# Communication unit 520CMD01
## RTU520 product line





Figure 1: Block diagram 520CMD01

### Application

The 520CMD01 communication unit is the CMU module of the RTU520 product line.

The essential tasks are:
- Managing and controlling of the RTU520 I/O modules via 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 interface.
- Communication with Sub-RTU's, IED's or multimeter devices via the interfaces (RS485) and the Ethernet interface.
- Managing the time base for the RTU520 product line station and synchronizing the I/O modules.
- Handling the dialog between RTU520 product line and Web-Browser via the LAN interfaces.

The communication unit will be mounted on a DIN-rail, together with the power supply module and the I/O modules. The communication unit is able to handle Ethernet- and UART character based communication protocols.

The unit is available in 2 versions:
- R0001: without battery buffered real time clock (RTC)
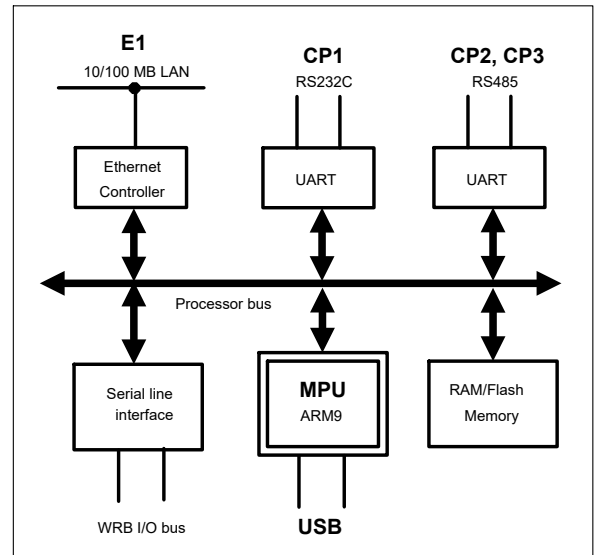- R0002: with battery buffered real time clock (RTC)

### Characteristics

On the applied ARM9 controller AT91SAM9260 a real-time operating system is implemented. The 520CMD01 is responsible for the interface management, the event handling, the time base and the internal data base. The controller acts as master for the serial I/O bus (WRB).

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).

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

The communication unit provides the following interfaces:
- Communication Port 1 (CP1): a serial interface according RS232C with RJ45 connector.
- Communication Port 2 and 3 (CP2 & CP3): serial interfaces according RS485 with RJ45 connector.
- Ethernet interface (E1): 10/100BaseT with RJ45 connector.
- Interface X1 for power supply to the power supply unit 520PSD01.
- Interface X2 for communication unit with the RTU520 I/O modules.
- USB 2.0 device interface for diagnosis and maintenance purposes.
- WRB I/O bus interface for local communication with the I/O-modules

## Technical data

In addition to the RTU500 series general technical data, the following applies:

### Main Processing Unit MPU

| | |
|---|---|
| CPU | ARM9, AT91SAM9260 @ 200 MHz |
| RAM | 64 MByte |
| NAND Flash | 4 GByte |

### 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 |

### Real time clock RTC (R0002 only)

| | |
|---|---|
| Battery | Lithium 3 V DC, CR2032 |
| Time resolution | 1 sec |
| Battery live time | > 10 years |

### Serial interface CP1

| | | |
|---|---|---|
| Connector | RJ45 | |
| Type | RS232C | |
| Bit rate | 100 bit/s - 38.4 kbit/s | |
| Signal lines | GND | E2/102 |
| | TxD | D1/103 |
| | RxD | D2/104 |
| | RTS | S2/105 |
| | CTS | M2/106 |
| | DTR | S1.2/108 |
| | DCD | M5/109 |
| Level | typical: ± 6V | |

### Serial interfaces CP2 and CP3

| | |
|---|---|
| Connector | RJ45 |
| Type | RS485 |
| Bit rate | 300 bit/s - 38.4 kbit/s |
| Level | $\Delta$ = 3V (typical) |

### Ethernet interface E1

| | |
|---|---|
| Connector | RJ45 |
| Type | IEEE 802.3, 10/100BaseT |

### USB interface

| | |
|---|---|
| Connector | USB Type B (configuration interface) |

### USB interface

| | |
|---|---|
| Type | USB 2.0 device, low and full speed (max. 12 MBit/s) |

### Current consumption for power supplied via WRB bus

| | |
|---|---|
| 5 V DC | max. 300 mA |
| ±15 V DC | -- |
| 18/ 24 V DC | -- |

### Signaling by LEDs

| | |
|---|---|
| ERR (red) | ON: RTU in error state |
| | Flashing: RTU in warning state |
| | For more details see RTU500 series Function Description |
| RUN (green) | Communication module in operation |
| WRB (green) | Transmission on to the I/O bus |
| Tx | Transmit data on serial communication ports CP |
| Rx | Receive data on serial communication ports CP |
| SP | Ethernet communication speed: |
| | ON: 100 Mbit/s |
| | OFF: 10 Mbit/s |
| L/A | Link up (ON) / Activity (Flashing) on Ethernet interface E |

### Mechanical layout

| | |
|---|---|
| Dimensions | 35 mm x 98 mm x 117 mm (Width x Height x Depth) |
| Housing type | Plastic housing (V-0), IP20, RAL 7035 light gray |
| Mounting | DIN rail mounting EN 50022 TS35: 35 mm x 15 mm or 35 mm x 7.5 mm |
| Weight | 0.17 kg |

### 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 |

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| Immunity test | |
| --- | --- |
| Surge<br>IEC 61000-4-5 | 2 kV (level 3)<br><br>Performance criteria A |
| Conducted Disturbances, induced by Radio-Frequency Fields<br>IEC 61000-4-6 | 10 V (level 3)<br><br>Performance criteria A |
| Damped oscillatory wave<br>IEC 61000-4-18 | 2.5 / 1 kV (level 3)<br><br>Performance criteria A |

| Environmental conditions - climatic | |
| --- | --- |
| Operating temperature<br>EN 60068-2-14 | -25 °C ... 70 °C |
| Start up<br>EN 60068-2-1 | -40 °C |
| Max. operating temperature, max. 96h<br>EN 60068-2-2 | +85 °C |
| Relative humidity<br>EN 60068-2-30 | 5 ... 95 %<br>(non condensing) |

| Ordering information | |
| --- | --- |
| 520CMD01 R0001<br><br>without battery buffered real time clock (RTC) | 1KGT031900R0001 |
| 520CMD01 R0002<br><br>with battery buffered real time clock (RTC) | 1KGT031900R0002 |

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