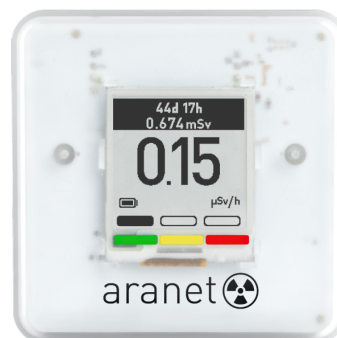


Radiation Sensor HOME

Wireless, portable device for measuring levels of ionizing radiation (γ , β). This sensor, belonging to the HOME sensor series, is intended to be used together with the *Aranet Home* mobile application for extended data browsing capabilities.



Product numbers

Globally	TDSNUCH1
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Sensor performance

Sensor element description

Detector type	PIN diode
Detected types of radiation	γ , β , x-rays
Photon energy range	70–1500 keV
Accuracy	$\pm 20\%$

- Provided accuracy data applies specifically to γ radiation measurements. This is because the device is calibrated using a Cs-137 radiation source, which is primarily an emitter of γ radiation. Consequently, the device is not calibrated to provide precise quantitative measurements for β radiation and x-ray intensity.
- Listed data corresponds to both dose rate and total dose measurements described below. Total dose measurements are derived from dose rate measurements via numerical integration within the sensor firmware.

Ambient equivalent dose rate of ionizing radiation

Measurement range	0–1000 $\mu\text{Sv/h}$	0–100 mrem/h
Resolution (0-10 $\mu\text{Sv/h}$)	0.01 $\mu\text{Sv/h}$	0.001 mrem/h
Resolution (10-1000 $\mu\text{Sv/h}$)	3 significant digits	
Measurement intervals	1, 2, 5 or 10 min	

- The device operates on a default measurement interval of 5 min, adjustable via the *Aranet Home* mobile application during configuration. However, if the device detects radiation levels surpassing the ambient threshold (a level

customizable through the mobile application), it automatically overrides these intervals. In such cases, the measurement interval is temporarily shortened to 1 min.

- For dose rate measurements, the device utilizes a dynamic averaging algorithm that adjusts the averaging window in the range 1–60 min based on radiation intensity.
- Immediately after powering on, due to a brief measurement history and the sporadic nature of radiation quanta detection, the device may temporarily display dose rate measurement with a lower accuracy figure than specified. To signal unreliable measurements, the device will present the dose rate measurement with outlined (non-filled) digits.

Ambient equivalent total dose of ionizing radiation

Measurement range	0–1000 mSv	0–100 rem
Dose accumulation time limit	2 years	
Resolution (0-10 mSv)	0.001 mSv	0.0001 rem
Resolution (10-1000 mSv)	3 significant digits	

- Upon reaching the dose accumulation time limit, the device will still update the total dose reading but will cease to increase the accumulation time. We recommend resetting the total dose reading either by using the button located on the back of the device or via the *Aranet Home* mobile application before this limit is reached.

General specifications

Ingress protection rating	IP20	
Operating temperature range	0–50 °C	32–122 °F
Operating relative humidity range	0–85 %	
Dimensions	71×71×24 mm	2.80×2.80×0.94 in
Weight (incl. batteries)	107 g	3.8 oz
Enclosure material	Polycarbonate	
Packaging includes	2 pcs AA alkaline batteries, configuration pin	

Bluetooth parameters

Line of sight range	10 m	33 ft
Transmitter power	4 dBm or -12 dBm	
Data transmission interval	1, 2, 5 or 10 min	

Battery lifetime

Measurement interval	Alkaline batteries		Lithium batteries	
	Bluetooth Off	Bluetooth On	Bluetooth Off	Bluetooth On
1 min	1.1 years	0.9 years	1.4 years	1.2 years
2 min	1.9 years	1.3 years	2.5 years	1.7 years
5 min	3.3 years	1.8 years	4.5 years	2.4 years
10 min	4.4 years	2.1 years	6.2 years	2.8 years

- Data provided for a device with an active Bluetooth connection considers it being paired with the *Aranet Home* mobile application and engaging in regular data transfer with the mobile phone or tablet.
- Battery lifetime data has been obtained by mathematical extrapolation and is provided for descriptive purposes only and is not intended to make or imply any guarantee or warranty.
- Battery lifetime tests and calculations performed assuming device is at 20 °C (68 °F) and using *Fujitsu Premium LR6G07* (alkaline) and *Energizer Ultimate Lithium L91* (lithium) AA batteries as reference.
- The operating temperature range may vary based on the battery type used. Generally, the range for alkaline batteries is between -20–50 °C (-4–122 °F), whereas for lithium batteries, it is -40–60 °C (-40–140 °F).
- Listed lifetime data does not take into account the out-of-turn measurements that are made due to abnormally high radiation levels (see notes in section *Sensor performance*).

Measurement data memory specifications

Measurement interval	Historic data availability
1 min	6 days
2 min	12 days
5 min	30 days
10 min	60 days

- The device provides access to historical data through the *Aranet Home* mobile application. For users seeking high-resolution measurement data consistently, shorter measurement interval is recommended, as frequent interval changes can impact historical data resolution.
- When transitioning to a longer measurement interval (e.g., from 1 min to 10 min), the firmware computes average values from subsets to represent the longer sampling (for instance, a 10 min average derived from ten 1 min samples).
- Likewise, when shifting to a shorter interval (e.g., from 10 min to 1 min), the memory stores additional samples mirroring the longer interval's data (such as ten 1 min samples with identical values as the original 10 min sample).
- The provided information applies to a device with the latest firmware installed. We strongly advise upgrading the firmware using the *Aranet Home* mobile application as soon as an update becomes available.

Important notes

- Do not leave the device in direct sunlight! Exposure to intense sunlight can adversely affect the performance and longevity of the e-ink display, potentially leading to issues like reduced contrast, diminished readability, or even permanent damage to the display pixels or electronic components. Moreover, sun exposure can also adversely impact accuracy of sensor readings.
- Do not remove the sticker on the back of the device as it protects the sensor element from debris and mechanical damage.
- Exposure to strong acceleration, such as sudden movements or impacts, can lead to erroneous device measurements. Therefore, it is recommended to handle the device with care and avoid subjecting it to any mechanical shock to ensure the reliability of the data it provides.

Compliance information

- CE** Conformité Européenne
 - FC** Federal Communications Commission (USA)
 - IC** Innovation, Science and Economic Development Canada
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