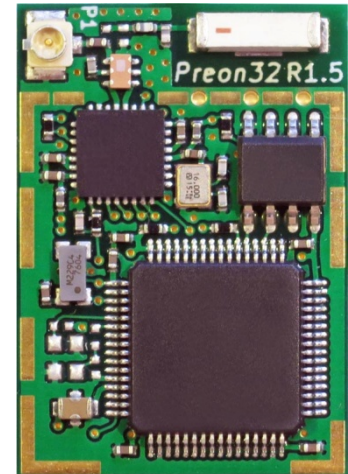


# Preon32 - Wireless Module

## Universal wireless module with superior peripherals

### Product features

- Wireless module with an efficient 32 bit Cortex-M3 microcontroller
- License free 2.4 GHz ISM frequency band
- Unique operating system with a virtual machine
- Transceiver compatible to the IEEE 802.15.4 standard
- Wireless data bandwidth up to 2 Mbit/s
- High sensitivity of -101 dBm and a link budget of 104 dB
- Chip antenna, optional with u. FL connector for external antenna
- Compact dimensions of 27,5 x 19 x 3,3 mm
- Conformity according to R&TTE Directive 99/5/EC guidelines



### Description

The module Preon32 is a universally usable sensor and actuator platform for realization of sophisticated applications for short-range wireless networks. It consists of a high-performance Cortex-M3 microcontroller, a transceiver with leading RF-properties of IEEE 802.15.4 compatible hardware on the market and a serial flash for data storage. The integrated microcontroller is able to execute complex protocol stacks and also handles extensive customer applications. The module footprint is designed as land grid array (LGA) with surface mount pads. Thus it is ideally suited for fully automatic pick & place. The customer has full access to all functions of the transceiver, like reading of RSSI-values, packet framing and encryption of packets by the hardware.

The innovative operating system allows programming the wireless module in an object-oriented programming language like Java™. For this purpose VIRTENIO provides a virtual machine for the embedded system. Java™ programs are developed on the desktop computer, get uploaded on the target system and are executed by the virtual machine. Through native interfaces it's possible to get access to the RF transceiver or all other peripherals.

### Interfaces

The Preon32 features a lot of interfaces for the connection of external peripherals, like CAN, I<sup>2</sup>C, SPI or USB as well as digital input and output pins. Analog signals can be sampled with the integrated analog to digital converter. The high resolution of 12 Bit and the possible sampling rate of up to one million samples per second separate the module Preon32 from the competitor products.

### Applications

- Ultra-fast time to market for innovative products and ideas
- Application areas, where currently technical and economic reasons are against to measure conditions and changes of the ambient conditions
- Applications in the home automation, the agriculture, monitoring of the road traffic, habitats of animals or plants and in the industrial sector

### Microcontroller

<b>Microcontroller core:</b>	32 Bit Cortex-M3 Microcontroller, RISC
<b>Main clock frequency:</b>	Up to 72 MHz
<b>System memory:</b>	64 kByte SRAM
<b>Data memory:</b>	256 kByte flash, optional up to 512kByte flash
<b>Current consumption (typ.):</b>	3,7 mA ( active, 8 MHz ), 28,3 mA ( active, 72 MHz ), 1,3 mA ( sleep, no peripherals active ), 26 $\mu$ A ( stop mode )

### HF-Transceiver

<b>Frequency band:</b>	2400.0 – 2483.5 MHz
<b>Channels:</b>	16
<b>Channel interval:</b>	5 MHz
<b>Data bandwidth:</b>	250 Kbit/s - 2 Mbit/s
<b>Output power:</b>	-17 dBm - 3 dBm
<b>Sensitivity:</b>	-101 dBm
<b>Range:</b>	Up to 250 m outdoor, 30 m in buildings
<b>Current consumption (typ.):</b>	Sleep mode: 20 nA, receive mode: 12.3 mA, transmit mode: 14 mA

### Interfaces

<b>Serial interfaces:</b>	1x USB 2.0 full-speed controller 1x CAN interface (2.0B Active) 3x SPIs, up to 18 Mbit/s 3x USARTs, up to 4.5 Mbit/s 1x I <sup>2</sup> C interface, up to 400 Kbit/s
<b>Analog interfaces:</b>	2x 12-Bit analog to digital converters, 1 MSPS, 15 channels 2x 12-Bit digital to analog converters
<b>Other interfaces:</b>	37x digital input or output pins (GPIOs) 15x external interrupt inputs

### Additional peripherals

<b>Data memory:</b>	External 8 Mbit serial Flash
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### General

<b>Dimensions:</b>	27,5 x 19 x 3,3 mm
<b>Operating temperature:</b>	-40°C up to +85°C
<b>Supply voltage:</b>	2,7 – 3,6 V
<b>Conformity:</b>	ETSI EN 50371, ETSI EN 60950, ETSI EN 300328, ETSI EN 301489