

EnOcean Development Kit EDK 100C





Self-powered Wireless Controls



The EnOcean Development Kit (EDK) features self-powered RF modules that simplify the installation of sustainable automation systems. This kit contains the devices & resources needed to quickly setup & test RF links between devices.

Development Kit Contents

Transmitters

[1] Solar-powered Sensor Module		STM-110C	RF module optimized for sampling and transmitting sensor data (example applications: Occupancy, Photo/Light, CO, Humidity and Temperature sensors)
[1] Mechanical-powered Switch Module		PTM-200C	Push-button RF module optimized for ON/OFF/DIM controls (example applications: Lighting, Blinds, Master ON/OFF)

Transceivers & Receiver

[2] Transceiver RF Modules		TCM-200C	Transceiver / Actuator Module that can receive RF packets from any EnOcean-enabled transmitter (Packet structures are detailed in the TCM user manual)
[1] Site-survey Tool		EPM-100C	Simplifies range and signal strength testing in various environments

Refer to the user manuals included on the CD for more information regarding RF modules

Accessories

[1] RS-232 Transceiver Interface Board	Provides a base connection to a PC
[1] RS-232 Sensor Development Board	Provides remote transmission & sensor configuration options
Other items: [2] RS-232 to USB Adapters [1] 120V / 60Hz Power Supply [1] 9V Battery (battery clip is for dev board) [15] Jumpers [1] Decorator Light Switch Plastics [1] ICD2 Adapter & Cable [1] CD-ROM	Connects interface board to PC's USB port Powers the EVA-110 interface board Powers the EPM-100C or STM Sensor development board Provides board configuration options Houses the PTM-200C transmitter Provides connection for programming Documentation, API & utility software

Setup Base Transceiver

Install the "USB Serial Converter" & "USB Serial Port" drivers

1. Insert the CD titled "EDK 100C Development Kit".
2. Connect the RS-232/USB adapter to the USB Cable.
3. Connect one end of the RS-232/USB cable assembly to the EVA-110 interface board and the other end to a PC's USB port. [The PC should launch the "Found New Hardware Wizard" dialog box.]

Install "USB Serial Converter" driver

4. Select the "No, not this time" option; then select the "Next" button.
5. Verify the "EDK 100C" CD is in the CD drive. Select the "Install the software automatically (Recommended)" option; then select the "Next" button.
6. Select the "Finish" button.

Install "USB Serial Port" driver

7. Repeat steps 5-6 above to install the 2nd "USB Serial Port" driver. After the "Hardware Installation" dialog box appears, select "Continue Anyway" button.
9. Select the "Finish" button.

Mount TCM-200C Transceiver RF Module to the Interface Board

1. Locate pin one of the RF Module and the Board's TCM receptacle. Pin 1 on the TCM-200C RF Module is the pin nearest to the antenna. Pin 1 on the EVA-110 Interface Board is marked as such [Figure 1].
2. Mount the TCM-200C Transceiver RF Module to the "TCM" header on the Interface Board (match pin numbers).
3. Power the module assembly using the included power supply.

Figure 1. TCM Transceiver Module & Interface Board

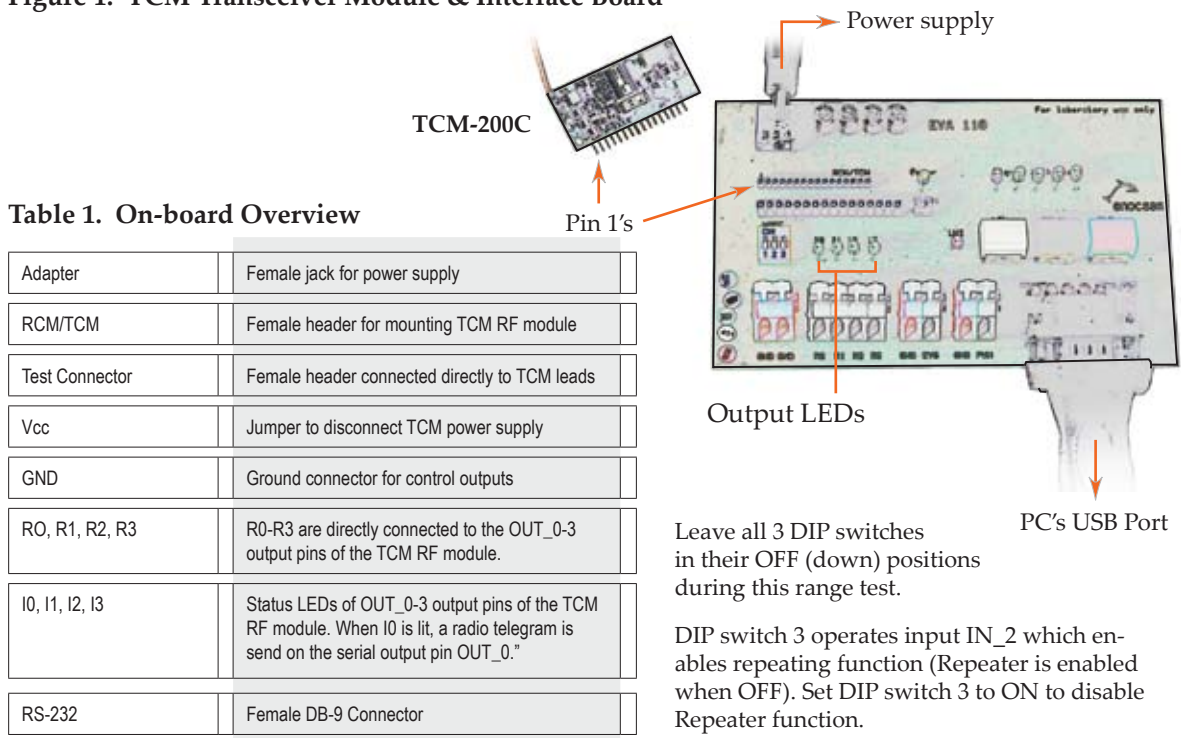


Table 1. On-board Overview

Adapter	Female jack for power supply
RCM/TCM	Female header for mounting TCM RF module
Test Connector	Female header connected directly to TCM leads
Vcc	Jumper to disconnect TCM power supply
GND	Ground connector for control outputs
RO, R1, R2, R3	RO-R3 are directly connected to the OUT_0-3 output pins of the TCM RF module.
I0, I1, I2, I3	Status LEDs of OUT_0-3 output pins of the TCM RF module. When I0 is lit, a radio telegram is send on the serial output pin OUT_0.
RS-232	Female DB-9 Connector

Leave all 3 DIP switches in their OFF (down) positions during this range test.

DIP switch 3 operates input IN_2 which enables repeating function (Repeater is enabled when OFF). Set DIP switch 3 to ON to disable Repeater function.

Range Test (Using a Mechanical-powered PTM RF Module)

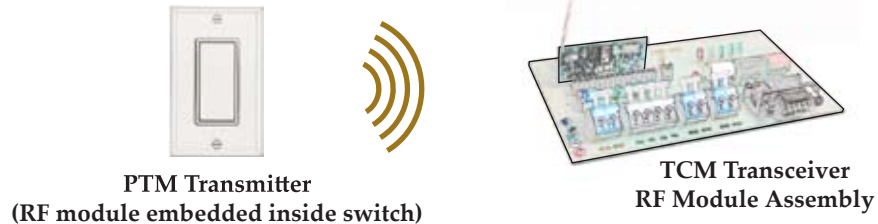
Send Radio Signals

1. Send radio signals from the PTM transmitter RF module to the TCM transceiver by pressing the attached plastic rockers.
2. Observe LED I0 indicating a radio telegram has been received and output on the serial interface.
3. Move the transmitting RF module away from the transceiver and test the RF link's range from various distances and environments.

--> Two persons and two cellular phones are ideal for testing range in this manner. Refer to page 4 of this starter guide for instructions on how one person can use the EVA-120 interface board with the STM transmitter RF module to test range.

--> For proper range testing, use the EPM100C range test tool together with a PTM200C switch transmitter or the EVA-120 board with an STM110C transmitter.

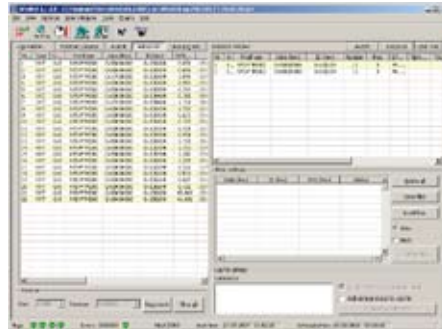
Figure 2. RF Link between the PTM Transmitter RF Module & TCM Transceiver



Monitor RF Packets

The WinETEL serial communications software enables users to observe RF packets as they are received through the TCM RF module assembly.

Figure 3. WinETEL Software User Interface



Install WinETEL Serial Communications Software (optional)

1. Browse the contents of the CD and double-click the file named "WinEtel 6.1.0.x.exe".
2. Follow the prompts given through the installation dialog boxes; then launch.

Range Test (Using a Solar-powered STM RF Module)

The following range test does not require use of a solar panel to power radio transmissions. Refer to the STM product user manual (located on the CD) for information regarding more in depth testing measures.

Setup Remote Transmitter RF Module

1. Follow the steps outlined in the "Setup Base Transceiver" section [page 2].
2. Populate the jumpers listed in the image below [Figure 4].
3. Mount the STM Transmitter RF Module to the "MOD1" header of the EVA-120 interface board. Use the outline of the RF module (silk-screened on the board) to ensure pin signals match.
4. Power the module assembly using a 9 volt battery and battery clip. The clip should be connected to the interface board using the contacts as is shown in the image below.

Send Radio Signals

The steps above ("Setup Remote...") configure the RF module to send a radio signal every 1 second. The module will also transmit each time the black "Wake" button (S2 on the EVA-120 board) is pressed.

LED4 is located below to the left of the orange antenna. LED4 blinks once each second when it transmits.

The module transmits (in addition to the 4 digital inputs, which are not connected) the state of the three blue variable resistors (which are intended to emulate sensors). The packet definition is detailed in user manual (STM 110_110C User Manual), which is found on the included CD ROM.

Use the WinEtel software to monitor, log and analyze all incoming radio telegrams. Use the EPM 100C to determine range.

Figure 4. Remote STM RF Module Assembly
(Jumpers that should be populated as indicated below)

