

Training Stack / System on Module



Products & Service Overview



Stacks, Tools and Middleware	Integration, Consulting & Design In	OEM & Customer-specific Engineering & Production	Module & Devices
✓ CANopen ✓ J1939 ✓ PROFINET ✓ EtherNetIP ✓ EtherCAT ✓ POWERLINK ✓ MODBUS TCP ✓ GOAL - Middleware ✓ CC-LinkIE TSN ✓ CC-linkIE Field Basic ✓ Design Tools ✓ Analysis Tools ✓ Configuration Tools	✓ Stack - Integration in your Hardware ✓ Creation of the List of Requirements ✓ Design In Service ✓ Hardware & Software Consulting ✓ Training (on Request) ✓ SMA Service Maintenance Agreements ✓ Pre-Certification Test	✓ OEM Development ✓ Customized Software-Engineering ✓ Customized Hardware-Engineering ✓ Gateway, I/O, Switch and Router Engineering ✓ Security relevant Engineering ✓ E²MS	✓ SBC – single Board Computer ✓ SoM – System on Module ✓ SoM – Stack on Module ✓ CAN / CANopen - Hardware ✓ I/O Devices ✓ Gateways 

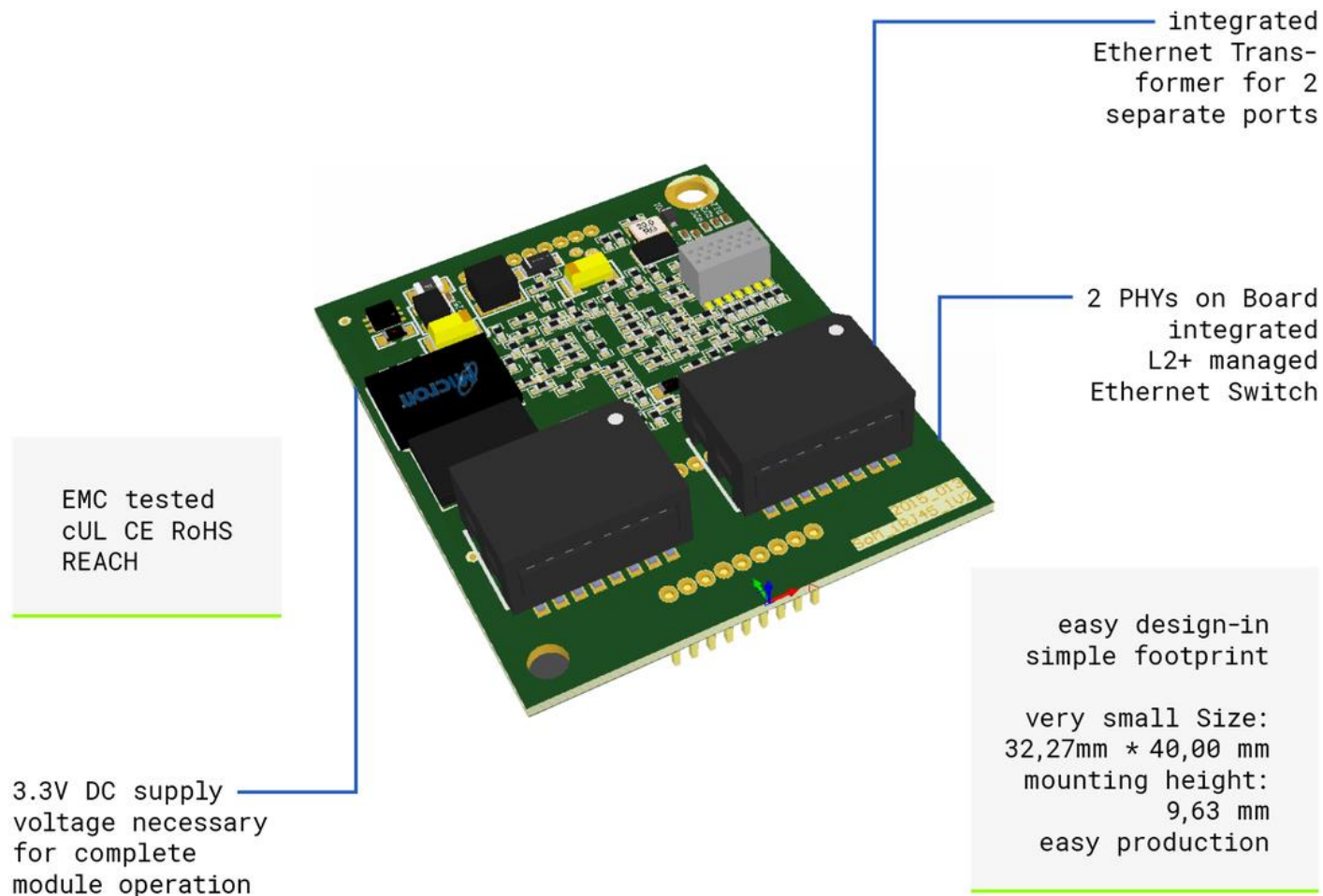
www.port.de / www.port-automation.com / www.system-on-module.com

Email: service@port.de / Phone: +49345777550

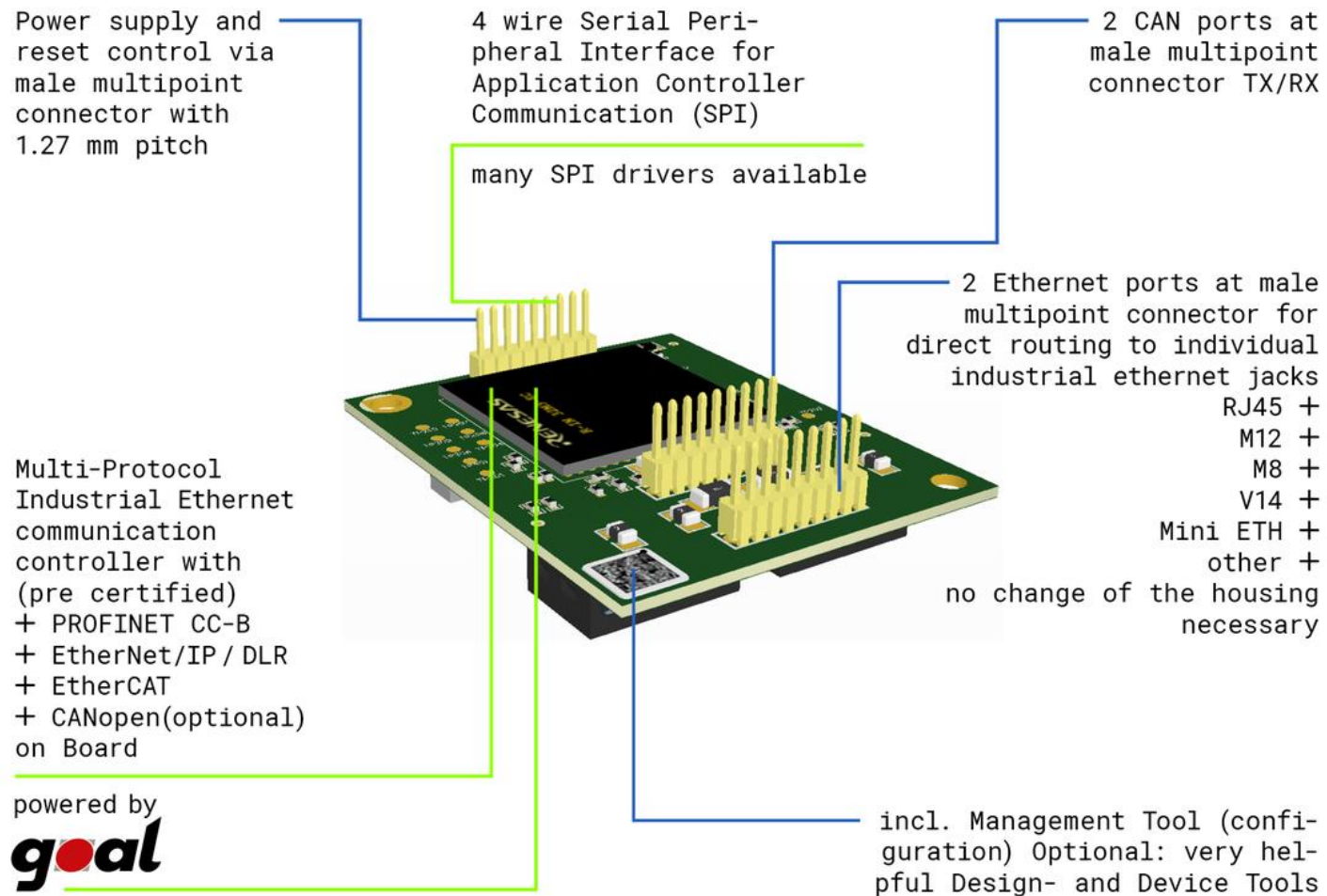
Stack / System on Module

- The SoM (Stack / System on Module) offers a lot of functionalities in combination with real time communication possibilities.
- various fieldbus protocols are available "on board". **PROFINET CC-B, EtherNetIP (CIP)** and **EtherCAT**.
- The SoM modules from PORT, significantly reduce development time and investments in license fees.
- PORT supports customers in the Design-In phase and can obtain the approvals and certifications as an extra service.
- all fieldbus systems pre-certified
- Engineering Tools also available

SoM Facts Step 1

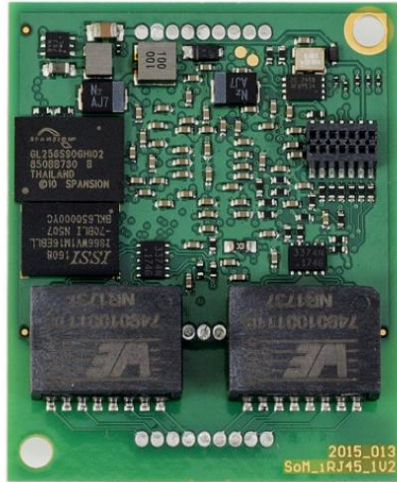


SoM Facts Step 2



SoM verfügbare Ausführungen

Zurzeit sind 2 Ausführungen erhältlich:



SoM IoT Based on RENESAS RIN32M3

Based on a RIN32M3EC CPU in combination with GOAL technology from PORT, this SoM offers **PROFINET CC-B**, **EtherNet/IP CIP**, **EtherCAT** and **CANopen** on board. Simply connect via the SPI of your host controller - and your applications are already multi-protocol capable.



SoM IoT Raspberry PI

Integrating Raspberry PI into networks such as PROFINET, EtherNet/IP and EtherCAT - **no problem with the Raspberry PI expansion board from port.**

How to connect the SoM with the Host CPU

Based on a RIN32M3EC CPU in combination with GOAL technology from PORT, this SoM offers PROFINET, EtherNetIP, EtherCAT on board.

Simply **connect via SPI** of your host controller - and your applications are already multi-protocol capable.

Functions & Communication

- ✓ 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
- ✓ Support of **PROFINET RT (incl. MRP)** , **EtherNet/IP (incl. DLR)**, **EtherCAT** real-time communication standards
- ✓ 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, NXP, TI...) and LINUX

Position within the portfolio of port

- ✓ Port is very well known for Protocol Stacks
- ✓ Contrary to our competitors we have a lot of priceless Know How from employing an own stack in countless customer projects.
- ✓ We learned our trade the old-fashioned way: From the very beginning
- ✓ We are selling not only a System on Module – we sell likewise a Stack on Module and with it our priceless experience.

Advantages

- ✓ cost effective and easy to integrate
- ✓ one module for all market leading real-time communication systems
- ✓ open interfaces for more flexibility in the connector area
- ✓ works with RJ45, M12, M8 or MiniIO
- ✓ extensive tool offer for management and integration makes the design very efficient
- ✓ integrated update service – you get always the latest firmware

EVAL Kits

Es sind verschiedene EVAL Kits verfügbar:

- STM32F4
 - STM32F7
 - RENESAS Synergy S7
 - RaspBerry PI
 - NXP LPC55
 - RENESAS RL78/G14
- Weitere befinden sich in Vorbereitung bzw. können mit überschaubaren Aufwand erstellt werden.

Wichtig ist, dass das Host EVAL Board über ARDUINO Schnittstelle verfügt.

<https://www.system-on-module.com/evaluation-boards/>

Welche Host CPU kann zusammen mit SoM genutzt werden?

Durch die Verwendung GOAL auf der SoM Seite und μ GOAL auf der Host Seite, lassen sich faktisch alle Controller (ab 8Bit) und mit einem verfügbaren SPI Interface mit dem SoM verbinden.

Introduction

μ GOAL describes a software package, which allows integration of the SoM module into applications without using a full GOAL framework platform. By stripping down the required dependencies from the GOAL industrial communication framework, integration is possible into a wide range of platforms from a simple ATMEGA 8-bit CPU with 2KB of RAM up to a Linux PC.

μ GOAL mimics the required functionality from the GOAL framework specifically needed by the application controller framework. It is configurable in different ways to ensure compatibility with a wide range of targets. Most GOAL functionality is not available, however the CCM specific examples for fieldbus applications can be reused mostly without adaption.

<https://portgmbh.atlassian.net/wiki/spaces/IRJ45SOM/pages/138739774/004+-+uGOAL+-+Introduction#Introduction>

Engineering Tools

Für die Konfiguration der SoM Module bietet PORT 2 Engineering Tools an:

<https://portgmbh.atlassian.net/wiki/spaces/ICE/overview>

Industrial Communication Explorer

(ist inclusive)

The Industrial Communication Explorer is an accompanying tool for all devices powered by the GOAL Device Detection protocol such as SoM/iRJ45 device and assists in developing applications on Windows, Linux and Mac OS.

The tool allows to configure the device, creating snapshots of the current state, update the firmware, read logs and initiate a PROFINET, EtherNET/IP or EtherCAT connection using the integrated master emulators.

Thus, the tool can also assist in the production line of devices for setting the default state of the device such as the initial firmware or device configuration.

<https://portgmbh.atlassian.net/wiki/spaces/ICCX/overview>

Industrial Communication Creator

For comfortable and easy configuration and object dictionary management, port provides its Unified Industrial Communication Creator Platform which enables the user to develop communication solutions using port stacks rapidly. The individual functionality for each stack is realized by plug-ins for each protocol. So the user has only to learn how to work with one tool.

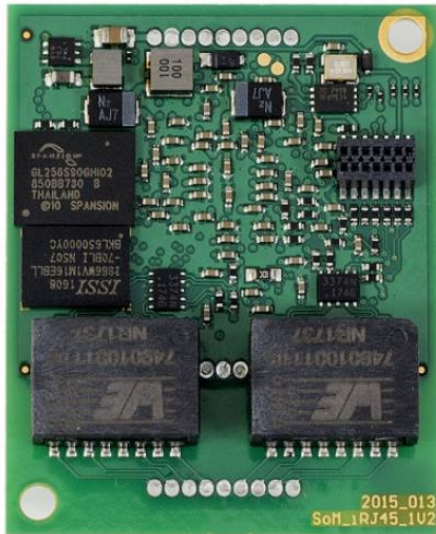
- Generation of stack configuration file;
- Generation of software model definition (e.g. slots and modules, connections, object dictionary, lines, etc.) file;
- Generation of device description (GSDML, EDS, ESI, CSP+) file;
- User assistance for each configuration setting;
- Detection of common configuration errors;
- Step by step configuration guide in form of task list.

Welche Kunden werden angesprochen

Das SoM spricht vor allem Kunden an, welche **kleine und mittlere Stückzahlen von Geräten** PROFINET, EtherNet/IP oder EtherCAT fähig machen wollen. Keine Lizenzgebühren, schnelle Integration, einfaches PCB Design und die Vorzertifizierung des SoM sind hier wichtige Argumente.

Für Kunden mit Stückzahlen > 1000 Stück pa ist das SoM ggf. zu teuer. Hier kann PORT anbieten, das der Kunde das SoM / den RENESAS RIN32M3 direkt eindesigned (also die Komponenten selber beschafft) und nur Royalties oder eine Licence Fee zahlt. Das wird idR. individuell vereinbart.

Road Map



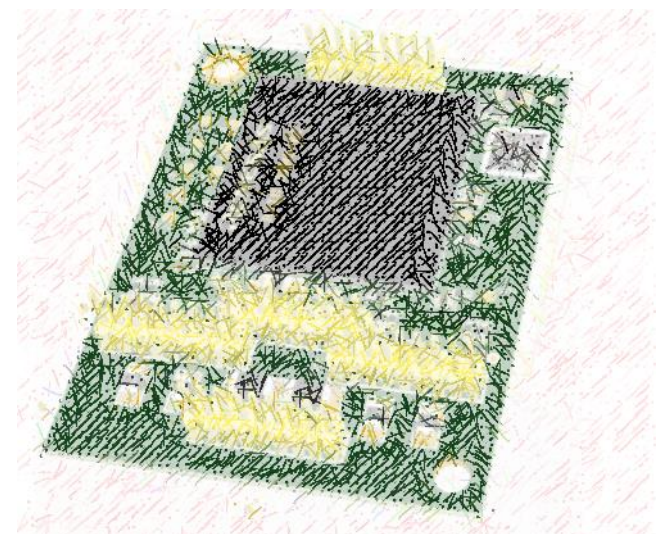
2020

PROFINET CC-B
EtherNet/IP
EtherCAT



2021

2x UART, 1xI2C, 2xSPI, RS485
und mit interrupt fähigen
GPIOs



2022

CC-LinkIE TSN
PROFINET CC-D TSN

Wichtige Links und Emails

Website (SoM) www.system-on-module.com

Website (Stacks and Tools) www.port.de

Support Knowledge Base

<https://portgmbh.atlassian.net/wiki/spaces/SKB/overview>

Technical Support: support@port.de (OTRS)

Sales: service@port.de

The logo for 'port' is displayed in a bold, italicized, black sans-serif font. The letter 'o' is replaced by a solid red circle. This red circle is centered within a light gray square that has diagonal lines extending from its corners, creating a sense of motion or a stylized 'X' shape behind the circle. The entire logo is set against a white background, which is flanked by solid red horizontal bars at the top and bottom of the image.

port

port – We connect industrial worlds!