Technical data sheet
Optical data transmission
Part no.: 50151305
DDLS 538 120.3 L W S3

For Illustration purposes only

Contents

Technical data

Basic data

Series	DDLS 500

Special version

Special version	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	F3
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)

Outputs

Number of digital switching outputs	1 Piece(s)

Interface

Transmission protocol	CIPsafety
Type	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

Number of connections	2 Piece(s)

Connection 1

Type of connection	Connector
Designation on device	POWER
Thread size	M12
Type	Male
No. of pins	5 -pin
Encoding	A-coded

Connection 2

Type of connection	Connector
Designation on device	BUS
Thread size	M12
Type	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

Type of display	Bar graph
	LED

Environmental data

Ambient temperature, operation	-5 ... 50 °C
Ambient temperature, storage	-35 ... 70 °C

Certifications

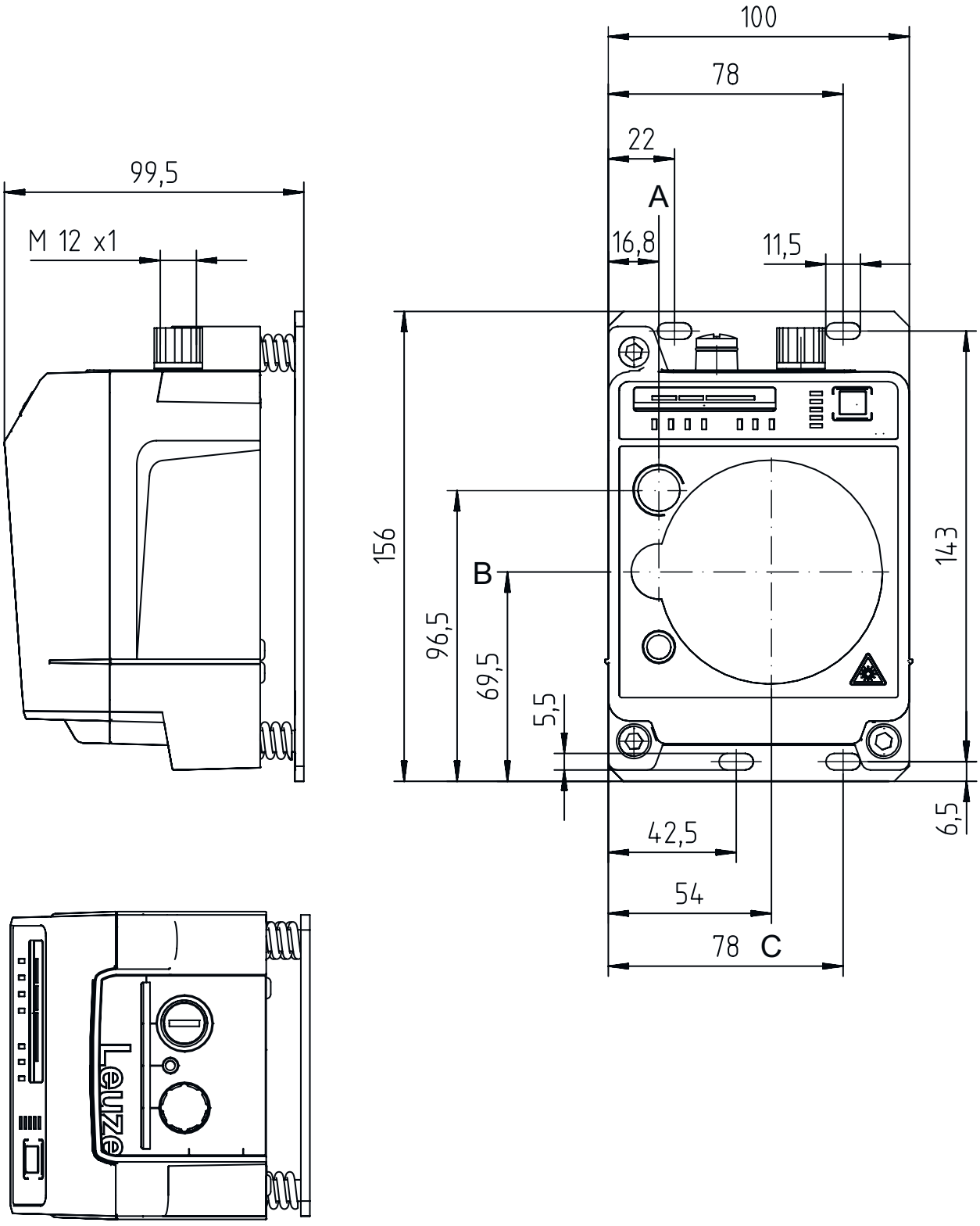
Degree of protection	IP 65
Approvals	c UL US
Test procedure for EMC in accordance with standard	EN 1000-6-4
	EN 61000-6-2
Test procedure for noise in accordance with standard	EN 60068-2-64
Test procedure for oscillation in accordance with standard	EN 60068-2-6
Test procedure for shock in accordance with standard	EN 60068-2-27

Classification

Customs tariff number	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
ETIM 10.0	EC000515

Dimensioned drawings

All dimensions in millimeters

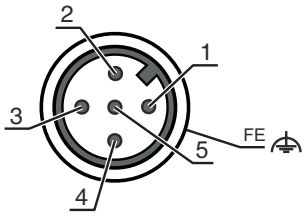


A Center axis of transmitter and alignment laser
B Center axis of transmitter and receiver
C Center axis of receiver

Electrical connection

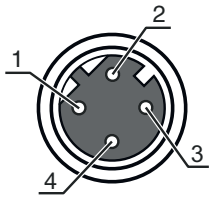
Connection 1	POWER
Function	Signal IN
	Signal OUT
	Voltage supply
Type of connection	Connector
Thread size	M12
Type	Male
Material	Metal
No. of pins	5 -pin
Encoding	A-coded

Pin	Pin assignment
1	VIN
2	IO1
3	GND
4	IO2
5	FE/SHIELD



Connection 2	BUS
Function	BUS IN
Type of connection	Connector
Thread size	M12
Type	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

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"
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

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

Suitable transmitters

	Part no.	Designation	Article	Description
	50151306	DDLS 538 120.4 L W S3	Optical data transmission	Special version: Not influenced by reflective surfaces, Integrated laser alignment aid, Operation of parallel light axes, Wide angle version Working range: 100 ... 120,000 mm Transmission frequency: F4 Interface: EtherCAT link down 70 ms Connection: Connector, M12

Suitable receivers

	Part no.	Designation	Article	Description
	50151306	DDLS 538 120.4 L W S3	Optical data transmission	Special version: Not influenced by reflective surfaces, Integrated laser alignment aid, Operation of parallel light axes, Wide angle version Working range: 100 ... 120,000 mm Transmission frequency: F4 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
A	**Option** L: integrated laser alignment aid (for transmitter/receiver) n/a: standard

Part number code

B	**Special equipment** H: with heating n/a: no special equipment
CC	**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

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).

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.

- **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.

Notes

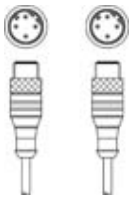
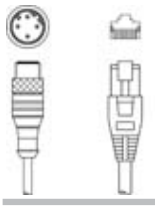
	ATTENTION! LASER RADIATION – CLASS 1 LASER PRODUCT (alignment laser)
	The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of **laser class 1** as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to Laser Notice No. 50 from June 24, 2007. 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

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
	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

Accessories

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

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

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