

Data Sheet IMD-3000

Version 2.0—04.08.2020

PRODUCT FAMILY

InnoSenT Motion Detectors

APPLICATIONS

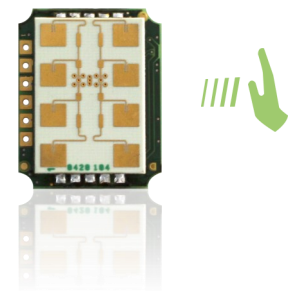
- Touchless switch

	Movement
	Velocity
	Direction
	Presence
	Distance
	Angle

FEATURES:

The IMD-3000 is a contact-free alternative for push buttons:

- Small design allows retrofit of existing facilities, e.g. ticket machines, manual door openers, light switches etc
- Includes a processing unit that converts the radar signal into a digital trigger if an object is detected in front of the sensor (moving or static)
- Poti for optimizing the detection range on-site
- Wide supply voltage range of 4-30V for flexible integration
- Performance is unaffected by hand coverings like gloves
- Radar technology is unaffected by lighting conditions



DESCRIPTION

The new IMD-3000 radar system with an intelligent μ C processing unit detects objects directly in front of the sensor (configurable detection range) and outputs this as a trigger on open collector.

CERTIFICATES

InnoSenT GmbH has established and applies a quality system for: development, production and sales of radar sensors for industrial and automotive sensors. See more information on our quality standards:

<https://www.innosent.de/en/company/certifications/>

ADDITIONAL INFORMATION

InnoSenT Standard Product. Changes will not be notified as long as there is no influence on form, fit or specified function of the product described within this data sheet.

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PARAMETERS

The IMD-3000 consists of a 24 GHz Radar front end (RFE) with CW-modulation and a DSP-board for recognizing objects in front of the sensor. The sensor outputs a pulse via open collector.

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNITS
Radar						
transmit frequencies		f_t	24.150		24.250	GHz
output power (EIRP)		P_{out}			12.7	dBm
detection range				10		cm
Mechanical Outlines						
outline dimensions	compare to schematic on page 5	height length width	6.9 25 20	6.9 25 20	6.9 25 20	mm
Power supply						
supply voltage		V_{CC}	4		30	V
supply current		I_{CC}		18mA @ 12V 12mA @ 18V		mA
Environment						
operating temperature		T_{OP}	-40		+85	°C
storage temperature		T_{STG}	-40		+85	°C

INTEGRATION

A distance of the antenna to the radome (can be a standard plastic covering) of 3mm is best for optimal performance. The recommended thickness of the radome is 3mm.

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VARIANTS

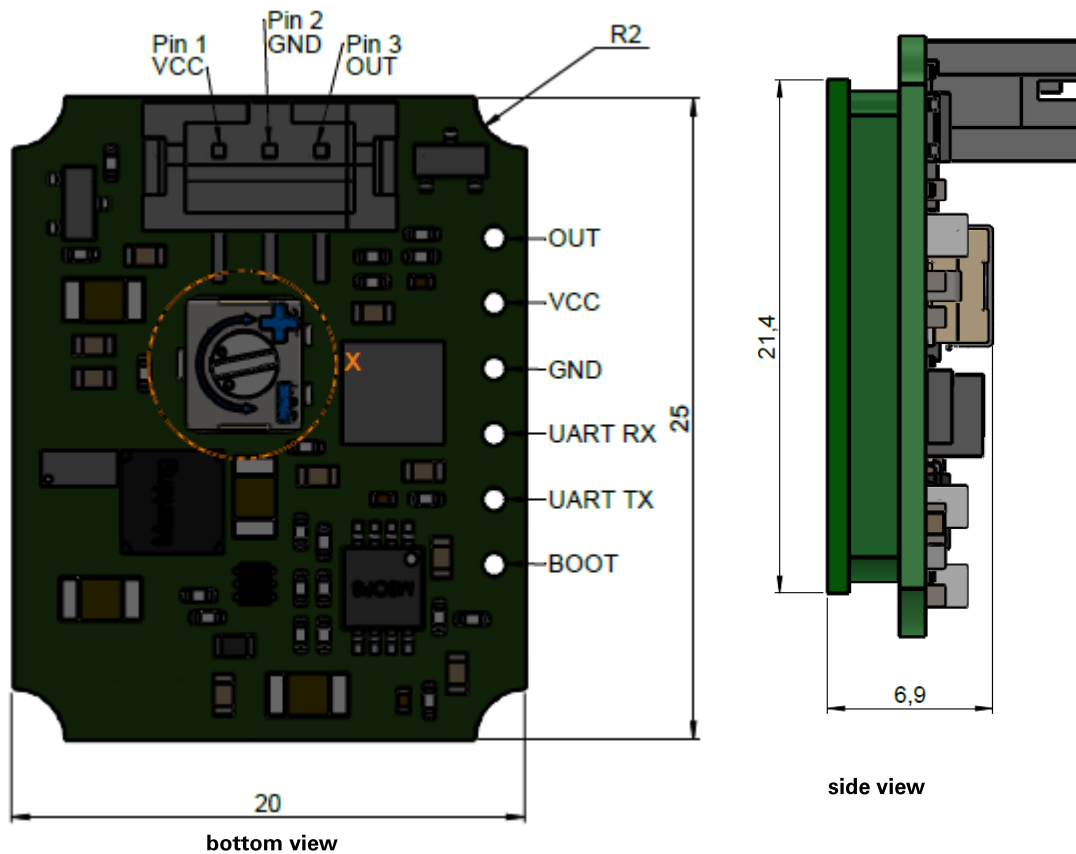
The IMD-3000 is available in different variants.

ORDERING NR.	VARIANT	DESCRIPTION
80.00000450	Standard	<ul style="list-style-type: none">• Outputs a short trigger (100ms) on open collector when detecting a hand in front of the sensor• Poti adjusts the detection range—min. up to 5cm (left), max. up to 15cm (right), delivery status: up to 10cm (middle); poti setting below: rain tolerant mode, suitable for outdoor applications where rainfall occurs (NOTE: the detection range cannot be adjusted in this mode)
80.00000452	Hold and Release	<ul style="list-style-type: none">• Outputs a trigger on open collector as long as a hand is detected in front of the sensor• Poti adjusts the detection range—min. up to 5cm (left), max. up to 15cm (right), delivery status: up to 10cm (middle)
80.00000453	Long Activation Time	<ul style="list-style-type: none">• Outputs a long trigger (1000ms) on open collector when detecting a hand in front of the sensor• Poti adjusts the detection range—min. up to 5cm (left), max. up to 15cm (right), delivery status: up to 10cm (middle); poti setting below: rain tolerant mode, suitable for outdoor applications where rainfall occurs (NOTE: the detection range cannot be adjusted in this mode)

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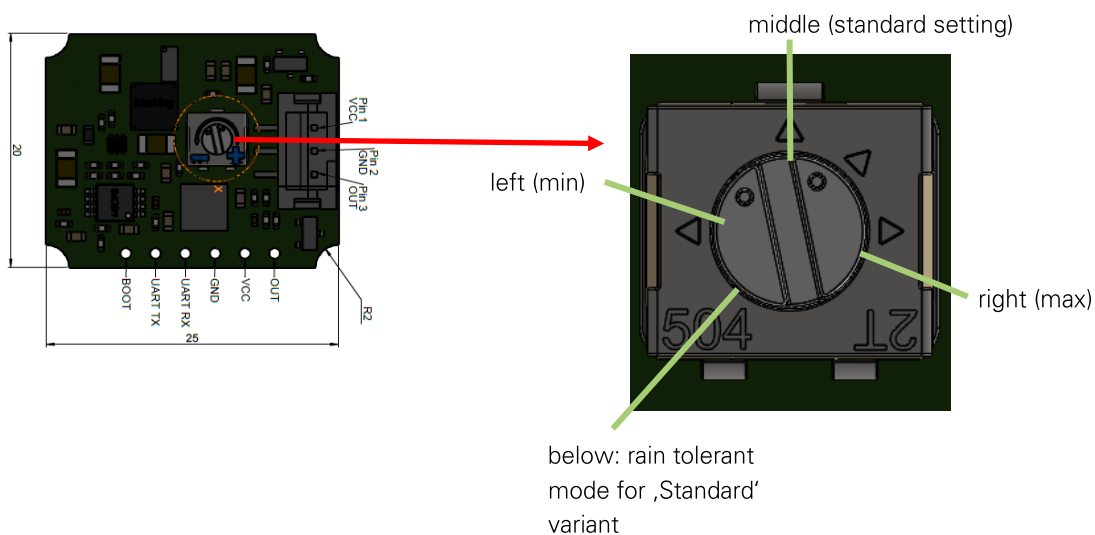
MECHANICAL DRAWING



All dimensions in mm

POTENTIOMETER

Adjusting the potentiometer adjusts the detection range or changes mode. Please refer to the table under 'VARIANTS' for a detailed description.

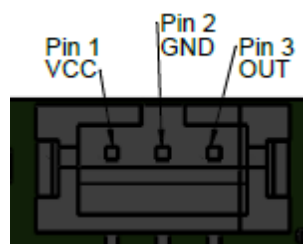
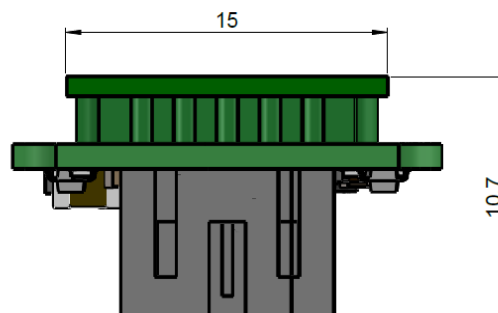
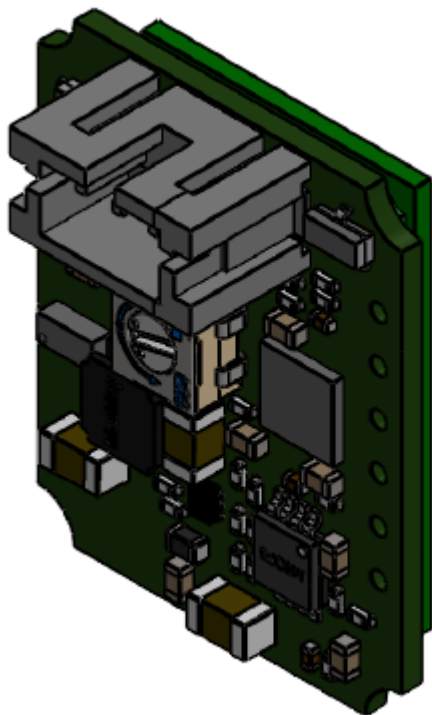


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INTERFACE

The IMD-3000 provides a B3B-PH-SM4-TB connector. The connector is mounted on the module facing backwards. A compatible pin header is PHR3.



PIN #	DESCRIPTION
1	VCC 4 - 30V
2	GND
3	Output open collector (max.50mA@25°C)

COMMUNICATION

The sensor outputs a trigger on open collector when an object is detected in front of the sensor.

A firmware update can be made via UART (additional pins on the right side, see Mechanical drawing on page 4). See the application note for a description of how to realize this.

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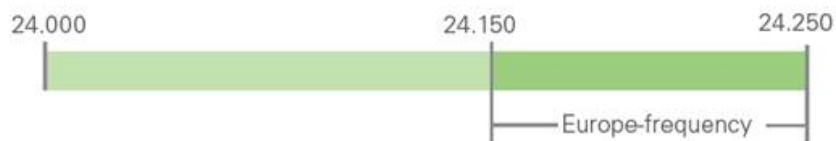
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ANNEX A

The information that will be given below is only a rough overview; for details please contact the local approval agencies. An overview over the frequency bands in Europa can also be found in the REC 70-03 (Annex B) which is available under www.cept.org

FREQUENCY BANDS IN EUROPE

Generally the IMD-3000 can be used in all countries in Europe.



FREQUENCY BANDS IN US FCC 15.249



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ESD-INFORMATION



This InnoSenT sensor is sensitive to damage from ESD. Normal precautions as usually applied to CMOS devices are sufficient when handling the device. Touching the signal output pins has to be avoided at any time before soldering or plugging the device into a motherboard.

APPROVAL

This Data Sheet contains the technical specifications of the described product. Changes of the specification must be in written form. All previous versions of this Data Sheet are no longer valid.

VERSION	DATE	COMMENT
1.0	09.07.2020	Initial release
2.0	04.08.2020	Add description of variants

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