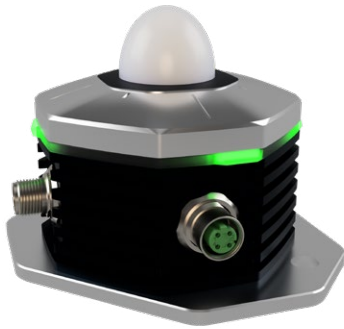


Radar sensors

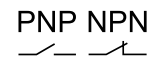
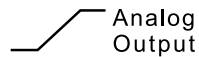
For demanding measurement tasks with maximum precision

RAD78D

PROFINET IO



For distance measurement, positioning, and object detection.



Order code

Measuring range 0.10 m ... 6 m

RAD78D . 006 . 11 X 5 3 . 3C12
Type

Opening angle : ±1.5° (3°)
Measurement rate : 500 Hz
Interfaces : PROFINET
 4 ... 20 mA + 3 x switching output PNP/NPN
 RS485 as communication interface
Radar frequency : 119 ... 125 GHz (selectable 122 ... 123 Hz)

a *Linearity*
 1 = up to ±1.0 mm
 3 = up to ±0.3 mm
 7 = up to ±0.7 mm

Order code

Measuring range 0.3 m ... 50 m

RAD78D . 050 . 11 2 1 2 . 3C12
Type

Opening angle : ±1.5° (3°)
Measurement rate : 100 Hz
Interfaces : PROFINET
 4 ... 20 mA + 3 x switching output PNP/NPN
 RS485 as communication interface
Radar frequency : 119.6 ... 123 GHz (selectable 122 ... 123 Hz)

a *Linearity*
 2 = up to ±2.0 mm

Radar sensors

For demanding measurement tasks with maximum precision		RAD78D	PROFINET IO
Accessories			Order no.
Starter Kit RAD78x PROFINET	Preconfigured router and power kit for immediate access to the sensor and the integrated web interface—without changing the PC's IP address or admin rights. The kit consists of a mini router and a 24 V sensor power supply.		8.0010.9000.0025
Radar corner cube	<ul style="list-style-type: none"> Increasing the signal strength received from a target. Increasing the possible angle between sensor and target. Increasing the measurement accuracy by increasing the signal strength. <p>For the measuring range: 0.5 m ... 20 m Dimensions: 100 x 82 x 91 mm</p> <p>For the measuring range: 10 m ... 30 m Dimensions: 250 x 171 x 221 mm</p> <p>For the measuring range: 20 m ... 70 m Dimensions: 350 x 210 x 307 mm</p>	<p>side length 100 mm</p> <p>side length 250 mm</p> <p>side length 350 mm</p>	<p>8.0000.7000.0081 ¹⁾</p> <p>8.0000.7000.0082 ¹⁾</p> <p>8.0000.7000.0091 ¹⁾</p>
Mounting plate for precise angle adjustment	Air-cooled housing for extreme radiant heat, e.g. from molten metal Resistance up to 1600°C Short-term load tolerance up to 700°C Suitable for ambient temperatures up to 120°C		8.0000.7000.0088
Heat protection housing	To ensure that the sensor is correctly aligned perpendicular to the intended target Horizontal angle adjustment $\pm 2^\circ$ Vertical angle adjustment $\pm 1.5^\circ$ Dimensions: 288 x 175 x 88 mm		8.0000.7000.0085
Heat protection housing with deflection	With a connection for air cooling.		on request
Heat protection housing for closed furnaces and containers	For enclosed furnaces and containers with high process temperatures. With a connection for air cooling		on request

1) Lagertypen

Radarsensors

For demanding measurement tasks with maximum precision		RAD78D	PROFINET IO
Cables and connectors			Order no.
Preassembled cables	M12 male connector with external thread, 4-pin, D-coded, straight M12 female connector with coupling nut, 4-pin, D-coded, straight 2 m [6.56'] PUR cable		05.00.6031.4444.002M
	M12 male connector with external thread, 4-pin, D-coded, angled M12 female connector with coupling nut, 4-pin, D-coded, straight 2 m [6.56'] PUR cable		05.00.6031.4542.002M
	M12 male connector with external thread, 4-pin, D-coded, straight RJ45 connector 2 m [6.56'] PUR cable		05.00.6031.7444.002M
	M12 female connector with coupling nut, 8-pin, A-coded, straight M12 male connector with external thread, 8-pin, A-coded, straight 2 m [6.56'] PUR cable		05.00.6051.8284.002M
Connectors	M12 male connector with external thread, 4-pin, D-coded, straight (metal)		05.WASCSY4S
	M12 male connector with external thread, 4-pin, D-coded, angled (metal)		8.0000.5128.0000
	M12 female connector with coupling nut, 8-pin, A-coded, straight (metal)		05.CMB 8181-0

Further Kübler accessories can be found at: [kuebler.com/accessories](https://www.kuebler.com/accessories)

Further Kübler cables and connectors can be found at: [kuebler.com/connection-technology](https://www.kuebler.com/connection-technology)

Radar sensors

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Technical data

General data – Order code **a** = 3

Measuring range	0.1 ... 6 m
Linearity	up to 2 m ±0.3 mm > 2 m ±0.015 % of the measurement section
Repeatability	up to 2 m ±0.03 mm > 2 m ±0.0015 % of the measurement section
Radar frequency (FMCW)	119 ... 125 GHz (selectable 122 ... 123 Hz)
Radiation power	EIRP < 100 mW
MTTF	> 105 years
Measurement rate	500 Hz
Opening angle	±1.5° (3°)

General data – Order code **a** = 1

Measuring range	0.1 ... 6 m
Linearity	up to 2 m ±1 mm > 2 m ±0.05 % of the measurement section
Repeatability	up to 2 m ±0.1 mm > 2 m ±0.005 % of the measurement section
Radar frequency (FMCW)	119 ... 125 GHz (selectable 122 ... 123 Hz)
Radiation power	EIRP < 100 mW
MTTF	> 105 years
Measurement rate	500 Hz
Opening angle	±1.5° (3°)

Electrical characteristics

Power supply	24 V DC
Current consumption	125 mA
Power consumption	3 W
Reverse polarity protection	yes
Analog output	4 ... 20 mA power supply 8 ... 40 V
Switching outputs	3 x PNP/NPN power supply 10 ... 40 V

General data – Order code **a** = 7

Measuring range	0.1 ... 6 m
Linearity	up to 2 m ±0.7 mm > 2 m ±0.035 % of the measurement section
Repeatability	up to 2 m ±0.07 mm > 2 m ±0.0035 % of the measurement section
Radar frequency (FMCW)	119 ... 125 GHz (selectable 122 ... 123 Hz)
Radiation power	EIRP < 100 mW
MTTF	> 105 years
Measurement rate	500 Hz
Opening angle	±1.5° (3°)

General data – Order code **a** = 2

Measuring range	0.3 ... 50 m
Linearity	up to 4 m ±2 mm > 4 m ±0.05 % of the measurement section
Repeatability	up to 4 m ±0.5 mm > 4 m ±0.005 % of the measurement section
Radar frequency (FMCW)	119.6 ... 123 GHz (selectable 122 ... 123 Hz)
Radiation power	EIRP < 100 mW
MTTF	> 105 years
Measurement rate	100 Hz
Opening angle	±1.5° (3°)

Mechanical characteristics

Material	housing die-cast aluminum, coated lens PTFE
Weight	740 g
Protection acc. to EN 60529	IP67
Working temperature range	-40 °C ... +70 °C [-40 °F ... +185 °F]
Storage temperature range	-40 °C ... +85 °C [-40 °F ... +158 °F]
Shock resistance (EN 60068-2-27)	100 g; 11 ms

Approvals

CE compliant in accordance with	EMC Directive 2014/30/EU RoHS Directive 2011/65/EU
Approvals/Certificates	FCC / CFR-47 part 15 (USA) RSS-210 Issue 10 (Canada) EN 305 550-1 V.1.2.1 (European Union) EN 305 550-2 V.1.2.1 (European Union)

Radar sensors

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PROFINET IO

Interface characteristics PROFINET

General information

Communication interface	Profinet RT
Cycle time	1 ms
Data transfer	100 MBit/s
Line length	100 m
Classifications	RT Class 1 Conformance Class B Netload Class III

Adjustable parameters

- IP address
- Device name
- I&M 0...3 Parameter


PROFINET characteristics

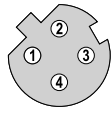
- I&M 0 ... 3
- MRP
- LLDP
- PDEV
- SNMP

Process data

- Distance
- Peak
- Ramp Count

Terminal assignment

Function	M12 connector, 8-pin, A-coded										
Power supply	Signal:	A	+V	CL	OUT 2	OUT 1	B	0 V	OUT 3	⊥	
Analog output Switching outputs	Pin:	1	2	3	4	5	6	7	8	PH	

Function	M12 connector, 4-pin, D-coded					
Profinet communication	Signal:	RxD+	RxD-	TxD+	TxD-	
	Abbreviation:	Receive data+	Receive data-	Transmit data+	Transmit data-	
	Pin:	2	4	1	3	

- +V: supply voltage sensor +V DC
- 0 V: Ground sensor GND (0V)
- A, B: RS485 Communication
- CL: analog output (4 ... 20 mA)
- OUT 1, 2, 3: switching outputs
- PH ⊥: connector housing (Shield)

Radar sensors

For demanding measurement tasks with maximum precision

RAD78D

PROFINET IO

Dimensions

Dimensions in mm

