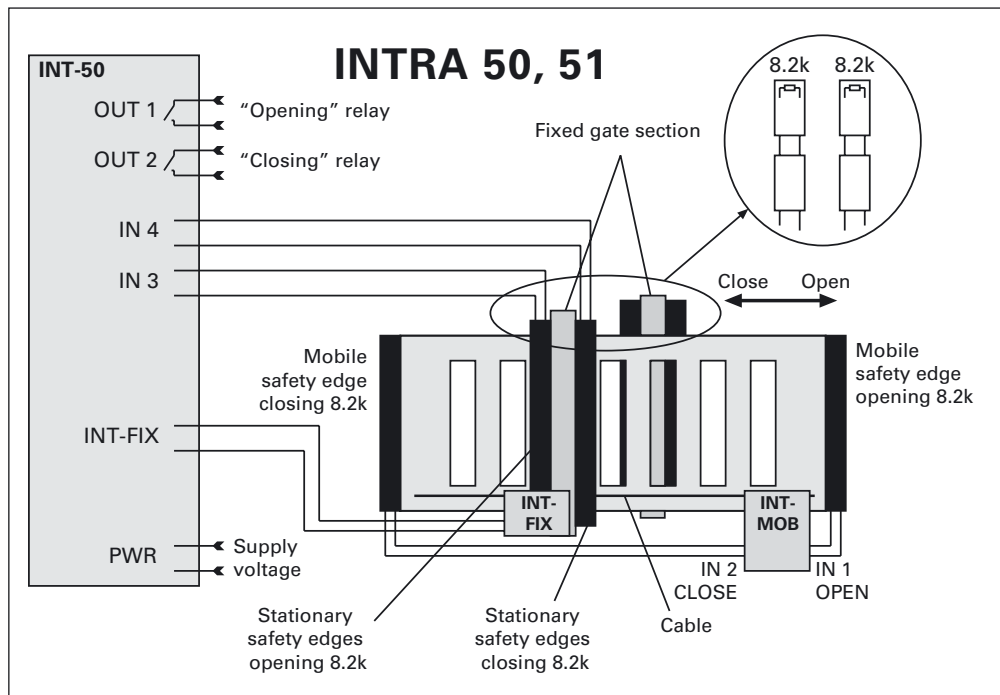


Fig. 7

2.4 Terminals / Terminal Assignment INT-50, 51

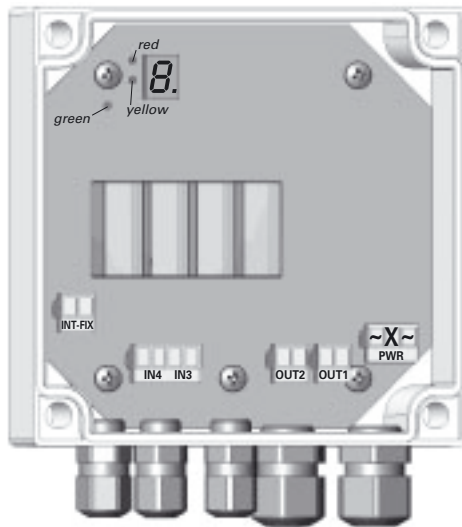


Fig. 8

2.5 Terminals/Terminal Assignment INT-MOB 50

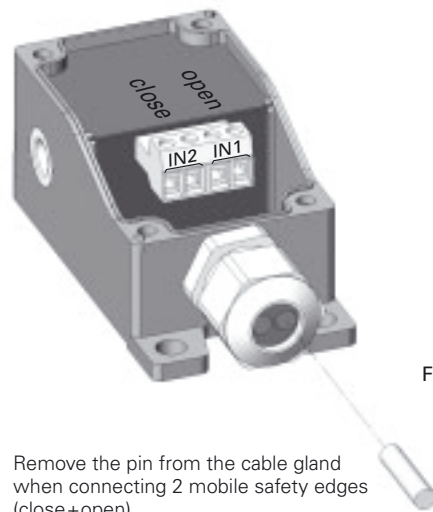


Fig. 9

Remove the pin from the cable gland when connecting 2 mobile safety edges (close+open).

2.6 Connecting the Safety Edges to INT-MOB 50 and INT-50, 51

- Maximum total length of the safety edge with cable: 30 m / 98 ft
- Several safety edges on the same input must be connected in series (Fig. 10)
- The last safety edge must be terminated with an 8.2 kohm resistor (Fig. 10)

We recommend that you measure the resistance values of the sensors prior to connection. If the sensor is not actuated, the resistance values should be between 7.5 and 8.7 kohm (typically 8.2 kohm).

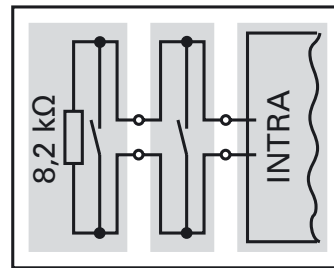


Fig. 10



If safety edges are only connected to one safety edge input (IN 1 or IN 2, IN 3 or IN 4), the unused channel IN2 or IN1 must be jumpered with 8.2 kohm otherwise a fault will be displayed.

2.7 Outputs

The system has two separate safety outputs, OUT1 and OUT2 (Fig. 7)

Safety output OUT1 ("opening" relay) and OUT2 ("closing" relay)

When the device is switched on, the safety edges are permanently monitored on the control unit INT-50 and the converter INT-MOB 50 (activated – not activated – interrupted)

If everything is OK, the relays of safety outputs OUT1 and OUT2 close.

OUT1

- If the safety edge on IN1 is activated on the INT-MOB 50 or IN3 on INT-50, the relays of the safety output OUT1 open for as long as the safety edge is activated
- When the safety edges are free again, the safety relays close

OUT2

- If the safety edge on IN2 is activated on the INT-MOB 50 or IN4 on INT-50, the relays of the safety output OUT2 open for as long as the safety edge is activated
- When the safety edges are free again, the safety relays close

2.8 Start-up

After switching on the device, the operating state is displayed by the green LED being lit and the flashing dot on the 7-segment-display.

To check the correct safety function every safety edge has to be actuated:

Safety edge actuated	Yellow LED	7-segment-display	OUT1	OUT2	Gate movement
None	off	flashing dot	closed	closed	–
at IN1 (mobile, open)	on	"1"	opens	closed	opening stops
at IN2 (mobile, close)	on	"2"	closed	opens	closing stops
at IN3 (stationary, open)	on	"3"	opens	closed	opening stops
at IN4 (stationary, close)	on	"4"	closed	opens	closing stops

2.9 Dimensions

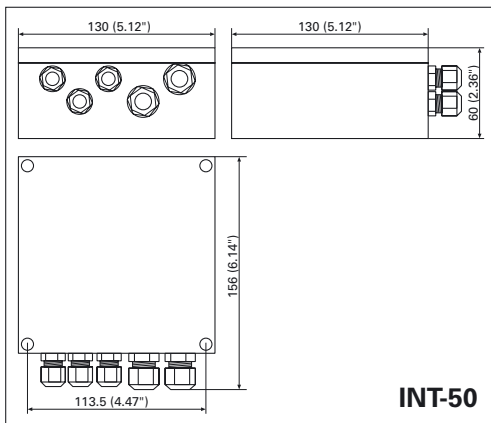


Fig. 11

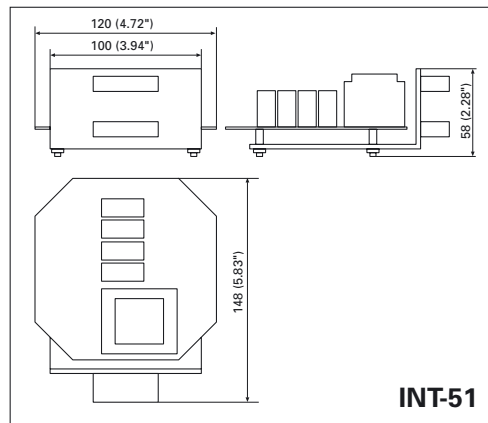


Fig. 12

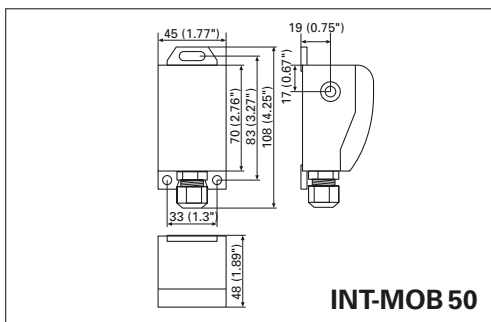


Fig. 13

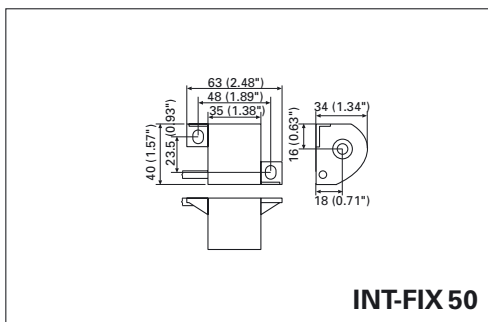


Fig. 14

3 Fault Analysis

A fault is displayed by the LED being lit and the nature of the fault is indicated on the 7-segment-display (see Fault Index section).

Basic procedure

- Switch off the power supply to the system
- Check all existing safety edges using an ohmmeter. The resistance value when the edges are not activated must be around 8.2 kohm
- The resistance must be around 0 ohm when the edges are activated

3.1 Fault Index

7-SEGMENT-DISPLAY*			E-1	E-2	E-3	E-4	E-C	1	2	3	4	E-5/6
Green LED	●		●	●	●	●	●	●	●	●	●	●
Yellow LED								●	●	●	●	
Red LED			●	●	●	●	●					●
Dot on 7-segment-display	● flashes											
Fault index	a	b	c	d	e	f	g	h	i	j	k	l

* In double-digit displays (e.g. E-1) the 7-segment-display changes from *E* to *1* every second

Fault index

- a** No fault, the system is functioning
- b** Check supply voltage at PWR connection
- c** Interruption in "Mobile open" safety edge. Check connections IN1 on the converter INT-MOB 50. Check the resistance of the mobile safety edge "Open".
- d** Interruption in "Mobile close" safety edge. Check connections IN2 on the converter INT-MOB 50. Check the resistance of the mobile safety edge "Close".
- e** Interruption in "Stationary open" safety edge. Check connections IN3 on the control unit INT-50. Check the resistance of the stationary safety edge "Open".
- f** Interruption in "Stationary close" safety edge. Check connections IN4 on the control unit INT-50. Check the resistance of the stationary safety edge "Close".
- g Check the cable circuit**
 - Check the linkage and connection of the coil INT-FIX 50 to the switching device INT-50.
 - Check the cable insulation (no short circuit from the cable to the gate before the converter INT-MOB 50).
 - Remove the connection between the cable and the gate structure at the converter INT-MOB 50 and measure the resistance between the cable and the gate structure. The resistance must not be more than 3 ohms (normally 1 to 2 ohms).
 - Check the other connection between the cable and the gate structure or check for a break in the cable if the resistance is greater than 3 ohms.
 - Check the connection on the converter INT-MOB 50 if the resistance is less than 3 ohms.
- h** The mobile safety edge "open" is activated or short-circuited, or there is a short circuit in the connection cable.
- i** The mobile safety edge "closed" is activated or short-circuited, or there is a short circuit in the connection cable.
- j** The stationary safety edge "open" is activated or short-circuited, or there is a short circuit in the connection cable.
- k** The stationary safety edge "closed" is activated or short-circuited, or there is a short circuit in the connection cable.
- l** Timing-Problem: check supply voltage at PWR connection (device operating!) (allowable tolerances +/-10%!) and cable circuit (see fault index g). If no failure can be found, please contact the customer service of Bircher Reglomat AG.

No safety edges are allowed to be connected in parallel to the safety edge inputs (IN1 to IN4). The yellow LED lights up and the corresponding number appears on the 7-segment-display if two or more safety edges are connected to an input in parallel.

Check the device periodically to make sure it is functioning correctly and document these checks.

4 Maintenance

After the system has been correctly mounted and installed and if the technical data are observed, it will operate without any maintenance being required. See EN 12453 for gate maintenance.

5 Technical Data

Mechanical data

Switching device INT-50

- Housing	Grey ABS, transparent cover	(min. protection class of the installation place: IP54)
- Dimensions	130 x 130 x 60 mm / 5.12" x 5.12" x 2.36"	148 x 120 x 58 mm / 5.83" x 4.72" x 2.28"
- Weight	455 g / 1.00 lb (24V), 710 g / 1.56 lb (230VAC)	330 g / 0.73 lb (24V), 600 g / 1.32 lb (230VAC)

INT-51

Converter INT-MOB 50

- Housing	Anthracite ABS
- Dimensions	94 x 45 x 48 mm / 3.70" x 1.77" x 1.89"
- Weight	150 g / 0.33 lb

Coil INT-FIX 50

- Housing	Anthracite ABS
- Dimensions	63 x 40 x 34 mm / 2.48" x 1.57" x 1.34"
- Weight	165 g / 0.36 lb (incl. 3 m / 118.11" cable)
- Cable length	3 m / 118 in; max. 50 m / 164 ft, min. cross-section 0.34 mm ² / AWG 22

Electrical data

- Power supply	230 VAC +/-10 % 24 VACDC +/-10 % *
- Frequency	50/60 Hz
- Power consumption	10 VA at 230 VAC 7 VA at 24 VAC 4 W at 24 VDC

***The power supply must be generated by a safety transformer in acc. with IEC 742. Cables must be laid so they are protected from mechanical damage.**

Output

- Type	2x2 positively driven relays
- Utilization category	AC-1: 250V/2A/500 VA acc.to EN60947-4-1* DC-1: 24V/2A/48W
- Utilization category	AC-15: 250V/2A/500 VA acc.to EN60947-5-1* DC-13: 24V/2A/48W (DC13: 6 switchings/min.)
- Fuse Protection	2 A slow acc.to EN60947-5-1
- Switching Capacity	24VDC/1 A, resistive load 30VAC/1 A, resistive load

***If not mentioned ratings are required, ask for them at the manufacturer.**

Displays

- Operation	Green LED
- Safety shutdown	Yellow LED
- Fault/interruption	Red LED
- Fault index	7-segment-display

Ambient conditions

- Protection class	IP65 (INT-51: IP00)
- Temperature range	Operation -10°C to 55°C / 14°F to 131°F (EN 1760-2) (guaranteed) -20°C to 55°C / -4°F to 131°F Storage -20°C to 80°C / -4°F to 176°F (EN 1760-2)
- Air humidity	according to EN1760-2 and IEC68-2-3 max. 93 % relative (no moisture condensation allowed)

Other data

- Response time	typ. 10 ms
- Length of safety edges	max. 30 m / 98.425' incl. conn. wire/channel
- Length of steel cable	max. 20 m / 65.62'
- Cable circuit resistance	max. 3 ohm (cable, contact points, gate)

Warranty and liability

- The warranty and liability of Bircher Reglo-mat AG are based on the sales contract.
- The warranty and liability shall expire prematurely, should the client or third parties not use and/or operate the product in compliance with existing operating instructions, should incorrect changes or repairs be made by the client or third parties, should the client or third parties, when a fault has occurred, not take suitable steps at once for a reduction of possible damage/losses and offer Bircher Reglomat AG a chance for remedying the said fault.
- The warranty and liability shall exclude any damage for which there is no proof that it is due to poor materials, faulty construction, poor workmanship, and any damage caused by other reasons, for which Bircher Reglo-mat AG cannot be held liable.
- No liability can be assumed for any consequential damage, provided this is not governed otherwise by applicable product liability laws and regulations.
- Warranty claims made against the seller on the basis of the sales agreement are not affected by these regulations.
- For the benefit of its customers Bircher Reglo-mat AG constantly develops its products further. Bircher Reglomat AG reserves the right to make changes to any of the products described in this document without prior notice.