STM 330U, STM 332U
Temperature Sensor Transmitter Module

Operational Description

The EnOcean energy-harvesting temperature sensor transmitter module is a fully integrated radio transmitter module powered by a solar cell.

It contains the EnOcean ASIC EO3000I, which integrates several voltage regulators, an 8051 microcontroller (uC) core, 32kB Flash memory, 2kB SRAM, 14 configurable I/O, three sleep timers, ADC and DAC, a temperature sensor and a radio transmitter core.

The module also contains a 16MHz crystal, a Balun and filter circuit as well as some resistors, capacitors and inductors.
A "Learn" button enables the transmission of a specific learn telegram which identifies the module to a network. An analog input for a set point dial and a digital input for an occupancy button are also provided. All components are mounted on a common PCB with ground plane shielding.
Transmission occurs via an integrated whip antenna.

The uC is clocked by external 16MHz crystal; the radio frequency is generated and modulated by a fractional n phase lock loop which is locking on the same crystal-based 16MHz clock.

The device firmware monitors the status of the temperature sensor – and optionally the status of the set point dial, the occupancy button and an ambient sensor such as a humidity sensor - and sends a data telegram if a significant change is detected. Additionally a presence signal is transmitted at user-defined intervals.

The operating frequency is single channel 902.875 MHz, FSK - modulated (+/- 62,5 kHz, NRZ). The output power level is fixed and below the limit of 81.9 dBuV/m @ 3m.

The length of a single transmission is three pulses within 100ms, each pulse being 960µs long. Radio transmissions of the device are controlled by built in firmware and triggered by external or user-defined events.

The differences between the two modules are as follows:

STM 330U integrates a vertically-operated learn button and an LED lighting into vertical direction

STM 332U integrates a side-operated learn button and an LED lighting towards the side

Other than the differences listed above, the two modules are fully identical.

The modules will be used in conjunction with a host system that provides the set point dial and optionally a humidity sensor, a backup battery and an occupancy switch input.

For further details, please refer to the user manual.

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