

STM 320U Magnet Contact Transmitter Module Operational Description

The EnOcean energy-harvesting magnet contact 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, tree sleep timers, ADC and DAC as well as 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 Reed contact enables the implementation of wireless magnet contact sensor functionality. A "Learn" button enables the transmission of a specific learn telegram which identifies the module to a network. An integrated energy storage element allows operation for several days even in total darkness.

All components are mounted on a common PCB with ground plane shielding. Transmission occurs via the integrated helical antenna.

The uC is clocked by the 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 reed contact and sends a data telegram if a change is detected. Additionally a "sign of life" is transmitted randomly every 20...30 minutes.

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 768µs long. Radio transmissions of the device are controlled by built-in firmware and triggered by random external or internal events.

For further details, please refer to the user manual.

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