

STS – Non-contact safety switches with coding



STS 01xx



STS 02xx



Applications

- Protection of people or machines
- Position monitoring of machine parts
- Position monitoring of doors and switches of isolating protective devices

Features

- Individual coding for maximum manipulation protection
- Up to PL e / category 4 (EN 13849-1)
- Up to SIL_{CL} 3 (EN 62061)
- Up to 30 sensors can be cascaded
- Automatic or manual start
- LED and semiconductor output for diagnostics
- Switching distance of 8 mm / 10 mm
- Protection class IP67 / IP69K

Function

The non-contact safety switches from the STS series are used for monitoring the position of machine parts and the position of doors and switches of isolating protective devices.

The STS series features integrated evaluation and built-in manipulation protection.

In the event of a hazard, access is approved or the machine is shut down, for example, by a device from the **safe** RELAY series or the **samos**[®]/**samos**[®]PRO safety system or by the safety switch directly.

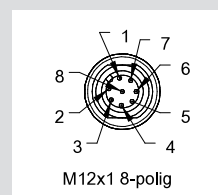
Safety switches from the STS series are also able to switch larger loads without wear via safe outputs (OSSDs).

Connection assignment STS with cable connection

Function	Colour
UB	BN
Safety input 1	WH
GND	BU
Safety output 1	BK
Diagnostic output	GY
Safety input 2	PK
Safety output 2	VT
EDM-start input	OG

Connection assignment STS with connection M12

Function	PIN
UB	1
Safety input 1	2
GND	3
Safety output 1	4
Diagnostic output	5
Safety input 2	6
Safety output 2	7
EDM-start input	8



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Tailor-made manipulation protection

Different applications require different solutions when it comes to existing manipulation protection.

Safety switches from the STS series have 3 different coding variations, which means that they can always offer the right solution.

Coded:

The safety switch accepts every STS actuator.

Fully coded:

The safety switch only accepts the programmed-in STS actuator.

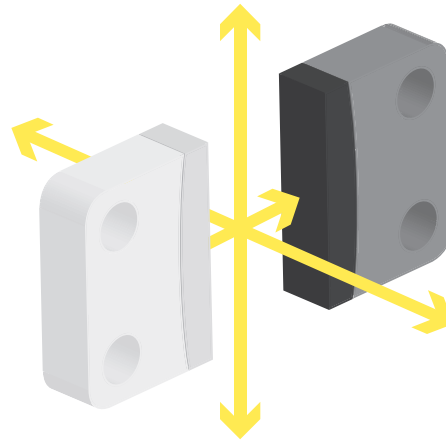
Unique:

The safety switch only accepts STS actuator delivered with it. An STS actuator cannot be programmed in.

Diverse installation

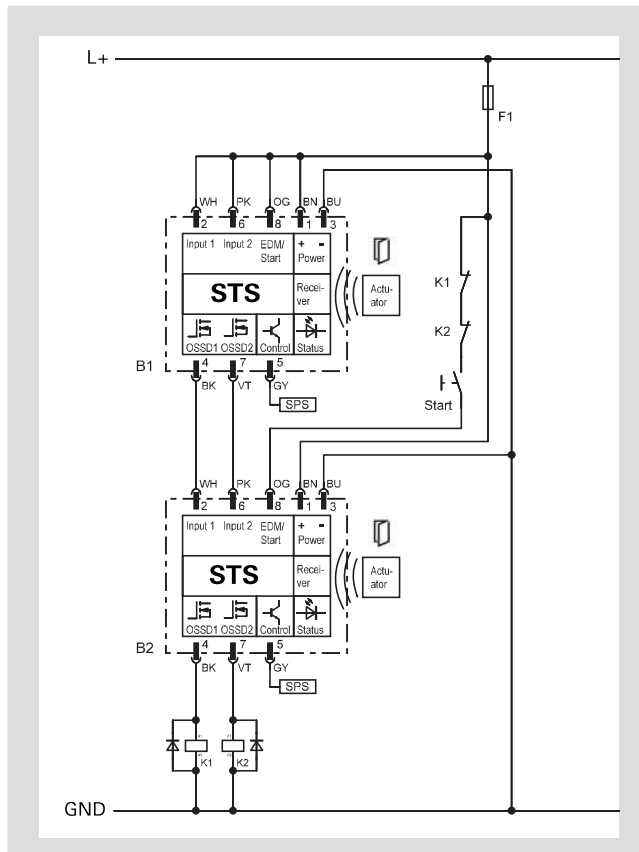
The 5 actuation directions of the STS series and the maximum displacement between the actuator and switch element of 8 mm make installation easy even when the protective device to be monitored has large mechanical tolerances.

The resulting advantage is that it can be used universally on removable, rotatable, or sideways-moving protective devices.

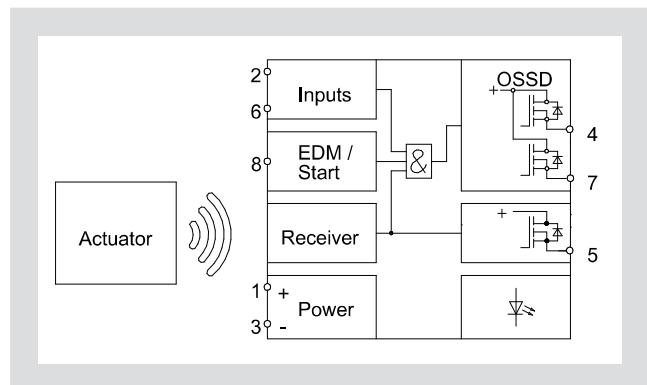


5 different actuation directions for universal use

Application



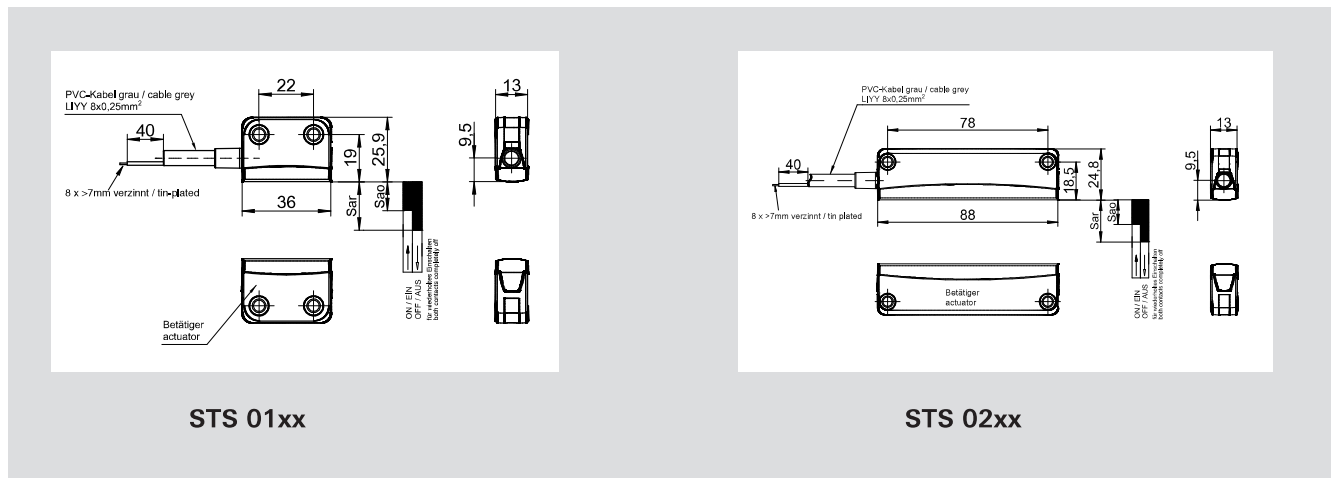
Circuit diagram



Serial wiring of 2 safety switches STS with manual start and EDM

STS – Non-contact safety switches with coding

Circuit diagram



STS 01xx

STS 02xx

Technical data

Function	Non-contact safety switch	
Function display	LED, three-colored	
Supply circuit		
Nominal voltage U_N	24 V DC	
Operating voltage range U_B	0.9 - 1.1 x U_N	
Galvanic isolation supply circuit - output circuit	no	
Control circuits		
Number of safety inputs	2	
EDM/start input	1	
Input current, max.	2 mA	
Output circuits		
Number	OSSD	2
	Diagnostics	1
Short-circuit monitoring	yes	
Switching current, max.	OSSD	400 mA
	Diagnostics	50 mA
Switching voltage, max.	$U_B - 0.2 V$	
Series connection	max. 30 sensors	
Switching behavior		
Switching distance / (Sao / Sar)	8 mm / 18 mm	
Hysteresis	2 mm	
Actuator displacement, max.	8 mm	
Actuation directions	Operator definable	
Switching frequency	3 Hz	
General data		
Creepage distances and clearances between the circuits	EN 60664-1	
Protection class as per EN 60529	IP67	
Operating ambient temperature	-25 °C - +70 °C	
Connection	M12 (8 pole) / cable (8 pole)	
Standards	EN ISO 13849-1, EN 62061	
Certificates / Approvals	TÜV, cULus	

STS – Non-contact safety switches with coding

Overview of devices | part numbers

Type	Description	Coding	Part no.	P.U.
STS 0110	Switch-set, automatic start, connection M12-8	coded	R1.400.0110.0	1
STS 0113	Switch-set, automatic start, connection cable 3m	coded	R1.400.0113.0	1
STS 0114	Switch-set, automatic start, connection cable 5m	coded	R1.400.0114.0	1
STS 0116	Switch-set, automatic start, connection cable 10m	coded	R1.400.0116.0	1
STS 0130	Switch-set, automatic start, connection M12-8	fully-coded	R1.400.0130.0	1
STS 0133	Switch-set, automatic start, connection cable 3m	fully-coded	R1.400.0133.0	1
STS 0134	Switch-set, automatic start, connection cable 5m	fully-coded	R1.400.0134.0	1
STS 0136	Switch-set, automatic start, connection cable 10m	fully-coded	R1.400.0136.0	1
STS 0150	Switch-set, automatic start, connection M12-8	unique	R1.400.0150.0	1
STS 0153	Switch-set, automatic start, connection cable 3m	unique	R1.400.0153.0	1
STS 0154	Switch-set, automatic start, connection cable 5m	unique	R1.400.0154.0	1
STS 0156	Switch-set, automatic start, connection cable 10m	unique	R1.400.0156.0	1
STS 0120	Switch-set, manual start, connection M12-8	coded	R1.400.0120.0	1
STS 0123	Switch-set, manual start, connection cable 3m	coded	R1.400.0123.0	1
STS 0124	Switch-set, manual start, connection cable 5m	coded	R1.400.0124.0	1
STS 0126	Switch-set, manual start, connection cable 10m	coded	R1.400.0126.0	1
STS 0140	Switch-set, manual start, connection M12-8	fully-coded	R1.400.0140.0	1
STS 0143	Switch-set, manual start, connection cable 3m	fully-coded	R1.400.0143.0	1
STS 0144	Switch-set, manual start, connection cable 5m	fully-coded	R1.400.0144.0	1
STS 0146	Switch-set, manual start, connection cable 10m	fully-coded	R1.400.0146.0	1
STS 0160	Switch-set, manual start, connection M12-8	unique	R1.400.0160.0	1
STS 0163	Switch-set, manual start, connection cable 3m	unique	R1.400.0163.0	1
STS 0164	Switch-set, manual start, connection cable 5m	unique	R1.400.0164.0	1
STS 0166	Switch-set, manual start, connection cable 10m	unique	R1.400.0166.0	1
STS 0210	Switch-set, automatic start, connection M12-8	coded	R1.400.0210.0	1
STS 0213	Switch-set, automatic start, connection cable 3m	coded	R1.400.0213.0	1
STS 0214	Switch-set, automatic start, connection cable 5m	coded	R1.400.0214.0	1
STS 0216	Switch-set, automatic start, connection cable 10m	coded	R1.400.0216.0	1
STS 0230	Switch-set, automatic start, connection M12-8	fully-coded	R1.400.0230.0	1
STS 0233	Switch-set, automatic start, connection cable 3m	fully-coded	R1.400.0233.0	1
STS 0234	Switch-set, automatic start, connection cable 5m	fully-coded	R1.400.0234.0	1
STS 0236	Switch-set, automatic start, connection cable 10m	fully-coded	R1.400.0236.0	1
STS 0250	Switch-set, automatic start, connection M12-8	unique	R1.400.0250.0	1
STS 0253	Switch-set, automatic start, connection cable 3m	unique	R1.400.0253.0	1
STS 0254	Switch-set, automatic start, connection cable 5m	unique	R1.400.0254.0	1
STS 0256	Switch-set, automatic start, connection cable 10m	unique	R1.400.0256.0	1
STS 0220	Switch-set, manual start, connection M12-8	coded	R1.400.0220.0	1
STS 0223	Switch-set, manual start, connection cable 3m	coded	R1.400.0223.0	1
STS 0224	Switch-set, manual start, connection cable 5m	coded	R1.400.0224.0	1
STS 0226	Switch-set, manual start, connection cable 10m	coded	R1.400.0226.0	1
STS 0240	Switch-set, manual start, connection M12-8	fully-coded	R1.400.0240.0	1
STS 0243	Switch-set, manual start, connection cable 3m	fully-coded	R1.400.0243.0	1
STS 0244	Switch-set, manual start, connection cable 5m	fully-coded	R1.400.0244.0	1
STS 0246	Switch-set, manual start, connection cable 10m	fully-coded	R1.400.0246.0	1
STS 0260	Switch-set, manual start, connection M12-8	unique	R1.400.0260.0	1
STS 0263	Switch-set, manual start, connection cable 3m	unique	R1.400.0263.0	1
STS 0264	Switch-set, manual start, connection cable 5m	unique	R1.400.0264.0	1
STS 0266	Switch-set, manual start, connection cable 10m	unique	R1.400.0266.0	1
STS 3110	Actuator for STS 011x, 012x, 013x, 014x		R1.400.3110.0	1
STS 3210	Actuator for STS 021x, 022x, 023x, 024x		R1.400.3210.0	1

STS – Accessories



STS-CON-448
T-Connector for serial wiring of STS-switches



STS-CON-TER
Terminal-connector of the serial wiring

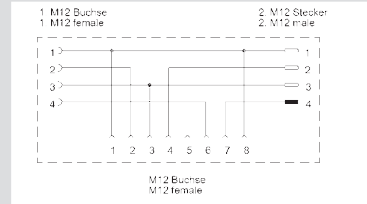


STS-CON-488
T-Connector for the extraction of the diagnostic output or coupling a restart signal into the switch (optional)



STS-CON-444
T-Connector for coupling an additional power supply into the serial wiring (optional)

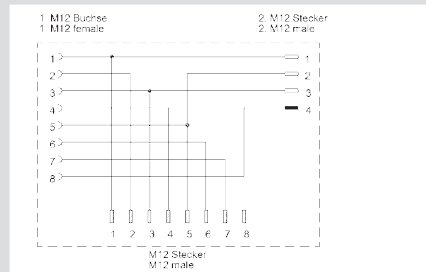
Dimensions diagramm



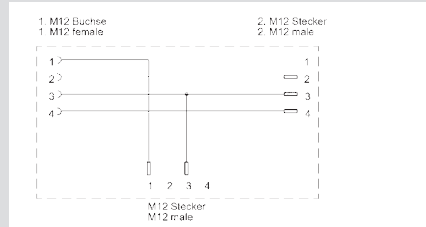
STS-CON-448



STS-CON-TER



STS-CON-488



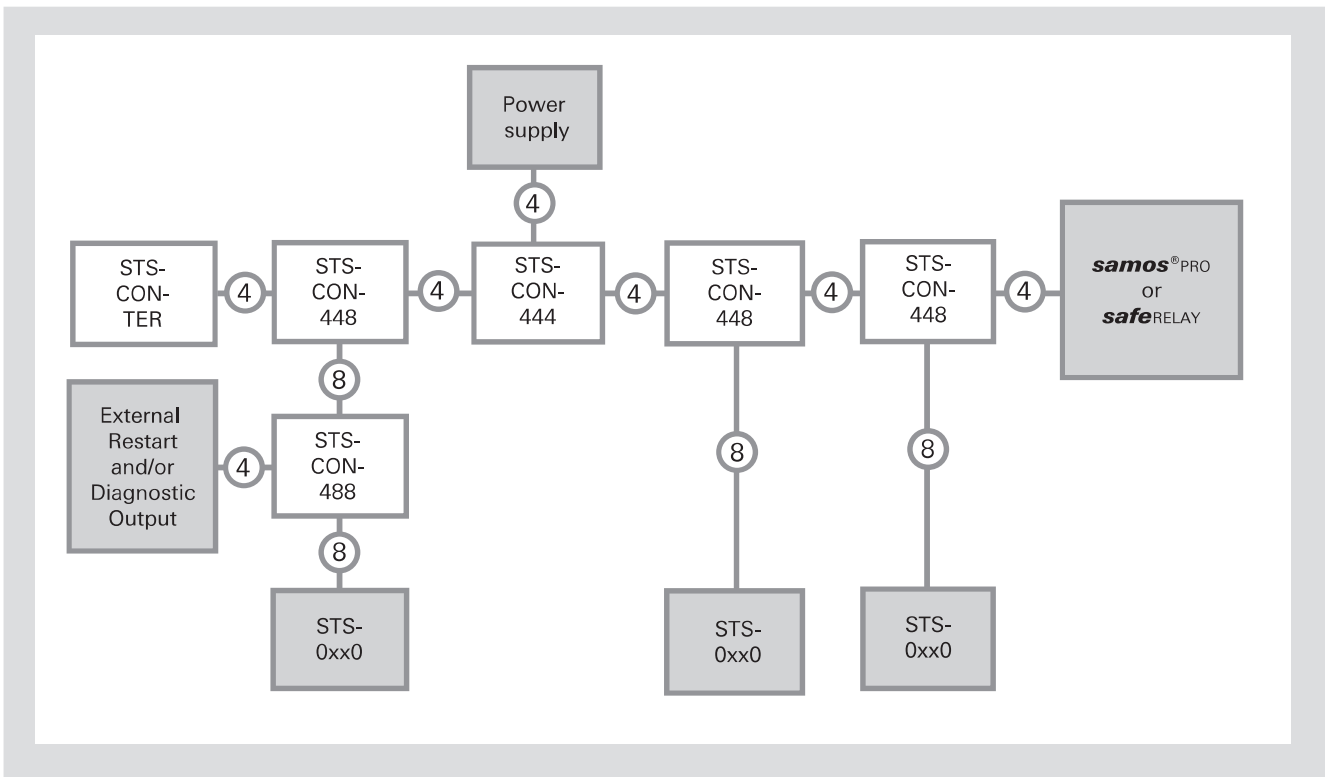
STS-CON-444

Overview of devices | part numbers

Type	Description	Part no.	P.U.
STS-CON-444	STS connector, M12-4-4-4	R1.400.9444.0	1
STS-CON-448	STS connector, M12-4-4-8	R1.400.9448.0	1
STS-CON-488	STS connector, M12-4-8-8	R1.400.9488.0	1
STS-CON-TER	STS connector, M12 terminal	R1.400.9000.0	1

STS – Accessories

Application



Connection assignment with *saris*® cable M12 (female – free end)

Function	PIN	Color
UB	1	WH
Safety input 1	2	BN
GND	3	GN
Safety output 1	4	YE
Diagnostic output	5	GY
Safety input 2	6	PK
Safety output 2	7	BU
EDM-start input	8	RD

Overview of devices | part numbers *saris*® M12 cable

Length	Cable M12, 4-pole, straight		Cable M12, 8-pole, straight	
	Female – male	Female – free end	Female – male	Female – free end
0.3 m	M2.K42.0344.0	–	M2.K81.0344.0	–
0.6 m	M2.K42.0644.0	–	M2.K81.0644.0	–
1 m	M2.K42.1044.0	M2.K42.1004.0	M2.K81.1044.0	M2.K81.1004.0
1.5 m	M2.K42.1544.0	M2.K42.1504.0	M2.K81.1544.0	M2.K81.1504.0
2 m	M2.K42.2044.0	M2.K42.2004.0	M2.K81.2044.0	M2.K81.2004.0
3 m	M2.K42.3044.0	M2.K42.3004.0	M2.K81.3044.0	M2.K81.3004.0
5 m	M2.K42.5044.0	M2.K42.5004.0	M2.K81.5044.0	M2.K81.5004.0
10 m	M2.K42.X044.0	M2.K42.X004.0	M2.K81.X044.0	M2.K81.X004.0