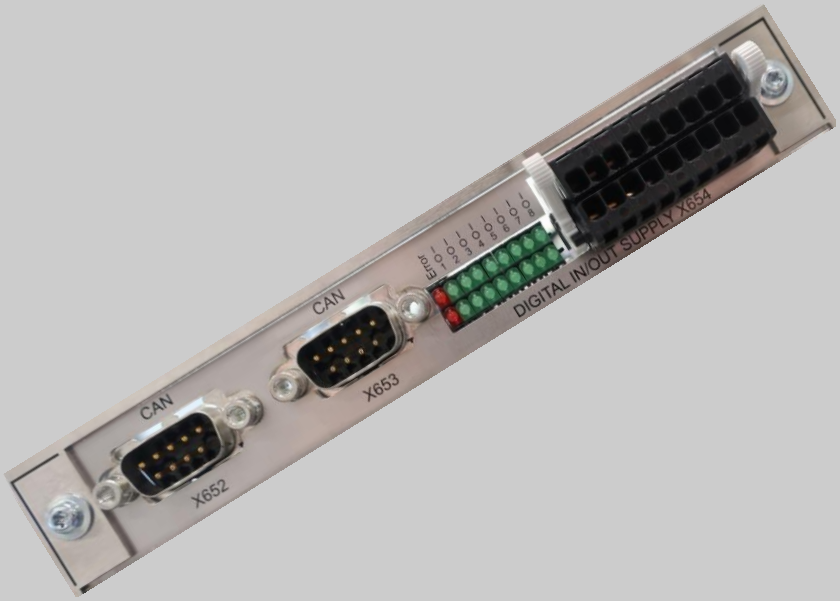

TC.ACS.CANmp CAN Multi Protocol Interface

REGATRON's versatile TC.ACS grid simulators are increasingly used in highly dynamic test and research applications. Therefore a fast data link between the superposed control structure and the AC power source-sink system is required. The new TC.ACS.CANmp interface has been developed exactly for this requirement. With the user configurable CAN multi protocol the creation of a new CAN network or the integration into an existing one is easily done.

Key Features & Functionality

- CAN protocol configurable by the user
- Fulfills ISO 11898-1 (CAN 2.0B)
- CANmp configuration tool for configuration with a dbc file available
- Cyclic or sync messages and several prioritization levels per message available
- Maximum 20 signals with a data length of 16-bit for each direction, transmit/receive, at a transmission rate of 1 kHz possible
- A simplified variant of the waveform generator is available in the controller modes CV and CC
- Synchronization of the waveform generator to the analog inputs or to the simulation port voltage
- 8 digital inputs and outputs for logic functionality and indication of operating states

Hardware

Figure 1: TC.ACS.CANmp interface option card

The TC.ACS.CANmp interface is mounted on the rear side of the device. The connections in a CAN bus are established via the two D-sub 9 pin male connectors.

For further information about the integrated digital I/O ports with indication, please refer to DS_TC.ACS.HW-options_*.pdf

The CANmp hardware fits all TC.ACS. Retrofitting of already delivered devices is possible in the field.

Message Configuration

The CANmp protocol can be configured by a dbc file editor (e.g. Vector CANdb++ Editor). Up to 50 messages with a maximum of four 16 bit signals per message can be configured.
By using the included template dbc file the configuration is easily done. The file contains all available CANmp signals and some examples of message configurations.

Configurable Message Properties

- CAN ID, currently only base frame format (11 bit identifier) supported, extended frame format (29 bit identifier) ignored
- DLC, data length code (number of bytes of payload)
- Receive message (e.g. set values, commands)
- Cyclic message, sending message with the configured cycle (e.g. actual values, operating state)
- Sync message, sending message after receiving the configured number of sync signals (e.g. actual values)
- Sync ID message, sending message after receiving the configured sync ID (e.g. actual values, operating state, actual error code, system information)

Available Transmit Signals

- Actual values, the same values as on the live viewer page of the ACSControl
- State of digital inputs, digital outputs, CANmp watchdog and operating state
- System information
- System and device configuration
- Operation, controller and supervision limits
- System incidents (errors, warnings and events)
- Operation and controller modes
- CANmp interface and software versions

Available Receive Signals

- Signals for configuring a simplified variant of the waveform generator
- Signals for changing parameters of a block on the fly
- Set command and synchronisation of the waveform generator
- Set system and device configurations
- Set operation, controller and supervision limits
- Set digital outputs and CANmp Watchdog

CANmp Configuration Tool

The CANmp configuration tool provides the following functions:

- Connection settings to establish a connection to device via USB or Ethernet interface
- CANmp configuration to set the CAN baudrate and custom specific signal factors
- Load a dbc file and write the CANmp configuration
- Read the current CANmp configuration
- Delete the current CANmp configuration

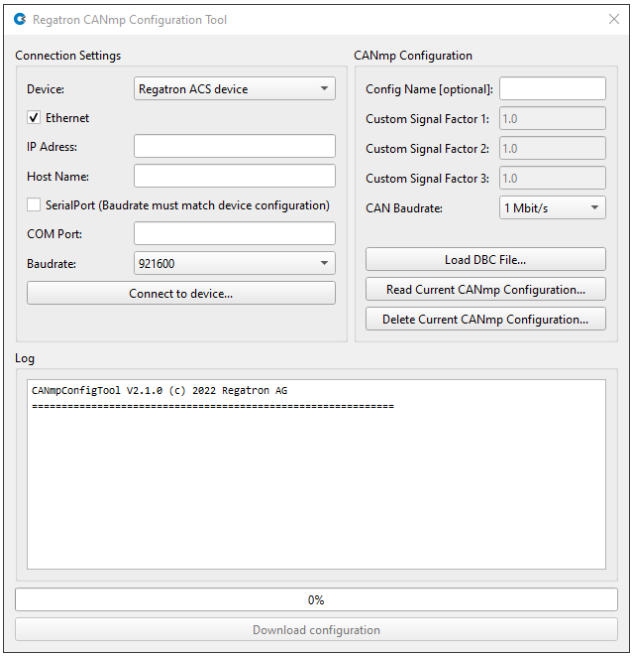

Figure 2: CANmp configuration tool

Simplified Waveform Generator

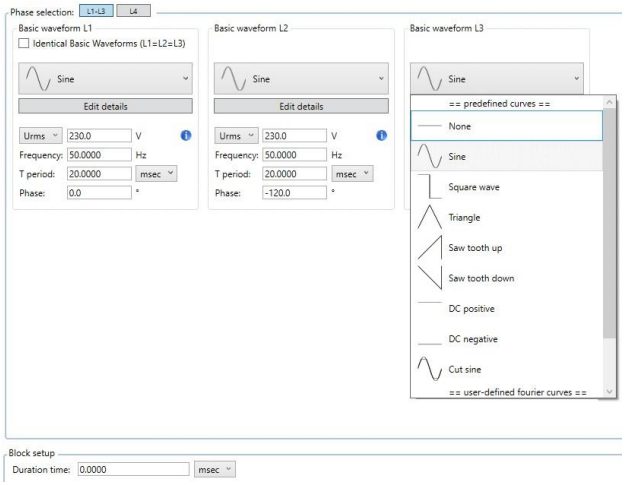

Figure 3: Graphical representation of the configurable parameters of a simpified variant of the waveform generator

Via the CANmp interface a simplified variant of the waveform generator is available.

The following parameters are configurable for each phase:

- Waveform (sine, square wave, triangle, saw tooth up, saw tooth down, DC positive, DC negative, cut sine)
- Amplitude
- Frequency
- Phase
- Duration time of the block
- A sequence with up to 10 blocks can be created

Change Parameters on the Fly

With an endless block, the parameters of a block, e.g. amplitude, phase, frequency can be changed via the CANmp interface while it is being executed.

Operation Modes

The simplified waveform generator can be used in the controller modes CV (constant voltage) and CC (constant current). The CC controller mode is optional and needs the option "current control".

Synchronous Mode

In synchronous mode the waveform generator synchronizes with the voltage on the ACS simulation port X20 or with signals from the analog inputs. This mode allows to generate a voltage (CV controller mode) or current (CC controller mode) waveform synchronous with an AC grid.

Automated System Configuration

The CANmp interface can be used to realize an automated division of one system into two systems or combination of two systems into one system. A PLC controls the relays and the contactors to disconnect or connect the multi-device communication and the power circuit. The communication with the PLC can take place via the digital I/O interface or the CAN interface. In the following examples the systems communicate via the digital I/O interface with the PLC.

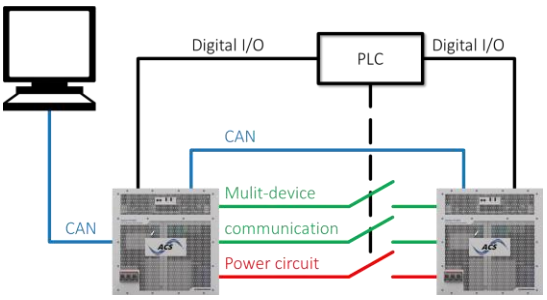

Figure 4: Automatic configuration of one system into two systems or vice versa with one CAN master (e.g. automation system or test bench).

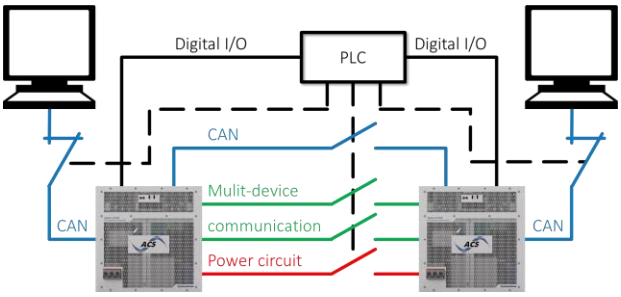

Figure 5: Automatic configuration from one system into two systems or vice versa with two CAN masters (e.g. automation systems or test benches). In this example the CAN communication must also be switched by the PLC, since only one CAN master is allowed in a CAN bus.

Automated Switching of two CAN Masters

The functionality for implementing an automated switching between two CAN masters controlling the same TC.ACS system is also provided by the CANmp interface. The switch-over with a CAN-switch can be controlled via the digital I/O interface.

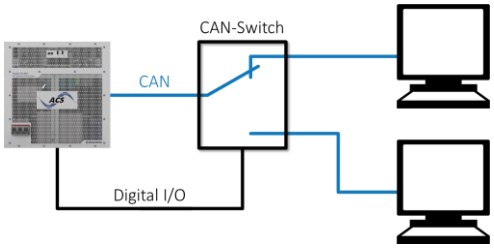

Figure 6: Automatic switch-over between two CAN masters (e.g. different automation systems or test benches) controlling the same TC.ACS system.

This product is developed, produced and tested by REGATRON, ISO 9001 certified.

For detailed technical information, contact REGATRON or your local sales partner.

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