

# **Technical data sheet Optical data transmission**

Part no.: 50141102

DDLS 538 40.3 L S2



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Figure can vary

### **Technical data**



### Basic data

Series	DDLS 500
Special version	
·	Integrated laser alignment aid
	Not influenced by reflective surfaces
	Operation of parallel light axes

### **Optical data**

Working range	100 40,000 mm
Light source	Laser
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

Ty	ype	EtherCAT, EtherCAT Safety-over- EtherCAT (FSoE)
	EtherCAT	
	Transmission speed	100 Mbit/s
		100 Mbit/s

**Encoding** 

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	
No. of pins	4 -pin	

D-coded

### Mechanical data

Dimension (W x H x L)	100 mm x 156 mm x 99.5 mm
Housing material	Metal
Net weight	1,185 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 with standard	EN 1000-6-4
	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

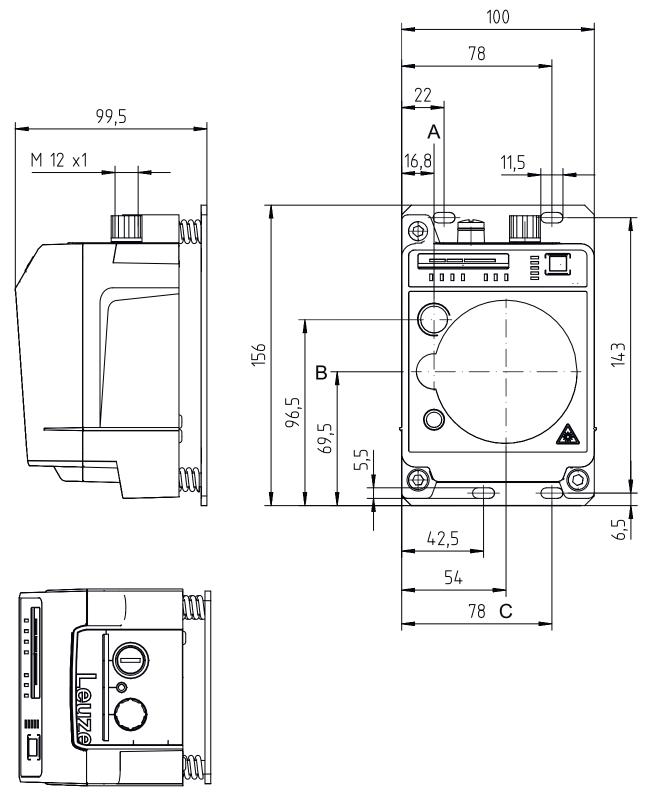
### Classification

Customs tariff number	85365019	
eCI@ss 5.1.4	19039001	
eCI@ss 8.0	19179090	
eCI@ss 9.0	19179090	
eCl@ss 10.0	19179090	
eCl@ss 11.0	19179090	
ETIM 5.0	EC000515	
ETIM 6.0	EC000515	
ETIM 7.0	EC000310	

# **Dimensioned drawings**

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All dimensions in millimeters



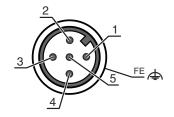
- A Center axis of transmitter and alignment laser
- B Center axis of transmitter and receiver
- C Center axis of receiver

## **Electrical connection**



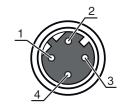
Connection 1	POWER	
Function	Signal IN	
	Signal OUT	
	Voltage supply	
Type of connection	Connector	
Thread size	M12	
Туре	Male	
Material	Metal	
No. of pins	5 -pin	
Encoding	A-coded	

Pin	Pin assignment
1	VIN
2	101
3	GND
4	102
5	FE/SHIELD



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	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	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





LE	D	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 QUALITY	2 red, 2 orange and 4 green	Received signal level		

### Suitable transmitters

Part no.	Designation	Article	Description
50141103	DDLS 538 40.4 L S2	Optical data transmission	Special version: Operation of parallel light axes, Integrated laser alignment aid, Not influenced by reflective surfaces Working range: 100 40,000 mm Interface: EtherCAT 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
CC	Special equipment S2: 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





### Observe intended use!



- This product is not a safety sensor and is not intended as personnel protection.
- The product may only be put into operation by competent persons.
- Only use the product in accordance with its intended use.



### For UL applications:



For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).



### WARNING! INVISIBLE LASER RADIATION - CLASS 1M LASER PRODUCT



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.
- 🖔 Looking 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.
- 🔖 CAUTION! The use of operating and adjusting devices other than those specified here or the carrying out of differing procedures may lead to dangerous 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.



### WARNING! 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.

- 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.

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### **Accessories**



# 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 Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC
W 0	50135074	KS ET-M12-4A-P7- 050	Connection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin 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: 1,000 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
1	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**



## 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.  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



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