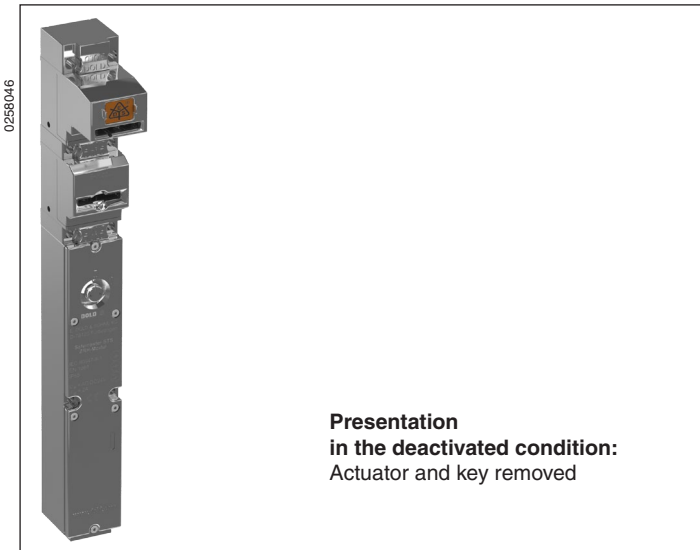


SAFEMASTER STS Safety Switch- And Key Interlock System Basic Unit STS-ZRHB01M



**Presentation
in the deactivated condition:
Actuator and key removed**

STS-System Benefits

- TÜV certificate according to the legal and standard requirements
- For safety applications up to PL_e/Category 4 according to EN/ISO 13849-1
- Modular and expandable system
- Rugged stainless steel design
- Wireless mechanical safeguarding
- Combines the benefits of safety switch, solenoid locking and key transfer in a single system
- Easy installation through comprehensive accessories
- Protection against lock-in

Features STS-ZRHB01M

The unit is particularly suitable for applications with:

- Full body access (lock-in danger)
- Setup mode
- Several secured entries
- Single-channel/ redundant/ diverse safety circuits
- Rugged ambient conditions

Approvals and marking



Function

Safety switch (type 2) for separating guards with electromagnetic solenoid locking and optional key removal

Application

To secure separating guards such as safety gates and hoods in machine and plant engineering.

Design and Operation

STS solenoid locking units prevent opening of separating guards and keep them closed as long as there is a risk of injury in the secured plant.

Attention!



Hazards must be ruled out before a key can be removed and the movable part of the guard can then be opened!

The STS solenoid locking unit is to be integrated into a system and connected with a control unit so that the hazardous machine can run only when the guard is locked and closed.

An access can only be opened after a release signal was sent by the machine control to the STS-ZRHB01M solenoid locking unit. The actuator can only be removed from actuator module A and the access opened after removing the key from key module 01. Key operation is forced. Key entry is blocked when the door is open. The key can be entered again after the access was closed again. Only after entering the key is the solenoid locking activated again and the machine can be restarted. Key and magnet position are monitored by separate contacts.

STS-ZRHB01M is usually used in the system in connection with additional STS units and SAFEMASTER products (e.g. release by speed monitor UH 5947, standstill monitor LH 5946 or speed/standstill monitor BH 5932). The key with forced removal can be used as protection against lock-in.

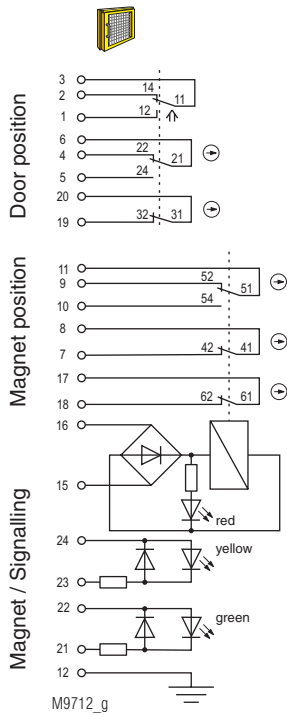


Fig. 1:
Solenoid locking activated:
Magnet locked,
actuator and key inserted,
Door closed

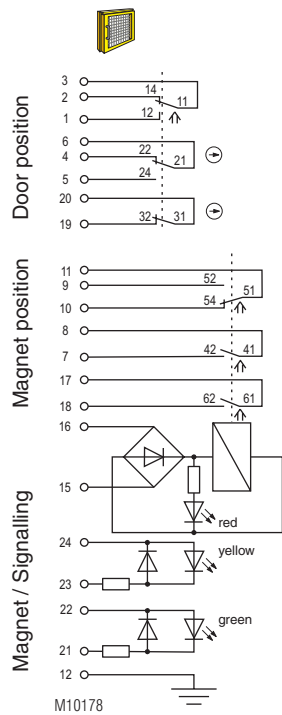


Fig. 2:
Solenoid locking deactivated:
Magnet released,
actuator and key inserted,
Door closed

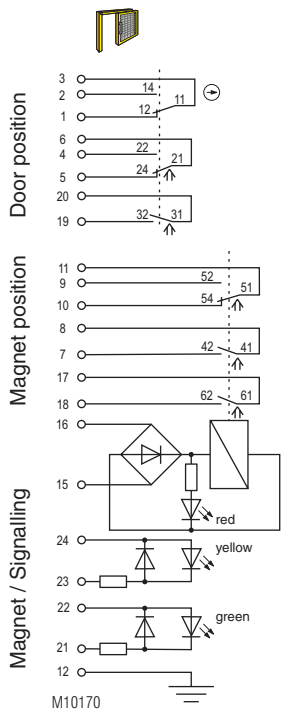


Fig. 3:
Solenoid locking deactivated:
Magnet released,
Actuator removed,
Door open

Switching logic

		Door position		
		3	2	1
Door contacts	3			Fig. 1
	6			Fig. 2
	19			Fig. 3
Magnet contact	11			
	7			
	17			
Control signal Magnet	15			
	16			

■ closed
□ open

The state shown in **Figure 3** does not depend on the control signal of the magnet.
If the control signal is applied and the actuator inserted the solenoid locking changes to the state of **Figure 2**.
If no signal is applied and the solenoid locking is inserted the solenoid locking changes to the state of **Figure 1**

Enclosure: Stainless steel V4A / AISI 316L
 Degree of protection: IP 65
 Temperature range standby current principle: - 25 °C to + 60 °C
 Temperature range load current principle: - 25 °C to + 40 °C
 Storage temperature: - 40 °C to + 80 °C
 Mechanical principle: Rotating axis with redundant actuation
 Connection method: Cage tension spring clamping
 min. connection cross-section: 0.25 mm²
 max. connection cross-section: 1.5 mm²
 Cable entry: 1 x M20 x 1.5
 B10_d: 2 x 10⁶ switching cycles
 Electrical service life: 5 x 10⁶ switching cycles
 Locking force: min. 1000 N
 Depending on actuator and actuator module
 min. 1000 N; depending on actuator
 Solenoid locking principle: Standby current, failure locking-proof
 Standby current or load current
 Magnetic principle: Standby current or load current
 min. operating speed: 100 mm/s
 max. operating speed: 500 mm/s
 (by exception, 1500 mm/s is permitted)
 max. switching frequency: 360/h
 Operating mode: 100% ED
 Nominal voltage U_N: AC/DC 24 V
 Nominal voltage range: 0.85 ... 1.1 U_N
 Power consumption: 6 W
 Rated impulse voltage: 0.8 kV
 Rated insulation voltage: < 60 V
 Contacts: 1 NC contact, 2 diverse changeover contacts
 Door position: 1 NC contact, 2 diverse changeover contacts
 Magnet position: 2 NC contacts + 1 changeover contact
 Switching principle: Changeover contact with forced-opening snap-action switches

Max. operating current: 2 A
 Standby current principle: 1 A
 Load current principle: 1 A
 Contact material: Ag / AgSnO₂
 Short circuit strength, max. fusing: 4 A gG
 Indicator: LED red: Magnet energized
 LED yellow/green (separate selection possible)
 Test principles: EN ISO 13849-1:2008
 EN 1088+A2:2008
 EN 60947-5-1:2005
 GS-ET 19:04.2004
 Intended use: up to max. cat. 4, PL e according to EN ISO 13849-1
 according to DIN EN 50041
 Mounting: according to IEC EN 60947-5-1 Appendix K

Additional requirement for cat. 4 structure (as single unit): Add 2nd actuator module, Type STS-ZRHBB01M

Diagnostic coverage (DC), (mechanical):

Logic and output	cat. 2	cat. 3	cat. 4
STS-ZRHB01M	84 %	85 %	85 %
STS-ZRXB01M	84 %	85 %	85 %
STS-ZRHBB01M	98 %	99 %	99 %
STS-ZRXBB01M	98 %	99 %	99 %
Fault exclusions:	none		

Protection against faults of common cause: see table in STS design guide
 Repair and replacement: by manufacturer only
 Test intervals: semi-annually recommended
 min. once a year

Variants and Combination Options

Because of their modular design the basic units of the Safemaster STS System can be combined and expanded according to customer requests. This allows for a variety of possible units and functions.

Overview of the basic units

Group of the basic unit	Application			
	Basic function with separate actuator	Forced key removal as protection against lock-in or to operate additional units	Optional key removal as protection against lock-in or to operate additional units	Units without actuator
Mechanical	STS-M10A	STS-M11A	STS-M10B01M	STS-M12M
Locking	STS-ZRHA	STS-ZRH01A	STS-ZRHB01M	STS-ZRH01M
Switch	STS-SXA	STS-SX01A	STS-SXB01M	STS-SX01M

For additional information refer to the data sheets of the individual modules and other basic units.

Data sheets

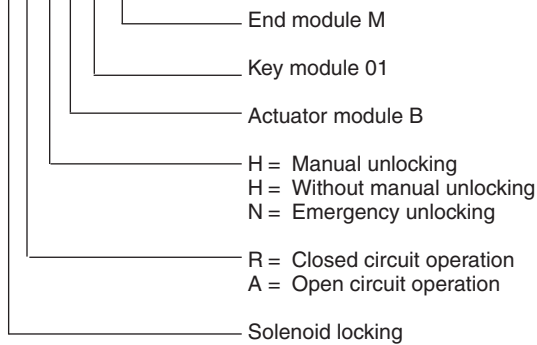
STS Solenoid locking modules ZRX/ZRH/ZAX
 STS Actuator module B
 STS Key module 01/10
 STS End module M



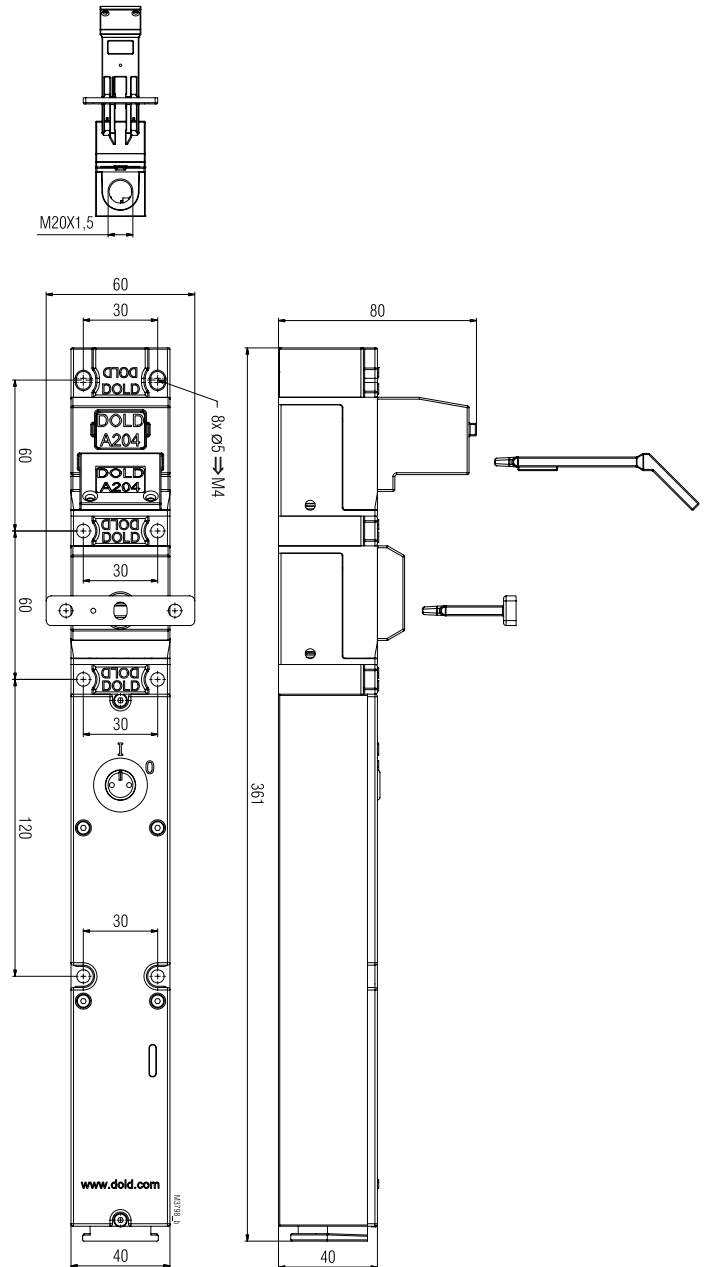
Take advantage of the advice of the **E. DOLD & SÖHNE KG** specialists regarding the choice of units and combination of a system.

Ordering Example

STS- Z R H B 01 M



Dimensional Drawing [mm]



Clearance tolerances $\pm 2\%$

