



# DS500-P411

Dx500

LONG RANGE DISTANCE SENSORS

**SICK**  
Sensor Intelligence.



### Ordering information

Type	Part no.
DS500-P411	1040478

Other models and accessories → [www.sick.com/Dx500](http://www.sick.com/Dx500)



### Detailed technical data

#### Mechanics/electronics

<b>Supply voltage <math>V_s</math></b>	DC 10 V ... 30 V, reverse polarity protected $U_V \geq$ DC 24 V for devices with heating
<b>Ripple</b>	5 V <sub>pp</sub> <sup>1)</sup>
<b>Power consumption</b>	Typ. 22 W
<b>Initialization time</b>	500 ms
<b>Housing material</b>	Metal (Aluminum die cast)
<b>Window material</b>	Glass
<b>Connection type</b>	Male connector, M12, 5-pin
<b>Weight</b>	1,000 g
<b>Dimensions (W x H x D)</b>	69 mm x 50 mm x 153 mm
<b>Enclosure rating</b>	IP65
<b>Protection class</b>	II <sup>2)</sup>

<sup>1)</sup> May not fall short of or exceed  $V_S$  tolerances.

<sup>2)</sup> Reference voltage DC 32 V.

#### Safety-related parameters

<b>MTTF<sub>D</sub></b>	101 years
<b>DC<sub>avg</sub></b>	0%

#### Performance

<b>Measurement range min ... max:</b>	0.2 m ... 7 m, 90% remission factor <sup>1) 2)</sup> 0.8 m ... 7 m, 6% remission factor <sup>1) 2)</sup>
<b>Target</b>	Natural objects
<b>Resolution</b>	≤ 1 mm
<b>Repeatability</b>	1 mm
<b>Accuracy</b>	± 3 mm
<b>Response time</b>	150 ms

<sup>1)</sup> In ambient light, max. 1 klx of constant light.

<sup>2)</sup> Unique up to 7 m.

<sup>3)</sup> Average service life of 50,000 h at  $T_A = +25$  °C.

<b>Output time</b>	150 ms
<b>Light source</b>	Laser, red <sup>3)</sup> visible red light
<b>Laser class</b>	2, complies with 21 CFR 1040.10 and 1040.11 except for the conformance according to "Laser Notice No. 50" from June 24, 2007 (IEC 60825-1:2014, EN 60825-1:2014)
<b>Typ. light spot size (distance)</b>	10 mm (at 7 m) 45 mm (at 30 m) 100 mm (at 70 m)

<sup>1)</sup> In ambient light, max. 1 klx of constant light.

<sup>2)</sup> Unique up to 7 m.

<sup>3)</sup> Average service life of 50,000 h at T<sub>A</sub> = +25 °C.

## Interfaces

<b>Digital output</b>	
Number	2 <sup>1)</sup>
Type	PNP
Maximum output current I <sub>A</sub>	≤ 100 mA
<b>Multifunctional input (MF)</b>	PNP <sup>2) 3)</sup>
<b>Hysteresis</b>	± 6 %

<sup>1)</sup> HIGH = UV - (<2,5 V) / LOW = < 2,5 V; active HIGH / aktive LOW konfigurierbar.

<sup>2)</sup> Refer to function MF input.

<sup>3)</sup> HIGH = UV - (<2,5 V) / LOW = < 2,5 V; active HIGH.

## Ambient data

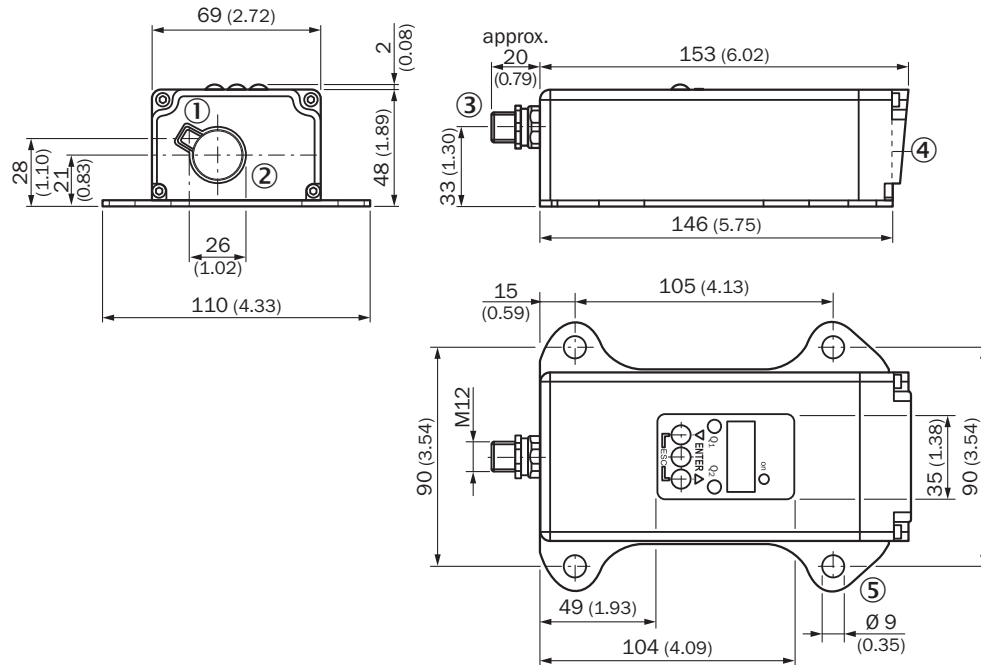
<b>Electromagnetic compatibility (EMC)</b>	EN 61000-6-2, EN 55011 EN 60947-5-7: 2003-9
<b>Ambient temperature, operation</b>	-40 °C ... +45 °C, operation with heating -40 °C ... +75 °C, operation with cooling case
<b>Ambient temperature, storage</b>	-25 °C ... +75 °C
<b>Temperature drift</b>	Typ. 0.05 mm/K
<b>Typ. Ambient light immunity</b>	≤ 3,000 lx
<b>Mechanical load</b>	Shock: (EN 600 68-2-27) Sine: (EN 600 68-2-6) Noise: (EN 600 68-2-64)

## Classifications

<b>eCl@ss 5.0</b>	27270801
<b>eCl@ss 5.1.4</b>	27270801
<b>eCl@ss 6.0</b>	27270801
<b>eCl@ss 6.2</b>	27270801
<b>eCl@ss 7.0</b>	27270801
<b>eCl@ss 8.0</b>	27270801
<b>eCl@ss 8.1</b>	27270801
<b>eCl@ss 9.0</b>	27270801
<b>eCl@ss 10.0</b>	27270801
<b>eCl@ss 11.0</b>	27270801
<b>eCl@ss 12.0</b>	27270916

<b>ETIM 5.0</b>	EC001825
<b>ETIM 6.0</b>	EC001825
<b>ETIM 7.0</b>	EC001825
<b>ETIM 8.0</b>	EC001825
<b>UNSPSC 16.0901</b>	41111613

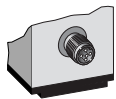
### Dimensional drawing (Dimensions in mm (inch))



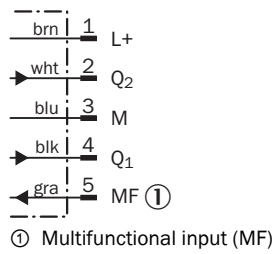
- ① Optical axis, sender
- ② Optical axis, receiver
- ③ Male connector M12, 5-pin
- ④ Zero level
- ⑤ Fixing hole

### Connection type

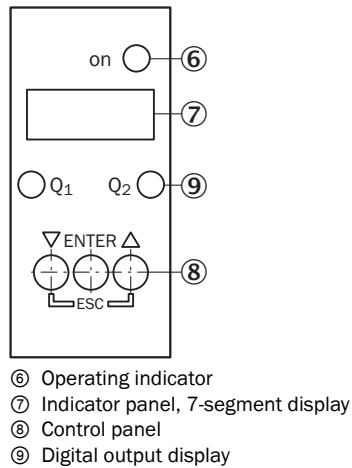
Male connector M12, 5-pin



## Connection diagram



## Adjustment possible



## Functional principle

Additional information

Extern Teach ET via MF ①

Teach-in	MF active	Model
Q <sub>1</sub>	100 ms	Current measurement value is used as switching threshold
$\bar{Q}_1$	200 ms	
Q <sub>2</sub>	300 ms	
$\bar{Q}_2$	400 ms	
Laser off	> 450 ms	

① Multi functional input.

Error performance or no object in measurement range

### Measurement not possible

Measurement value output display	Switching outputs
0.000	Switching stage $\hat{=}$ measurement value 0 m

### No object in measurement range or laser off

Measurement value output display	Switching outputs
99.99	Switching stage $\hat{=}$ measurement value 99.99 m


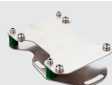
Function MF input

### Function MF input

Teach in	$Q_1$	60 ms < MF < 150 ms
Teach in	$\bar{Q}_1$	150 ms < MF < 250 ms
Teach in	$Q_2$	250 ms < MF < 350 ms
Teach in	$\bar{Q}_2$	350 ms < MF < 450 ms
Laser off	–	450 ms < MF < ∞

### Recommended accessories

Other models and accessories → [www.sick.com/Dx500](http://www.sick.com/Dx500)

	Brief description	Type	Part no.
Plug connectors and cables			
	Head A: female connector, M12, 5-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 2 m	YF2A15-020VB5XLEAX	2096239
	Head A: female connector, M12, 5-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m	YF2A15-050VB5XLEAX	2096240
	Head A: female connector, M12, 5-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 10 m	YF2A15-100VB5XLEAX	2096241
Terminal and alignment brackets			
	Alignment unit for DS/DT500, stainless steel (1.4541), incl. mounting material, mounting hardware included	BEF-DSDT	2031377

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

**For us, that is “Sensor Intelligence.”**

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)