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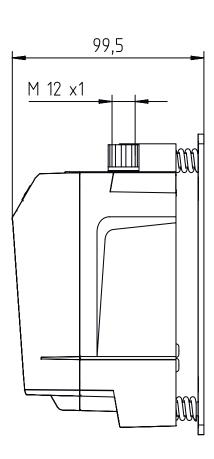
Basic data				
Series	DDLS 500			
Special version				
Special version	Heating			
	Integrated laser alignment aid			
	Not influenced by reflective surfaces			
	Operation of parallel light axes			
	Wide angle version			
Optical data				
Working range	100 120,000 mm			
Light source	Laser			
Transmission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

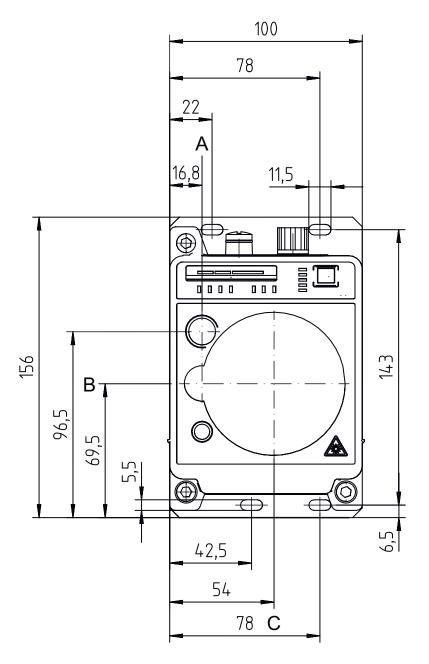
Connection 2		
Type of connection	Connector	
Designation on device	BUS M12	
Thread size		
Туре	Female	
No. of pins	4 -pin	
Encoding	D-coded	
	2 00000	
Mechanical data		
Dimension (W x H x L)	100 mm x 156 mm x 99.5 mm	
Housing material	Metal	
Net weight	1,750 g	
Operation and display		
Type of display	Bar graph	
	LED	
Environmental data		
Ambient temperature, operation	-35 50 °C	
Ambient temperature, storage	-35 70 °C	
Certifications		
Degree of protection	IP 65	
Approvals	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	19170506	
ECLASS 11.0	19170506	
ECLASS 12.0	19170506	
ECLASS 13.0	19170506	
ECLASS 14.0	19170506	
ECLASS 15.0	19170506	
ETIM 5.0	EC000515	
ETIM 6.0	EC000515	
ETIM 7.0	EC000515	
ETIM 8.0	EC000515	
ETIM 9.0	EC000515	
ETIM 10.0	EC000515	

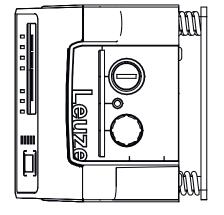
Dimensioned drawings

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All dimensions in millimeters







A Center axis of transmitter and alignment laser

B Center axis of transmitter and receiver

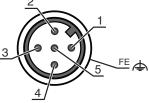
C Center axis of receiver

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

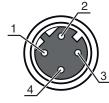
Connection 2	BUS	
Function	BUS IN	
Type of connection	Connector	
Thread size	M12	
Туре	Female	
Material	Metal	
No. of pins	4 -pin	
Encoding	D-coded	

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

Operation and display

LED		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"
1	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





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		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



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

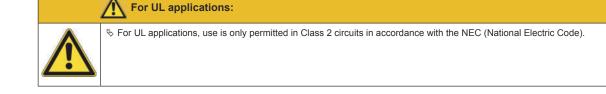
Notes

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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.



A	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.
Mr 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.
	beam or in the direction of reflecting beams.
	to 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
	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
1	♦ A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.