

SoM - RIN32M3 -Ethernet dual port SoM module (preliminary) 08/2018

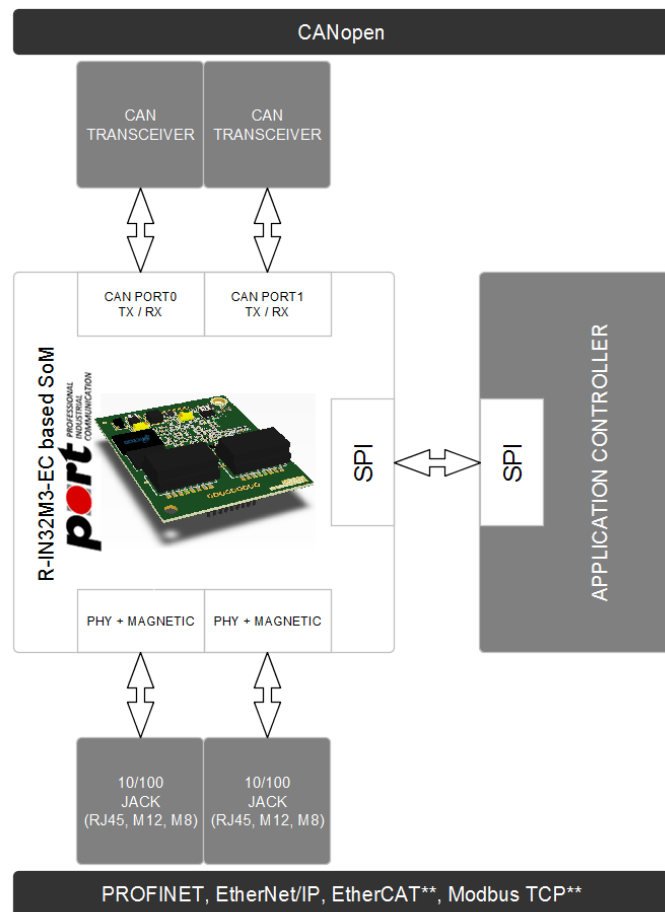
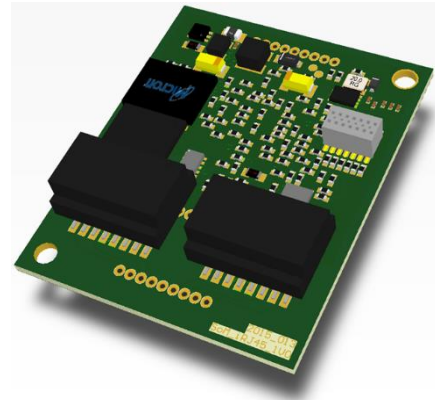
Description

The [SoM RIN32M3](#) is a ready to use, pre-certified (with example application) dual port Ethernet module solution currently available for PROFINET RT, EtherNet/IP, EtherCAT and CANopen real-time protocols, including an embedded 2-port Ethernet switch with a 3rd internal port for bus and ring network topologies.

In the SoM – RIN32M3 module a Renesas microcontroller is integrated running a protocol library which supports various kinds of real-time industrial Ethernet communication protocols. With a well-documented generic API (Application Programming Interface), the protocol library can be simply accessed from an application processor in order to exchange real-time network data with the user application via a lean SPI module interface.

The generic API is an abstraction platform for real-time communication offering scalable multi-protocol solutions such as PROFINET RT, EtherNet/IP, EtherCAT and CANopen. The external application processor has full control of the protocol stacks running on the module CPU without interfering the modules' real-time communication or wasting the CPU performance on the host processor.

The currently available industrial Ethernet protocols PROFINET RT, EtherNet/IP, EtherCAT and the common Fieldbus CANopen implementations are complying with the latest specification releases. An extensive tool chain covering evaluation boards (module and application processor), API source code and host application examples including extensive documentation makes the integration into your target application environment quite easy. All this enables the users for a lean and independent connection to existing or new applications, products and networks while accelerating time to market.



** on Request

Advantages

The SoM - RIN32M3 module offers you a cost effective and easy to integrate communication solution. With just one module you have the for market leading real-time communication systems. The open interfaces allow you to react flexibly in the connector area. RJ45, M12, M8 or MiniIO - no problem. An extensive tool offer for management and integration makes the design very efficient. With the integrated update service, you are always up to date.

Functions

- Complete dual Ethernet interface compliant to IEEE 802.3 including transformers and PHYs
- Embedded 2-port Ethernet switch for bus and ring network topologies
- High speed SPI interface and power pins to connect the module to the host CPU
- Integrated processor to handle real-time industrial Ethernet protocols
- All Protocols on board available

Features

Applications

- Industrial automation
- Compact and modular remote I/Os
- Gateways for IoT – Internet of Things

Product Features

- Support of PROFINET RT, EtherNet/IP, EtherCAT real-time communication standards
- Support of CANopen protocol
- Ethernet ports supporting 10 Mbit/s and 100 Mbit/s with auto negotiation
- Device configuration via “Management Tool” and API through application controller
- Comprehensive tool support and application examples in source code for many platforms (STM, RENESAS...)

SPI operation

The SPI of the SoM-RIN32M3 module is intended to interface the module to the external application processor. Because of the independency between the module clock and the clock of the external application processor the serial transfer with the SPI interface is executed in asynchronous mode by the following 3 module pins:

- MOSI (master out, slave in)
- MISO (master in, slave out)
- SCLK (RSPI clock) signals
- SS (slave select)

The application controller as SPI master determines the SPI communication mode. The SPI data format can be switched between MSB first and LSB first. The number of bits in each transfer can be changed to any number of bits from 8 to 16, or to 20, 24, or 32 bits. Communication bases on a 128-byte transfer buffer, which can transport multiple requests. Communication is based on a cyclic scheme, where process data can be transmitted cyclically with each request of the application controller. Non-Realtime communication (RPC) uses the same transport, however processing is decoupled from the Realtime communication. Thus, real time data can be exchanged independently from function calls of the API.

Development environments

Solutions Kit's available for:

- [ARDUINO – PMOD Board for RENESAS Synergy S5 / S7](#)
- [ARDUINO – PMOD Board for STM32F4 \(Nucleo\)](#)
- [ARDUINO – PMOD Board for – on request](#)

Services

We offer a comprehensive service around the SoM modules.

- Integration service
- Design In Support
- SPI driver customizations on the host side
- Certification Service (in cooperation with certified laboratories)

Order – Information

| Art.-No. | Description | Note |
|----------|---|--|
| 2070/45 | SoM - RIN32M3 - Real Time Multiprotocol - Solution | |
| 2070/84 | PORT - ARDUINO / PMOD Communication Board SoM – RIN32M3 | Optimized for using STM32F4 NUCLEO and RENESAS SYNERGY S5/S7 Boards (other on Request) |

Helpful Links

SoM Module: <https://www.port-automation.com/en/products/som-module-embedded/som-iot-based-on-renesas-rin32m3.html>

SoM EVAL KIT: <https://www.port-automation.com/en/products/arduino-pmod-boards.html>