

DS 500/DT 500

Laser sensor measures distances to 18 m – on black material in proximity mode



a suitable weather protection hood are available for outdoor use. DS 500 – distance sensor with two settable switching outputs. Suitable for precise and reliable detection of objects – even with black surfaces – up to a distance of 18 m. The high resolution of the sensor provides exact background suppression even with material with a bright surface in the background.

Typical applications are:

- Anticollision applications,
- Detecting small parts at large scanning distances,
- Part detection in the handling sector.

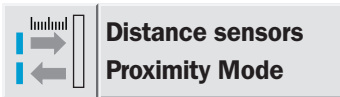
DT 500 – distance sensor with analog output or optionally with serial RS 422 measurement data output. Universal use in measurement ranges up to 18 m on back objects to be detected. Measurement range beginning and end can be set freely, i.e., adapted optimally to the task. With a resolution of one millimeter, the DT 500 achieves accuracy of 3 mm and consequently can be used for precise measurement tasks.


Typical applications are:

- Contour detection,
- diameter detection,
- difference measurements,
- positioning of parts,
- measuring stack heights/ classifying stacks.



The sensors of the DS/DT 500 series are also suitable for rough ambient conditions thanks to their sturdy metal housing. According to the principle of time of flight measurement, a red light laser detects the precise distance to an object. The measurement laser can be seen on the object to be detected similar to the point of a laser pointer; as a result, the measurement point is clearly visible even at greater distances. An integrated display signals the current measurement value and serves for setting switching limits and measurement range in a very easy way. Models with integrated heating and

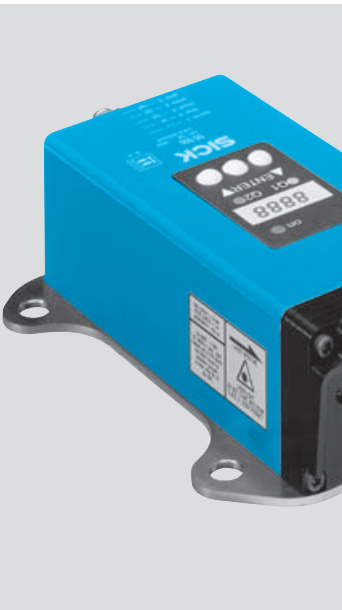
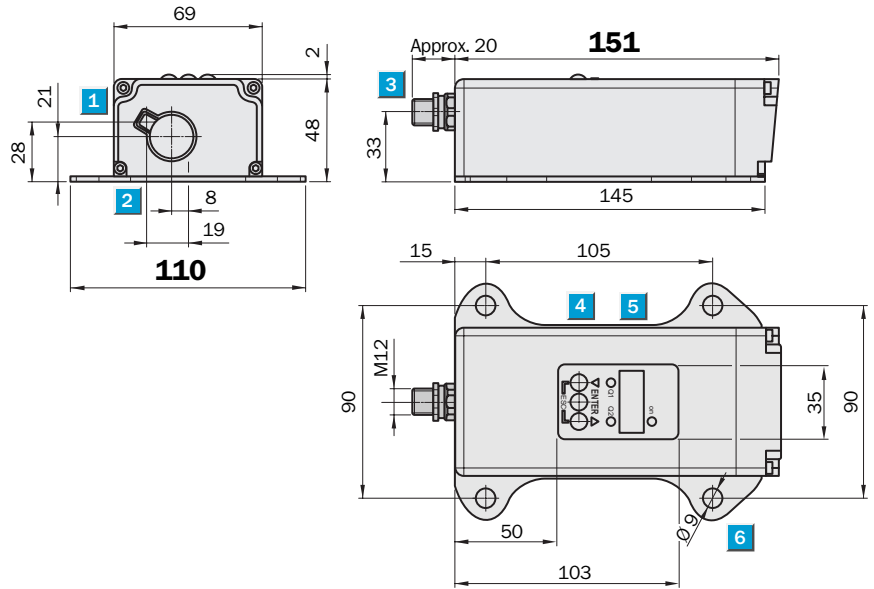


 **Scanning distance**
0.2 ... 18 m

Distance sensor

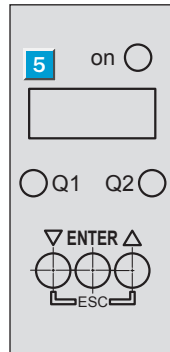
- High measurement accuracy thanks to time of flight measurement
- Simple alignment using red laser light
- Two distance switching outputs
- Heatable metal housing
- Weather protection housing optional
- Alignment bracket optional

Dimensional drawing



Adjustments possible

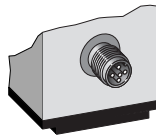
All types



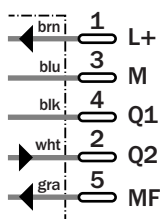
- 1 Optical axis – sender
- 2 Optical axis – receiver
- 3 M12 plug, 5-pin
- 4 Operating components
- 5 Indicator
- 6 Mounting hole

Connection type

All types



5-pin, M12



Accessories

- Cables and connectors
- Mounting systems
- Special accessories

| Teach-in | MF active | Model |
|----------|-----------|------------------------------|
| Q1 | 100 ms | Current measurement value is |
| Q̄1 | 200 ms | |
| Q2 | 300 ms | used as switching threshold |
| Q̄2 | 400 ms | |

| Technical Data | | DS500- | P111 | P211 | N111 | N211 | | | | | | |
|---|-----------------|--------------------------------------|------|------|------|------|--|--|--|--|--|--|
| Scanning distance | | 0.2 ... 18 m (black), 6 % remission | | | | | | | | | | |
| | | 0.2 ... 30 m (white), 90 % remission | | | | | | | | | | |
| Light spot diameter | | 30 mm at 20 m | | | | | | | | | | |
| Light source ¹⁾, light type | | Laser diode, red light | | | | | | | | | | |
| Laser class | | 2 (EN 60825/21 CFR 1040) | | | | | | | | | | |
| Supply voltage V_S²⁾ | | 10 ... 30 V DC | | | | | | | | | | |
| Ripple ³⁾ | | 5 V _{PP} | | | | | | | | | | |
| Power consumption typ. without heating | | 2 W | | | | | | | | | | |
| | with heating | 22 W | | | | | | | | | | |
| Response time | | 250 ms | | | | | | | | | | |
| Switching accuracy | | ± 3 mm | | | | | | | | | | |
| Temperature drift | | Typ. 0.05 mm/K | | | | | | | | | | |
| Switching outputs Q1, Q2 | | PNP | | | | | | | | | | |
| | | NPN | | | | | | | | | | |
| External Teach ET | | Teach: > 12 V < V _S | | | | | | | | | | |
| | | Teach: < 2 V | | | | | | | | | | |
| | | Free-running < 2 V or unswitched | | | | | | | | | | |
| | | Free-running > 12 V < V _S | | | | | | | | | | |
| VDE protection class ⁴⁾ | | <input type="checkbox"/> | | | | | | | | | | |
| Enclosure rating | | IP 65 | | | | | | | | | | |
| Ambient temperature | without heating | Operation -10 °C ... +50 °C | | | | | | | | | | |
| | with heating | Operation -40 °C ... +50 °C | | | | | | | | | | |
| | | Storage -25 °C ... +75 °C | | | | | | | | | | |
| Weight | | Approx. 1000 g | | | | | | | | | | |
| Initialisation period | | Typ. 500 ms | | | | | | | | | | |
| EMC | | EN 61000-6-2, EN 55011 | | | | | | | | | | |
| Mechanical load | | Shock: EN 600 86-2-27/-2-29 | | | | | | | | | | |
| | | Sine: EN 600 68-2-6 | | | | | | | | | | |
| | | Noise: EN 600 68-2-64 | | | | | | | | | | |

¹⁾ Average service life 50,000 h at T_A = +25 °C

²⁾ Reverse-polarity protected

³⁾ May not exceed or fall short of V_S tolerances

⁴⁾ Reference voltage 32 V DC

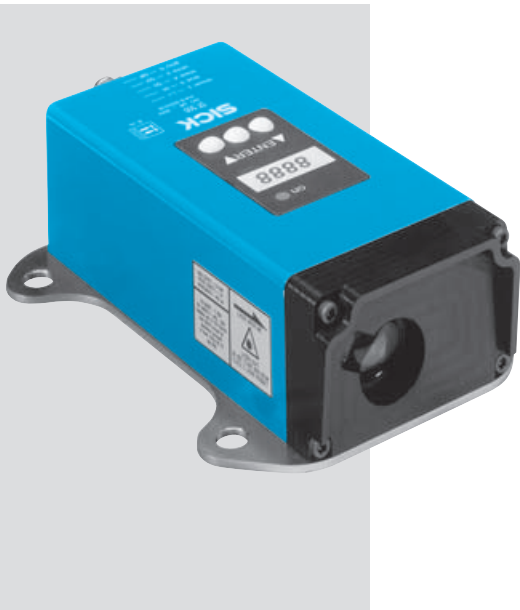
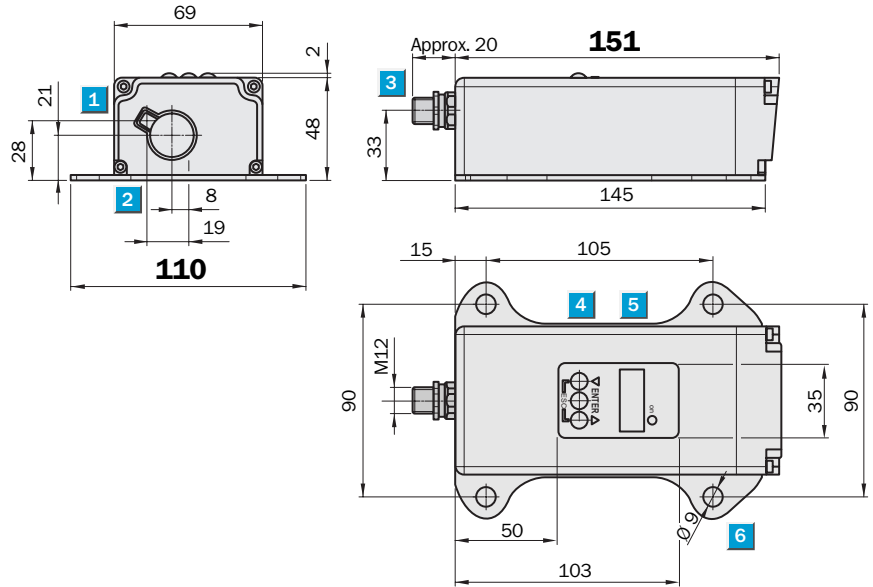
| Error performance or no object in visibility field | | Order information | |
|--|--|-------------------|-----------|
| | | Type | Part no. |
| Error: | Measurement value output display: 0.000 | DS500-P111 | 1 026 519 |
| | Switching outputs: Switching stage \cong measurement value 0 m | DS500-P211 | 1 026 520 |
| No object in visibility field: | Measurement value output display: 99.99 | DS500-N111 | 1 026 512 |
| | Switching outputs: Switching stage \cong measurement value 99.99 m | DS500-N211 | 1 026 522 |

Measurement range
0.2 ... 18 m

Distance sensor

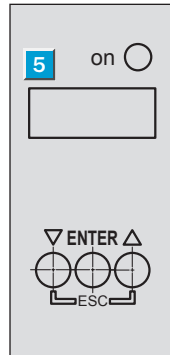
- High measurement accuracy thanks to time of flight measurement
- Simple alignment using red laser light
- Analog current interface
- Serial RS 422 data output
- Heatable metal housing
- Weather protection housing optional
- Alignment bracket optional

Dimensional drawing



Adjustments possible

All types

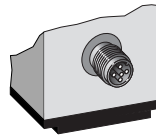
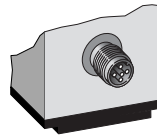


- 1 Optical axis – sender
- 2 Optical axis – receiver
- 3 M12 plug, 5-pin
- 4 Operating components
- 5 Indicator
- 6 Mounting hole

Connection type

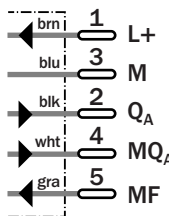
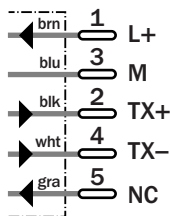
Serial (-A .. 2)

Analogue (-A .. 1)



5-pin, M12

5-pin, M12



Accessories

Cables and connectors

Mounting systems

Special accessories

| Technical Data | | DT500- | A111 | A211 | A112 | A212 | | | | | | |
|--|--------------------------------------|-----------|-------------------|------|------|------|--|--|--|--|--|--|
| Measuring range | 0.2 ... 18 m (black), 6 % remission | | | | | | | | | | | |
| | 0.2 ... 30 m (white), 90 % remission | | | | | | | | | | | |
| Accuracy | ±3 mm | | | | | | | | | | | |
| Reproducibility ¹⁾ | 1 mm | | | | | | | | | | | |
| Measured value output | 250 ms | | | | | | | | | | | |
| Temperature drift | Typ. 0.05 mm/K | | | | | | | | | | | |
| Light spot diameter | 30 mm at 20 m | | | | | | | | | | | |
| Resolution | 1 mm | | | | | | | | | | | |
| Light source ²⁾, light type | Laser diode, red light | | | | | | | | | | | |
| Laser class | 2 (EN 60825/21 CFR 1040) | | | | | | | | | | | |
| Supply voltage V_S ³⁾ | 10 ... 30 V DC | | | | | | | | | | | |
| Ripple ⁴⁾ | 5 V _{PP} | | | | | | | | | | | |
| Power consumption typ. without heating | 2 W | | | | | | | | | | | |
| | with heating | 22 W | | | | | | | | | | |
| Analogue output (adjustable) | 0–20 mA/4–20 mA | | | | | | | | | | | |
| Serial interface | RS 422; 19,2 kBd; 8, n, 1 | | | | | | | | | | | |
| Measurement value display in mm ⁵⁾ | 20.000 CR LF | | | | | | | | | | | |
| VDE protection class ⁶⁾ | □ | | | | | | | | | | | |
| Enclosure rating | IP 65 | | | | | | | | | | | |
| Ambient temperature | without heating | Operation | –10 °C ... +50 °C | | | | | | | | | |
| | with heating | Operation | –40 °C ... +50 °C | | | | | | | | | |
| | | Storage | –25 °C ... +75 °C | | | | | | | | | |
| Weight | Approx. 1000 g | | | | | | | | | | | |
| Initialisation period | Typ. 500 ms | | | | | | | | | | | |
| EMC | EN 61000-6-2, EN 55011 | | | | | | | | | | | |
| Mechanical load | Shock: EN 600 86-2-27/-2-29 | | | | | | | | | | | |
| | Sine: EN 600 68-2-6 | | | | | | | | | | | |
| | Noise: EN 600 68-2-64 | | | | | | | | | | | |

¹⁾ Statistical error 1 σ , environmental conditions constant

²⁾ Average service life 50,000 h at $T_A = +25\text{ °C}$

³⁾ Reverse-polarity protected

⁴⁾ May not exceed or fall short of V_S tolerances

⁵⁾ Without point, example output 20,000 mm

⁶⁾ Reference voltage 32 V DC

Error performance or no object in visibility field

Error: Measurement value output display: 0.000
 Analogue interface: 0/3.5 mA
 Serial interface: 00000 CR LF

No object in visibility field:
 Measurement value output display: 99.99
 Analogue interface: 20.5 mA
 Serial interface: 99999 CR LF

Order information

| Type | Part no. |
|------------|-----------|
| DT500-A111 | 1 026 515 |
| DT500-A211 | 1 026 516 |
| DT500-A112 | 1 026 517 |
| DT500-A212 | 1 026 518 |

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The SICK logo consists of the word "SICK" in a bold, blue, sans-serif font. The letters are closely spaced and have a slight shadow effect.