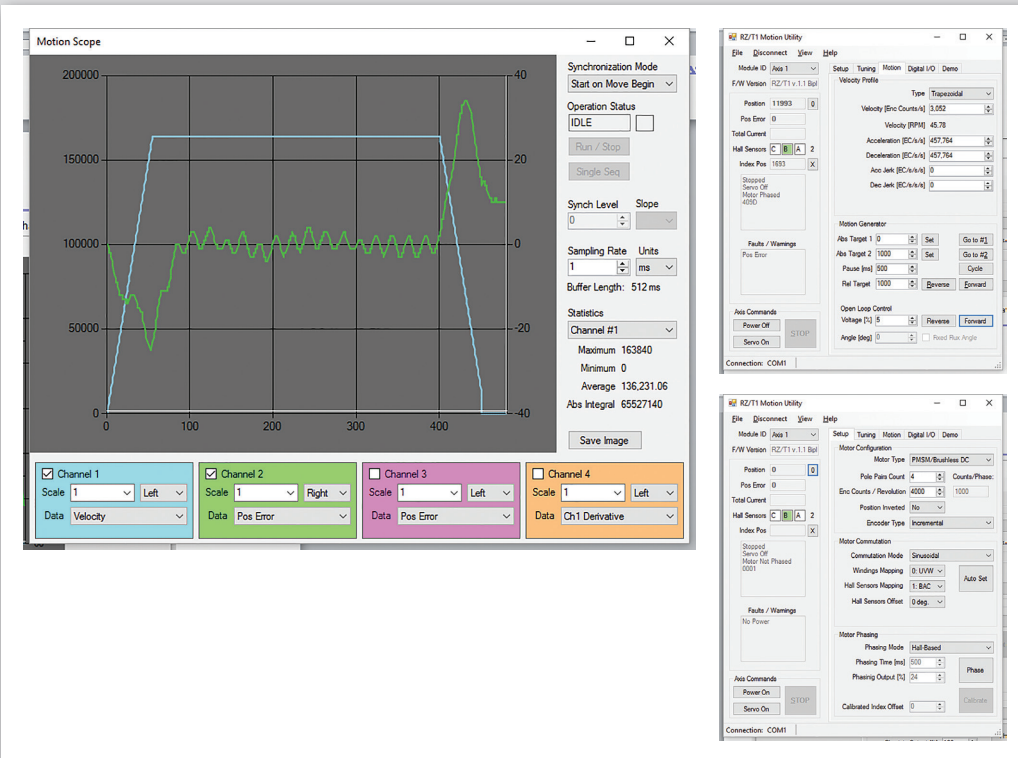# Drive it!

RZ/T1 Solution Kit for Motion Control

The RZ/T1 Solution Kit is an all-in-the-box evaluation tool for the RZ/T1 motion control device chip. It includes all required hard- and software for trying the RZ/T1's motion control and networking capabilities with easy-to-use demonstration programs and it serves as a starting point for customer's own developments.

Drive it! Overview

The major hardware component of the RZ/T1 Solution Kit is the RZ/T1 itself, which includes a 600 MHz Cortex-R4F to implement the motion control function with superior real-time capabilities. The embedded Cortex-M3 based R-IN engine with its hardware-accelerators is intended to handle the network communication. The dual-channel low-voltage inverter allows simultaneous control of two axis with a single RZ/T1; all connections required to drive two motors with hall sensors and encoders are provided on the board. A BLDC motor with incremental encoder is included in the kit.

On the network side the Solution Kit offers two standard 100BASE-TX connections to support Industrial Ethernet protocols such as EtherCAT, PROFINET-RT, EtherNet/IP and Modbus TCP.

Like other Renesas Solution Kits Drive it! comes with a large software bundle. The software package includes industrial Ethernet protocol stacks, motion control firmware and a comprehensive GUI for the PC for easy adaptation and parametrization of the firmware to the actually connected motor. Application program development and debugging is done with an evaluation version of the well-renowned IAR EWARM IDE tool and and an I-jet Lite hardware debugger (included).
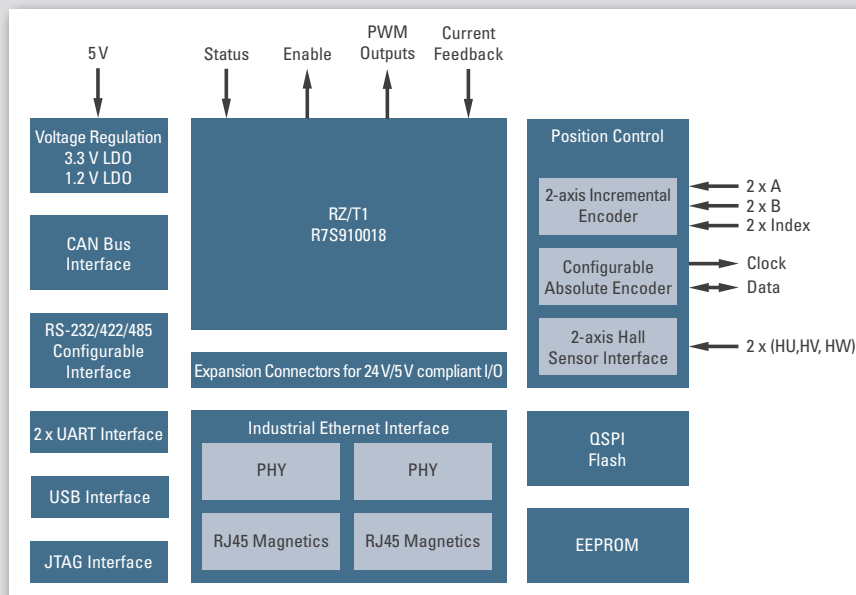
Product Features

Hardware

- Controller board with top-of-the-line RZ/T1 motion control device
  (600 MHz, R-IN engine, EtherCAT, configurable digital encoder I/F)
- Direct connection to incremental and absolute (EnDAT 2.2, BiSS-C, Hiperface DSL etc.) encoders
- Multiple communication interfaces like 2-ch Ethernet, USB, RS-232, RS-422/485, CAN
- Inverter board with 6-ch PWM for dual inverters in complimentary mode (48 V, 6 A)
- Analogue inputs for current feedback, bus voltage feedback, temperature
- Digital inputs for inverter status and enable
- 2 pole-pair, 3-phase BLDC motor with hall sensors and incremental encoder (2000 encoder count per revolution)

Software

- RZ/T1 based motion control firmware including current control and position loops, position capture, space vector modulation and velocity profile generator (source code except VPG)
- PC based motion control GUI to adapt and control motor specific parameters, position and speed setting, velocity and acceleration
- Built-in 4-channel motion scope with zoom to observe choice of motor operation parameters in real-time
- Evaluation programs for industrial communication stacks like EtherCAT, PROFINET, PROFIBUS, EtherNet/IP, Modbus TCP
- Evaluation version of IAR EWARM for application program development and debugging
- Applilet AP4 code generation tool for pin multiplex control, initialization code and peripheral configuration

Content of Solution Kit

- Drive it! RZ/T1 Solution Kit board
- BLDC motor with incremental encoder
- CD-ROM with software tools, program examples, documentation and a video
- USB, Ethernet and serial cables

Order Code

YDRIVE-IT-RZT1

Further information available under www.renesas.com/en-eu/products/microcontrollers-microprocessors/rz/rzt/rzt1.html

Before purchasing or using any Renesas Electronics products listed herein, please refer to the latest product manual and/or data sheet in advance.

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