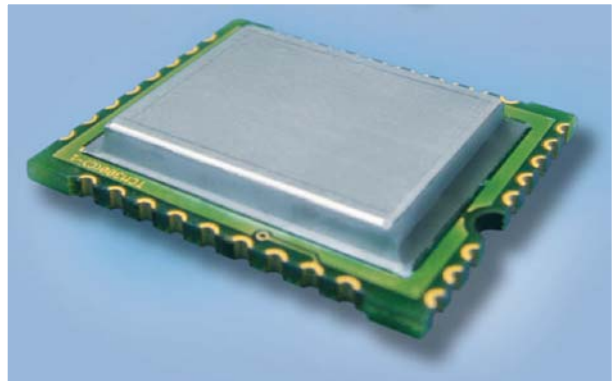


## 1 GENERAL DESCRIPTION

### 1.1 Basic functionality

The extremely power saving RF transmitter module STM 300 of EnOcean enables the realization of wireless and maintenance free sensors and actuators such as room operating panels, motion sensors or valve actuators for heating control.



Power supply is provided by an external energy harvester, e.g. a small solar cell (e.g. EnOcean ECS 3x0) or a thermal harvester. An energy storage device can be connected externally to bridge periods with no supply from the energy harvester. A voltage limiter avoids damaging of the module when the supply from the energy harvester gets too high. The module provides a user configurable cyclic wake up. After wake up a radio telegram (input data, unique 32 bit sensor ID, checksum) will be transmitted in case of a change of any digital input value compared to the last sending or in case of a significant change of measured analogue values (different input sensitivities can be selected). In case of no relevant input change a redundant retransmission signal is sent after a user configurable number of wake-ups to announce all current values. In addition a wake up can be triggered externally.

#### Features with built-in firmware

- 3 A/D converter inputs
- 4 digital inputs
- Configurable wake-up and transmission cycle
- Wake-up via Wake pins
- Voltage limiter
- Threshold detector
- Application notes for calculation of energy budgets and management of external energy storages

#### Product variants

- STM 300/300C: SMD mountable module for use with external antenna (868/315 MHz)

#### Features accessible via API

Using the Dolphin API library it is possible to write custom firmware for the module. STM 300 / STM 300C is in-system programmable. The API provides:

- Integrated 16 MHz 8051 CPU with 32 KB FLASH and 2 kB SRAM
- Receiver functionality
- Various power down and sleep modes down to 0.2  $\mu$ A current consumption
- Up to 16 configurable I/Os
- 10 bit ADC, 8 bit DAC

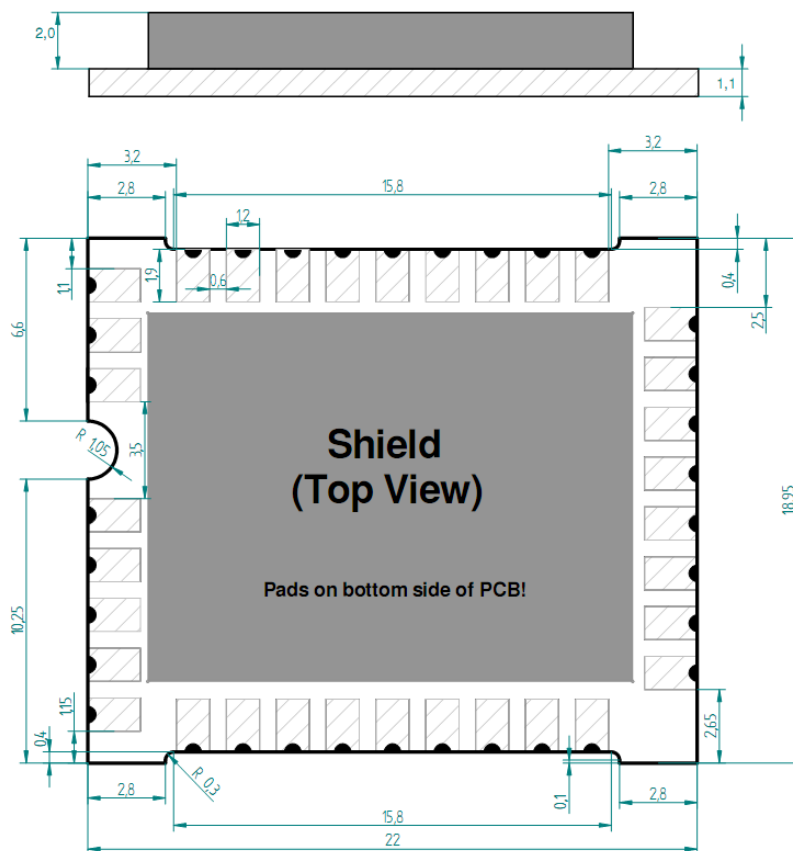
STM 300 / STM 300C

1.2 Technical data

Antenna	External whip or 50 Ω antenna mountable
Frequency	315.0 MHz (STM 300C)/868.3 MHz (STM 300)
Radio Standard	EnOcean 868 MHz/315 MHz
Data rate/Modulation type	125 kbps/ASK
Receiver Sensitivity (at 25°C)	typ. -93 dBm, receiver available only via API
Conducted Output Power	typ. 5 dBm
Power Supply	2.1 V-4.5 V, 2.6 V needed for start-up
Current Consumption	Deep Sleep mode : typ. 0.2 μA Transmit mode: typ. 24 mA, max. 33 mA Receive mode (available via API only): typ. 33 mA, max. 43 mA
Input Channels	4x digital input, 2x WAKE input , 3x analog input Resolution: 3x 8 bit or 1x 10 bit, 1x 8 bit, 1x 6 bit
Radio Regulations	R&TTE EN 300 220 (STM 300) FCC CFR-47 Part 15 (STM 300C)

1.3 Physical dimensions

PCB dimensions	STM 300/STM 300C: 22x19x3.1 mm
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Unless otherwise specified dimensions are in mm.

Tolerances:  
PCB outline dimensions ±0.2 mm  
All other tolerances ±0.1 mm

STM 300 / STM 300C (pads on bottom side of PCB!)

## 1.4 Environmental conditions

Operating temperature	-25 °C ... +85 °C
Storage temperature	-40 °C ... +85 °C
Storage temperature in tape & reel package	-20 °C ... +50 °C
Humidity	0% ... 93% r.h., non-condensing

## 1.5 Ordering Information

Type	Ordering Code	Frequency
STM 300	S3001-D300	868.3 MHz
STM 300C	S3031-D300	315.0 MHz

Suited solar cells (for technical details please refer to the ECS3x0 data sheet):

Type	Ordering Code	Size
ECS 300	S3005-D305	35.0×12.8×1.1 mm
ECS 310	S3005-D310	50.0×20.0×1.1 mm