

## Datasheet - CSS 11-300-SD-M-ST

Safety sensors / CSS 300



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

- Thermoplastic enclosure
- Max. 31 sensors can be wired in series.
- 8-pole Connector M12,
- 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 11-300-SD-M-ST
Article number	101213905
EAN Code	4030661405667
eCl@ss	27-27-24-01

### Approval


Approval



### Classification

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

### Global Properties

Permanent light	CSS 300
Standards	IEC 60947-5-3, EN ISO 13849-1
Compliance with the Directives (Y/N) 	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	Plastic
- Material of the active surface	Plastic
Housing construction form	cylinder, thread
Weight	
Diagnostic output (Y/N)	Yes
Reaction time	< 60
Duration of risk	< 60
Cascadable (Y/N)	Yes
Recommended actuator	CST 30S-1

### Mechanical data

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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
resistance to shock	30 g / 11 ms
Resistance to vibration	10 ... 55 HZ, Amplitude 1 mm

### Ambient conditions

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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
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)

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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	150 mA short-circuit proof
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
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### 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

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 $\mu$ s –1500 $\mu$ s. The 250 $\mu$ s 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 $\mu$ s is reached with a 100 m connecting cable.
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## 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 <sub>on</sub>	Switch-on distance
S <sub>off</sub>	Switch-off distance
S <sub>h</sub>	Hysteresis area
S <sub>ao</sub>	Ensured switch distance ON
S <sub>ar</sub>	Ensured switch distance OFF

## Ordering code

CSS 11-300-(1)-M-ST

(1)

D	with Diagnostic output
SD	serial diagnostic output

## Documents

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**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

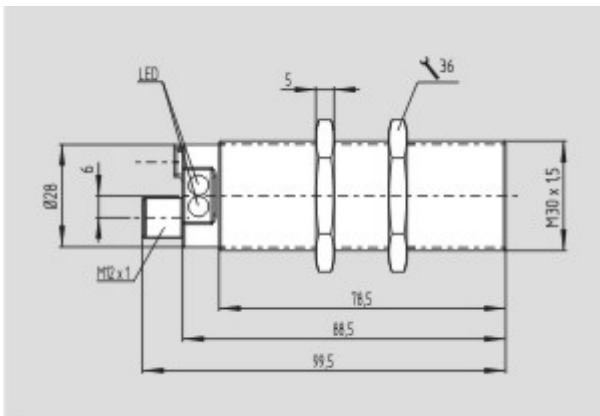
Code: b\_css\_brosch09\_de

**Brochure (en)** 6 MB, 15.02.2018

Code: b\_css\_brosch09\_en

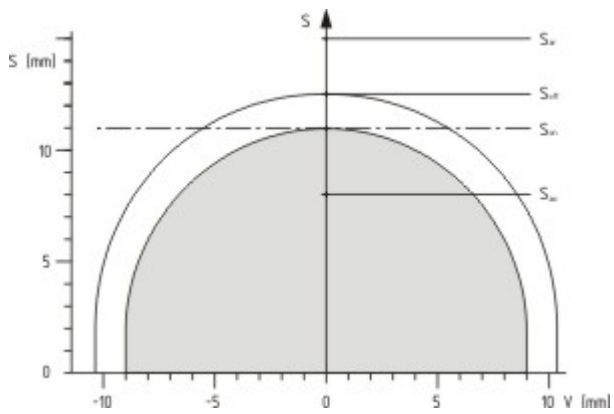
## Images

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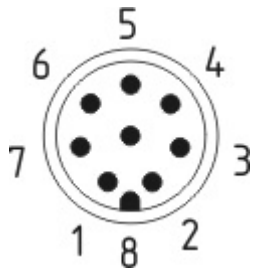


Dimensional drawing (basic component)

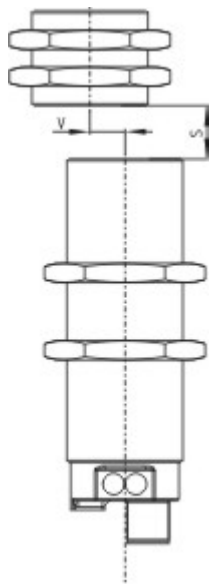
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Characteristic curve



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



#### **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



#### **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

#### **101170036 - AES 1135**

- Monitoring of BNS range magnetic safety sensors



- 1 safety contact, STOP 0
- 2 Signalling outputs



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#### **101170049 - AES 1235**

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

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### **Mounting accessories**



#### **101068520 - MOUNTING CLAMP H 30**

- For a smooth fitting of the proximity switches with cylindric shape  $\varnothing$  30 mm or thread M30

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The data and values have been checked thoroughly. Technical modifications and errors excepted.

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