

Data Sheet IMD-3000

Version 4.3 — 07.11.2022

PRODUCT FAMILY

InnoSenT Motion Detector

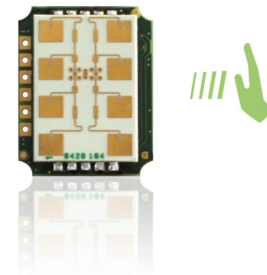
APPLICATIONS

- Touchless switch

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 4 | 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} | | 19mA @ 12V 15mA @ 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.

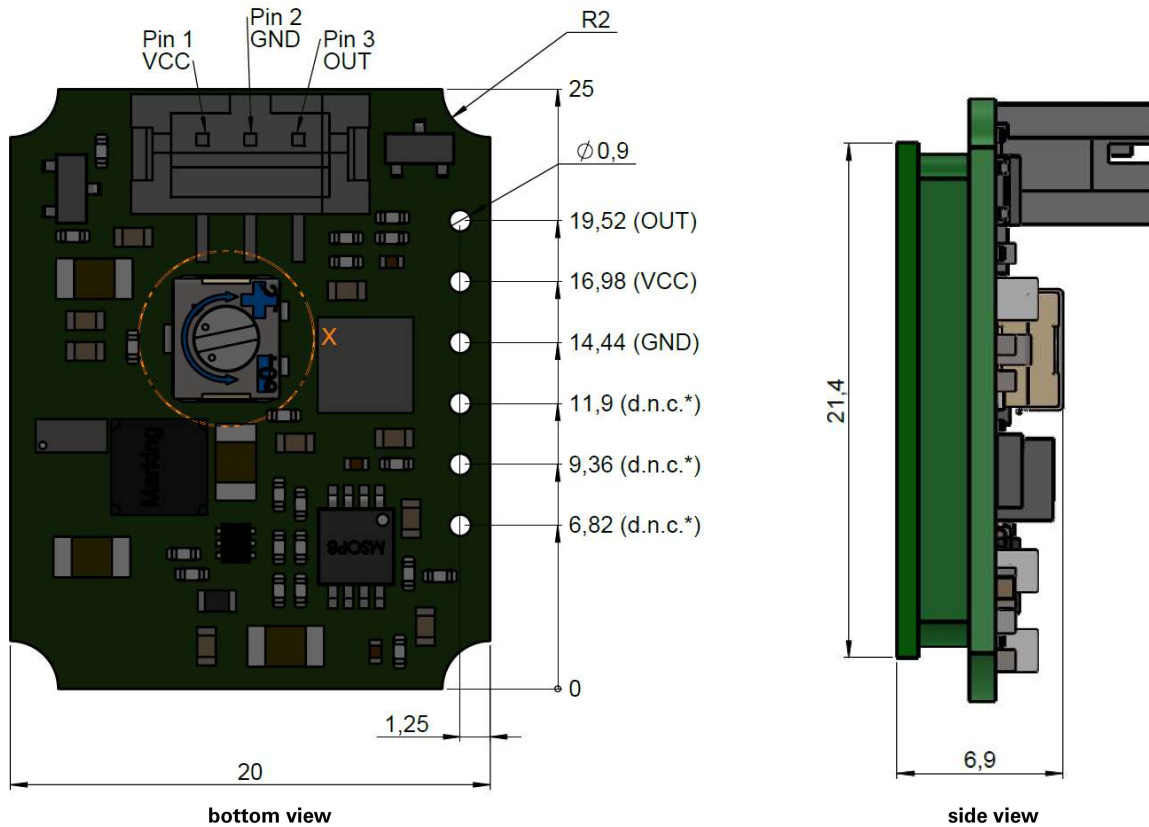
| ORDERING NR. | VARIANT | DESCRIPTION |
|--------------|----------------------|--|
| 80.00000450 | Standard | <ul style="list-style-type: none"> • Outputs a short trigger (100 ms) on open collector when detecting a hand in front of the sensor • Poti adjusts the detection range—min. up to 5 cm (left), max. up to 15 cm (right), delivery status: up to 10 cm (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 5 cm (left), max. up to 15 cm (right), delivery status: up to 10 cm (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 5 cm (left), max. up to 15 cm (right), delivery status: up to 10 cm (middle); poti setting below: rain tolerant mode, suitable for outdoor applications where rainfall occurs (NOTE: the detection range cannot be adjusted in this mode) |
| 80.00000541 | Outdoor | <ul style="list-style-type: none"> • Outputs a long trigger (1000 ms) on open collector when detecting a hand in front of the sensor. • Sensor is only working in a rain tolerant mode • Poti adjusts the detection range: Min. up to 5 cm (left), Max. up to 15 cm (right) • Delivery status: up to 10 cm (middle) • Suitable for outdoor applications where rainfall occurs |

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MECHANICAL DRAWING: IMD-3000_4V1 (series version)

Note: The IMD-3000 series version provides 6 through-connections on the side. Both, it provides the OUT connector on the 6 through-connections sideways and by the 3-pin B3B-PH-SM4-TB connector on the modules top.

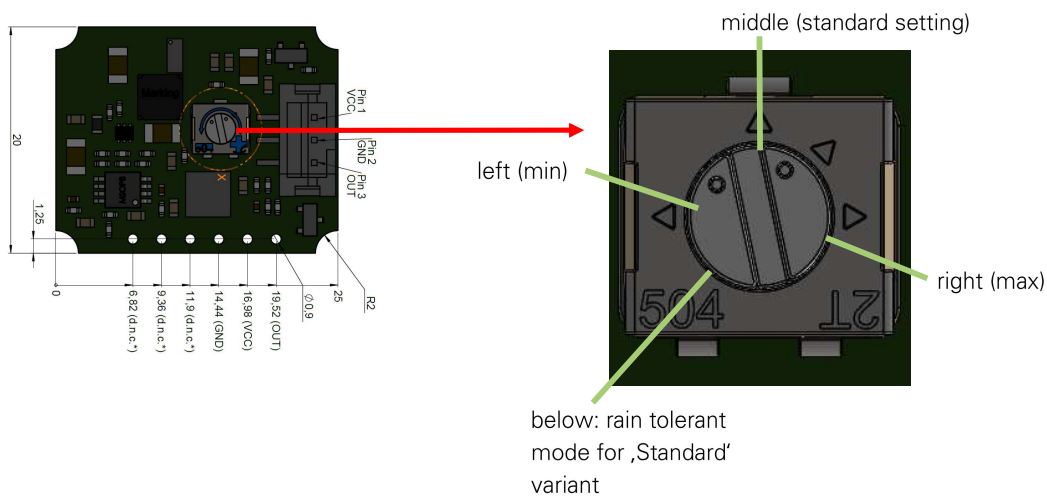


* d.n.c. - do not connect

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.

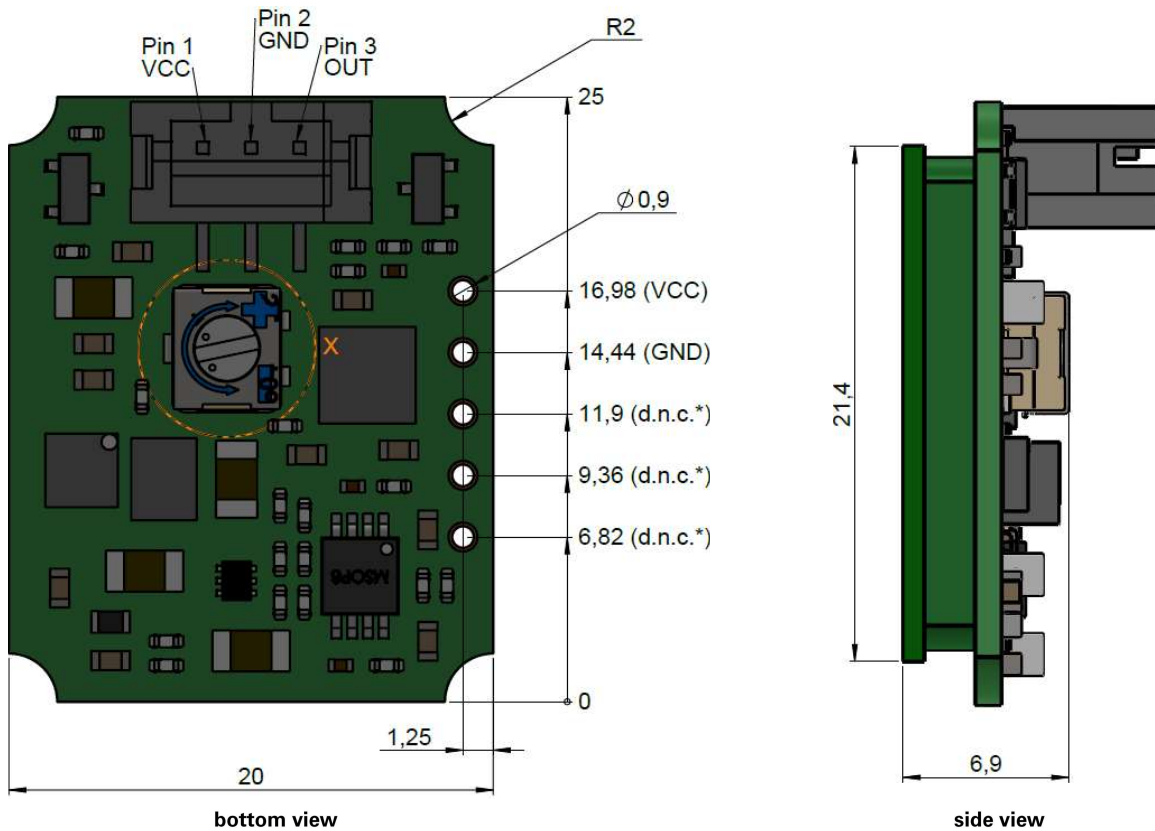


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MECHANICAL DRAWING: IMD-3000_2V1 (pre-series version)

Note: The IMD-3000 pre-series version provides 5 through-connections on the side. Its only OUT connector is available by the 3-pin B3B-PH-SM4-TB connector on the module's top.

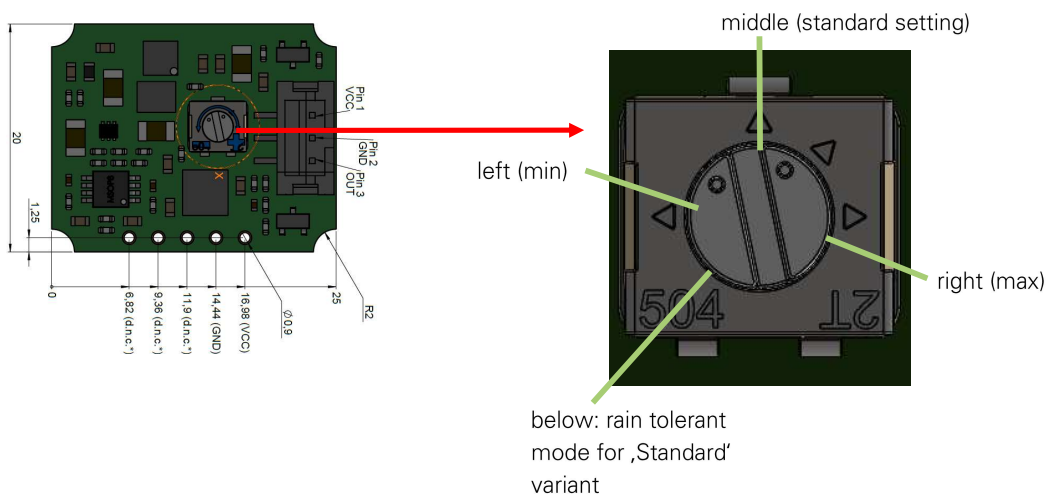


* d.n.c. - do not connect

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.

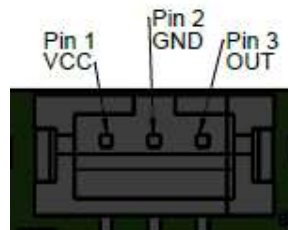
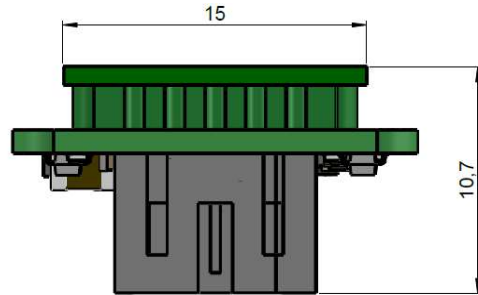
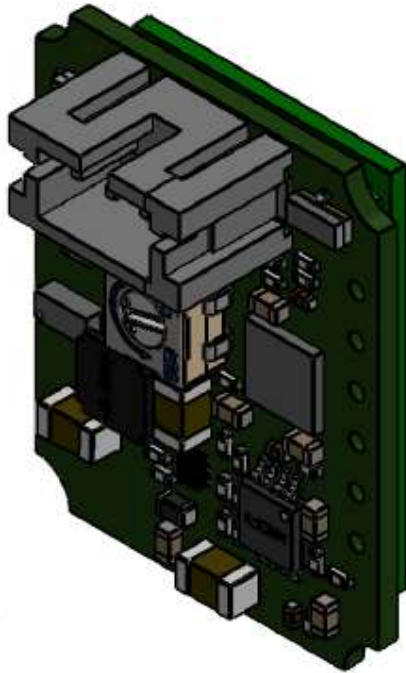


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INTERFACE: series and pre-series version

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.

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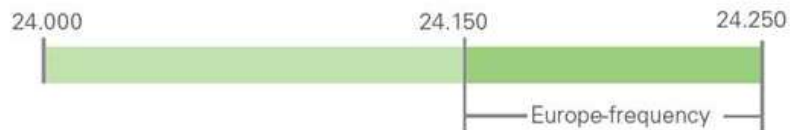
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ANNEX A

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



ETSI / FCC

IMD-3000 is compliant with ETSI 300 440.

The IMD-3000 is compliant with FCC CRR, title 47, part 15, subpart B. It contains FCC ID: **UXS-SMR-3X3**.

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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 |
| 3.0 | 30.09.2020 | Add ETSI / FCC compliance |
| 4.0 | 25.01.2021 | Correct supply current |
| 4.1 | 18.10.2021 | Updated - pinout description with d.n.c. Removed - information for firmware update (firmware update is not available) |
| 4.2 | 29.10.2021 | Added - mechanical drawings for older hardware revision 2V1 with 5 connectors on the connector side |
| 4.3 | 07.11.2022 | Added: 80*451 IMD-3000 Outdoor |

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