Technical data sheet Optical data transmission

Part no.: 50149700 DDLS 538 120.4 L H W S3



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Technical data

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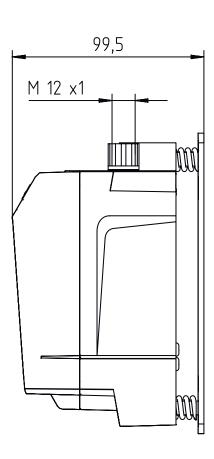
Basic data			
Series	DDLS 500		
Special version			
Special version	Heating		
	Integrated laser alignment aid		
	Not influenced by reflective surfaces		
	Operation of parallel light axes		
	Wide angle version		
Optical data			
Working range	100 120,000 mm		
Light source	Laser		
Transmission frequency	F4		
Opening angle	1.6 °		
Electrical data			
Performance data			
Supply voltage U _B	18 30 V, DC		
eapp.,			
Inputs			
Number of digital switching inputs	1 Piece(s)		
Outputs			
Number of digital switching outputs	1 Piece(s)		
Interface			
	EtherCAT link down 70 ms, EtherCAT Safety-over-EtherCAT (FSoE)		
Interface			
Interface Type			
Interface Type EtherCAT	Safety-over-EtherCAT (FSoE)		
Interface Type EtherCAT Function	Safety-over-EtherCAT (FSoE) Process		
Interface Type EtherCAT Function Switch functionality	Safety-over-EtherCAT (FSoE) Process None		
Interface Type EtherCAT Function Switch functionality Transmission speed Transmission protocol	Safety-over-EtherCAT (FSoE) Process None 100 Mbit/s		
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Interface Type EtherCAT Function Switch functionality Transmission speed Transmission protocol Safety-over-EtherCAT (FSoE) Function Connection Number of connections Connection 1	Safety-over-EtherCAT (FSoE) Process None 100 Mbit/s EtherCAT FSoE Process 2 Piece(s)		
Interface Type EtherCAT Function Switch functionality Transmission speed Transmission protocol Safety-over-EtherCAT (FSoE) Function Connection Number of connections Connection 1 Type of connection	Safety-over-EtherCAT (FSoE) Process None 100 Mbit/s EtherCAT FSoE Process 2 Piece(s) Connector		
Interface Type EtherCAT Function Switch functionality Transmission speed Transmission protocol Safety-over-EtherCAT (FSoE) Function Connection Number of connections Connection 1 Type of connection Designation on device	Safety-over-EtherCAT (FSoE) Process None 100 Mbit/s EtherCAT FSoE Process 2 Piece(s) Connector POWER		
Interface Type EtherCAT Function Switch functionality Transmission speed Transmission protocol Safety-over-EtherCAT (FSoE) Function Connection Number of connections Connection 1 Type of connection Designation on device Thread size	Safety-over-EtherCAT (FSoE) Process None 100 Mbit/s EtherCAT FSoE Process 2 Piece(s) Connector POWER M12		

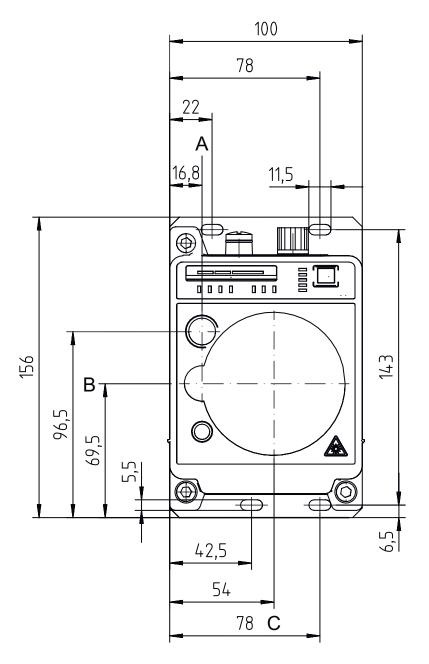
Connection 2			
Type of connection	Connector		
Designation on device	BUS		
Thread size	M12		
Туре	Female		
No. of pins	4 -pin		
Encoding	D-coded		
Mechanical data			
Dimension (W x H x L)	100 mm x 156 mm x 99.5 mm		
Housing material	Metal		
Net weight	1,750 g		
Operation and display			
	Der groop		
Type 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		
• .	11 00		
Certifications	c UL US		
Certifications Test procedure for EMC in accordance	c UL US EN 1000-6-4		
Certifications Test procedure for EMC in accordance with standard	c UL US EN 1000-6-4 EN 61000-6-2		
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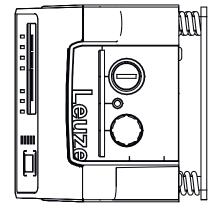
Dimensioned drawings

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All dimensions in millimeters







A Center axis of transmitter and alignment laser

B Center axis of transmitter and receiver

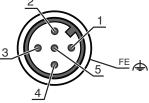
C Center axis of receiver

Electrical connection

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

Pin Pin assignment

1 2 3 4	VIN IO1 GND IO2	3
4	IO2 FE/SHIELD	



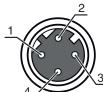
Connection 2

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	

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

Operation and display

LE	D	Display	Meaning Operating mode not active	
1	AUT	Off		
		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"	
1	LAS	Off	Operating mode not active	
		Green, continuous light	Operating mode "Alignment-laser mounting support"	
;	LLC	Off	Operating mode not active	
		Green, continuous light	LLC without interruption	
		Red, continuous light	LLC interrupted at least once	
;	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	
,	TMP	Off	Operating temperature OK	
		Orange, continuous light	Operating temperature critical	





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 SIGNAL QUALIT	2 red, 2 orange and 4 green	Received signal level

Suitable receivers

 Part no.	Designation	Article	Description
50149699	DDLS 538 120.3 L H W S3	Optical data transmission	Special version: Not influenced by reflective surfaces, Heating, Integrated laser alignment aid, Operation of parallel light axes, Wide angle version Working range: 100 120,000 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 W: Transmission optics with larger beam spread 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.

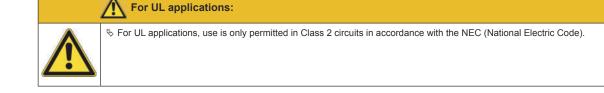
Notes

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Observe intended use!

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

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



٨	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.
	∜ 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.
	Shocking into the beam path for extended periods using telescope optics may damage the eye's retina. Never look using telescope optics into the laser beam or in the direction of reflecting beams.
	Sector CAUTION! The use of operating and adjusting devices other than those specified here or the carrying out of differing procedures may lead to dangero exposure to radiation!
	The use of optical instruments or devices (e.g., magnifying glasses, binoculars) in combination with the device increases the danger of eye damage.
	♥ 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.

th 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.
- 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, 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
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.