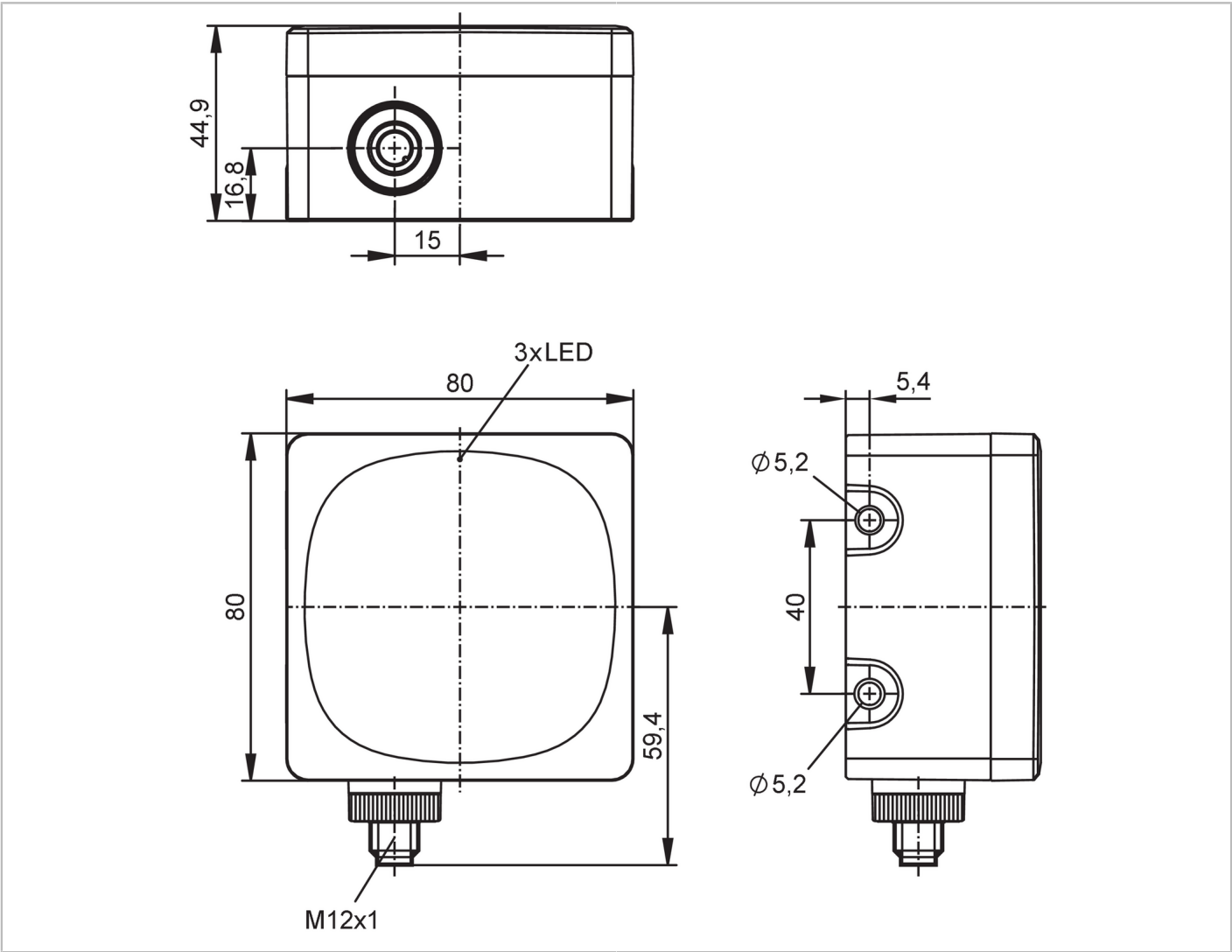


R1D102



Radar distance sensor

R1DADF6KG/US/IO-Link



Product characteristics		
Communication interface		IO-Link
Housing		rectangular
Dimensions	[mm]	80 x 80 x 45
Digital		
Electrical design		PNP/NPN; (configurable)
Output function		normally open / closed; (configurable)
Application		
Radio approval for		Hong Kong; Singapore; USA; Canada; Chile; Brazil; Ecuador
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)
Current consumption	[mA]	< 300; (mean value: 150 mA)
Power consumption	[W]	21; (maximum)
Protection class		III

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Reverse polarity protection		yes
Max. power-on delay time	[ms]	1000
Operating frequency [GHz]		60...64
Radiated peak power EIRP [dBm]		10
Inputs / outputs		
Total number of inputs and outputs		3
Inputs		
Inputs	IN1	activation/deactivation of the radar
Outputs		
Total number of outputs		2
Output signal	OUT1	switching signal; IO-Link
	OUT2	switching signal; analog signal
Short-circuit protection		yes
Type of short-circuit protection		yes (non-latching)
Overload protection		yes
Analog		
Analog current output	[mA]	4...20, invertible; (scalable)
Max. load	[Ω]	500; (< 250 Ω: Ub 16...30 V DC; 250...500 Ω: Ub 18...30 V DC)
Analog voltage output	[V]	0...10, invertible; (scalable)
Min. load	[Ω]	2000
Digital		
Electrical design		PNP/NPN; (configurable)
Output function		normally open / closed; (configurable)
Max. voltage drop switching output DC	[V]	2.5
Permanent current rating of switching output DC	[mA]	200
Monitoring range		
Range	[m]	0.1...35; (referred to a 10 cm corner reflector)
Angle of aperture cylindrical	Horizontal	40
	vertical	30
Measuring/setting range		
Measuring range	[m]	0.1...35; (see diagram:)
Sampling rate	[Hz]	20...100
Accuracy / deviations		
Hysteresis	[mm]	5; (configurable)
Temperature coefficient analog output		± 0,1
	[% of the span / 10 K]	
Repeatability analog output		< 0,1
	[% of the span]	
Linearity error of analog output		± 0,15
	[% of the span]	

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Precision analog output [% of the span]

± 0,2 (in addition to the accuracy specifications in the further data section)

Software / programming

Parameter setting options

only via IO-Link

Interfaces

Communication interface

IO-Link

Transmission type

COM3 (230,4 kBaud)

IO-Link revision

1.1

SDCI standard

IEC 61131-9

Profiles

BLOB

Binary Large Object transfer

Common - I&D

Identification and Diagnosis

Function

Locator

Function

ProductURI

SIO mode

yes

Required master port class

A

Min. process cycle time

[ms]

3.2

IO-Link process data (cyclical)

Function

bit length

Distance

32

speed

32

Power

8

RCS

8

sensor inclination

1

device status

4

binary switching information

4

IO-Link functions (acyclical)

application specific tag; operating hours counter; number of trigger events; internal temperature; ROI setting

Supported DeviceIDs

Type of operation

DeviceID

default

1518

Operating conditions

Ambient temperature

[°C]

-40...80

Note on ambient temperature

without using the analog output: -40...85 °C

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

noise 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

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

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Radar distance sensor

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Fast temperature changes	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 safety	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]	413.5
Housing	rectangular
Mounting	flush mountable
Dimensions [mm]	80 x 80 x 45
Material	housing: PA; radome: PEI; sealing: HNBR

Displays / operating elements

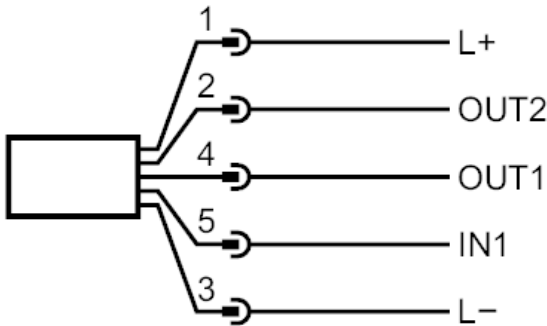
Display	Switching status	2x LED, yellow
	Power	1x LED, green
	errors	1x LED, red

Remarks

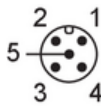
Pack quantity	1 pcs.
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Electrical connection

Connection



Connector: 1 x M12; coding: A; Contacts: 5



1	L+
2	OUT2 Switching output analog output
4	OUT1 Switching output IO-Link
5	IN1 activation/deactivation of the radar
3	L-

R1D102



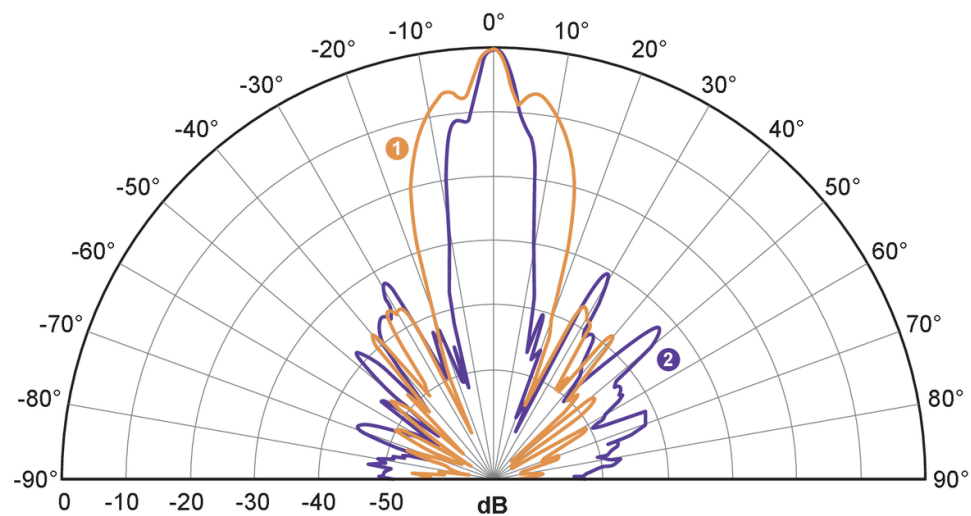
Radar distance sensor

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Other data			
Operating mode	standard	Long range, high velocity	high measuring frequency
max. distance	0.1...20 m	0.25...35 m	0.1...20 m
distance resolution	100 mm	370 mm	100 mm
distance accuracy	± 5 mm	± 15 mm	± 5 mm
max. velocity	± 6 m/s	± 15 m/s	± 20 m/s
velocity resolution	± 0.15 m/s	± 0.38 m/s	
speed accuracy	± 0.01 m/s	± 0.04 m/s	± 0.25 m/s
Sampling rate	20 Hz	20 Hz	100 Hz
Distance	referred to a 10 cm corner reflector		
Resolution	for the detection of two objects of the same size		
Accuracy	for a strong, point-shaped target		

Diagrams and graphs

Monitoring range



- 1: azimuth
- 2: elevation

conditions

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

RCS: 8 dBm²

Distance: 5 m

operating frequency: 62 GHz