EOP 350

EnOcean Programming and Configuration Tool

Observe precautions! Electrostatic sensitive devices!

Patent protected:
WO98/36395, DE 100 25 561, DE 101 50 128,
WO 2004/051591, DE 103 01 678 A1, DE 10309334,
WO 04/109236, WO 05/096482, WO 02/095707,
US 6,747,573, US 7,019,241

REVISION HISTORY

The following major modifications and improvements have been made to the first version of this document:

No	Major Changes
1.0	Initial Release

Published by EnOcean GmbH, Kolpingring 18a, 82041 Oberhaching, Germany
www.enocean.com, info@enocean.com, phone ++49 (89) 6734 6890

Important!

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.

TABLE OF CONTENT

1   PRODUCT DESCRIPTION

1.1 Overview

EOP 350 is a hardware tool that enables the following functionality:

- Programming of the following EnOcean radio modules
    - STM 300, STM 300U and STM 400J
      (Soldered on an adapter board or connected via the programmer interface)

    - TCM 300, TCM 300U
      (Soldered on an adapter board or connected via the programmer interface)

    - TCM 320, TCM 320U
      (Direct plug-in)

- Configuration of the following EnOcean radio modules
    - STM 330, STM 331, STM 331U, STM 332U, STM 333U, STM 431J
      (Direct plug-in)

EOP 350 provides a debugger interface for the EnOcean products listed above and a USB interface towards a host PC running EnOcean DolphinStudio / Dolphin V4 Suite.
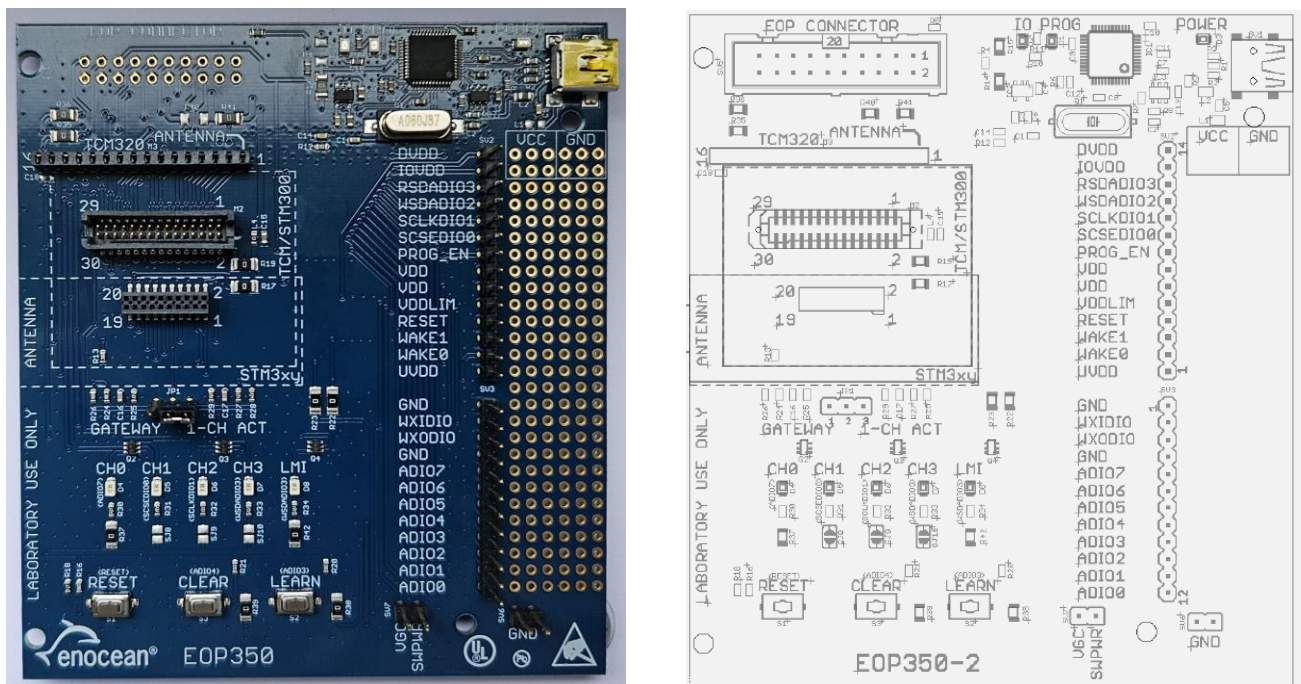
Figure 1 below shows EOP 350.

Figure 1 – EOP 350

1.2 Physical dimensions

Product Dimensions	9 cm x 10 cm
Product Weight	40 g

1.3 Environmental conditions

Operating Temperature	-5°C ... +45°C
Storage Temperature	-20°C ... +65°C
Humidity	0% to 90% r.h. (non-condensing)

1.4 Packaging information

Packaging Unit / Method	Box with 10 units

1.5 Ordering information

Type	Current Revision	Ordering Code
EOP 350	DA-03	S3005-X350

2   SETUP INSTRUCTIONS

2.1   Installation of DolphinStudio or Dolphin V4 Suite

EOP 350 enables the programming of certain EnOcean modules listed in chapter 1.1 in conjunction with a PC SW which is either DolphinStudio or Dolphin V4 Suite. The selection of the PC SW depends on the module to be programmed.

DolphinStudio is used to program and configure the following devices:

- STM 300 and STM 300U (if soldered on an adapter board)
- TCM 300 and TCM 300U (if soldered on an adapter board)
- TCM 320 and TCM 320U (direct plug-in)
- STM 330, STM 331, STM 331U, STM 332U and STM 333U (direct plug-in)

DolphinSuite is used to program and configure the following devices:

- STM 400J (if soldered on an adapter board)
- STM 431J (direct plug-in)

DolphinStudio and Dolphin V4 Suite can be downloaded from the EnOcean webpage:
 https://www.enocean.com/en/product-category/tools-kits-iot-software-software-tools/

2.2   USB connection to PC

Connect EOP 350 via a micro-USB cable to PC and check that the two LED next to the USB connector of EOP 350 are illuminated as shown on the right.

Start DolphinStudio or Dolphin V4 Suite and select the COM port of the EOP 350 board as shown below.

DolphinStudio

File   View   Tools   Utilities   Help

COM21 - EOXEYEP2A
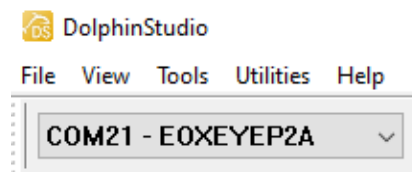
2.3 Module connection to EOP 350

You can connect devices to the correct EOP 350 interface as follows:

- TCM 320 / TCM 320U
  Plug TCM 320 or TCM 320U into the single row connector labeled "TCM 320".
  It is important to ensure correct orientation of the TCM 320 / TCM 320U module:
  The antenna must be above the "1" label indicating the required position of Pin 1 of
  TCM 320 / TCM 320U.

- TCM 300 / TCM 300U / STM 300 / STM 300U / STM 400J
  These devices must be mounted onto a daughter card, contact EnOcean for
  instructions if required. Plug this device into the connector named TCM/STM300.

- STM 330 / STM 331 / STM 331U / STM 332U / STM 333U / STM 431J
  Remove the jumper from the module connector and plug the module into the
  connector labelled "STM3xy" such that the antenna points to the outside (not the
  center) of the module as indicated by the "ANTENNA" label on the EOP 350 board.

The illustrations below show examples for the connection of TCM 320 (left), STM 300 (center)
and STM 330 (right) to EOP 350.

**Figure 2 – Connection of TCM 320, STM 300 and STM 330 to EOP 350**

3   USAGE EXAMPLES

3.1   Program TCM 320 / TCM 320U with Gateway Controller SW

EnOcean TCM 320 / TCM 320U modules can be programmed with a device firmware implementing gateway controller functionality like the TCM 310 / TCM 310U functionality.

To do so, follow these steps:

1. Download the latest Gateway Controller SW from the following link and extract it into a directory of your PC:
   https://www.enocean.com/en/product/gateway-controller/

2. Insert TCM 320 into the correct connector using the orientation shown in chapter 2.2 Connect EOP 350 with your PC using a Mini USB cable.

3. Click the "Browse" button to the right of "Program area" and select the following file from the firmware directory of step #1
   TCM320-gatewayctrl-hwtcm320-868mhz-4dbm-1v51-da.hex

4. Click the "Browse" button to the right of "Configuration area" and select the following file from the firmware directory of step #1
   TCM320-gatewayctrl-hwtcm320-868mhz-4dbm-1v51-da_cfg.hex

5. Press "Execute" and check that all steps are marked as "OK"

6. Close DolphinStudio, open DolphinView and select the COM interface corresponding to the TCM 320 module acting as Gateway Controller
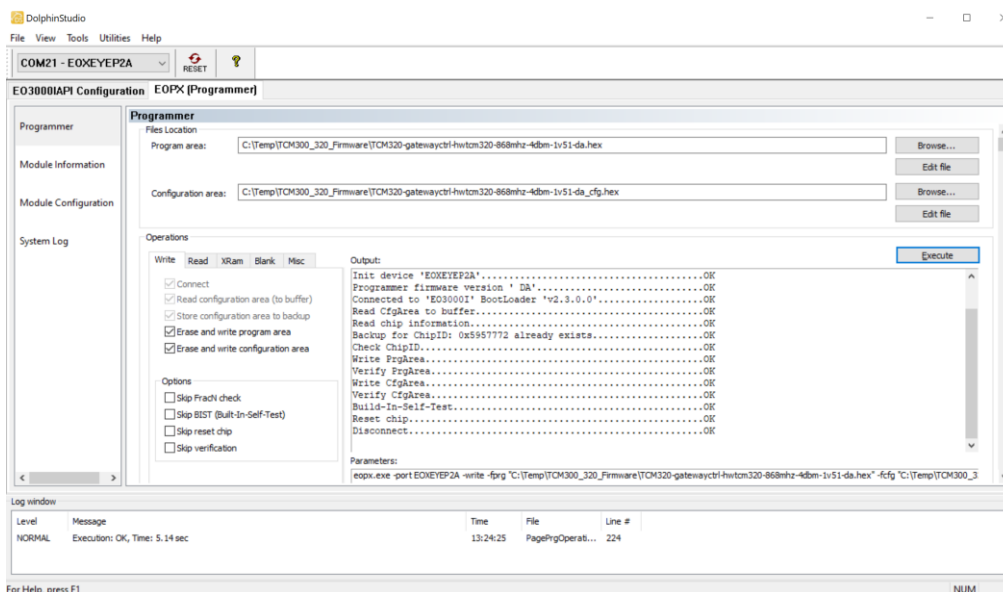
3.2 Relay actuator with TCM 320 / TCM 320U

EnOcean TCM 320 / TCM 320U modules are pre-programmed with a device firmware implementing 1-channel relay actuator functionality. This firmware allows switching on and off an output pin in response to input from an EnOcean PTM 215 / PTM 215U switch module.

Note that this firmware might be overwritten by the user (for instance with the gateway controller firmware as described above) and would then not be available anymore.

If that is the case, then use the programming procedure described above with the following files:

- Application: `TCM320-hwtcm320-868mhz-4dbm-1v51-da.hex`

- Configuration Area: `TCM320-hwtcm320-868mhz-4dbm-1v51-da_cfg.hex`

The Relay Switch functionality can then be tested as follows with a PTM 215 module (in conjunction with TCM 320) or a PTM 215U module (in conjunction with TCM 320U):

1. Insert TCM 320 into EOP 350 as described in chapter 2.2

2. Provide power supply to EOP 350, for instance by connecting it with a mini-USB cable to a PC

3. Learn-in the PTM 215 / PTM 215U into TCM 320 / TCM 320U as follows:

   a. Press the `LEARN` button on EOP 350 for at least 1 second to start Learn Mode

   b. Check that the Learn Mode Indicator (`LMI`) LED is lighting permanently

   c. Check that the Channel 0 (`CH0`) LED is blinking

   d. Press the PTM 215 module once

   e. Check that the Channel 0 (`CH0`) LED is now lighting permanently

   f. Press the `LEARN` button on EOP 350 for at least 1 second to stop Learn Mode

   g. Check that `CH0` and `LMI` are not lighting anymore

4. Verify the relay actuator functionality as follows:

   a. Press the "I" side of the PTM 215 / PTM 215U module
      Check that the `CH0` LED will start being illuminated

   b. Press the "0" side of the PTM 215 / PTM 215U module
      Check that the `CH0` LED will stop being illuminated

3.3   Configuration of Temperature Sensor

EOP 350 can be used with DolphinStudio or Dolphin V4 Suite to configure STM 33x, STM 33xU or STM 43xJ modules using the configuration interface shown below.
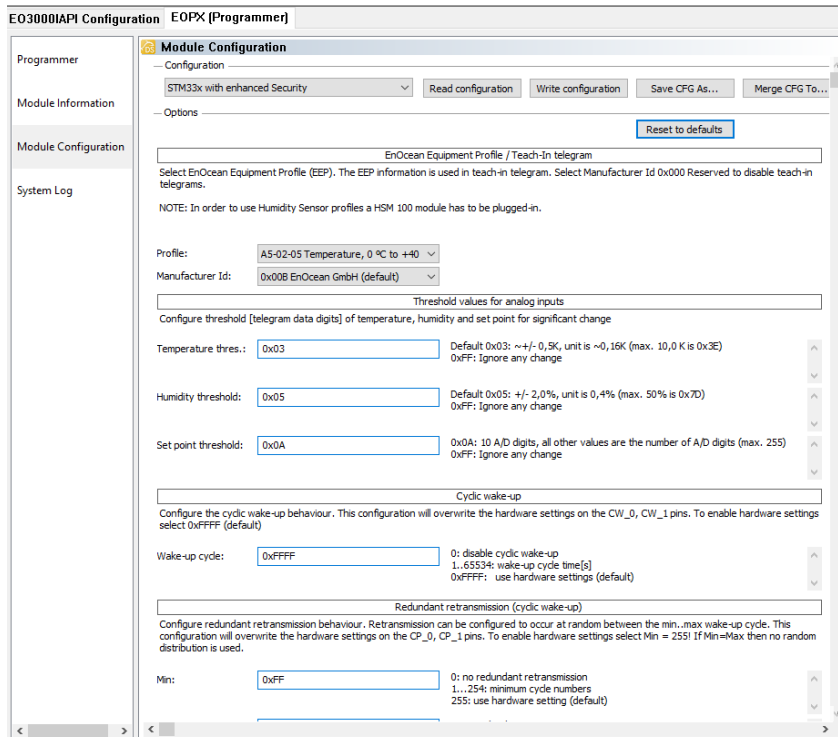
To configure a module, follow these steps:

1. Plug in the module into EOP 350 as shown in chapter 2.3, connect EOP 350 to the PC and start DolphinStudio or Dolphin V4 Suite

2. If you are using DolphinStudio, then select the "Module Configuration" tab of "EOPX Programmer". If you are using Dolphin V4 Suite then select the "STM 43xJ" tab.

3. Click on the "Read configuration" button to retrieve the current module configuration

4. You may for instance modify the following parameters:

   a. EEP used by the device

   b. Manufacturer ID used by the device

   c. Wake-up and transmission timings and thresholds

5. You can apply a new configuration by pressing the "Write configuration" button. You can reset all settings to their default settings by first pressing "Reset to default values" and then press the "Write configuration button".