

Real Time Clock 560RTC02

RTU560 product line



Real time clock for synchronization of the RTU560 with the standard time of the long-wave transmitter DCF77

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.

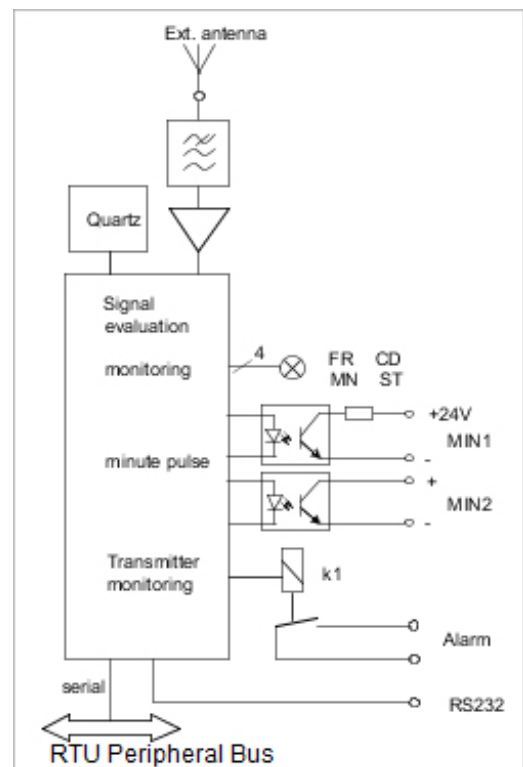


Figure 1: Block diagram 560RTC02

Characteristics

Reliable receipt of the long-wave DCF 77 transmitter is guaranteed within an area of approx. 1500 km from Frankfurt/Main in West Germany and thus in many parts of Europe.

If the received level is adequate the module 560RTC02 synchronizes to the standard time and receives the date and time within three minutes.

The communication unit (CMU) synchronizes itself to the DCF 77 by the leading edge of the minute pulse MIN1. The CMU reads the time and date via the RTU system bus.

In case of radio interferences or DCF 77 drop outs the clock on the 560RTC02 will continue using a highly accurate quartz clock. An internal condenser allows the 560RTC02 to continue the control of the clock (approx. 150 h), even when the station is switched off. After power up the RTU560 has thereby a valid time at once.

If the DCF 77 signal fails for more than 2.5 h or as long as the 560RTC02 is not synchronized, the alarm relay contact closes.

In addition to the minute pulse output for synchronization of the RTU560 there is one further minute pulse outputs which is interfaced to the module via optocoupler (MIN2).

At each minute the time, date and status can be read out at the serial data output interface RS232.

On the front panel of the real-time clock 560RTC02 there are four light emitting diodes for indicating the following operating statuses:

- ST: Summary alarm of the board
- FR: Free-Running
560RTC02 is not synchronized with the DCF 77
- CD: Carrier Detect
Signal strength of the receiver level; optimal positioning of the antenna to a maximum receiving is possible
- MN: Minute pulse
flashes with each minute pulse

Technical data

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

Mechanical layout	
Dimensions	160 mm x 100 mm, 3HE euro card format 4R (20 mm) front panel
Housing type	Printed circuit board
Mounting	for mounting in RTU560 racks
Weight	0,3 kg

Electrical Layout	
Receiver	Linear receiver with gain control. Band width approx. 40 Hz.
Accuracy	The minutepulse MIN1 and MIN2 are synchronized to the DCF 77 signal but shifted by the propagation rate of the long wave signal.
Antenna	Type: active ferrite antenna
Interfaces	Minutepulse: opto-coupler output MIN2: 24 V DC / ≤ 20 mA load MIN1: opto-coupler output prepared for TSY input of CMU
Alarm output	Contact (NC) 560RTC02 not synchronized DCF 77 drop out > 2.5 h
Alarm contact	Max. switching voltage: 60 VDC Max. current: 0,5 A DC Max. power: 10 W
Standby supply	Gold-Cap-condenser capacity: approx. 150 h
Serial output (RS232)	Baudrate: 9600 Bit/s Character format: 8 bit / 1 stop bit / no parity

Current consumption for power supplied via RTU560 backplane

5 V DC	160 mA
24 V DC	

Preciseness	
Minute pulse	5 ms

Preciseness

Free running	1 ppm = 110^{-6} = 86 ms/day (after more than 24 hours of DCF 77 operation)
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Environmental conditions - climatic

Nominal operating temperature range EN 60068-2-14	0 °C... 70 °C
Relative humidity EN 60068-2-30	5... 95 % (non condensing)

Ordering information

560RTC02 R0001	1KGT007800R0001
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Accessories ordering information

Antenna 23AN02 R0003	GSNP812601 R0003
Antenna cable 23AC02 R00XX:	1KGT 006 900 R00XX XX = Length in meter Default length: 20 or 50 m

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