



Small but highly beneficial

Transponder-coded safety switch
CTM with guard locking

EUCHNER

More than safety.

The safety switch CTM

Smart, compact and safe – the new safety switch CTM fits into any machine. The integrated transponder technology achieves the highest safety level, category 4 / PL_e (EN ISO 13849-1). Featuring a locking force of 1,000 N and an innovative ball actuator, it is ideally suited for small doors and flaps with pivoting radii from 150 mm. Two different versions for standard and hygienic applications cover a wide range of uses.

■ Compact design

The small dimensions (120 mm x 36 mm x 25 mm) permit simple integration into any machine design.

Door pivoting radii as small as 150 mm are possible thanks to the innovative ball actuator. The integral adhesive force (25 / 50 N) effectively prevents doors from being opened unintentionally when they are not locked.

■ “No chance of getting locked in”

The bistable guard locking function of the new safety switch CTM ensures that guard locking remains in its momentary state in case of a power failure or if the installation is switched off. In other words: a locked door will stay locked if it was locked before, or it can be opened and closed as needed if guard locking was not previously activated. People can therefore no longer be locked in unintentionally if the machine is switched off or if the power should fail.

■ Maximum safety

Transponder coding ensures maximum safety despite the small switch size. The requirements in all relevant standards can already be met with a single CTM. Irrespective of whether category 4 / PL_e according to EN ISO 13849-1 must be achieved or whether the requirements in EN ISO 14119 must be met – you're always on the safe side with the CTM.

■ Simple series connection

The CTM's communication capabilities future-proof it for Industry 4.0. The integrated interface additionally permits connection to the new EUCHNER evaluation unit ESM-CB, which then forwards the relevant process and diagnostic data via IO-Link to the higher-level control system. Data communication functions in a series connection with additional EUCHNER devices as well.

■ Hygienic design

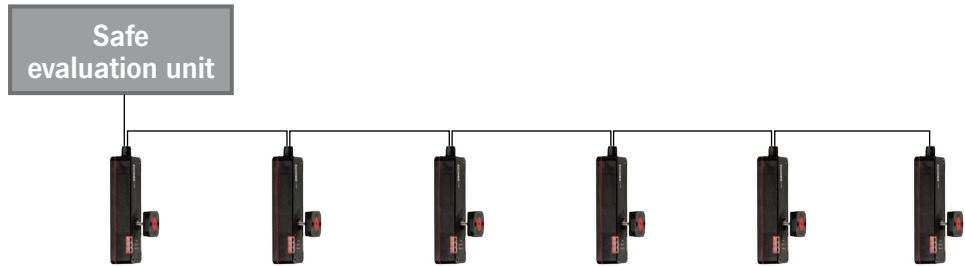
The black-and-blue hygienic version consists exclusively of food-safe materials; all plastics are approved according to EU Regulation (EC) No. 10/2011, for example. This version features smooth surfaces, rounded edges, and materials resistant to cleaning agents, making it particularly suitable for use in the food and packaging industries.



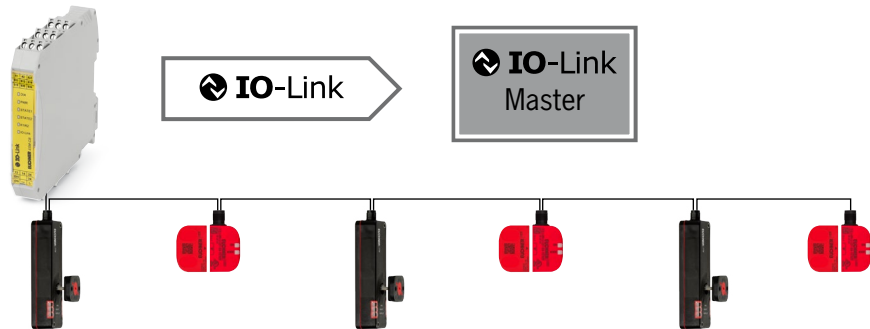
Intelligent communication

Examples for series connection in the field

Connection to safe PLCs or safety relays



Connection to safety module ESM-CB



CTM IO-Link communication data

The devices transmit both process data, which the system continuously supplies to the IO-Link master, and acyclical data*, which can be polled specifically as needed.

Process data

Daten		Meaning
Guard position	O_D	This signal indicates whether the guard is open or closed.
Status of guard locking	O_L	This signal indicates whether guard locking is active or inactive.
Safety outputs switched	O_M	This signal indicates whether the safety outputs are switched on. The guard must be closed and all other conditions must be met for this purpose. The safety outputs of all preceding devices in the series connection are switched on, for example.
Message pending	O_I	This signal indicates a pending message. You can retrieve it via the acyclical data.

*Refer to the "Industry 4.0" flyer for information about the acyclical data

Technical data

CTM

Parameter	Value			Unit
	min.	typ.	max.	
Housing material	Reinforced thermoplastic			
Degree of protection acc. to EN IEC 60529	IP65 / IP67 / IP69 / IP69K			
Installation orientation	Any			
Mechanical life	1 x 10 ⁶ operating cycles			
Ambient temperature at U _B =24 V DC	-20 ... +60			°C
Approach speed, max.	20			m/min
Locking force F _{Zh} (incl. safety margin acc. to GS-ET-19)	1,000			N
Weight	0.2			kg
Overtravel	2			mm
Actuating and extraction force	25/50			N
Utilization category acc. to EN IEC 60947-5-2	DC-13 150 mA 24 V			
Electronics operating voltage U _B (reverse polarity protected, regulated, residual ripple < 5%)	DC 24 V ± 15%			
Solenoid				
Current consumption I _{IMP}	min. 20 (IMP = HIGH)			mA
Control-input voltage IMP				
Guard locking active (closed)	0...5			V DC
Guard locking not active (open)	15...24			
Average connected load	1.7			W
Switching frequency	Max. 50			Hz
Safety outputs (F01A, F01B)		Semiconductor outputs, p-switching, short circuit-proof		
Output voltage	U _{OA} /U _{OB}			
HIGH	U _{OA} /U _{OB}	UB - 1.5	-	UB
LOW	U _{OA} /U _{OB}	0	-	1
Switching current per safety output		1		150
Discrepancy time between both safety outputs EN IEC 60947-5-3	10			ms
Switch-on time, max.	400			ms
Off-state current I, max	0.25			mA
Monitoring output OD		p-switching, short circuit-proof		
Output voltage		0.8 x UB		UB
Switching current		1		50
Safety characteristics				
Mission time	20			years
Category	4			
Performance Level (PL)	e			

Actuator

Parameter	Value	Unit
Housing material	Ultradur	
Elastomer material	FKM	
Resistance	Chemical and oil resistant	
Food safe	DIN EN 1672-2, DIN EN ISO 14159	
Ball holder material	Stainless steel	
Installation orientation	Any	
Degree of protection	IP65 / IP67 / IP69 / IP69K	
Mechanical life	1 x 10 ⁶	operating cycles
Ambient temperature	-20 ... +60	°C
Weight	0.02	kg

CTM

in detail

Industry 4.0 ready
through intelligent
communication

Easy mounting

Auxiliary release
(optional)

Bistable
guard locking

Compact housing

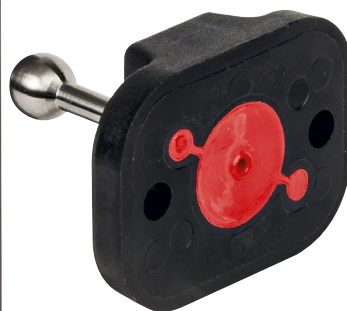
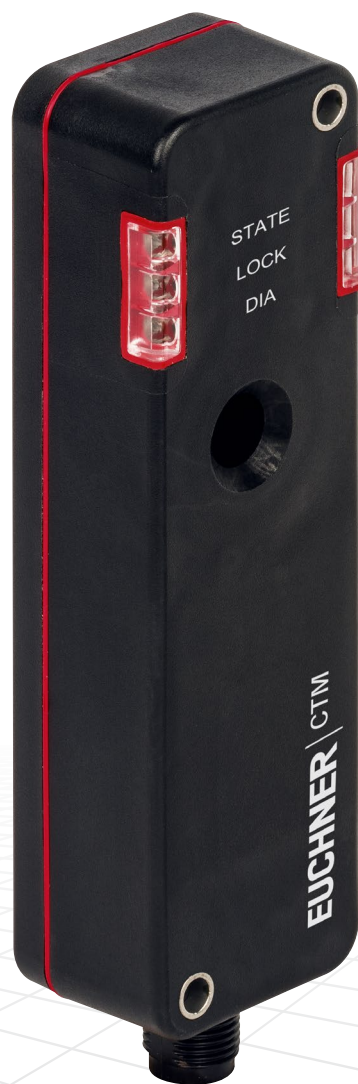
Hygienic version
additionally available

LEDs visible from
three sides

Innovative guard locking
principle

Flexible ball actuator for
very small door radii

Versatile integration into
the machine design



Shown in original size

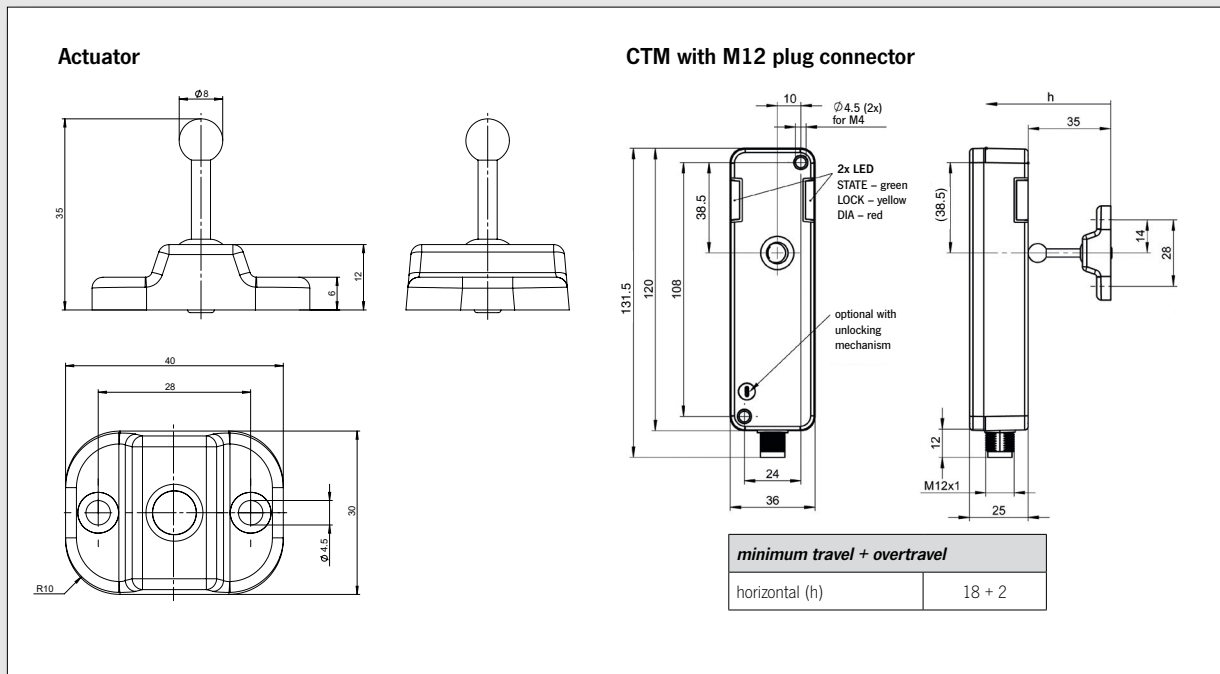
Advantages of the CTM at a glance

- Compact size
- Guard locking with guard lock monitoring
- Locking force 1,000 N
- Simple wiring and series connection
- Suitable for small door radii thanks to ball actuator
- Bistable guard locking principle
- Comprehensive, detailed diagnostics
- Hygiene requirements are met
- Maximum safety level: Category 4/ PLe according to EN ISO 13849-1

Series	Guard locking principle	System family	Coding	Connec-tion	Actuating/ extraction force	Optional release	Particularity	Order number/ type designation
CTM	LBI	BR	Unicode	M12, 8-pin	25 N	Auxiliary release		161639 / CTM-LBI-BR-U-AZ-SA-161639
							EU Regulation (EC) No. 10/2011	161640 / CTM-LBI-BR-U-ZZ-SA-P-161640
								161641 / CTM-LBI-BR-U-ZZ-SA-161641
					50 N	Auxiliary release		161638 / CTM-LBI-BR-U-AZ-SA-161638
								161500 / CTM-LBI-BR-U-ZZ-SA-161500
							EU Regulation (EC) No. 10/2011	161496 / CTM-LBI-BR-U-ZZ-SA-P-161496

Series	Design	Particularity	Order number/ type designation
CTM actuator	Ball actuator		161642/ A-B-A1-A1-161642
		EU Regulation (EC) No. 10/2011	161643/ A-B-A1-A1-P-161643

Dimensions



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

Tel. +49 711 7597-0
 Fax +49 711 753316
 info@euchner.de
 www.euchner.com

EUCHNER
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