SMART

SENSOR

BUSINESS

△ **Leuze electronic**

the *sensor* people

Part no.: 50142219
IPS 448i FIX-F2-102-I3-G-H
Smart camera

CE

c(UL)us LISTED

Ethernet

PROFI NET

Figure can vary

Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Diagrams
- Operation and display
- Part number code
- Notes
- Accessories

Leuze electronic GmbH + Co. KG, In der Braike 1, 73277 Owen
Phone: +49 7021 573-0, Fax: +49 7021 573-199

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1 / 12

Technical data

Basic data	
Series	IPS 400i
Application	Double compartment depth Single compartment depth
Chip	CMOS

Special design	
Special design	Heating

Functions	
Software functions	Compartment fine positioning

Optical data	
Working range	250 ... 1,900 mm
Light source	LED , Infrared
Transmitted-signal shape	Pulsed
Camera resolution, horizontal	1,280 px
Camera resolution, vertical	960 px
Marker size (round)	13 ... 15 mm
Electronic shutter speed	0.068 ... 5 ms
Camera type	Monochrome

Measurement data	
Reproducibility (1 sigma)	0.2 mm , (Compartment depth 2: 0.5 mm) depending on the application

Electrical data		
Protective circuit		Polarity reversal protection Short circuit protected
Performance data		
Supply voltage U_B		18 ... 30 V , DC
Average power consumption		12 W
Inputs		
Number of digital switching inputs		3 Piece(s)
Switching inputs		
	Type	Digital switching input
	Voltage type	DC

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2 / 12

Part no.: 50142219 – IPS 448i FIX-F2-102-I3-G-H – Smart camera

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	Client Server
Address assignment	DHCP Manual address assignment
Transmission speed	10 Mbit/s 100 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)

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3 / 12

Connection 1	
Function	Signal IN Signal OUT Voltage supply
Type of connection	Connector
Thread size	M12
Type	Male
Material	Metal
No. of pins	12 -pin
Encoding	A-coded
Connection 2	
Function	Configuration interface Data interface
Type of connection	Connector
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	Metal Plastic , Diecast aluminum , PC
Lens cover material	Glass
Net weight	124 g
Housing color	Silver
Type of fastening	Mounting thread Via optional mounting device

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

Environmental data	
Ambient temperature, operation	-30 ... 45 °C
Ambient temperature, storage	-20 ... 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

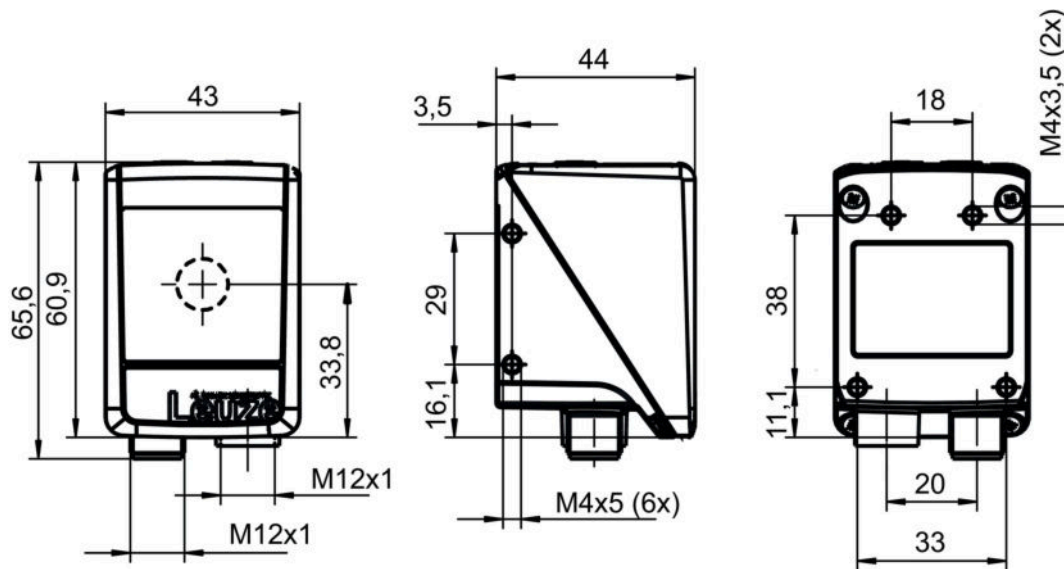| Test procedure for vibration in accordance with standard	IEC 60068-2-6, test Fc

Classification	
Customs tariff number	84719000
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**
Function	Signal IN Signal OUT Voltage supply
Type of connection	Connector
Thread size	M12
Type	Male
Material	Metal
No. of pins	12 -pin
Encoding	A-coded

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5 / 12

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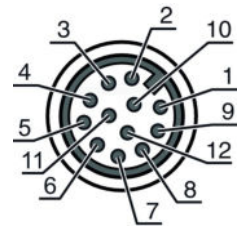
Connection 2	HOST
Function	Configuration interface Data interface
Type of connection	Connector
Thread size	M12
Type	Female
Material	Metal
No. of pins	4 -pin
Encoding	D-coded

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

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6 / 12
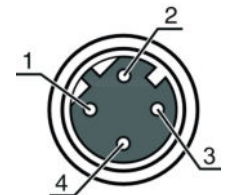
Diagrams
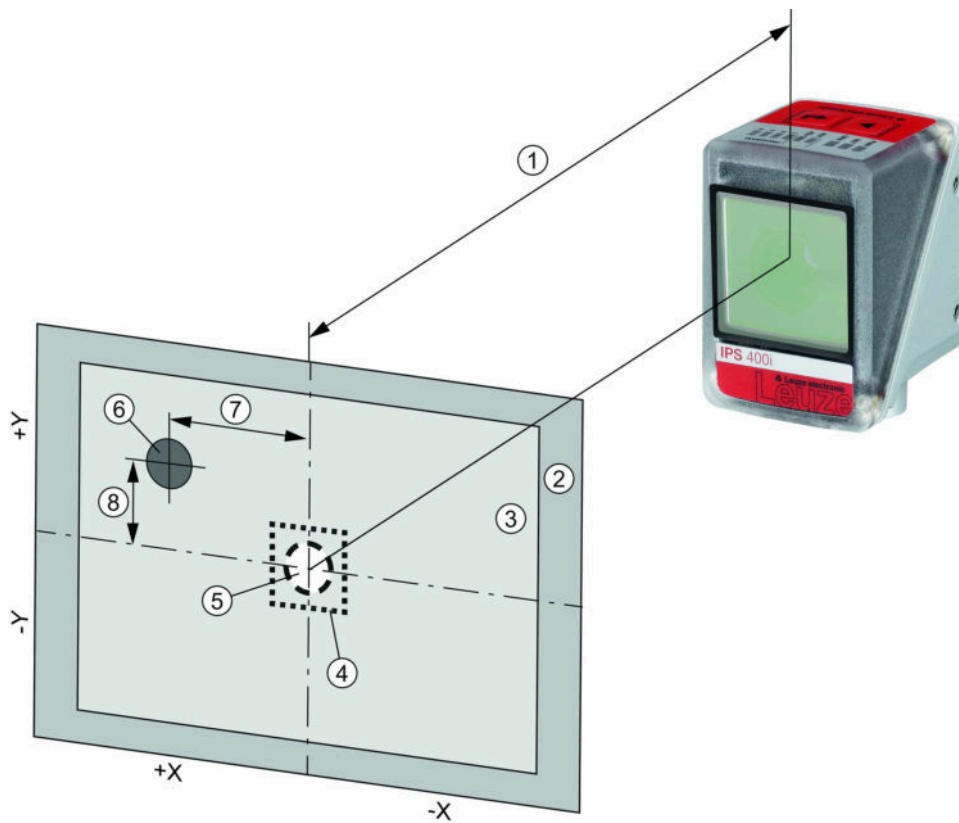
1   Working distance
2   Field of view (FOV)
3   Region of interest (ROI)
4   Tolerance range
5   Nominal position (marker)
6   Actual position (marker)
7   X deviation (default)
8   Y deviation (default)

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7 / 12

Relationship between working distance and field of view size
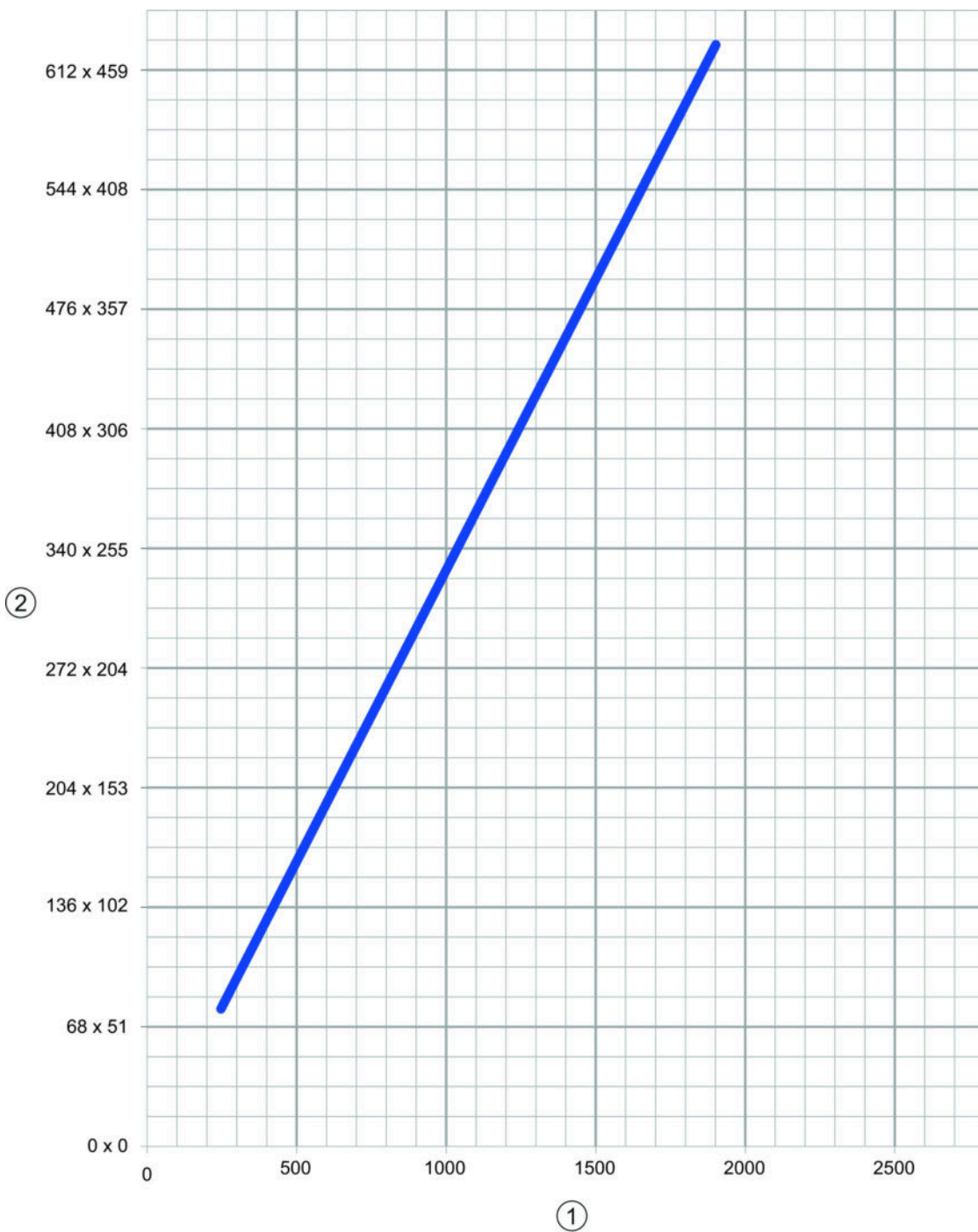
1   Distance [mm]
2   Field of view: width x height [mm]

Operation and display

LEDs

LED		Display	Meaning
1	PWR	Off	No supply voltage

LED		Display	Meaning
		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
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

Part number code

Part designation: **IPS AAAA BBB-DC-EEE-FG-H-J**

IPS	**Operating principle:** Imaging Positioning Sensor (camera-based)
AAAA	**Series/interface (integrated fieldbus technology):** 408i: Ethernet TCP/IP, UDP 448i: PROFINET-IO, Ethernet TCP/IP, UDP
BBB	**Equipment:** FIX: Fixed focal length
C	**Focus position:** F: Far Density
D	**Lens:** 2: 12 mm 4: 16 mm
EEE	**Beam exit:** 102: front
F	**Illumination:** I: infrared light
G	**Resolution range:** 3: 1280 x 960 pixels
H	**Protective screen:** G: Glass
J	**Special equipment:** H: with heating

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

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9 / 12

Notes

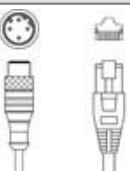| Observe intended use! |
| --- |
| • This product is not a safety sensor and is not intended as personnel protection. |
| • The product may only be put into operation by competent persons. |
| • Only use the product in accordance with its intended use. |

Configuration via configuration codes
• The positioning sensor can also be configured using configuration codes. The device/application parameters in the device are set and permanently saved after reading this code. Configuration codes are created with the Code Generator tool. You can find the Code Generator on the Internet at **www.leuze.com/code-generator**.

Accessories

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
	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

Connection technology - Interconnection cables

	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

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

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10 / 12

Mounting technology - Rod mounts

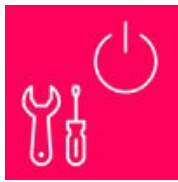|	Part no.	Designation	Article	Description
	50132150	BTU 320M-D12	Mounting system	Contains: 4x M4 x 6 screws Design of mounting device: Mounting system Fastening, at system: For 12 mm rod Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal

Standard reflectors

	Part no.	Designation	Article	Description
	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

Reflective tapes for standard applications

	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

Services

	Part no.	Designation	Article	Description
	S981014	CS30-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.

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11 / 12

	Part no.	Designation	Article	Description
	S981019	CS30-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 electronic website in the Download tab of the article detailed page.

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12 / 12