DOLPHIN
Self-powered IoT by EnOcean

TCM 300 / TCM 320 (868 MHz), TCM 300U / TCM 320U (902 MHz) Transceiver Modules

The transceiver modules TCM 300 and TCM 320 enable the realization of highly efficient radio actors, repeaters and other line powered applications for the EnOcean systems with 868 MHz & 902 MHz.

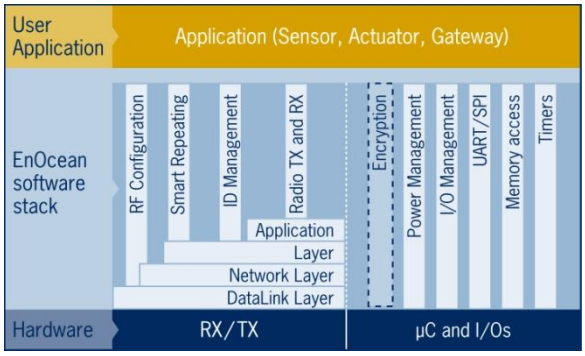
The module provides several built-in operating modes. In addition repeater functionality (1 or 2 level) can be activated. Using the Dolphin API library it is possible to write custom specific software for the module. The modules are in-system programmable.

Built-in operating modes

- Unidirectional serial communication (ESP2)
- Bidirectional serial communication (ESP2)
- 1-channel relay mode
- 4-channel relay mode
- 1-channel dimming mode

Features accessible via API:

- Integrated 16 MHz 8051 CPU with 32 kB FLASH and 2kB SRAM
- Various power down and sleep modes down to 0.2 µA current consumption
- Up to 14 configurable I/Os
- 10 bit ADC, 8 bit DAC



Energy Harvesting made easy with EnOcean wireless standard

TCM 300 is a bidirectional system module for line powered applications to communicate with maintenance-free sensor solutions based on the EnOcean wireless standard.

Product variants

- TCM 300 / TCM 300U: SMD mountable module for use with external antenna
- TCM 320 / TCM 320U: Variant for vertical mounting with pin connector and whip antenna.

Type	Ordering Code
TCM 300	**S3003-K300**
TCM 320	**S3003-K320**
TCM 300U	**S3053-K300**
TCM 320U	**S3053-K320**

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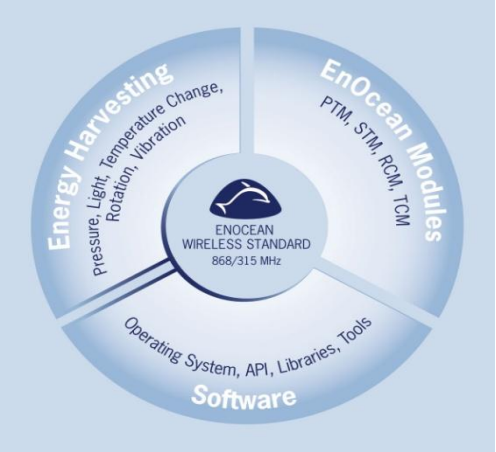
EnOcean Dolphin System Architecture. Open. Flexible. Expandable.

The distinguishing feature that sets Dolphin apart from other wireless system architectures is energy harvesting, which enables self-powered wireless sensors and actuators. The Dolphin system architecture joins the components necessary for an energy-autonomous wireless sensor system that operates on a standardized wireless network. These include energy conversion and storage components, EnOcean wireless modules for energy management, data acquisition, data processing and wireless data transmission, and finally the software blocks operating system, API and application programs.

As an open and expandable hardware and software architecture, Dolphin is future-oriented and fully backward compatible with EnOcean-enabled devices and system components already on the market.

The hardware kernel of Dolphin is the EO3000I chip, a basis for simply integrated modules. EnOcean modules already have extensive firmware functionality implemented – such as basic switching, dimming and measuring – and can go straight into an application without additional programming. Its built-in application functions enable straightforward start-up and system integration.



Benefits for OEM partner

- Maintenance-free sensor solution with energy harvesting
- Ready available and wide-ranging, interoperable system product portfolio
- Fast implementation and time to market
- Various evaluation tools obtainable to support development
- Competitive advantage over battery-powered wireless solutions
- New differentiated marketing advantages
- Participation in EnOcean's eco-system
- EnOcean is the wireless standard for sustainable buildings

Features overview

Antenna	Pre-installed whip antenna (TCM 320/320C/300U) External whip or 50 Ω antenna mountable (TCM 300/300C/300U)
Frequency and data rate	868.300 MHz / 125 kbps (TCM 300/320)[1)] 902.875 MHz / 125 kbps (TCM 300U/320U)
Receiver Sensitivity (at 25°C)	typ. –96 dBm (868 MHz)[2)] typ. -98 dBm (902 MHz)[2)]
Power Supply	2.6 – 3.3 V (TCM 320 / TCM 320U) 2.6 – 4.5 V (TCM 300 / TCM 300U)
Current Consumption	Receive mode: typ. 33mA Transmit mode: typ. 24mA
Dimensions of PCB	36.5 x 18 x 5.5 mm (TCM 320 / TCM 320U) 22 x 19 x 3 mm (TCM 300 / TCM 300U)
Operating temperature	–25 up to +85°C
Radio Regulations	R&TTE / EN 300 220 (TCM 300/320) IC/FCC CFR-47 Part 15 (TCM 300U/320U)

1) According to ISO/IEC 14543-3-10

2) 0.1% telegram error rate (based on the combination of 3 received sub-telegrams)

The use of energy harvesting with wireless communication is protected by EnOcean under international patents. Purchase of any of the above listed TCM modules does NOT include a license to use these patents. For energy harvesting wireless products please use our STM and PTM product families.