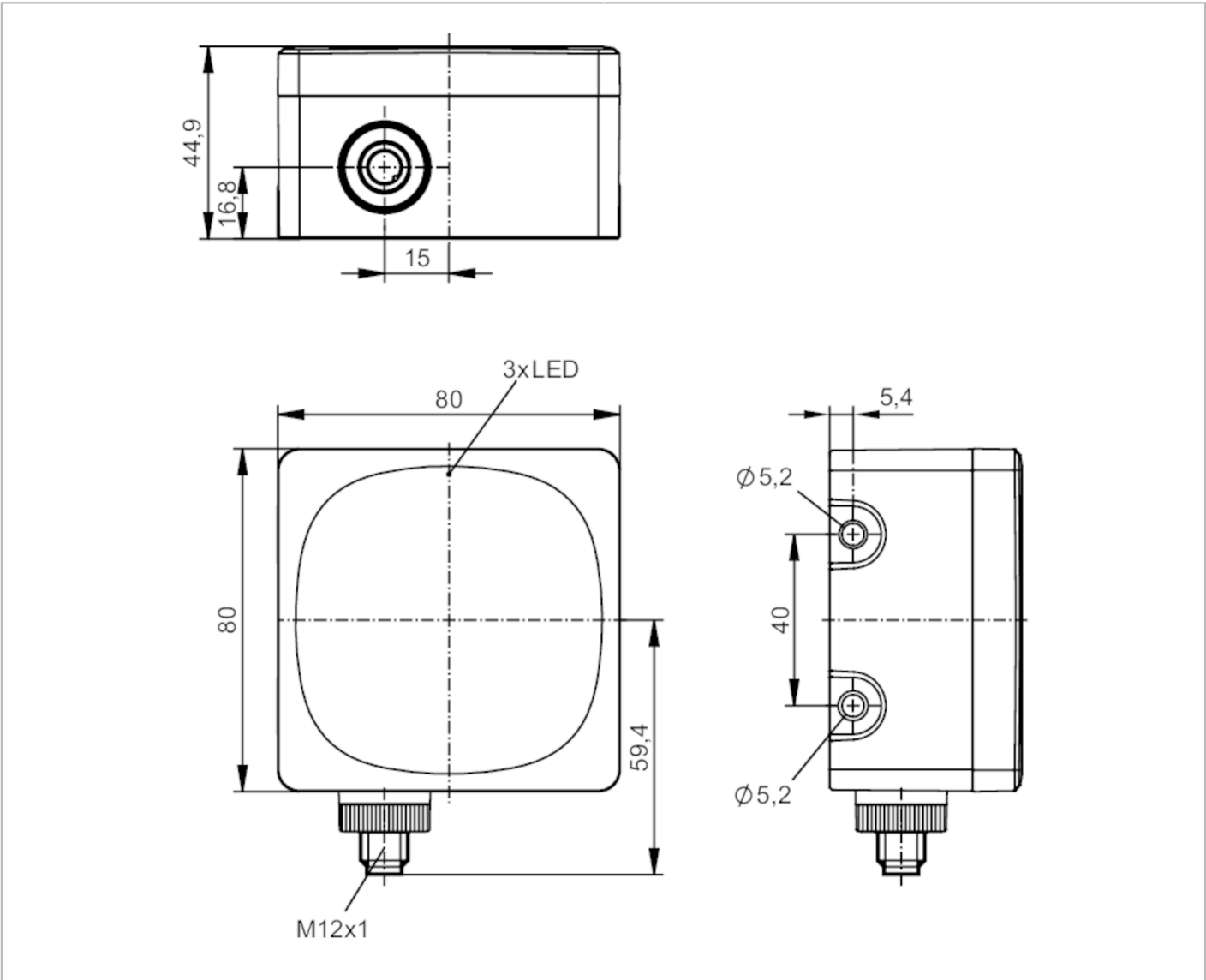


R2D210



Radar range sensor

R2DBAF6KG/US/IO-Link



Product characteristics

Communication interface	IO-Link
Housing	rectangular
Dimensions [mm]	80 x 80 x 45
Digital	
Electrical design	PNP/NPN; (parameterisable)
Output function	normally open / normally closed; (parameterisable)

Application

Radio approval for	USA; Canada; EU/RED
Note on radio approval	The list of countries applying the European Radio Equipment Directive 2014/53/EU (RED) can be found under "Downloads".

Electrical data

Operating voltage [V]	10...30 DC; (to SELV/PELV ; energy-limited circuits according to IEC/UL 61010-1 3rd ed. cl. 9.4)
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Radar range sensor

R2DBAF6KG/US/IO-Link

Current consumption	[mA]	< 300; (mean value: 150 mA)
Power consumption	[W]	21; (maximum)
Protection class		III
Reverse polarity protection		yes
Max. power-on delay time	[ms]	1000
Operating frequency [GHz]		77...81
Maximum radiated average spectral density EIRP [dBm/MHz]		-9
Radiated peak power EIRP [dBm]		27

Inputs / outputs

Total number of inputs and outputs	3
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Inputs

Inputs	IN1	activation/deactivation of the radar
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Outputs

Total number of outputs	2	
Output signal	OUT1	switching signal; IO-Link
	OUT2	switching signal
Short-circuit protection	yes	
Type of short-circuit protection	pulsed	
Overload protection	yes	

Digital

Electrical design		PNP/NPN; (parameterisable)
Output function		normally open / normally closed; (parameterisable)
Max. voltage drop switching output DC	[V]	2.5
Permanent current rating of switching output DC	[mA]	200

Detection zone

Range	[m]	0.3...50; (referred to E23014)
Angle of aperture cylindrical	[°]	horizontal 140 vertical 30
Note		static objects are not stably detected in the range < 1 m

Measuring/setting range

Measuring range	[m]	0.3...50; (see diagram:)
Sampling rate	[Hz]	20
Note		static objects are not stably detected in the range < 1 m

Software / programming

Parameter setting options	only via IO-Link
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Interfaces

Communication interface	IO-Link
Transmission type	COM3 (230,4 kBaud)
IO-Link revision	1.1

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Radar range sensor

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SDCI standard		IEC 61131-9	
Profiles	Function class		Designation
	0x0030		BLOB transfer
	0x4000		Identification and Diagnosis
	0x8101		Locator
	0x8102		ProductURI
SIO mode	yes		
Required master port type	A		
Min. process cycle time	[ms]	3.2	
IO-Link process data (cyclical)	function		bit length
	Alarmzonen Status		8
	Position X von Objekt 1		16
	Position Y von Objekt 1		16
	Geschwindigkeit X von Objekt 1		16
	Geschwindigkeit Y von Objekt 1		16
	Leistung von Objekt 1		8
	RCS von Objekt 1		8
	Konfidenz von Objekt 1		8
	Position X von Objekt 2		16
	Position Y von Objekt 2		16
	Geschwindigkeit X von Objekt 2		16
	Geschwindigkeit Y von Objekt 2		16
	Leistung von Objekt 2		8
	RCS von Objekt 2		8
	Konfidenz von Objekt 2		8
	device status		4
	sensor inclination		1
IO-Link functions (acyclical)	application specific tag; operating hours counter; number of trigger events; internal temperature; ROI setting; Schaltverzögerungen; Sender abschaltbar		
Supported DeviceIDs	Type of operation		DeviceID
	default		1520
Note	For further information please see the IODD PDF file under "Downloads"		
Operating conditions			
Ambient temperature	[°C]	-40...85	
Storage temperature	[°C]	-40...85	
Protection	IP 65; IP 66; IP 67; IP 69K; (with mounted connectors or protective caps)		
Tests / approvals			
EMC	DIN EN 61000-4-2 ESD		4 kV CD / 8 kV AD
	DIN EN 61000-4-3 HF radiated		10 V/m
	DIN EN 61000-4-4 Burst		2 kV
	DIN EN 61000-4-6 HF conducted		10 V
	DIN EN 61000-6-2		immunity / industrial environments
	EN 55032 emission		Class A
Impact resistance	IEC 62262		IK06 (1J)
Vibration resistance	DIN EN 60068-2-6 Fc		10 g 10 frequency cycles, 1 octave/minute, in 3 axes
Shock resistance	DIN EN 60068-2-27 Ea		50 g 11 ms half-sine; 10 shocks each in every direction along the 3 coordinate axes

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Radar range sensor

R2DBAF6KG/US/IO-Link

Continuous shock resistance	DIN EN 60068-2-29 Eb	40 g 6 ms half-sine; 4,000 shocks each in every direction along the 3 coordinate axes
Fast temperature change	DIN EN 60068-2-14 Na	TA = -40°C; TB = 85°C; t1 = 30 min; t2 = < 30 s; 300 cycles
Salt spray test	DIN EN 60068-2-11 Ka	8 test cycles
Electrical protection	DIN EN 61010-2-201	electric shock / electrical supply only via SELV/PELV circuits
MTTF [years]		53
UL approval	Ta	-40...65 °C
	File number UL	E205959

Mechanical data

Weight [g]	396.8
Housing	rectangular
Mounting	flush mountable
Dimensions [mm]	80 x 80 x 45
Materials	housing: PA; radome: PEI; Sealing: HNBR

Displays / operating elements

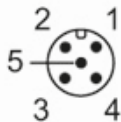
Display	switching status	2x LED, yellow
	operation	1x LED, green
	errors	1x LED, red

Remarks

Pack quantity	1 pcs.
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Electrical connection

Connector: 1 x M12; coding: A



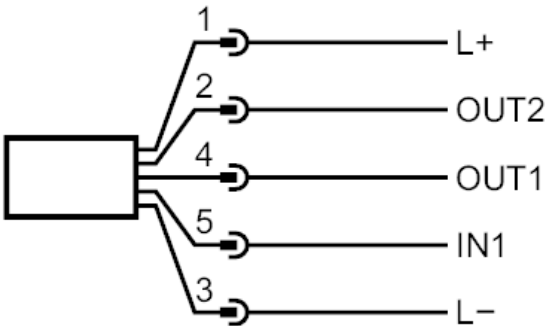
R2D210



Radar range sensor

R2DBAF6KG/US/IO-Link

Connection



- OUT1:

switching output
IO-Link
- OUT2:

switching output
- IN1:

activation/deactivation of the radar

Other data		
Operating mode	standard	Long range, high velocity
max. distance	0.3...20 m	0.3...30 m
distance resolution	100 mm	350 mm
horizontal angular resolution (azimuth)	10 °	10 °
distance accuracy	± 5 mm	± 15 mm
max. velocity	± 6 m/s	± 15 m/s
velocity resolution	± 0.20 m/s	± 0.38 m/s
speed accuracy	± 0.01 m/s	± 0.04 m/s
Switching frequency	20 Hz	20 Hz
distance	referred to E23013	
Resolution	for the detection of two objects of the same size	
accuracy	for a strong, point-shaped target	

R2D210

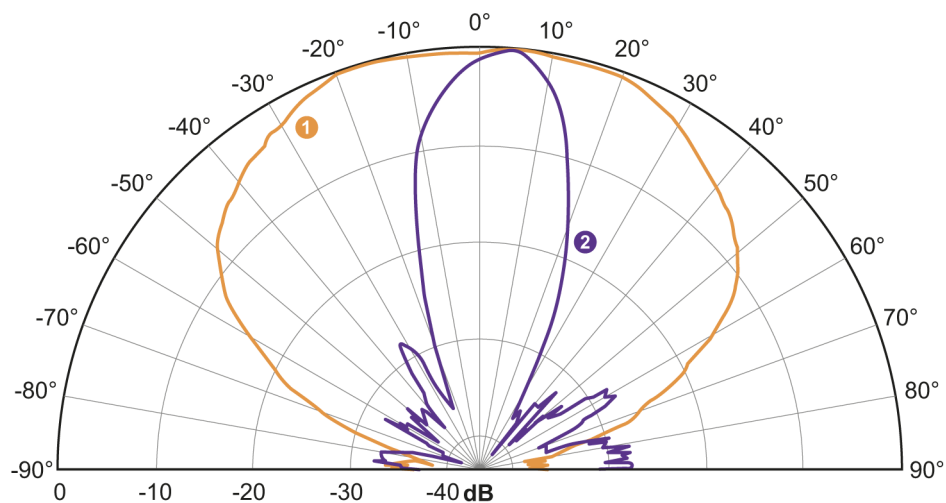
Radar range sensor

R2DBAF6KG/US/IO-Link



Diagrams and graphs

Detection zone



1: azimuth

2: elevation

conditions

Reflector: 4.3" Trihedral Corner Reflector (SAJ043-S1)

RCS: 10 dBm²

distance: 5 m

operating frequency: 79 GHz