EnOe+ / EnOu+

Energiya EnOcean + IoT card

868 MHz / 902 MHz
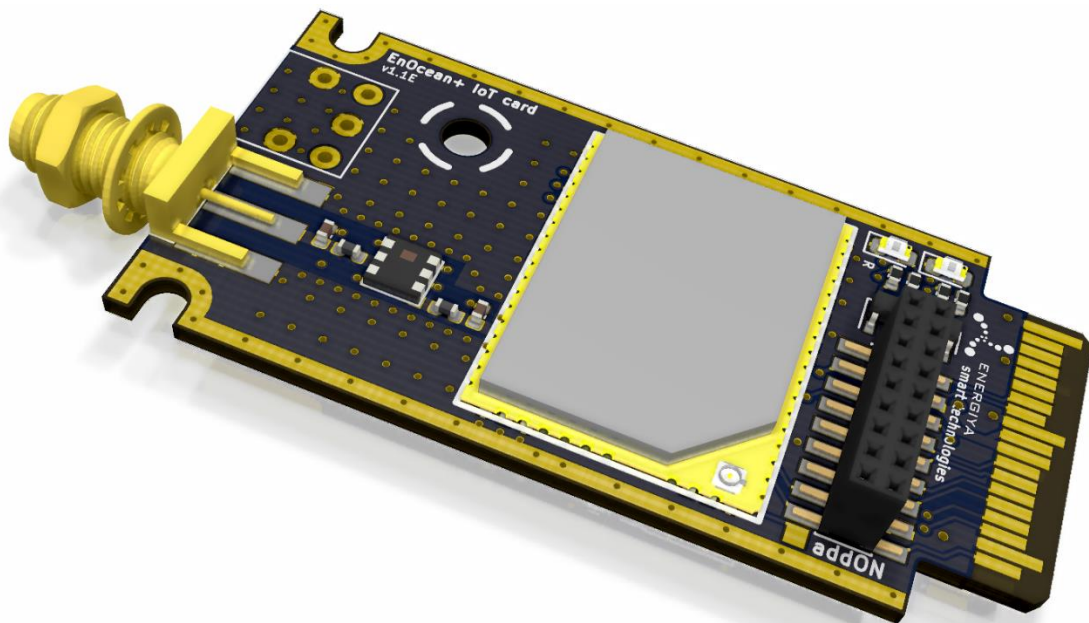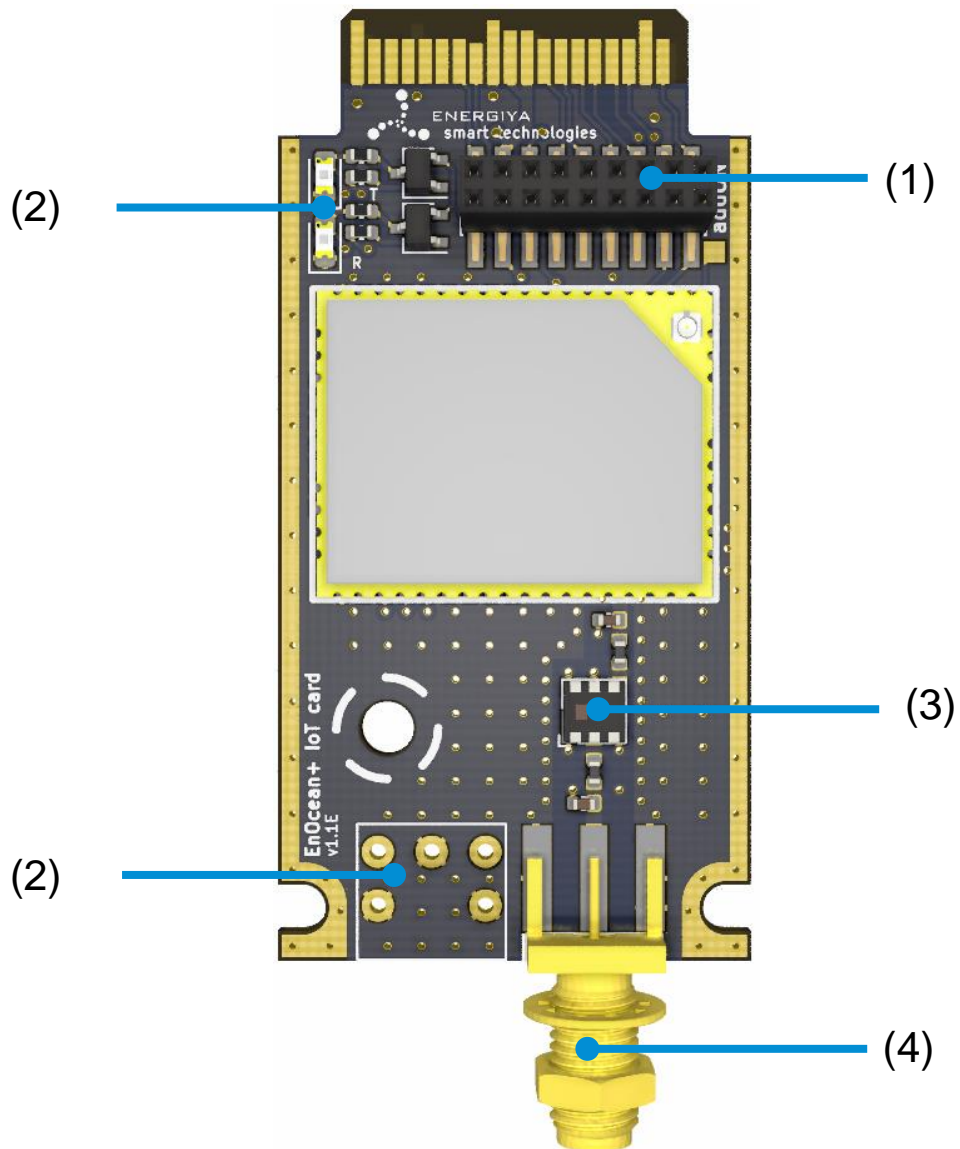
fig. 1

(1)	addON socket
(2)	RXD and TXD LEDs
(3)	SAW filter (only 868 MHz version)
(4)	SMA connector

Description

EnOcean is self-powered Internet of Things. EnOcean stands for energy harvesting wireless technology, which enables maintenance-free sensor solutions delivering data for intelligent networks in buildings and the IoT.

Energiya EnOcean + IoT card allows you to build a gateway, manage a network of devices, encrypt transmission and integrate with the Octave cloud.

We are using original EnOcean wireless transceiver module.

Thanks to a special connector, the device has the possibility to extend its functionality with addON expansion cards.

The IoT card is compatible with mangOH Green, Red, Yellow and FX30.

Mounting the card in host

It is recommended to install the IoT card when the power is off to avoid accidental short circuits. If the card is installed with the power on, it is necessary to reboot the program.

cDepending on the device used, the card is mounted using standoffs/spacers (mangOH) or rails (FX30). The IoT card also have dedicated cover for locking inside FX30.

⚠️ **Important!** Never mount or remove the addON card with power on!

Transmission range

The following information comes from the EnOcean communication module manual.

The main factors that influence the system transmission range are:

- Type and location of the antennas of receiver and transmitter.
- Type of terrain and degree of obstruction of the link path.
- Sources of interference affecting the receiver.
- "Dead spots" caused by signal reflections from nearby conductive objects.

Since the expected transmission range strongly depends on this system conditions, range tests should always be performed to determine the reliably achievable range under the given conditions. The following examples should be treated as a rough guide only:

- Line-of-sight connections
  (typically 30 m range in corridors, up to 100 m in halls).
- Plasterboard walls / dry wood
  (typically 30 m range, through max. 5 walls).
- Ferro concrete walls / ceilings
  (typically 10 m range, through max. 1 ceiling).
- Fire-safety walls, elevator shafts, staircases and supply areas
  (such areas should be considered as screening).

The angle at which the transmitted signal hits the wall is very important. The effective wall thickness – and with it the signal attenuation – varies according to this angle. Signals should be transmitted as directly as possible through the wall. Wall niches should be avoid-ed. Other factors restricting transmission range include:

- Switch mounting on metal surfaces (up to 30% loss of transmission range).
- Hollow lightweight walls filled with insulating wool on metal foil.
- False ceilings with panels of metal or carbon fibre.
- Lead glass or glass with metal coating, steel furniture.

⚠ **Important!** The distance between the receiver and other transmitting devices such as computers, WiFi routers, audio and video equipment that also emit high-frequency signals should be at least 0.5 m (see figure 2).
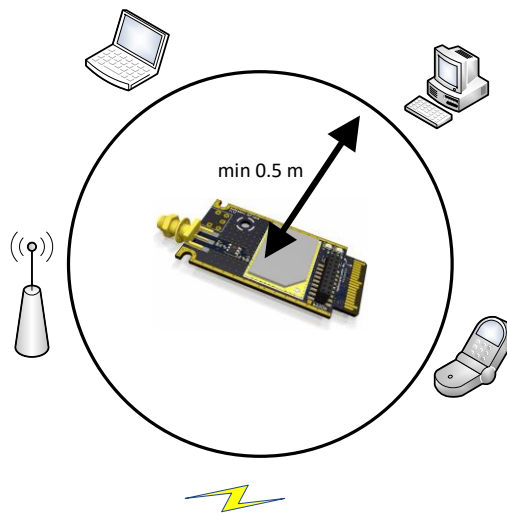
min 0.5 m

fig. 2

Telegram encryption

The following information comes from the EnOcean communication module manual.

The goal of telegram encryption is to prevent unauthorized receivers from correctly inter-preting the content of a telegram.

In order to do so, the original (plain text) data is encrypted with a key thus transforming it into encrypted, unreadable data. Only when the correct key is known it is possible to trans-form – decrypt - the encrypted data into readable data again (see figure 3).
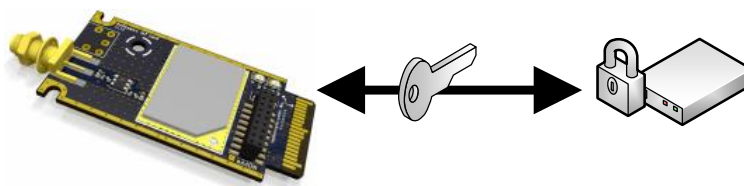
fig. 3

Specifications

Dimensions (W x H x D)	22.3 x 58.8 x 12.9 mm
Operating temp	–40 to +85°C
Weight	9 g
Current consumption	26 mA
Antenna connector type	SMA
Receiver sensitivity	-92 dBm (868 MHz) -98 dBm (902 MHz)
Transmit power	+10 dBm (868 MHz) +1 dBm (902 MHz)
Default baudrate	460800 bps
ESD protection	yes
addON socket	yes
Latching cover for FX30	yes

Troubleshooting

Lack of communication with card	check baudrate
Wireless communication errors	check the range of devices, refer to the wireless instructions in the manual

Send us your feedback and suggestion to help us improve our products! 😊 **info@energiya.pl**

Please consider the environment before printing this manual.