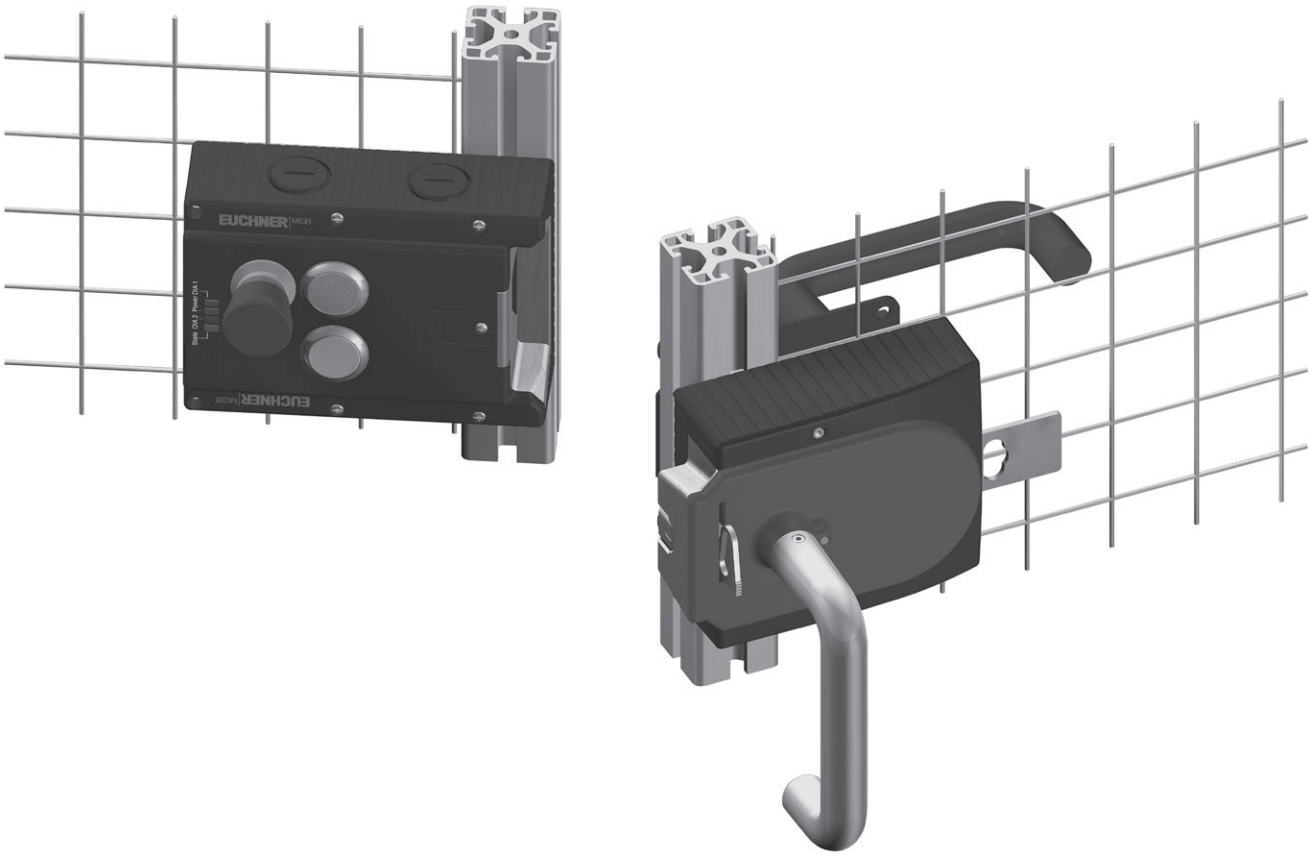
Operating Instructions

Safety systems
MGB-L1-...AR.-... / MGB-L2-...AR.-...
and
MGB-L1-...AP.-... / MGB-L2-...AP.-...

from V2.2.1



Contents

1 About these operating instructions

1.1 Scope

The operating instructions are part of the system documentation for the safety system MGB. It applies to the following MGB systems:

Series	Guard locking types	System families	Product versions
MGB	L1 (guard locking by spring force)	...-AP...	from V2.2.1
		...-AR...	
	L2 (guard locking by solenoid force)	...-AP...	
		...-AR...	

Notes on older product versions

Products with lower product versions or without a version number are not described by these operating instructions. Download the related operating instructions for these products in the download area at www.EUCHNER.de.

1.2 Symbols used

Symbol	Significance
	This section applies on operation as MGB-AP
	This section applies on operation as MGB-AR
	In this section attention must be paid to the DIPswitch setting

2 Correct use

The system comprises at least one locking module MGB-L1-.../MGB-L2-... and one handle module MGB-H...

The safety system MGB is an electromagnetic interlocking device with guard locking.

The locking module can be configured with the aid of DIPswitches. Depending on the setting, the locking module behaves like an AP or AR device. In addition the guard lock monitoring can be switched on or off. More detailed information about the possible settings is available in the section *10.5 Changing device configuration (using DIPswitches), page 21*.

DIP

With active guard lock monitoring the following applies:

In combination with a movable safety guard and the machine control, this safety component can prevent opening of the safety guard while a dangerous machine movement is performed. The position of the guard locking is monitored during this process.

For the control system, this means that

- starting commands which cause hazardous situations must become active only when the safety guard is in protective position and the guard locking is in locked position.
  The locked position of the guard locking must be released only when the hazardous situation is no longer present.

With inactive guard lock monitoring the following applies:

In combination with a movable separating safety guard, this safety device prevents dangerous machine movements from occurring while the safety guard is open. A stop command is triggered if the safety guard is opened during the dangerous machine function. The position of the guard locking is not taken into account during this process.

Before safety components are used, a risk assessment must be performed on the machine in accordance with

- EN ISO 13849-1, Safety of machinery. Safety related parts of control systems. General principles for design, Annex B
- EN ISO 12100, Safety of machinery – Basic concepts - General principles for design - Risk assessment and risk reduction.

Correct use includes compliance with the relevant requirements for installation and operation, in particular

- EN ISO 13849, Safety of machinery. Safety related parts of control systems. General principles for design
- EN 1088, Safety of machinery. Interlocking devices associated with guards. Principles for design and selection
- EN 60204-1, Safety of machinery. Electrical equipment of machines. General requirements.

The safety system MGB can only be combined with the intended modules in the MGB system family.

On the modification of system components, EUCHNER provides no warranty for function.

Locking modules with the configuration MGB-AR can be integrated into an AR switch chain.

Connection of several devices in an AR switch chain is permitted only using devices intended for series connection in an AR switch chain. Check the operating instructions for the related device. For detailed information on operation in an AR switch chain, please see the system manual for the related AR device.

Important:

- The user is responsible for the integration of the device in a safe overall system. For this purpose, the overall system must be validated, e.g. in accordance with EN ISO 13849-2.
- Correct use requires observing the permissible operating parameters (see section *12 Technical data, page 31*).
- If a product data sheet is included with the product, the information on the data sheet applies in case of discrepancies with the operating instructions.
- In the estimation of the PL for the overall system, a maximum value of 100 years can be assumed for the $MTTF_d$ according to the limit value in EN ISO 13849-1:2008, Section 4.5.2. This corresponds to a minimum value for the PFH_d of $2.47x10^{-8}$/h.

- When up to 10 devices are connected in series, these limit values can be assumed for the entire switch chain as a subsystem. As a subsystem, this switch chain achieves PL e.

Main differences between MGB-AP and MGB-AR

System family	Symbol	Use
MGB-AP		If series connection is not necessary, the number of terminals can be reduced using this system family.
MGB-AR		Linking of several safety guards on one shutdown path. As a consequence several safety doors can be very simply polled using one evaluation unit or two control system inputs.

3 Exclusion of liability and warranty

In case of failure to comply with the conditions for correct use stated above, or if the safety instructions are not followed, or if any servicing is not performed as required, liability will be excluded and the warranty void.

4 General safety instructions

Safety switches fulfill personal protection functions. Incorrect installation or tampering can lead to fatal injuries to personnel.

Check the safe function of the safety guard particularly

- after any setup work
- after the replacement of an MGB component
- after an extended period without use
- after every fault
- after any change to the DIPswitch setting

Independent of these checks, the safe function of the safety guard should be checked at suitable intervals as part of the maintenance schedule.

Warning!

Loss of safety function in the event of incorrect connection, incorrect DIPswitch setting or incorrect use.

- Safety switches must not be bypassed (bridging of contacts), turned away, removed or otherwise rendered ineffective.
  On this topic pay attention in particular to the measures for reducing the possibility of bypassing from EN 1088:1995+A2:2008, Section 5.7.
- The switching operation is only allowed to be triggered by the intended handle module MGB-H... that is positively fastened to the safety guard.

The device is only allowed to be installed and placed in operation by authorized personnel

- who are familiar with the correct handling of safety components
- who are familiar with the applicable EMC regulations
- who are familiar with the applicable regulations on health and safety and accident prevention
- who have read and understood the operating instructions.

Important:

Prior to use, read the operating instructions and keep these in a safe place. Ensure that the operating instructions are always available during mounting, setup and servicing work. EUCHNER cannot provide any warranty in relation to the readability of the CD/DVD for the storage period required. For this reason you should archive a printed copy of the operating instructions. If you should lose the operating instructions, you can download the document from www.EUCHNER.de.

5 Function

Together with a handle module, the locking module makes it possible to lock movable safety guards. The combination also serves as a mechanical door stop at the same time.

DIP

The following switch-on condition applies for the safety outputs FO1A and FO1B (see also sections *13.2 System status table MGB-AR, page 33* and *13.3 System status table MGB-AP, page 34*):

Configuration / System family		MGB-AR		MGB-AP	
	Guard lock monitoring	active	inactive	active	inactive
Condition	Not a fault in the device	TRUE	TRUE	TRUE	TRUE
	Safety guard closed	TRUE	TRUE	TRUE	TRUE
	Bolt tongue inserted in locking module	TRUE	TRUE	TRUE	TRUE
	Guard locking active	TRUE	Not relevant	TRUE	Not relevant
	In case of series connection: Signal available from the upstream switch on the safety inputs FI1A and FI1B **In case of separate operation:** DC 24 V available on the safety inputs FI1A and FI1B	TRUE	TRUE	Not relevant	Not relevant
		FO1A and FO1B are **ON**			

The locking module detects the position of the safety guard and the position of the bolt tongue. The position of the locking arm is also monitored.

Guard lock monitoring can be deactivated with DIPswitches (see section *10.5 Changing device configuration (using DIPswitches), page 21*).

Important:

For use as guard locking in accordance with EN 1088 the guard lock monitoring must be active.

The bolt tongue in the handle module is moved into and out of the locking module by actuating the door handle.

When the bolt tongue is fully inserted in the locking module, the locking arm locks the bolt tongue in this position. Depending on the version, this locking is by spring force or solenoid force.

Version MGB-L1-..., guard locking by spring force

The locking arm is kept in locked position by spring force and is unlocked by solenoid force (closed-circuit current principle).

Version MGB-L2-..., guard locking by solenoid force

The locking arm is kept in locked position by solenoid force and unlocked by spring force when the solenoid is switched off (open-circuit current principle).

Warning!

The safety guard can be opened immediately in the event of interruption of the solenoid power supply! Usage only in special cases in accordance with strict evaluation of the accident risk (see EN 1088:1995+A2:2008, section 5.5).
Example: If the risk of accidental locking inside a safety guard during a power failure is higher than the risk of ineffective guard locking.

6 System Overview

6.1 Locking module MGB-L.-...

Key:
① Cover for mechanical release
② LED indicator
③ DIPswitches
④ Terminals X2 -X5
⑤ Locking bar
⑥ Depending on version
Cable entry M20x1.5 or plug connector
⑦ Auxiliary marking for maximum permitted mounting distance

Note:
Depending on the version, additional controls and indicators may be integrated into the cover and a mounting plate can be included.
See enclosed data sheet.

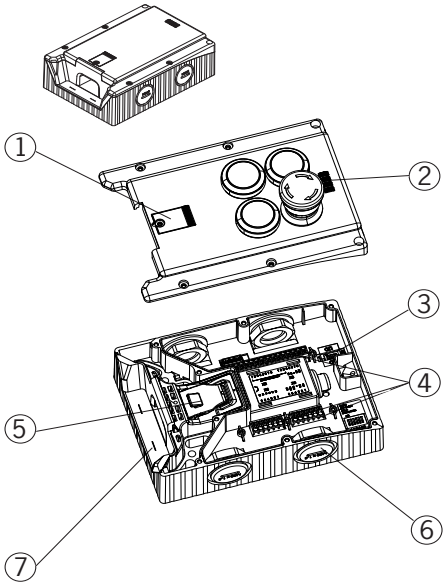


Figure 1: Locking module MGB-L.–...

6.2 Handle module MGB-H-...

Key:
① Door handle
② Locking pins for housing cover and handle adjustment
③ Folding lockout mechanism (optional: second, automatically extending lockout mechanism)
④ Bolt tongue

Note:
Depending on the version, a mounting plate can be included.
See enclosed data sheet.

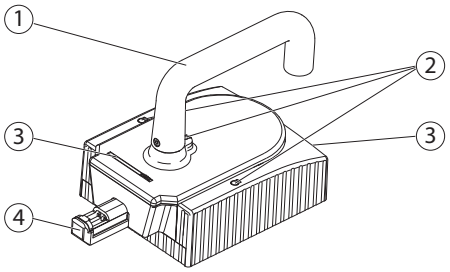


Figure 2: Handle module MGB-H-...

6.3 Escape release MGB-E-... (optional)

Key:
① Door handle
② Setscrew
③ Cover
④ Actuation axis 8 x 8 mm
(different lengths available)
⑤ Protective sleeve

Note:
Depending on the version, a mounting plate can be included.
See enclosed data sheet.

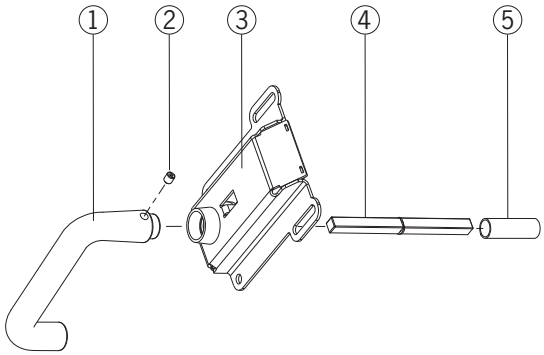


Figure 3: Escape release MGB-E-...

6.4 Dimension drawing

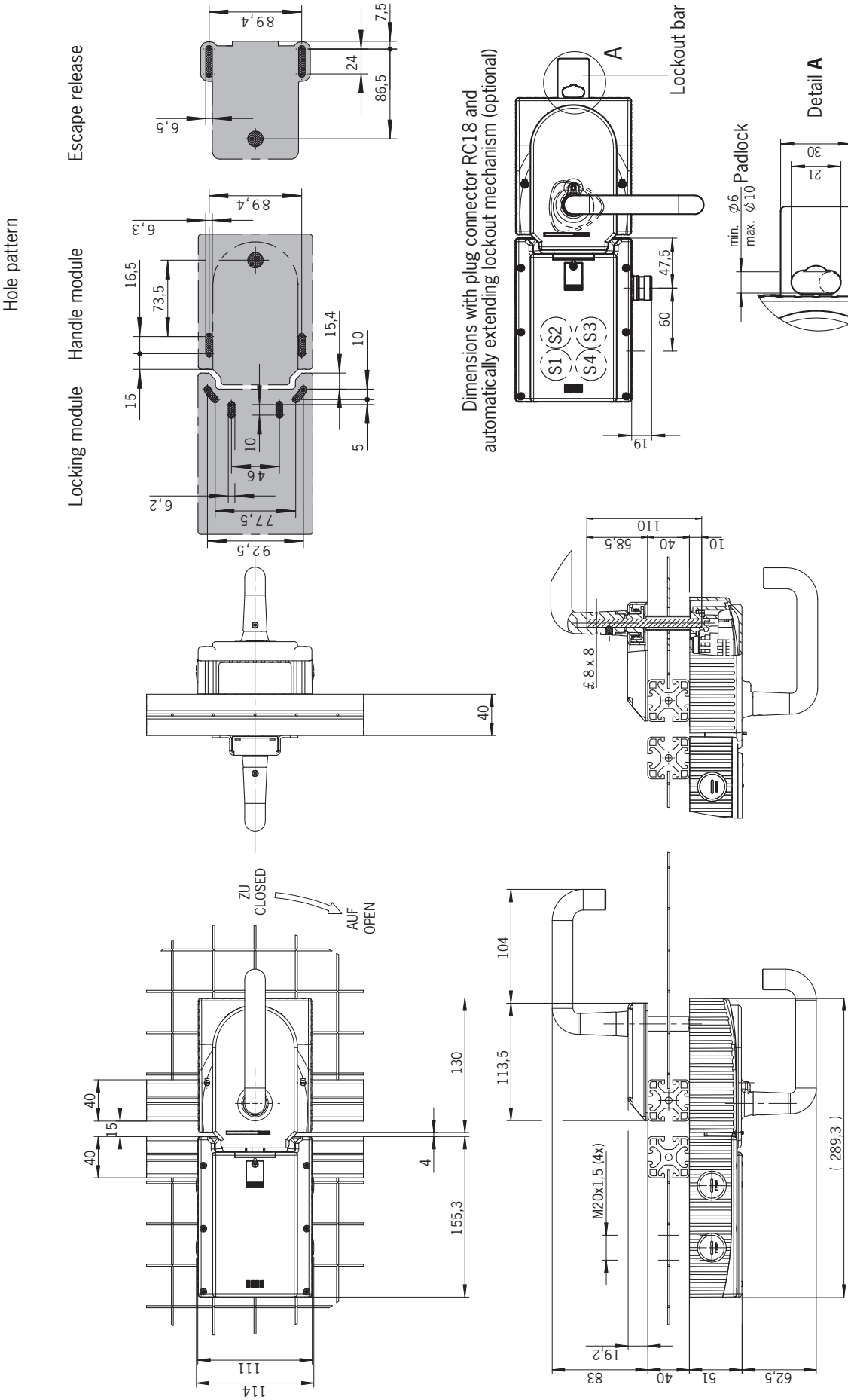


Figure 4: Dimension drawing MGB fitted, without optional mounting plates

6.5 Mechanical release

In the event of service, the guard locking can be released with the mechanical release irrespective of the state of the solenoid (see Figure 5).

DIP

When release monitoring is active, the system enters into a latching fault when the mechanical release is actuated.
See System status table, signal sequence incorrect status (DIA red, Lock flashes 1 time).
The system might not enter into a latching fault if the mechanical release is actuated very slowly.

Important:

- The mechanical release is not a safety function.
- The machine manufacturer must select and use a suitable release (escape release, emergency unlocking, etc.) for a specific application. A risk assessment appraisal is required for this purpose. It may be necessary to take specifications from a product standard into account.
- The correct function must be checked at regular intervals.
- Loss of the release function due to mounting errors or damage during mounting. Check the release function every time after mounting.
- Please observe the notes on any enclosed data sheets.

The locking screw must be screwed back in and sealed after assembly and after use of the mechanical release (for example, with sealing lacquer). Tightening torque 0.5 Nm.

1. Undo locking screw.
2. Lift locking arm using a screwdriver and actuate door handle

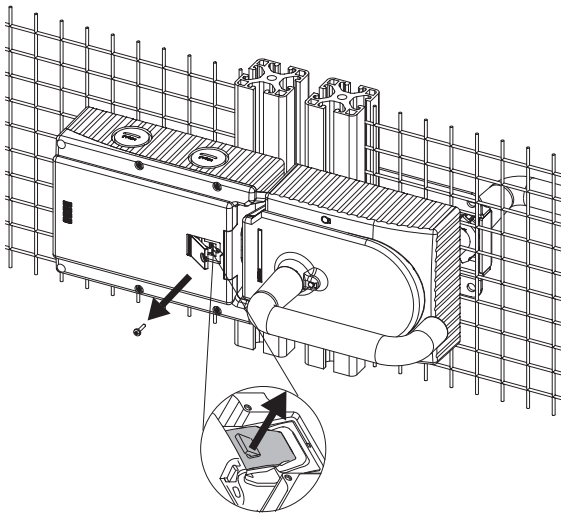


Figure 5: Mechanical release

6.6 Lockout bar

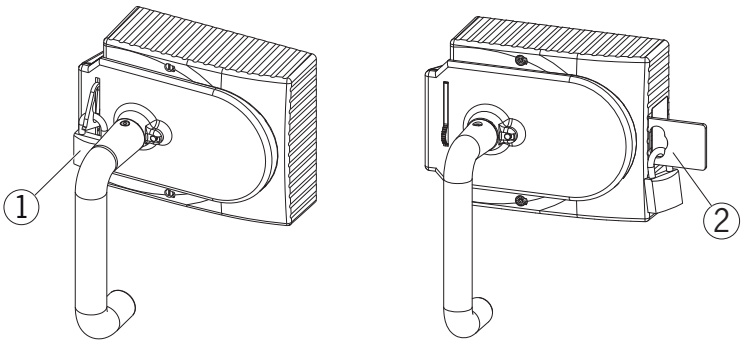
If the lockout mechanism is pivoted out / extended, the bolt tongue cannot be extended. The lockout mechanism can be secured with padlocks (see Figure 6).

To pivot out, press the grooved part (only possible with bolt tongue retracted).

Key:

① Padlock ∅ min. 2 mm, ∅ max. 10 mm
Note:
You can fit a maximum of 3 locks Ø 8 mm..

② Automatically extending, second lockout mechanism
Padlock ∅ min. 6 mm, ∅ max. 10 mm



Order no.. 100464 (right)
Order no.. 106619 (left)

Order no.. 111157 (right)
Order no.. 111158 (left)

Figure 6: Lockout mechanism secured with padlock

6.7 Escape release (optional)

The escape release is used to open a locked safety guard from the inside without tools.

DIP

When release monitoring is active, the system enters into a latching fault when the escape release is actuated.
See System status table, signal sequence incorrect status (DIA red, Lock flashes 1 time).
The system might not enter into a latching fault if the escape release is actuated very slowly.

Important:

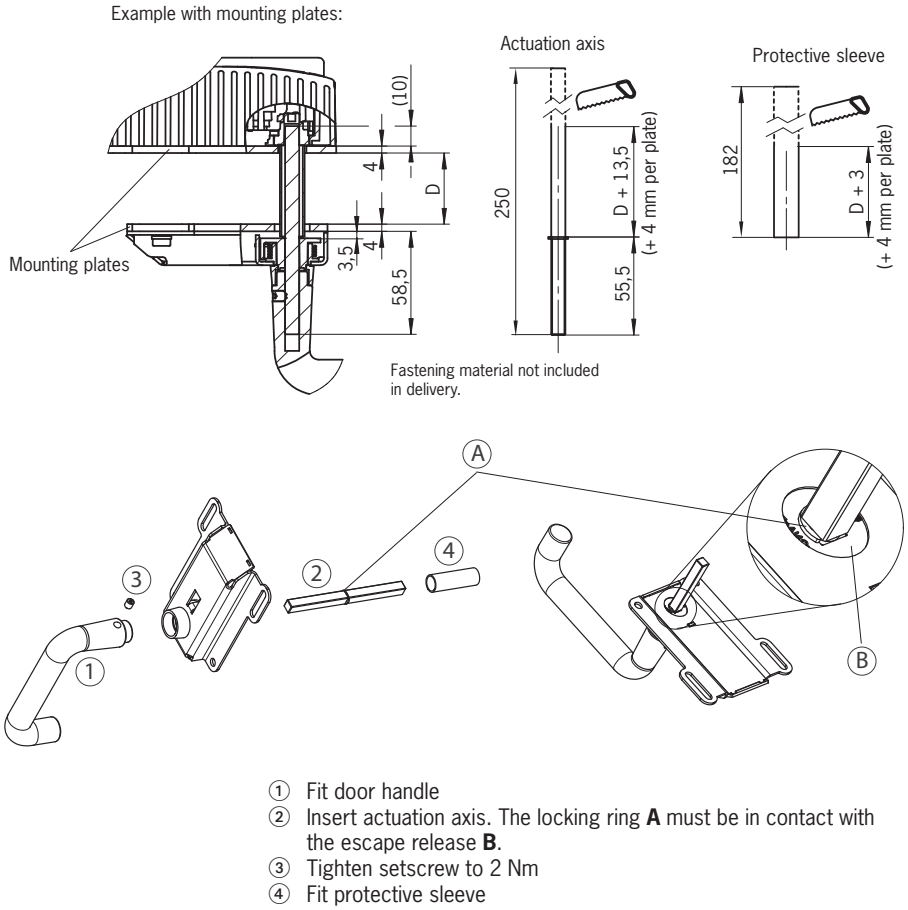
- The escape release is not a safety function.
- The machine manufacturer must select and use a suitable release (escape release, emergency unlocking, etc.) for a specific application. A risk assessment appraisal is required for this purpose. It may be necessary to take specifications from a product standard into account.
- The correct function must be checked at regular intervals.
- Please observe the notes on any enclosed data sheets.

- Fit escape release such that operation, inspection and maintenance are possible.
- The actuation axis for the escape release must be inserted min. 10 mm into the handle module. Note the information on the different profile widths in the next section.
- Align escape release axis at right angles to the handle module. See Figure 4 and 8.

Preparing escape release

(Also see Figure 7 on the next page)

Profile width	Length required for actuation axis		Which EUCHNER parts are required?	Necessary work steps
	Without plates	With mounting plates (4 mm each)		
D	D+13	D+21		
30 mm	43 mm	51 mm	Standard escape release with 110 mm actuation axis (order no. 100465)	Shorten to required length
40 mm	53 mm	61 mm	Standard escape release with 110 mm actuation axis (order no. 100465) If necessary extended actuation axis (order no. 106761)	Without mounting plates: No With mounting plates: Use long actuation axis and protective sleeve and shorten to required length
45 mm	58 mm	66 mm	Standard escape release with 110 mm actuation axis (order no. 100465) **and** extended actuation axis (order no. 106761)	Use long actuation axis and protective sleeve and shorten to required length
50 mm	63 mm	71 mm	Standard escape release with 110 mm actuation axis (order no. 100465) **and** extended actuation axis (order no. 106761)	Use long actuation axis and protective sleeve and shorten to required length



① Fit door handle
② Insert actuation axis. The locking ring **A** must be in contact with the escape release **B**.
③ Tighten setscrew to 2 Nm
④ Fit protective sleeve

Figure 7: Preparing escape release

7 Mounting

Warning!

Mounting must be performed only by authorized personnel.

With two-wing hinged doors, one of the two door wings additionally must be latched mechanically.

Use a rod latch (Item) or a double-door lock (Bosch Rexroth) for this purpose, for example.

Tip!

- You will find an animation on the mounting process at www.mgb.EUCHNER.de.
- The color and labeling of pushbuttons and indicators can be modified.

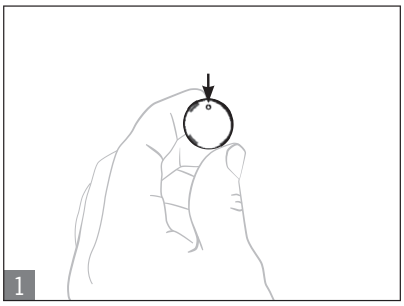
For installation steps see Figure 8 and Figures 9 to 14.

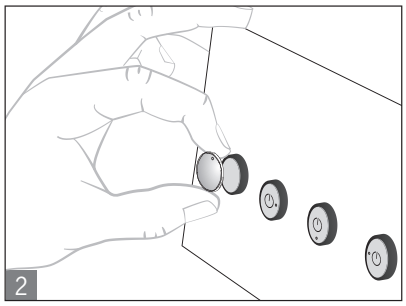
Attach system such that operation of the mechanical release as well as inspection and maintenance are possible.

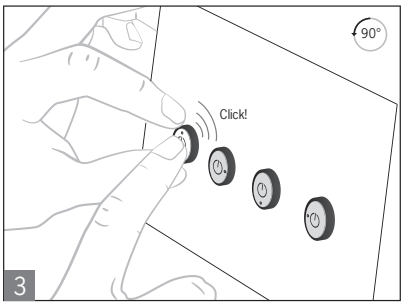
The locking screw of the escape release must be returned to its original position and sealed before putting into operation (for example, with sealing lacquer).

7.1 Mounting color cover

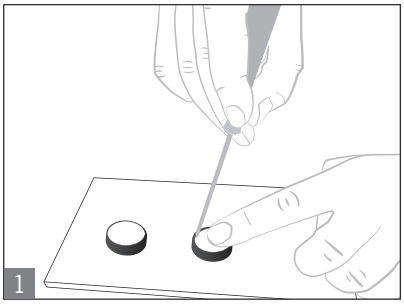
Mounting

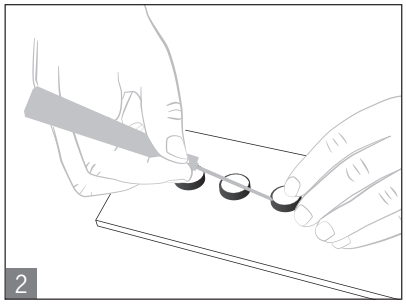




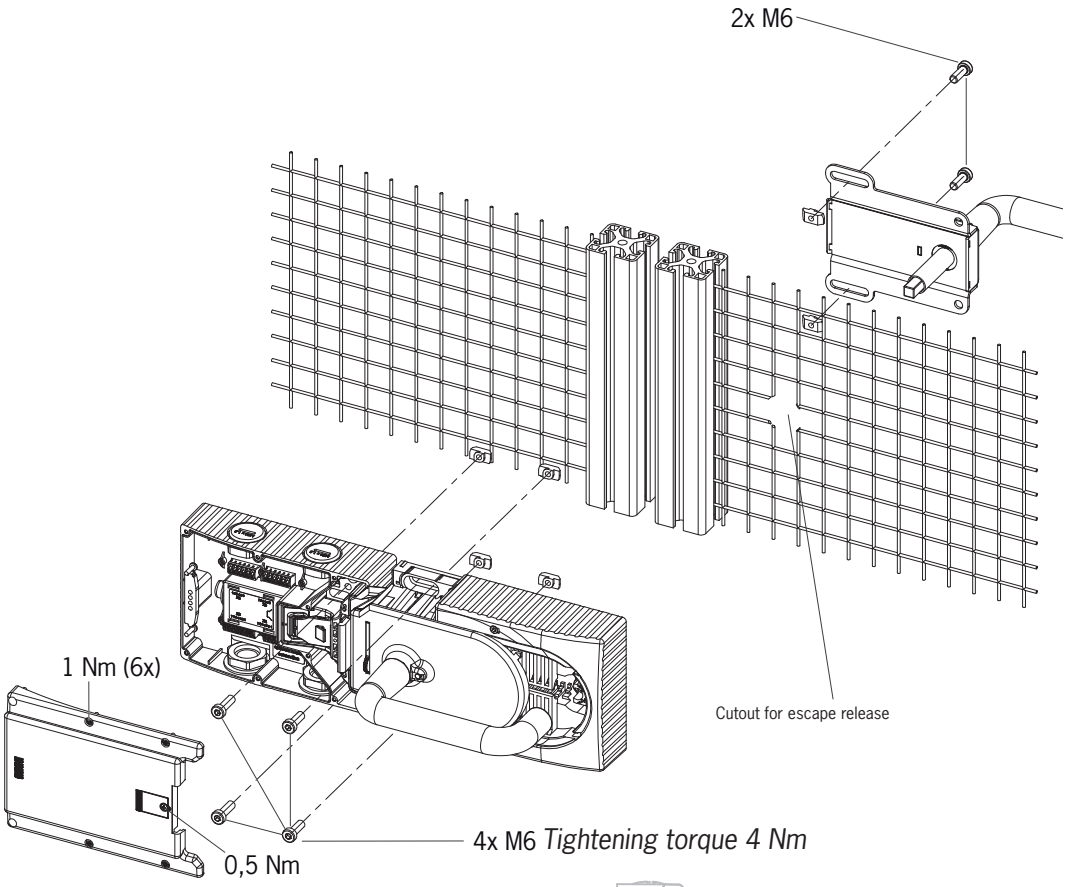


Removing





Color cover



Recommended fastening material
For fastening the guard locking module on the mounting plate
DIN 912-M6X25-8.8 ZN CAP SCREW

For fastening the handle module on the mounting plate:
DIN 7984-M6X10 ZN CAP SCREW

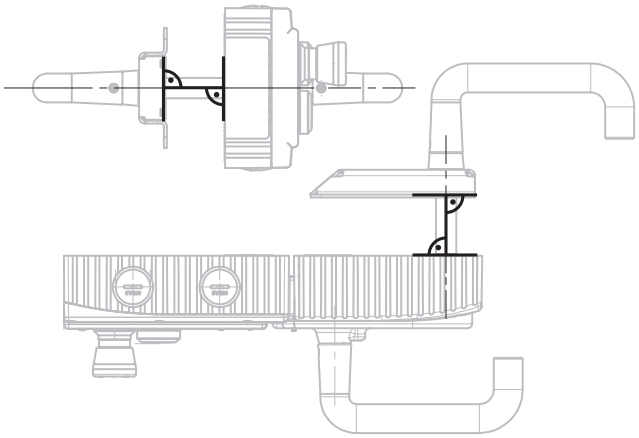


Figure 8: Installation example for door hinged on the right (general view)

8 Changing actuating direction (here: from right to left)

Important:

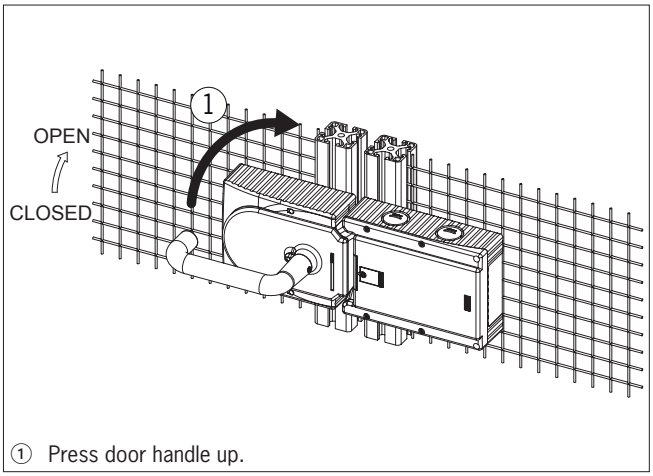
It is only possible to make this change when the bolt tongue is not extended and an escape release is not yet mounted.

As supplied, the handle module is set either for doors hinged on the right or for doors hinged on the left.

Based on the example of a handle module for doors hinged on the right this means:

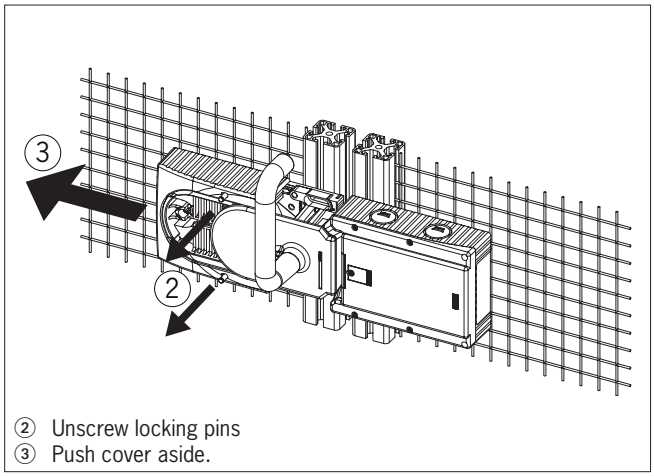
- The safety guard opens by pressing down the door handle.
- The system is mounted the other way up, as it were, for doors hinged on the left. In other words, the safety guard opens by pressing up the door handle (see Figure 9). For this reason the actuating direction of the door handle must be changed (see Figures 9 - 14).

(similarly on handle modules for doors hinged on the left)



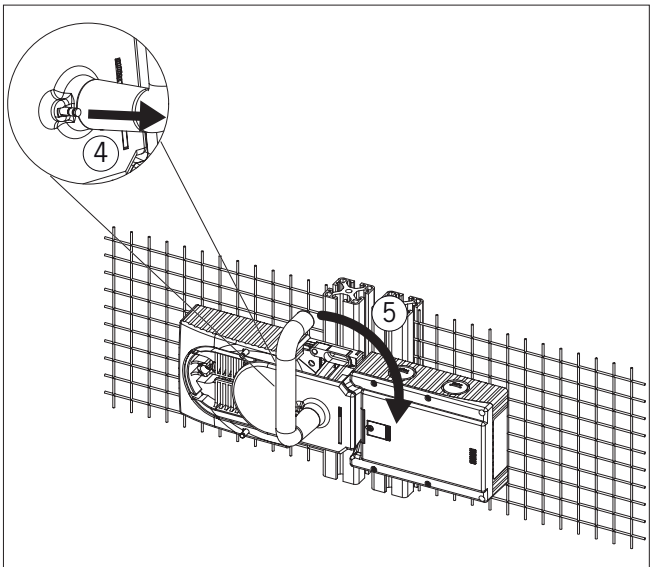
① Press door handle up.

Figure 9: Changing actuating direction, step ①



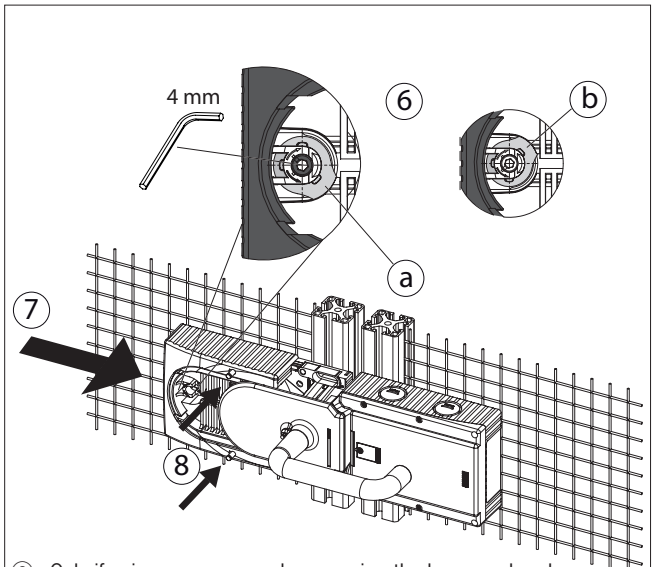
② Unscrew locking pins
③ Push cover aside.

Figure 10: Changing actuating direction, steps ② and ③



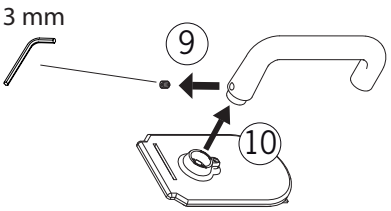
④ Lift the locking pin on the door handle using a screwdriver and hold it in this position.
⑤ Turn door handle to the right.

Figure 11: Changing actuating direction, steps ④ and ⑤



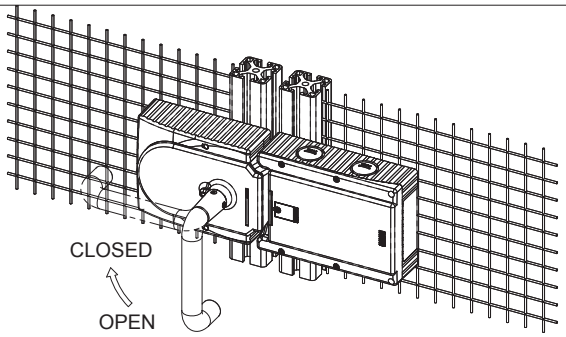
⑥ Only if using an escape release: using the hexagon head screw, turn the joint counterclockwise from position (a) to position (b).
⑦ Close cover.
⑧ Screw in locking pins and tighten to 2 Nm.

Figure 12: Changing actuating direction, steps ⑥ to ⑧



⑨ Loosen the setscrew
⑩ Reposition the door handle by 90° in clockwise direction and fasten it again. Tighten setscrew to 2 Nm.

Figure 13: Changing actuating direction, step ⑨ and ⑩



⑪ State after repositioning

Figure 14: Changing actuating direction, final state

9 Protection against environmental effects

Lasting and correct safety function requires that the system must be protected against foreign bodies such as swarf, sand, blasting shot, etc., which can become lodged in the locking and handle modules. For this purpose a suitable installation position should be selected.

Cover device during painting work!

10 Electrical connection

Warning!

In case of an error, loss of the safety function through incorrect connection.
- To ensure safety, both safety outputs (FO1A and FO1B) must always be evaluated.
- The monitoring outputs OD, OT, OL and OI must not be used as safety outputs.
- Lay the connection cables with protection to prevent the risk of short circuits.

Caution!

Risk of damage to equipment or malfunctions as a result of incorrect connection.
- The inputs on an evaluation unit connected must be positive-switching, as the two outputs on the safety switch deliver a level of +24 V in the switched-on state.
- All the electrical connections must either be isolated from the mains supply by a safety transformer according IEC 61558-2-6 with limited output voltage in the event of a fault, or by other equivalent isolation measures.
- For use and operation as per the ℓ requirements, a power supply with the feature “for use in class 2 circuits” must be used. The same requirement applies to the safety outputs.
  Alternative solutions must comply with the following requirements:
  a) Electrically isolated power supply unit with a max. open-circuit voltage of 30 V/DC and a limited current of max. 8 A.
  b) Electrically isolated power supply unit in combination with fuse as per UL248. This fuse should be designed for max. 3.3 A and should be integrated into the 30 V/DC voltage section.
- The mounting of conduits directly on the MGB is not allowed. Cables are only allowed to be connected via suitable cable glands. For this purpose use EUCHNER cable gland of type EKPM20/06U. Equivalent cable glands can be used if they are UL-listed (QCRV) and are suitable for the related cable diameter (22 AWG – 17 AWG).
- All electrical outputs must have an adequate protective circuit for inductive loads. The outputs must be protected with a free-wheeling diode for this purpose. RC interference suppression units must not be used.
- Power devices which are a powerful source of interference must be installed in a separate location away from the input and output circuits for signal processing. The cable routing for safety circuits should be as far away as possible from the cables of the power circuits.
- To prevent EMC problems, it is imperative you follow section *10.4 Notes on cable laying, page 20*. Follow EMC notes on devices in the immediate vicinity of the MGB system and their cables.
- In order to avoid EMC interference, the physical environmental and operating conditions at the installation site of the device must comply with the requirements according to the standard DIN EN 60204-1:2006, section 4.4.2/ EMC).

* Note on the scope of the UL approval: Only for applications as per NFPA 79 (Industrial Machinery)
The devices are tested according to the requirements of UL508 (protection against electric shock and fire).

Important:

- If the device does not appear to function when the operating voltage is applied (e.g. green Power LED does not illuminate), the safety switch must be returned to the manufacturer.
- To ensure the stated degree of protection IP67 is achieved, the cover screws must be tightened to a tightening torque of 1 Nm.
- Tighten screw for the cover for the mechanical release to 0.5 Nm.

10.1 Safety in case of faults

- The operating voltage UB is reverse polarity protected.
- The contacts FI1A/FI1B and FO1A/FO1B are short circuit-proof.
- A short circuit between FI1A and FI1B or FO1A and FO1B is detected by the device.
- A short circuit in the cable can be excluded by laying the cable with protection.

10.2 Fuse protection for power supply

The power supply must be provided with fuse protection depending on the number of devices and current required for the outputs. The following rules apply:

Max. current consumption of an individual device I_{max}

I_{max} = I_{UB} + I_{UA} + $I_{FO1A+FO1B}$

I_{UB} = Device operating current (80 mA)

I_{UA} = Load current of monitoring outputs OD,OT, OL and OI (4 x max. 50 mA) + solenoid + switches

$I_{FO1A+FO1B}$ = Load current of safety outputs FO1A + FO1B (2 x max. 200 mA)

AR

Max. current consumption of a switch chain ΣI_{max}

$\Sigma I_{max} = I_{FO1A+FO1B} + n \times (I_{UB} + I_{UA})$

n = Number of connected devices

Current assignment to the fuses

Current	Fuse circuit F1	Fuse circuit F2
I_{UB}	80 mA	
$I_{FO1A+FO1B}$	(2 x max. 200 mA)	
I_{UA}		$I_{solenoid}$ = 350 mA $I_{OD,OT,OL,OI}$ = (4 x max. 50 mA) $I_{operating\ elements}$ = max. 100 mA (per operating element) $I_{indicators}$ = max. 5 mA (per indicator)

10.3 Requirements for connection cables

Caution!

Risk of damage to equipment or malfunctions as a result of incorrect connection cables.

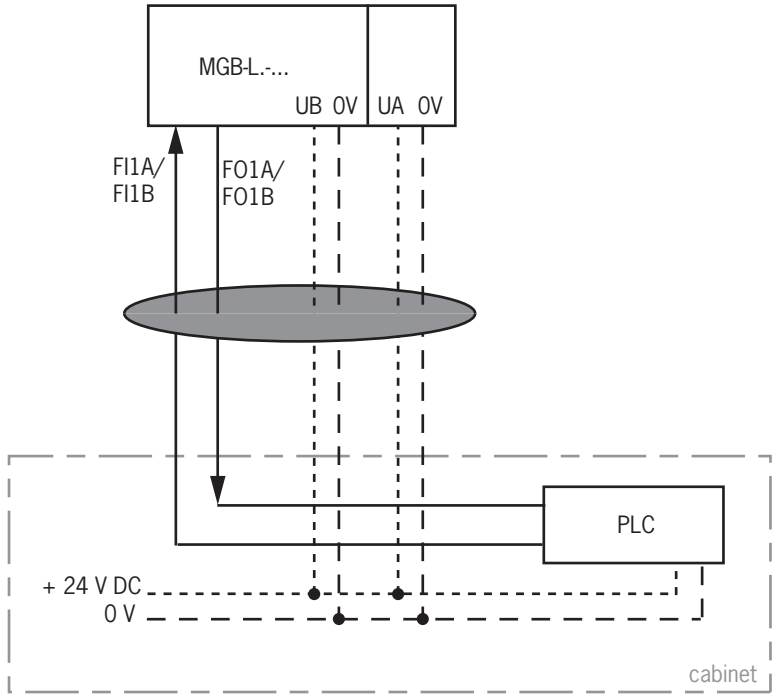
- On the usage of other connection components, the requirements in the following table apply. EUCHNER provides no warranty for safe function in case of failure to comply with these requirements.

Observe the following requirements with respect to the connection cables:

Parameter	Value	Unit
Wire cross-section min.	0.13	mm²
R max.	60	Ω/km
C max.	120	nF/km
L max.	0.65	mH/km

10.4 Notes on cable laying

- Lay all MGB connection cables in a common cable harness.



Important: lay cables in a common harness

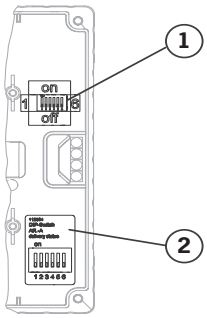
Figure 15: Stipulated cable laying

10.5 Changing device configuration (using DIPswitches)

Tip!

You will find an animation on device configuration at www.mgb.EUCHNER.de.

DIPswitch



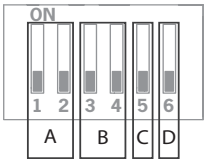
The devices can be configured using the DIPswitches. The following settings are possible:

- Changing system family (AR/AP switching)
- Deactivating guard lock monitoring
- Activate release monitoring (possible only with active guard lock monitoring)

Position of the switches

Item	Description
1	DIPswitch
2	Sticker with factory setting

Function of the switches



Detail	Switch	Function
A	1+2	on: Device is operated as AP system
		off: Device is operated as AR system
B	3+4	on: Guard lock monitoring is deactivated
		off: Guard lock monitoring is active (usually factory setting)
C	5	on: Configuration possible
		off: Configuration inhibited (factory setting)
D	6	on: release monitoring is activated off: release monitoring is deactivated (factory setting)

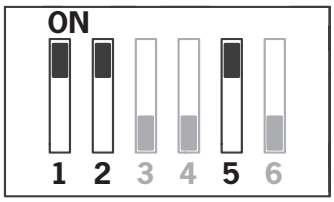
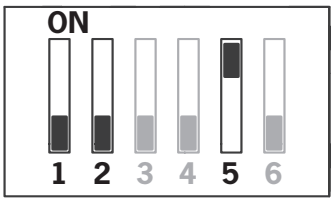
Changing system family (AR/AP switching)

Caution!

Malfunction due to incorrect configuration or incorrect connection.

- Note that the terminal assignment assignment also changes on changing the configuration (see section *10.7 Terminal assignment and contact description, page 25*).

1. Switch off power supply.
2. Set DIPswitches 1,2 and 5 as shown.

For changing from AR => AP	For changing from AP => AR
	

3. Switch the power supply on for at least 5 seconds.

➡ The change is confirmed by the illumination of the Power LED. All other LEDs are off.

4. Switch off power supply and set DIPswitch 5 to OFF.

➡ The next time the device is started, it operates in the operating mode set.

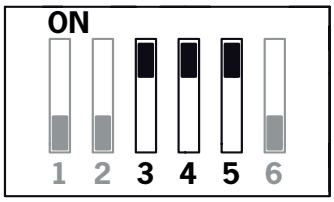
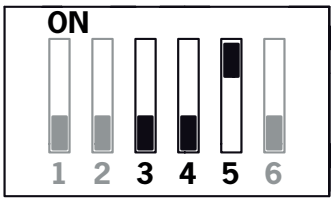
Deactivating guard lock monitoring

Warning!

Risk of injury due to inactive guard lock monitoring.

- If guard lock monitoring is inactive, the position of the guard locking does not influence the safety outputs. The safety guard can be opened immediately. This setting is not allowed to be used in applications in which, e.g., there is hazard due to overrunning machinery movement.

1. Switch off power supply.
2. Set DIPswitches 3-5 as shown.

Deactivating guard lock monitoring	Activating guard lock monitoring
	

3. Switch the power supply on for at least 5 seconds.

➡ The change is confirmed by the illumination of the Power LED. All other LEDs are off.

4. Switch off power supply and set DIPswitch 5 to OFF.

➡ The next time the device is started, it operates in the operating mode set.

Activating release monitoring

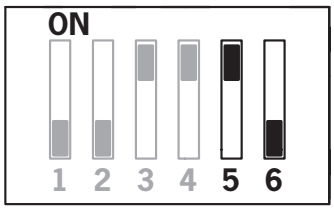
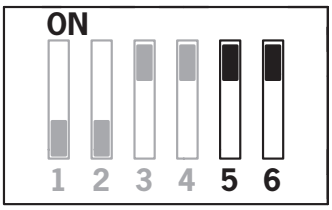
Important!

Release monitoring can be activated only if guard lock monitoring is also active.

Note!

When release monitoring is active, the system enters into a latching fault when the escape release or mechanical release is actuated.
See *System status table*, *signal sequence incorrect* status (DIA red, Lock flashes 1 time).

1. Switch off power supply.
2. Set DIPswitches 5 and 6 as shown.

Deactivating release monitoring	Activating release monitoring
	

3. Switch on power supply for 5 s.

➡ The change is confirmed by the illumination of the Power LED. All other LEDs are off.

4. Switch off power supply and set DIPswitch 5 to OFF.

The next time the device is started, it operates in the operating mode set.

10.6 Notes on operation with control systems

General notes

AR

Do not use a control system with pulsing or switch off the pulsing function in your control system. The device generates its own pulsed signal for short circuit monitoring on the output lines FO1A/FO1B. A downstream control system must tolerate these pulses, which may have a length of up to 1 ms. The pulses are also present when the safety outputs are switched off (only on FO1A). Depending on the inertia of the connected device (control system, relay, etc.), this can lead to short switching processes (only on configuration as AR device).

There must also not be any pulsed signals on the inputs (FI1A/FI1B). The MGB is connected statically to 24 V DC (connection comparable with light barriers, OSSD)

AP

Do not use a control system with pulsing or switch off the pulsing function in your control system. The device generates its own pulsed signal for short circuit monitoring on the output lines FO1A/FO1B. A downstream control system must tolerate these pulses, which may have a length of up to approx. 300µs. The pulses are not present when the safety outputs are switched off.

The inputs on an evaluation unit connected must be positive-switching, as the two outputs on the safety switch deliver a level of +24 V in the switched-on state.

Note:

Due to the fact that the short circuit monitoring is undertaken by the device itself, the Performance Level in accordance with EN 13849 is not reduced if the control system pulsing is switched off.

Connection to safe control systems

To make easier the operation of the guard locking solenoid with a safe control system, along with IMP the MGB has the control input IMM.

Important:

The above mentioned dual-channel control of the guard locking does not provide increased safety, as the device-internal control of the guard locking is only of single-channel design.

10.7 Terminal assignment and contact description

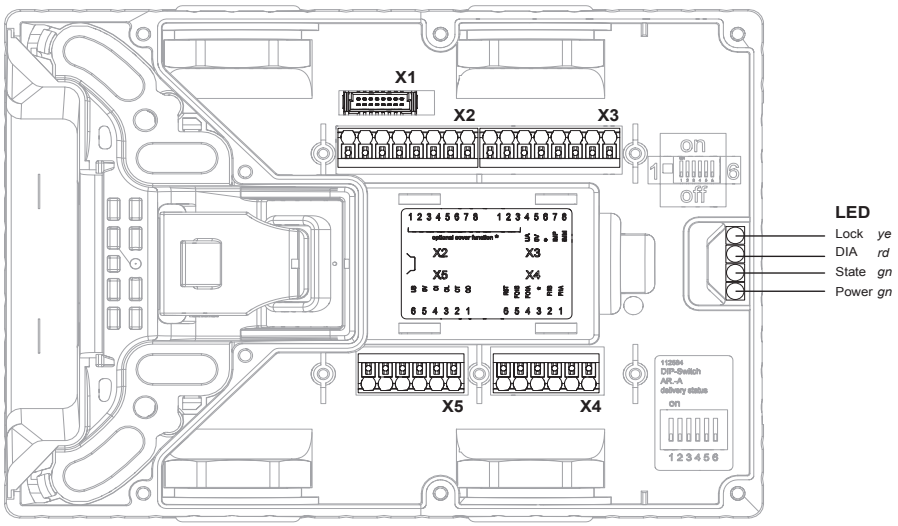


Figure 16: Connections and LEDs

Terminal	Designation	Description	Old designation
X3.1 to X3.3	-	See the enclosed data sheet	-
X3.4	UA	Power supply for the guard locking solenoid, monitoring outputs and cover assembly, DC 24 V, must be present continuously so that the guard locking solenoid functions.	U_A
X3.5	0V	Ground, DC 0 V (connected internally to X5.5).	$0V_M$
X3.6	-	See the enclosed data sheet	-
X3.7	IMP	Control voltage for switching on and off the guard locking, DC 24 V	U_{CM}
X3.8	IMM	**On usage of a safe control system:** Additional control input for switching guard locking on and off, 0 V (see section *Connection to safe control systems, page 24*). Not normally required.	-
X4.1	FI1A	In case of AR configuration: Enable input for channel A, connect to DC 24 V in separate operation. In case of switch chains, connect output signal FO1A from previous device. In case of AP configuration: Input is not evaluated.	I_A
X4.2	FI1B	In case of AR configuration: Enable input for channel B, connect to DC 24 V in separate operation. In case of switch chains, connect output signal FO1B from previous device. In case of AP configuration: Input is not evaluated.	I_B
X4.3	-	See the enclosed data sheet	-
X4.4	FO1A	Safety output channel A (function dependent on DIPswitch setting) Guard lock monitoring active: ON when door is closed and guard locked. Guard lock monitoring inactive: ON when door is closed and bolt tongue is retracted.	O_A
X4.5	FO1B	Safety output channel B (function dependent on DIPswitch setting) Guard lock monitoring active: ON when door is closed and guard locked. Guard lock monitoring inactive: ON when door is closed and bolt tongue is retracted.	O_B
X4.6	RST	Reset input; device is reset if DC 24 V are applied to RST for at least 3 s..	RST
X5.1	OD	Door monitoring output, ON when the door is closed.	O1
X5.2	OT	Bolt tongue monitoring output, ON when the door is closed and the bolt tongue is inserted in the locking module.	O2
X5.3	OL	Guard locking monitoring output, ON when the door is closed and locked.	O3
X5.4	OI	Diagnostics monitoring output, ON when the device is in the fault state.	O4
X5.5	0V	Ground, DC 0 V (connected internally with X3.5).	0V
X5.6	UB	Power supply, DC 24 V	U_B
X2.1 to X2.8	-	See the enclosed data sheet	-
X1	-	Reserved for connection of the cover circuit board (only for populated covers)	-

Table 1: Terminal assignment and contact description

10.8 Operation as separate device

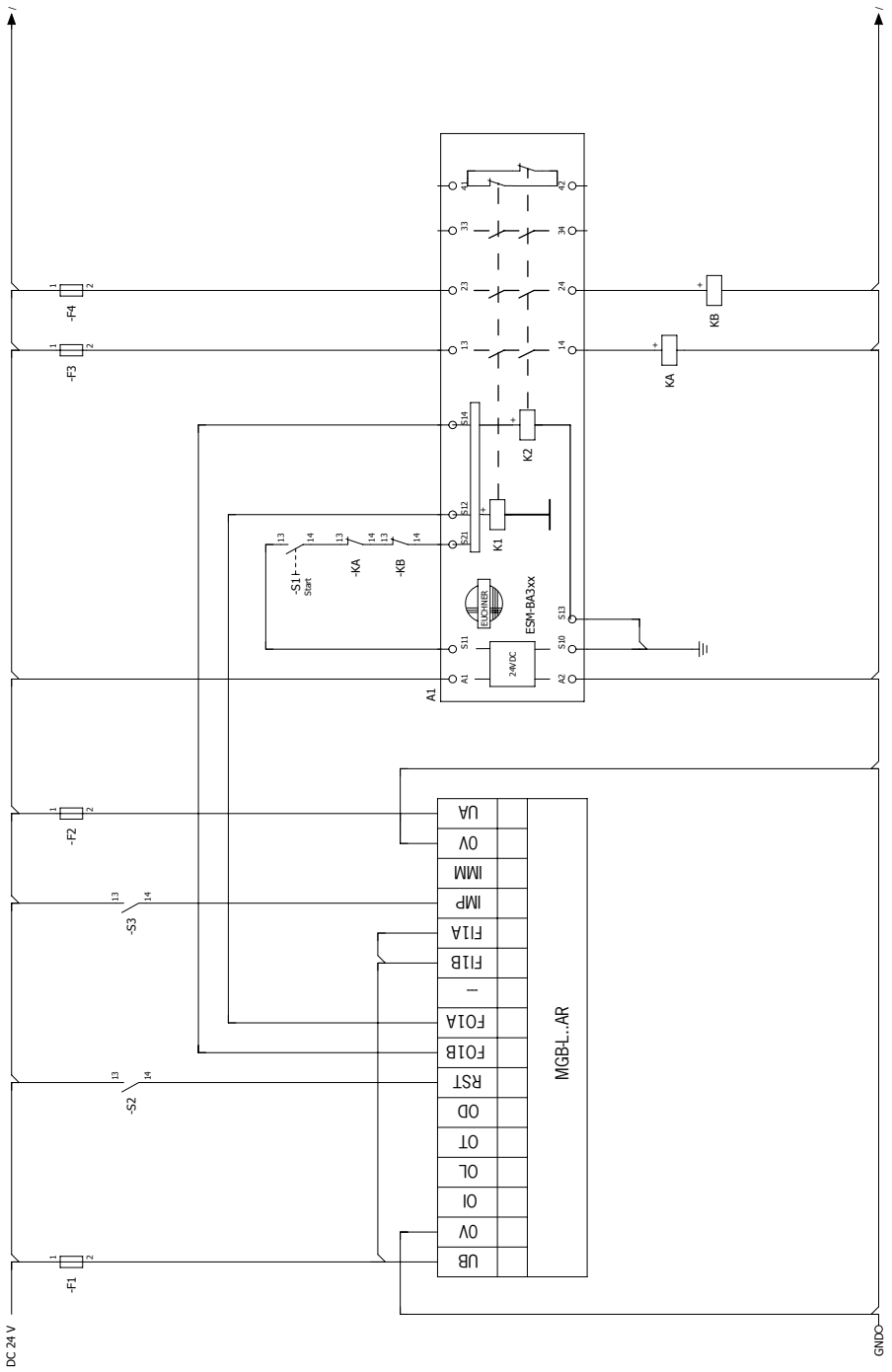


Figure 17: Connection example for separate operation

The switches can be reset via the RST input. To do this, a voltage of 24 V is applied to the RST input for at least 3 seconds. The supply voltage to the switches is interrupted during this time. The RST input must be connected to 0 V if it is not used.

10.9 Operation in an AR switch chain

AR

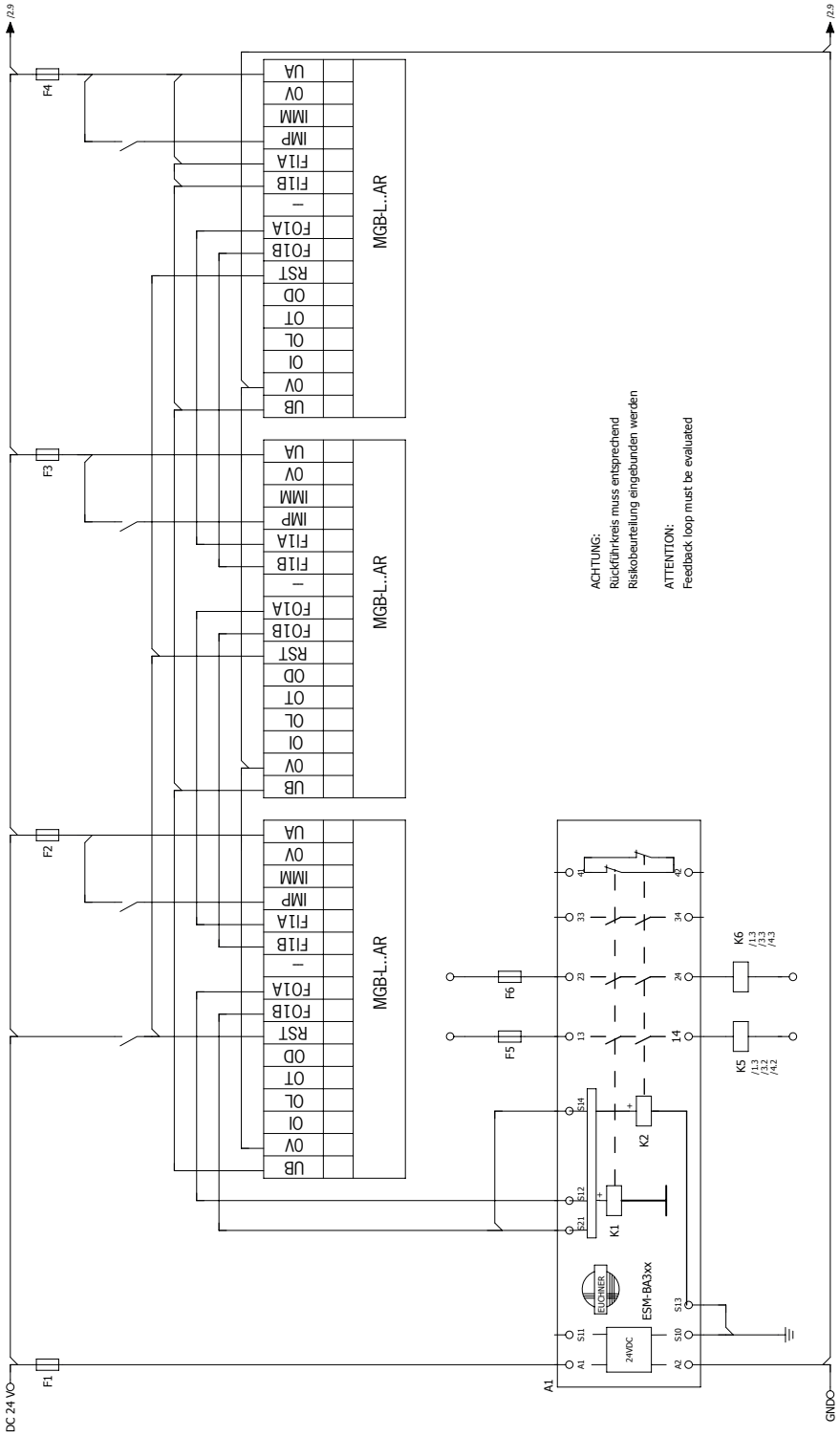


Figure 18: Connection examples for operation in a CES-AR switch chain

For detailed information on operation in an AR switch chain, see the related CES-AR system manual. The locking module MGB-L1-AR-.../MGB-L2-AR-... behaves in the switch chain in practice like a safety switch CES-AR. The differences to the CES-AR are described in the following.

10.10 Information on operation in an AR switch chain

AR

System times

The guard locking module has longer response times than a CES-AR switch (see sections *12 Technical data, page 31* and *12.1 Typical system times, page 32*).

Wiring an AR switch chain

To prevent earth loops, the wiring should be in a star configuration (see Figure 19).

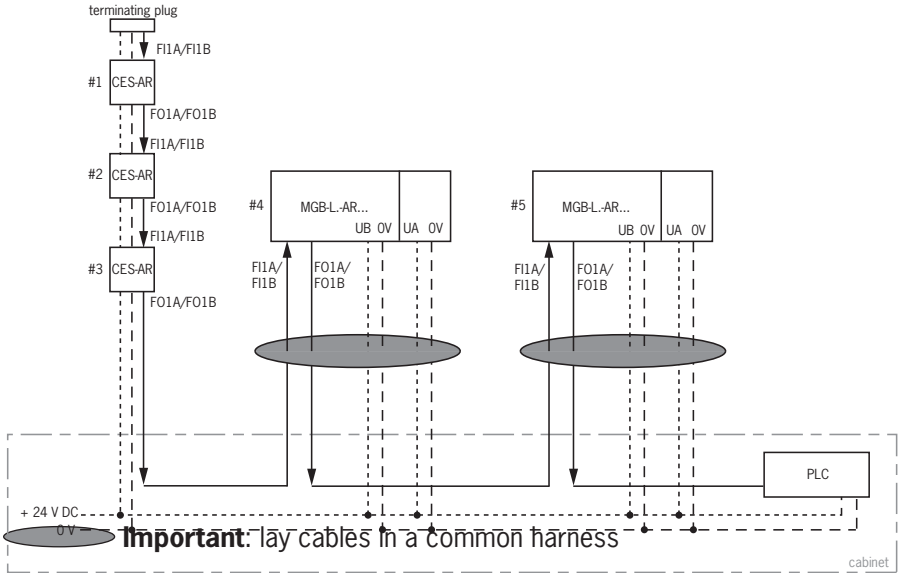


Figure 19: Central wiring of CES-AR switch chain in the control cabinet

Output current

The safety outputs on the MGB have a lower maximum output current than a CES-AR switch (see section *12 Technical data, page 31*).

Number of devices in the switch chains

In a pure MGB switch chain a maximum of ten devices can be connected in series. In mixed switch chains (e.g. MGB together with CES-AR) the maximum number of devices is also ten.

Resetting in switch chains

Important:

If you use the reset input (RST) for resetting in AR switch chains (RST), all devices in the chain must be reset at the same time. Resetting individual switches will result in faults.

11 Setup

11.1 Teach-in operation (only for MGB unicode)

The handle module must be assigned to the locking module using a teach-in function before the system comprising locking module and handle module and forms a functional unit.

During a teach-in operation the safety outputs are switched off.

Important:

- The locking module disables the code for the previous handle module if teach-in is carried out for a new handle module. Teach-in is not possible again immediately for this actuator if a new teach-in process is carried out. The disabled code is deleted in the locking module only after a third code has been taught.
- The locking module can only be operated with the last handle module taught.
- If, in the teach-in standby state, the locking module detects the handle module taught-in or a disabled handle module, the teach-in standby state is ended immediately and the locking module changes to the normal state.
- If the bolt tongue is in the operating distance for less than 60 s, the handle module is not taught. Fault display: see sections *13.2 System status table MGB-AR, page 33* and *13.3 System status table MGB-AP, page 34*.

Teaching in handle module

1. Fit handle module.
2. Close safety guard. Check for correct alignment and distance using the marking on the locking module and re-adjust if necessary.
3. Insert bolt tongue in the locking module.
4. Apply operating voltage to the locking module.

➡ The green LED (State) flashes quickly (approx. 5 Hz). A self-test is performed during this time (approx. 8 s in case of AR configuration). Teach-in operation starts, green LED (State) flashes slowly (approx. 1 Hz). During teach-in, the locking module checks whether the handle module is a disabled handle module. Provided this is not the case, the teach-in operation is completed after approx. 60 seconds, and the green LED (State) goes out. The new code has now been stored, and the old code is disabled.

5. To activate the handle module's code from the teach-in operation in the locking module, the operating voltage must then be switched off at the locking module for min. 3 seconds. As an alternative, 24V can be applied to the input RST for min. 3 seconds.

11.2 Mechanical function test

It must be possible to easily insert the bolt tongue in the locking module. To check, close safety guard several times and actuate door handle.

If available, check function of the escape release. With active guard locking it must be possible to operate the escape release from the inside without excessive effort (approx. 40 N).

11.3 Electrical function test

Warning!

AR

On usage in a switch chain with different AR devices (CES-AR, CET-AR), also follow the procedure for the functional check in the related system manual.

DIP

With active guard lock monitoring

1. Switch on operating voltage.

➡ The locking module carries out a self-test. In case of AR configuration: The green State LED flashes for 8 s with 5 Hz. The green State LED then flashes at regular intervals.

2. Close all safety guards and insert the bolt tongue into the locking module. Guard locking by solenoid force: Activate guard locking.

➡ The safety outputs FO1A/FO1B are ON

➡ The machine must not start automatically.

➡ It must not be possible to open the safety guard.

➡ The green State LED and the yellow Lock LED are illuminated continuously.

3. Enable operation in the control system.

➡ It must not be possible to deactivate guard locking as long as operation is enabled.

4. Disable operation in the control system and deactivate guard locking.

➡ The safety guard must remain locked until there is no longer any risk of injury.

➡ It must not be possible to start the machine as long as the guard locking is deactivated.

➡ It must be possible to open the safety guard.

Repeat steps 2-4 for each safety guard.

With inactive guard lock monitoring

1. Switch on operating voltage.

➡ The locking module carries out a self-test. In case of AR configuration: The green State LED flashes for 8 s with 5 Hz.

2. Close all safety guards and insert the bolt tongue into the locking module. As soon as the bolt tongue is inserted in the locking module, the safety outputs FO1A/FO1B are ON. Independent of whether the guard locking is active or not.

➡ The machine must not start automatically.

➡ The green State LED illuminates continuously. The yellow Lock LED is ON for a long time with a short interruption or is ON continuously (depending on the state of the guard locking)

3. Enable operation in the control system.

4. If necessary deactivate guard locking and open safety guard.

➡ The machine must switch off and it must not be possible to start it as long as the safety guard is open.

Repeat steps 2-4 for each safety guard.

12 Technical data

Note:

If a product data sheet is included with the product, the information on the data sheet applies in case of discrepancies with the operating instructions.

Test duration after power on	Value	Unit
Housing material	Glass fiber reinforced plastic die-cast zinc, nickel-plated Stainless steel	
Dimensions	See section *6.4 Dimension drawing, page 9*	
Weight Locking module Handle module Escape release	 0.75 1.00 0.50	kg
Ambient temperature at U_B = DC 24 V	-20 .... +55	°C
Degree of protection Cover not populated/populated with buttons/indicators Cover populated with key-operated switch Cover populated with key-operated switch FS22	 IP65 IP54 IP42	
Safety class	III	
Degree of contamination	3	
Installation position	Any	
Locking force F_{zh} in accordance with GS-ET-19	2000	N
Connection	4 cable entries M20x1.5 or plug connector	
Conductor cross-section (rigid/flexible) - With ferrule according to DIN 46 228/1 - With ferrule with collar according to DIN 46 228/1	0.13 ... 1.5 (AWG 24 ... AWG 16) 0.25 ... 1.5 0.25 ... 0.75	mm^2
Operating voltage UB (reverse polarity protected, regulated, residual ripple < 5 %)	24 +10% / -15% (PELV)	V DC
Auxiliary power UA (reverse polarity protected, regulated, residual ripple < 5 %)	24 +10% / -15% (PELV)	V DC
Current consumption I_{UB} (no load on any outputs)	80	mA
Current consumption I_{UA} - With energized guard locking solenoid and unloaded outputs OI,OL,OT and OD) - Push button S (no load, per LED)	 350 5	mA
External fuse	See section *10.2 Fuse protection for power supply, page 19*	
Safety outputs FO1A/FO1B	Semiconductor outputs, p-switching, short circuit-proof	
Test duration after power on	AR < 1000 / AP < 300	µs
Output voltage U_{FO1A} / U_{FO1B} [1] HIGH U_{FO1A} / U_{FO1B} LOW U_{FO1A} / U_{FO1B}	 U_B-2V ... U_B 0 ... 1	 V DC
Switching current per safety output	1 ... 200	mA
Utilization category according to EN IEC 60947-5-2	DC-13 24 V 200 mA Caution: outputs must be protected with a free-wheeling diode in case of inductive loads.	
Monitoring outputs - Output voltage [1] - Max. load	p-switching, short circuit-proof U_A - 2V ... U_A max. 50	 mA
Rated insulation voltage U_i	30	V
Rated impulse withstand voltage U_{imp}	1.5	kV
Resilience to vibration	In acc. with EN IEC 60947-5-3	
Switching frequency	0.25	Hz
EMC protection requirements	In acc. with EN IEC 60947-5-3	
Reliability values according to EN ISO 13849-1		
Category	4	
Performance Level	PL e	
PFH_d	3.1 x 10^{-9} / h [2]	
Mission time	20	years
Controls and indicators		
Operating voltage	5 ... 24	V
Operating current	1 ... 100	mA
Breaking capacity max.	250	mW
Power supply LED	24	V DC

1) Values at a switching current of 50 mA without taking into account the cable lengths.
2) Applying the limit value from EN ISO 13849-1:2008, section 4.5.2 ($MTTF_d$ = max. 100 years), the employers' liability insurance association certifies a PFH_d of max. 2.47 x 10^{-8}.

12.1 Typical system times

Important:

The system times given are maximum values for one device.

Ready delay:

AR

In case of AR configuration the following applies: After switching on, the unit carries out a self-test for 8 s. The system is ready for operation only after this time.

AP

In case of AP configuration the following applies: After switching on, the unit carries out a self-test for 0.5 s. The system is ready for operation only after this time.

Switch-on time of safety outputs:

AR

In case of AR configuration the following applies: The max. reaction time from the moment when the safety guard is locked to the moment when the safety outputs switch on T_{on} is 570 ms.

AP

In case of AP configuration the following applies: The max. reaction time from the moment when the bolt tongue is inserted to the moment when the safety outputs switch on T_{on} is 570 ms.

AR

Simultaneity monitoring, safety inputs FI1A/FI1B: If the safety inputs have different switching states for longer than 150 ms, the safety outputs FO1A/FO1B will be switched off. The devices switches to fault state.

Risk time according to EN 60947-5-3:

DIP

With active guard lock monitoring the following applies: If the guard locking is no longer effective, the safety outputs FO1A and FO1B are deactivated after a maximum of 350 ms.

DIP

With inactive guard lock monitoring the following applies: If the bolt tongue is pulled out of the locking module, the safety outputs FO1A and FO1B are deactivated after a maximum of 350 ms.

Difference time: The safety outputs FO1A and FO1B switch with a slight delay in relation to each other. They both have the ON state at the latest after a difference time of 10 ms.

13 System states

13.1 Key to symbols

○	LED not illuminated
☼	LED illuminated
☼ 10 Hz (8 s)	LED flashes for 8 seconds at 10 Hz
☼ 3 x	LED flashes three times
X	Any state

13.2 System status table MGB-AR

Operating mode	Safety inputs FI1A and FI1B	Door position	Position of the bolt tongue	Guard locking	Safety outputs FO1A and FO1B	Door monitoring output (OD)	Monitoring output bolt tongue (OT)	Guard locking monitoring output (OL)	Diagnostics monitoring output (OI)	LED indicator: Power (green)	LED indicator: STATE (green)		LED indicator: DIA (red)	LED indicator: Lock (yellow)		State
Self-test	X	X	X	X	OFF	OFF	OFF	OFF	OFF		✳	5 Hz		○		Self-test after power up
Normal operation	X	open	not inserted	OFF	OFF	OFF	OFF	OFF	OFF		✳	Long OFF short ON		○		Normal operation, door open
	X	closed	not inserted	OFF	OFF	ON	OFF	OFF	OFF		✳	Long ON, short OFF		○		Normal operation, door closed
	OFF	closed	inserted	OFF	OFF	ON	ON	OFF	OFF		✳	Long ON, short OFF		✳	Long ON, short OFF	Normal operation, door closed, bolt tongue inserted safety inputs FI1A/FI1B OFF
	ON	closed	inserted	OFF	OFF	ON	ON	OFF	OFF		✳	Long ON, short OFF		✳	Long ON, short OFF	**With active guard lock monitoring:** Normal operation, door closed, bolt tongue inserted. Safety inputs FI1A/FI1B are ON. Safety outputs FO1A and FO1B are OFF
					ON						✳		○			**With inactive guard lock monitoring:** Normal operation, door closed, bolt tongue inserted. Safety inputs FI1A/FI1B are ON. Safety outputs FO1A and FO1B are ON
	OFF	closed	inserted	ON	OFF	ON	ON	ON	OFF		✳	Long ON, short OFF		✳		**Operation in an AR chain:** Normal operation, door closed and locked. Safety outputs on the previous device OFF
	ON	closed	inserted	ON	ON	ON	ON	ON	OFF		✳			✳		**Operation as separate device:** Normal operation, door closed and locked.
																Operation in an AR chain: Normal operation, door closed and locked. Safety outputs on the previous device ON
Teach-in standby (only for MGB unicode)	X	open	not inserted	OFF	OFF	OFF	OFF	OFF	OFF	✳	✳	3 x		○		Door open; unit is ready for teach-in for another handle module (only 3 min. after power-up)
Setup (only for MGB unicode)	X	closed	inserted	ON	OFF	OFF	OFF	OFF	OFF		✳	2 Hz		○		Teach-in operation, tip: To prevent the interruption of teach-in operations, close door and switch on guard locking.
	X	X	X	X	OFF	OFF	OFF	OFF	OFF		○			○		Positive acknowledgment after completion of teach-in operation
Diagnostics	X	X	X	X	OFF	OFF	OFF	OFF	ON		✳	1 x		○		Error during teach-in / configuration or invalid DIPswitch setting
	errone-ous	X	X	X	OFF	OFF	OFF	OFF	ON		✳	2 x		○		Input error (e.g. missing test pulses, illogical switch state from previous switch)*
	X	X	X	X	OFF	X	X	X	OFF		✳	3 x	✳	○		:Handle module read error (e.g. error in code)**
	X	X	X	X	OFF	OFF	OFF	OFF	ON		✳	4 x		○		Output error (e.g. short circuits or loss of switching capability) or short circuit at the outputs*
	X	X	X	X	OFF	OFF	OFF	OFF	ON		○			○		Internal fault (e.g. component faulty, data fault)*
	X	X	X	X	OFF	OFF	OFF	OFF	ON		○			✳	1 x	Signal sequence erroneous (e.g. broken bolt tongue) *** With active release monitoring: escape release or mechanical release was actuated
	X	X	X	X	X	X	X	X	X	✳	Power is ON for a very long time with short interruption					1 million operating cycles exceeded

* Latching fault; to reset, use the RST input or briefly disconnect the device from the power supply
** Non-latching fault; open safety guard and close it again to reset
*** See section *14 Troubleshooting and assistance, page 35*

Important: If you do not find the displayed device status in the System status table, this indicates an internal device fault. In this case, you should contact the manufacturer.

13.3 System status table MGB-AP

Operating mode	Door position	Position of the bolt tongue	Guard locking	Safety outputs FO1A and FO1B	Door monitoring output (OD)	Belt tongue monitoring output (OT)	Guard locking monitoring output (OL)	Diagnostics monitoring output (OI)	LED indicator: Power (green)	LED indicator: State (green)	LED indicator: DIA (red)	LED indicator: Lock (yellow)	State
Normal operation	open	not inserted	OFF	OFF	OFF	OFF	OFF	OFF	☼	Long OFF short ON	○	○	Normal operation, door open
	closed	not inserted	OFF	OFF	ON	OFF	OFF	OFF	☼	Long ON, short OFF	○	○	Normal operation, door closed
	closed	inserted	OFF	OFF	ON	ON	OFF	OFF	☼	Long ON, short OFF	○	Long ON, short OFF	**With active guard lock monitoring:** Normal operation, door closed, bolt tongue inserted. Safety outputs FO1A and FO1B are OFF
				ON					☀				**With inactive guard lock monitoring:** Normal operation, door closed, bolt tongue inserted. Safety outputs FO1A and FO1B are ON
	closed	inserted	ON	ON	ON	ON	ON	OFF	☀			☀	Normal operation, door closed and locked.
Teach-in standby (only for MGB unicode)	open	not inserted	OFF	OFF	OFF	OFF	OFF	OFF	☼	3 x		○	Door open; unit is ready for teach-in for another handle module (only 3 min. after power-up)
Setup (only for MGB unicode)	closed	inserted	ON	OFF	OFF	OFF	OFF	OFF	☼	2 Hz		○	Teach-in operation, tip: To prevent the interruption of teach-in operations, close door and switch on guard locking.
	X	X	X	OFF	OFF	OFF	OFF	OFF	○			○	Positive acknowledgment after completion of teach-in operation
Diagnostics	X	X	X	OFF	OFF	OFF	OFF	ON	☼	1 x		○	Error during teach-in / configuration or invalid DIPswitch setting
	X	X	X	OFF	X	X	X	OFF	☼	3 x		○	:Handle module read error (e.g. error in code)**
	X	X	X	OFF	OFF	OFF	OFF	ON	☼	4 x	☀	○	Output error (e.g. short circuits or loss of switching capability) or short circuit at the outputs*
	X	X	X	OFF	OFF	OFF	OFF	ON	○			○	Internal fault (e.g. component faulty, data fault)*
	X	X	X	OFF	OFF	OFF	OFF	ON	○			☀ 1 x	Signal sequence erroneous (e.g. broken bolt tongue) *** With active release monitoring: escape release or mechanical release was actuated
	X	X	X	X	X	X	X	X	☼	Power is ON for a very long time with short interruption			1 million operating cycles exceeded

* Latching fault; to reset, use the RST input or briefly disconnect the device from the power supply
** Non-latching fault; open safety guard and close it again to reset
*** See section *14 Troubleshooting and assistance, page 35*

Important: If you do not find the displayed device status in the System status table, this indicates an internal device fault. In this case, you should contact the manufacturer.

14 Troubleshooting and assistance

14.1 Fault reset

Proceed as follows:

1. Switch the operating voltage off at the locking module for min. 3 seconds. As an alternative, 24 V can be applied to the input RST for min. 3 seconds.

➡ The green LED (State) flashes quickly (approx. 5 Hz). A self-test is performed during this time (approx. 8 s in case of AR configuration). The LED then cyclically flashes three times.

2. Close safety guard and switch guard locking on.

➡ The system is in normal mode again.

14.2 Help on troubleshooting in the Internet

You will find a help file on troubleshooting under “Support” in the download area at www.EUCHNER.de.

14.3 Help on mounting in the Internet

You will find an animation on the mounting process at www.mgb.EUCHNER.de.

15 Service

If service support is required, please contact:
EUCHNER GmbH + Co. KG
Kohlhammerstraße 16
D-70771 Leinfelden-Echterdingen

Service telephone:

+49 711 7597-500

E-mail:

info@euchner.de

Internet:

www.euchner.de

16 Inspection and service

Warning!

Loss of the safety function because of damage to the system.
In case of damage, the affected module must be replaced completely.
Only accessories or spare parts that can be ordered from EUCHNER may be replaced.

Regular inspection of the following is necessary to ensure trouble-free long-term operation:

- Check the switching function (see section *11.3 Electrical function test, page 30*)
- Check the secure fastening of the devices and the connections
- Check for soiling

No servicing is required, repairs to the device are only allowed to be made by the manufacturer.

Note:

The year of manufacture can be seen in the lower right corner of the rating plate.

17 Declaration of conformity

More than safety.

CE

EUCHNER

EUCHNER GmbH + Co. KG
Kohlhammerstraße 16
70771 Leinfelden-Echterdingen
Germany

EG-Konformitätserklärung
EC-Declaration of Conformity
CE-Déclaration de Conformité
CE-Dichiarazione di conformità
CE-Declaración de Conformidad

Original DE
Translation EN
Traduction FR
Traduzione IT
Traducción ES

Die nachfolgend aufgeführten Produkte sind konform mit den Anforderungen der folgenden Richtlinien (falls zutreffend):
The beneath listed products are in conformity with the requirements of the following directives (if applicable):
Les produits mentionnés ci-dessous sont conformes aux exigences imposées par les directives suivantes (si valable)
I prodotti sotto elencati sono conformi alle direttive sotto riportate (dove applicabili):
Los productos listados a continuación son conforme a los requisitos de las siguientes directivas (si fueran aplicables):

I:	2006/42/EG	Maschinenrichtlinie
	2006/42/EC	*Machinery directive*
	2006/42/CE	*Directive Machines*
	2006/42/CE	*Direttiva Macchine*
	2006/42/CE	*Directiva de máquinas*
II:	2004/108/EG	EMV Richtlinie
	2004/108/EC	*EMC Directive*
	2004/108/CE	*Directive de Compatibilité électromagnétique*
	2004/108/CE	*Direttiva EMV*
	2004/108/CE	*Directiva CEM*

Die Schutzziele der Niederspannungsrichtlinie wurden gemäß Anhang I, Nr. 1.5.1 der Maschinenrichtlinie eingehalten.
The safety objetives of the Low-Voltage Directive comply with Annex I, No. 1.5.1 of the Machinery Directive.
Les objectifs de sécurité de la Directive Basse Tension sont conformes à l'annexe I, No. 1.5.1 de la Directive Machines
Gli obiettivi di sicurezza della Direttiva Bassa Tensione sono conformi a quanto riportato all'allegato I, No. 1.5.1 della Direttiva Macchine.
Los objetivos de seguridad de la Directiva de Bajo Voltaje cumplen con el Anexo I, No. 1.5.1 de la Directiva de Máquinas

Folgende Normen sind angewandt:
Following standards are used:
Les normes suivantes sont appliquées:
Vengono applicate le seguenti norme:
Se utilizan los siguientes estándares:

a: EN 60947-5-3:1999 + A1:2005
b: EN 1088: 1995+A2:2008
c: EN ISO 13849-1:2008

Bezeichnung der Bauteile *Description of components* *Description des composants* *Descrizione dei componenti* *Descripción de componentes*	**Type** *Type* *Type* *Tipo* *Typo*	**Richtlinie** *Directives* *Directive* *Direttiva* *Directivas*	**Normen** *Standards* *Normes* *Norma* *Estándares*	**Zertifikats-Nr.** *No. of certificate* *Numéro du certificat* *Numero del certificato* *Número del certificado*
Multifunctional Gate Box *Multifunctional Gate Box* *Interrupteurs de sécurité sans contact* *Finecorsa di sicurezza senza contatto* *Interruptores de seguridad sin contacto*	MGB-L...-AR... MGB-L...-AP... MGB-H... MGB-E... MGB-C...	I, II	a, b, c	UQS 113839

Benannte Stelle
Notified Body
Organisme notifié
Sede indicata
Entidad citada

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Leinfelden, Oktober 2011

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(translation of the original operating instructions)

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