## Leuze

## Technical data sheet Optical data transmission

Part no.: 50146905 DDLS 538 120.3 L H S3



 
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### **Technical data**

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Basic data						
Series	DDLS 500					
Special version						
Special version	Heating					
	Integrated laser alignment aid					
	Not influenced by reflective surfaces					
	Operation of parallel light axes					
Optical data						
Working range	100 120,000 mm					
Light source	Laser					
Transmission frequency	F3					
Opening angle	1 °					
Electrical data						
Performance data						
Supply voltage U <sub>B</sub>	18 30 V, DC					
Inputs						
Number of digital switching inputs	1 Piece(s)					

## Number of digital switching outputs 1 Piece(s)

Outputs

Туре	EtherCAT link down 70 ms
Transmission protocol	EtherCAT FSoE
	EtherCAT link down 70 ms
Туре	EtherCAT Safety-over-EtherCAT (FSoE)

#### 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

Designation on device	BUS
Thread size	M12
Туре	Female
No. of pins	4 -pin
Encoding	D-coded

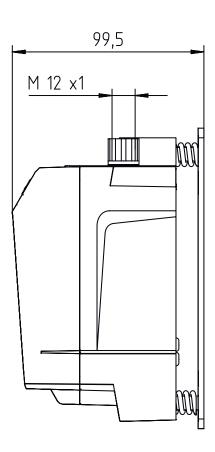
Dimension (W x H x L)	100 mm x 156 mm x 99.5 mm
Housing material	Metal
Net weight	1,255 g
Operation and display	
Type of display	Bar graph
	LED
Environmental data	
Ambient temperature, operation	-35 50 °C
Ambient temperature, storage	-35 70 °C
Certifications	
Degree of protection	IP 65
Certifications	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	

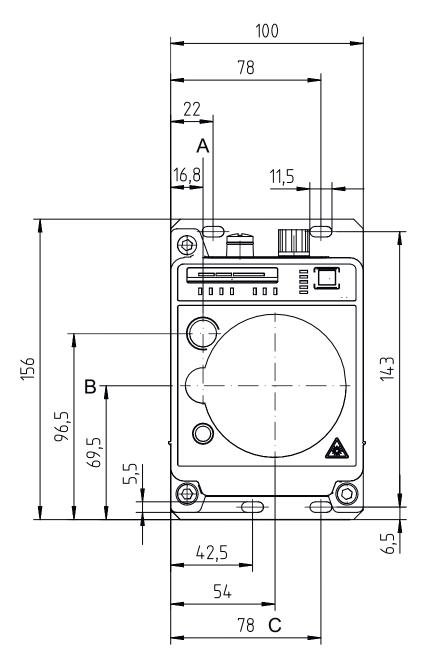
Mechanical data

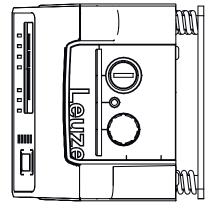
Customs tariff number	84718000
ECLASS 5.1.4	19039001
ECLASS 8.0	19179090
ECLASS 9.0	19179090
ECLASS 10.0	19170506
ECLASS 11.0	19170506
ECLASS 12.0	19170506
ECLASS 13.0	19170506
ECLASS 14.0	19170506
ETIM 5.0	EC000515
ETIM 6.0	EC000515
ETIM 7.0	EC000515
ETIM 8.0	EC000515
ETIM 9.0	EC000515

### **Dimensioned drawings**

All dimensions in millimeters







A Center axis of transmitter and alignment laser

B Center axis of transmitter and receiver

C 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	IO2	
5	FE/SHIELD	4

E₽

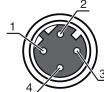
#### **Connection 2**

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**

LE	D	Display	Meaning
1 AUT	AUT	Off	Operating mode not active
		Green, continuous light	Operating mode "Automatic"
2 MAN	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 PWF	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**



LED	Display	Meaning
7 TMP	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
	Orange, continuous light	Data transmission active
11 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 LINK	Off	No cable-connected link to the connected device
	Green, continuous light	Link OK
	Orange, continuous light	Data transmission active
13 SIGNA QUAL		Received signal level

### Suitable transmitters

 Part no.	Designation	Article	Description
50146906	DDLS 538 120.4 L H S3	Optical data transmission	Special version: Integrated laser alignment aid, Heating, Not influenced by reflective surfaces, Operation of parallel light axes Working range: 100 120,000 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
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.

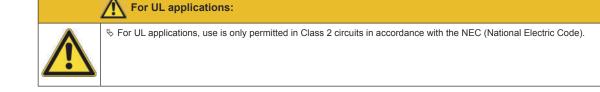
#### Notes

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#### Observe intended use!

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

b The product may only be put into operation by competent persons.



ATTENTION! INVISIBLE LASER RADIATION – CLASS 1M LASER PRODUCT
<b>Do 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 <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.
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.
Subscription between the beam path for extended periods using telescope optics may damage the eye's retina. Never look using telescope optics into the las 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 danger 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>
by 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.
- <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
Ŵ	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, 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
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.
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.

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