

EUCHNER

Operating Instructions

Transponder-Coded Safety Switch with Guard Locking
CTM-L2-AS1B Unicode/Multicode

EN

Contents

1.	About this document.....	4
1.1.	Scope.....	4
1.2.	Target group	4
1.3.	Key to symbols.....	4
1.4.	Supplementary documents	4
2.	Correct use	5
3.	Description of the safety function	6
4.	Exclusion of liability and warranty	7
5.	General safety precautions	7
6.	Function	8
6.1.	Guard locking on version CTM-L2	8
6.2.	Switching states	9
7.	Manual release.....	10
7.1.	Auxiliary release.....	10
7.1.1.	Actuating auxiliary release	10
8.	Mounting.....	11
9.	Electrical connection	12
9.1.	Notes about cULus.....	12
9.2.	Setting the AS-Interface address	12
9.3.	Configuration in the AS-Interface safety monitor	12
9.3.1.	Dual-channel conditionally dependent.....	12
9.4.	AS-Interface status messages.....	13
9.5.	Safety in case of faults.....	13
9.6.	Connection of guard locking control	13
9.6.1.	Guard locking control by means of switching the auxiliary voltage	13
9.6.2.	Guard locking control via ASi bit D0 (guard locking for process protection only)	13
10.	Setup	14
10.1.	LED displays	14
10.2.	Teach-in function for actuator (only for unicode evaluation)	14
10.2.1.	Actuator teach-in.....	14
10.3.	Functional check.....	15
10.3.1.	Mechanical function test	15
10.3.2.	Electrical function test.....	15
11.	System status table	16

12. Technical data 17

12.1. Technical data for safety switch CTM-L2-AS1B17

12.1.1. Typical system times.....18

12.2. Radio frequency approvals.....19

12.3. Dimension drawing for safety switch CTM...20

12.4. Technical data for actuator A-B-A1-A1-...21

12.4.1. Dimension drawing for actuator A-B-A1-A1-...21

13. Ordering information and accessories 22

14. Inspection and service 22

15. Service 22

16. Declaration of conformity 23

1. About this document





1.1. Scope

These operating instructions are valid for all CTM-L2-AS1B... from version V1.0.0. These operating instructions, the document *Safety information* and any enclosed data sheet form the complete user information for your device.

1.2. Target group





Design engineers and installation planners for safety devices on machines, as well as setup and servicing staff possessing special expertise in handling safety components.

1.3. Key to symbols

Symbol/depiction	Meaning
	Printed document
	Document is available for download at www.euchner.com
 DANGER WARNING CAUTION	Safety precautions Danger of death or severe injuries Warning about possible injuries Caution slight injuries possible
 NOTICE Important!	Notice about possible device damage Important information
Tip	Useful information

1.4. Supplementary documents

The overall documentation for this device consists of the following documents:

Document title (document number)	Contents	
Safety information (2525460)	Basic safety information	
Operating instructions (2539116)	(this document)	
Possibly enclosed data sheet	Item-specific information about deviations or additions	
	Important! Always read all documents to gain a complete overview of safe installation, setup and use of the device. The documents can be downloaded from www.euchner.com . For this purpose enter the doc. no. in the search box.	

2. Correct use

Safety switches series CTM-...-AS.. are operated as slaves on the safety bus AS-Interface Safety at Work and function as interlocking devices with guard locking solenoid (type 4). The device complies with the requirements according to EN IEC 60947-5-3. Devices with unicode evaluation possess a high coding level, devices with multicode evaluation possess a low coding level.

In combination with a movable guard and the machine control, this safety component prevents the guard from being opened while a dangerous machine function is being performed.

This means:

- Starting commands that cause a dangerous machine function must become active only when the guard is closed and locked.
- The guard locking must not be released until the dangerous machine function has ended.
- Closing and locking a guard must not cause automatic starting of a dangerous machine function. A separate start command must be issued. For exceptions, refer to EN ISO 12100 or relevant C-standards.

Devices from this series are also suitable for process protection.

Before the device is used, a risk assessment must be performed on the machine, e.g. in accordance with the following standards:

- EN ISO 13849-1
- EN ISO 12100
- IEC 62061

Correct use includes observing the relevant requirements for installation and operation, particularly based on the following standards:

- EN ISO 13849-1
- EN ISO 14119
- EN 60204-1

The safety switch is allowed to be operated only in conjunction with the intended EUCHNER actuator and the related connection components from EUCHNER. On the use of different actuators or other connection components, EUCHNER provides no warranty for safe function.



Important!

- The user is responsible for the proper integration of the device into a safe overall system. For this purpose, the overall system must be validated, e.g. in accordance with EN ISO 13849-2.
- It is only allowed to use components that are permissible in accordance with the table below.

Table 1: Possible combinations for CTM components

Safety switch	Actuator	
	A-B-A1-...	
CTM-... Unicode/Multicode	●	
Key to symbols	●	Combination possible

3. Description of the safety function

Devices from this series feature the following safety functions:

Monitoring of guard locking and the position of the guard (interlocking device with guard locking according to EN ISO 14119)

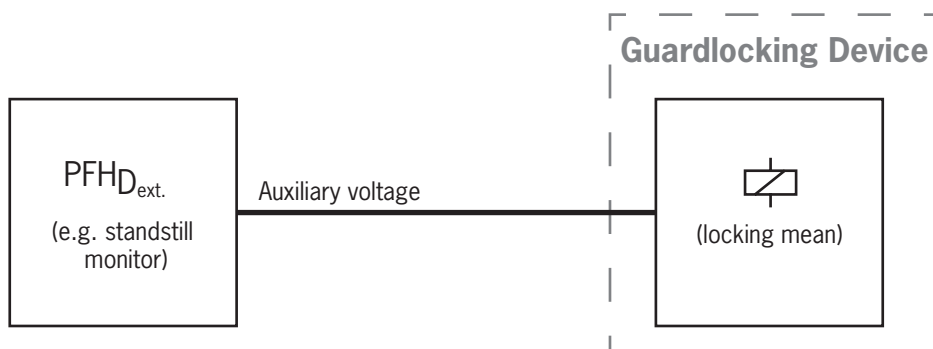
- Safety function (see chapter 6.2. *Switching states on page 9*):
 - When guard locking is released, no valid code sequence is sent (monitoring of the locking device).
 - When the guard is open, no valid code sequence is sent (monitoring of the door position).
 - Guard locking can be activated only when the actuator is located in the switch (prevention of inadvertent locking position (faulty closure protection)).¹⁾
- Safety characteristics: category, Performance Level, PFH_D (see chapter 12. *Technical data on page 17*).

Activation of guard locking by switching on/off the auxiliary voltage

If the device is used as guard locking for personnel protection, the control of the guard locking must be regarded as a safety function.

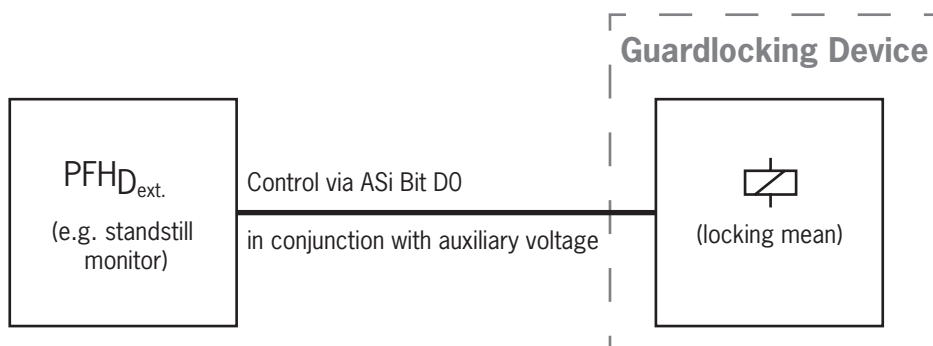
The device does not feature a safety characteristic for control of guard locking, because the guard locking solenoid is completely disconnected from outside the device via the auxiliary power (no control function within the device). It therefore does not contribute to the failure probability.

The safety level for the control of the guard locking is defined only by the external control (e.g. PFH_{D ext.} for the standstill monitor).



Control via ASi bit D0 (only for process protection) in conjunction with auxiliary voltage

Because control is via the non-safe bit D0, this control is only allowed to be used for process protection.



¹⁾ Limited prevention of inadvertent locking position (faulty closure protection) on Power Up.

4. Exclusion of liability and warranty

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

5. General safety precautions

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

Check the safe function of the safeguard particularly

- › after any setup work
- › after the replacement of a system component
- › after an extended period without use
- › after every fault

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



WARNING

Danger to life due to improper installation or due to bypassing (tampering). Safety components fulfill a personnel protection function.

- › Safety components must not be bypassed, turned away, removed or otherwise rendered ineffective. On this topic pay attention in particular to the measures for reducing the possibility of bypassing according to EN ISO 14119:2013, section 7.
- › The switching operation must be triggered only by actuators designated for this purpose.
- › Prevent bypassing by means of replacement actuators (only for multicode evaluation). For this purpose, restrict access to actuators and to keys for releases, for example.
- › Damaged actuators can lead to limited prevention of inadvertent locking position (faulty closure protection) when the machine is switched on. The guard locking function can no longer be ensured if an actuator is broken. Opening the door will cause the zero sequence to be sent. Regularly check the actuator for mechanical damage.
- › Mounting, electrical connection and setup only by authorized personnel possessing the following knowledge:
 - specialist knowledge in handling safety components
 - knowledge about the applicable EMC regulations
 - knowledge about the applicable regulations on operational safety and accident prevention



Important!

Prior to use, read the operating instructions and keep these in a safe place. Ensure the operating instructions are always available during mounting, setup and servicing. You can download the operating instructions from www.euchner.com.

6. Function

The device permits the locking of movable guards.

The system consists of the following components: coded actuator (transponder) and switch.

Whether the device learns the complete actuator code (unicode) or not (multicode) depends on the respective version.

- **Devices with unicode evaluation:** The actuator must be assigned to the safety switch by a teach-in operation so that it is detected by the system. This unambiguous assignment ensures a particularly high level of protection against tampering. The system thus possesses a high coding level.
- **Devices with multicode evaluation:** Unlike systems with unicode evaluation, on multicode devices a specific code is not requested but instead it is only checked whether the actuator is of a type that can be detected by the system (multicode detection). There is no exact comparison of the actuator code with the taught-in code in the safety switch (unicode evaluation). The system possesses a low coding level.

When the guard is closed, the actuator is moved into the safety switch. When the operating distances are reached, power is supplied to the actuator by the switch and data transfer begins.

If the guard is closed, guard locking is effective and the coding is permissible, each CTM-AS transmits a switch-specific, unique safety code sequence with 8 x 4 bits via the AS-Interface bus.

The zero sequence is transmitted via the AS-Interface bus when the guard is unlocked.

In the event of a fault in the safety switch, the zero sequence is transmitted via the AS-Interface bus and the LOCK/DIA LED illuminates red. The occurrence of faults is detected at the latest on the next demand to close the safety outputs (e.g. on starting).

6.1. Guard locking on version CTM-L2

(guard locking actuated by power-ON and released by spring force)



Important!

Use as guard locking for personnel protection is possible only in special cases, after strict assessment of the accident risk (see EN ISO 14119:2013, section 5.7.1)!

Activating guard locking: Apply auxiliary power to the solenoid and set AS-Interface output bit D0.

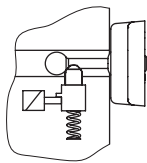
Releasing guard locking: No auxiliary power at the solenoid and/or clear AS-Interface output bit D0.

The magnetically actuated guard locking operates in accordance with the open-circuit current principle. If the solenoid is not controlled (D0=0) or if auxiliary power is switched off, guard locking is released and the guard can be opened directly!

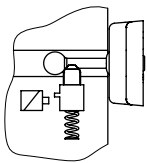
If the solenoid is controlled via the ASi bus (D0=1) and auxiliary power is applied to the solenoid, guard locking is activated and the guard is locked.

6.2. Switching states

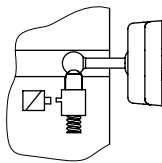
Guard closed and locked



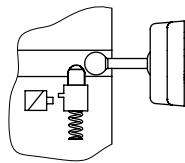
Guard closed and not locked




Guard being opened



Guard open



Programming	State	D0, D1	D2, D3	Monitor diagnostics
Dual-channel conditionally depen- dent	Guard closed and locked 	Code sequence		Green
	Guard closed and not locked	Half-se- quence	00	Yellow flashing
	Invalid state (guard open, guard locking active)	00	Half-se- quence	Red flashing (monitoring of the invalid state)
	Guard open	00	00	Red
	Address 0 or communication disrupted	–		Gray

7. Manual release



Important!

- › All release functions latch when the device is electrically isolated.
- › Guard locking remains released when the release function is reset.

Some situations require the guard locking to be released manually (e.g. malfunctions or an emergency). A function test should be performed after release.

More information on this topic can be found in the standard EN ISO 14119:2013, section 5.7.5.1. The device can feature the following release functions:

7.1. Auxiliary release

In the event of malfunctions, the guard locking can be released with the auxiliary release irrespective of the state of the solenoid.

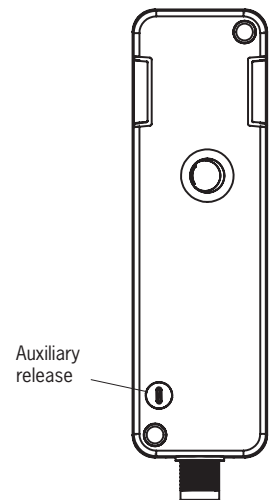
The zero sequence is sent via the ASi bus when the auxiliary release or the auxiliary key release is actuated.

Open the guard and close it again after resetting the auxiliary release. The device will then operate normally again.




Important!

- › The actuator must not be under tensile stress during manual release.
- › Reset the auxiliary release and cover it with a new seal label after use.
- › Loss of the release function due to mounting errors or damage during mounting.
- › Check the release function every time after mounting.
- › After manual release, the solenoid must be energized briefly to re-establish guard locking.
- › The auxiliary release must be reset at the control system level, e.g. by means of a plausibility check (status of the safety outputs does not match the guard locking control signal). See EN ISO 14119:2013, sec. 5.7.5.4.
- › The auxiliary release is not a safety function.
- › The correct function must be checked at regular intervals.
- › Observe the notes on any enclosed data sheets.



7.1.1. Actuating auxiliary release

1. Remove seal label or make a hole.
 2. Using a screwdriver, turn the auxiliary release to  in the direction of the arrow.
- ➡ Guard locking is released.

8. Mounting



CAUTION

Safety switches must not be bypassed (bridging of contacts), turned away, removed or otherwise rendered ineffective.

- › Observe EN ISO 14119:2013, section 7, for information about reducing the possibilities for bypassing an interlocking device.



NOTICE

Risk of damage to equipment and malfunctions as a result of incorrect installation.

- › Safety switches and actuators must not be used as an end stop.
- › Observe EN ISO 14119:2013, sections 5.2 and 5.3, for information about mounting the safety switch and the actuator.
- › Protect the switch against damage, as well as against penetrating foreign objects such as swarf, sand and blasting shot, etc.
- › Observe the min. door radii (see chapter 12.4.1. *Dimension drawing for actuator AB-A1-A1-... on page 21*).
- › Observe the maximum permissible angle between switch and actuator (max. 5°).
- › Observe the tightening torque for fastening the switch and the actuator (max. 2.9 Nm).
- › The rear side of the switch and the actuator's plate must lie fully on the mounting surface.
- › Actuator and safety switch must be mounted such that the actuator is vertically inserted into the switch when the guard is closed.

9. Electrical connection

1 AS-Interface +	View of safety switch plug connector
2 Auxiliary voltage 0 V	
3 AS-Interface -	
4 Auxiliary voltage 24 V	

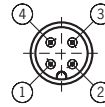


Fig. 1: Terminal assignment, AS-Interface M12 plug connector

9.1. Notes about



Important!

- This device is intended to be used with a Class 2 power source in accordance with UL1310. As an alternative an LV/C (Limited Voltage/Current) power source with the following properties can be used:
 - This device shall be used with a suitable isolating source in conjunction with a fuse in accordance with UL248. The fuse shall be rated max. 3.3 A and be installed in the max. 30 V DC power supply to the device in order to limit the available current to comply with the UL requirements. Please note possibly lower connection ratings for your device (refer to the technical data).
- For use and application as per the requirements of UL ¹⁾ a connecting cable listed under the UL category code CYJV/7, min. 24 AWG, min. 80 °C, must be used.

1) Note on the scope of the UL approval: the devices have been tested as per the requirements of UL508 and CSA/ C22.2 no. 14 (protection against electric shock and fire).

9.2. Setting the AS-Interface address

The address can be set prior to or after mounting.

The AS-Interface address of the safety switch is set using an AS-Interface programming device. Addresses 1 to 31 are valid.

The unit is programmed by connecting the programming device to the M12 plug connector of the safety switch with a programming cable.

Address 0 is the default setting on delivery (the AS-Interface LED flashes alternately red/yellow).

9.3. Configuration in the AS-Interface safety monitor

(see operating instructions for the AS-Interface safety monitor)

9.3.1. Dual-channel conditionally dependent

**Cat.
4**

The safety switch is configured in the AS-Interface safety monitor with the AS-Interface address set as follows, for example:

- Dual-channel conditionally dependent
- Independent: In-1



Important!

The switch is monitored for a malfunction; the door monitoring must not switch before guard lock monitoring. The guard does not have to be opened in this operating mode. Safety is provided again when the guard locking is closed.

9.4. AS-Interface status messages

A dual LED (red/green) displays the colors red, green and yellow. The following table provides assistance with troubleshooting.

State ASI LED	Explanation
green	Normal operation
red	No data exchange between master and slave Cause: - Master in STOP mode - Slave not in LPS - Slave with wrong IO/ID
red/yellow alternately flashing	No data exchange between master and slave Cause: slave address=0
red/green alternately flashing	Device fault in the slave. Contact the manufacturer.
red flashing	

9.5. Safety in case of faults

The AS-Interface power supply and the auxiliary voltage are reverse polarity protected.

9.6. Connection of guard locking control

9.6.1. Guard locking control by means of switching the auxiliary voltage

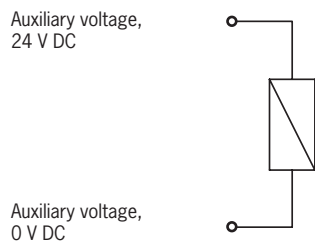


Fig. 2: Connection example: guard locking control by means of switching the auxiliary voltage

9.6.2. Guard locking control via ASi bit D0 (guard locking for process protection only)

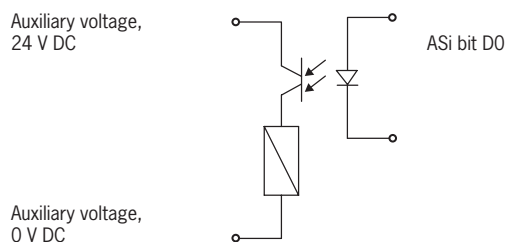


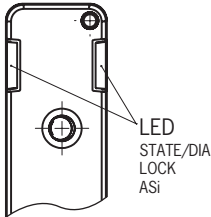
Fig. 3: Connection example of guard locking control via ASi bit D0 (guard locking for process protection only)

10. Setup

10.1. LED displays

You will find a detailed description of the signal functions in chapter 11. *System status table on page 16.*

LED	Color
STATE/DIA	green/red
LOCK	yellow
ASi	green/red/ yellow



10.2. Teach-in function for actuator (only for unicode evaluation)

The actuator must be allocated to the safety switch using a teach-in function before the system forms a functional unit.

The zero sequence is output during a teach-in operation.

The number of possible teach-in operations is unlimited.



Tip!

Prior to switching on, close the guard on which the actuator to be taught-in is installed. The teach-in operation starts immediately after switching on.



Important!

- › The teach-in operation can be performed only if the device does not have any internal fault.
- › Devices in the condition as supplied remain in teach-in standby state until they have successfully taught-in the first actuator. Once taught-in, switches remain in the teach-in standby state for approx. 3 min. after each switch-on.
- › The safety switch disables the code of the preceding device if teach-in is carried out for a new actuator. Teach-in is not possible again immediately for this device if a new teach-in operation is carried out. The disabled code is released again in the safety switch only after a third code has been taught-in.
- › The safety switch can be operated only with the last actuator taught-in.
- › If the switch detects the actuator that was most recently taught-in when in the teach-in standby state, this state is ended immediately and the switch changes to normal operation.
- › The actuator to be taught-in is not activated if it is within the actuating range for less than 30 s.

10.2.1. Actuator teach-in

1. Establish teach-in standby:
 - Devices in the condition as supplied: unlimited teach-in standby after switching on.
 - Switch already taught-in: teach-in standby is available for approx. 3 min after switching on.
- ➔ Teach-in standby indication, STATE/DIA LED repeatedly flashes 3x green.
2. Insert the actuator during teach-in standby.
 - ➔ The automatic teach-in operation starts (duration approx. 30 s).
 - During the teach-in operation, the STATE/DIA LED flashes green (approx. 1 Hz).
 - The STATE/DIA LED flashing (alternately red/green) acknowledges the successful teach-in operation.
 - Teach-in errors are indicated by the STATE/DIA LED illuminating red and a green flashing code of the STATE/DIA LED (see chapter 11. *System status table on page 16*).
3. Switch off operating voltage (min. 3 s).
 - ➔ The code of the actuator that was just taught-in is activated in the safety switch.
4. Switch on operating voltage.
 - ➔ The device operates normally.

10.3. Functional check



WARNING

Danger of fatal injury as a result of faults in installation and functional check.

- › Before carrying out the functional check, make sure that there are no persons in the danger zone.
- › Observe the valid accident prevention regulations.

10.3.1. Mechanical function test

The actuator must slide easily into the switch. Close the guard several times to check the function.




















































10.3.2. Electrical function test

After installation and any fault, the safety function must be fully checked. Proceed as follows:

1. Switch on operating voltage.
 - ➔ The machine must not start automatically.
 - ➔ The safety switch carries out a self-test. The STATE/DIA LED then flashes green at regular intervals.
2. Close all guards. In case of guard locking by solenoid force: activate guard locking.
 - ➔ The machine must not start automatically. It must not be possible to open the guard.
 - ➔ The STATE/DIA LED (green) 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 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.

Repeat steps 2 - 4 for each guard.

11. System status table

Operating mode	Actuator/door position	LED indicator Output		LOCK (yellow)	State
		STATE/DIA (green)	STATE/DIA (red)		
Normal operation	off	 5 Hz			Power Up
	closed				Normal operation, door closed and locked
	closed	 1 x inverse			Normal operation, door closed and not locked
	open	 1 x			Normal operation, door open
	open	 1 x		 1 x	Normal operation, door open, ready for guard locking
Teach-in operation (only unicode)	open	 3 x			Device in teach-in standby
	closed	 1 Hz			Teach-in operation
	X	 ↔ 			Positive acknowledgment after completion of teach-in operation
Fault display	X	 1 x	 or  1 x inverse		Error in the teach-in operation (only unicode) Actuator removed from the actuating range prior to the end of the teach-in operation or disabled actuator detected
	X	 3 x			Transponder error (e.g. actuator faulty)
	X	 5 x			Environment errors (e.g. operating voltage or operating temperature too high)
	X			 1 x	Plausibility errors
	X			X	Internal error
	X	 1 x inverse		 1 x inverse	Locking element stuck
Key to symbols					LED not illuminated
					LED illuminated
	 1 x inverse				LED illuminated, briefly goes off 1 x
	 5 Hz				LED flashes at 5 Hz
	 3 x				LED flashes three times, and this is then repeated
	 ↔ 				LEDs flash alternately
	X				Any state

When STATE/DIA flashes red inversely once, the fault display can generally be reset by opening and closing the guard after remedying the cause. If the fault is still displayed afterward, as well as for all other fault displays, briefly interrupt the power supply. Contact the manufacturer if the fault display is not reset after restarting.



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.

12. Technical data



NOTICE

If a data sheet is included with the product, the information on the data sheet applies.

12.1. Technical data for safety switch CTM-L2-AS1B

Parameter		Value		Unit
		min.	typ.	max.
General				
Material		Fluorinated rubber (FKM)		
- Seals		Reinforced thermoplastic		
- Switch housing				
Installation orientation		Any		
Degree of protection		IP65/IP67/IP69/IP69K (screwed tight with the related mating connector)		
Safety class acc. to EN IEC 61140		III		
Degree of contamination (external, acc. to EN 60947-1)		3 (industrial)		
Mechanical life		1 x 10 ⁶ operating cycles		
Ambient temperature at U _B = 24 V		-20	-	+60
Actuator approach speed		-	-	20
Actuating/extraction force		Device dependent, see www.euchner.com		
Locking force F _{max}		1,300		
Locking force F _{Zh} ¹⁾		F _{Zh} = F _{max} /1.3 = 1,000		
Weight		Approx. 0.16		
Connection (depending on version)		1 plug connector M12, 4-pin		
The following applies to the approval acc. to UL		Operation only with UL class 2 power supply or equivalent measures		
Resilience to vibration		Acc. to EN 60947-5-3		
EMC protection requirements		Acc. to EN 60947-5-3		
Ready delay		-	-	3
Risk time		-	-	220
Turn-on time		-	-	400
Solenoid				
Auxiliary voltage		24 +10%/-15% (PELV)		
Current consumption with auxiliary voltage		650		
Duty cycle		100		
AS-Interface data		EA code: 7		ID code: B
AS-i operating voltage		26.5	-	31.6
Total current consumption from AS-i	CTM...AS.B	-	-	50
Valid AS-Interface addresses		1 - 31		
AS-Interface inputs		Acc. to ASi Safety at Work		
Influenced by door position	CTM...AS1..	D0, D1		
	CTM...AS2..	D0, D1, D2, D3		
Influenced by guard locking	CTM...AS1..	D2, D3		
	CTM...AS2..	D0, D1, D2, D3		
AS-Interface outputs				
Guard locking solenoid		D0 (1 = solenoid energized)		
Reliability values acc. to EN ISO 13849-1				
Mission time		20		
Monitoring of guard locking and the guard position				
Category		4		
Performance Level (PL)		e		
PFH _D		1.468 x 10 ⁻⁸		
Control of guard locking				
Category		Depends on external control		
Performance Level (PL)				
PFH _D				

1) Dependent on the actuator used

12.1.1. Typical system times

Refer to the technical data for the exact values.

Ready delay: After switch-on, the device carries out a self-test. The system is ready for operation only after this time.

Turn-on time: The max. reaction time t_{on} is the time from the moment when the guard is locked to the moment when the code sequence is transmitted.

Risk time according to EN 60947-5-3: If an actuator moves outside the actuating range, transmission of the code sequence on the corresponding safety switch is deactivated at the latest after the risk time.

12.2. Radio frequency approvals

FCC ID: 2AJ58-07

IC: 22052-07

FCC/IC-Requirements

This device complies with part 15 of the FCC Rules and with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference, and
- 2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Supplier's Declaration of Conformity

47 CFR § 2.1077 Compliance Information

Unique Identifier:

CTM-LBI-BR series
CTM-IBI-BR series
CTM-L2-BR series
CTM-I2-BR series
CTM-LBI-BP series
CTM-IBI-BP series
CTM-L2-BP series
CTM-I2-BP series
CTM-L2-AS1B series
CTM-I2-AS1B series
CTM-LBI-AS1B series
CTM-IBI-AS1B series

Responsible Party – U.S. Contact Information

EUCHNER USA Inc.

6723 Lyons Street
East Syracuse, NY 13057

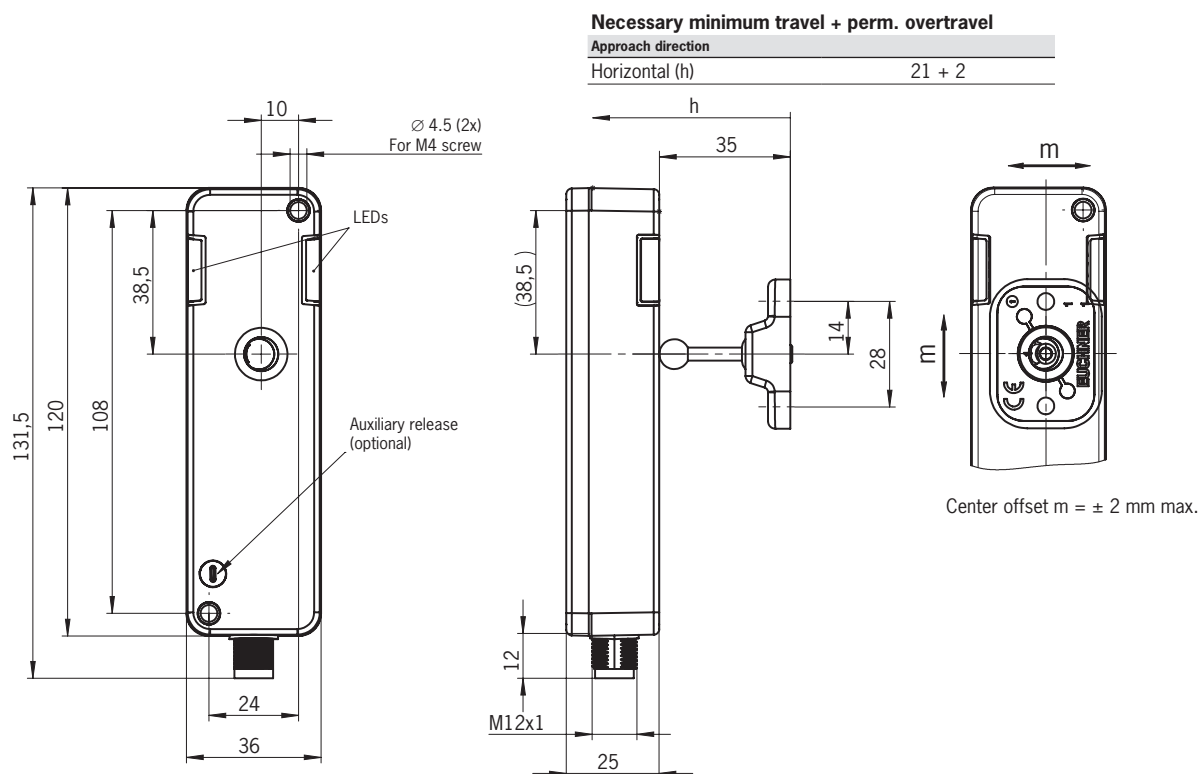
+1 315 701-0315

+1 315 701-0319

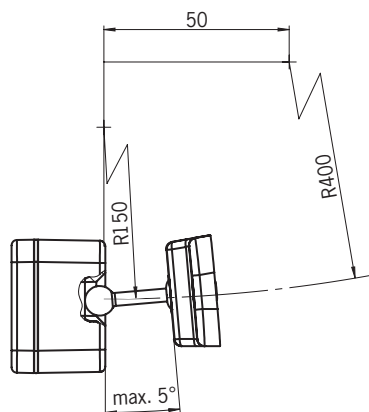
info(at)euchner-usa.com

http://www.euchner-usa.com

12.3. Dimension drawing for safety switch CTM...



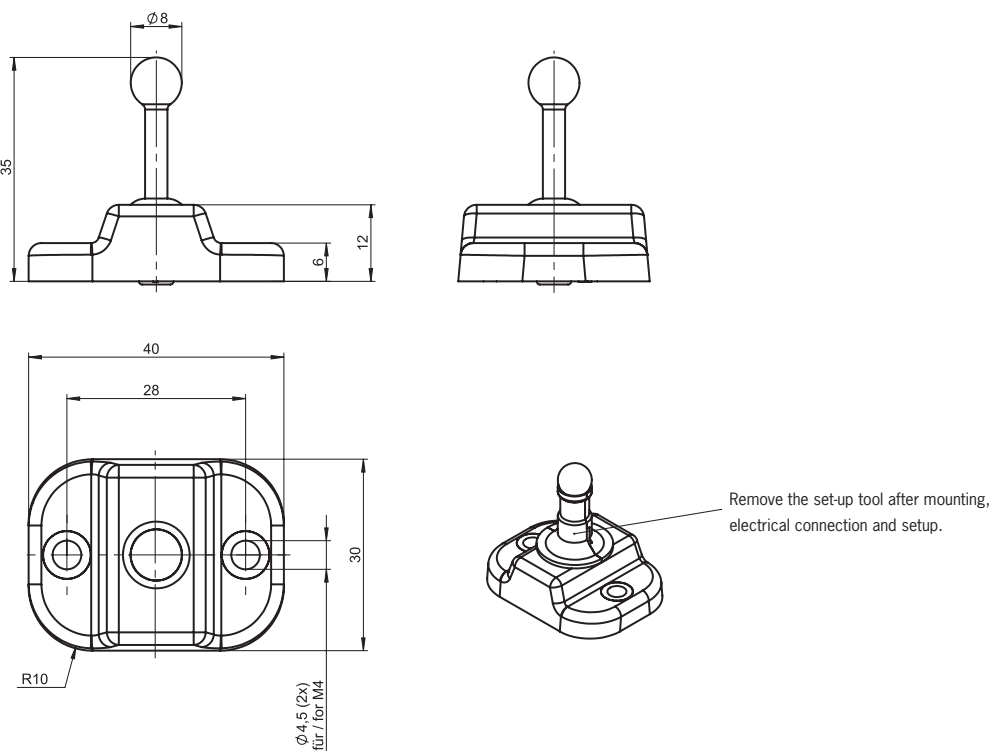
Min. door radius [mm]



12.4. Technical data for actuator A-B-A1-A1-...

Parameter	min.	Value typ.	max.	Unit
Material				
- Housing		Ultradur black		
- Ball holder		Stainless steel		
- Elastomer		A-B-A1-161642: FKM red / A-B-A1-161643: FKM blue		
Resistance		Resistant to chemicals and oil		
Food safe		DIN EN 1672-2, DIN EN ISO 14159, PAH category 3		
Weight		0.0194		kg
Ambient temperature	-20	-	+60	°C
Degree of protection		IP65/IP67/IP69/IP69K		
Mechanical life		1 x 10 ⁶		
Locking force, max.		1,300		N
Locking force F _{Zh}		1,000		N
Installation orientation		Any		
Overtravel		2		mm
Power supply		Inductive via read head		

12.4.1. Dimension drawing for actuator A-B-A1-A1-...



Tip!
Remove the set-up tool after mounting the safety switch and actuator.

13. Ordering information and accessories



Tip!

Suitable accessories, e.g. cables or assembly material, can be found at www.euchner.com. To order, enter the order number of your item in the search box and open the item view. Accessories that can be combined with the item are listed in *Accessories*.

14. Inspection and service



WARNING

Danger of severe injuries due to the loss of the safety function.

- If damage or wear is found, the complete switch and actuator assembly must be replaced. Replacement of individual parts or assemblies is not permitted.
- Check the device for proper function at regular intervals and after every fault. For information about possible time intervals, refer to EN ISO 14119:2013, section 8.2.

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

- Check the switching function (see chapter 10.3. *Functional check on page 15*)
- Check all additional functions (e.g. escape release, lockout bar, etc.)
- Check the secure mounting 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.



NOTICE

The year of manufacture is given in the laser marking at the bottom right corner. The current version number in the format (V X.X.X) can also be found on the device.

15. Service

If servicing is required, please contact:

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

Service telephone:
+49 711 7597-500

E-mail:
support@euchner.de

Internet:
www.euchner.com

16. Declaration of conformity



EUCHNER

More than safety.

EU-Konformitätserklärung
EU declaration of conformity
Déclaration UE de conformité
Dichiarazione di conformità UE
Declaración UE de conformidad

Original DE
Translation EN
Traduction FR
Traduzione IT
Traducción ES

2525461-03-10/20

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:	Maschinenrichtlinie Machinery directive Directive Machines Direttiva Macchine Directiva de máquinas	2006/42/EG 2006/42/EC 2006/42/CE 2006/42/CE 2006/42/CE
II:	Funkanlagen-Richtlinie (RED) Radio equipment directive Directive équipement radioélectrique Direttiva apparecchiatura radio Directiva equipo radioeléctrico	2014/53/EU 2014/53/EU 2014/53/UE 2014/53/UE 2014/53/UE
III:	RoHS Richtlinie RoHS directive Directive de RoHS Direttiva RoHS Directiva RoHS	2011/65/EU 2011/65/EU 2011/65/UE 2011/65/UE 2011/65/UE

Die Schutzziele der Niederspannungsrichtlinie 2014/35/EU und EMV Richtlinie 2014/30/EU werden gemäß Artikel 3.1 der Funkanlagen-Richtlinie eingehalten.
The safety objectives of the Low-voltage directive 2014/35/EU and EMC Directive 2014/30/EU comply with article 3.1 of the Radio equipment directive.
Les objectifs de sécurité de la Directive basse tension 2014/35/UE et Directive de CEM 2014/30/EU sont conformes à l'article 3.1 de la Directive équipement radioélectrique.
Gli obiettivi di sicurezza della Direttiva bassa tensione 2014/35/UE e Direttiva CEM 2014/30/UE sono conformi a quanto riportato nell'articolo 3.1 della Direttiva apparecchiatura radio.
Los objetivos de seguridad de la Directiva de bajo voltaje 2014/35/UE y Directiva CEM 2014/30/UE cumplen con el artículo 3.1 de la Directiva equipo radioeléctrico.

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 60947-5-3:2013	f:	EN IEC 63000:2018 (RoHS)
b:	EN ISO 14119:2013	g:	EN 62026-2:2013 (ASI)
c:	EN ISO 13849-1:2015		
d:	EN 50364:2018		
e:	EN 300 330 V2.1.1		

Bezeichnung der Bauteile Description of components Description des composants Descrizione dei componenti Descripción de componentes	Type Type Type Tipo Tipo	Richtlinie Directives Directive Direttiva Directivas	Normen Standards Normes Norme Estándares	Zertifikats-Nr. No. of certificate Numéro du certificat Numero del certificato Número del certificado
Sicherheitsschalter Safety Switches Interrupteurs de sécurité Fincorsa di sicurezza Interruptores de seguridad	CTM...	I, II, III	a, b, c, d, e, f	UQS 2535187
Betätiger Actuator Actionneur Azionatore Actuador	A-B-A... S-B-...	I, II, III	a, b, c, d, e, f	UQS 2539946

Genehmigung der umfassenden Qualitätssicherung (UQS) durch die benannte Stelle
Approval of the full quality assurance system by the notified body
Approbation du système d'assurance qualité complet par l'organisme notifié
Approvazione del sistema di garanzia di qualità totale da parte dell'organismo notificato
Aprobación del sistema de aseguramiento de calidad total por parte del organismo notificado

0035
TÜV Rheinland
Industrie Service GmbH
Alboinstr. 56 - 12103 Berlin
Germany

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller:
This declaration of conformity is issued under the sole responsibility of the manufacturer:
La présente déclaration de conformité est établie sous la seule responsabilité du fabricant:
La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante:
La presente declaración de conformidad se expide bajo la exclusiva responsabilidad del fabricante:

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



EUCHNER

More than safety.

Leinfelden, Oktober 2020

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

i.A. Dipl.-Ing. Richard Holz
Leiter Elektronik-Entwicklung
Manager Electronic Development
Responsable Développement Électronique
Direttore Sviluppo Elettronica
Director de desarrollo electrónico

i.A. Dr. Tobias Lehmann
Dokumentationsbevollmächtigter
Documentation manager
Responsable documentation
Responsabilità della documentazione
Agente documenta

EUCHNER GmbH + Co. KG
Kohlhammerstraße 16
70771 Leinfelden-Echterdingen
Germany
info@euchner.de
www.euchner.com

Edition:
2539116-02-09/21
Title:
Operating Instructions Transponder-Coded Safety Switch
CTML2-AS1B
(translation of the original operating instructions)
Copyright:
© EUCHNER GmbH + Co. KG, 09/2021

Subject to technical modifications; no responsibility is accepted for the accuracy of this information.