



## Long range distance sensors Dx500, DS500

DS500-N411



**Model Name** > [DS500-N411](#)  
**Part No.** > [1040482](#)



#### At a glance

- Measurement range 0.2 m ... 70 m
- Two switching outputs
- Highest measurement resolution, repeatability and accuracy without a reflector
- Simple adjustment using red laser light
- Metal housing with integrated heating option for cold store applications
- Weather protection housing optional
- Alignment bracket optional

#### Your benefits

- High-precision switching reliably indicates product position for exact machine control, reducing scrap and increasing throughput
- Red laser light as well as adjustable mounting brackets (optional accessory) enable fast and easy alignment, ensuring on-time and cost-effective installation
- A tough metal housing with internal heating ensures reliability in rough ambient conditions, such as cold store warehouses
- User-friendly display with easy-to-use menu along with external PC/PLC programming offers fast and costefficient setup
- Two individual programmable switching outputs offer flexible integration into application
- Wide measurement range of 0.2 m to 70 m enables automated measurement on natural targets where reflectors can't be used



#### Performance

|                                  |                                                       |
|----------------------------------|-------------------------------------------------------|
| Measuring range <sup>1)</sup> :  | 0.2 m ... 7 m, 6 % ... 90 % remission                 |
| Resolution:                      | ≤ 1 mm                                                |
| Accuracy:                        | ± 3 mm                                                |
| Light source <sup>2)</sup> :     | Laser, red                                            |
| Typ. light spot size (distance): | 10 mm (at 7 m)<br>100 mm (at 70 m)<br>45 mm (at 30 m) |
| Response time:                   | 150 ms                                                |
| Laser class:                     | 2 (EN 60825/21 CFR 1.040)                             |

<sup>1)</sup> Unique up to 7 m <sup>2)</sup> Average service life of 50,000 h at T<sub>A</sub> = +25 °C

## Interfaces

---

|                                                            |                |
|------------------------------------------------------------|----------------|
| Output type <sup>1)</sup> :                                | NPN (< 100 mA) |
| Hysteresis:                                                | ± 6 %          |
| Multifunctional input (MF) <sup>2)</sup> , <sup>3)</sup> : | < 2 V          |

<sup>1)</sup> PNP: HIGH =  $V_S - (< 2.5 \text{ V})$  / LOW = < 2.5 V; NPN: HIGH = < 2.5 V / LOW =  $V_S$  <sup>2)</sup> Refer to function MF input <sup>3)</sup> NPN < 2 V; PNP > 2 V <  $V_S$

## Mechanics/electronics

---

|                        |                                                                                           |
|------------------------|-------------------------------------------------------------------------------------------|
| Supply voltage $V_S$ : | DC 10 V ... 30 V, reverse polarity protected, $U_S \geq$ DC 24 V for devices with heating |
| Ripple <sup>1)</sup> : | 5 Vpp                                                                                     |
| Initialization time:   | 500 ms                                                                                    |
| Weight:                | 1,000 g                                                                                   |
| Power consumption:     | Typ. 22 W                                                                                 |
| Connection type:       | Connector M12, 5-pin                                                                      |

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

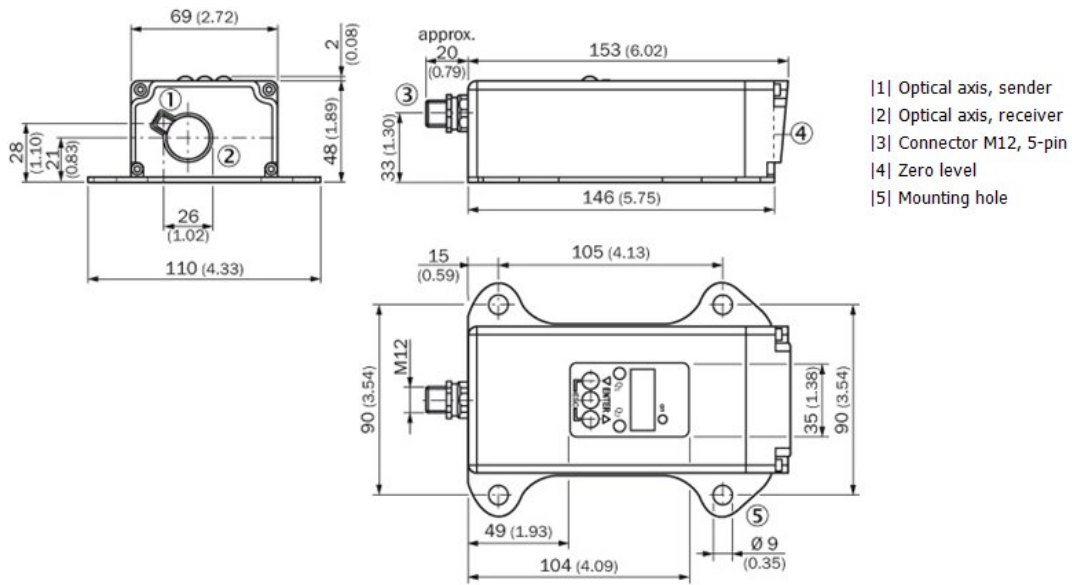
## Ambient data

---

|                                      |                                                                                                               |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Enclosure rating:                    | IP 65                                                                                                         |
| Protection class <sup>1)</sup> :     | II                                                                                                            |
| Temperature drift:                   | Typ. 0.05 mm/K                                                                                                |
| Ambient temperature:                 | Operation with heating: -40 ... 50 °C<br>Operation with cooling case: -40 ... 75 °C<br>Storage: -25 ... 75 °C |
| Mechanical load:                     | Noise: EN 600 68-2-64<br>Shock: EN 600 68-2-27<br>Sine: EN 600 68-2-6                                         |
| Electromagnetic compatibility (EMC): | EN 61000-6-2, EN 55011/EN 60947-5-7: 2003-9                                                                   |

<sup>1)</sup> Reference voltage DC 32 V

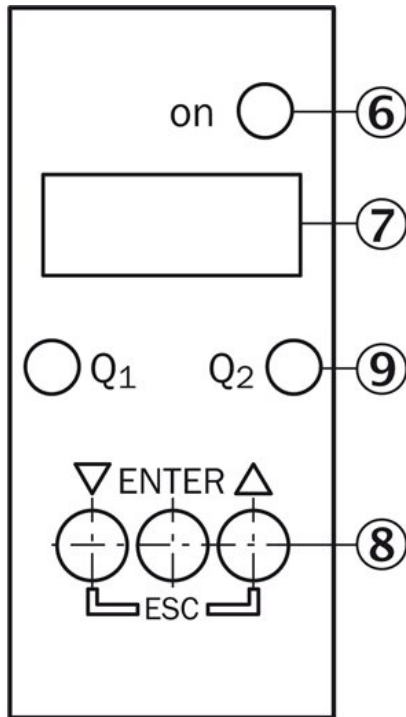
## Dimensional drawing



- |1| Optical axis, sender
- |2| Optical axis, receiver
- |3| Connector M12, 5-pin
- |4| Zero level
- |5| Mounting hole

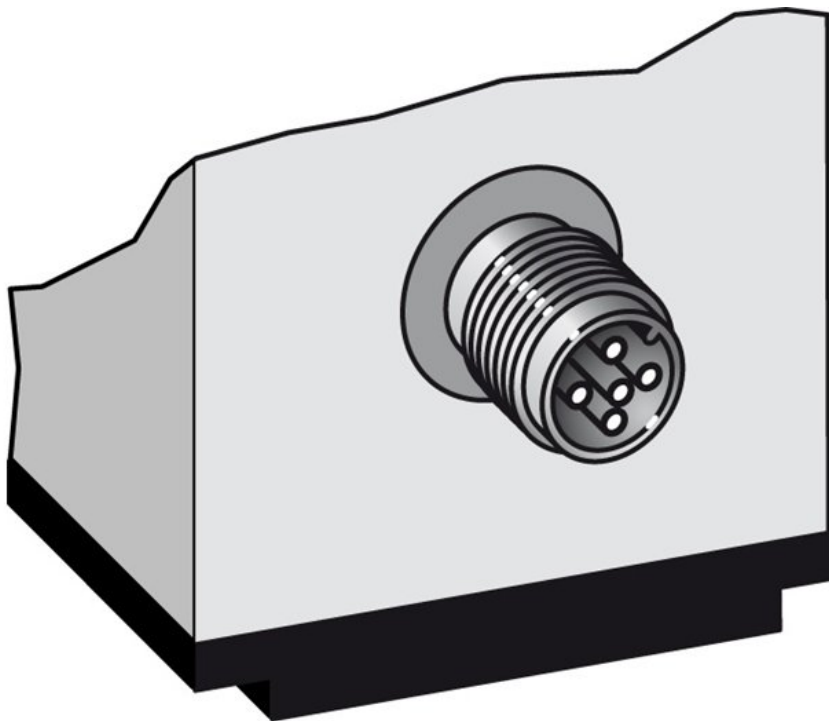
All dimensions in mm (inch)

## Adjustment possible

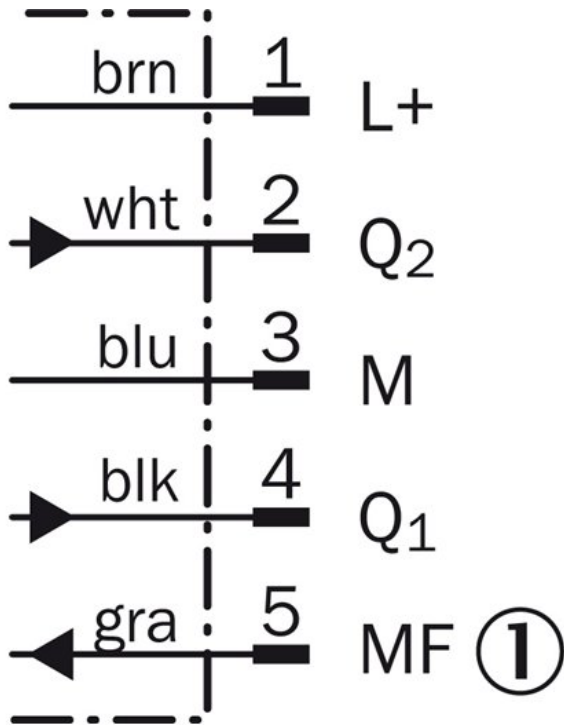


- |6| Operating indicator
- |7| Indicator panel, 7-segment display
- |8| Control panel
- |9| Switching output indicator

Connection type



Connection diagram



[1] Multifunctional input (MF)

## Function MF input

### Function MF input

|           |             |                                               |
|-----------|-------------|-----------------------------------------------|
| Teach in  | $Q_1$       | $60 \text{ ms} < \text{MF} < 150 \text{ ms}$  |
| Teach in  | $\bar{Q}_1$ | $150 \text{ ms} < \text{MF} < 250 \text{ ms}$ |
| Teach in  | $Q_2$       | $250 \text{ ms} < \text{MF} < 350 \text{ ms}$ |
| Teach in  | $\bar{Q}_2$ | $350 \text{ ms} < \text{MF} < 450 \text{ ms}$ |
| Laser off | -           | $450 \text{ ms} < \text{MF} < \infty$         |

## Additional information

### Extern Teach ET via MF ①

| Teach-In    | MF active | Model                                                    |
|-------------|-----------|----------------------------------------------------------|
| $Q_1$       | 100 ms    | Current measurement value is used as switching threshold |
| $\bar{Q}_1$ | 200 ms    |                                                          |
| $Q_2$       | 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 |

**Australia**

Phone +61 3 9457 0600  
1800 334 802 – tollfree  
E-Mail sales@sick.com.au

**Belgium/Luxembourg**

Phone +32 (0)2 466 55 66  
E-Mail info@sick.be

**Brasil**

Phone +55 11 3215-4900  
E-Mail sac@sick.com.br

**Canada**

Phone +1 905 771 14 44  
E-Mail information@sick.com

**Ceská Republika**

Phone +420 2 57 91 18 50  
E-Mail sick@sick.cz

**China**

Phone +86 4000 121 000  
E-Mail info.china@sick.net.cn  
Phone +852-2153 6300  
E-Mail ghk@sick.com.hk

**Danmark**

Phone +45 45 82 64 00  
E-Mail sick@sick.dk

**Deutschland**

Phone +49 211 5301-301  
E-Mail kundenservice@sick.de

**España**

Phone +34 93 480 31 00  
E-Mail info@sick.es

**France**

Phone +33 1 64 62 35 00  
E-Mail info@sick.fr

**Great Britain**

Phone +44 (0)1727 831121  
E-Mail info@sick.co.uk

**India**

Phone +91-22-4033 8333  
E-Mail info@sick-india.com

**Israel**

Phone +972-4-6801000  
E-Mail info@sick-sensors.com

**Italia**

Phone +39 02 27 43 41  
E-Mail info@sick.it

**Japan**

Phone +81 (0)3 3358 1341  
E-Mail support@sick.jp

**Magyarország**

Phone +36 1 371 2680  
E-Mail office@sick.hu

**Nederlands**

Phone +31 (0)30 229 25 44  
E-Mail info@sick.nl

**Norge**

Phone +47 67 81 50 00  
E-Mail austefjord@sick.no

**Österreich**

Phone +43 (0)22 36 62 28 8-0  
E-Mail office@sick.at

**Polska**

Phone +48 22 837 40 50  
E-Mail info@sick.pl

**România**

Phone +40 356 171 120  
E-Mail office@sick.ro

**Russia**

Phone +7-495-775-05-30  
E-Mail info@sick.ru

**Schweiz**

Phone +41 41 619 29 39  
E-Mail contact@sick.ch

**Singapore**

Phone +65 6744 3732  
E-Mail admin@sicksgp.com.sg

**Slovenija**

Phone +386 (0)1-47 69 990  
E-Mail office@sick.si

**South Africa**

Phone +27 11 472 3733  
E-Mail info@sickautomation.co.za

**South Korea**

Phone +82 2 786 6321/4  
E-Mail info@sickkorea.net

**Suomi**

Phone +358-9-25 15 800  
E-Mail sick@sick.fi

**Sverige**

Phone +46 10 110 10 00  
E-Mail info@sick.se

**Taiwan**

Phone +886-2-2375-6288  
E-Mail sales@sick.com.tw

**Türkiye**

Phone +90 (216) 528 50 00  
E-Mail info@sick.com.tr

**United Arab Emirates**

Phone +971 (0) 4 8865 878  
E-Mail info@sick.ae

**USA/México**

Phone +1(952) 941-6780  
1 800-325-7425 – tollfree  
E-Mail info@sickusa.com

More representatives and agencies  
at [www.sick.com](http://www.sick.com)