EIB/KNX time transmitter RMD

Contents

1 Functional characteristics

The time transmitter is a clock which sends the time and date to the bus.
This clock can be set using the DCF signal or via the bus.
The time data can be sent either cyclically or on request.

1.1 Benefits

- Either crystal operation or synchronisation by means of DCF 77 time signal
- The time zone and summer/winter time changeover can be configured freely. This means that the time transmitter can be used in many different countries.
- Option to switch off the summer time changeover. Can be used for shading systems with calculation of the position of the sun.
- The time is set at the factory, so the time transmitter is ready for use as soon as the group addresses are assigned.
- Thanks to a built-in lithium battery, the time is preserved even in the event of a bus failure.

1.2 Special features

For specific places or conditions of use it is possible to define one's own summer/winter time changeover rules via the parameters.

The time and date object can be read out directly at any time, directly, e.g. from a display.

If the DCF signal is not present or not necessary, then the clock can be set via the bus and operated using the internal crystal time base.
The internal crystal time basis can be adjusted by means of a parameter.

The integrated, non-polluting lithium battery has a power reserve of more than ten years.

2 The application program "Time transmitter RMD V1.0"

2.1 Selection in the product database

Manufacturer	Berker
Product family	Physical sensors
Product type	Time transmitter
Program name	Time transmitter RMD V1.0

Download the application from: www.berker.com

2.2 Parameter pages

Table 1

Name	Description
General	Sending behaviour, summer time rules, crystal adjustment
Summer time rules	Location and time-zone dependent settings

2.3 Communication objects

2.3.1 Object characteristics

The time transmitter has three communication objects.

Table 2

No.	Function	Object name	EIS type	Response
0	Send / receive time	Time	EIS3 3-byte	Send/ Receive
1	Send / receive date	Date	EIS4 3-byte	Send/ Receive
2	Send time and date	Time request	EIS1 1-bit	Receive

Table 3

Number of communication objects	3
Number of group addresses	8
Number of associations	8

2.3.2 Object description

- **Object 0 “Time”**

As a send object:
Sends the current time in EIS 3 format, depending on the configuration: only on request, cyclically or at specific times (see parameter table “Send time and date”).

As a receive object:
Used to set the time via the bus:

- **Object 1 “Date”**

As a send object:
Sends the current date in EIS 4 format, depending on the configuration: only on request, cyclically or at specific times (see parameter table “Send time and date”).

As a receive object:
Used to set the date via the bus:

- **Object 2 “Time request”**

The time data can be queried at any time via this object.
Receipt of a telegram (0 or 1) on this objects triggers sending of the time and date.

2.4 Parameters

2.4.1 General

Table 4

Designation	Values	Meaning
Send time and date		When should the time and date be sent?
	Only on request	Only when a 1 or a 0 is written to object 2 (time query)
	Every minute Every hour	Send cyclically
	Every day at 00:00 midnight and at summer/winter changeover	Only 1x per day and additionally at every summer/winter time changeover.
	Every day at 00:02 and at summer/winter changeover	
Summer / winter time changeover	None like Central Europe like the United Kingdom like North America User-defined No summer time changeover despite DCF signal like Greece, Finland, Turkey UTC without summer time changeover despite DCF signal	Adjustment to the time zone For Germany, “**as for Central Europe**” must be selected. **IMPORTANT:** see chapter Application.
Offset for quarz time in 1/10s per day (-128 ... 127)	Value entry –128...127	Crystal adjustment in 1/10s if the clock runs fast or slow in crystal operation. Values between -128 (12.8s slower per day) and +127 (12.7s faster per day) can be entered. The default value is 0. Example: If the clock runs fast by 5s per day without DCF synchronisation, then the value -50 should be entered, i.e. 50x 1/10s

2.4.2 Summer time rules

This parameter page appears when the parameter “Summer/winter time changeover” has been set to “User-defined”. You can define your own changeover rule here.
Programming for the Southern Hemisphere is also possible (e.g. summer time in October and winter time in March).
At the winter to summer changeover, the time is moved forward by one hour, and at the change from summer to winter it is moved back by one hour.
Changeovers always take place on a Sunday.

Table 5

Designation	Values	Meaning
Summer time from	First Sunday in Second Sunday in Third Sunday in Fourth Sunday in Last Sunday in	On what Sunday in each year should the changeover to summer time take place?
	January, February, March April, May, June July, August, September October, November, December	In what month?
	0:00 midnight 1:00 a.m. 2:00 a.m. 3:00 a.m. 4:00 a.m. 5:00 a.m. 6:00 a.m.	At what time?
Winter time from	First Sunday in Second Sunday in Third Sunday in Fourth Sunday in Last Sunday in	On what Sunday in each year should the change back to winter time take place?
	January, February, March April, May, June July, August, September October, November, December	In what month?

IMPORTANT: With user-defined changeover, the DCF signal is not evaluated.

3 Application

The parameter “Summer / winter time changeover” controls the time zone of the place of use thus also determines the time which is sent.

3.1 Recommended settings

“**as in Central Europe**” should be selected for all normal applications in the CET/CEST time zone.
This means that changeovers between summer and winter time will be carried out automatically in both DCF and crystal operation.

3.2 DCF synchronisation

If a DCF antenna is connected, the DCF synchronisation occurs automatically:

- after downloading the application program
- after BUS voltage return
- every night at 2:00 and 3:00

In case the synchronisation couldn’t be completed caused by interferences, the time transmitter will retry at every clock hour.
After max. 5 attempts the operation will be aborted until the next automatic synchronisation is started (2:00 and 3:00).

3.3 DCF operation outside of Central Europe and special applications

If the time transmitter is installed in a different time zone, e.g. in the United Kingdom, then the DCF signal can still be used if it is available, despite the difference in time zone.
One (or if necessary two) hours will be subtracted or added to the DCF time which is received, depending on the changeover rule selected.

If no DCF signal is received, then the clock will be set via the bus and operated using the internal quarz basis.

Table 6

Parameter "Summer/winter time changeover	Evaluate DCF		Changeover to summer time	Time transmitted		Comment
	Yes	No		in summer	in winter	
None	X		2:00 if DCF signal available	DCF *	CET	No summer time changeover without DCF
As for Central Europe	X		2:00	DCF	DCF	**Recommended for the CET/CEST time zone**
As for the United Kingdom	X		1:00	DCF-1h*		Automatic adjustment if DCF signal available
"Greece, Finland, Turkey"	X		3:00	DCF + 1h*		Automatic adjustment if DCF signal available
As for North America		X	Summer time at 2:00 on the 1st Sunday in April Winter time as in Europe	Clock is set via the bus and operated using the internal crystal basis		DCF signal is not evaluated

Continued

Parameter "Summer/winter time changeover	Evaluate DCF		Changeover to summer time	Time transmitted		Comment
	Yes	No		in summer	in winter	
No summer time changeover despite DCF signal	X		None	CET i.e. DCF-1h	CET i.e. DCF	**Recommended if summer time is not desired** Example: Shade systems with calculation of the position of the sun
UTC without summer time changeover despite DCF signal	X		None	DCF – 2h	DCF – 1h	Use in the UTC time zone if summer time is not desired
User-defined		X	As parameterized	Clock is set via the bus and operated using the internal crystal basis		Own, local summer time rule DCF signal is not evaluated

* if DCF signal is available.

4 Appendix

4.1 DCF 77

DCF 77 is a technology used to transmit Central European time (CET in winter, and CEST in summer) to suitably equipped clocks via a radio signal.

The DCF 77 long wave transmitter is located in Mainflingen, near Frankfurt. Its range is approximately 1,500 km (depending on the specific geographical circumstances).
The transmitter is controlled by the atomic clock (atomic standard) at the Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig.
This clock measures the vibrations of caesium atoms (9,129.631770 MHz).
The result is a maximum deviation of only one second in 300,000 years.

4.2 UTC / GMT / CET / CEST

UTC (previously GMT) serves as the international basis for timekeeping and corresponds to the mean solar time on the meridian through Greenwich (zero degrees longitude or prime meridian).
This time is used to calculate the position of the sun, among other things (astronomy).
Most Western European countries use Central European time (CET/CEST).

Table 7

Time zone	Meaning	Converting UTC to local time	
		in winter	in summer
CET	Central European Time = **winter time** in Germany	+1h	+1h
CEST	Central European Summer Time = **summer time** in Germany	+1h	+2h

Table 8: Examples

UTC	CET	CEST
12:00	13:00	14:00

4.3 CET/CEST time zone

The Central European time zone comprises the following countries:
Albania, Andorra, Austria, Belgium, Bosnia-Herzegovina, Croatia, Czech Republic, Denmark main territory, France main territory, Germany, Gibraltar, Hungary, Italy, Liechtenstein, Luxembourg, Macedonia, Malta, Monaco, Netherlands main territory, Norway Arctic-Jan Mayen, Norway Arctic-Spitzbergen (Svalbard), Norway main territory, Poland, San Marino, Serbia and Montenegro, Slovakia, Slovenia, Spain main territory, Sweden, Switzerland, United Kingdom, Vatican City