

## **Technical data sheet Optical data transmission**

Part no.: 50146892 DDLS 538 40.4 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	F4
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)
Connection	
Number of connections	2 Piece(s)
Connection 1	
Type of connection	Connector
Designation on device	POWER
Thread size	M12
Туре	Male
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	
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 12.0	19179090
ECLASS 12.0 ECLASS 13.0	
	EC000515
ECLASS 13.0	EC000515 EC000515
ECLASS 13.0 ETIM 5.0	

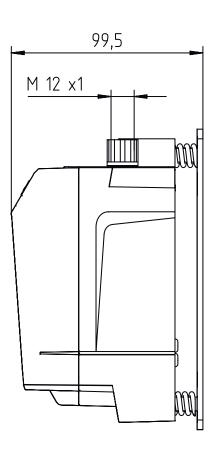
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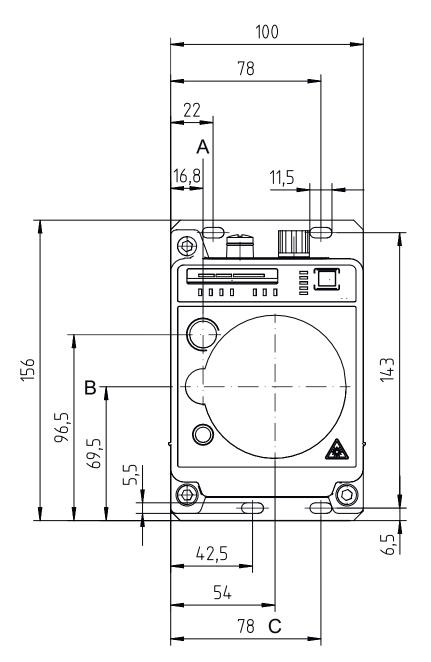
No. of pins

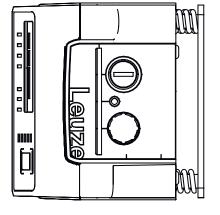
Encoding

### **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-

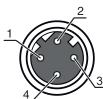
#### **Operation and display** Diamlaw

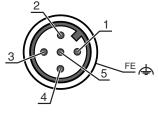
LE	ED	Display	Meaning
1	AUT	Off	Operating mode not active
		Green, continuous light	Operating mode "Automatic"
2	MAN	Off	Operating mode not active
		Green, continuous light	Operating mode "Manual"
3	ADJ	Off	Operating mode not active
	Green, continuous light Operating mode "Adjust" A LAS Off Operating mode not active Green, continuous light Operating mode "Adjust"	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	Operating mode not active         Operating mode "Automatic"         Operating mode not active         Operating mode "Manual"         Operating mode not active         Operating mode "Adjust"         Operating mode not active         Operating mode not active
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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We reserve the right to make technical changes





### **Operation and display**

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LE	D	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 Of Gr	Off	Fault
		Green, continuous light	No data transmission
		Orange, continuous light	Data transmission active
11 ERL     Off       Orange, continuous light	ERL	Off	Link OK
	Orange, continuous light	Missing link (Ethernet cable connection) on the second device	
		Red, continuous light	No cable-connected link to the connected device
12	2 LINK Off	Off	No cable-connected link to the connected device
		Green, continuous light	Link OK
		Orange, continuous light	Data transmission active
13	SIGNAL QUALITY	2 red, 2 orange and 4 green	Received signal level

#### Suitable receivers

 Part no.	Designation	Article	Description
50146891	DDLS 538 40.3 S3	Optical data transmission	Special version: Operation of parallel light axes, Not influenced by reflective surfaces Working range: 100 40,000 mm Transmission frequency: F3 Interface: EtherCAT link down 70 ms 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
Α	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
Note	



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.
<u>k</u>	<b>bo not expose users of telescopic optics!</b> 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.
	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 dange 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>
	♥ Observe the applicable statutory and local laser protection regulations.
	to 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
W D	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
Contraction of the second	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
с. 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.