

## Technical data sheet Optical data transmission

Part no.: 50146891 DDLS 538 40.3 S3



The Sensor People In der Braike 1, 73277 Owen

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### **Technical data**

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Basic data	
Series	DDLS 500
Special version	
Special version	Not influenced by reflective surfaces
	Operation of parallel light axes
Optical data	
Working range	100 40,000 mm
Light source	Laser
Transmission frequency	F3
Usable opening angle transmitter	1 °
Electrical data	
Performance data	
Supply voltage U <sub>B</sub>	18 30 V, DC
Inputs	
Number of digital switching inputs	1 Piece(s)
Outputs	
Number of digital switching outputs	1 Piece(s)
Interface	
Туре	EtherCAT link down 70 ms, EtherCAT Safety-over-EtherCAT (FSoE)
EtherCAT	
Function	Process
Connection	
Number of connections	2 Piece(s)
Connection 1	Connector
Type of connection	Connector POWER
Designation on device	
Thread size	M12 Male
Type	
No. of pins	5 -pin
Encoding	A-coded
Connection 2	
Type of connection	Connector
Designation on device	BUS
Thread size	M12
Туре	Female

4 -pin D-coded

Dimension (W x H x L)	100 mm x 156 mm x 99.5 mm
Housing material	Metal
Net weight	1,255 g
Operation and display	
Type of display	Bar graph
	LED
Environmental data	
Ambient temperature, operation	-5 50 °C
Ambient temperature, storage	-35 70 °C
Certifications	
Degree of protection	IP 65
Certifications	c UL US
Test procedure for EMC in accordance	EN 1000-6-4
with standard	EN 61000-6-2
Test procedure for noise in accordance with standard	EN 60068-2-64
Test procedure for oscillation in accordance with standard	EN 60068-2-6
Test procedure for shock in accordance with standard	EN 60068-2-27
Classification	
	0.500.50.40
Customs tariff number	85365019
ECLASS 5.1.4	19039001
ECLASS 8.0	19179090
ECLASS 9.0	19179090
ECLASS 10.0	19179090
ECLASS 11.0	19179090
ECLASS 12.0	19179090
ECLASS 13.0	19179090
ETIM 5.0	EC000515
ETIM 6.0 ETIM 7.0	EC000515
	EC000310
ETIM 8.0	EC000310

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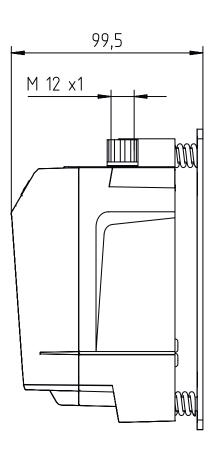
No. of pins

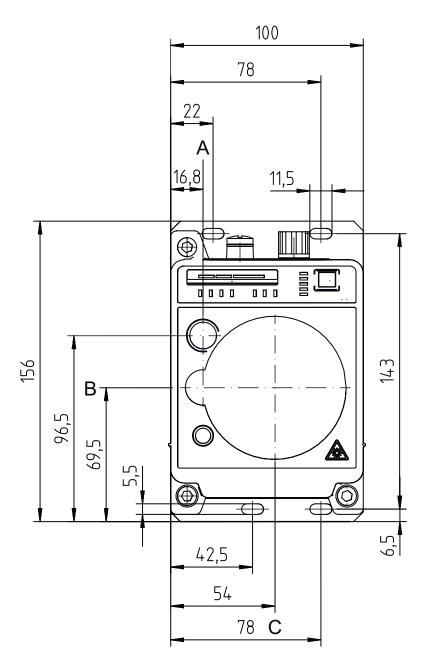
Encoding

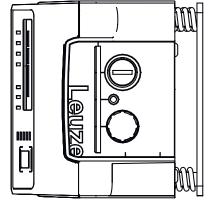
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### **Dimensioned drawings**

All dimensions in millimeters







Center axis of transmitter and alignment laser А

В Center axis of transmitter and receiver

С Center axis of receiver

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### **Electrical connection**

Connection 1	POWER
Function	Signal IN
	Signal OUT
	Voltage supply
Type of connection	Connector
Thread size	M12
Туре	Male
Material	Metal
No. of pins	5 -pin
Encoding	A-coded

#### Pin **Pin assignment**

1	VIN	
2	IO1	
3	GND	3
4	102	
5	FE/SHIELD	4

#### **Connection 2**

Connection 2	BUS
Function	BUS IN
Type of connection	Connector
Thread size	M12
Туре	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded

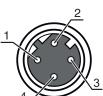
Pin	Pin assignment
1	TD+
2	RD+
3	TD-
4	RD-

#### **Operation and display** Diamlaw

LE	ED	Display	Meaning
1 AUT		Off	Operating mode not active
		Green, continuous light	Operating mode "Automatic"
2	MAN	Off	Operating mode not active
		Green, continuous light	Operating mode "Manual"
3	ADJ	Off	Operating mode not active
		Green, continuous light	Operating mode "Adjust"
4	LAS	Off	Operating mode not active
		Green, continuous light	Operating mode "Alignment-laser mounting support"
5	LLC	Off	Operating mode not active
		Green, continuous light	LLC without interruption
		Red, continuous light	LLC interrupted at least once
6	PWR	Off	No supply voltage
		Green, flashing	Device ok, initialization phase
		Green, continuous light	Data transmission active
		Red, flashing	Data transmission interrupted
		Red, continuous light	Device error
7	TMP	Off	Operating temperature OK
		Orange, continuous light	Operating temperature critical



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### **Operation and display**

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LEC	C	Display	Meaning
7	ТМР	Red, continuous light	Operating temperature exceeded or not met
8	LSR	Off	With function reserve
		Orange, continuous light	Device OK, warning set
9	MAS	Off	Installation on slave side
		Green, continuous light	Installation on master side
10	OLK	Off	Fault
		Green, continuous light	No data transmission
	ERL	Orange, continuous light	Data transmission active
11 E	ERL	Off	Link OK
	11 ERL Off Link OK	Missing link (Ethernet cable connection) on the second device	
		Red, continuous light	Operating temperature exceeded or not met         With function reserve         Device OK, warning set         Installation on slave side         Installation on master side         Fault         No data transmission         Data transmission active         Link OK
12	LINK	Off	No cable-connected link to the connected device
		Green, continuous light	Link OK
		Orange, continuous light       Device OK, warning set         Off       Installation on slave side         Green, continuous light       Installation on master side         Off       Fault         Green, continuous light       No data transmission         Orange, continuous light       Data transmission active         Off       Drange, continuous light         Orange, continuous light       Data transmission active         Off       Drange, continuous light         Off       Drange, continuous light         Off       Drange, continuous light         Off       No cable-connected link to the connected device         Off       No cable-connected link to the connected device         Off       Off         Off       No cable-connected link to the connected device         Off       No cable-connected link to the connected device         Off       Orange, continuous light         Off       Data transmission active         Green, continuous light       Data transmission active         Orange, continuous light       Data transmission acti	Data transmission active
	SIGNAL QUALITY	2 red, 2 orange and 4 green	Received signal level

### Suitable transmitters

 Part no.	Designation	Article	Description
50146892	DDLS 538 40.4 S3	Optical data transmission	Special version: Not influenced by reflective surfaces, Operation of parallel light axes Working range: 100 40,000 mm Transmission frequency: F4 Connection: Connector, M12

### Part number code

Part designation: DDLS 5XXX YYY.Z A B CC

DDLS	Optical transceiver for digital data transmission
5XXX	Series 508i: without integrated web server for remote diagnostics 508i: with integrated web server for remote diagnostics 538: without integrated web server for remote diagnostics (EtherCAT) 548i: with integrated web server for remote diagnostics
YYY	Range for data transmission in m
Z	Frequency of the transmitter 0: Frequency F0 1: Frequency F1 2: Frequency F2 3: Frequency F3 4: Frequency F4
A	Option L: integrated laser alignment aid (for transmitter/receiver) n/a: standard
В	Special equipment H: With heating n/a: no special equipment
сс	Special equipment S3: Optimized for EtherCAT transmission n/a: no special equipment



A list with all available device types can be found on the Leuze website at www.leuze.com.

### Notes

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#### Observe intended use!

✤ This product is not a safety sensor and is not intended as personnel protection.

 $\ensuremath{^{\ensuremath{\Downarrow}}}$  The product may only be put into operation by competent persons.



	Do not expose users of telescopic optics!
	The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of <b>laser class 1M</b> as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to Laser Notice No. 50 from June 24, 2007.
1	* Do not expose users of telescopic optics! The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of laser class 1M as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to Laser Notice No. 50 from June 24, 2007.
	S Looking into the beam path for extended periods using telescope optics may damage the eye's retina. Never look using telescope optics into the l beam or in the direction of reflecting beams.
	<ul> <li>CAUTION! The use of operating and adjusting devices other than those specified here or the carrying out of differing procedures may lead to dame exposure to radiation!</li> <li>The use of optical instruments or devices (e.g., magnifying glasses, binoculars) in combination with the device increases the danger of eye damage</li> </ul>
	t ⇔ Observe the applicable statutory and local laser protection regulations.
	✤ The device must not be tampered with and must not be changed in any way. There are no user-serviceable parts inside the device.
	Repairs must only be performed by Leuze electronic GmbH + Co. KG.

#### ATTENTION! LASER RADIATION – CLASS 1 LASER PRODUCT (alignment laser)

The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of **laser class 1** as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to Laser Notice No. 50 from June 24, 2007.

<sup>th</sup> The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of laser class 1 as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to Laser Notice No. 50 from June 24, 2007.

- ♦ Observe the applicable statutory and local laser protection regulations.
- <sup>t</sup> The device must not be tampered with and must not be changed in any way. There are no user-serviceable parts inside the device.

Repairs must only be performed by Leuze electronic GmbH + Co. KG.

### Accessories

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### Connection technology - Connection cables

	Part no.	Designation	Article	Description
	50132079	KD U-M12-5A-V1- 050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 5.000 mm Sheathing material: PVC
Ŵ	50135074	KS ET-M12-4A-P7- 050	Connection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 5.000 mm Sheathing material: PUR

### Connection technology - Interconnection cables

	Part no.	Designation	Article	Description
	50137078	KSS ET-M12-4A- M12-4A-P7-050	Interconnection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: Connector, M12, Axial, Male, D-coded, 4 -pin Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR
	50135081	KSS ET-M12-4A- RJ45-A-P7-050	Interconnection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: RJ45 Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR

### Connection technology - Connectors

	Part no.	Designation	Article	Description
-	50020501	KD 095-5A	Connector	Connection: Connector with screw terminals, M12, Axial, Female, A-coded, 5 -pin
	50112155	S-M12A-ET	Connector	Suitable for interface: Ethernet Connection: Connector, M12, Axial, Male, D-coded, 4 -pin

### Accessories

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### Services

	Part no.	Designation	Article	Description
ц. С	S981001	CS10-S-110	Start-up support	Details: Performed at location of customer's choosing, duration: max. 10 hours. Conditions: Devices and connection cables are already mounted, price not including travel costs and, if applicable, accommodation expenses. Restrictions: No mechanical (mounting) and electrical (wiring) work performed, no changes (attachments, wiring, programming) to third-party components in the nearby environment.
	S981005	CS10-T-110	Product training	Details: Location and content to be agreed upon, duration: max. 10 hours. Conditions: Price not including travel costs and, if applicable, accommodation expenses. Restrictions: Travel costs and accommodation expenses charged separately and according to expenditure.

	Note
6	♣ A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.