

ESK 300 (868MHz)

ESK 300C (315MHz)

ESK 300U (902MHz)

EnOcean Starter Kit



Important Notes

This information describes the type of component and shall not be considered as assured characteristics. No responsibility is assumed for possible omissions or inaccuracies. Circuitry and specifications are subject to change without notice. For the latest product specifications, refer to the EnOcean website: <http://www.enocean.com>.

As far as patents or other rights of third parties are concerned, liability is only assumed for modules, not for the described applications, processes and circuits. EnOcean does not assume responsibility for use of modules described and limits its liability to the replacement of modules determined to be defective due to workmanship. Devices or systems containing RF components must meet the essential requirements of the local legal authorities. The modules must not be used in any relation with equipment that supports, directly or indirectly, human health or life or with applications that can result in danger for people, animals or real value. Components of the modules are considered and should be disposed of as hazardous waste. Local government regulations are to be observed.

Packing: Please use the recycling operators known to you. By agreement we will take packing material back if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or that we are not obliged to accept, we shall have to invoice you for any costs incurred.

This evaluation kit and its components are intended for use for evaluation, demonstration or engineering development purposes only. It is not considered to be a finished end product fit for consumer use. Persons handling this developer kit must have electronics expertise and observe good engineering practice standards. As such, the goods being provided are not intended to be complete in terms of required design, marketing, and/or manufacturing related protective considerations, including product safety and environmental measures typically found in end products that incorporate such electronic components or circuit board. EnOcean does not reliable consequences for any HW or SW changes/modifications of the developer board done by the developer.

Important notice for users in Japan: This developer kit is not certified as confirming to technical regulations of radio law of Japan. If you use this kit in Japan, you are required by Radio Law of Japan to follow the instructions below with respect to this product: Use this product in a shielded room or any other test facility as defined in the notification #173 issued by Ministry of Internal Affairs and Communications on March 28, 2006, based on sub-section 1.1 of article 6 of the "Rule for Enforcement of Radio Law of Japan". Use this kit only after you obtained the license of "Test Radio Station" as provided in Radio Law of Japan with respect to this product, or use of this product only after you obtained the technical regulations conformity certification as provided in radio law of Japan with respect to this product. Do not transfer this product, unless you give the same notice above to the transferee. Please note that if you could not follow the instructions above, you will be subject to penalties of Radio Law of Japan.



Observe precautions! Electrostatic sensitive devices!

1 Introduction

The EnOcean Starter Kit has been designed to demonstrate EnOcean's energy harvesting and ultra low power radio technology. The ESK 300 comes with two electro-mechanical push button generators for switches and a solar powered temperature sensor. Radio telegrams sent by the self-powered sensors are received via USB dongle and visualized in DolphinView Basic PC software.



2 ESK 300 Content

- User Manual
- USB 300: USB Stick Gateway
- PTM 2xx: Self powered push button switch
- Rocker: Rocker for push button switch
- STM 33x: Self-powered temperature sensor
- ECO 200: Push button energy generator
- PTM 330: Push button radio module
- Housing example from SEMD
- Housing example from BSC GmbH*)

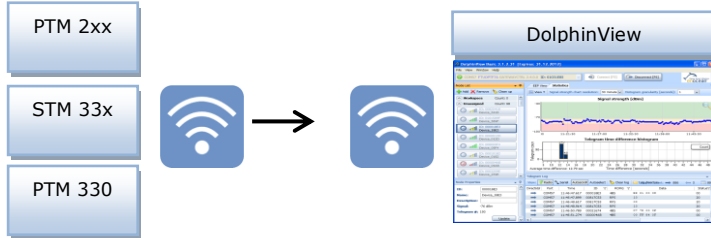
*) Optional component



3 First Steps

3.1 DolphinView Basic

- DolphinView Basic visualizes and interprets EnOcean radio telegrams. It receives messages via the USB 300, shows telegram content and interprets EnOcean Equipment Profiles (EEP).



- Please register for your personal account at: <http://www.enocean.com/registration/>
- Download DolphinView Basic from EnOcean's Software download website: <http://www.enocean.com/en/download/>
- Execute the DolphinView Basic setup program and follow instructions
- Connect the USB 300 to your PC or notebook
- Execute DolphinView Basic and press the connect button

3.3 Demonstration of PTM 215 Security Mode (868MHz only)

PTM 215 has an additional secure mode with a rolling code to prevent copying. It supports normal mode and secure mode. In order to use the secure mode you need a transceiver firmware with encryption firmware or DolphinView to evaluate secure telegrams.

- Use EOP 350 with TCM 320 and DolphinSniffer firmware to receive secure telegrams
- Start DolphinView and connect TCM 320 DolphinSniffer
 - PTM 215 **DA**: Hold down two contacts (1) and press the energy bow (2) **one time**
 - PTM 215 **DB** or higher: Hold down two contacts (1) and press the energy bow **two times** (for details see PTM 215 user manual)
 - ➔ PTM will send a learn and synchronisation telegram to the receiver
- Received (telegram log) and interpreted telegram (EEP view) will be shown
- Additional documentation is available at:

www.enocean.com/en/security-specification/ and http://www.enocean.com/en/enOcean_modules/ptm-215/

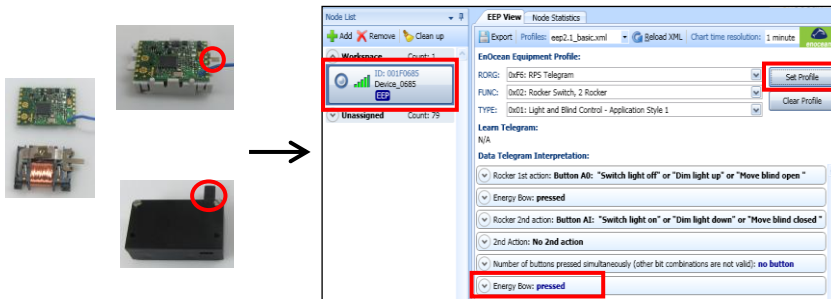


Remark: PTM 215 can be switched from secure mode to normal mode by simultaneously hold down four contact nipples and actuating the energy bow. Before changing the operating mode, make sure to clear the device from all learned receivers, otherwise receivers will ignore the telegrams and the application will not work.

3.4 ECO 200 & PTM 330 – Push Button Generator & Radio Module

The ECO 200 is an energy converter for linear motion. It can be used to power the PTM 330 radio module. The energy output at every actuation is sufficient to transmit 3 sub-telegrams with a free field range of 300m. Possible applications are miniaturized switches and sensors in building technology and industrial automation.

- Radio telegrams will be received via USB 300 and shown by DolphinView Basic
- Press spring to send telegram -> PTM 330 will be shown in the node list
- Select node and press "Set Profile" button to interpret Equipment Profile
- Press spring to send telegram "Energy Bow: pressed"
- Pull spring to send telegram "Energy Bow: release"



The diagram illustrates the hardware components and the software interface for configuring the ECO 200 and PTM 330 modules. On the left, three images show the modules: a green PCB, a black PCB, and a black module. A large arrow points to the DolphinView Basic software interface. The interface shows a 'Node List' with a selected node (ID: 001F0685, Device: 0685, BIP). The 'EEP View' tab is active, showing the 'EnOcean Equipment Profile' with fields for RORG, FUNC, and TYPE. The 'Learn Telegram' section shows the 'Energy Bow: pressed' telegram selected.

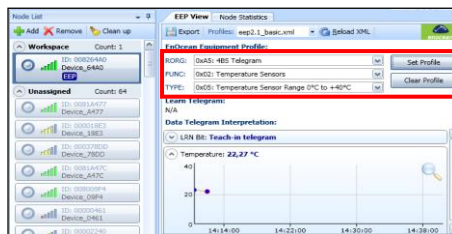
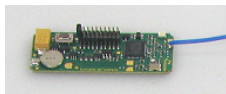
Remark: In order to send EnOcean standard radio telegrams according to the EEP specification, you need to set the right contact pins on PTM 330. Without doing this PTM 330 can't control a standard receiver/actuator. For details see PTM 330 user manual.

3.5 STM 33x – Self-powered Temperature Sensor

The STM33x is a solar powered module for wireless, maintenance-free temperature sensors and room operating panels. It can be extended with a humidity sensor.

- Radio telegrams will be received via USB 300 and shown by DolphinView Basic
- Turn the STM 33x with solar cell faced up to get light, indoor light will be sufficient
- Configure*) DolphinView Basic with following EnOcean Equipment Profile values and press "Set Profile" button:
 - RORG: 0x0A5 4BS Telegram
 - FUNC: 0x02 Temperature Sensor
 - TYPE: 0x05 Temperature Sensor Range 0°C to +40°C
- Press the button to send sensor telegram
- STM 33x with default configuration sends periodical temperature values:

Cyclic wake-up cycle:	100s (wake up and check temperature value)
Redundant retransmission min:	7 (min send interval every 7. wake up)
Redundant retransmission max:	14 (max send interval every 14. wake up)



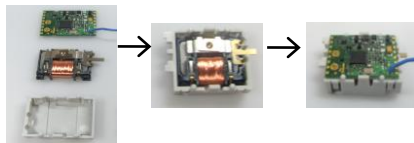
*) OEM manufacturer can enable EnOcean automatic learn by setting sensor type and manufacturer ID of STM 33x during production. Developers can do this by using programmer board of EDK 350.

4 Push Button Switch Examples (Optional)

Depending on your location the ESK 300 will be delivered with housing examples for the PTM 330 and the ECO 200. This demonstrates how EnOcean's energy harvesting and ultra low power radio technology can be implemented within various environments.

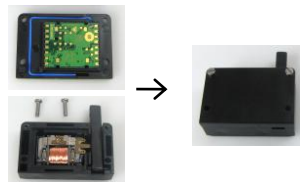
Switch frame from the company SEMD

- Clip ECO 200 into SEMD plastic frame
- Clip PTM 330 on top of ECO 200
- Push tongue to send telegrams
- If you are interested in developing switches with SEMD please call:
+49 9302 989990



Switch housing from company BSC GmbH (optional)

- Clip PTM 330 and antenna into upper part
- Clip ECO 200 with spring inside the gap of the arm into bottom part
- Put four spacers into the corner of ECO 200 and close housing with screws
- Push arm to send a telegram
- If you are interested in developing switches with BSC GmbH please call:
+49 6452 91400



5 References

- Data sheets and user manuals:

868 MHz: http://www.enocean.com/en/enocean_modules/

315 MHz: http://www.enocean.com/en/enocean_modules_315mhz/

902 MHz: http://www.enocean.com/en/enocean_modules_902mhz/

- Software can be found at: www.enocean.com/download
- Additional information: <http://www.enocean.com/knowledge-base/>
- Technical support: support@enocean.com
- EnOcean Equipment Profiles: <http://www.enocean-alliance.org/eep/>
- EnOcean Protocol ISO/IEC 14543-3-10:
http://www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=59865

For developing hardware and software with EnOcean technology we recommend using our developer kits:

868 MHz: http://www.enocean.com/en/enocean_modules/

315 MHz: http://www.enocean.com/en/enocean_modules_315mhz/

902 MHz: http://www.enocean.com/en/enocean_modules_902mhz/

ENOCEAN

EnOcean is the originator of patented energy harvesting wireless sensor technology. The company manufactures and markets maintenance-free wireless sensor solutions for use in buildings and industrial installations. EnOcean solutions are based on miniaturized energy converters, ultra-lowpower electronic circuitry and reliable wireless. Combining these elements enables EnOcean and its product partners to offer sensor systems that are fundamental for energy-efficient buildings and innovative industry.

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