

DIN Rail RTU 540CMD01

RTU540 product line



Application

The 540CMD01 is a module of the RTU540 product line consisting of a communication unit (CMU) and a galvanic isolated wide range power supply (PSM) in a metal DIN rail housing.

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 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 RTU540 product line station and synchronizing the I/O modules.
- Handling the dialog between RTU540 product line and Web-Browser via the LAN interfaces.

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

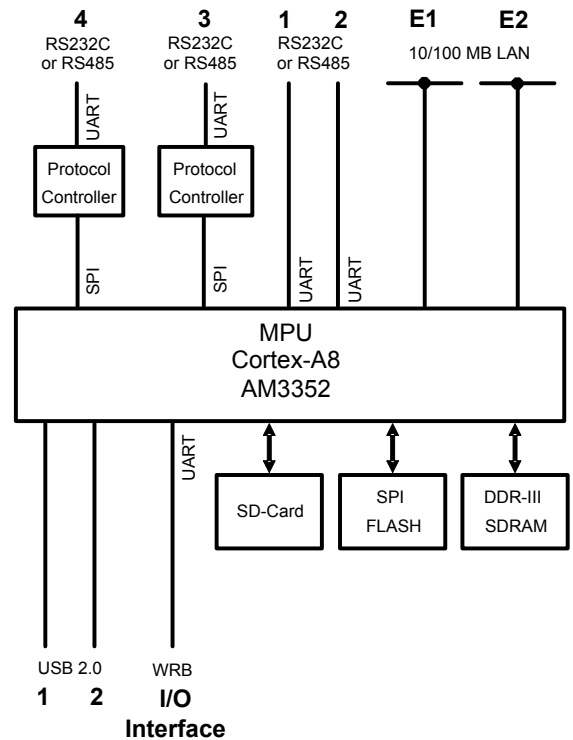


Figure 1: Function block diagram 540CMD01

Characteristics

On the applied ARM cortex A8 controller AM3352 a real-time operating system is implemented. The 540CMD01 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).

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 ... 4 (CP1 ... CP4): serial interfaces according RS232C or RS485 with RJ45 connectors.
- Ethernet interface 1 and 2 (E1 & E2): 10/100BaseT with RJ45 connector.
- USB 2.0 device interface for diagnosis and maintenance purposes.
- USB 2.0 host interface for future extensions.

- WRB I/O bus interface for local communication with the I/O-modules



Figure 2: Top side of 540CMD01 housing

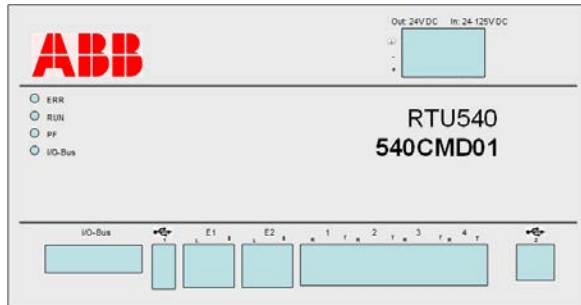


Figure 3: Front side of 540CMD01 housing

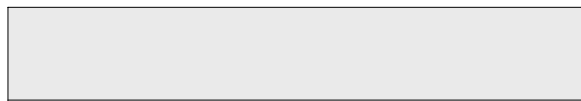


Figure 4: Bottom side of 540CMD01 housing

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	256 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	
Connector	RJ45
Type	RS232C or RS485
RS232C:	
Bit rate	200 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
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 1	
Connector	USB Type A (for future extensions)
Type	USB 2.0 host, low and full speed (max. 12 MBit/s)

USB interface 2	
Connector	USB Type B (configuration interface)
Type	USB 2.0 device, low and full speed (max. 12 MBit/s)

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
PF (red)	Failure of one of the internal voltages (24 V DC out not included)
I/O bus (green)	Transmission on to the I/O bus
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 Ethernet interface E

Power supply input

Input voltage	24 ... 125 V DC
Input tolerance range	-20%... +20%
Max. input current	2 A
Efficiency	88% @ 24 V DC
Power consumption	5.4 Watt (0.0 A @ 24 V out)
External circuit-breaker	The plus lead needs a be protected by a circuit-breaker upstream with 10 A trip current.
Reverse voltage protection	yes
Potential isolation between input and outputs	yes

Power supply output

Total output power	30 W
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24 V DC power supply output

Voltage	24 V DC (galvanic isolated)
Tolerance	±20 %
Max. current	500 mA
Residual ripple	≤ 200 mV _{pp}

Current supply for power supplied via WRB bus

5 V DC (±5 %)	1.8 A
±15 V DC (±10 %)	200 mA
18 V DC (±20 %)	50 mA

Mechanical layout	
Dimensions	204 mm x 105 mm x 70 mm (Width x Height x Depth)
Housing type	Metal case
Mounting	DIN rail mounting (EN 50022 TS35: 35 mm x 15 mm or 35 mm x 7.5 mm)
Enclosure protection class	IP20
Weight	ca. 940 g

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	4 kV (level 4) Performance criteria A
Conducted Disturbances, induced by Radio-Frequency Fields IEC 61000-4-6	10 V (level 3) Performance criteria A
Damped oscillatory wave IEC 61000-4-18	2.5 / 1 kV (level 3) Performance criteria A

Environmental conditions	
Nominal operating temperature range:	-25 °C ... 70 °C -40 °C
Start up:	
	EN 60068-2-1, -2-2, -2-14
Relative humidity EN 60068-2-30	5 ... 95 % (non condensing)

Ordering information	
540CMD01 R0001	1KGT037400R0001