Remote Terminal Units

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Remote Terminal Units

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Remote Terminal Units
RTU560 product line – Communication units

560CMR01
1KGT036200R0001

Description
Central module of the RTU560 with 32 bit CPU
- 2x 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

Licences for protocol, functions and SD-card are not included

Communication unit (CMU) for RTU560. 2 serial ports, 2 Ethernet ports
Application
The 560CMR01 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 station and synchronizing the I/O modules.
- Handling the dialog between RTU560 and Web-Browser via the LAN and USB interfaces.

Within the RTU560 racks the board occupies one slot. The communication unit is able to handle Ethernet-, UART-character based communication protocols.

560CMR02
1KGT036300R0001

Description
Central 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

Licences for protocol, functions and SD-card are not included

Communication unit (CMU) for RTU560, 6 serial ports, 2 Ethernet ports
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 station and synchronizing the I/O modules.
- Handling the dialog between RTU560 and Web-Browser via the LAN and USB interfaces.

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

Remote Terminal Units
RTU560 product line – Communication units

560CMU05
1KGT012700R0002

Description
Central module of the RTU560 with 32 bit CPU
- 4x serial communication interface (RS-232 or RS-485) for local/remote communication
- 2x Ethernet interface (10/100BaseT)

Licences for protocol, functions and compact flash are not included.

Communication unit (CMU) for RTU560, 4 serial ports, 2 Ethernet ports

Application
The 560CMU05 communication unit is one of the CMU boards of the RTU560.
The essential tasks are:
- Managing and controlling of the I/O boards via the interfaces to the RTU serial peripheral bus
- Reading process events from the input boards
- Send commands to the output boards
- Communication with control centers and local HMI systems via the integrated serial line interfaces and the implemented Ethernet 10/100 BaseT LAN interface
- Managing the time base for the RTU560 station and synchronizing the I/O boards
- Handling the dialog between RTU560 and web browser via LAN interface
- Support of bit oriented protocols

Within the RTU560 racks the board occupies two slots. It contacts itself via a DIN F socket connector to the rack. The Communication unit 560CMU05 is able to handle Ethernet-, UART- and all non UART-character based communication protocols, and serial peripheral bus.

560HMR01
1KGT030500R0001
1KGT030500R0002

Description
Interface board to RTU500 integrated web HMI
- Windows Embedded Standard 7 (english, 32 bit)
- 2x Ethernet interface (10/100BaseT)
- 4x USB port (for keyboard and mouse)
- 1x VGA port (for monitor)
- 1x stereo audio-out
- Windows 7 recovery DVD

Human machine interface (HMI) for RTU560, 2 Ethernet ports, 4 USB ports, VGA, audio

Application
The 560HMR01 is a rack based human machine interface board of the RTU560 system.

The essential tasks of the 560HMR01 are:
- Interface to RTUs that are running web-server and RTU560 integrated HMI. It communicates via Ethernet LAN interfaces and provides interfaces to connect a local monitor, mouse and keyboard
- Runs Windows based operating system for RTU560 integrated HMI

The 560HMR01 takes two slots of the module rack. The connection from the 560HMR01 to the 19“ rack is done via a DIN 41612 F-connector.

The unit is available in 2 versions:
- R0001: Interface module to RTU500 integrated web HMI
- R0002: Interface module to RTU500 bundled with SDM600 Software

Remote Terminal Units
RTU560 product line – Power supply units

560PSR00
1KGT026500R0001

Description
Power supply unit for RTU560 racks
- Input voltage 24...60 V DC
- Output voltage: 5 and 24 V DC
- Suitable for redundant power supply in 560MPR03/560SFR02

Power supply unit for RTU560, 24...60 V DC, 44.3 W
Application
The power supply unit 560PSR00 generates the two supply voltages (5 V DC and 24 V DC) for the RTU560 racks 560MPR03 and 560SFR02. The output power is sufficient to supply a sub-rack with up to 4 communication units.

It is possible to configure redundant power supplies for project configurations with higher requirements to availability. In this configuration 2 power supply units 560PSR00 are operating in parallel mode. They are able to take over the load, if one power supply fails. Only power supplies of the same type and rubric should be used for redundant operation.

The power supply unit 560PSR00 is available in the following version (rubric):
- R0001: Input range 24...60 V DC (-20...+15 %)

560PSU01
1KGT006600R0002

Description
Power supply unit for RTU560 racks
- Input voltage 110...220 V DC
- Output voltage: 5 and 24 V DC
- Suitable for redundant power supply in 560MPR03/560SFR02

Power supply unit for RTU560, 110...220 V DC, 44.3 W
Application
The power supply unit 560PSU01 generates the two supply voltages (5 V DC and 24 V DC) for the RTU560 racks 560MPR03 and 560SFR02. The output power is sufficient to supply a sub-rack with up to 4 communication units.

It is possible to configure redundant power supplies for project configurations with higher requirements to availability. In this configuration 2 power supply units 560PSU01 are operating in parallel mode. They are able to take over the load, if one power supply fails.

The power supply unit 560PSU01 is available in the following version (rubric):
- R0002: Input range 110…220 V DC (-20...+15 %)

Remote Terminal Units
Product line RTU560 – Power supply units

560PSU02
1KGT011900R0001

Description
Power supply unit for RTU560 racks
- Input voltage: 48...220 V DC
- Output voltage: 5 and 24 V DC
- Suitable for redundant power supply in 560MPR03/560SFR02

Power supply unit for RTU560, 48...220 V DC, 85 W

Application
The power supply unit 560PSU02 generates the two supply voltages (5 V DC and 24 V DC) for the RTU560 communication units (CMU) within the rack. The output power is sufficient to supply the whole communication subrack with up to 8 CMU modules.

It is possible to configure redundant power supplies for project configurations with higher requirements for availability. In this configuration 2 power supply units 560PSU02 are operating in parallel mode. They are able to take over the full load, if one power supply fails.

The power supply unit 560PSU02 is available in the following version (rubric):
- R0001: Input range 48...220 V DC (-20...+15 %)

Remote Terminal Units
RTU560 product line – Input/output modules

23BE23
1KGT012100R5001

Description
To be used for single indications, double indications, digital measurands and pulse counters
- Resolution: 1 ms
- Process voltage: 24...60 V DC
- LED signal for each input

Binary input, 16 channels, LED's
Application
Isolated input of up to 16 binary process signals. Scanning and processing of the inputs are executed with the high time resolution of 1 ms. Allocation of an input to a processing function can be done according to the rules of configuration.

The board 23BE23 can process the following types of signals:
- 16 single indications with time stamp
- 8 double indications with time stamp
- 2 digital measured values with 8 bit
- 1 digital measured value with 16 bit
- 16 pulse counters (max. 120 Hz)
- 2 step position information each with 8 bit
- Two 8 bit string information
- One 16 bit string information

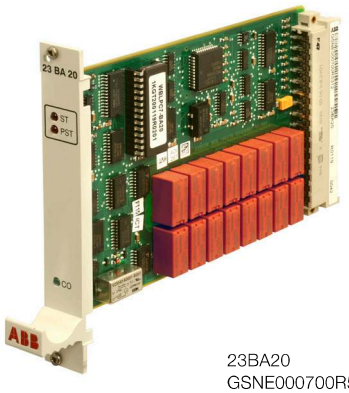
560BIR01
1KGT034000R0002

Description
To be used for single indications, double indications, digital measurands and pulse counters
- Resolution: 1 ms
- Process voltage: 110/125 V DC
- LED signal for each input

Binary input, 16 channels, LED's
Application
The binary input module 560BIR01 provides 16 galvanic isolated inputs for up to 16 binary process signals. Scanning and processing of the inputs are executed with the high time resolution of 1 ms. The allocation of an input signal to the processing functions can be done according to the rules of configuration.

The module 560BIR01 is able to process the following types of signals or a combination of them:
- 16 single point information with time stamp (SPI)
- 8 double point information with time stamp (DPI)
- 2 digital measured values each with 8 bit (DMI8)
- 1 digital measured value with 16 bit (DMI16)
- 16 integrated totals (max. 120 Hz) (ITI)
- 2 step position information each with 8 bit (STI)
- 2 bit string input each with 8 bit (BSI8)
- 1 bit string input with 16 bit (BSI16)
- or combinations of this signal types

Remote Terminal Units
RTU560 product line – Input/output modules



23BA20
GSNE000700R5312

Description
- 16 output contacts configured as
  - 1-pole command
  - 2-pole command
  - 1.5-pole command in configuration with 23BA23
- Operating voltage 24...60 V DC, 60 W
- Imax: 2 A @ 24 V DC (ohmic load)

Binary output, 16 channels
Application
The binary output board 23BA20 can be used for the potentially isolated output of up to 16 binary signals to the process. The assignment of an output to a number of processing functions can be managed within the scope of the configuration rules.

The 23BA20 can be used for the following types of signals :
- Object commands with 1 or 2 pole output without (1 out of n) check
- Object command with 1.5 or 2 pole output with (1 out of n) check
- Set-point messages
- General output messages

23BA23
1KGT020800R0001

Description
- Two test and switching circuits
- Auxiliary test voltage 24...60 V DC

Command output monitoring (1 out of n) check
Application
The 23BA23 board is intended for use in the RTU560 product line. The 23BA23 board should be installed if the output circuit of an object command has to be checked before the actual command is given. The 23BA23 board executes a (1 out of n) check. It checks if only one interposing relay will be activated in the output circuit. This is feasible only if all interposing relays connected to one check circuit have the same resistance value.

The 23BA23 board allows to check two different interposing relay types by using two separated check circuits. The permissible tolerance range is defined by means of parameters. Up to 16 23BA23 boards can be used in one RTU560.

- Galvanic isolation of the check circuit
- Suppression of line frequency during measuring

Remote Terminal Units
RTU560 product line – Input/output modules

23AE23
1KGT012200R5001

Description
- Resolution 12 bit + sign
- Measuring ranges: +/-2 mA; +/-5 mA; +/-10 mA; +/-20 mA; +/-40 mA; +/-2 V DC; 0...20 V DC

Analog input, 8 channels
Application

The 23AE23 board records up to 8 analog measured values. The 23AE23 board allows it to connect all typical measured value ranges. It can be configured for the following measurement ranges by setting switches and jumpers:
- ± 2 mA
- ± 5 mA
- ± 10 mA
- ± 20 mA
- ± 40 mA
- ± 2 V DC
- 0 ... + 20 V DC

Other effective ranges and live zero signals become generated out of these ranges through conversion of the communication unit (CMU).

23AA21
1KGT020700R0001

Description
- Analog signal represented digitally by 11 bit + sign
- Selectable current outputs: +/-2.5 mA; +/-5 mA; +/-10 mA; +/-20 mA; +4...20 mA

Analog output, 2 channels with potential isolation
Application

Via the analog output board 23AA21 analog control outputs for sequential or closed loop control, display instruments, measu-rand recorders etc. can be connected to the RTU560. The 23AA21 board has 2 output channels which are isolated and can be configured to different output current ranges. The output format, unipolar or bipolar resp. live zero (4...20 mA) can be configured by software parameters.

The following output current ranges can be configured independently per channel via plug-in jumpers:
- ± 2.5 mA
- ± 5 mA
- ± 10 mA
- ± 20 mA (4...20 mA)

Remote Terminal Units
RTU560 product line – Input/output modules

23BE50
1KGT020900R0001

Description
To be used for single indications, double indications, digital measurands and pulse counters.
- Resolution: 1 ms
- Process voltage: 24...60 V DC
- LED signal for each input

Binary input, 64 channels, LED's
Application
The binary input board 23BE50 is used for the isolated input of 64 process signals in 4 groups with each up to 16 binary signals. Scanning and processing of the inputs are executed with the high time resolution of 1 ms.

Allocation of an input to a processing function can be done according to the rules of configuration. The board 23BE50 can process the following types of signals:
- 64 single indications with time stamp
- 32 double indications with time stamp
- 8 step position information each with 8 bit
- 8/16 bit digital measured value(s)
- 8/16 bit string information
- 64 pulse counters (max. 120 Hz)

23BA40
1KGT011200R0011

Description
- 16 output contacts configured as 16 single contact outputs or 8 double contact outputs
- Switching voltage: 24...220 V DC / 250 V AC
- Max. switching capacity: 120 W (DC)
- Max. switching current: 300 mA at 110 V DC, 200 mA at 220 V DC (L/R = 40 ms)
- Isolated relay output contacts NO, 2-pole connection

Command output module 110...220 V DC
Application
The binary output board 23BA40 can be used for the potentially isolated output of up to 16 binary output signals to the process. The assignment of an output to a number of processing functions can be freely undertaken within the scope of the configuration rules. Secure command output with (n out of 16) check of the output relays.

The 23BA40 can be used for the following types of signal:
- Object commands with single or double contact outputs
- Regulation commands
- Digital setpoints
- Bitstring output, 1, 2 or 16 bit

Remote Terminal Units
RTU560 product line – Input/output modules

23BE40
1KGT011100R0011
1KGT011100R0012

Description
- 16 channel potential isolated inputs, without common return
- Process voltage: 110...125 V DC and 220...250 V DC

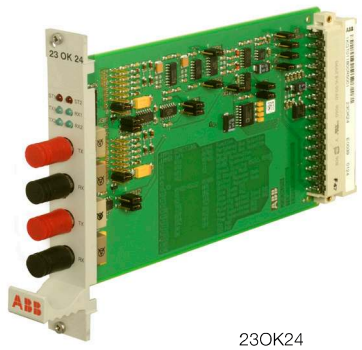
Binary input, 16 channels 110...125 V DC (R0011) and 220...250 V DC (R0012)

Application
The binary input board 23BE40 is used for the isolated input of up to 16 binary process signals. Scanning and processing of the inputs are executed with the high time resolution of 1 ms.

The board is available in two versions (rubrics):
- 23BE40 R0011: 110...125 V DC
- 23BE40 R0012: 220...250 V DC

Allocation of an input signal to a processing function can be done according to the rules of configuration. The 23BE40 can process the following types of signals:
- 16 single indications with time stamp
- 8 double indications with time stamp
- 2 step position information each with 8 bit
- 8/16 bit digital measured value(s)
- 8/16 bit string information
- 16 pulse counters (max. 25 Hz)

Remote Terminal Units
RTU560 product line – Serial communication



23OK24
1KGT011800R5001

Description
- Fiber optic coupler for glass-fiber optic cable with emission wave length of 820 nm
- Fiber optic connection with bayonet socket BFOC/2.5 (IEC-SC86B)
- Optical isolation of RTU560 bus
- Suitable as star coupler for RS-485 bus and RS-232 bus
- Interfacing of IEC 60870-5-103 devices
- Connector for 2 optical lines on frontplate

Fiber optic coupler (BFOC/2.5) for 2 glass-fibre optic lines
Application
The fiber optic coupler 23OK24 is intended for use in the RTU560. The module is used to transmit data via 2 independent optical links (receive and transmit).

Optical fiber cables are not sensitive to inductive and capacitive interferences, as well for potential differences between the 2 data communication equipments. Fiber optic cables will be used to bridge over distances in critical environments, or if a potential isolation is required. The maximum distance can be up to 2600 m via fiber optic cable type 200 µm.

The board can be used for signal conversion to fiber optic signals of the received and transmitted data for the following electrical interface standards:
- RTU560 I/O bus
- RS-485 bus
- RS-232 C

The fiber optic coupler 23OK24 can be connected to the RTU500 coupler 560FOC40.

23WT23
1KGT008200R0001
1KGT008200R0002

Description
- Voice frequency telegraphy device (VFT) according CCITT V.23 standard with max. 1200 baud

Modem V.23, power supply 5...24 V DC
Application
The 23WT23 board is a modem which converts the serial data according to FSK-channel CCITT V.23 standard. Therefore it can be used for transmission via leased PTT-lines or private networks.

The modem 23WT23 is available in two versions (rubrics):
- 23WT23 R0001: V.23 modem power supply +5 V DC
- 23WT23 R0002: V.23 modem power supply +24 V DC

Two- or four-wire operation mode is selectable by jumper. The voice frequency (VF) output has a high impedance which allows that up to 10 remote stations can be connected to a multi-drop line.

Remote Terminal Units
RTU560 product line – Serial communication

23WT24
1KGT010500R0001

Modem 9600 baud, power supply 5 V DC

Description
- FSK device with 9600 bps transmission speed
- Connector for RS-232 testing and disconnecting on frontplate
- Communication over pilot cables
- Auxilliary voltage: 5 V DC

Application

The 23WT24 board is a modem with 9600 baud transmission speed. Therefore it can be used for the transmission via private networks over pilot cables.

The board operates on the frequency shift keying principle (FSK). Two- or four-wire operation mode is selectable by jumper. The frequency output can be set to high impedance which allows that up to 10 remote stations can be connected to a multi-drop line.

23WT25
1KGT012400R0001
1KGT012400R0002

Modem 50-2400 baud, power supply 5...24 V DC

Description
- Voice frequency telegraphy device (VFT)
- Channel-frequencies and -bandwidth are selectable according to CCITT standards (R35...R38) and V.23/ 1200 bps
- Additional 600 bps and 2400 bps channels

Application

The 23WT25 modem is designed for the operation on telecontrol lines together with the RTU560. However it can also be connected to other data terminal equipments because it operates at the interfaces like a universal FSK-modem in the voice-band range (300-3400 Hz) according to CCITT.

The 23WT25 modem allows the assignment of a two- or four-wire line with communication channels for 50 baud up to 2400 baud (24 channels 50 baud, 12 channels 100 baud, 6 channels 200 baud, 2 channels 600 baud, 1 channel 1200 baud).

There are two versions (rubrics) available:
- 23WT25 R0001: 5 V DC supply
- 23WT25 R0002: 24 V DC supply

Additional material:

Programming cable for 23WT25

1KGT013200R0001

23PK31

– For download of project specific firmware version to 23WT25

Remote Terminal Units
RTU560 product line – Ethernet communication

560NUS04
1KHW001891R0001

Integrated unmanaged switch with 4 Ethernet ports

Application

The RTU component 560NUS04 is an unmanaged plug and play 10/100 Mbps Ethernet switch providing 4 fast Ethernet auto-negotiating RJ45-ports with auto MDI/X (automatic crossover detection and correction). The switch is intended for distributing Ethernet within a station and supplying a local area network (LAN) with additional ports and can be used with rack types 560MPR01, 560MPR03, 560SFR02.

Description

- Unmanaged switch
- 4x 10/100 BaseT port (electrical)
- Linear network structure supported

560NUS12
1KHW001892R0001

Integrated unmanaged switch with 2 SFP slot

Application

The RTU component 560NUS12 is an unmanaged plug and play 10/100 Mbps Ethernet switch providing 2 fast Ethernet auto-negotiating RJ45-ports with auto MDI/X (automatic crossover detection and correction) and 2 fiber optic 100 Mbps slots for use with SFP (small form-factor pluggable) modules.

The switch is intended for distributing Ethernet within a station through the RJ45-ports. The fiber optic ports can be used for interconnecting stations with a maximum distance of 40 km.

Description

- **Unmanaged switch**
- 2x SFP slot, without optical transmitter/receiver
- Additional SFP modules are required (see 560NFOxx)
- 2x 10/100 BaseT port (electrical)
- Linear network structure supported

Additional material:

SFP (small form-factor pluggable) for optical switch

1KHW001893R0001
1KHW001894R0001
1KHW001895R0001

560NFO13
– For 5560NUS12, 560NMD11, 500NMD20; monomode, distance of typically 15 km

560NFO15
– For 560NUS12, 560NMD11, 500NMD20; monomode, distance of typically 40 km

560NFO85
– For 560NUS12, 560NMD11, 500NMD20; multimode, distance of typically 2 km

560NMS24
1KHW002108R0001

Description

- Integrated managed layer-2-switch
- 4x 10/100 BaseT port (RJ45, electrical, auto-negotiating)
- 2x SDSL-port for copper wire
- Provides redundant topologies by the (Rapid) Spanning Tree Protocol (RSTP)
- 1x RS-232 port suitable for serial protocols

Integrated managed switch with 2 SDSL-ports and 4 Ethernet ports

Application

The RTU component 560NMS24 is a managed plug and play Layer-2-switch providing 4 fast Ethernet auto-negotiating RJ45-ports with auto MDI/X (Automatic Crossover Detection and Correction) and two 2-wire SDSL-ports for use with private copper cables. It can be used with rack types 560MPR01, 560MPR03 and 560SFR02.

The switch is intended for distributing Ethernet within a station through the RJ45-ports. The SDSL-ports can be used for interconnecting stations with a maximum distance of 20 km (copper cable with diameter of 0.8 mm). Longer distances can be achieved by cascading multiple 560NMS24. The switch is able to provide redundant topologies by the (Rapid) Spanning Tree Protocol. The switch supports VLAN frames and tunneling of serial data.

560NMS34
1KHW023538R0001

Description

- Integrated managed layer-2-switch
- 4x 10/100 BaseT port (RJ45, electrical, auto-negotiating)
- 1x SDSL-port for copper wire
- Provides redundant topologies by the (Rapid) Spanning Tree Protocol (RSTP)
- 1x RS-232 port suitable for serial protocols

Integrated managed switch with 1 SDSL-port and 4 Ethernet ports

Application

The RTU component 560NMS34 is a managed plug and play Layer-2-switch providing 4 fast Ethernet auto-negotiating RJ45-ports with auto MDI/X (automatic crossover detection and correction) and one 2-wire SDSL-port for use with private copper cables. It can be used with rack types 560MPR01, 560MPR03 and 560SFR02.

The switch is intended for distributing Ethernet within a station through the RJ45-ports. The SDSL-port can be used for interconnecting stations with a maximum distance of 20 km (copper cable with diameter of 0.8 mm). The switch is able to provide redundant topologies by the (Rapid) Spanning Tree Protocol. The switch supports VLAN frames and tunneling of serial data.

560RTC01
1KGT006700R0001

Description

Real time clock for synchronization of the RTU560 with the standard time of the GPS satellite including configuration tool.

– Antenna and cable have to be ordered separately

Real time clock GPS for RTU560

Application

A RTU560 product line unit can be synchronized with the time information received from the global positioning system (GPS) satellites using the module 560RTC01. The RTU560 reads the time and date from the module 560RTC01 and synchronizes its internal time to the standard time by the means of a minute pulse. The use of the module 560RTC01 ensures that process information from several terminal units are synchronized, when they include time information.

560RTC02
1KGT007800R0001

Description

For synchronization of the RTU560 with the standard time of the long-wave transmitter DCF77.

– Antenna and cable have to be ordered separately

Real time clock DCF77 for RTU560

Application

A RTU560 product line unit can be synchronized with the standard time of the long-wave transmitter DCF77 using the module 560RTC02. The RTU560 reads the time and date from the module 560RTC02 and synchronizes its internal clock to the standard time by means of a minute pulse. The use of the module 560RTC02 ensures that indications from several terminal units are synchronized, when they include time information.

Remote Terminal Units
RTU560 product line – Real time clocks

560RTC03
1KGT012000R0001

Description
For synchronization of the RTU560 with the standard time of the IRIG-B signal.
– Receiver and cable have to be ordered separately

Real time clock IRIG-B for RTU560
Application
A remote terminal unit RTU560 can be synchronized with the standard time of the IRIG-B signal using the module 560RTC03. The RTU560 reads the time and date from the module 560RTC03 and synchronizes its internal clock to the standard time by means of a minute pulse. The use of the module 560RTC03 ensures that indications from several terminal units are synchronized, if they include time information.

Additional material:

Connection cable 20 m/ 50 m for real time clock

1KGT006900R0020
1KGT006900R0050

23AC02 R0020
– Cable to connect real time clock module 560RTC01 with 23AN02 or 560RTC02 with 25AN01
– Length 20 meters

23AC02 R0050
– Cable to connect real time clock module 560RTC01 with 23AN02 or 560RTC02 with 25AN01
– Length 50 meters

Ferrite antenna for outside installation

GSNP812601R0003

25AN01 R0003
– Ferrite antenna for real time clock module 560RTC02
– Incl. wall mounting kit, 360° rotatable

GPS antenna

1KGT006800R0001

23AN02 R0001
– Active antenna for real time clock module 560RTC01