Multisensor RK-55 EnOcean

The RK-55 indoor sensor equipped with the STM 550 module enables the implementation of wireless sensors communicating according to the EnOcean Alliance radio standard. The STM 550 integrates special sensors for temperature, humidity, lighting, acceleration and magnetic contact. These sensors measure and transmit the current status every 60 seconds. Transmission is indicated by a built-in LED.
STM 550 will immediately wake-up and transmit an update if an acceleration event occurs (e.g. due to being moved or shaken) after a period without such change.
Sensor contains an integrated solar cell optimized to generate the required energy based on available ambient lighting. Under typical indoor lighting scenarios (200 lux for 6 hours per day) they operate fully self-supplied. For use cases with insufficient available light, a dedicated backup battery can be fitted.
The module provides an integrated NFC interface that can be used for device configuration and device commissioning. Additionally, it includes an LRN button that can be used for simple commissioning tasks.
The sensor is delivered in a plastic case suitable for placement on the wall of the room. It can be used, for example, as a complement to already existing systems with ModBus communication. The EnOcean-GWY-MOD gateway can be used to convert EnOcean signals to ModBus RTU, and the EO-MOD-IP gateway can be used to convert them to ModBus TCP/IP.

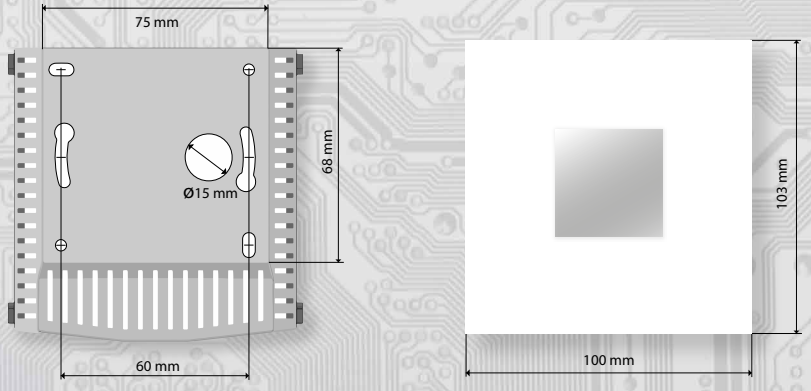
Technical parameters

Transmission Frequency / Data Rate	868,300 MHz / 125 kbps
Transmission Range (for guidance only)	200 m (free field) / 30 m (indoor environment)
Temperature Measurement Range	-20 ÷ 60 °C [1]
Accuracy (temperature)	± 0,3 °C
Humidity Measurement Range	0 ÷ 100 % r. h. [1]
Accuracy (humidity)	± 3 % r. h.
Illumination Measurement Range	0 ÷ 65000 Lux
Accuracy (illumination)	± 10 %
Acceleration Measurement Range	0 ÷ 2 g
Accuracy (acceleration)	± 0,03 g
Acceleration Wake Threshold	0,03 g (configurable via NFC)
Device Configuration	LRN button and NFC (ISO 14443)
Power Supply	integrated solar cell
Minimul light level	200 lux for 6 hours per day [2]
Operating Temperature / Humidity	-5 ÷ 45 °C / 0 ÷ 90 % RH (without condensation)
Operating Time In Darkness (at 25°C)	cca 4 days (after full charge)
Update Rate	period 60 s (configurable via NFC)
Backup Battery	CR1632
Dimension	100 x 103 x 25 mm
Supported EEP	D2-14-40 D2-14-41 (default) A5-02-05 A5-06-03 A5-04-01 A5-14-05 A5-04-03 D5-00-01 A5-06-02
Protection	IP30 (EN60529)

[1] Sensor measurement range is dependent on the selected EEP.

[2] Minimum light level required for self-supplied operation with the default product configuration.

Dimensional sketch (Fig. 1)



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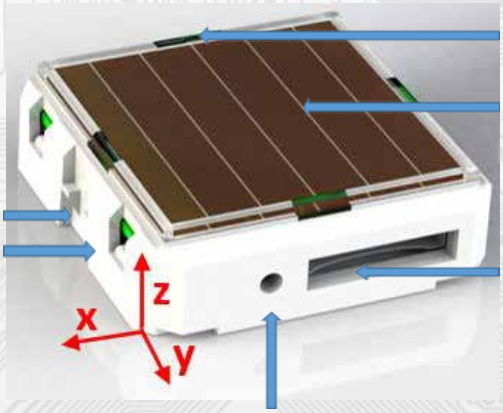
The RK-55 sensor operates fully self-powered (no batteries required) when there is sufficient available ambient light (200 lux for 6 hours a day). The energy required for operation is collected by an integrated solar cell. In this STM 550 configuration it works completely maintenance-free. For cases where sufficient ambient lighting is not available, there is an option to mount a backup battery CR1632.

The RK-55 product interface consists of the following elements:
- LRN button and LED
- Solar cell harvesting energy from ambient light
- Ambient light sensor (co-located with the LED)
- Magnet contact sensor
- Ventilation slots to ensure airflow to the temperature and humidity sensor
- Backup battery slot for a CR1632 battery
- Backup battery ejector slot (on the back side)
- Product label (on the back side)

Front view to STM550 (Fig. 2)



Back view to STM550 (Fig. 3)

Sensor supports seven functional modes:
- Standard operation mode
- Standby (Sleep) mode
- Learn mode
- Function test mode
- Illumination test mode
- Acceleration test mode
- Factory reset mode

Summary of all technical parameters, description of functional modes, description of EnOcean Equipment Profiles (EEP) and signal telegrams are available on the website of the EnOcean organization, or in the relevant pdf file on our website.

STM 550 implements am NFC configuration interface that can be used to access (read and write) the STM 550 configuration memory and thereby configure the device as described in the following chapters. NFC communication distance is for security reasons set to require direct contact between the NFC reader and the STM 550 device. Note that STM 550 temporarily stops operation to ensure configuration data in-tegrity while the NFC reader is connected to the NFC interface of STM 550. STM 550 will automatically resume operation approximately 5 seconds after the NFC reader has been disconnected. Care has to be taken not to configure unsupported values as product behavior is undefined in that case.

Using the NFC interface requires the following:

1. NFC reader
   This can be either a USB NFC reader connected to a PC or a suitable smartphone with NFC functionality.
2. NFC SW with read, write, PIN lock, PIN unlock and PIN change functionality
   This can be either a PC application or an Android / iOS app.

1. PC with dedicated NFC reader
   For PC-based applications, EnOcean recommends the TWN4 Multitech 2 HF NFC Reader (or-der code T4BT-FB2BEL2-SIMPL) from Elatec RFID Systems (sales-rfid@elatec.com).

2. Android or iOS smartphone with NFC
   NFC functionality is available in certain Android (e.g. Samsung Galaxy S7 / S8 / S9 / S10) and iOS (iPhone7 or newer, firmware version 13 or newer) smartphones.

EnOcean provides the configuration app “EnOcean Tool” for these devices which can be downloaded directly from the respective app store.
At the time of writing, the tool was available from the Google Play Store using this link:
https://play.google.com/store/apps/details?id=de.enocean.easytool&hl=en
Likewise, the tool was available from the Apple Store using this link:
https://apps.apple.com/de/app/enocean-tool/id1497283202