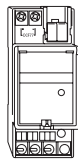


KNX Time sender REG-K

Operating instructions



Art. no. 677290

For your safety

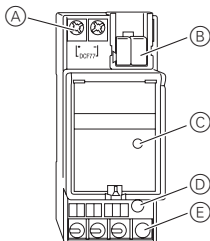
**DANGER****Risk of fatal injury due to electrical current:**

All work on the device should only be carried out by qualified electricians. Observe the country-specific regulations as well as the valid KNX guidelines.

Getting to know the time sender

The time sender sends time and date on the KNX bus and can be operated with or without a DCF antenna. The time sender is set in the factory to time and date.

Connections and display elements



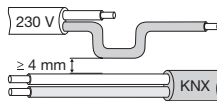
- (A) Connection for the DCF antenna, optional
- (B) Bus connection terminal
- (C) LED for status display (DCF signal ok)
- (D) Programming button
- (E) Programming LED



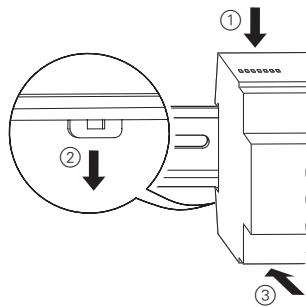
The LED for displaying the status of the DCF signal is only relevant when a DCF antenna is being used (receiving the time in the last 30 hours).

**WARNING****Risk of fatal injury from electrical current. The device could become damaged.**

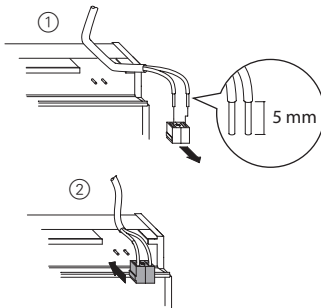
Safety clearance must be guaranteed in accordance with IEC 60664-1. There must be at least 4 mm between the individual cores of the 230 V supply cable and the KNX line.



- ① Set the time sender onto the DIN rail.



- ② Connect KNX.

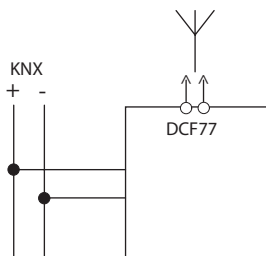


Connecting the DCF antenna (optional)

**CAUTION****The device could become damaged.**

Always use a poled antenna. The connection terminals of the antenna are marked with + and -. Make sure that the polarity is correct.

- ① Connect the antenna (art. no. 668091).



Putting the time sender into operation

- ① Press the programming button.

The programming LED lights up.

- ② Load the physical address and application into the device from the ETS.

The programming LED goes out.

The application was loaded successfully, the device is ready for operation.

Bus failure



Should the bus fail the power reserve will retain the current time.

Toggling summer time/winter time

- Switching between summer time and winter time takes place on the basis of the quartz time and the changover rule specified.
- The rule for Central European summer time and winter time is preprogrammed in the factory. This can be changed in the application.
- If no DCF signal is received, summer time and winter time will be calculated automatically.

Technical data

Power supply from bus:	DC 24 V, max. 10 mA
Ambient temperature:	-10°C to +50°C
Type of protection:	IP 20 in accordance with EN 60529 provided installed correctly
Reserve power:	10 years
Cable length of antenna:	max. 100 m
Accuracy (without antenna)	Factory setting 1 s/d. The application allows additional adjustment.
EU guideline	73/23/EEC (low-voltage guideline) 89/336/EEC (EMC guideline)
Device width:	2 modules = approx. 36 mm

Merten GmbH & Co. KG,

Solutions for intelligent buildings
Service Center, Fritz-Kotz-Straße 8,
Industriegebiet Bomig-West
D-51674 Wiehl

Phone: +49 2261 702-204

Fax: +49 2261 702-136

E-Mail: servicecenter@merten.de

Internet: www.merten.de

InfoLine:

Phone: +49 1805 212581* or +49 800 63783640

Fax: +49 1805 212582* or +49 800 63783630

E-Mail: infoline@merten.de

* fee required

1) The application program

Parameter pages

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

Communication objects

Object characteristics

The time transmitter has three communication objects.

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 query	EIS1 1-bit	Receive

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

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 query"**

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.

KNX Time transmitter

Application 2422

Parameters

General

Designation	Values	Meaning
Send time and date	Only on request Every minute Every hour Every day at 00:00 midnight and at summer/winter changeover Every day at 00:02 and at summer/winter changeover	When should the time and date be sent? Only when a 1 or a 0 is written to object 2 (time query) Send cyclically Only 1x per day and additionally at every summer/winter time changeover.
Summer / winter time changeover	None As for Central Europe As for the United Kingdom As for North America User-defined No summer time changeover despite DCF signal 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.
Time correction for crystal 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

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.

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?



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

2) Application

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

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.

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 ZS 600 DCF 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).

KNX Time transmitter

Application 2422

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 crystal basis.

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
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.

3) Appendix

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.

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).

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

Example:

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

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