

Technical data

Basic data

Series	648
Application	Detection of up to 7 colors

Special version

Special version	For glossy objects (not suitable for black objects) RGB color output via IO-Link
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Optical data

Operating range	18 ... 32 mm
Beam path	Divergent
Light source	LED, White
LED risk group	Group 2 (in accordance with EN62471)
Light spot size [at sensor distance]	6 mm x 6 mm [25 mm]
Type of light spot geometry	Rectangular

Electrical data

Protective circuit	Polarity reversal protection Short circuit protected
Output current, max.	100 mA

Performance data

Supply voltage U_B	18 ... 30 V, DC
Open-circuit current, max.	60 mA, 24 V DC

Inputs

Number of teach inputs	1 Piece(s)
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Teach inputs

Type	Teach input
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Teach input 1

Function	Teach-in (deactivated by default, optionally configurable)
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Outputs

Number of digital switching outputs	3 Piece(s)
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Switching outputs

Type	Digital switching output
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Switching output 1

Switching element	Transistor, Push-pull
Switching principle	IO-Link / light switching (PNP)/dark switching (NPN)

Switching output 2

Switching element	Transistor, PNP / NPN switchable
Switching principle	Light switching (PNP)/dark switching (NPN)

Switching output 3

Switching element	Transistor, PNP / NPN switchable
Switching principle	Light switching (PNP)/dark switching (NPN)

Time behavior

Switching frequency	3 ... 500 Hz
Response time	≤ 540 ms, 500 Hz
Warmup time	5 min

Interface

Type	IO-Link
IO-Link	
COM mode	COM2
Min. cycle time	COM2 = 4 ms
Specification	V1.1
Device ID	5304
SIO-mode support	Yes
Process data, length	6 byte

Connection

Number of connections	1 Piece(s)
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Connection 1

Function	Signal IN (configurable) Signal OUT Voltage supply
Type of connection	Connector, turning 270°
Thread size	M12
Type	Male
Material	Metal
No. of pins	5 -pin
Encoding	A-coded

Mechanical data

Design	Cubic
Dimension (W x H x L)	25 mm x 50 mm x 50.5 mm
Housing material	Metal
Metal housing	Diecast zinc
Lens cover material	Plastic / PMMA
Net weight	150 g
Housing color	matte chrome
Type of fastening	Through-hole mounting Via optional mounting device
Compatibility of materials	ECOLAB

Operation and display

Type of display	LC Display LED
Operational controls	Control buttons

Environmental data

Ambient temperature, operation	-20 ... 55 °C
Ambient temperature, storage	-20 ... 80 °C

Certifications

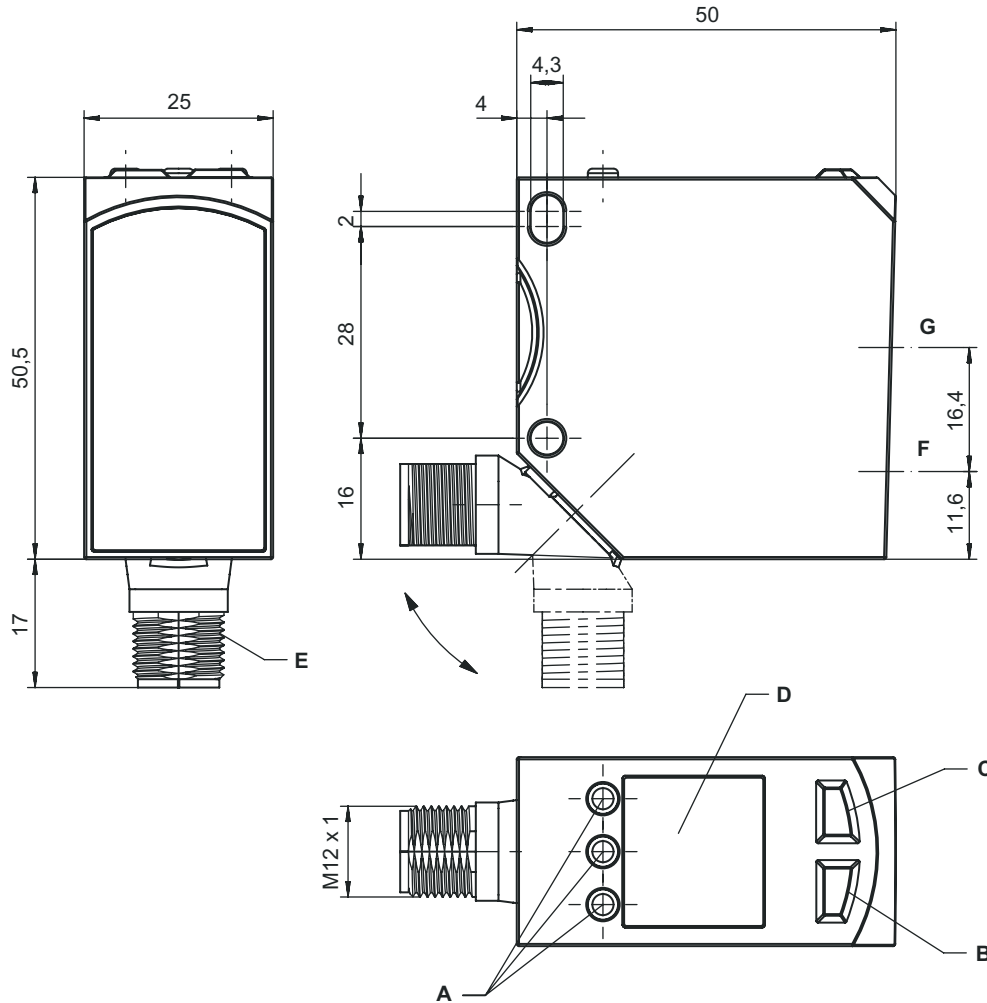
Degree of protection	IP 67 IP 69
Protection class	II
Approvals	c UL US
Test procedure for oscillation in accordance with standard	EN 60947-5-2
Test procedure for shock in accordance with standard	EN 60947-5-2
Standards applied	EN IEC 60947-5-2

Technical data

Customs tariff number	85365019
ECLASS 5.1.4	27270907
ECLASS 8.0	27270907
ECLASS 9.0	27270907
ECLASS 10.0	27270907
ECLASS 11.0	27270907
ECLASS 12.0	27270907
ECLASS 13.0	27270907
ECLASS 14.0	27270907
ECLASS 15.0	27270907
ECLASS 16.0	27270907
ETIM 5.0	EC001817
ETIM 6.0	EC001817
ETIM 7.0	EC001817
ETIM 8.0	EC001817
ETIM 9.0	EC001817
ETIM 10.0	EC001817
UNSPSC 26.08	41111940

Dimensioned drawings

All dimensions in millimeters



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|---|-----------------|---|-------------|
| A | Control buttons | E | M12 x 1 |
| B | LED(2) | F | Transmitter |
| C | LED(1) | G | Receiver |
| D | Display | | |

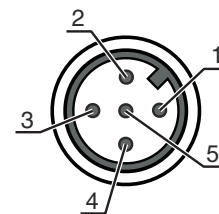
Electrical connection

Connection 1

Function	Signal IN (configurable)
	Signal OUT
	Voltage supply
Type of connection	Connector, turning 270°
Thread size	M12
Type	Male
Material	Metal
No. of pins	5 -pin
Encoding	A-coded

Electrical connection

Pin	Pin assignment	Conductor color
1	V+	Brown
2	IO2	White
3	V-	Blue
4	IO-Link / OUT 1	Black
5	IO3	Gray



Accessories

Connection technology - Connection unit


	Part no.	Designation	Article	Description
	50144900	MD 798i-11-82/L5-2222	IO-Link master	Current consumption, max.: 11,000 mA Interface: IO-Link, Automatic protocol detection, EtherNet IP, Modbus TCP, PROFINET Connections: 12 Piece(s) Sensor connections: 8 Piece(s) Degree of protection: IP 67, IP 65, IP 69K

Connection technology - Connection cables

	Part no.	Designation	Article	Description
	50133855	KD S-M12-5A-V1-020	Connection cable	Application: Chemical resistant Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 2,000 mm Sheathing material: PVC
	50133856	KD S-M12-5A-V1-050	Connection cable	Application: Chemical resistant Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PVC
	50132077	KD U-M12-5A-V1-020	Connection cable	Application: Chemical resistant Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PVC
	50132079	KD U-M12-5A-V1-050	Connection cable	Application: Chemical resistant 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

Accessories

Mounting technology - Rod mounts

	Part no.	Designation	Article	Description
	50117252	BTU 300M-D12	Mounting system	<p>Contains: 2x M4 x 25 screw, 2x M4 x 20 screw, 4x position washers</p> <p>Design of mounting device: Mounting system</p> <p>Fastening, at system: For 12 mm rod, Sheet-metal mounting</p> <p>Mounting bracket, at device: Screw type, Suited for M4 screws</p> <p>Type of mounting device: Clampable, Adjustable, Turning, 360°</p> <p>Material: Metal</p>

Note



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