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PTM 330 wireless switch module

With the invention of the self-powered light switch EnOcean has layed the corner-stone for flexible automation systems in energy efficient buildings. Energy harvested by an electrodynamic generator is used to send control commands via a wireless radio module. Besides lighting and heating control a wide range of applications is possible based on that technology. The new PTM 330 radio switch module will enable many of these, especially when combined with the new ECO 200 energy harvester.

Dr. Wolfgang Heller, Product Line Manager, EnOcean GmbH

Overview and key features

The radio transmitter modules PTM 33x from EnOcean enable the implementation of wireless sensors and switches without batteries.

	PTM 330 / PTM 330C PTM 330U / PTM 330J	PTM 332 / PTM 332C
Target Applications	Wireless key card switches Window and door sensors Key fobs Switches for industrial automation	Wireless key card switches Window and door sensors Switches for industrial automation
Firmware Features	When an energy pulse is supplied ■ Digital inputs / buttons are read ■ Polarity of energy puls is read ■ Radio switch telegram containing ID, polarity and button information equivalent to PTM200 radio switch is sent	
Size	26.2 x 21.15 x 3 mm	
Connector	Direct mechanical connection to ECO 200 possible	16 SMD pads for reflow soldering onto host PCB
Antenna	Pre-installed whip antenna	Whip antenna or external 50Ω antenna
Variants	868 MHz: PTM 330 315 MHz: PTM 330C 902M MHz: PTM 330U 928 MHz: PTM 330J	868 MHz: PTM 332 315 MHz: PTM 332C
# I/Os	4	
Packaging	Tray	Tape&Reel

When an energy pulse is supplied (e.g. by ECO 200 from EnOcean) a RF telegram is transmitted including a unique 32-bit module ID, the polarity of the energy pulse, and the operating status of 4 digital inputs.

Applications

PTM33x is designed for use in remote control key fobs, wireless key card switches, window and door sensors or switches for industrial automation.
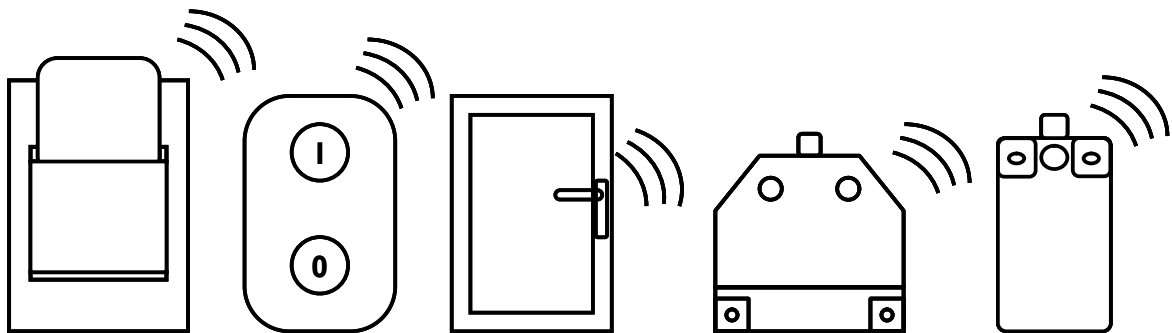

PTM 330 can be connected to ECO 200 without soldering. ECO 200 provides contact springs which can directly be connected to contact pads of PTM 330. The contact pads on the bottom of the PCB are shown below (left). A second orientation where PTM 330 is rotated 180° with respect to ECO 200 is also possible as shown with dashed lines.

There are two meander structures on the PCB which allow usage of a rubber pad on top of the PCB to set the level of two of the four digital inputs.
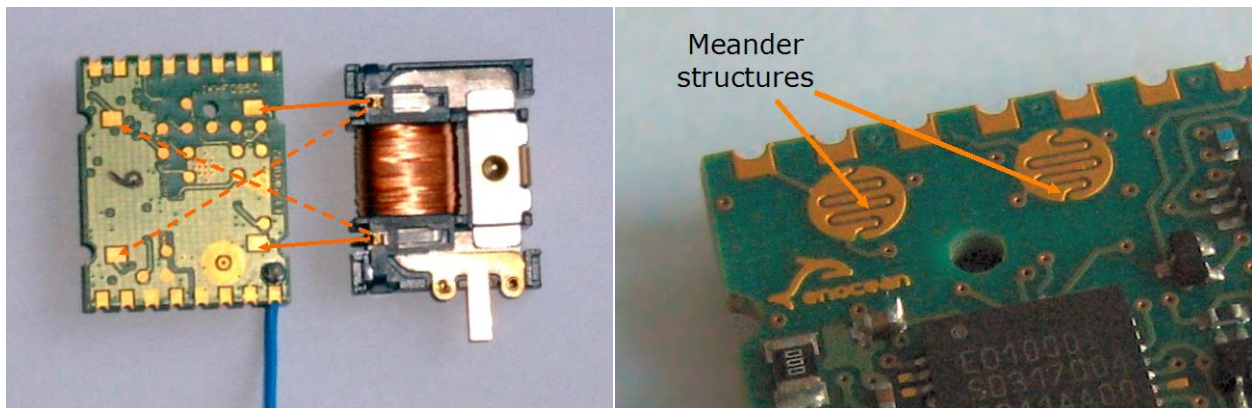
In the left figure below a schematic view of the combination of ECO 200, PTM 330, and a rubber keypad is shown. The right figure shows an integration example into a small housing where both the ECO 200 and the PTM 330 simply have to be snapped in. Rubber keypad and housing are application specific and are not provided by EnOcean. The overall height for the combination of ECO 200, PTM 330, and a housing is about 10mm. Construction data for this application example is available in .igs format on request.
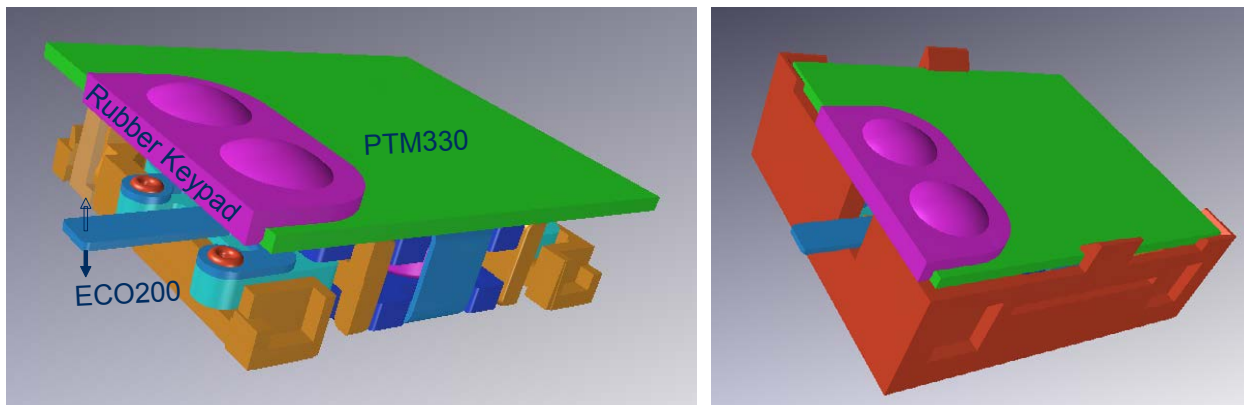
The product variant PTM 332 can be mounted as an SMD component onto a host PCB. In this case energy supply pins and four digital input pins are accessible via contact pads at the short edges of the module. With these four inputs two rockers of a PTM 200 / 200C switch can be simulated. This option is advantageous for example if a different form factor is required, if other antennas than the whip shall be used, or if another energy source (e.g. pulses generated by an electronic circuit) shall be employed. PTM 332 provides the option to use a whip antenna or to connect 50Ω antennas.

Configuration

Via a configuration interface the content of the radio telegrams can be modified at time of production of the end device (configurable, within the boundaries of EnOcean telegrams of type RPS). For each of the 32 possible different radio telegrams the content can be defined independently.
This allows to exchange for example rocker information, invert polarity information, or to send window handle or key card switch telegrams as specified by the EnOcean Alliance radio profile specification.

Summary

The new family of PTM 33x modules addresses a wide range of self-powered switch products. Through its versatile mounting options PTM 33x provides a high degree of freedom in product design and ensures cost efficient mass production.