
News Release

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**Renesas Electronics Europe and port GmbH Announce Availability of
CANopen Protocol Stack for Renesas' 32-Bit RX600 Microcontroller
Series**

Dusseldorf, July 2, 2012 – Renesas Electronics Europe, a premier supplier of advanced semiconductor solutions, and port GmbH today announced the availability of a highly efficient CANopen protocol stack and an engineering tool (CDT – CANopen Design Tool) for Renesas' high performance 32-bit RX600 series of microcontrollers (MCUs). Renesas ported the widely used and popular CANopen software stack in cooperation with its business partner port GmbH.

With the large RAM of up to 128 KB and up to 2 MB flash embedded, the Renesas RX600 series offers up to three channels of Controller Area Network (CAN) interfaces, which are fully compliant with the CAN 2.0B and the ISO11898-1 (standard and extended frames) standards, and is therefore well-suited to industrial and consumer applications requiring CAN interfaces.

Each of the embedded CAN modules includes 32 mailboxes, of which eight can also be configured as FIFO mailboxes. A powerful acceptance filter mask provides up to eight different masks to be individually set up for each of four mailboxes, which can be enabled and disabled separately. In addition, a 16-bit counter offers a time stamp function. The CAN modules can interact with Renesas' RX CPU by using different interrupts such as reception complete, transmission complete, receive FIFO, transmit FIFO, and error interrupts.

The RX600 series of MCUs has a maximum operating frequency of 100 MHz. In combination with the enhanced CPU core architecture, it provides an overall processing performance of 165 DMIPS executing code from embedded zero wait state flash. The MCUs also incorporate an on-chip 32-bit multiplier, single-precision floating-point unit (FPU) and a 32-bit enhanced barrel shifter for dramatically improved operation processing performance.

The RX600 series also includes a variety of on-chip peripheral functions, such as high-functionality timers and four DMA controller channels as well as Ethernet MAC and up to two USB units (Host/OTG/Device). Additional features include up to 13 freely scalable SCIs, supporting UART, SIO and I2C communication, 21 channels of 12-bit A/D converter, eight

channels of 10-bit A/D converter, two 10-bit D/A converter channels and a CRC calculation circuit to increase reliability.

“As well as its traditional use in automotive companies, the CAN protocol has gained widespread popularity in applications ranging from industrial automation to medical electronics. Renesas’ latest MCUs simplify CAN-based designs because the RX600 MCU series ranges from low-end to high-end flash-based CAN controllers,” said Bernd Westhoff, Product Manager of the Renesas Electronics Europe IBG business unit. “These RX MCUs, combined with the well-known CANopen stack supported by port GmbH, provide an excellent foundation for fast and smart development using the powerful embedded CAN interfaces.”

The RX600 series with embedded CAN comes in 48-pin to 176-pin packages with on-chip flash memory from 64 KB to 2 MB and RAM memory from 8 KB to 128 KB.

The CANopen stack follows the strict and very efficient coding and documentation standards established by port GmbH. These standards result in the very small memory footprints of CANopen as well as high execution speed and easily readable code. For easy implementation, port GmbH offers board support packages for the standard Renesas Starter Kits.

CANopen Source Code Library

The CANopen source code library Master/Slave contains the services of the CANopen CiA-301 V4.2 and CiA-302 standard. The library has been fully ANSI-C coded, and hardware specific interfaces have been placed in separate driver packages (also available in ANSI-C source code). This facilitates adaptation to different systems. The scope of delivery for the CANopen Source Code Library includes one driver package for one CPU and one CAN controller (if already available at port). Further information is available at <http://www.port.de/0564Library>.

CANopen Design Tool

The CANopen Design Tool enables the rapid and cost-effective development of CANopen applications (devices). It automatically generates an object dictionary and an initialization function in C-code, an Electronic Data Sheet and the documentation of the project. Furthermore, it simplifies the configuration of the CANopen Library and of the CANopen Driver Packages. An evaluation version is available free of charge at: <http://www.port.de/pages/shop/canopends.php?lang=en>

The CANopen stack and the CANopen Design Tool (CDT) are available now. Further information is available from Renesas Electronics Europe sales offices or from port GmbH.

About port GmbH

port is one of the leading providers of communication technologies with emphasis on CAN/CANopen. Since 1990 port has been situated in Halle (Saale) Germany and for five years port has successfully established a position in the area of industrial Ethernet technology (PROFINET, EtherCAT, POWERLINK, EtherNet/IP). Apart from stacks, tools, trainings and integration support port offers customer specific hard- and software development, including the manufacturing of electronic devices and systems.

About Renesas Electronics Europe

Renesas Electronics Europe with its Business Operations Centre located in Dusseldorf, Germany, is a wholly owned subsidiary of Renesas Electronics Corporation (TSE: 6723), the world's number one supplier of microcontrollers and a premier supplier of advanced semiconductor solutions including microcontrollers, SoC solutions, secure MCU applications and a broad-range of analog and power devices. Renesas Electronics' European structure is comprised of three dedicated business groups serving the region's key markets: automotive, communications & consumer and industrial. The business groups are supported by the Engineering Group, which itself includes the Engineering Design Centre; the European Quality Centre that provides technical support to local customers in Europe; and the European Technology Centre to design leading-edge products specifically for the European market. Further information about Renesas Electronics Europe can be found at: www.renesas.eu.

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