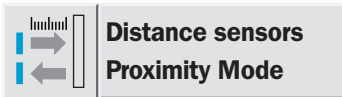


DS 500/DT 500

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



**Distance sensors
Proximity Mode**

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

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:

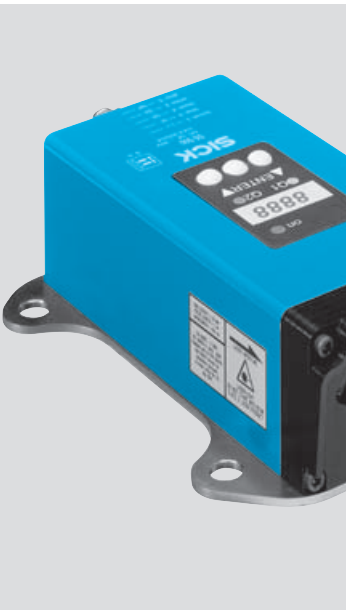
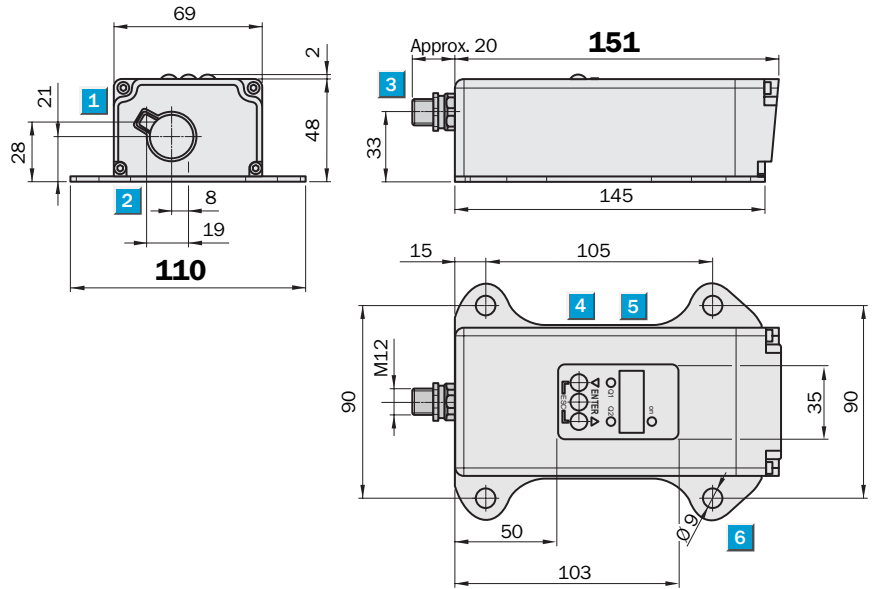
- Contour detection,
- diameter detection,
- difference measurements,
- positioning of parts,
- measuring stack heights/ classifying stacks.



Scanning distance
0.2 ... 18 m
Distance sensor

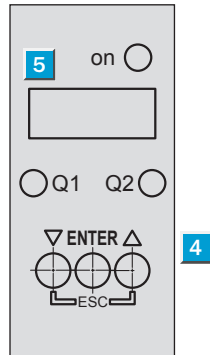
- High measurement accuracy thanks to time of flight measurement
- Simple alignment using red laser light
- Two distance switching outputs
- Heatable metal housing
- Weather protection housing optional
- Alignment bracket optional

Dimensional drawing



Adjustments possible

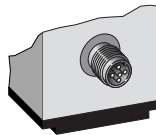
All types



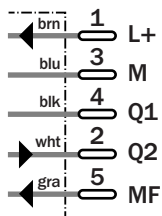
- 1 Optical axis – sender
- 2 Optical axis – receiver
- 3 M12 plug, 5-pin
- 4 Operating components
- 5 Indicator
- 6 Mounting hole

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

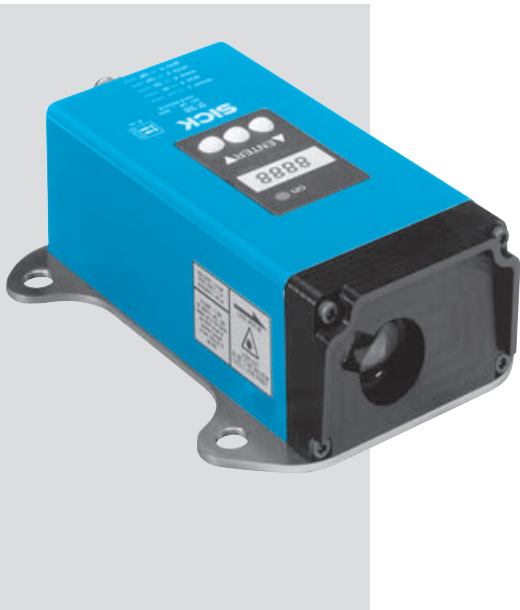
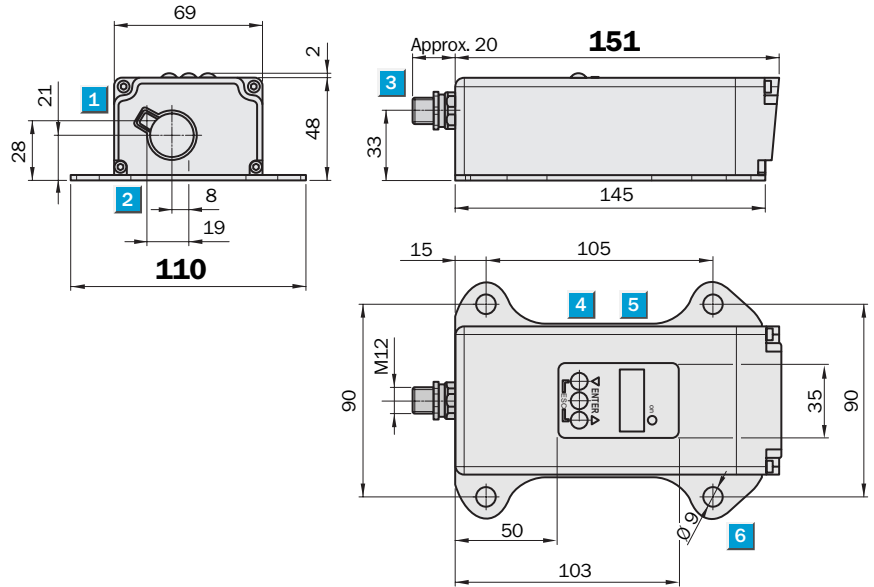
⁴⁾ Reference voltage 32 V DC

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	

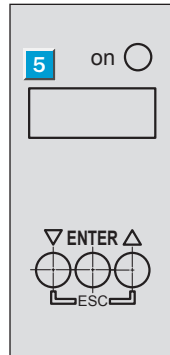
- High measurement accuracy thanks to time of flight measurement
- Simple alignment using red laser light
- Analog current interface
- Serial RS 422 data output
- Heatable metal housing
- Weather protection housing optional
- Alignment bracket optional

Dimensional drawing



Adjustments possible

All types

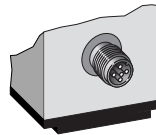
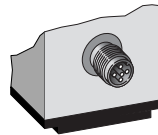


- 1 Optical axis – sender
- 2 Optical axis – receiver
- 3 M12 plug, 5-pin
- 4 Operating components
- 5 Indicator
- 6 Mounting hole

Connection type

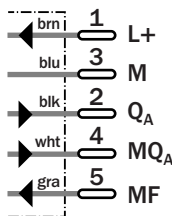
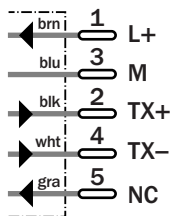
Serial (-A .. 2)

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		Order information	
		Type	Part no.
Error:	Measurement value output display: 0.000	DT500-A111	1 026 515
	Analogue interface: 0/3.5 mA	DT500-A211	1 026 516
	Serial interface: 00000 CR LF	DT500-A112	1 026 517
No object in visibility field:	Measurement value output display: 99.99	DT500-A212	1 026 518
	Analogue interface: 20.5 mA		
	Serial interface: 99999 CR LF		

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T a i w a n

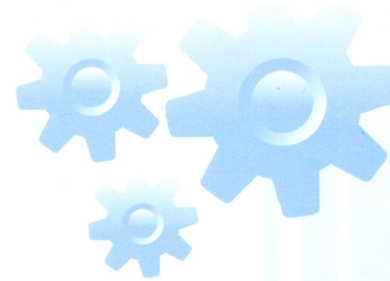
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U S A / C a n a d a / M é x i c o

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E-Mail info@sickusa.com

More representatives and agencies
in all major industrial nations at
www.sick.com

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.

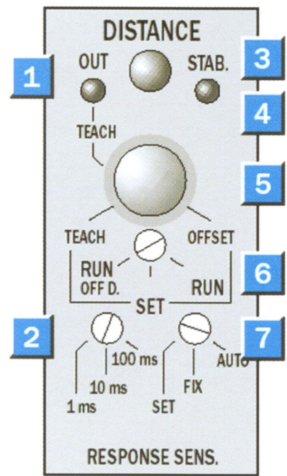
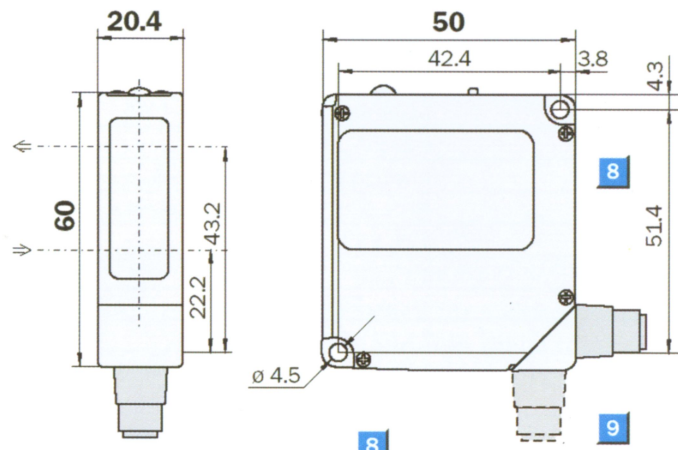


PDS Displacement sensor

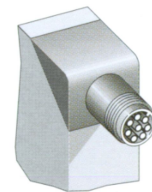


Dimension illustration

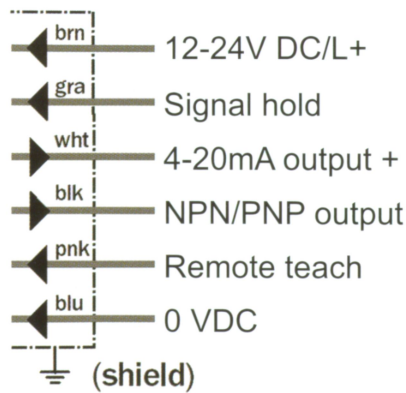
PDS30	PDS100	PDS130	PDS250
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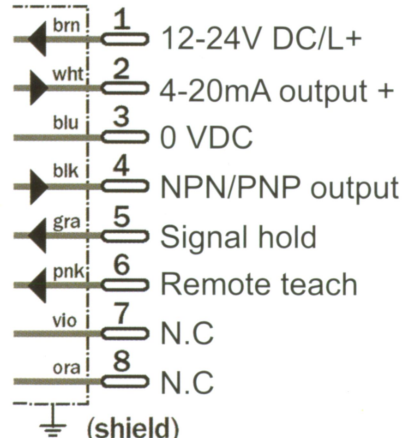
- 1 Teach-in indicator/output indicator
- 2 Response time selector
- 3 Distance indicator
- 4 Stable indicator
- 5 Teach-in button
- 6 Mode selector
- 7 Sensitivity selector
- 8 Mounting hole, $\phi 4.5$ mm
- 9 Connecting cable 2 m (optional 5 m) or M 12 plug; 90° rotatable



6 x 0.2mm²

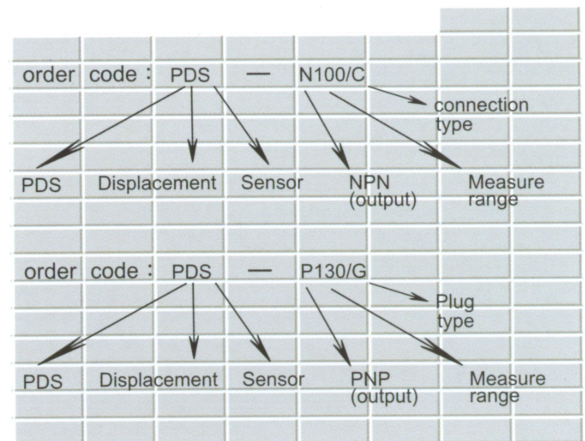


8-pin, M 12



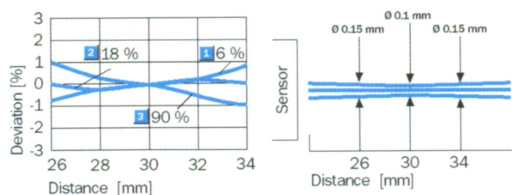
Technical data

Measuring range	30 mm ± 4 mm
	100 mm ± 35 mm
	130 mm ± 50 mm
	250 mm ± 150 mm
Light source	Laser Klasse 2 IEC 60825: 1998
Analog output	4-20 mA , 0-300
Control output ³⁾	PNP; 30 V/100 mA Open collector NPN; 30 V/100 mA Open collector
Accuracy	± 2% FS ⁴⁾ /90% - 6%
	± 3% FS ⁴⁾ /90% - 18%
	± 0.5% FS ⁴⁾ /90% - 6%
	± 1.5% FS ⁴⁾ /90% - 6%
	± 3% FS ⁴⁾ /90% - 18%
Drift	± 0.02%/°C FS ⁴⁾
Resolution of analog output ⁵⁾	10/3/1 μm, 1/10/100 ms
	150/50/15 μm, 1/10/100 ms
	200/70/20 μm, 1/10/100 ms
	1500/500/150 μm, 1/10/100 ms
Analog output freq. response-3dB	100 ms -5/s, 10 ms -42/s, 1 ms - 720/s
Teach-in input (TI)	NPN LOW = active, PNP HIGH = active
Hold input (SH)	NPN LOW = active, PNP HIGH = active
Timer	40 ms off delay
VDE protection class	III
Sensitivity to ambient light	10000 lx (sun), 3000 lx (artificial light)
Supply voltage V _S	12-24 V DC, -5%/+10%
Power consumption ⁶⁾	75 mA (at 24 V)
Warmup time ⁷⁾	10 min. maximum
EMC	EN 50081-2, EN 50082-2
Enclosure rating	IP 67
Circuit protection ⁸⁾	A, B, D
Ambient temperature TA ⁹⁾	Operation: -10 ... +40 °C Storage: -20 ... +60 °C
Housing	PBT (housing), Glass (window)



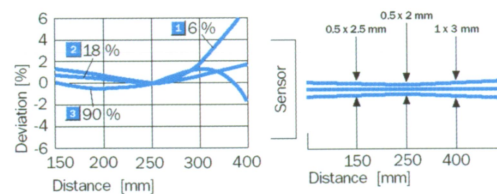
- 1) Connection: cable 2 m
- 2) Connection: Plug 2 m pre-fabricated cable, Order no. 6 020 663,
- 3) Minimum teachable distance window is 4 ... 10 times resolution of analog output
- 4) FS = Full Scale = 8 mm/PDS 30, 80 mm/PDS 100, 100 mm/PDS 130, 300 mm/PDS 250
- 5) 90 % remission
- 6) Without load
- 7) For applications with the highest resolution and preciseness
- 8) A =inputs and outputs reverse-polarity protected
B =outputs protected against shortcircuits
D=pulse interference suppression
- 9) Do not bend cable at temperatures lower than 0 °C

PDS 30: Deviation/lightspot diameter



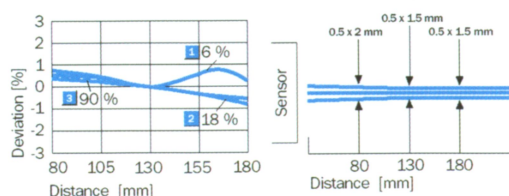
- 1 Deviation on black
- 2 Deviation on grey
- 3 Deviation on white

PDS 100: Deviation/lightspot diameter



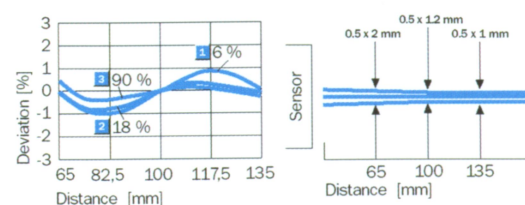
- 1 Deviation on black
- 2 Deviation on grey
- 3 Deviation on white

PDS 130: Deviation/lightspot diameter



- 1 Deviation on black
- 2 Deviation on grey
- 3 Deviation on white

PDS 250: Deviation/lightspot diameter



- 1 Deviation on black
- 2 Deviation on grey
- 3 Deviation on white