



Radon Detector RN52

- **For Continuous Radon Monitoring (CRM) Systems**
- **Ultra Low Power Requirement**

Description

The RN52 Radon Detector operates on the method of electrostatic collecting of the radon ^{222}Rn progeny ^{218}Po and ^{214}Po . Both ^{218}Po and ^{214}Po decay via alpha emission. A PIN diode, which is part of the RN52 detector, continuously detects the alpha particles being emitted during the decay of ^{218}Po and ^{214}Po . An integrated energy spectrum analyzer separates the signal of undesired decay products. The rate of the output pulses of the RN52 is a direct measure for the radon gas concentration in the sampled air.

Electrostatic collecting of the decay products of the radon gas is a precise and reliable method to get a representative measure for the concentration of radon in the environment being monitored.

Features and Benefits

- Continuous monitoring of radon concentration
- Ultra low power requirement for battery powered applications
- Integrated energy spectrum analyzer
- TTL/CMOS compatible pulse output
- Swiss made

Application Areas

- Environmental monitoring in IoT
- Integration in commercial CRM systems
- Natural sciences courses and practical lab experiments

Absolute Maximum Ratings

Supply voltage, V_{CC} to GND	18.0V
Collecting voltage	1000V
Output short-circuit duration	continuous
Storage temperature range	-65°C to 100°C

Electrical Characteristics

Unless otherwise indicated specified at:

$V_{CC} = 4.0V$; $T_A = 23^{\circ}C$; relative humidity RH = 20%;

Progeny collecting volume: 165cm³; collecting voltage: +100V

Output pulse level	Equal to supply voltage (positive going)
Output pulse width	200μs (LOW→HIGH→LOW)
Supply voltage range, V_{CC}	2.5V to 15.0V
Supply current, I_S	25μA TYP
Collecting voltage range	+50V to +200V
Operating temperature range	-20°C to 60°C
Pulse count rate	100 counts per hour typical at 1000Bq/m ³

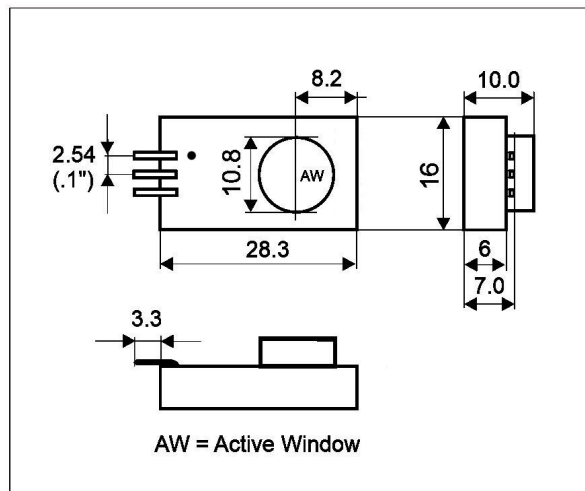
Note:

The pulse count rate highly depends on factors such as

- design of the radon collector
- collecting voltage
- humidity and temperature of the environment

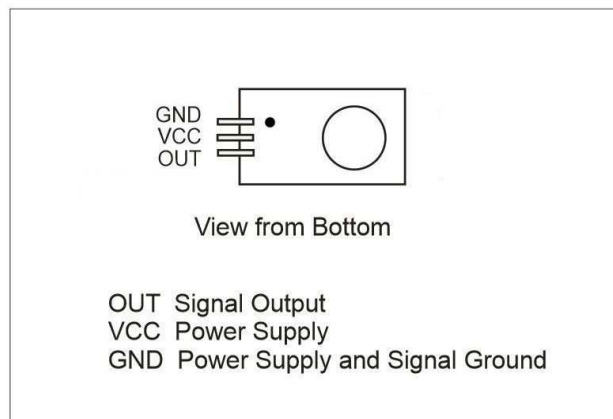
RN52

RN52-SM Outline Dimensions (in millimeters)



RN52-SM Outer Dimensions

RN52-SM Connection Descriptions (View from the bottom side)



RN52-SM Connections

Soldering Recommendations

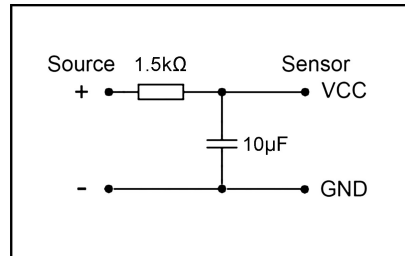
Hand soldering is recommended. 360°C max., 5 seconds max.

Precaution

- Remove protective cover from PIN diode before taking the RN52 into operation.
- **Never touch or cleanse the sensor chip.**
- The PIN diode is sensitive to light. During operation the RN52 Radon Detector and the collecting can should be kept in a dark environment for maximum accuracy.
- For collecting voltages beyond 100V a resistor of 1 MΩ should be inserted at the output of the voltage supply to reduce possible electric shocks to a harmless level and to prevent damage of electronic components in case of sparking. +1000V should not be exceeded.

Susceptibility to Noise on the Power Source

In situations where a high noise level on the power source could be a problem, an RC filter as shown below is recommended.



Power Source Noise Filter

RN52 Application Notes

For RN52 Application Notes please refer to
<https://www.teviso.com/file/pdf/rn52-application-notes.pdf>

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