



Figure can vary

**Part no.: 50137969**  
**IPS 248i FIX-M3-102-I3-H**  
**Smart camera**



Ethernet



## Contents

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- Electrical connection
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Part no.: 50137969 – IPS 248i FIX-M3-102-I3-H – Smart camera

## Technical data

<b>Basic data</b>	
Series	IPS 200i
Chip	CMOS
<b>Special design</b>	
Special design	Heating
<b>Functions</b>	
Software functions	Compartment fine positioning
<b>Optical data</b>	
Working range	100 ... 600 mm
Light source	LED, Infrared
Transmitted-signal shape	Pulsed
Camera resolution, horizontal	1,280 px
Camera resolution, vertical	960 px
Marker size	5 ... 20 mm
Electronic shutter speed	0.068 ... 5 ms
Camera type	Monochrome
<b>Measurement data</b>	
Reproducibility (1 sigma)	0.1 mm, depending on the application
<b>Electrical data</b>	
Protective circuit	Short circuit protected Polarity reversal protection
<b>Performance data</b>	
Supply voltage $U_B$	18 ... 30 V, DC
Average power consumption	8 W
<b>Inputs</b>	
Number of digital switching inputs	3 Piece(s)
<b>Switching inputs</b>	
Type	Digital switching input
Voltage type	DC

**Outputs**

Number of digital switching outputs 5 Piece(s)

**Switching outputs**

Type Digital switching output

Voltage type DC

Switching current, max. 100 mA

**Switching output 1**

Switching principle +24 V switching

**Switching output 2**

Switching principle +24 V switching

**Switching output 3**

Switching principle +24 V switching

**Switching output 4**

Switching principle +24 V switching

**Switching output 5**

Switching principle +24 V switching

**Interface**

Type Ethernet, PROFINET

**Ethernet**

Architecture Server  
Client

Address assignment Manual address assignment  
DHCP

Transmission speed 100 Mbit/s  
10 Mbit/s

Function Process

Switch functionality None

Transmission protocol TCP/IP , UDP

**Profinet**

Function Process

Conformance class B

Protocol PROFINET RT

Transmission speed 100 Mbit/s

**Service interface**

Type Ethernet

**Ethernet**

Function Service

**Connection**

Number of connections 2 Piece(s)

**Connection 1**

Type of connection	Connector
Function	Voltage supply Signal IN Signal OUT
Thread size	M12
Type	Male
Material	Metal
No. of pins	12 -pin
Encoding	A-coded

**Connection 2**

Type of connection	Connector
Function	Configuration interface Data interface
Thread size	M12
Type	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded

**Mechanical data**

Design	Cubic
Dimension (W x H x L)	43 mm x 61 mm x 44 mm
Housing material	Plastic Metal, Diecast aluminum, PC
Lens cover material	Plastic
Net weight	120 g
Housing color	Silver
Type of fastening	Via optional mounting device Mounting thread

**Operation and display**

Type of display	LED
Number of LEDs	9 Piece(s)
Type of configuration	Teach-in Via web browser Configuration codes
Operational controls	Button(s)
Function of the operational control	Adjustment mode Auto-setup

**Environmental data**

Ambient temperature, operation	-30 ... 50 °C
Ambient temperature, storage	-30 ... 70 °C
Relative humidity (non-condensing)	90 %

**Certifications**

Degree of protection	IP 65
Protection class	III
Certifications	c UL US
Test procedure for EMC in accordance with standard	EN 61000-6-2 EN 61000-6-4
Test procedure for continuous shock in accordance with standard	IEC 60068-2-29, test Eb

Test procedure for vibration in accordance with standard

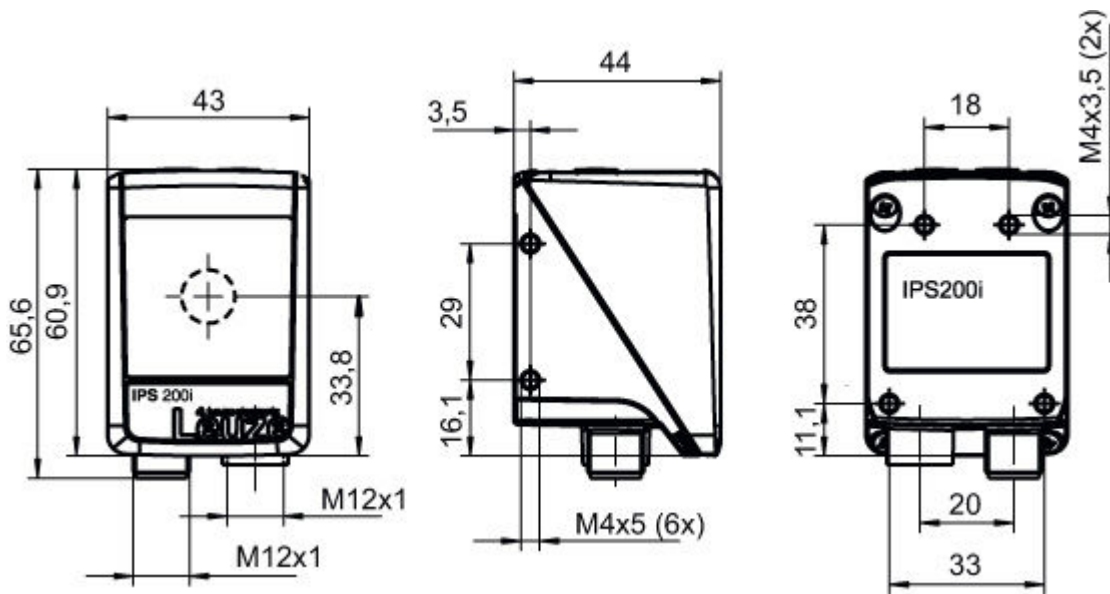
IEC 60068-2-6, test Fc

**Classification**

eCl@ss 8.0	27310201
eCl@ss 9.0	27310201
ETIM 5.0	EC002550
ETIM 6.0	EC002550

**Dimensioned drawings**

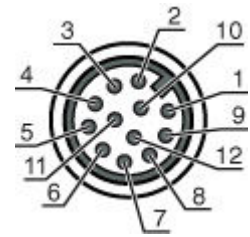
All dimensions in millimeters



**Electrical connection**

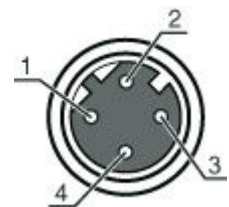
Connection 1	PWR / SWI / SWO
Type of connection	Connector
Function	Voltage supply Signal IN Signal OUT
Thread size	M12
Type	Male
Material	Metal
No. of pins	12 -pin
Encoding	A-coded

Pin	Pin assignment
1	VIN
2	GND
3	SWIN 1
4	SWOUT 2
5	FE
6	n.c.
7	SWOUT 5
8	SWOUT 6
9	SWOUT 7
10	SWOUT 8
11	SWIO 3
12	SWIO 4



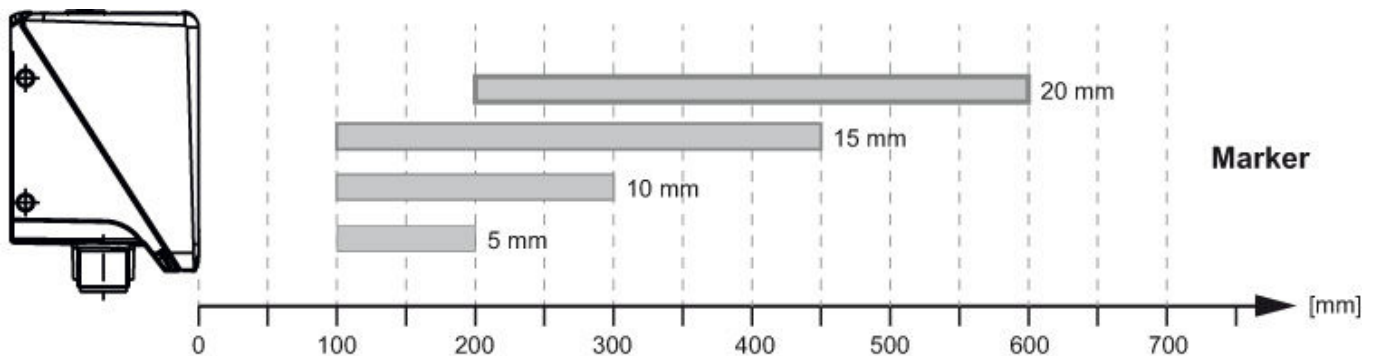
Connection 2	HOST
Type of connection	Connector
Function	Configuration interface Data interface
Thread size	M12
Type	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded

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



## Diagrams

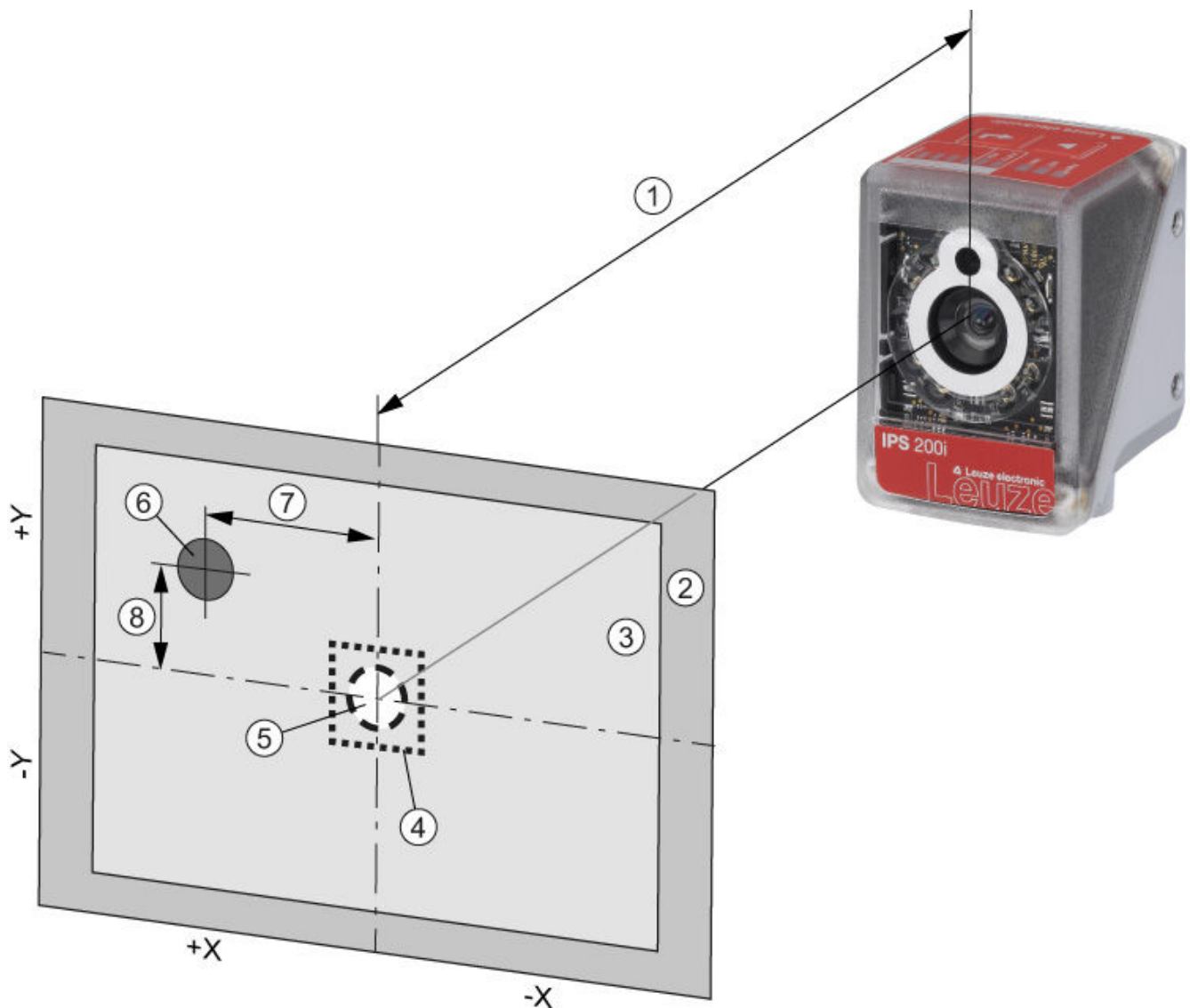
Typical working distances for markers with different marker diameters



①

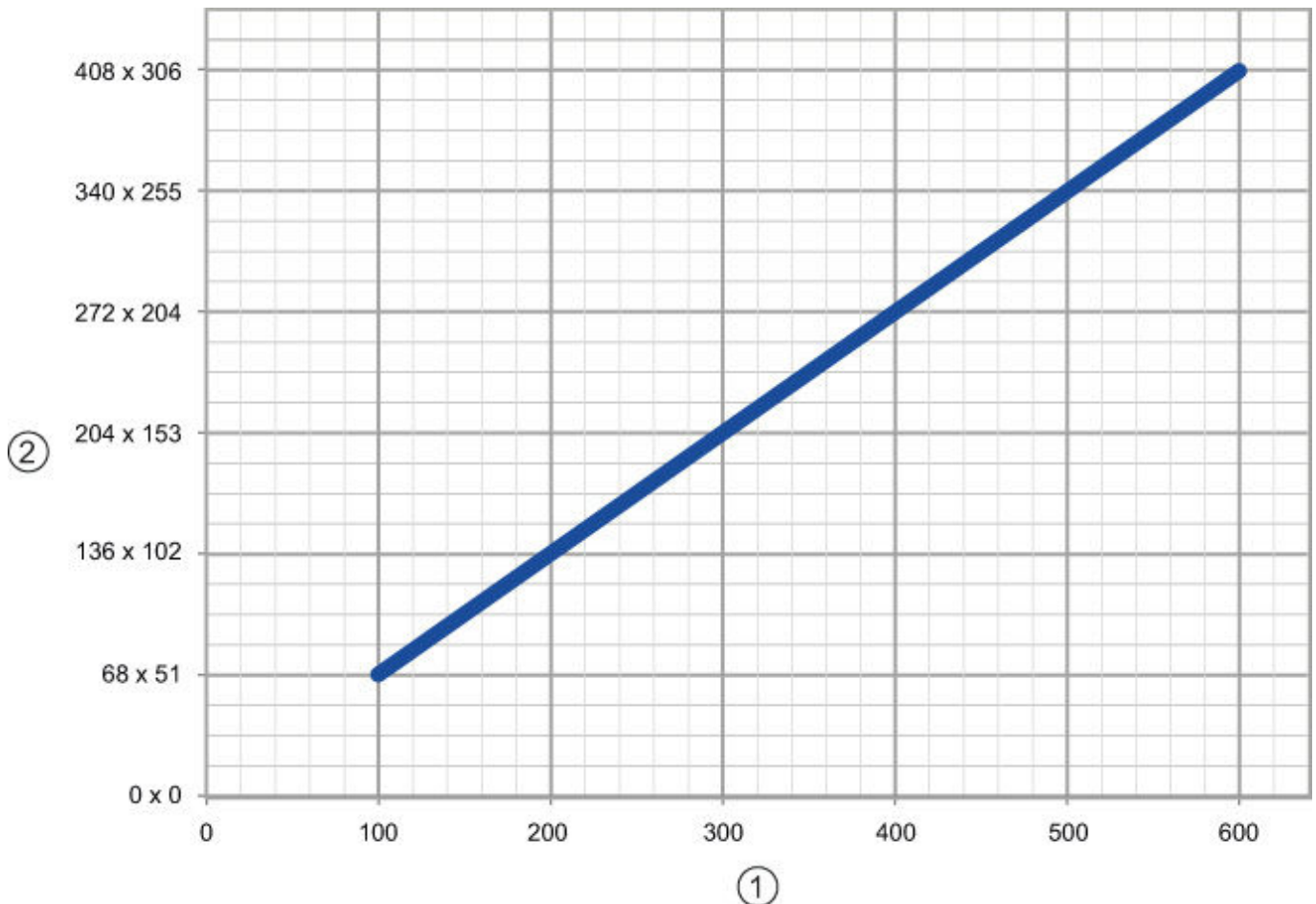
1 Distance [mm]

Mode of operation of the positioning sensor



- 1 Working distance
- 2 Field of view (FOV)
- 3 Region of interest (ROI)
- 4 Tolerance range
- 5 Nominal position (marker)
- 6 Actual position (marker)
- 7 X deviation
- 8 Y deviation

Relationship between working distance and field of view size



- 1 Distance [mm]
- 2 Field of view: width x height [mm]

## Operation and display

### LEDs

LED	Display	Meaning	
1	PWR	Off	No supply voltage
		Green, flashing	Initialization
		Green, continuous light	Operational readiness
		Orange, continuous light	Service operation
		Orange, flashing	Wave function
		Red, flashing	Device OK, warning set
		Red, continuous light	Device error
2	NET	Off	No supply voltage
		Green, flashing	Initialization
		Green, continuous light	Operational readiness
		Red, flashing	Communication error
		Red, continuous light	Network error
3	LINK	Green, continuous light	Ethernet connection is established
		Yellow, flashing	Data exchange active



LED	Display	Meaning
4	AUTO	Green, flashing Auto setup and teach-in of position
5	ADJ	Green, flashing Alignment mode and teach-in of position
6	---	Green, flashing Flashing frequency signals the marker distance to the nominal position
		Green, continuous light Marker is in nominal position
7	---	Green, flashing Flashing frequency signals the marker distance to the nominal position
		Green, continuous light Marker is in nominal position
8	---	Green, flashing Flashing frequency signals the marker distance to the nominal position
		Green, continuous light Marker is in nominal position
9	---	Green, flashing Flashing frequency signals the marker distance to the nominal position
		Green, continuous light Marker is in nominal position




## 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.

## Accessories










### Connection technology - Connection unit

	Part no.	Designation	Article	Description
	50130109	MA 150	Modular connection unit	Supply voltage: 18 ... 30 V Current consumption, max.: 150 mA Connections: 5 Piece(s) Degree of protection: IP 67
	50135196	MD 708-21-42/ D4-12	Ethernet switch	Supply voltage: 18 ... 30 V Interface: Ethernet Connections: 5 Piece(s) Connections for voltage supply: 1 Piece(s) Interface connections: 4 Piece(s) Degree of protection: IP 67
	50135197	MD 708-21-82/ D4-12	Ethernet switch	Supply voltage: 18 ... 30 V Interface: Ethernet Connections: 9 Piece(s) Connections for voltage supply: 1 Piece(s) Interface connections: 8 Piece(s) Degree of protection: IP 67

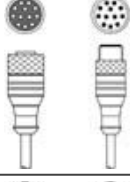
### Connection technology - Connection cables

	Part no.	Designation	Article	Description
	50130281	KD S-M12-CA- P1-020	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 12 -pin Connection 2: Open end Shielded: Yes Cable length: 2,000 mm Sheathing material: PUR

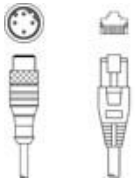
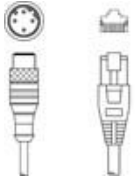
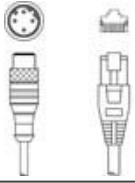
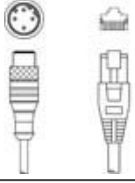
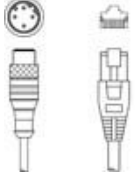
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	Part no.	Designation	Article	Description
	50130282	KD S-M12-CA-P1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 12 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR
	50130283	KD S-M12-CA-P1-100	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 12 -pin Connection 2: Open end Shielded: Yes Cable length: 10,000 mm Sheathing material: PUR
	50134943	KD S-M12-CW-P1-050	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 12 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR
	50135073	KS ET-M12-4A-P7-020	Connection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: Open end Shielded: Yes Cable length: 2,000 mm Sheathing material: PUR
	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
	50135075	KS ET-M12-4A-P7-100	Connection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: Open end Shielded: Yes Cable length: 10,000 mm Sheathing material: PUR
	50135076	KS ET-M12-4A-P7-150	Connection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: Open end Shielded: Yes Cable length: 15,000 mm Sheathing material: PUR
	50135077	KS ET-M12-4A-P7-300	Connection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: Open end Shielded: Yes Cable length: 30,000 mm Sheathing material: PUR
	50134942	KS ET-M12-4W-P7-050	Connection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Angled, 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
	50106905	KB ET-30000-SSA	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: 30,000 mm Sheathing material: PUR
	50137694	KDS S-M12-CA- M12-5A- P1-004-23X	Interconnection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 12 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 5 -pin Shielded: Yes Cable, crossed: Connection 1, pin 2 <-> connection 2, pin 3 Cable length: 400 mm Sheathing material: PUR
	50130284	KDS S-M12-CA- M12-CA-P1-020	Interconnection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 12 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 12 -pin Shielded: Yes Cable length: 2,000 mm Sheathing material: PUR
	50130285	KDS S-M12-CA- M12-CA-P1-050	Interconnection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 12 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 12 -pin Shielded: Yes Cable length: 5,000 mm Sheathing material: PUR
	50130286	KDS S-M12-CA- M12-CA-P1-100	Interconnection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 12 -pin Connection 2: Connector, M12, Axial, Male, A-coded, 12 -pin Shielded: Yes Cable length: 10,000 mm Sheathing material: PUR
	50137077	KSS ET-M12-4A- M12-4A-P7-020	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
	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
	50137079	KSS ET-M12-4A- M12-4A-P7-100	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: 10,000 mm Sheathing material: PUR
	50137080	KSS ET-M12-4A- M12-4A-P7-150	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: 15,000 mm Sheathing material: PUR


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	Part no.	Designation	Article	Description
	50135080	KSS ET-M12-4A-RJ45-A-P7-020	Interconnection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: RJ45 Shielded: Yes Cable length: 2,000 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
	50135082	KSS ET-M12-4A-RJ45-A-P7-100	Interconnection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: RJ45 Shielded: Yes Cable length: 10,000 mm Sheathing material: PUR
	50135083	KSS ET-M12-4A-RJ45-A-P7-150	Interconnection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: RJ45 Shielded: Yes Cable length: 15,000 mm Sheathing material: PUR
	50135084	KSS ET-M12-4A-RJ45-A-P7-300	Interconnection cable	Suitable for interface: Ethernet Connection 1: Connector, M12, Axial, Male, D-coded, 4 -pin Connection 2: RJ45 Shielded: Yes Cable length: 30,000 mm Sheathing material: PUR

**Connection technology - Connectors**


	Part no.	Designation	Article	Description
	50132254	D M12A-12P	Connector	Connection: Connector with solder connection, M12, Axial, Female, A-coded, 12 -pin
	50112155	S-M12A-ET	Connector	Suitable for interface: Ethernet Connection: Connector, M12, Axial, Male, D-coded, 4 -pin

**Connection technology - Adapters**


	Part no.	Designation	Article	Description
	50132255	D M12A-12P-PWR	Adapter	Number of connections: 2 Piece(s) Connection 1: Connector, M12, Axial, Female, A-coded, 12 -pin Connection 2: Jack socket

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## Mounting technology - Mounting brackets

	Part no.	Designation	Article	Description
	50132151	BT 320M	Mounting bracket	Design of mounting device: Angle, L-shape Fastening, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal




## Mounting technology - Rod mounts

	Part no.	Designation	Article	Description
	50132150	BTU 320M-D12	Mounting system	Contains: 4x M4 x 6 screws Design of mounting device: Mounting system Fastening, at system: For 12 mm rod Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal



## Standard reflectors

	Part no.	Designation	Article	Description
	50132911	REF 7-A-15-30 SET	Reflective tape	Contains: 500x Design: Round Reflection surface diameter: 15 mm Fastening: Self-adhesive

## Micro-triad-type reflectors

	Part no.	Designation	Article	Description
	50130343	MTKZ 13-30 SET	Reflector	Contains: 100x Design: Round Reflection surface diameter: 15 mm Material: Plastic Base material: Plastic Chemical designation of the material: PA Fastening: Clip Suitable for bore hole diameter: 12.5 ... 13.5 mm Suitable for material thickness: 0.8 ... 5 mm Processing temperature: 5 ... 45 °C
	50129092	MTKZ 15-30 SET	Reflector	Contains: 100x Design: Round Reflection surface diameter: 15 mm Material: Plastic Base material: Plastic Chemical designation of the material: PA Fastening: Clip Suitable for bore hole diameter: 14.5 ... 15.5 mm Suitable for material thickness: 0.8 ... 5 mm Processing temperature: 5 ... 45 °C
	50140183	MTKZ 7-30 SET	Reflector	Contains: 100x Design: Round Reflection surface diameter: 15 mm Material: Plastic Base material: Plastic Chemical designation of the material: PA Fastening: Clip Suitable for bore hole diameter: 6 ... 7 mm Suitable for material thickness: 0.8 ... 5 mm Processing temperature: 5 ... 45 °C

## General

	Part no.	Designation	Article	Description
	50137680	Cover IPS 200i	Cover hood	Housing material: Plastic Optics cover: Plastic
	50137681	Cover IPS 200i-G	Cover hood	Housing material: Plastic Optics cover: Glass