

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

Part no.: 50134422 DDLS 548i 40.4 H



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#### **Technical data**

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Basic data				
Series	DDLS 500			
Special version				
Special version	Heating			
	Not influenced by reflective surfaces			
	Operation of parallel light axes			
	Remote diagnosis via web server			
Optical data				
Working range	100 40,000 mm			
Light source	Laser			
Transmission frequency	F4			
Opening angle	1 °			
Electrical data				
Performance data				
Supply voltage U <sub>B</sub>	18 30 V, DC			
Interface				
Transmission protocol	PROFINET slave network device			
	PROFINET/PROFIsafe			
Туре	PROFINET, PROFIsafe over PROFINET			
PROFINET				
Function	Process			
Conformance class	В			
Switch functionality	None			
Transmission speed	100 Mbit/s			
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			
Encoding	D-coded			

#### Mechanical data

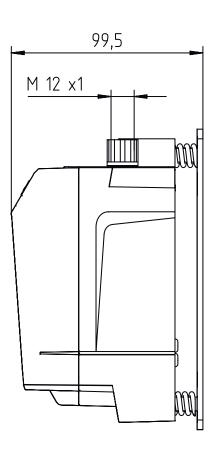
Dimension (W x H x L)	100 mm x 156 mm x 99.5 mm
Housing material	Metal
Net weight	1,255 g
Operation and display	
Type of display	Bar graph
	LED
Type of configuration	GSDML file
	Software
	Via web browser
Environmental data	
Ambient temperature, operation	-35 50 °C
Ambient temperature, storage	-35 70 °C
Certifications	
Degree of protection	IP 65
Approvals	c UL US
Test procedure for EMC in accordance 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	EN 60068-2-27
accordance with standard	
Classification	
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
ECLASS 15.0	19170506
ETIM 5.0	EC000515
ETIM 6.0	EC000515
ETIM 7.0	EC000515
ETIM 8.0	EC000515
ETIM 9.0	EC000515

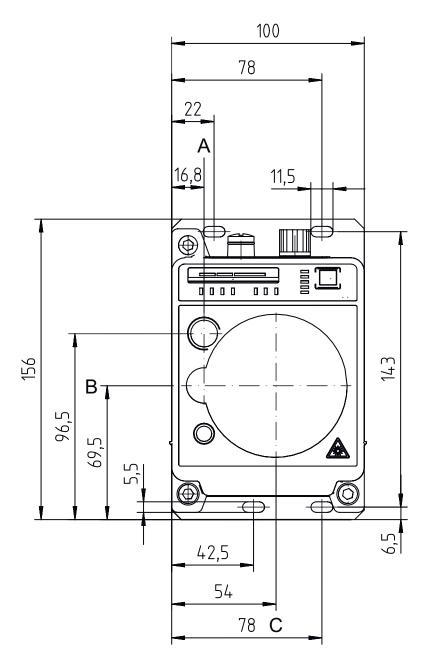
EC000515

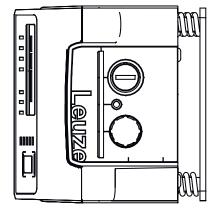
ETIM 10.0

#### **Dimensioned drawings**

All dimensions in millimeters







A Middleaxis Transmitter

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 2 3	VIN IO1 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**

LE	Ð	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	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

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#### **Operation and display**

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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 BUS	Off	No supply voltage
	Green, flashing	Device waiting for communication to be re-established, no data exchange
	Green, continuous light	Communication with IO-Controller established, data exchange active
	Orange, flashing	PROFINET wave function activated, the PWR and BUS LEDs flash in sync in orange
	Red, flashing	Parameterization or configuration failed, no data exchange
	Red, continuous light	Bus error, no communication established to the IO controller
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
50134421	DDLS 548i 40.3 H	Optical data transmission	Special version: Operation of parallel light axes, Heating, Not influenced by reflective surfaces, Remote diagnosis via web server Working range: 100 40.000 mm Transmission frequency: F3 Interface: PROFINET 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	<b>Option</b> L: integrated laser alignment aid (for transmitter/receiver) n/a: standard

#### Part number code



В	Special equipment H: with heating n/a: no special equipment
CC	<b>Special equipment</b> W: transmission optics with larger opening angle (on request) n/a: no special equipment
	Note
A	∜ 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.
$\frown$	♦ Only use the product in accordance with its intended use.

1	/!	/	For	UL	app	licati	ions
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₺ For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).

ATTENTION! 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.
b 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.
S 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.
<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 dangerous 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>
to Observe the applicable statutory and local laser protection regulations.
<ul> <li>The device must not be tampered with and must not be changed in any way.</li> <li>There are no user-serviceable parts inside the device.</li> <li>Repairs must only be performed by Leuze electronic GmbH + Co. KG.</li> </ul>

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