Communication Unit 560CMR02
RTU560 product line

Communication module of the RTU560 with 32 bit CPU
- 6x serial communication interface (RS-232 or RS-485) for remote communication
- 2x Ethernet interface (10/100BaseT)
- 1x USB port
- 1x serial peripheral bus
- battery buffered real time clock

Application

The 560CMR02 communication unit is one of the CMU modules of the RTU560 product line.

The essential tasks are:
- Managing and controlling of the I/O modules via the interface to the serial I/O bus.
- Reading Process events from the input modules.
- Send commands to the output modules.
- Communicating with control systems and local HMI systems via the serial interfaces (RS232) and the Ethernet 10/100BaseT interfaces.
- Communication with Sub-RTU’s, IED’s or multimeter devices via the interfaces (RS485) and the Ethernet interfaces.
- Managing the time base for the RTU560 product line station and synchronizing the I/O modules.
- Handling the dialog between RTU560 product line and Web-Browser via the LAN interfaces.

Within the RTU560 racks the board occupies two slots. The communication unit is able to handle Ethernet- and UART-character based communication protocols.

The unit has a battery buffered real time clock (RTC).

Characteristics

On the applied ARM cortex A8 controller AM3352 a real-time operating system is implemented. The 560CMR02 is responsible for the interface management, the event handling, the time base and the internal data base. The controller acts as master for the SPB I/O.
bus (serial peripheral bus). RTU560 synchronizes itself to the time references supplied by 560RTC0x. The time information of the 560RTC0x is provided to the 560CMR02 on the backplane of the sub-rack.

System relevant configuration files are stored in the non-volatile flash memory card (removable SD-card™) in order to guarantee a valid system configuration after Power on Reset (PoR).

A battery buffered RTC is used to keep an exact time during power off state.

The communication unit provides the following interfaces:
- Communication Port 1 ... 6 (CP1 ... CP6): serial interfaces according RS232C or RS485 with RJ45 connectors. CP1 and CP2 can be configured independant as SPB I/O bus interface to the front.
- Ethernet interface 1 and 2 (E1 & E2): 10/100BaseT with RJ45 connector.
- USB 2.0 device interface for diagnosis and maintenance purposes.
- The SPB I/O bus is directly connected to the backplane connector.
Technical data
In addition to the RTU500 series general technical data, the following applies:

### Main Processing Unit MPU
- **CPU**: ARM cortex A8, AM3352 @ 800 MHz
- **RAM**: 128 MByte
- **Boot Flash**: 8 MByte

### SD card
- **Connector**: SD card slot (push push)
- **Type**: SD 2.0, class 2
- **Capacity**: 4 GByte

### Real time clock RTC (Backup)
- **Battery**: Lithium 3 V DC, CR2032
- **Time resolution**: 1 sec, 1ms with timesync
- **Battery lifetime**: > 10 years
- **Free running**: ± 50 ppm

### Serial interfaces 1, 2, 3, 4, 5 and 6
- **Connector**: RJ45
- **Type**: RS232C or RS485
- **RS232C**:
  - **Bit rate**: 200 bit/s - 38.4 kbit/s
  - **Signal lines**:
    - GND
    - TxD
    - RxD
    - RTS
    - CTS
    - DTR
    - DCD
    - E2/102
    - D1/103
    - D2/104
    - S2/105
    - M2/106
    - S1.2/108
    - M5/109
  - **Level**: typical: ± 6V
- **RS485**:
  - **Bit rate**: 200 bit/s - 38.4 kbit/s
  - **Level**: typical: ± 6V

### Ethernet interface E1 and E2
- **Connector**: RJ45
- **Type**: IEEE 802.3, 10/100BaseT

### USB interface
- **Connector**: micro USB Type AB (female)
- **Type**: USB 2.0 device, low, full and high speed (max. 480 MBit/s)
- **Cable type to PC**: USB Type A <-> micro USB Type B

### Current consumption for power supplied via RTU560 backplane
- **5 V DC**: 600 mA
- **24 V DC**: 4 mA

### Signaling by LEDs
- **ERR (red)**: ON: RTU in error state
  - Flashing: RTU in warning state
- **RUN (green)**: Communication module in operation
  - **T**: Transmit data on serial communication ports CP
  - **R**: Receive data on serial communication ports CP
  - **S**: Ethernet communication speed:
    - ON: 100 Mbit/s
    - OFF: 10 Mbit/s
- **L**: Link up (ON) / Activity (Flashing) on Ethernet interface E

### Mechanical layout
- **Dimensions**: 160 mm x 100 mm, 3HE euro card format
- **Housing type**: Printed circuit board
- **Mounting**: for mounting in RTU560 racks
- **Weight**: 0.19 kg

### Connection type
- **RTU560 backplane connector**: 48 pole type F DIN 41612

### Immunity test
- **Electrostatic discharge**
  - IEC 61000-4-2: 8 kV air / 6 kV contact (level 3)
  - **Performance criteria A**
- **Radiated Radio-Frequency Electromagnetic Field**
  - IEC 61000-4-3: 10 V/m (level 3)
  - **Performance criteria A**
- **Electrical Fast Transient / Burst**
  - IEC 61000-4-4: 4 kV (level X)
  - **Performance criteria A**
- **Surge**
  - IEC 61000-4-5: 2 kV (level 3)
  - **Performance criteria A**
- **Conducted Disturbances, induced by Radio-Frequency Fields**
  - IEC 61000-4-6: 10 V (level 3)
  - **Performance criteria A**
## Immunity test

<table>
<thead>
<tr>
<th>Damped oscillatory wave</th>
<th>IEC 61000-4-18</th>
<th>2.5 / 1 kV (level 3)</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Performance criteria A</td>
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</table>

## Environmental conditions

<table>
<thead>
<tr>
<th>Nominal operating temperature range</th>
<th>EN 60068-2-14</th>
<th>-25°C... 70°C</th>
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</thead>
<tbody>
<tr>
<td>Start up</td>
<td>EN 60068-2-1</td>
<td>-40 °C</td>
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<tr>
<td>Max. operating temperature, max. 96h</td>
<td>EN 60068-2-2</td>
<td>+85 °C</td>
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<tr>
<td>Relative humidity</td>
<td>EN 60068-2-30</td>
<td>5... 95 %</td>
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(non condensing)

## Ordering information

| 560CMR02 R0001 | 1KGT036300R0001 |