

STS-System Benefits

- EU-Test certificate according to the directive 2006/42/EG, annex IX
- For safety applications up to PLe/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
- Coding level low, medium, high according to DIN EN ISO 14119:2014-03

Features STS-ZRH01M

The unit is particularly suitable for applications with:

- Several secured entries
- Single-channel/ redundant/ diverse safety circuits
- Rugged ambient conditions

Approvals and marking



Function

Safety switch with forced key removal and electromagnetic blocking of the key

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!

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.

A key can only be removed after a release signal was sent by the machine control to the STS-ZRH01M solenoid locking unit. The machine can only be restarted after the key was returned to its original position; key blockage is activated then.

Key and magnet position are monitored by separate contacts.

STS-ZRH01M 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 BH5932). The key to be removed can serve as protection against lock-in or for the operating release of additional units (e.g. STS-M10A, STS-M11A, STS-M12M, STS-M10B01M).

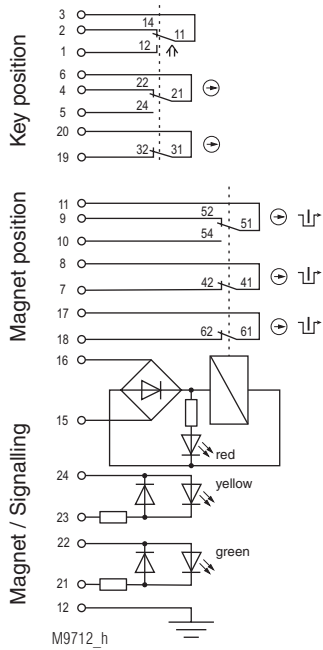


Fig. 1:
Solenoid locking activated:
Magnet locked,
Key inserted

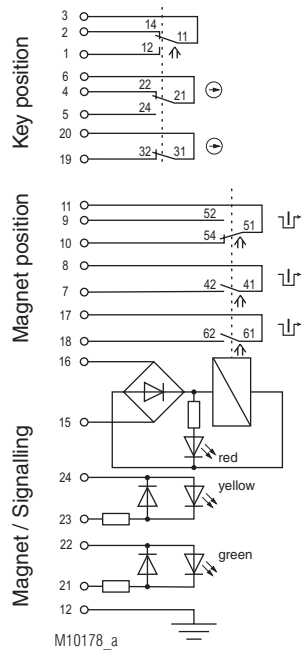


Fig. 2:
Solenoid locking deactivated:
Magnet released,
Key inserted

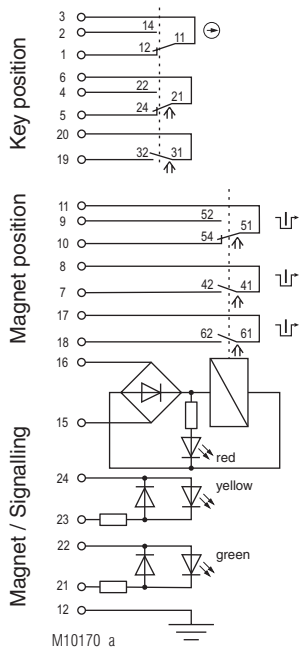


Fig. 3:
Solenoid locking deactivated:
Magnet released,
Key removed

Switching logic

		Fig. 1	Fig. 2	Fig. 3
Door contacts	3	2	1	1
	6	4	5	5
	19	20	19	19
Magnet contact	11	9	11	11
Control signal Magnet	15	16	15	15

■ 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 key inserted the solenoid locking changes to the state of **Figure 2**. If no signal is applied and the key inserted the solenoid locking changes to the state of **Figure 1**

Enclosure: Stainless steel V4A / AISI 316L
 Degree of protection: IP 65
 Temperature range: - 25 °C to + 60 °C
 standby current principle: - 25 °C to + 40 °C
 Temperature range: - 40 °C to + 80 °C
 load current principle: Rotating axis with redundant actuation
 Storage temperature: Cage tension spring clamping
 Mechanical principle: 0.25 mm²
 Connection method: max. connection cross-section: 0.75 mm²
 min. connection cross-section: 1 x M20 x 1.5
 Cable entry: B10_d: 2 x 10⁶ switching cycles
 Electrical service life: 5 x 10⁶ switching cycles
 Locking force: min. 1000 N
 Shearing force: depending on actuator
 Solenoid locking principle: Standby current, failure locking-proof
 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: ≤ 50 V
 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:
 Rated conditional short circuit current: 1000 A
 Contact material: Ag / AgSnO₂
 Short circuit strength, max. fusing: 2 A gG
 Utilization category of switching elements to AC 15: 1 A / AC 230 V
 to DC 13: 0.5 A / DC 60 V
 Indicator

Test principles: EN ISO 13849-1:2008
 DIN EN ISO 14119:2014-03
 EN 60947-5-1:2005
 GS-ET-15:02.2011
 GS-ET-19:02-2011
 GS-ET-31:02-2010

Intended use: up to max. cat. 4, PL e according to EN ISO 13849-1 according to DIN EN 50041 IEC EN 60947-5-1 Appendix K

Mounting: Contact elements: Diagnostic coverage (DC), (mechanical):

Logic and output

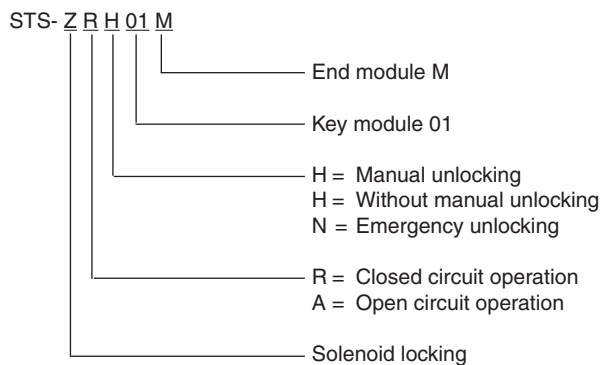
STS-ZRH01M:
 STS-ZRH02M:
 Protection against faults of common cause:
 Repair and replacement:
 Test intervals:
 for PL a to d:
 for PL e:

cat. 2	cat. 3	cat. 4
90 %	90 %	99 %
90 %	90 %	99 %

see table in STS design guide by manufacturer only

min. once a year
 min. once a month

Ordering Example



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

Functions	Safety switches design type 2	Safety switches design type 2 with solenoid lock	Mechanical units design type 2	Mechanical units with electrical monitoring	Mechanical units with electrical release
Units with standard function	SXA	ZRHA	M10A	RXK01M RX10A	YRXKM
Units with mechanical lock and forced key extraction	SX01A	ZRH01A	M11A	RXK11M RX11A	YRX10A
Units with optional key extraction	SXB01M	ZRHB01M	M10B01M	RX10K01M	YRX10B01M
Units without actuator	SX01M	ZRH01M	M12M	RX11M	YRX11M

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

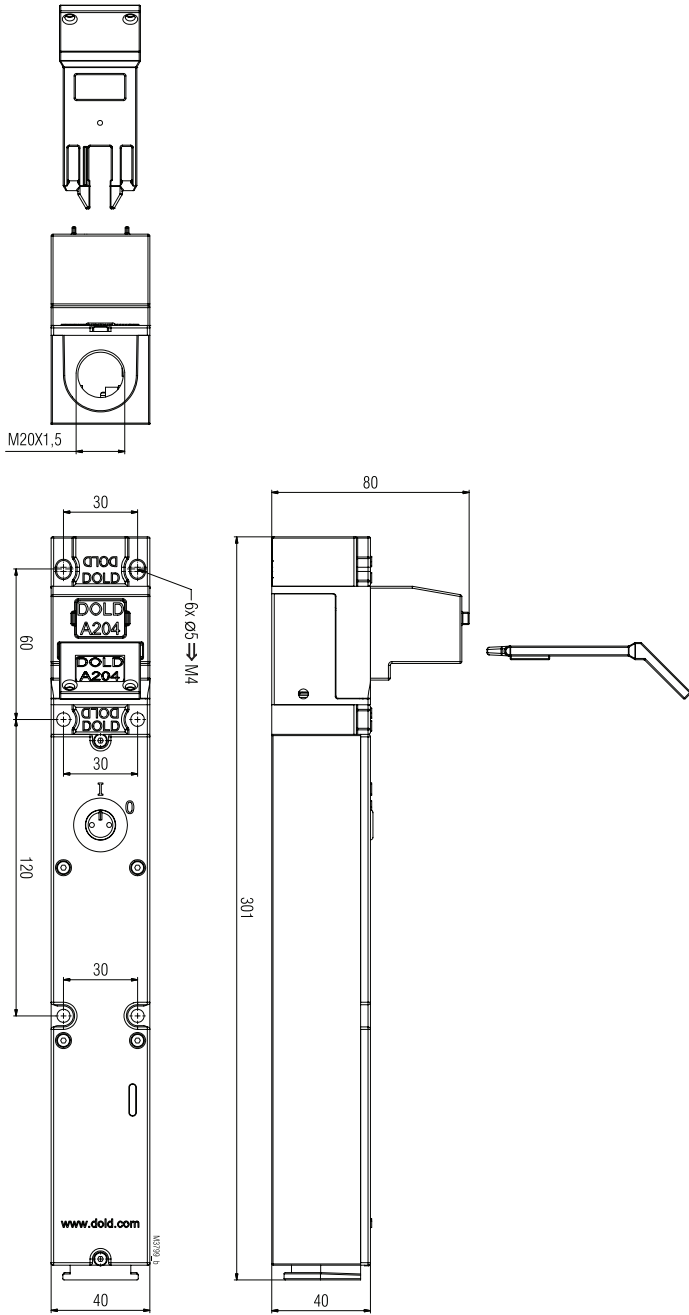
Data sheets

STS Solenoid locking modules ZRX/ZRH/ZAX
 STS 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.

Dimensional Drawing [mm]



Clearance tolerances $\pm 2\%$

