Datasheet - CSS 11-30S-SD-M-ST

Safety sensors / CSS 30S

☒ Preferred typ

(Minor differences between the printed image and the original product may exist!)

- Stainless steel enclosure
- Max. 31 sensors can be wired in series.
- Connector M12, 8-pole
- Ø M30
- High repeat accuracy of the switching points
- Max. length of the sensor chain 200 m
- 2 short-circuit proof PNP safety outputs
- Integral cross-short, wire-breakage and external voltage monitoring of the safety cables up to the control cabinet
-
- serial diagnostic output

Ordering details

Product type description	CSS 11-30S-SD-M-ST
Article number	101204613
EAN Code	4030661381657
eCl@ss	27-27-24-01

Approval

Approval	TÜV USA/CAN

Classification

Standards	EN ISO 13849-1, IEC 61508, IEC 60947-5-3
PL	up e
Control category	bis 4
PFH	3.6 x 10 -9/h
SIL	bis 3
Mission time	20 Years
Classification	PDF-M

Global Properties

Permanent light	CSS 30S
Standards	IEC 60947-5-3, IEC 61508
Compliance with the Directives (Y/N) CE	Yes
Suitable for safety functions (Y/N)	Yes
Function	Sensor for series wiring
Series-wiring	up to 31 components
Length of the sensor chain	max. 200 m
Active principle	inductive
Materials	
- Material of the housings	Stainless steel
Housing construction form	cylinder, thread
Weight	248
Diagnostic output (Y/N)	Yes
Reaction time	< 60
Duration of risk	< 60
Cascadable (Y/N)	Yes
Recommended actuator	CST 30S-1

Mechanical data

mechanical installation conditions	not flush
Actuating planes	Actuation from top
Active area	front
Switch distance S_n	11 mm
Ensured switch distance ON S_{ao}	8 mm
Ensured switch distance OFF S_{ar}	15 mm
hysteresis	< 2 mm
Repeat accuracy R_R	< 1 mm
restistance to shock	30 g / 11 ms
Resistance to vibration	10 … 55 HZ, Amplitude 1 mm

Ambient conditions

Ambient temperature	
- Min. environmental temperature	−25
- Max. environmental temperature	+65
Storage and transport temperature	
- Min. Storage and transport temperature	−25
- Max. Storage and transport temperature	+85
Protection class	IP65, IP67 to IEC/EN 60529 IP69K to DIN 40050-9
Protection rating	II
Air clearances and creepage distances To IEC/EN 60664-1	
- Rated impulse withstand voltage U_{imp}	0,8 kV
- Overvoltage category	III
- Degree of pollution	3

Electromagnetic compatibility (EMC)

EMC rating	to IEC 61000-6-2
Interfering radiation	to IEC 61000-6-4

Electrical data

Cross circuit/short circuit recognition possible (Y/N)	Yes
Voltage type	DC
Switch frequency	3
Rated insulation voltage U_i	32 VAC/DC
Rated operating voltage U_e (stabilised PELV)	
- Min. Rated operating voltage	20.4 VDC
- Max. Rated operating voltage	26.4 VDC
Operating current I_e	0,6 A
No-load current I_0	0,1 A
Required rated short-circuit current	100 A
Device insulation (Circuit breaker)	2 A
notice	The cable section of the interconnecting cable must be observed for both wiring variants! Cable length and cable section alter the voltage drop depending on the output current

Electrical data - Safety inputs

Safety inputs	X1 and X2

Electrical data - Safety outputs

Safety outputs	Y1 and Y2
Fuse rating	short-circuit proof
Design of control output	p-type
Number of secure semi-conductor outputs	2
Max. output current at secured output	0,25 A
Rated operating voltage	min. (U_e − 1 V)
Residual current I_r	< 0,5 mA
Operating current I_e	max. 0,25 A
Minimum operating current I_m	0,5 mA
Utilisation category	DC-12: 24 V / 0,25 A DC-13: 24 V / 0,25 A
Voltage drop U_d	< 1 V

Electrical data - Diagnostic output

Serial diagnostics (Y/N)	Yes
Fuse rating	short-circuit proof
Design of control output	p-type
Number of semi-conductor outputs with signaling function	1
Rated operating voltage	min. (U_e − 5 V)
Operating current I_e	max. 0,05 A
Voltage drop U_d	< 5 V
Utilisation category	DC-12: 24 V / 0,05 A DC-13: 24 V / 0,05 A
Wiring capacitance for serial diagnostics	max. 50 nF

LED switching conditions display

LED switching conditions display (Y/N)	Yes
Number of LED´s	2

ATEX

Explosion protection categories for gases	None

Explosion protected category for dusts	None

Dimensions

Dimensions of the sensor	
- Length of sensor	99.5
- Diameter of sensor	M30

Pin assignment

1 - A1 Ue	(1)
2 - X1 Safety input 1	(2)
3 - A2 GND	(3)
4 - Y1 Safety output 1	(4)
5 - SD serial diagnostic output	(5)
6 - X2 Safety input 2	(6)
7 - Y2 Safety output 2	(7)
8 - IN serial diagnostic input	(8)

notice

Requirements for the safety monitoring module	The safety monitoring module must tolerate internal functional tests of the safety outputs for 250 µs –1500 µs. The 250 µs switch-off time of the safety sensor additionally will be extended depending on the cable length and the capacity of the cable used. Typically, a switch-off time of 500 µs is reached with a 100 m connecting cable.

Included in delivery

Actuators must be ordered separately.	
Mounting accessories Nuts M 18 x 1	2 piece

Indication legend

see drawing: Characteristic curve	
S	Switch distance
V	Axial offset
S_{on}	Switch-on distance
S_{off}	Switch-off distance
S_h	Hysteresis area
S_{ao}	Ensured switch distance ON
S_{ar}	Ensured switch distance OFF

Ordering code

CSS 30S-**(1)**-M-ST

(1)

D	with Diagnostic output
SD	serial diagnostic output

Documents

Operating instructions and Declaration of conformity (nl) 311 kB, 13.12.2016

Code: mrl_css30s_nl

Operating instructions and Declaration of conformity (pt) 321 kB, 17.03.2017
Code: mrl_css30s_pt

Operating instructions and Declaration of conformity (jp) 412 kB, 09.10.2017
Code: mrl_css30s_jp

Operating instructions and Declaration of conformity (de) 372 kB, 18.11.2016
Code: mrl_css30s_de

Operating instructions and Declaration of conformity (fr) 313 kB, 24.11.2016
Code: mrl_css30s_fr

Operating instructions and Declaration of conformity (en) 381 kB, 18.11.2016
Code: mrl_css30s_en

Operating instructions and Declaration of conformity (es) 314 kB, 22.11.2016
Code: mrl_css30s_es

Operating instructions and Declaration of conformity (it) 316 kB, 09.02.2017
Code: mrl_css30s_it

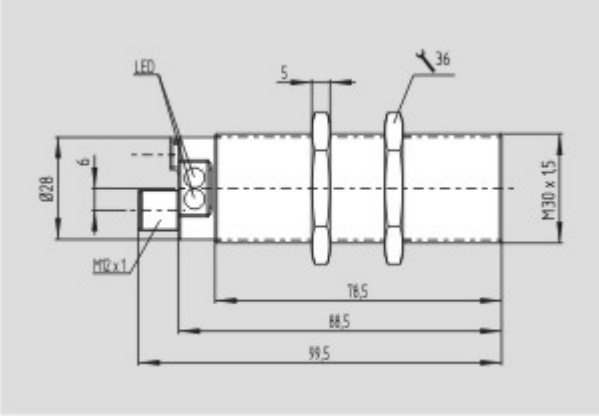
Operating instructions and Declaration of conformity (pl) 335 kB, 16.02.2017
Code: mrl_css30s_pl

BG-test certificate (de, en) 518 kB, 23.10.2014
Code: z_cssp04

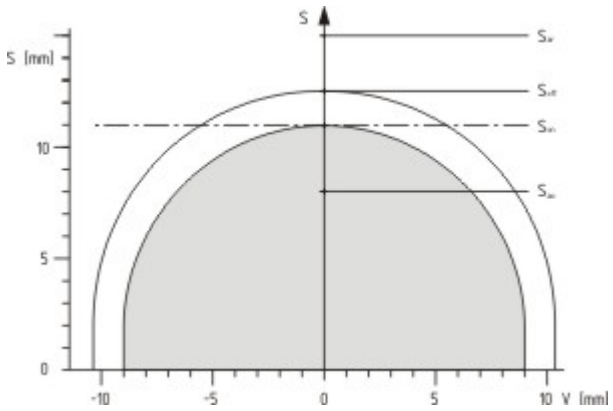
Brochure (de) 6 MB, 15.02.2018
Code: b_css_brosch09_de

Brochure (en) 6 MB, 15.02.2018
Code: b_css_brosch09_en

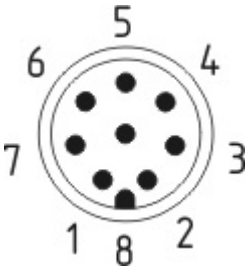
Images



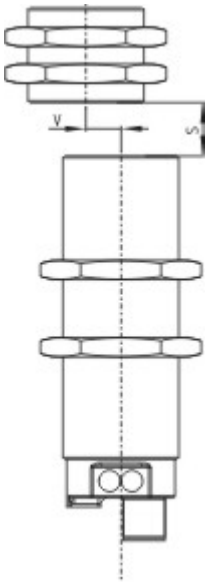
Dimensional drawing (basic component)



Characteristic curve



Contact arrangement



Operating principle

System components

Actuator

101193607 - CST 30S-1

• Stainless steel enclosure

Safety control modules

SRB031MC

• 1 Signalling output
• 3 safety contacts, STOP 1
• Drop-out delay can be set between 0,4 to 1,5 s
• Suitable for signal processing of potential-free outputs, e.g. emergency stop command devices, position switches and solenoid interlocks
• Suitable for signal processing of outputs connected to potentials (AOPDs), e.g. safety light grids/curtains
• Fit for signal evaluation of outputs of safety magnetic switches

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SRB 301LC/B

• Fit for signal evaluation of outputs of safety magnetic switches (to this end, integrated current and voltage limiters)
• Suitable for signal processing of potential-free outputs, e.g. emergency stop command devices, position switches and solenoid interlocks
• Suitable for signal processing of outputs connected to potentials (AOPDs), e.g. safety light grids/curtains
• 3 safety contacts, STOP 0
• 1 Signalling output

SRB 301MC

• Fit for signal evaluation of outputs of safety magnetic switches
• 3 safety contacts, STOP 0
• 1 Signalling output
• Suitable for signal processing of outputs connected to potentials (AOPDs), e.g. safety light grids/curtains
• Suitable for signal processing of potential-free outputs, e.g. emergency stop command devices, position switches and solenoid interlocks

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SRB301ST

• Suitable for signal processing of potential-free outputs, e.g. emergency stop command devices, position switches and solenoid interlocks
• Suitable for signal processing of outputs connected to potentials (AOPDs), e.g. safety light grids/curtains
• Fit for signal evaluation of outputs of safety magnetic switches
• 3 safety contacts, STOP 0
• 1 Signalling output

SRB304ST

• Suitable for signal processing of potential-free outputs, e.g. emergency stop command devices, position switches and solenoid interlocks
• Suitable for signal processing of outputs connected to potentials (AOPDs), e.g. safety light grids/curtains
• Fit for signal evaluation of outputs of safety magnetic switches
• 3 safety contacts, STOP 0
• 4 Signalling outputs

SRB324ST

• Suitable for signal processing of potential-free outputs, e.g. emergency stop command devices, position switches and solenoid interlocks
• Suitable for signal processing of outputs connected to potentials (AOPDs), e.g. safety light grids/curtains
• 3 safety contacts, STOP 0;
2 safety contacts, STOP 1 (adjustable 1 … 30 s)
• 4 Signalling outputs
• Optional: Short-circuit recognition, Manual reset with edge detection in fail-safe circuit, Automatic reset function

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101170036 - AES 1135

• Monitoring of BNS range magnetic safety sensors

• 1 safety contact, STOP 0
• 2 Signalling outputs

101170049 - AES 1235

• Monitoring of BNS range magnetic safety sensors
• 2 safety contacts, STOP 0
• 2 Signalling outputs

Mounting accessories

101068520 - MOUNTING CLAMP H 30

• For a smooth fitting of the proximity switches with cylindric shape Ø 30 mm or thread M30

K.A. Schmersal GmbH & Co. KG, Möddinghofe 30, D-42279 Wuppertal
The data and values have been checked throroughly. Technical modifications and errors excepted.
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