



SAFEMASTER STS
Safety switch- and
key interlock system
switch module RX and RV

Translation
of the original instructions

0278784



E. DOLD & SÖHNE KG
 P.O. Box 1251 • D-78114 Furtwangen • Germany
 Tel: +49 7723 6540 • Fax +49 7723 654356
 dold-relays@dold.com • www.dold.com

Content

Symbol and Notes Statement.....	8
General Notes	8
Notes	8
Product Description	9
Installation Examples.....	9
Approvals and Markings	9
Design and Function.....	9
Indication	9
Circuit Diagrams (Example RX01M).....	10
Technical Data	10
Safety Related Data	11
Dimensional Drawings [mm].....	12
Variants and Accessories	12
Ordering Designation.....	12
Notice	19

Symbol and Notes Statement



DANGER:
Indicates that death or severe personal injury will result if proper precautions are not taken.



WARNING:
Indicates that death or severe personal injury can result if proper precautions are not taken.



CAUTION:
Indicates that a minor personal injury can result if proper precautions are not taken.



INFO:
Referred information to help you make best use of the product.



ATTENTION:
Warns against actions that can cause damage or malfunction of the device, the device environment or the hardware / software result.



Before installing, operating or maintaining this device, these instructions must be carefully read and understood.



The installation must only be done by a qualified electrician!



The installation must only be done by a qualified mechanic!



Do not dispose of household garbage!
The device must be disposed of in compliance with nationally applicable rules and requirements.



Storage for future reference.

To help you understand and find specific text passages and notes in the operating instructions, we have important information and information marked with symbols.

General Notes

The product hereby described was developed to perform safety functions as a part of a whole installation or machine. A complete safety system normally includes sensors (SAFEMASTER STS System), evaluation units, signals and logical modules for safe disconnections. The manufacturer of the installation or machine is responsible for ensuring proper functioning of the whole system. DOLD cannot guarantee all the specifications of an installation or machine that was not designed by DOLD. The total concept of the control system into which the device is integrated must be validated by the user. DOLD also takes over no liability for recommendations which are given or implied in the following description. The following description implies no modification of the general DOLD terms of delivery, warranty or liability claims.

Notes



Risk!
Danger to life or risk of serious injuries.

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



INFO

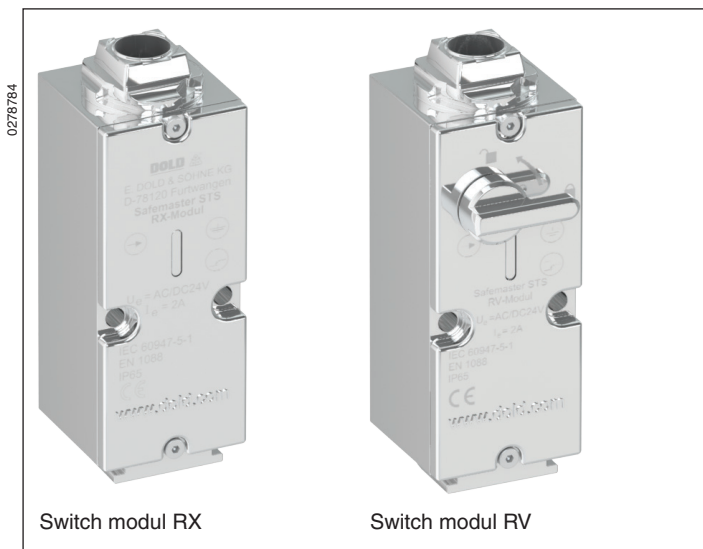
- For information regarding use in the system and validation according to EN ISO 13849-2, see SAFEMASTER STS application guide.
- Take advantage of the advice of the **E. DOLD & SÖHNE KG** specialists regarding the choice of units and combination of a system.



ATTENTION !

- To avoid wrong usage (e.g. by overload, mounting position or usage in acid, alkaline or other hostile ambient conditions) the limitations of the product have to be observed. Please check in advance if your application requires the usage of the more robust stainless steel model of SAFEMASTER STS. The requirements of the mounting and operating instruction must be fulfilled.

SAFEMASTER STS Safety Switch- And Key Interlock System Switch Module RX and RV



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, locking module 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-RX and STS-RV

- Switch module for access authorization applications or additional direct key/actuator monitoring of mechanical units
- Module expansions possible only above the module
- With integrated LEDs for status indication
- Optional single-channel / redundant / diverse switch-off possible

Product Description

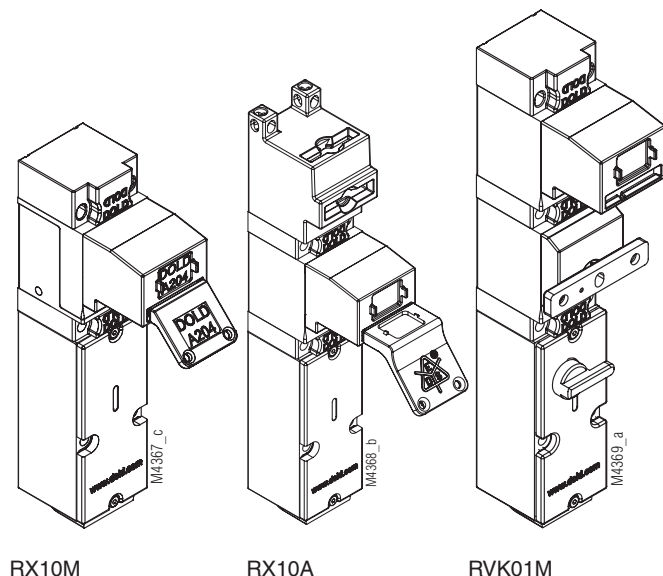
Switch modules STS-RX and STS-RV are assembled together with other modules into a STS unit. They are used for access control or additional direct key / actuator monitoring of mechanical units with separating guard.

In case of authorization applications it must be ensured that the hazard is stopped and/or entries are cleared when inserting the key/actuator.

Approvals and Markings



Installation Examples



Design and Function

Switch modules RX and RV are extremely rugged and flexible switch modules monitoring the safe position of one or several entries, e.g. protective hood or door, in the system. For this purpose the modules are used in connection with other mechanical STS modules, e. g. actuator modules K and E, key modules 10 and 10S and/or padlock module W. The key and padlock modules can only be installed above the switch module used.

Switch modules RX and RV are typically used in systems where access rights are distributed via SAFEMASTER STS keys. For access authorizations users and service employees receive an STS key allowing entry to predefined plant areas. Examples for such units are RX10A or RX11A. With unit RX10A a key must first be inserted before an access can be opened. With unit RX11A a second key can be removed in addition. Also, these modules without actuator module can only be used to release keys in a key interlock system if access authorizations are used here. This function is applied in key interlock systems with central shut-off or where the shut-off must take place outside the system, for instance in Ex zones, with strong vibration or dirt build-up, etc.

Switch module RX is used to monitor an actuator (of a mechanical unit). These are examples of such SAFEMASTER STS units: RXK01M and RXE11M.

For additional information refer to the data sheet of actuator modules K and E.

Indication

LED red/green: Separately controllable

Circuit Diagrams (Example RX01M)

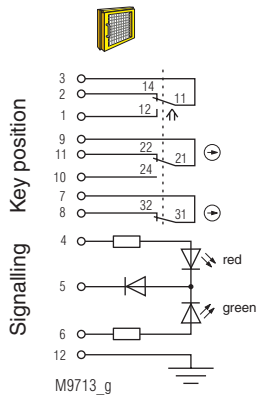


Fig. 1:
Locked while activated:
Key removed,
Actuator inserted,
Door closed

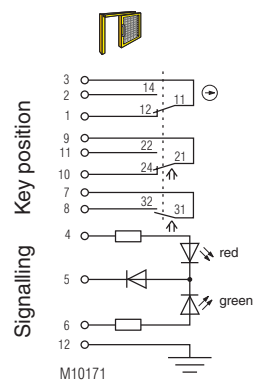


Fig. 2:
Lock deactivated:
Key inserted,
Door unlocked and open

Switching logic

		Fig. 1	Fig. 2
Door contacts	3	2	■
	3	1	□
	9	11	■
	9	10	□
	7	8	■

■ closed
□ open

Technical Data

Mechanical Data

Mechanical principle: Rotating axis with redundant actuation
Enclosure: Stainless steel V4A / AISI 316L
Internal parts: Stainless steel V4A / AISI 316 / AISI 630 / V2A (acc. to EN 10027-2 1.4401; 1.4404; 1.4542; 1.4301; 1.4310)
Degree of protection: IP 65
Operating speed: 100 / 500 mm/s
Locking force: F_{zh} 4000 N

Input

Nominal voltage U_N (Rated voltage): AC/DC 24 V
Nominal voltage range: 0,85 ... 1,1 U_N
Power consumption: 0,3 W

Output

Contacts: 1 NC contact, 2 antivalent changeover contacts
Switching element: IEC EN 60947-5-1 Appendix K
Switching principle: Change-over contact with forced opening spring contact
Contact material: Ag / AgSnO₂
Max. switching frequency: 360/h
Max. operating current: 2 A
Utilization category of switching elements
to AC 15: 1 A
to DC 13: 0,5 A
Electrical service life: 5 x 10⁶ switching cycles
Short circuit strength, Max. fuse rating: 2 A gG
Conditional rated short-circuit current: (rated conditional short circuit current): 1000 A
Mechanical life: 1 x 10⁶ switching cycles

General Data

Temperature range: - 25°C to + 65°C
Storage temperature: - 40°C to + 80°C
Rated impuls voltage: 0,8 kV
Rated insulation voltage: ≤ 50 V
Overvoltage category: III
Pollution degree: 2
Connection: Cage clamp terminals
Cross sections min. / max.: 0,25 / 0,75 mm² (with ferrules and sleeve according DIN 46228-4)
Cable entry with thread: 1 x M20x1,5
Intended use: Up to max. cat. 4, PL e according DIN EN ISO 13849-1
Mounting: To DIN EN 50041
Test principles: DIN EN ISO 13849-1:2008
DIN EN ISO 14119:2014-03
DIN EN 60947-5-1:2005
GS-ET-15:2011-02
GS-ET-19:2011-02
GS-ET-31:2010-02

Safety Related Data

Data suitable for the PFH_D summation method according to EN ISO13849-1:2016

Data according to EN ISO13849-1:2016	Switch Module RX and RV			
Category	2	3	3	4
PL	d	d	e	e
PFH _D	1,061E-09	6,84592E-10	5,44569E-10	1,00122E-10
T _{10D}	20	20	20	20
CCF required	65-100	85-100	85-100	85-100
B _{10d}	2.000.000	2.000.000	2.000.000	2.000.000
d _{op} (d/a)	365	365	365	365
h _{op} (h/d)	24	24	24	24
t _{cycle} (h)	1	1	1	1
n _{op}	8760	8760	8760	8760
Diagnostic coverage DC	60%	60%	90%	99%
Test interval according to ISO14119	1 / year	1 / year	1 / month	1 / month

Category 2: The prerequisites for installation and integration into a category 2 architecture must be met

Category 3: The prerequisites for installation and integration into a category 3 architecture must be met

Category 4: The prerequisites for installation and integration into a category 4 architecture must be met, in particular 2 actuators must be used

PFH_D: A single module has no function. As a result, an individual module cannot have any safety-related characteristic values. The safety-related characteristic data in the table only serve to determine the values of a unit into which it is integrated.

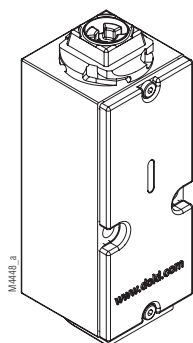
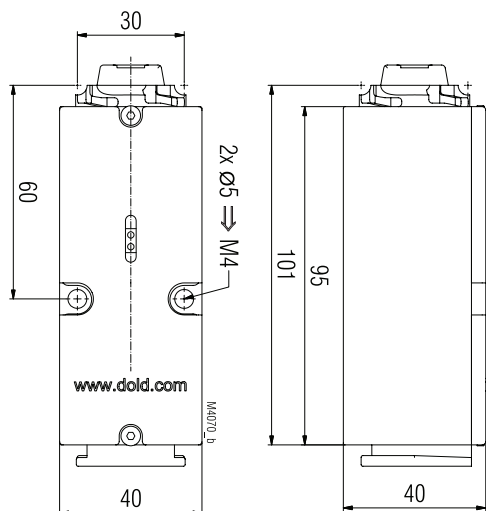
When used as part of a **key transfer system**:

- PFH_D total STS system = SUM PFH_{D1} + ... PFH_{Dn}
- Lowest category of a module = category of whole STS system
- Lowest DC of a module = DC entire STS unit

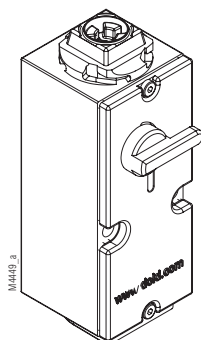
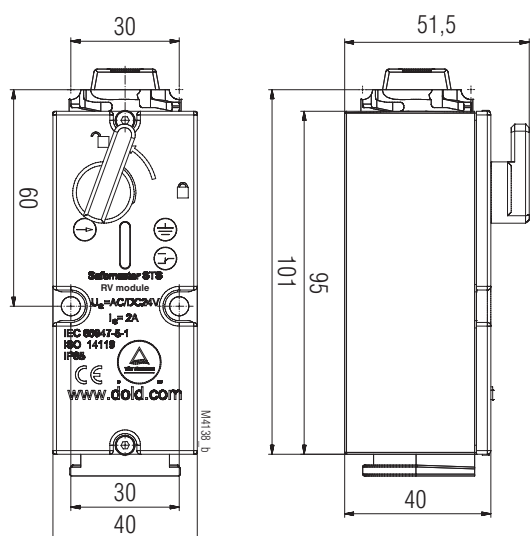


If the design of a unit is changed, the safety-related data may also change.

Dimensional Drawings [mm]



Switch modul RX



Switch modul RV

Variants and Accessories

Switch module with RV lock

The switch module RV with 3-level locking module function has the same design as the RX, but is equipped with additional manual lock. It is particularly suitable for application where an actuator or key must be inserted deliberately. Manual locking of the switch module RV does not prevent, as the switch module SV, the unintended ejection of actuator or key.

Switch modules SX and SV

For applications where the key modules 01, 01S or actuator module B, D, or padlock module V shall be installed above the switch module, versions SX and SV are available.

For more information, refer to the data sheet for switch modules SX and SV.

Ordering Designation

Switch module RX
Article number: 0063598

Switch module RV
Article number: 0064968

DE	Notizen
EN	Notice
FR	Note

