

Master clock/signal master clock Type series 921



- Instructions for commissioning
- Operating instructions

Version note	5
Introduction	6
Quartz operation	6
Radio guidance DCF77	6
Radio guidance GNSS	6
Synchronisation to an NTP server	6
Power supply - Power failure.....	6
Protective devices.....	7
Slave clock lines	7
Switching channels	7
Network interface	7
Versions - Article numbers - Accessories	8
Safety instructions	9
Mounting	11
Opening the housing	11
Mounting the enclosure on the wall	12
Terminals - Layout in full configuration	13
Strain relief.....	14
Commissioning	15
Connect power supply - Switch on master clock	15
Display test	16
Disconnect power supply - Switch off master clock	17
Device fuse	18
Operation - Menu	19
Menu structure	19
Function keys.....	19
DCF77 radio receiver	20
General	20
Connection.....	21
Mounting and alignment.....	22
Submaster clock	23
Synchronisation of a second master clock via <i>DCFport24</i>	23
GNSS radio receiver	24
General	24
Connection.....	24
Mounting and alignment.....	25
Slave clock lines	26
Factory settings.....	26
Cable lengths.....	26
Line type	26
Line load	27
Connect slave clock lines	27
Wiring diagram.....	28
Set slave clocks	29
Slave clock minute pulse 24 V/12 V	29
Slave clock minute/second pulse 24V/12 V	30
Second pulse slave clock 24 V, creeping minute.....	31
Slave clock minute pulse 24 V/12 V with synchronous second 230 V/50 Hz	32
<i>DCFport24 Telegram Slave Clock</i>	32
<i>DCFport24 + Minute Pulse</i>	33
Connection of the switching channels	34
RS232 data interface	35
Time protocol via the RS232 data interface.....	35
Alarm contact	36
Connection of options 1 and 2	37
Menu 1 - Master clock	38
Menu 1.1.....	38
Master clock with system time and date.....	38

Menu 1.2.....	38
Time base	38
Time base selection	38
Control of continuous DCF77 radio reception.....	38
Control of continuous GNSS radio reception.....	39
Control of continuous synchronisation with an NTP server.....	39
Checking the last synchronisation: Date	39
Checking the last synchronisation: Time	39
Radio reception quality control - DCF77.....	40
Radio reception quality control - GNSS.....	40
IPV4 Address of the NTP server	40
Menu 1. 3.....	41
Setting the time zone	41
Deposited time zones in menu 1.3	42
Menu 1. 4.....	43
Setting the current time (system time), manually.....	43
Menu 1. 5.....	43
Setting the current date (system date), manually	43
Menu 1.6.....	44
Changing the hour display (12/24 hour format)	44
Menu 1.7.....	44
Changing the date display.....	44
Menu 2 - Lines	45
Menu 2.1.....	45
Current consumption of the slave clock lines	45
Menu 2.2.....	45
Switching lines on and off	45
Menu 2.3.....	46
Line time - Slave clock time.....	46
Menu 2. 4.....	46
Time zone for the slave clock lines (world time function).....	46
Menu 2. 5.....	47
Mode (pulse type)	47
Menu 2. 6.....	48
Enter cycle.....	48
Menu 2. 7.....	49
Activate power reserve - deactivate	49
Menu 2.8.....	50
Pulse length - Set pulse pause.....	50
Menu 3 - Switching.....	51
Menu 3.1.....	51
Switching channels Status	51
Menu 3.2.....	52
Switching program input.....	52
Example 1: Weekly program, "pulse"	53
Example 2: Weekly program, "on"	54
Example 3: Weekly program, "off"	54
Example 4: Yearly program, "on"	55
Example 5: Yearly program, "off"	56
Example 6: yearly program, "lock".....	57
Example 7: yearly program, "unlock".....	58
Program mode " yearly by list " (variable holidays).....	59
Menu 3.2.....	60
Change switch event.....	60
Menu 3.2.....	61
Delete single switch events.....	61
Menu 3.3.....	61
Delete all switch events of a channel	61

Menu 3.4.....	62
Manually operating the switching channels	62
Menu 4 - Messages.....	63
Menu 4.1.....	63
Display error messages	63
Menu 4.2.....	63
Edit error messages	63
Menu 5 - System	66
Menu 5.1.....	66
System.....	66
Menu 5.2.....	66
Change passcode for keyboard and web interface.....	66
Unlocking the keyboard.....	66
Menu 5.3.....	67
Set language.....	67
Menu 5.4.....	67
Switch RS232 interface on/off	67
Menu 5.5.....	68
Line voltage 24V / 12V	68
Menu 5.6.....	68
Factory settings.....	68
Menu 5.7.....	69
Update	69
Menu 6 - Network.....	70
Establish network connection.....	70
Menu 6.1.....	70
Network.....	70
Menu 6.2.....	71
DHCP	71
Menu 6.3.....	71
IPv4 address	71
Menu 6.4.....	71
Net mask.....	71
Menu 6.5.....	72
Standard Gateway	72
Menu 6.6.....	72
DNS server	72
Menu 6.7.....	72
MAC address	72
Menu 7 - NTP client	73
Menu 8 - NTP server	74
Web interface.....	75
Passcode	75
Main menu	76
Master clock menu.....	77
Lines menu	78
Channels menu.....	79
Messages menu.....	80
System menu.....	80
Network menu.....	81
Network menu - NTP client / NTP server.....	82
Options menu	83
Help menu	84
Replace power reserve battery.....	85
Technical data	86
EC Declaration of Conformity.....	87
Disposal of old appliances	88



Version note

These operating instructions/installation instructions describe the master clock type series 921 with the **software version V1.07**

- The currently offered **operating instructions/installation manual** and **software** for this master clock can be found at: <https://www.peweta.com/download.php>
- Check whether a more recent version of the **operating/installation instructions is available for this master clock**.
- You can read the software status of your master clock in **menu 5.7** (see page 69).
- Download the current software and operating instructions/installation manual from our homepage and carry out a **software update** if a more recent version is available (**see page 69**).

Introduction

This master clock provides a time base with synchronisation by various time sources. An integrated quartz oscillator ensures high accuracy. Optional external time references can be used to correct the integrated quartz oscillator: A PEWETA DCF77 radio receiving antenna (item no. 03.925.111), a GNSS satellite receiver (option no. -95) or an NTP server. Summer/winter time changeover or different local times can be stored for the system time of the master clock as well as for the slave clock lines. The master clock is operated via the keypad on the master clock or via the network and an Internet browser.

Depending on the equipment version, this master clock can be used to control the following slave clocks or switch the following devices:

- Slave clocks with network interface NTP (Network Time Protocol)
- NTP clients such as PCs, printers, IP telephones, etc.
- Slave clocks with analogue display, with or without second hand
- Slave clocks with digital display, with or without date
- Self-setting PEWETA *DCFport24 telegram slave clocks*
- Acoustic signalling devices, lighting devices, etc.

Quartz operation

A temperature-compensated quartz oscillator (TCXO) ensures a master clock rate accuracy of +/- 0.1 seconds/24 hrs at an ambient temperature of -15 °C to +60 °C.

Radio guidance DCF77

Two cesium fountain clocks of the Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig form the legal time for the Federal Republic of Germany and transmit it via the long-wave transmitter DCF77, near Frankfurt a.M., on the frequency 77.5 kHz. The detachable PEWETA DCF77 radio receiving antenna (accessory) receives this legal time and synchronises the master clock. The CSF2 and CSF1 cesium fountain clocks have a rate deviation of 6 billionths of a second per year relative to an ideal clock. Through permanent synchronisation to the cesium fountain clocks, the PEWETA master clock takes over their long-term stability. The short-term stability is 30 milliseconds per second.

Radio guidance GNSS

The remote PEWETA GNSS radio receiver receives the time from satellites of the Global Navigation Satellite System (GNSS). GPS (NAVISTAR GPS/USA), GLONASS (Russian Federation), Galileo (Europe) and Beidou (People's Republic of China) satellites are received. The remote PEWETA GNSS radio receiver (option) ensures high short- and long-term stability.

Synchronisation to an NTP server

The master clock has an Ethernet network interface. Via this interface, the master clock can take over the time of an NTP server. The function "NTP client for synchronising the system time via LAN" is an option (option no. -98) and can be ordered additionally, the Ethernet network interface itself is always included in the scope of delivery of the master clock.

Power supply - Power failure

The PEWETA master clock is supplied with power via 100-240 VAC/50-60 Hz (observe type plate). If included in the scope of delivery, a power reserve accumulator 12 VDC/1500 mA maintains all functions of the master clock for a limited period of time in case of power failure.

Protective devices

The power supply input 100-240 VAC/50-60 Hz is protected by a fuse.
The fuse may only be replaced by a qualified electrician.
The slave clock lines are protected against short circuit and overload.

Slave clock lines

The master clock has up to 4 slave clock lines when fully extended. The total current consumption of all lines is 1,000 mA at 24 V (1,000 mA at 12 V), the distribution to the slave clock lines is arbitrary. The line voltage for supplying the slave clocks is either 24 V or 12 V. The slave clock lines should be operated at 24 V as standard. The following pulse types can be selected for each line:

- Minute pulse (factory setting).
- Second pulse, second pulse with creeping minute.
- Half-minute pulse.
- PEWETA *DCFport24 telegram*.
- PEWETA *DCFport24 telegram* combined with minute pulse.

The total current consumption of all lines for the operating mode second pulse is max. 500 mA (in 24 V operation), for the operating mode PEWETA *DCFport24 telegram* max. 500 mA (in 24 V operation).

Switching channels

For switching acoustic and/or optical break signalling devices or for switching on/off other devices, e.g. lighting equipment, fans, etc., up to 4 signal circuits (potential-free relay contact 250 V/2A) with weekly programs, annual programs and holiday programs are available. The switching channels are bistable relays with changeover contact (max. 300 switching events). Manual operation of the switching channels is possible. The supply voltage for the signalling devices to be switched must be provided by the customer.

Network interface

The master clock has an RJ45 Ethernet IEEE 802.3 10/100Base-T network interface for integration into a network/LAN.

The network interface enables:

- Operation of all functions via an internet browser from a PC, mobile phone or tablet
- NTP Server (option). Synchronises NTP clients such as NTP clocks, PCs, printers, etc.
- Synchronisation to an NTP time server (option, instead of DCF77 or GNSS radio receiver)
- Sending status and error messages via SYSLOG or e-mail

Versions - Article numbers - Accessories

Version			
PEWETA Article number	Slave clock line(s)	Switching channels	Power reserve battery
10.921.010	1	0	no
10.921.110	1	0	yes
10.921.012	1	2	no
10.921.112	1	2	yes
10.921.020	2	0	no
10.921.120	2	0	yes
10.921.022	2	2	no
10.921.122	2	2	yes
10.921.024	2	4	no
10.921.124	2	4	yes
10.921.040	4	0	no
10.921.140	4	0	yes
10.921.044	4	4	no
10.921.144	4	4	yes

Accessories	
PEWETA Article number	
03.925.111	DCF77 radio receiver (IP68)
Options	
PEWETA Option no.	
-95	GNSS version, incl. GNSS antenna (IP 68)
-98	NTP Client
-99	NTP Server



Safety instructions

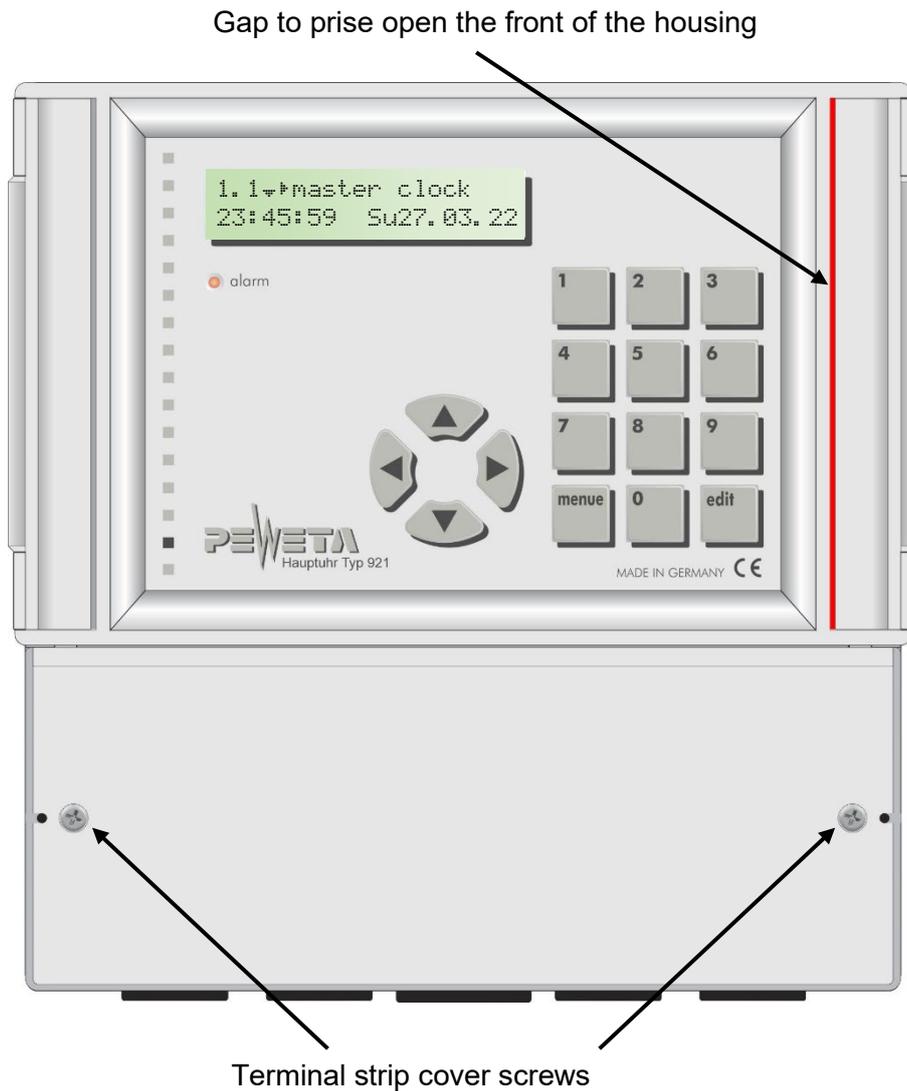
- Before carrying out any electrical work, the master clock must be disconnected from the power supply (all poles) and secured against being switched on again.
The absence of voltage must be determined.
Failure to do so may result in damage to property and personal injury or even danger to life.
- The master clock may only be installed and opened for maintenance purposes by a qualified electrician. Unauthorised opening and improper tampering may result in considerable danger to the user.
- The master clock has been developed and tested in accordance with the requirements of EN 62368-1 (2014 +AC:2015 + A11:2017 / Equipment for audio/video, information and communication technology).
- It must be possible to disconnect the master clock from the mains. An all-pole disconnecter with at least 3 mm contact opening must be present in the installation. Examples of an all-pole disconnecter are a plug with a protective contact system or a circuit breaker. The all-pole disconnecter must still be accessible after installation. It must be possible to assign the all-pole disconnecter to the master clock with a label.
- To disconnect the master clock from the power supply, it must first be disconnected from the power supply via the all-pole disconnecter. After that, the master clock must be switched off via the operating switch (see page 17) to deactivate the battery, if present.
- The unit is intended exclusively for the control of slave clocks, for the switching of signalling and switching devices and network services that must not perform any safety functions.
- Power is supplied via an AC voltage of 100-240 VAC/50-60 Hz (observe the rating plate).
- The connection cable used for the mains voltage must have a minimum cross-section of 1.5 mm² and must be made of solid rigid material.
- Building-side installation according to VDE 0100 or corresponding national or international regulations according to DIN, ISO, EN etc. must be observed and complied with.
- Do not connect or disconnect any cables during a thunderstorm/lightning.
- The battery and the rechargeable battery may only be replaced by a PEWETA original replacement battery and PEWETA original replacement rechargeable battery of the same type. Otherwise, functional impairments may result and all supplier responsibilities will lapse.
- Batteries and rechargeable batteries must be kept away from fire, danger of explosion!
- Batteries and rechargeable batteries must not be opened or damaged. The electrolyte liquid released is toxic and can cause burns to the skin and eyes.
- Rechargeable batteries can cause injuries due to electric shocks and high short-circuit currents. When handling batteries, observe the following safety precautions:
 - Take off wristwatches, rings and other metal objects.
 - Use tools with insulated handles.
- Do not short-circuit the terminals of the battery.
- The batteries must be disposed of as special waste, they must not be disposed of with household waste.

- Rechargeable batteries/batteries can be returned free of charge after use to the point of sale or to appropriately marked collection points.
- The end user is legally obliged to return used batteries/rechargeable batteries.
- The master clock must be mounted on a vertical, stable, smooth (wall) surface.
No vibrations may be transmitted to the master clock.
- When mounting the master clock on a conductive surface, ensure a distance of 20 mm between the bottom of the master clock and the conductive surface.
The distance must be non-conductive spacers to ensure that the distance is permanent.
- The master clock must not be exposed to direct sunlight.
- The limit values for temperature (0°-40°C) and humidity (10-90% rel. humidity, non-condensing) must not be exceeded.
- The mounting location of the master clock must be chosen in such a way that the ingress of dust and liquids is excluded. Electromagnetic sources of interference (e.g. motors, electromagnets, ballast chokes, etc.) must be avoided.
- The master clock is not approved for EX areas.

Mounting

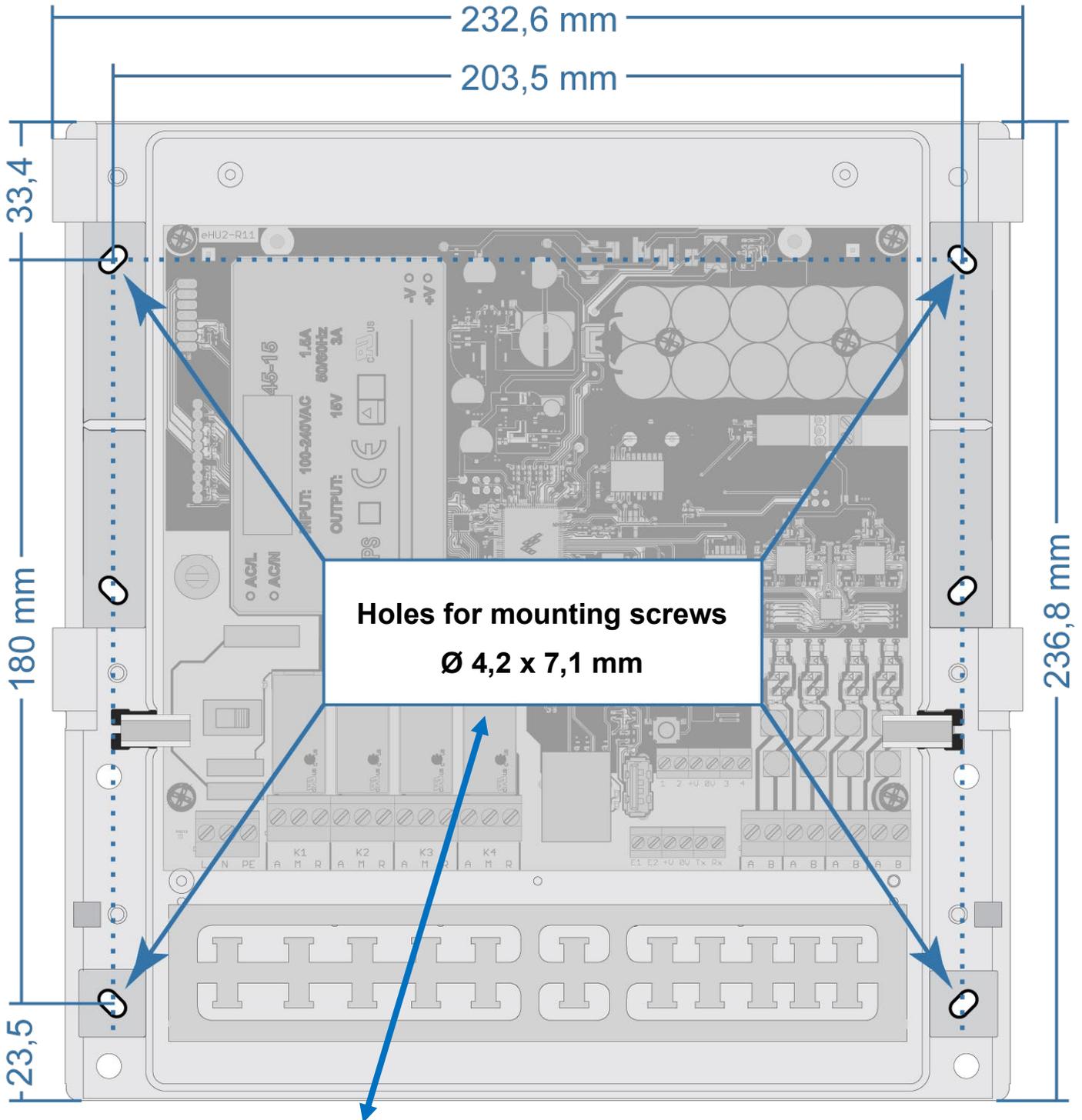
Opening the housing

1. Loosen the screws of the terminal strip cover and remove the cover.
2. Use a wide, narrow flat-blade screwdriver to prise open the front of the housing in the gap and swivel the front of the housing to the left.



Mounting the enclosure on the wall

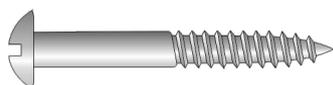
Attach the master clock to the wall using the 4 screws and dowels included in the delivery. on the wall using the 4 screws and dowels provided, see illustration:



Included in delivery:

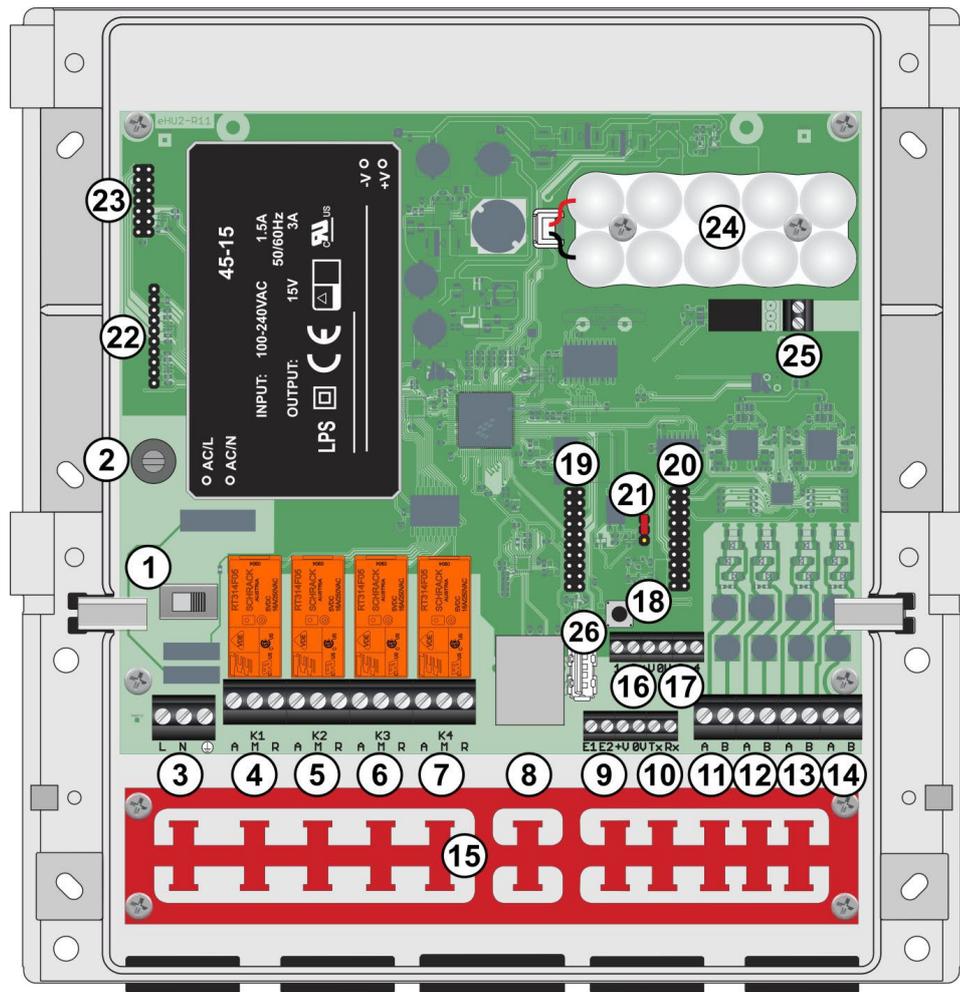


4 x dowels



4 x screw 4 x 40 mm

Terminals - Layout in full configuration

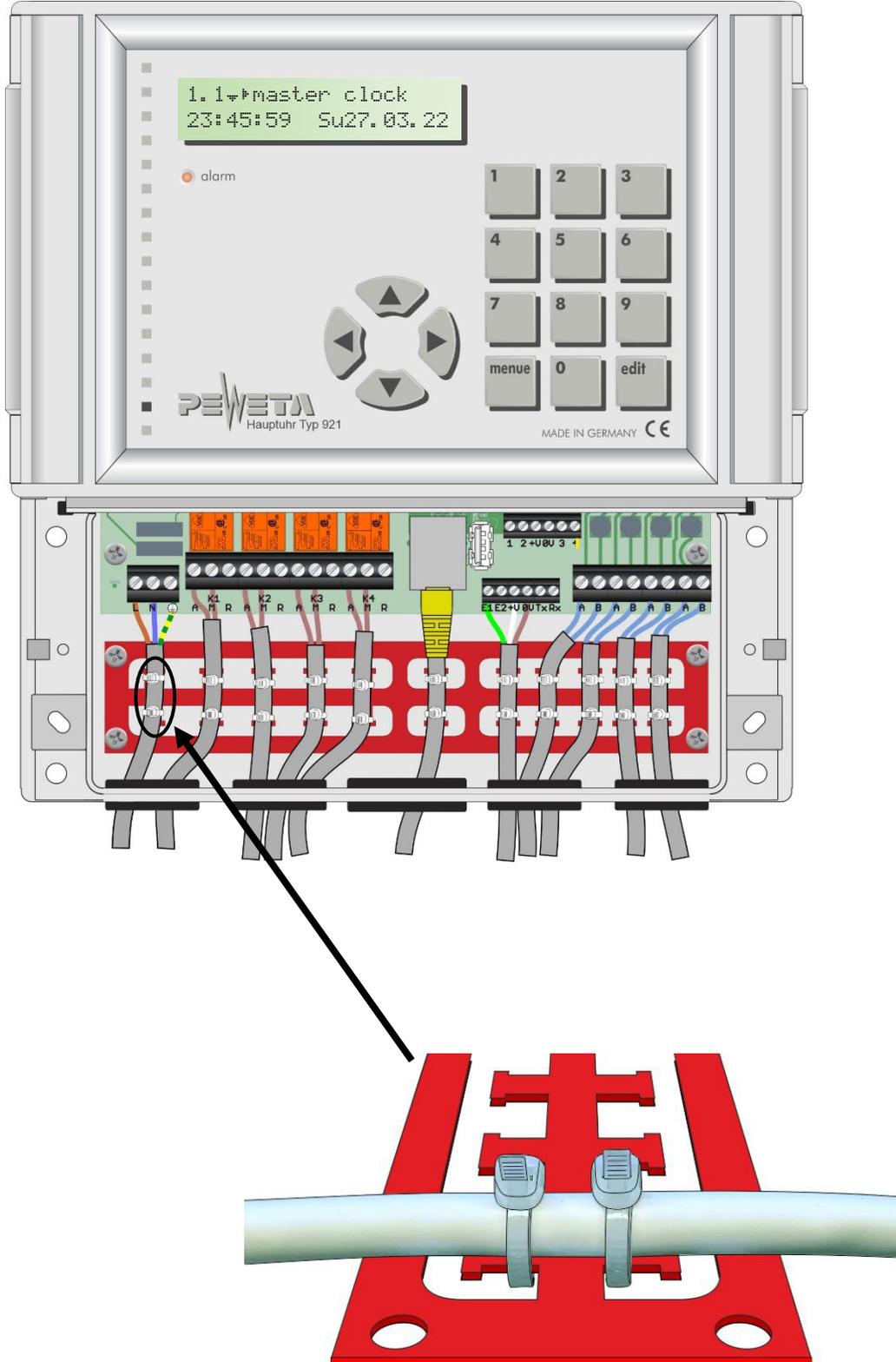


1. Operating switch: OFF (left) / ON (right)
2. Mains fuse: Fine-wire fuse (5 x 20 mm) 250 V/500 mA slow-blow
3. Power supply 100-240 VAC/50-60 Hz (observe type plate)
- 4-7. Switching channels 0 to 4, depending on the master clock version
8. RJ45 Ethernet IEEE 802.3 10/100Base-T
9. DCF77 antenna input
10. RS232 interface
- 11-14. slave clock lines 1 to 4, depending on the version of the master clock.
15. Strain relief
16. Output for option slot 1 (option)
17. Output for option slot 2 (option)
18. Reset button
19. Slot 1 for option card
20. Slot 2 for option card
21. Jumper for DCF77 antenna with external supply voltage
22. Keyboard connection socket
23. LCD connection socket
24. Power reserve accumulator (option)
25. Alarm contact (option)
26. USB 2.0 / Type A interface

Strain relief

All connected cables must be secured against tension and shear with 2 cable ties each.

The cable ties must be tightened firmly. The position of the cable ties is shown in the following illustration. Cable ties are not included in the scope of delivery.



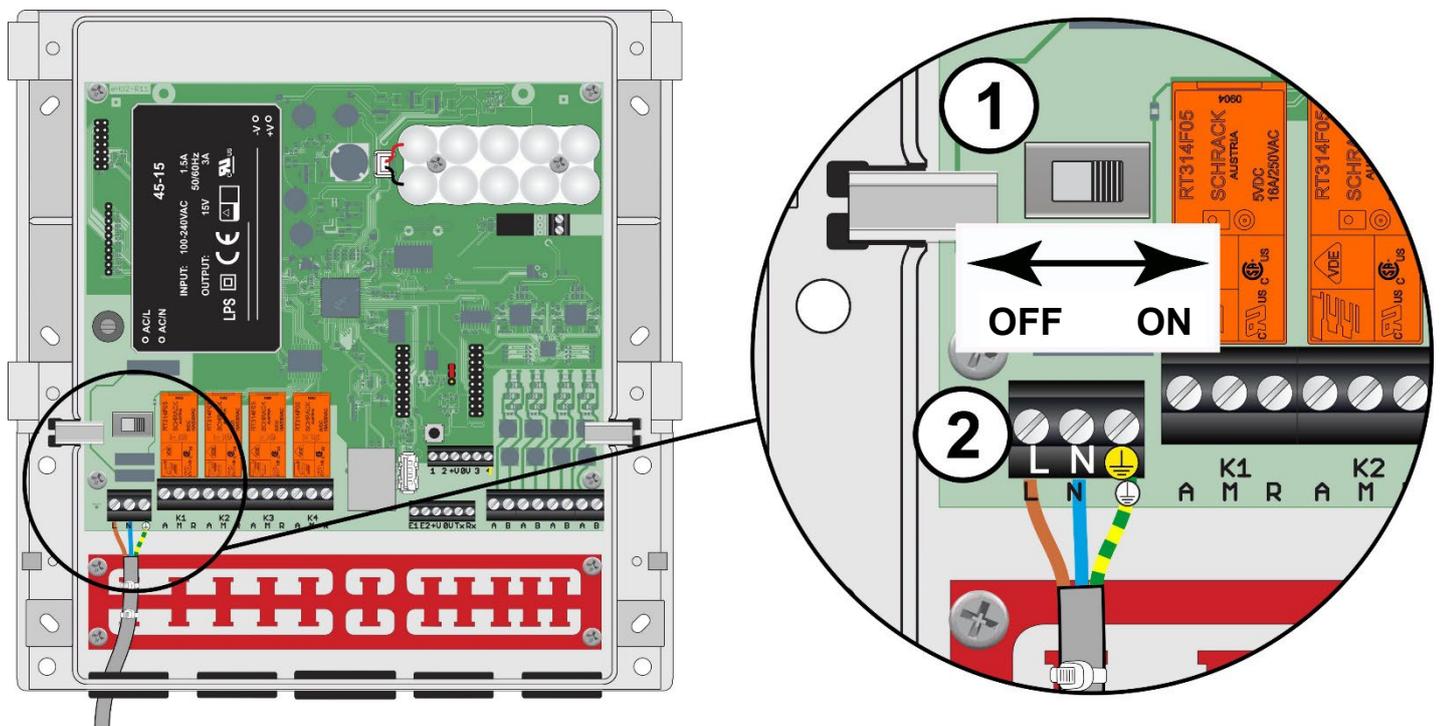
Commissioning

Connect power supply - Switch on master clock

Safety instructions from page 9 observe!

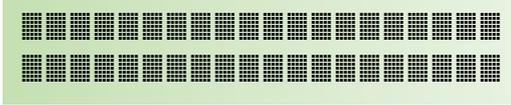
The power supply for the master clock is 100-240 VAC/50-60 Hz, unless otherwise indicated on the name-plate.

1. Loosen screws of the terminal strip cover and remove cover (see page 11).
2. Disconnect the connecting cable from the mains via the all-pole isolating switch provided by the customer (see page 9).
3. Slide the operating switch to the "OFF" position (to the left), see figure number ① .
4. Connect the power supply 100-240 VAC/50-60 Hz to the terminals L, N and PE properly, see figure number ② . The protective earth connection is mandatory for safety reasons!
5. Secure the cable against pulling and pushing (see page 14).
6. Re-establish contact via the all-pole disconnecter.
7. To switch on the master clock, slide the operating switch to the "ON" position (to the right), see figure number ① .

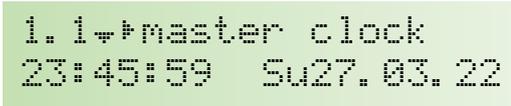


Display test

If the master clock has been switched on (see page 15), the following indications first appear in the display of the master clock:



This is displayed for approx. 2 seconds.
All dots/pixels must be displayed.

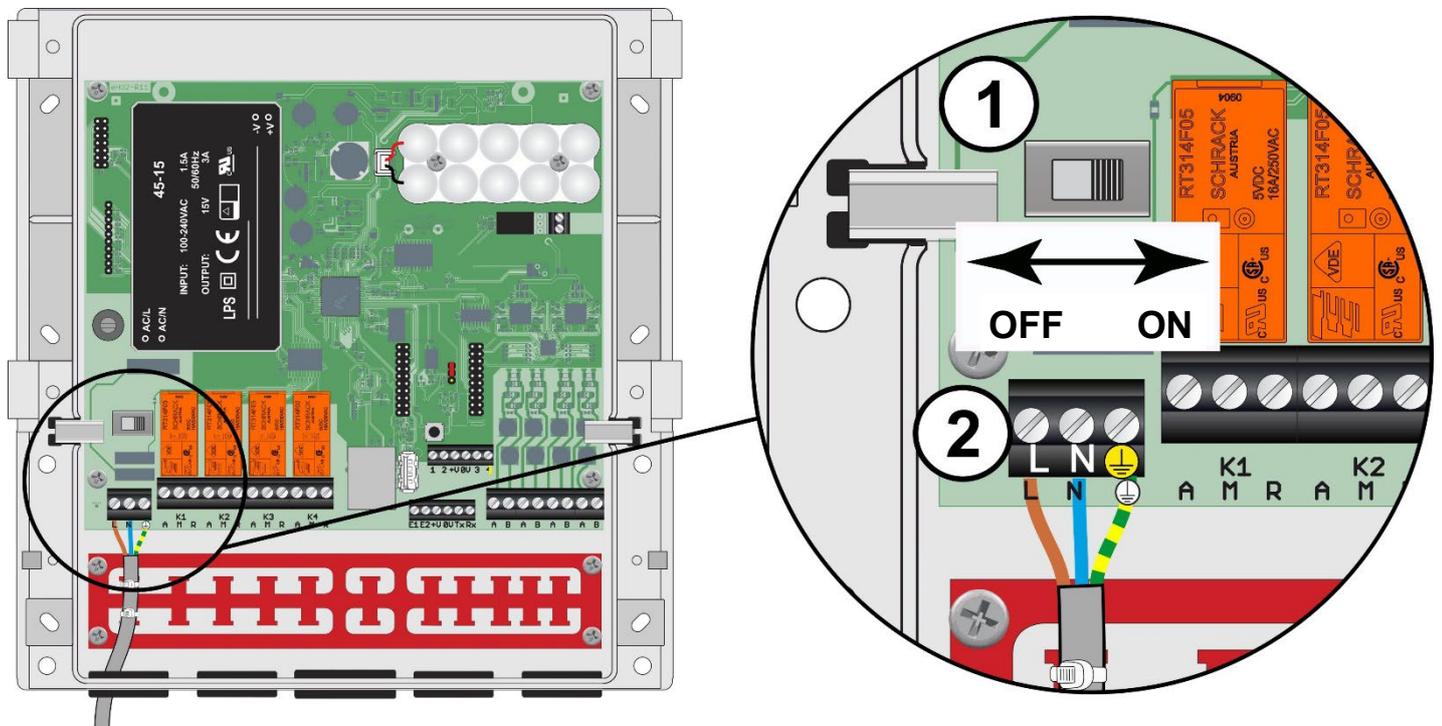


The standard menu with the system time appears.
The time and date displayed after switching on are stored values and may differ from the current time and date. The system time may have to be set (menu 1.4 and 1.5) or synchronised (DCF77 radio receiver, GNSS satellite receiver or NTP server) in quartz operation.

Disconnect power supply - Switch off master clock

Safety instructions from page 9 observe!

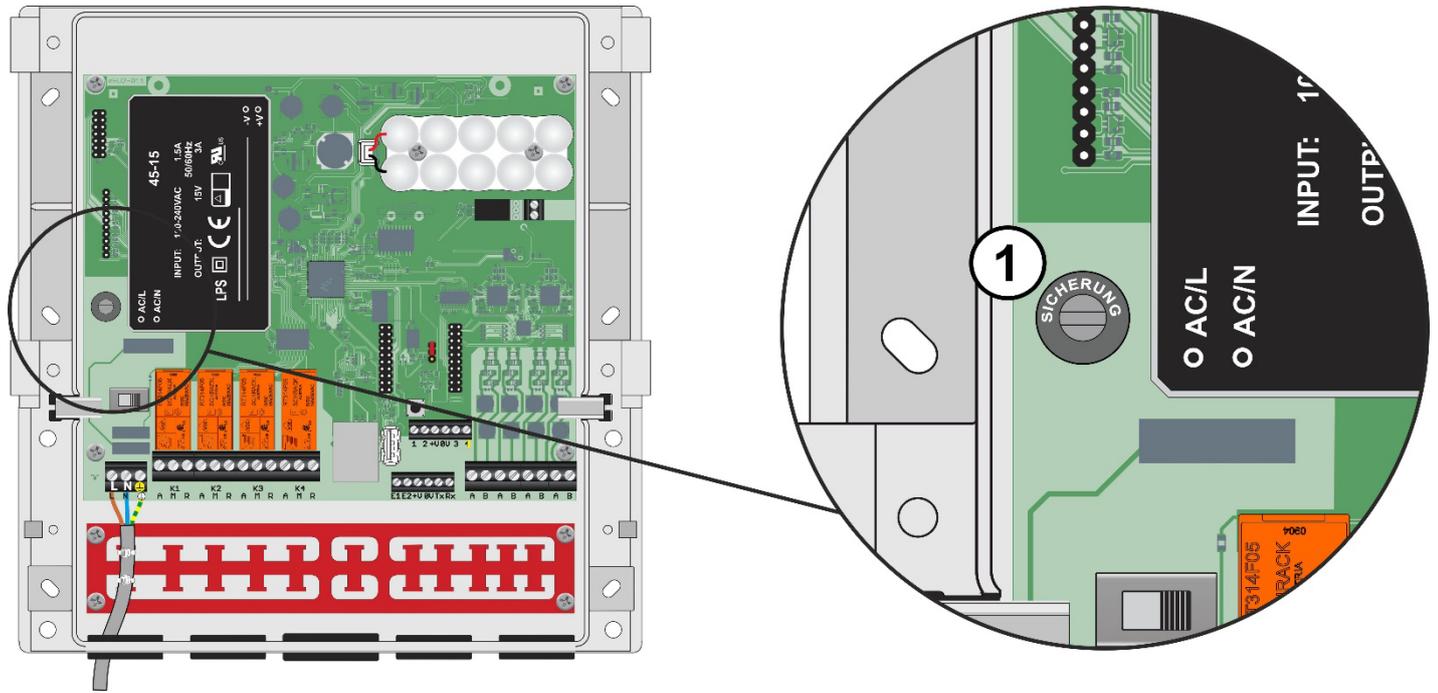
1. Loosen screws of the terminal strip cover and remove cover (see page 11).
2. Slide the operating switch to the "OFF" position (to the left), see figure number ① .
3. Disconnect the connecting cable from the mains via the all-pole isolating switch provided by the customer (see page 9).
4. Disconnect the 100-240 VAC/50-60 Hz power supply at terminals L, N and PE, see Figure digit ② .



Device fuse

Observe safety instructions from page 9 observe.

The master clock is protected by a fine-wire fuse, 5 x 20mm, 500 mA 250V/sluggish, see figure digit ①.



Operation - Menu

The menu is laid out in table form. After switching on the master clock, the menu item appears "1.1 Master clock", the operator is located in the upper left corner of the menu structure, see the following table:

Menu structure

master clock	Lines	Channels	Messages	System	Network	NTP-client	NTP-server
1.1  	2.1   	3.1   	4.1   	5.1   	6.1   	7.1   	8.1   
time date	load	state	quantity	system	network	NTP-Client	NTP-Server
1.2  	2.2 	3.2   	4.2  	5.2 	6.2 	7.2 	8.2 
timebase	state	switching events	messages	change pass code	DHCP	DHCP	state
1.3 	2.3 	3.3 		5.3 	6.3 	7.3 	8.3 
time zone	line time	delete all		language	IP-address	server	stratum
1.4 	2.4 	3.4 		5.4 	6.4 	7.4 	8.4 
system time	time zone	manual		RS232	netmask	multicast rx	multicast tx
1.5 	2.5 			5.5 	6.5 	7.5 	8.5 
system date	mode			line voltage	gateway	multicast addr.	multicast
1.6 	2.6 			5.6 	6.6 		8.6 
display hours	cycle			factory preset	DNS		intervall
1.7 	2.7 			5.7 	6.7 		
display date	battery			update	MAC addr.		
	2.8 						
	pulse length						

The individual menus can be selected in two different ways:

1. direct menu item selection



Press the "menue" key, then the numeric keys "1", "2" etc. for the desired menu (see table Menu structure).

2. navigation with arrow keys



By pressing the arrow keys  you can "scroll" through the individual menus horizontally (main menus) and vertically (submenus).

Function keys



The "edit" key confirms entries.



The "menu" key has 2 functions:

- "menu" enables direct menu item selection.
- "menu" cancels an input at any time **without** saving or changing values.

DCF77 radio receiver

The DCF77 radio receiver (**art. no. 03.925.111**) is available as an accessory.



General

The Physikalisch-Technische Bundesanstalt (PTB) in Braunschweig operates several caesium clocks (atomic clocks) by which the legal time for the Federal Republic of Germany is represented.

This time is transmitted via the radio station DCF77 near Frankfurt am Main on the frequency 77.5 kHz long wave. The radio signal has a maximum range of about 2000 km. Both the distance (field strength) as well as local sources of interference (e.g.: Fluorescent lamps, monitors, TV sets, switching power supplies or electrical machines) have an influence on the reception quality of the signal.

The time and date are encoded in 59 signals and one signal is sent every second, 1 signal is missing in the 59th second. The duration for the transmission of the entire time and date information is 1 minute.

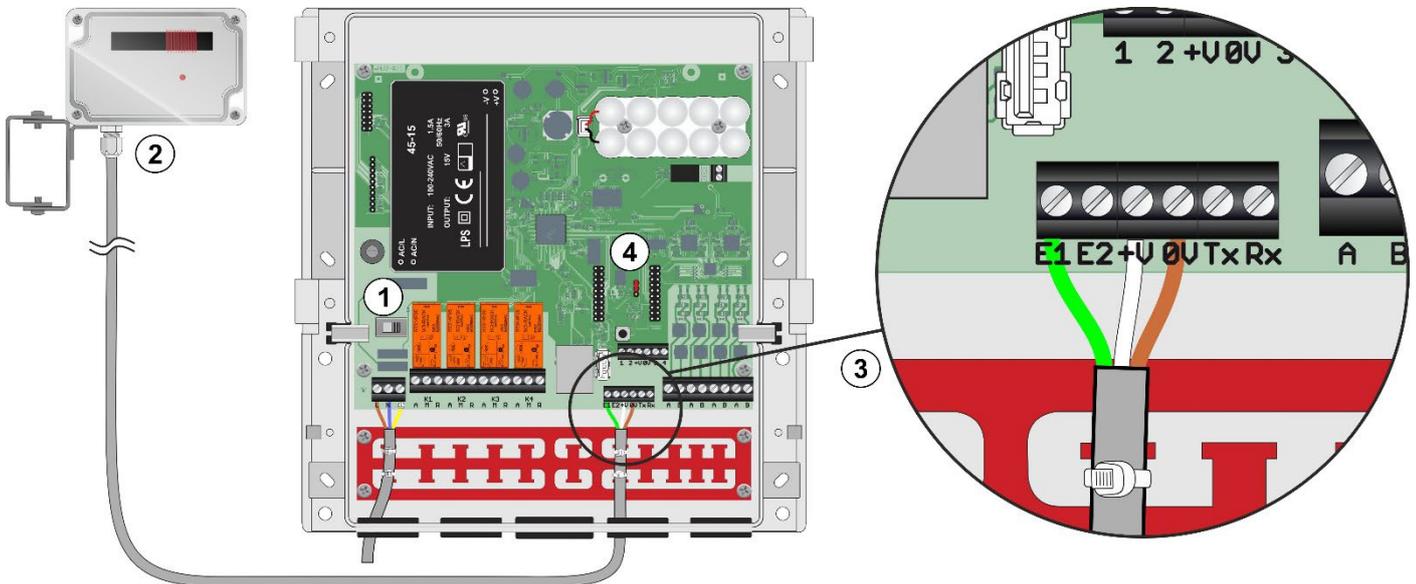
The DCF77 radio receiver receives the long-wave signal and passes it on decoded to the master clock.

Connection

1. Slide the operating switch to the "OFF" position, to the left. See figure number ① .
2. Connect the DCF77 radio receiver, see figure number ② according to figure number ③ .
 - Green → E1
 - White → +V
 - Brown → 0V

The jumper, see figure ④ , must bridge the middle and upper contacts.

3. Slide the operating switch to the right in the "ON" position. See figure number ① .



Mounting and alignment

1. Find a suitable mounting position:
 - The red LED in the DCF77 radio receiver must flash every second and must not flicker irregularly. No time signal is transmitted in the 59th second – the flashing is interrupted for 1 second per minute.
 - The DCF77 radio receiver has a degree of protection of IP68 and is suitable for indoor and outdoor use.
 - The cable gland on the DCF77 radio receiver must point downwards (towards the floor).
 - The DCF77 radio receiver should be aligned so that the cover or the rear wall faces the DCF77 time signal transmitter (Frankfurt am Main).
 - Alignment is carried out by rotating the DCF77 radio receiver and/or by changing the mounting location.

2. Check the radio reception quality in menu 1.2 (see page 40).
 - To synchronise, the master clock needs 3 consecutive time and date information, i.e. at least 3 minutes. If a second-by-second signal is received incorrectly, the complete 3-minute reception process starts again. The DCF77 radio receiver must not be moved during the synchronisation phase.
radio receiver must not be moved.
 - If the master clock has synchronised, a "check mark" appears in menu 1.2 instead of the "question mark" (see page 38).

3. Mounting
 - Once a suitable mounting location has been found and the master clock has synchronised, the DCF77 radio receiver must be permanently mounted in this position and may no longer be moved.
 - The DCF77 radio receiver is mounted on the stainless steel bracket on the wall with two screws (4.0 x 30) and suitable dowels. The screws and dowels are included in the delivery.



Frankfurt am Main



Included in delivery:



2 x dowel



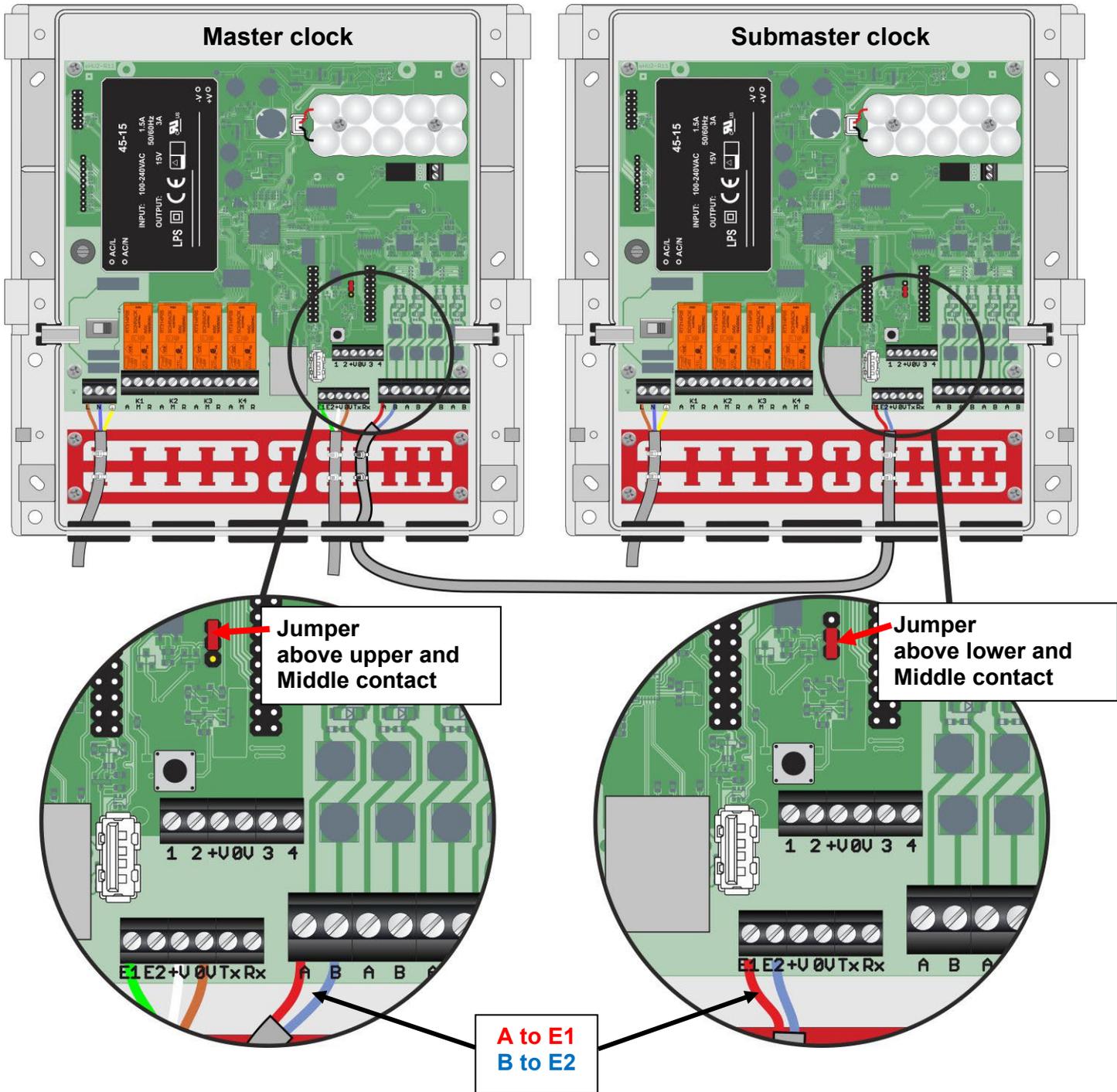
2 x screw 4 x 30 mm

Submaster clock

Synchronisation of a second master clock via *DCFport24*

A master clock can be synchronised as a submaster clock via a *DCFport24* slave clock line of another master clock. For the master clock, on one line, e.g. line 1, in menu 2.4 the slave clock line must be set to "DCF-Port" in menu 2.4. The line output "A" of line 1 must be wired to "E1" of the submaster clock and the line output "B" of line 1 must be wired to "E2" of the submaster clock. The jumper of the submaster clock must be plugged over the middle and lower contact.

Up to 30 submaster clocks can be connected to the *DCFport24* slave clock line.



GNSS radio receiver

The GNSS radio receiver (**option no. -95**) is available as an option.

A GNSS option card is installed in option slot 1. The card/option cannot be retrofitted.

General

GNSS stands for "Global Navigation Satellite System".

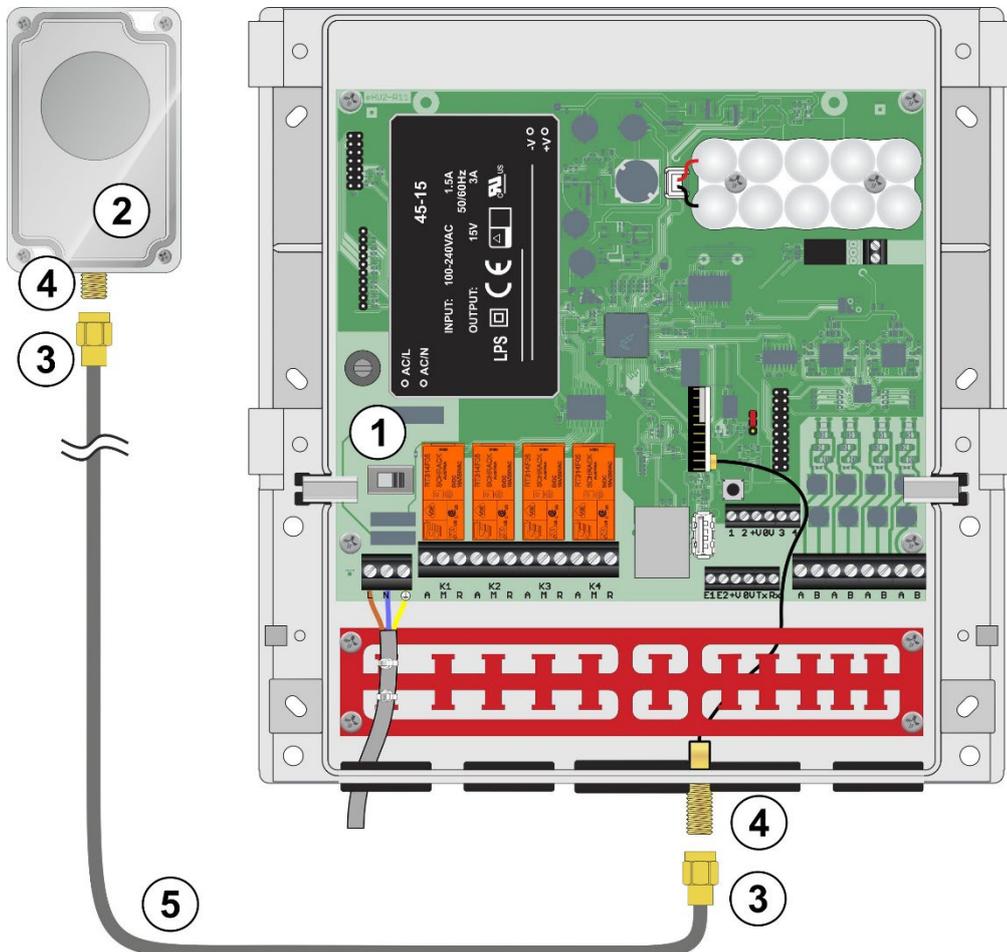
The GNSS radio receiver receives the satellites of the systems:

- NAVSTAR GPS (Global Positioning System) - United States of America
- GLONASS (Global Navigation Satellite System) - Russian Federation
- Galileo - European Union
- Beidou - People's Republic of China

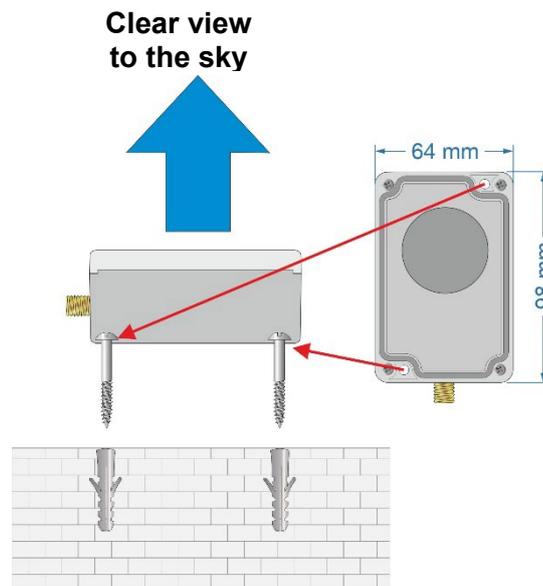
The GNSS radio receiver receives the satellite signals and the master clock synchronises to their highly accurate time.

Connection

1. Slide the operating switch ① to the "OFF" position, to the left.
2. The connection cable ⑤ is screwed with SMA plugs/male ③ to the GNSS radio receiver ② and the master clock to the SMA sockets/female ④ respectively.
3. Slide the operating switch ① to the "ON" position, to the right.



Mounting and alignment



Included in delivery:



2 x dowel



2 x screw 4 x 30 mm

1. Find a suitable mounting location:

- The best reception conditions are achieved with a clear view to the sky (clear cover facing the sky).
- The GNSS radio receiver has an IP68 protection rating and is suitable for indoor and outdoor use.
- The GNSS radio receiver can be used worldwide.
- The GNSS radio receiver is supplied with a ready-made connection cable 20 metres long. A longer connection cable can be used on site. Only Belden H155 cable may be used. The maximum total length of the connection cable is 80 m.
- The connector type at both ends is SMA/male. On request, we can supply the connection cable option in the desired length.

2. Check the quality of the radio reception in menu 1.2 (see page 40).

- To synchronise the master clock, the signal from at least 3 satellites must be received.
- If the master clock has synchronised, a "check mark" appears in menu 1.2 instead of the "question mark", (see page 39).

3. Mounting

- Once a suitable mounting location has been found and the master clock has synchronised, the GNSS radio receiver must be permanently mounted in this position and may no longer be moved.
- Loosen the 4 screws of the transparent cover and screw the GNSS radio receiver to the surface with the 2 screws (4 x 30mm) and dowels included in the delivery.
- Fit the transparent cover.

Slave clock lines

Factory settings

Factory settings in delivery state and after resetting to factory settings (see page 68):

Menu 2.2	Status	: off
Menu 2.3	Line Time	: 12:00
Menu 2.4	Time zone	: CET / CEST
Menu 2.5	Mode	: Minute
Menu 2.6	Cycle	: 12 hrs.
Menu 2.7	Power reserve	: on (if batteries are included in the scope of delivery)
Menu 2.8	Pulse length	: 1 second

Cable lengths

Table for determining the cable lengths.

All figures are approximate.

Note: The standard of slave clock lines is 24 V.

All PEWETA slave clocks and master clocks are preset for 24 V line voltage.

Line-voltage	Rated current	Line cross section	Number Slave clocks	Line length
24 V	60 mA	0.6 mm ²	10	906 m
	360 mA		60	150 m
	960 mA		160	56 m
24 V	60 mA	0.8 mm ²	10	1612 m
	360 mA		60	268 m
	1000 mA		160	100 m
24 V	60 mA	1.5 mm ²	10	5669 m
	360 mA		60	1416 m
	1000 mA		160	353 m
12 V	100 mA	0.6 mm ²	10	226 m
	400 mA		40	56 m
	1600 mA		160	13 m
12 V	100 mA	0.8 mm ²	10	402 m
	400 mA		40	100 m
	1600 mA		160	24 m
12 V	100 mA	1.5 mm ²	10	1416 m
	400 mA		40	353 m
	1600 mA		160	88 m

Line type

The minimum requirement for a slave clock line is a cable with 2 cores and a diameter of minimum 0.6 mm². In the case of a cable with 4 cores, the cross-section can be doubled by combining them. The larger the cable cross-section, the longer the slave clock line may be.

Recommended cable type: **J-Y(ST)Y 2 x 2x 0.6 mm²** or
J-Y(ST)Y 2 x 2x 0.8 mm² (see table above)

Line load

The maximum number of slave clocks to be connected to the master clock depends on the line mode and the line voltage. The standard for the line voltage is 24 V.

The total load of the master clock is 1000 mA at 24 V or 12 V.

Line mode	Line-voltage	Total load per line	Power consumption/ Slave clock	Resistor/ Slave clock	Number of slave clocks
Minute	24 V	1000 mA	6 mA	4 KΩ	160
1/2 minute	24 V	1000 mA	6 mA	4 KΩ	160
Second	24 V	600 mA	6 mA	4 KΩ	100
DCFport24	24 V	600 mA	12 mA	-	50
DCFport24+ Minute	24 V	600 mA	12 mA / 6 mA	-	50 to 100
Minute	12 V	600 mA	12 mA	1 KΩ	50
1/2 minute	12 V	600 mA	12 mA	1 KΩ	50
Second	12 V	600 mA	12 mA	1 KΩ	25
DCFport24	12 V	600 mA	24 mA	-	25
DCFport24+ Minute	12 V	600 mA	24 mA / 12 mA	-	25 to 50

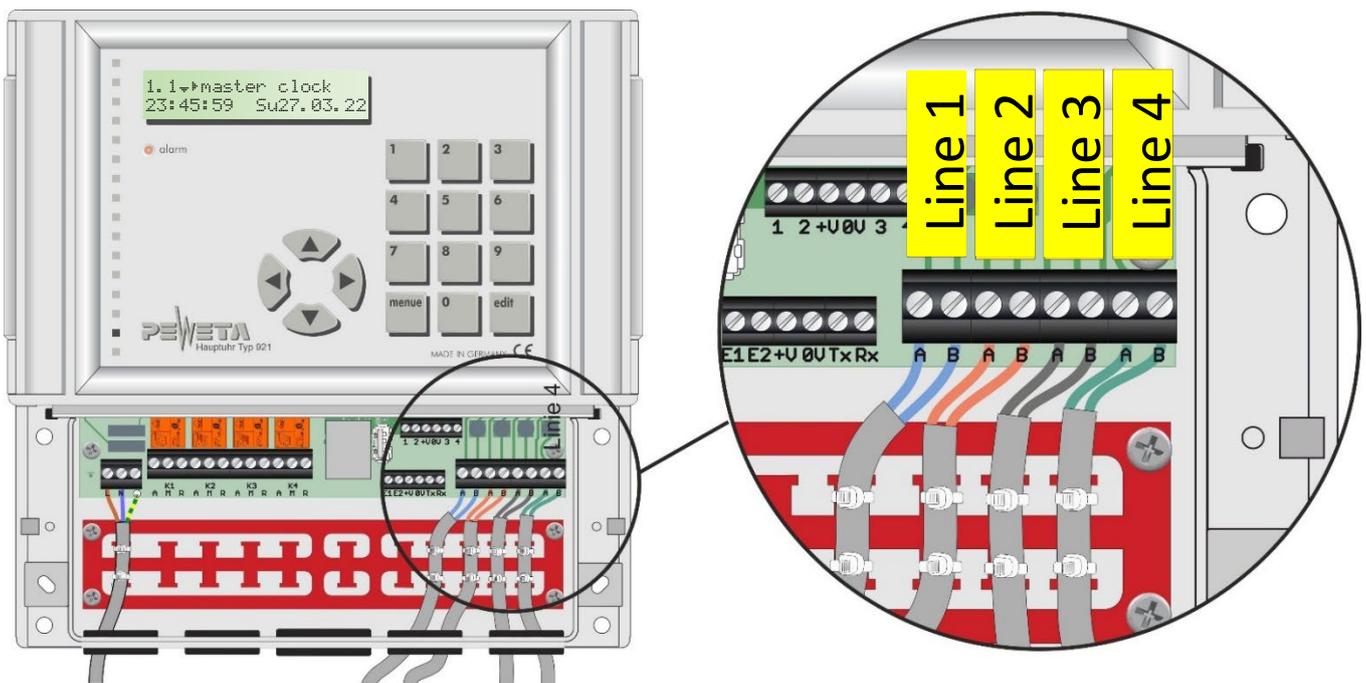
Example:

If 100 second pulse slave clocks (600 mA) are connected to line 1, additional 66 minute pulse slave clocks (400 mA) can be connected to line 2.

Double-sided clocks count as 2 clocks.

Connect slave clock lines

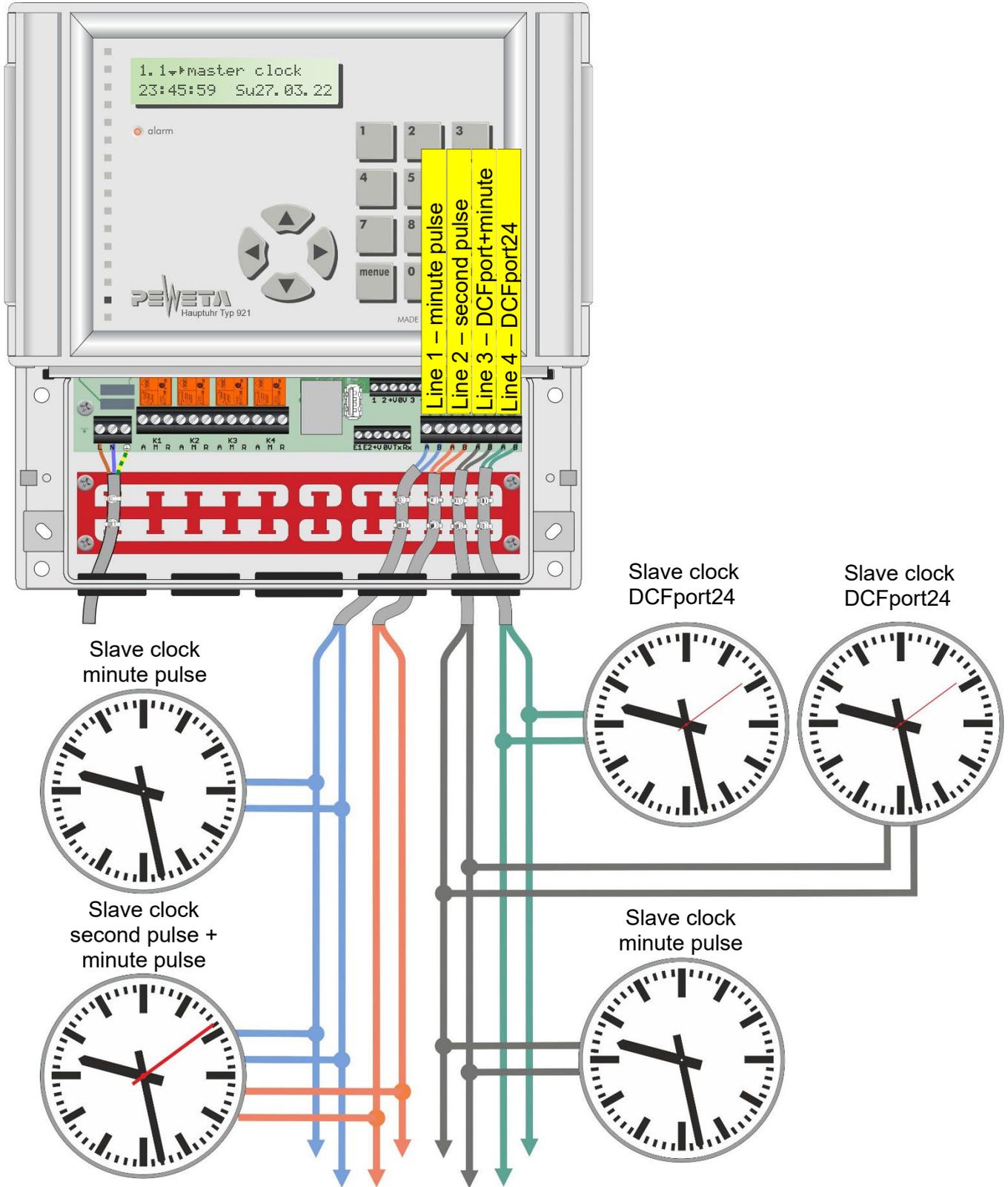
- Depending on the version, the master clock has 1, 2 or 4 slave clock lines (see page 8).
- The slave clocks are connected in parallel.
- The wiring can be star-shaped or as a bus.



If the slave clocks are distributed over several lines, only the slave clocks of the affected line will stop in the event of a short circuit. Slave clocks of other lines continue to function.

Wiring diagram

Example for connecting the slave clocks.



This connection diagram is an **example**.

The mode (minute pulse, second pulse, DCFport24 etc.) can be freely selected for **each** line in menu 2.5 (see page 47).

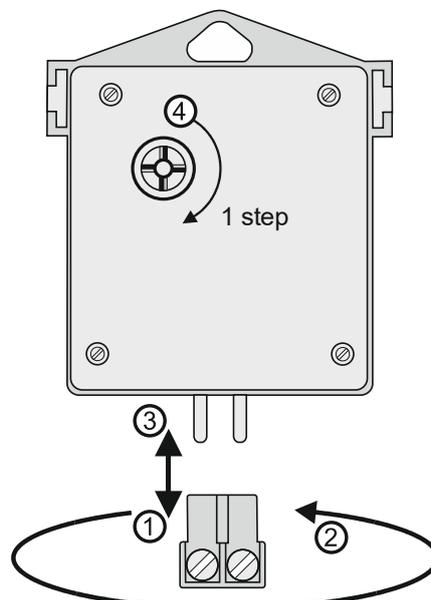
Set slave clocks

Slave clock minute pulse 24 V/12 V

The article numbers of PEWETA slave clocks start with **71...**

1. Switch off the clock line in menu 2.2 "Status" with "off" (see page 45).
2. Slave clocks and master clocks are delivered for 24 V line voltage as standard. Check that the slave clocks and the master clock (see page 68) have the same line voltage.
3. Connect all slave clocks of the line in parallel to the terminal provided in the master clock. (see page 27).
4. Set all slave clocks of this line manually (at analogue clocks, set the adjusting wheel on the movement) exactly to **any desired, but uniform time** (e.g. 12:00).
5. Set the pulse length in menu 2.8 to "1.0s" (see page 50).
6. Activate or deactivate the power reserve (if present) in menu 2.7 (see page 49).
7. Set the cycle in menu 2.6 to "12 hrs. (see page 48).
If digital clocks are also or only connected, set the cycle according to the list on page 48.
8. Set the mode to "Minute" in menu 2.5 (see page 47).
9. Select the time zone in menu 2.4, CET/CEST for Germany (see page 46).
10. Now enter the time set in point 4 in menu 2.3 "NU time" (see page 46) (e.g. 12:00).
11. Switch on the clock line in menu 2.2 "Status" with status "on" (see page 45).
All slave clocks of this line now set themselves to the current time.
12. Once the setting process is complete, the polarity must be changed for slave clocks that are **exactly 1 minute** slow (did not get the 1st pulse): For analogue clocks, disconnect the plug for the minute pulse input on the movement ①, turn ② and reconnect ③. Correct the 1 minute "by hand" on the setting wheel of the movement ④, see the illustration shown below.

Changing the polarity (A/B)
for slave movements with
Minute pulse input

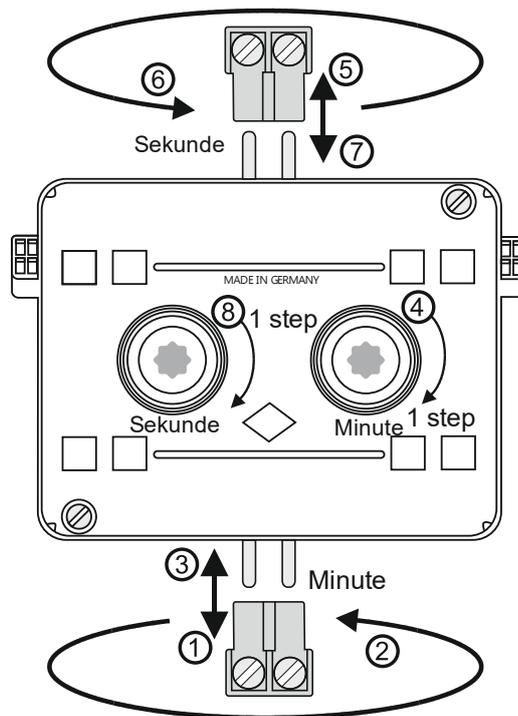


Slave clock minute/second pulse 24V/12 V

The article numbers of PEWETA slave clocks start with **72...** or **73...**

1. The prerequisite is a master clock with at least 2 slave clock lines.
In this example, line 1 is the minute line and line 2 is the second line.
2. Switch off the clock lines 1 and 2 in menu 2.2 "Status" with status "off" (see page 45).
3. Slave clocks and master clocks are supplied for 24 V line voltage as standard.
Check whether the slave clocks and the master clock, (see page 68) have the same line voltage.
4. For line 1
 - Set the pulse length in menu 2.8 to "1.0s" (see page 50).
 - Activate or deactivate the power reserve in menu 2.7 (see page 49).
 - Set the cycle in menu 2.6 to "12 hrs. 48).
 - Set the mode in menu 2.5 to "Minute" (see page 47).
 - Select the time zone in menu 2.4, CET/CEST for Germany (see page 46).
5. For line 2
 - Set the pulse length in menu 2.8 to "1.0s" (see page 50).
 - Activate or deactivate the power reserve in menu 2.7 (see page 49).
 - Set the cycle in menu 2.6 to "60 sec. 48).
 - Set the mode in menu 2.5 to "Seconds" (see page 47).
 - Select the time zone in menu 2.4, CET/CEST for Germany (see page 46).
6. Connect the minute pulse inputs of all slave clocks in parallel to the terminals of line 1.
(see page 27).
7. Connect the second pulse inputs of all slave clocks in parallel to the terminals of line 2
(see page 27).
8. Set all slave clocks of these lines exactly to **any, but uniform time, e.g. 12:00:00**.
All 3 hands (hrs./min./sec.) must be positioned exactly!
9. This slave clock time must now be entered in menu 2.3 NU time:
"12:00" for hr./min. (line 1), **"00"** for seconds (line 2). (see page 46).
10. Now switch on the clock lines in menu 2.2 "Status" with status "on" (see page 45).
All slave clocks of these lines now set themselves to the current time.
11. Once the setting process is complete, the polarity must be changed for slave clocks that are **exactly 1 minute** slow (did not get the 1st pulse): For analogue clocks, disconnect the plug for the **minute pulse input on** the movement ① and turn ②, see illustration and reconnect ③. Correct the 1 minute "by hand" on the setting wheel of the movement ④, see illustration on page 31.
12. When the setting procedure is completed, the polarity must be changed for slave clocks that are **exactly 1 second** slow (did not get the 1st pulse). For analogue clocks, disconnect the plug for the **second pulse input on** the movement ⑤ and turn ⑥, see illustration and reconnect ⑦. Correct the 1 second "by hand" on the setting wheel of the movement ⑧, see illustration on page 31. These instructions are also enclosed with the PEWETA slave clocks.

Changing the polarity (A/B) for slave movements with minute and second pulse input



Second pulse slave clock 24 V, creeping minute

The article numbers of PEWETA slave clocks start with 75...

1. Switch off the clock line in menu 2.2 "Status" with "off" (see page 45).
2. Slave clocks and master clocks are delivered for 24 V line voltage as standard. Check that the slave clocks and the master clock (see page 68) have the same line voltage.
3. Connect the second pulse inputs of all slave clocks in the line in parallel to the terminals provided in the master clock. (see page 27).
4. Set all slave clocks of this line manually at the setting wheels of the movement exactly to **any, but uniform time**. This arbitrary time should be close to the current time.
If the time difference is too great, these second slave clocks will "wait" up to 22 hours and will therefore not set themselves immediately.
5. Set the pulse length in menu 2.8 to "1.0s" (see page 50).
6. Activate or deactivate the power reserve in menu 2.7 (see page 49).
7. Set the cycle in menu 2.6 to "12. hrs" (see page 48).
8. Set the mode to "Second" in menu 2.5 (see page 47).
9. Select the time zone in menu 2.4 (CET/CEST for Germany) (see page 46).
10. Now enter the time set in point 4 in menu 2.3 "NU time" (see page 46) (hrs./min./sec.).
11. Switch on the clock line in menu 2.2 "Status" with "Status on".
All slave clocks of this line now set themselves to the current time.
12. Once the setting process is complete, the polarity must be changed for slave clocks that are **exactly 1 second** slow (has not utilised the 1st pulse).
For analogue clocks, disconnect the plug for the **second pulse input** at the movement ⑤ and turn it ⑥, see illustration above, and reconnect it ⑦. Correct the 1 second "by hand" at the setting wheel of the movement ⑧, see illustration above.

Slave clock minute pulse 24 V/12 V with synchronous second 230 V/50 Hz

The article numbers of the PEWETA slave clocks start with **74...**

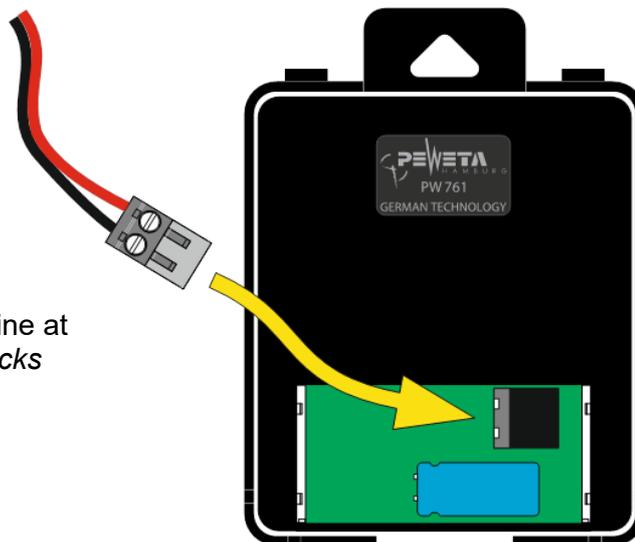
Commissioning as for minute slave clocks 71..., (see page 29). The second hand is supplied by the separate 230 VAC/50 Hz mains voltage to be provided by the customer.

DCFport24 Telegram Slave Clock

The article numbers of PEWETA slave clocks start with **81...** or **83...**

1. Switch off the clock line in menu 2.2 "Status" with "off" (see page 45).
2. Connect all *DCFport24 telegram slave clocks* of a line in parallel to the provided terminals in the master clock (see page 27). A non-uniform/random h/m/s hands position with *DCFport24 telegram slave clocks* is intended and should be ignored.
3. The polarity of the line (A/B) does not need to be observed.
4. Activate or deactivate the power reserve in menu 2.7 (see page 49).
5. Set the mode to "DCF port" in menu 2.5 (see page 47).
6. Switch on the clock line in menu 2.2 "Status" with "on" (see page 45).
7. All *DCFport24 telegram slave clocks* of this line set themselves to the current time.

Connection of the slave clock line at
DCFport24 Telegram slave clocks



DCFport24 + Minute Pulse

DCFport24 and minute pulse slave clocks can be operated together on 1 line.
The article numbers of PEWETA slave clocks start with **71...**, **74...**, **81...** or **83...** .

1. Switch off the clock line in menu 2.2 "Status" with "off" (see page 45).
2. Slave clocks and master clocks are delivered for 24 V line voltage as standard. Check that the slave clocks and the master clock (see page 68) have the same line voltage.
3. Connect all slave clocks of the line in parallel to the designated terminal in the master clock (see page 27).
4. Set all **minute pulse slave clocks** of this line manually (for analogue clocks, set the hands on the movement) exactly to **any, but uniform time** (e.g. 12:00).
Ignore the hand position of the *DCFport24 telegram slave clocks*.
5. The pulse length in menu 2.8 cannot be changed and is set automatically.
The display shows "[AUTO]".
In readjustment mode the pulse length is 2 seconds (see page 50).
6. Activate or deactivate the power reserve in menu 2.7 (see page 49).
7. Set the cycle in menu 2.6 to "12 hrs. (see page 48).
If digital clocks are also or only connected, set the cycle in accordance with the list on page 48.
8. Set the mode in menu 2.5 to "DCF+Min" (see page 47).
9. Select the time zone in menu 2.4 (CET/CEST for Germany) (see page 46).
10. Now enter the time set in point 4 in menu 2.3 "line time" (see page 46) (e.g. 12:00).
11. Switch on the clock line in menu 2.2 "Status" with status "on" (see page 45).
All *DCFport24 telegram slave clocks* and minute pulse slave clocks of this line automatically set themselves to the current time.
12. When the setting procedure is completed, the polarity must be changed for minute pulse slave clocks that are **exactly 1 minute** slow (did not get the 1st pulse): For analogue clocks, disconnect the plug for the minute pulse input at the movement ①, turn ② and reconnect ③ . Correct the 1 minute "by hand" at the setting wheel of the movement ④ , see illustration page 29.

Connection of the switching channels

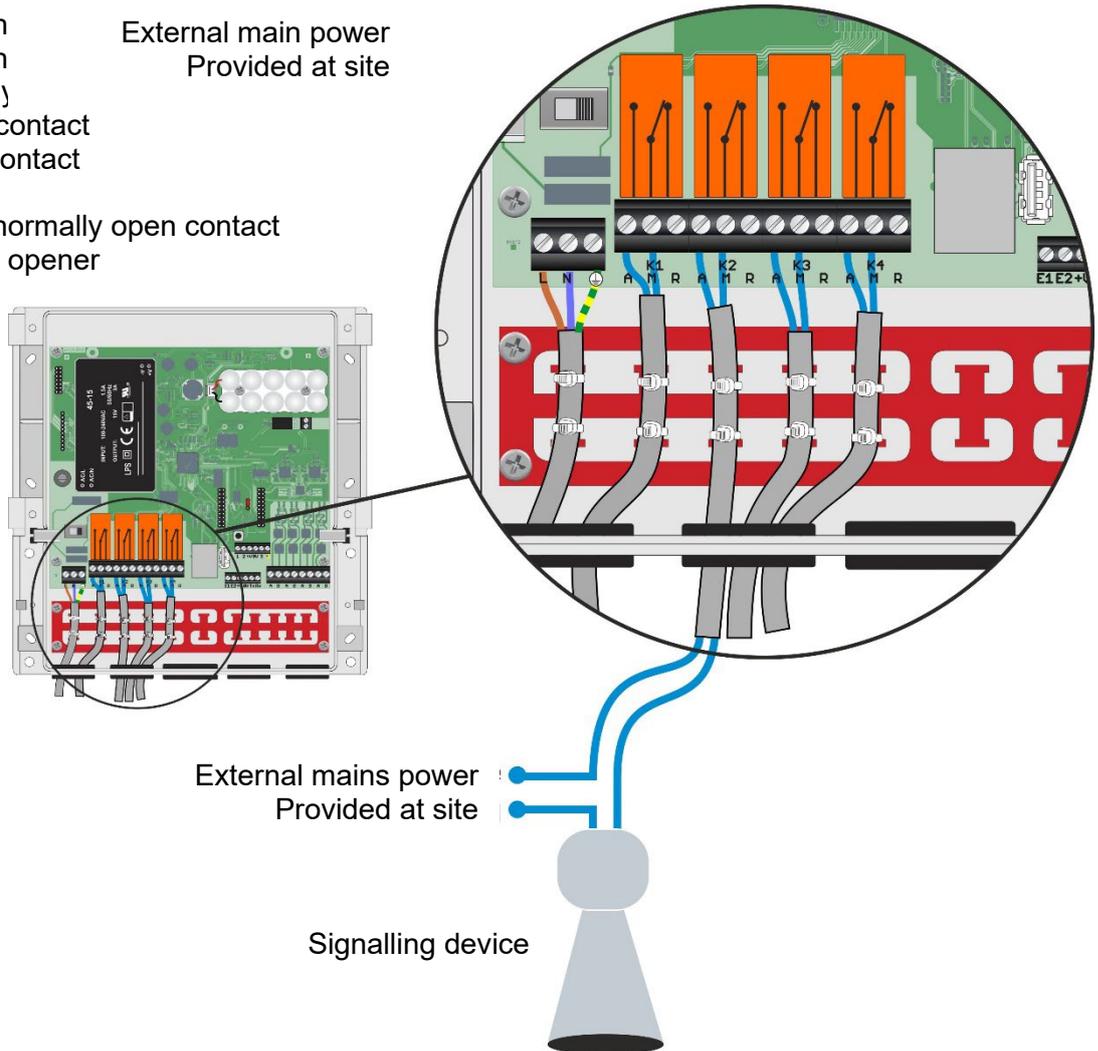
The switching channels, if included in the scope of delivery, are used to switch optical and/or acoustic signalling devices (break horns, gongs, etc.) and/or to switch various devices (ventilation, lighting, etc.) on and off.

- All relay contacts (changeover contacts) are potential-free.
The supply voltage for all devices to be switched must be provided by the customer.
- Each relay contact can be loaded with max. 250 VAC/2A.

The abbreviations have the following meaning:

K1=	Switching ch	External main power
K2=	Switching ch	Provided at site
A	= Normally	
M	= Middle contact	
R	= Break contact	

A and M form a normally open contact
M and R form an opener



The electronics are protected against interference as far as possible. However, in case of exceptionally high interference, an influence cannot be ruled out. To reduce interference to a minimum, the following points should be observed during installation:

1. Do not mount the master clock directly next to sources of interference, such as contactors, high-current lines, solenoid valves, thyristor controls, etc.
2. Directly switched inductive loads should be suppressed with suitable interference suppression filters such as varistors, RC elements, etc.
3. Inductive and capacitive loads place an extremely high load on the relay contacts of the channel outputs. Therefore, check whether isolating relays or contactors should be installed.



The switching contacts continue to be operated by the power reserve battery (option) in the event of a power failure. For the function of the connected loads, the loads must be equipped with their own power reserve/ UPS.

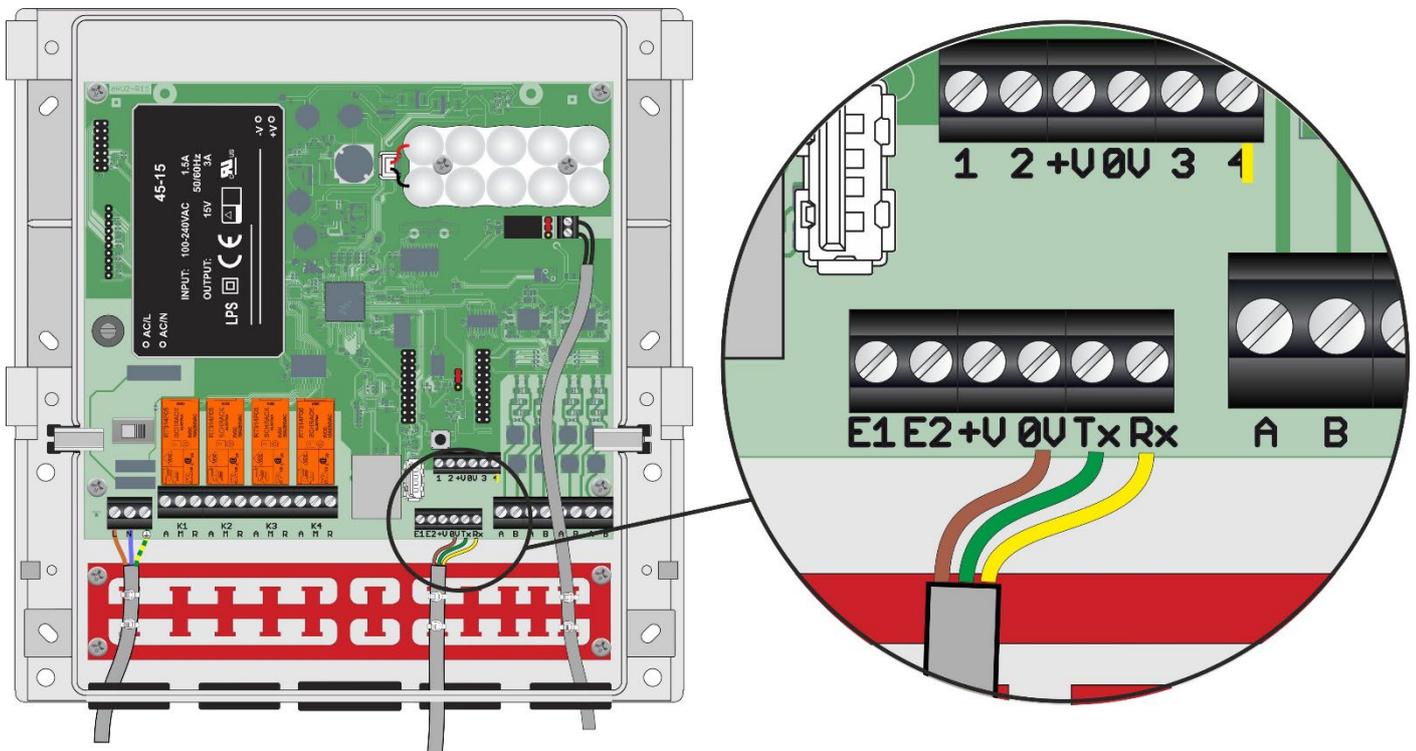
RS232 data interface

Time protocol via the RS232 data interface

The RS232 interface of the master clock outputs time and date every second in ASCII format. In the menu "5.4 System" (see page 67) the protocol must be switched on.

The RS232 interface is connected to the terminals 0V, Tx and Rx, see illustration.

0V = GNG / Ground
 Tx = TxD / Transmit Data
 Rx = RxD / Receive Data



8 bits per character
 No parity
 1 stop bit
 9600 baud

Time protocol output: **hh:mm:ss w dd.mm.yy[CR]**
 Example: **23:45:59 7 27.03.22**

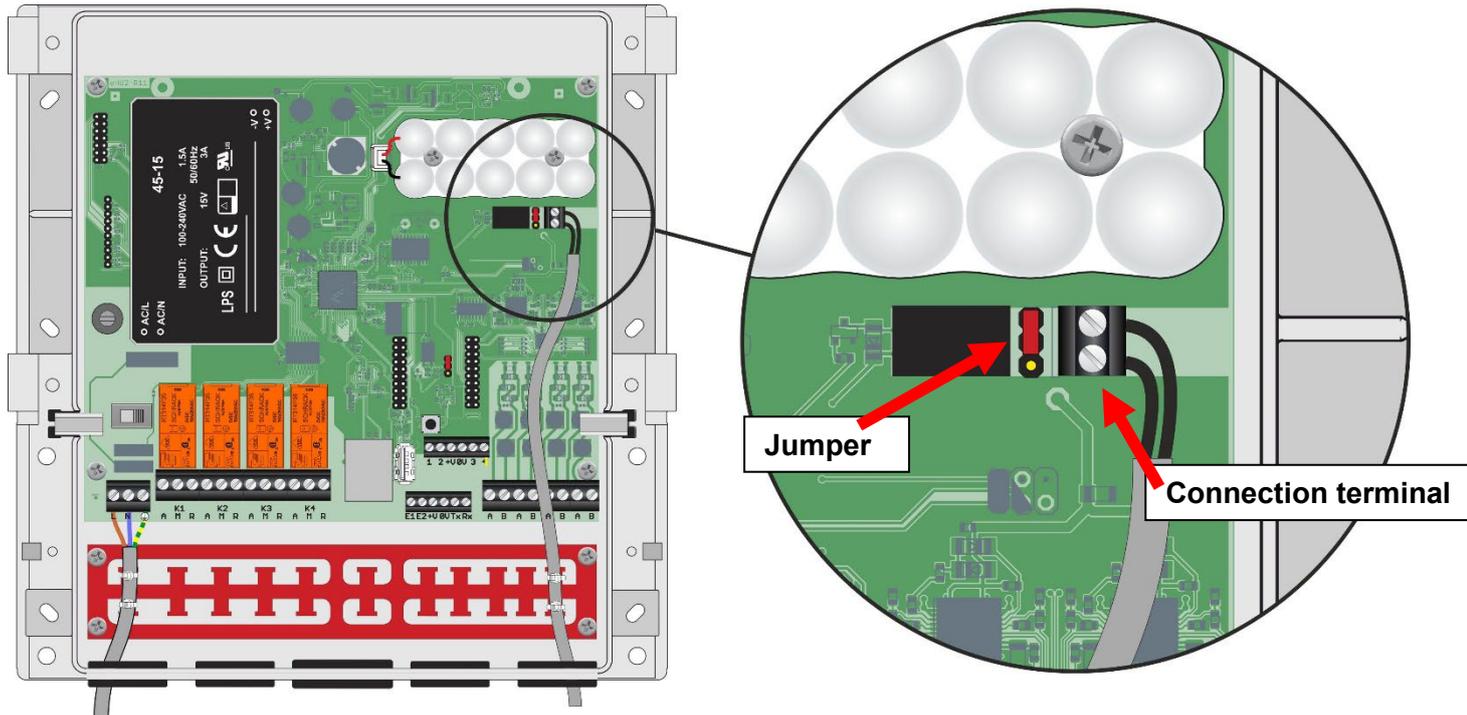
W = Placeholder for the day of the week in numerical sequence from 1 to 7, Monday = 1
 CR = A CR (carriage return) follows at the end of the time protocol.

Alarm contact

The alarm contact for forwarding error messages is an option. The alarm contact cannot be retrofitted at a later date.

To the left of the connection terminal is a jumper, see illustration.
 If the jumper bridges the middle and upper contact, the relay is a "break contact".
 If the jumper bridges the middle and lower contacts, the relay is a "normally open" contact.

The alarm contact is potential-free and can be loaded with max. 30V/0.5A.



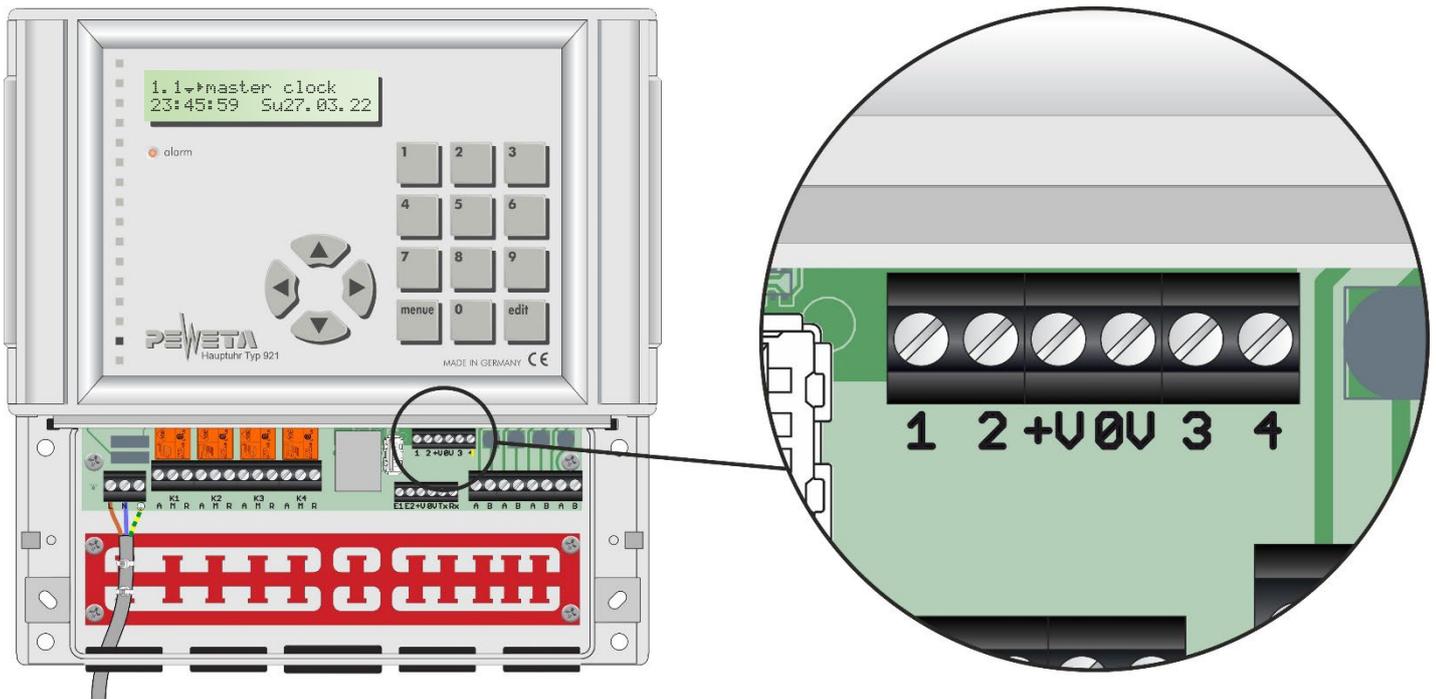
Error messages can also be reported via LAN.

Connection of options 1 and 2

The master clock has two connection terminals that optionally extend the functionality of the master clock. If no option has been ordered, the connection terminals have no function.

In the standard version without function.

If occupied, see separate information attached to the master clock.



Menu 1 - Master clock

Menu 1.1

Master clock with system time and date

Menu 1.1 is the start menu; it is displayed after start-up. If no key is entered for 10 minutes, the master clock display returns to menu 1.1.

```
1.1 master clock
23:45:59 Sun27.03.22
```

The arrows ▼► show with which arrow key on the keyboard the next menu item can be reached (see page 19).

The displayed system time and system date can only be seen here, but not changed.

Menu 1.2

Time base

The following options can be supplied as a time base for the master clock:

- DCF77 radio receiver (synchronisation of the system time to the radio signal of the DCF77 transmitter)
- GNSS radio receiver (synchronisation of the system time to satellite signals)
- NTP client (synchronisation of the system time with an NTP time server via network)

The rate deviation in quartz mode is approx. +/- 0.1 seconds/24 hours.

Menu 1.2 shows whether the master clock has regularly synchronised with the time base, when the last synchronisation took place and whether the quality of the signal from the time base is currently sufficient for synchronisation.

Time base selection

If the master clock is supplied with a DCF77 radio receiver and without the GNSS or NTP client options, time base "DCF" is already selected and cannot be changed.

If the master clock was delivered without radio receiver and without other options (time base will be quartz), also "DCF" is displayed as time base.

DCF" is displayed as time base and cannot be changed.

If the master clock is supplied with the option „GNSS radio receiver“ and/or with the option "NTP client", the time base is selected in menu 1.2:

Select the menu (see page 19).

```
1.2 Master clock
Timebase^DCF ?
```

Press the "edit" key.

The available time bases (DCF, GNSS and/or NTP) can be selected with the arrow keys ▲ or ▼.

Confirm with "edit".

```
1.2 Master clock
Time base^NTP ?
```

Confirm with "edit".

Control of continuous DCF77 radio reception

Select the menu (see page 19).

```
1.2# master clock
tinebase DCF ✓ ▶
```

A **check mark** indicates that the master clock has **successfully** synchronised to the DCF77 radio signal within the last 24 hours.

```
1.2# master clock
tinebase DCF ? ▶
```

A **question mark** indicates that the master clock has **not** synchronised to the DCF77 radio signal within the last 24 hours. The DCF77 radio receiver must be aligned, the master clock runs in quartz mode.

If the master clock is put into operation without a DCF77 radio receiver, it runs in quartz mode. The display of the question mark instead of the check mark is then correct.

Control of continuous GNSS radio reception

```
1.2# master clock
tinebase GNSS ✓ ▶
```

A **check mark** indicates that the master clock is within **successfully synchronised** to the signal of the GNSS satellites during the satellites.

```
1.2# master clock
tinebase GNSS ? ▶
```

A **question mark** indicates that the master clock has **not synchronised to** the GNSS satellite signal within the last 24 hours. The GNSS radio receiver must be aligned, (see page 25). The master clock is running in quartz mode

If the master clock is put into operation without a GNSS radio receiver, it runs in quartz mode. The display of the question mark instead of the check mark is then correct.

Control of continuous synchronisation with an NTP server

```
1.2# master clock
tinebase NTP ✓ ▶
```

A **check mark** indicates that the master clock is **successfully synchronised** with an NTP server in the last 24 hours.

```
1.2# master clock
tinebase NTP ? ▶
```

A **question mark** indicates that the master clock has **not** synchronised with an NTP server within the last 24 hours. The network settings must be checked.

If the master clock is put into operation without a connection to an NTP server, it runs in quartz mode. The display of the question mark instead of the check mark is then correct.

Checking the last synchronisation: Date

If the arrow key ▶ is now pressed, the submenu **last synchronisation: date** is called up.

```
1.2# master clock
1.sync. 27.03.22 *▶
```

This shows the **date on which** the master clock last synchronised to the current time. The information is given in system time.

Checking the last synchronisation: Time

Pressing the arrow key ▶ again calls up the submenu **last synchronisation: time**.

```
1.2# master clock
1.Sync.      23:59:45 +
```

This shows the **time** at which the master clock last synchronised to the current time.
The information is given in system time.

Radio reception quality control - DCF77

Pressing the arrow key ► calls up the DCF77 radio reception quality submenu.

```
1.2# master clock
quality      -■■■■+ 4
```

Here, 3 bars show how good the DCF77 radio reception quality is. This visual representation supports the positioning and alignment of the DCF77 radio receiver (DCF77 antenna).

- ■■■■+ = Good to very good radio reception, probable synchronisation after 3 minutes.
- ■■■ + = Sufficient radio reception, synchronisation possible.
- ■■ + = Poor radio reception, there is **no** synchronisation.
- + = No radio reception, no DCF77 antenna connected, there is no Synchronisation.

The display is updated every second.

If the display drops from 3 bars to 1 or 0 bars, synchronisation takes place after 3 minutes at the earliest. For synchronisation, between 3 and 2 bars must always be displayed for at least 3 minutes.

In the 59th second, no time signal is transmitted and no bars are displayed, This is **not a** sign of poor or no radio reception.

Radio reception quality control - GNSS

Pressing the arrow key ► calls up the GNSS radio reception quality submenu.

```
1.2# master clock
quality      -■■■■+ 5
```

Here, 3 bars show how good the GNSS radio reception quality is. This visual representation supports the alignment of the GNSS radio receiver.
The number behind the bars, in this example "5", indicates the number of received satellites.

- ■■■■+ = good to very good GNSS reception. More than 3 satellites are received.
- ■■■ + = sufficient GNSS reception. 3 satellites are received.
- ■■ + = 0 to 2 satellites are received, there is **no** synchronisation.
- + = GNSS antenna not connected.

IPV4 Address of the NTP server

Pressing the arrow key ► calls up the "Server" submenu.

```
1.2# master clock
svr. 192.168.050.009
```

The IPV4 address of the NTP server with which the master clock was last synchronised is displayed here.

Menu 1.3

Setting the time zone

The time zone for the system time of the master clock is selected here. The time zone for the slave clock lines is selected in another menu item and can be selected separately for each line.

The factory setting is "CET/CEST" (Central European Time/Central European Summer Time).

Change the time zone if the master clock is put into operation in a country outside the CET/CEST time zone or the summer/winter time changeover for CET/CEST is omitted.

Select the menu item: "menu, 1, 6".

```
1.3# master clock  
timezone CET/CEST
```

The currently selected time zone for the system time is displayed. To change it, press the "edit" key.

```
1.3 master clock  
timezone #Tokyo
```

Now the desired **time zone for the** system time can be selected with the arrow keys ▲▼. Confirm the entry with 'edit'.

There are 16 time zones stored in the master clock, which can be selected in menu 1.3.

Example 1: The master clock is installed in **Germany**: Select "CET/CEST" (factory setting).

Example 2: The master clock is mounted in **England**: Select "WEZ/WESZ" (for Western Europe).

Deposited time zones in menu 1.3

Selection-Menu 1.3	Standard time zone (Wintertime)	Difference to UTC	Daylight saving time Time zone	Difference to UTC
Los Angeles	Pacific Standard Time (PST)	-8	Pacific Daylight Time (PDT) Start: Second Sunday in March End: First Sunday in November	-7
Denver	Mountain Standard Time (MST)	-7	Mountain Daylight Time (MDT) Start: Second Sunday in March End: First Sunday in November	-6
Dallas	Central Standard Time (CST)	-6	Central Daylight Time (CDT) Start: Second Sunday in March End: First Sunday in November	-5
New York	Eastern Standard Time (EST)	-5	Eastern Daylight Time (EDT) Start: Second Sunday in March End: First Sunday in November	-4
Brasilia	Brasília Time (BRT)	-3	No summer time	
UTC	Universal Time Coordinated (UTC)	0	No summer time	
GMT/WESZ	Western European Time (GMT)	0	Western European Summer Time (WESZ) Start: Last Sunday in March End: Last Sunday in October	+1
CET	Central European Time (CET)	+1	No summer time	
CET/CEST	Central European Time (CET)	+1	Central European Summer Time (CEST) Start: Last Sunday in March End: Last Sunday in October	+2
CEST	No standard time (winter time)		Central European Summer Time (CEST)	+2
OEZ/OESZ	Eastern European Time	+2	Eastern European Summer Time (CEST) Start: Last Sunday in March End: Last Sunday in October	+3
Moscow	Moscow Standard Time	+3	No summer time	
Mumbai	India Standard Time (IST)	+5:30	No summer time	
Beijing	China Standard Time (CST)	+8	No summer time	
Tokyo	Japan Standard Time (JST)	+9	No summer time	
Sydney	Australian Eastern Standard Time (AEST)	+10	Australian Eastern Daylight Time (AEDT) Start: First Sunday in October End: First Sunday in March	+11

As of April 2022. All information is non-binding. Please observe national announcements accordingly.

Menu 1. 4

Setting the current time (system time), manually

If the time in menu 1.1 differs from the current time, it can be set in menu 1.4.



If the system time and system date are set manually and the master clock synchronises with a time base (DCF77 radio receiver, GNSS radio receiver, NTP server...), the system time and system date are overwritten again after synchronisation.

Select the menu item: "menu, 1, 4".

```
1.4# master clock
time      23:45:59
```

If the "edit" key is now pressed...

```
1.4  master clock
time      ■3:45:59
```

...the current **time** can be entered here with the numeric keys "0" to "9" (a bar flashes during the entry above the number that can be changed).



If the time has been entered completely, the entry must be confirmed by pressing the "edit" key, only then will the time be accepted.
If the "edit" key was pressed by mistake and the first number flashes, the operation can be undone by pressing the "menue" key without making any changes.

Menu 1. 5

Setting the current date (system date), manually

If the date in menu 1.1 differs from the current date, it can be set in menu 1.5.

Select the menu item: "menu, 1, 5".

```
1.5# master clock
date      27.03.22
```

If the "edit" key is now pressed...

```
1.5  master clock
date      ■7.03.22
```

...the current **date** can be entered here with the numeric keys "0" to "9" (a bar flashes during the entry above the number that can be changed).
Confirm with "edit".

Menu 1.6

Changing the hour display (12/24 hour format)

The hours can be shown in the master clock display in either 24-hour or 12-hour format. 12-hour format. The **factory setting is 24-hour format**.

Select the menu item: "menu, 1, 6".

```
1.6# master clock
disp. hrs.      24 hrs.
```

If the "edit" key is now pressed...

```
1.6  master clock
disp. hrs.      *12 hrs.
```

...the desired format can be selected with the arrow keys ▲ or ▼. Confirm with "edit".

Example: 24 hour format:

```
1.1#*master clock
23:45:59 Su27.03.22
```

12 hour format:

```
1.1#*master clock
11:45:59P Su27.03.22
```

(a stands for am, p for pm)

Menu 1.7

Changing the date display

The date display in the master clock display can be set as "**Day. Month. Year**" or as "**Month/Day/Year**" month/day/year.

The **factory setting is "Day. Month. Year" → "d.m.y"**.

Select the menu item: "menu, 1, 7".

```
1.7# master clock
disp. date      d. m. y
```

If the "edit" key is now pressed...

```
1.7  master clock
disp. date      *m/d/y
```

...the desired format can be selected with the arrow keys ▲ or ▼. Confirm with "edit".

Example:

d.m.y:

```
1.1#*master clock
23:45:59 Su27.03.22
```

m/d/y:

```
1.1#*master clock
23:45:59 Su03/27/22
```

Menu 2 - Lines

Menu 2.1

Current consumption of the slave clock lines

The current load of the slave clock lines is **displayed** here in amperes (A).
If the master clock has only one or two lines, only one or two values are displayed here.



The load capacity depends on the line voltage and the type and number of slave clocks. In the chapter "Line load" on page 27 you can see how many slave clocks you can connect per line.

Select the menu item: "menu, 2, 1".

```
2.1+ lines
0.00 0.00 0.00 0.00
```

The current values measured for each slave-clock line are current values in amperes (A) are displayed. A display only takes place current is flowing, i.e. for minute lines only at the beginning of each full minute.



DCFport24 telegram slave clocks have an inrush current of 12 mA. During operation they load the slave clock line with 2.4 mA per movement. The total load in running operation (displayed value in menu 2.1) for *DCFport24 telegram slave clocks* must not exceed 0.12 amperes. If the value is exceeded, the slave clock line goes into overload when it is switched on (e.g. after a power failure) (see page 64).

Menu 2.2

Switching lines on and off

The slave clock lines can be switched on and off here. The **factory setting is "off"**.

Select the menu item: "menu, 2, 2".

```
2.2+ line 1
state      off
```

Select the desired **line with** the numeric keys "1" to "4".... For example, press the "2" key to change to line 2.
To change the status, press the "edit" key.

```
2.2+ line 1
state      ^on
```

The status is selected with the arrow key ▼ or ▲ and confirmed with "edit". If the status is changed to "On", all slave clocks of this line set themselves to the current time (system time). If the status is changed to "Off", no pulses are output on this line and the slave clocks stop.

Menu 2.3

Line time - Slave clock time

If a line time is entered here that deviates from the system time, this line time and thus the slave clocks are tracked from the entered time to the system time (current time).

Select the menu item: "menu, 2, 3".

```
2.3 line 1
line time 23:59
```

Select the desired line with the numeric keys "1" to "4". For example, press the key "2" to change to line 2. Confirm with "edit" to change the line time/NU time.

```
2.3 line 1
line time 3:59
```

Enter the time with the numeric keys "0" to "9" and confirm with "edit".

The format of the line time depends on the mode (menu 2.5) and cycle (menu 2.6). For example, with mode: "Second" and cycle: "60 seconds" only seconds and no hours/minutes can be entered. With mode: "DCF-Port" the system time is always output, the line time cannot be set for *DCFport24 telegram slave clocks*.

Menu 2.4

Time zone for the slave clock lines (world time function)

Here, different time zones can be selected and assigned for each individual slave clock line. The **factory setting** is "CET/CEST".

By assigning **different time zones** on different lines, slave clocks can be operated as a **world time clock**.

Select the menu item: "menu, 2, 4".

```
2.4 line 1
timezone CET/CEST
```

Select the desired line with the number keys "1" to "4". For example, press the key "2" to change to line 2. Confirm with "edit" to change the time zone.

```
2.4 line 1
timezone Tokyo
```

...now the desired time zone can be selected with the arrow keys ▲ or ▼. Confirm with "edit".

There are 16 time zones stored in the master clock, which can be selected in menu 2.4.

The same time zones are stored that can be selected for the system time.

You will find a list on page 42.

Example of a world time clock:

```
2.4# line 1
tinezone New York
```

```
2.4# line 2
tinezone CET/CEST
```

```
2.4# line 3
tinezone Peking
```

```
2.4# line 4
tinezone Sydney
```



If slave clocks with minute impulse are connected for this example, additional slave clocks for other world times whose time zone does not include a summer/winter time changeover can be connected to line 3 "Beijing". These additional slave clocks must be set to the current local time once during initial commissioning.

Menu 2. 5

Mode (pulse type)

In menu 2.5, the pulse type matching the slave clocks is selected.

Select the menu item: "menu, 2, 5".

```
2.5# line 1
node      minute
```

Select the desired line with the numeric keys "1" to "4". For example, press the key "2" to change to line 2. Confirm with "edit" to change the mode.

```
2.5 line 1
node      ↗minute
```

Now the desired mode can be selected with the arrow keys ▲ or ▼. Confirm with "edit".

The following pulse types are available, **factory setting is "Minute"**:

- Minute = pole-changing minute pulses for controlling **minute slave clocks**
- DCFport24* = DCF77 telegram for controlling PEWETA ***DCFport24 telegram slave clocks***
- DCF+Min = Parallel operation of **minute slave clocks** and ***DCFport24 telegram slave clocks***
- 1/2 minute = pole-changing half-minute pulses for controlling **half-minute slave clocks**
- Second = pole-changing second impulses to control the second hand of a **second slave clock**
(for minute/second slave clocks, the minute pulse of a 2nd line is also required).

Menu 2. 6

Enter cycle

In menu 2.6 the cycle for the resetting operation is entered. A digital clock with a 24-hour display must be reset longer after a 13-hour power failure than an analogue clock with a 12-hour display.

Select the menu item: "menu, 2, 6".

```
2.6# line 1
cycle 12 hrs.
```

Select the desired line with the number keys "1" to "4". For example, press the key "2" to change to line 2. Confirm with "edit" to change the cycle.

```
2.6 line 1
cycle *12 hrs.
```

Now the desired cycle (see list below) can be selected with the arrow keys ▲ or ▼. Confirm with "edit".

The following cycles are available, **factory setting is "12 hrs.**

- 60 sec. = for the seconds pulse input in all minute/second slave clocks.
- 12 hrs. = for all slave clocks with minute or half-minute pulse and for all second slave clocks with creeping minute.
- 24 hrs. = for all digital slave clocks with 24-hour display.
- 1 week = for all digital slave clocks with additional date display.
- [AUTO] = for all PEWETA *DCFport24 telegram slave clocks* analogue and digital. "[AUTO]" is set automatically, cannot be changed.



If slave clocks with different cycles are operated on 1 slave clock line, select the higher value. Example: On one line, slave clocks with minute pulse (cycle 12 hours) and digital clocks with 24-hour display (cycle 24 hours) are operated together, in this case select cycle 24 hours.

Menu 2.7

Activate power reserve - deactivate

If the master clock is equipped with power reserve batteries, the power reserve for each line is switched on or off separately here in menu 2.7. The **factory setting is "on"**.



For master clocks with at least two slave clock lines, the duration of the power reserve of one line can be increased by deactivating the power reserve of other lines.

Select the menu item: "menu, 2, 7".

```
2.7# line 1
battery yes
```

Select the desired line with the number keys "1" to "4". For example, press the key "2" to change to line 2. To change the power reserve, confirm with "edit".

```
2.7 line 2
battery no
```

The power reserve is selected with the arrow key ▼ or ▲.
"Yes" activates the power reserve.
"No" deactivates the power reserve.

If power reserve batteries are included in the scope of delivery of the master clock, the slave clock lines will continue to operate in the event of a power failure and the connected slave clocks will continue to show the current time.

If the line voltage drops below 21 V (in 24 V operation) or below 10 V (in 12 V operation), the slave clock lines are stopped in power reserve mode, the slave clocks remain stopped. The master clock stores the time and date of the power failure and sets all connected slave clocks to the current time when the power returns.

Menu 2.8

Pulse length - Set pulse pause

In menu 2.8 the duration (= pulse length) of the minute pulses, half-minute pulses and second pulses is set. The **factory setting is "1.0s" (1 second)**.

Select the menu item: "menu, 2, 8".

```
2.8 line 1
imp. len. 1.0s
```

Select the desired line with the numeric keys "1" to "4". For example, press the key "2" to change to line 2. Confirm with "edit" to change the pulse length.

```
2.8 line 1
imp. len. 1.0s
```

Use the numeric keys "0" to "9" to enter the desired pulse length. A bar flashes above the number that can be changed. The maximum value of the pulse length is 9.9 seconds. Confirm the value with "edit".

Impulse breaks

The pulse pause results automatically from the pulse length.

Examples:

The pulse length displayed in menu 2.8 corresponds to the values "Normal operation/pulse length in seconds".

in the table below:

Pulse type	Normal operation		Readjustment mode	
	Pulse length in seconds	Pulse pause-one seconds	Pulse length in seconds	Pulse pause-one seconds
Minute pulse	0,5	59,5	0,5	1,0
Minute pulse	1,0	59,0	1,0	2,0
Minute pulse	2,0	58,0	2,0	4,0
Minute pulse	3,0	57,0	3,0	6,0
Second pulse	0,2	0,8	0,5	0,5
Second pulse	0,5	0,5	0,5	0,5
Second pulse	1,0	0,0	0,5	0,5
DCF+MIN	automatic	automatic	automatic	automatic
DCFport24	automatic	automatic	automatic	automatic



The factory setting of 1.0 second of pulse length is optimal for all PEWETA slave clocks. An extension leads to longer reset times. An extension may be necessary under certain circumstances for special "large clock movements/tower clock movements". A shortening leads to shorter reset times, but can also lead to slave clocks going wrong. We recommend leaving the pulse length at the factory setting of 1.0 second.

Menu 3 - Switching

Menu 3.1

Switching channels Status

From left to right (channel 1 to 4), the display shows the current status of the individual switching channels.

If the master clock has no or two switching channels, only no or two values are displayed here. Switching channels are a component of the design (see page 8) and cannot be retrofitted.

Select the menu item: "menu, 3, 1".

```
3. 1+channels
state      - 2 -. 4.
```

Example:

Channel 1: not switched
 Channel 2: switched
 Channel 3: not switched, blocked
 Channel 4: switched, blocked

```
3. 1+channels
state      - - - -
```

In the factory setting, **no** switching events are programmed. (factory setting). The display therefore shows a dash (-) for each existing switching channel (depending on the equipment of the master clock).

- A **number** (1 to 4) means that the corresponding channel is **switched**.
- A **dash (-)** means that the channel is **not switched**.
- A **dot to the right of a number** (4.) means that the **switched channel** is **blocked**.
- A **dot to the right of a dash** (-.) means that the **unswitched channel** is blocked.

Menu 3.2

Switching program input

Quick guide

Programming examples can be found on the **following pages**.

Select the menu item: "menu, 3, 2".

1. Select channel:

Press the numeric keys "1" to "4", the number of the corresponding switching channel is displayed.

2. To create a new switching event:

Press the arrow key ► repeatedly until the word "new" appears in the upper right-hand corner of the display (if it is not already displayed). Confirm with the "edit" key.

3. Select program mode:

Use the arrow keys ▲ or ▼ to select between:

- weekly program
- every year
- yearly by list.

Confirm with the "edit" key.

4. Select day:

For **weekly**: Use the keys "1" to "7" (1 = Mon, 7 = Sun) to select one or more **days of the week**

For **every year**: Use the keys "0" to "9" to select the **date**

For **yearly by list**: Use the arrow keys ▲ or ▼ to select the **event** (public holidays).

Confirm with the "edit" key.

5. Enter the time:

Enter the time with the keys "0" to "9".

Confirm with the "edit" key.

6. Select functions:

Use the arrow keys ▲ or ▼ to select between:

- **impulse**: Switches the channel on and off again for a desired period of time.
- **on**: Switches the channel on.
- **off**: Switches the channel off.
- **lock**: Disables all programmed circuits for the respective selected channel.
- **unlock**: Cancels a lock.

Confirm with the "edit" key.

If you select "on", "off", "lock" and "unlock", the entry ends here.

Continue from here if the **"impulse"** function has been selected.

7. Enter duration:

Use the "0" to "9" keys to enter the duration in seconds for which the respective channel is to be switched. 1 to 60 seconds are possible. The channel switches from the time entered under point 5 for the duration of the seconds entered here. Confirm with the "edit" key.

8. Repetitions:

Enter the number of repetitions with the numeric keys "0" to "3". A circuit entered under the "impulse" function can be **repeated** 1, 2 or 3 times after a pause (the pause duration corresponds to the switching duration). If 0 is entered for "repetitions", the circuit is **not** repeated. If "2" is entered, the circuit is repeated 2 times, i.e. the circuit is executed 3 times (1 x switching time + 2 repetitions).

Confirm with the "edit" key.

Example 1: Weekly program, "pulse"

The break bells of a school are connected to **channel 2**. From **Monday to Friday** at **08:00:00** each day for **4 seconds**. It is programmed as follows:



Accidental entries can be cancelled with the "menu" key without creating a switch event.

Select the menu item: "menu, 3, 2".

```
3.2# channel 2 new#
----- 00:00:00 ---
```

Select switching channel:

Select **channel 2** by pressing the number key "2".

```
3.2# channel 2 new#
----- 00:00:00 ---
```

Create a new switch event:

Press the ► key until "**new**" appears in the top right-hand corner of the display. If no switching events have been programmed yet, "new" is already displayed. Confirm with "edit".

```
Program mode
#every week
```

Select program mode:

"**every week**" appears in the display. Confirm with the "edit" key.

```
weekday(s)
MTWTF--
```

Enter days of the week:

The numeric keys "1", "2", "3", "4" and "5" for the days of the week. Press **Monday "1" to Friday "5"**. Confirm entry with "edit".

```
time
08:▯0:00
```

Enter time:

Enter the time "08" with the numeric keys. (a bar flashes above the changeable number). Confirm entry with "edit".

```
function
#pulse
```

Enter function:

"**impulse**" appears in the display. Confirm with the "edit" key.

```
duration(1-60 sec)
▯4
```

Enter pulse duration:

Enter pulse duration "**04**" seconds with the numeric keys. (a bar flashes above the changeable number). Confirm with the "edit" key.

```
repeat(0-3)
0
```

Enter repetition:

Since a repetition of the circuit is not desired, enter the value "0" (a bar flashes above the changeable number) and confirm with "edit".

```
3.2# channel 1 #
MTWTF-- 08:00:00 PU
```

The switch event has been created. An overview of the entered values is displayed. "**pu**" at the bottom right indicates that the "**pulse**" function has been programmed.

Press the ► key until "**new**" appears in the top right-hand corner of the display to create another switching event. Press the ◀ key to call up switching events that have already been created. Use the "menu, 1, 1" keys to access the main menu.

Example 2: Weekly program, "on"

A light is connected to **channel 1**. It is to be switched on every **Wednesday** at **17:45:00** ("off" see example 3, bottom of this page). It is programmed as follows:

Select the menu item: "menu, 3, 2".

```
3.2# channel 1 new#
----- 00:00:00 --
```

Select switching channel:

Select **channel 1** by pressing the number key "1".

```
3.2# channel 1 new#
----- 00:00:00 --
```

Create a new switch event:

Press the ► key until "new" appears in the top right-hand corner of the display.

If no switching events have been programmed yet, "new" is already displayed. Confirm with "edit".

```
Program mode
#every week
```

Select program mode:

"**every week**" appears in the display. Confirm with the "edit" key.

```
weekday(s)
--W----
```

Enter days of the week:

Press the digit keys "3" for the weekday **Wednesday** "3". Confirm entry with "edit".

```
time
17:45:##
```

Enter time:

Enter the time "17:45" with the numeric keys. (a bar flashes above the changeable number). Confirm with the "edit" key.

```
function
#on
```

Enter function:

Select "**on**" with the arrow key ▼. Confirm with the "edit" key.

```
3.2# channel 1 #
--W---- 17:45:00 on
```

The switch event has been created. An overview of the entered values is displayed. "**on**" at the bottom right indicates that the function "**on**" has been programmed.

Press the ► key until "new" appears in the top right-hand corner of the display to create another switching event. Press the ◀ key to call up switching events that have already been created. Use the "menu, 1, 1" keys to access the main menu.

Example 3: Weekly program, "off"

The lighting connected to **channel 1** is to be switched off again at **23:00:00**.

```
function
#off
```

The switch event is created as described in example 2, but when entering the time, "**23:00:00**" must now be entered. and select "**off**" under Function. Confirm each entry with the "edit" key.

Example 4: Yearly program, "on"

The lighting connected to **channel 1** is to be switched on **additionally** on **22.11.** at **18:00:00.**

Select the menu item: "menu, 3, 2".

```
3.2# channel 1 new#
----- 00:00:00 --
```

Select switching channel:

Select **channel 1** by pressing the number key "1".

```
3.2# channel 1 new#
----- 00:00:00 --
```

Create a new switch event:

Press the ► key until "new" appears in the top right-hand corner of the display.

If no switching events have been programmed yet, "new" is already displayed. Confirm with "edit".

```
Program mode
#every year
```

Select program mode:

Select "**every year**" with the arrow key ▼.

Confirm with the "edit" key.

```
date
22.1#.
```

Enter date:

Enter the date "**22.11.**" with the numeric keys.

(a bar flashes above the changeable number).

Confirm with the "edit" key.

```
time
18:#0:00
```

Enter time:

Enter the time "**18:00**" with the numeric keys.

(a bar flashes above the changeable number).

Confirm with the "edit" key.

```
function
#on
```

Enter function:

Select "**on**" with the arrow key ▼.

Confirm with the "edit" key.

```
3.2# channel 1 #*
22.11 18:00:00 on
```

The switch event has been created.

An overview of the values entered is displayed.

"on" at the bottom right indicates that the function "on" has been programmed.

Press the ► key until "new" appears in the top right-hand corner of the display to create another switching event. Press the ◀ key to call up switching events that have already been created. Use the "menu, 1, 1" keys to access the main menu.

Example 5: Yearly program, "off"

The lighting connected to **channel 1** (see page 55) is to be switched off again at **23:00:00 on 22.11.** switched off again.

Select the menu item: "menu, 3, 2".

```
3.2# channel 1 new#
----- 00:00:00 --
```

Select switching channel:

Select **channel 1** by pressing the number key "1".

```
3.2# channel 1 new#
----- 00:00:00 --
```

Create a new switch event:

Press the ► key until "new" appears in the top right-hand corner of the display.

If no switching events have been programmed yet, "new" is already displayed. Confirm with "edit".

```
Program mode
#every year
```

Select program mode:

Select "**every year**" with the arrow key ▼.

Confirm with the "edit" key.

```
date
22.1#.
```

Enter date:

Enter the date "**22.11.**" with the numeric keys. (a bar flashes above the changeable number).

Confirm with the "edit" key.

```
time
23:#0:00
```

Enter time:

Enter the time "**23:00**" with the numeric keys. (a bar flashes above the changeable number).

Confirm with the "edit" key.

```
function
#off
```

Enter function:

Select "**off**" with the arrow key ▼.

Confirm with the "edit" key.

```
3.2# channel 1 #
22.11 23:00:00 of
```

The switch event has been created.

An overview of the entered values is displayed.

"of" at the bottom right indicates that the function has been programmed "off".

Press the ► key until "new" appears in the top right-hand corner of the display to create another switching event. Press the ◀ key to call up switching events that have already been created. Use the "menu, 1, 1" keys to access the main menu.

Example 6: yearly program, "lock"

The break time bells of a school are connected on **channel 2** (page 53). During the school holidays from **24 July 08:00:00 to 04 August 00:00:00** the break bells should not ring.

Select the menu item: "menu, 3, 2".

```
3.2# channel 2 new#
----- 00:00:00 --
```

Select switching channel:

Select **channel 2** by pressing the number key "2".

```
3.2# channel 2 new#
----- 00:00:00 --
```

Create a new switch event:

Press the ► key until "new" appears in the top right-hand corner of the display. If no switching events have been programmed yet, "new" is already displayed. Confirm with "edit".

```
Program mode
#every year
```

Select program mode:

Select "**every year**" with the arrow key ▼. Confirm with the "edit" key.

```
date
24.0#.
```

Enter date:

Enter the date "**24.07.**" with the numeric keys. (a bar flashes above the changeable number). Confirm with the "edit" key.

```
time
08:##0:00
```

Enter time:

Enter the time "**08:00**" with the numeric keys. (a bar flashes above the changeable number). Confirm with the "edit" key.

```
function
#lock
```

Enter function:

Select "**lock**" with the arrow key ▼. Confirm with the "edit" key.

```
3.2# channel 2 **
22.11 08:00:00 lo
```

The switch event has been created. An overview of the entered values is displayed. "**lo**" at the bottom right indicates that the function "lock" has been programmed.

Press the ► key until "new" appears in the top right-hand corner of the display to create another switching event. Press the ◀ key to call up switching events that have already been created.

Use the "menu, 1, 1" keys to access the main menu.



The circuits of the break bells (in our example 1 Mon.-Fri. 08:00:00 for 4 sec.) are blocked from 24.07. from 08:00:00 **for all following days**. In order to reactivate the switching on 04.08. from 00:00:00, this blocking must be cancelled ("unlock") with effect from 4 August, see Example 7 (Page 58).

Example 7: yearly program, "unlock"

The circuits which were blocked on **channel 2** (page 57) have to be **unlocked** again on **04 August, 00:00:00** hrs.

Select the menu item: "menu, 3, 2".

```
3.2# channel 2 new#
----- 00:00:00 ---
```

Select switching channel:

Select **channel 2** by pressing the number key "2".

```
3.2# channel 2 new#
----- 00:00:00 ---
```

Create a new switch event:

Press the ► key until "new" appears in the top right-hand corner of the display.

If no switching events have been programmed yet, "new" is already displayed. Confirm with "edit".

```
Program mode
#every year
```

Select program mode:

Select "**every year**" with the arrow key ▼.

Confirm with the "edit" key.

```
date
04.08.
```

Enter date:

Enter the date "**04.08.**" with the numeric keys.

(a bar flashes above the changeable number).

Confirm with the "edit" key.

```
time
00:00:00
```

Enter time:

Enter the time "**00:00**" with the numeric keys.

(a bar flashes above the number that can be changed).

Confirm with the "edit" key.

```
function
#unlock
```

Enter function:

Select "**unlock**" with the arrow key ▼.

Confirm with the "edit" key.

```
3.2# channel 2 #
04.08 00:00:00 un
```

The switch event has been created. An overview of the entered values is displayed. "**un**" at the bottom right indicates that the function "unlock" has been programmed.

Press the ► key until "new" appears in the top right-hand corner of the display to create another switching event. Press the ◀ key to call up switching events that have already been created.

Use the "menu, 1, 1" keys to access the main menu.

Program mode "yearly by list" (variable holidays)

If the circuit is on a public holiday whose date changes annually, the public holiday can be selected from a list:

Select the menu item: "menu, 3, 2".

```
3.2# channel 2 new#
----- 00:00:00 --
```

Select the switching channel:

Press the numeric keys "1" to "4" to display the number of the
The number of the corresponding switching channel is displayed.

```
3.2# channel 2 new#
----- 00:00:00 --
```

Create a new switch event:

Press the ► key until "new" appears in the top right-hand corner of
the display. If no switching events have been programmed yet,
"new" is already displayed.
is already displayed. Confirm with "edit".

```
Program mode
#yearly by list
```

Select program mode:

Select "yearly by list" with the arrow key ▼.
Confirm with the "edit" key.

```
date
#Rosenmontag
```

Enter date:

Use the ▲ and ▼ arrow keys to switch between the
stored public holidays/special days. The following are available for
selection:

Rosenmontag – Rose Monday

Karfreitag – Good Friday

Ostermontag – Easter Monday

Christi Himmelfahrt – Ascension of Jesus

Pfingstmontag – Whit Monday

Fronleichnam – Corpus Christi

```
time
08:00:00
```

Enter time:

Enter the desired time with the numeric keys.
(a bar flashes above the number that can be changed).
Confirm with the "edit" key.

```
function
#ON
```

Enter function:

Select the desired function "pulse", "on", "off",
"suppress" or "release". For the selection "pulse", select the dura-
tion and the repetitions.

```
3.2# channel 1 #+
Rosenmo. 08:00:00 on
```

The switch event has been created.

An overview of the values entered is displayed.

Press the ► key until "new" appears in the top right-hand corner of the display to create another switching
event. Press the ◀ key to call up switching events that have already been created.
Use the "menu, 1, 1" keys to access the main menu.

Menu 3.2

Change switch event

In menu 3.2 already entered switch events can be **changed**.

Select the menu item: "menu, 3, 2".

```
3.2# Channel 2 *#
MDMDF-- 08:00:00 FU
```

Select the switching channel:

Press the numeric keys "1" to "4" to display the number of the corresponding switching channel will be displayed.

```
3.2# Channel 2 *#
MDMDF-- 14:00:00 FU
```

Call switch event:

Use the ◀ or ▶ arrow keys to switch between the stored switch events until the switch event which should be changed appears.

Press the "edit" key



```
Program mode
-weekly
```

Change switch event

Change the individual entries of the switch event in each case with the arrow keys and numeric keys and confirm with the "edit" key or accept without making a change with the "edit" key.

```
3.2# Channel 2 *#
MDMDFSS 14:30:00 FU
```

The switch event has been changed.

An overview of the entered values is displayed.

Use the arrow keys ◀ or ▶ to switch between the stored switch events in order to change another switch event. Use the "menu, 1, 1" keys to return to the main menu.

Menu 3.2

Delete single switch events

In menu 3.2, switch events can be deleted **individually**.

Select the menu item: "menu, 3, 2".

```
3.2# channel 2    *+
MTWTF--  08:00:00 PU
```

Select the switching channel:

Press the numeric keys "1" to "4" to display the number of the corresponding switching channel is displayed.

```
3.2# channel 2    *+
MTWTF--  14:00:00 PU
```

Call up the switch event:

Use the ◀ and ▶ arrow keys to switch between the events until the switching event to be deleted appears.

Press the number key "0"

```
delete entry?
1=NO      2=YES
```

The display shows "Delete entry? "

No = 1

Yes = 2

Press the number key "2" to **delete** the event.

Press the number key "1" to remain the event.

Press the arrow keys ◀ or ▶ to call up another switch event that you want to delete. Use the "menu, 1, 1" keys to access the main menu.

Menu 3.3

Delete all switch events of a channel

In menu 3.3 **all** switching events of **a channel** can be deleted.

Select the menu item: "menu, 3, 3".

```
3.3# channel 3    *+
delete all?
```

Select the switching channel:

Press the numeric keys "1" to "4" to display the number of the corresponding switching channel.

Press the "edit" key

```
delete all?
1=NO      2=YES
```

The display shows "delete all?"

No = 1

Yes = 2

Press the number key "2" to **delete all** events.

Press the number key "1" to remain all events.

Press the ◀ or ▶ arrow keys to call up another channel for which you want to delete all switch events. you want to delete. Use the "menu, 1, 1" keys to go to the main menu.

Menu 3.4

Manually operating the switching channels

In menu 3.4, each **individual channel** can be switched **manually** via the keyboard.

Select the menu item: "menu, 3, 4".

```
3.4* channels
manual    - 2 - -
```

Select switching channel:

By pressing the numeric keys "1" to "4", the selected channel is switched on and the number of the corresponding channel is displayed as long as it is switched on. If the same key is pressed **again**, the channel is switched off.



Switching events that have already been entered are not changed or deleted!

Menu 4 - Messages

Menu 4.1

Display error messages

Select the menu item: "menu, 4, 1".

```
4.1 ← messages (2)
```

Number of messages:

The number of error messages is shown in brackets at the top right. The error messages are edited (cancelled) in menu 4.2. Press the arrow key ▼ to enter menu 4.2.

Possible error messages:

1. Short circuit on the slave clock line(s)
2. Overload of individual slave clock lines
3. Overload of the system (total line load/total output power of the master clock is exceeded)
4. Power failure
5. Undervoltage
6. Power reserve batteries empty - system stopped



A maximum of 8 messages are stored.

The most recent message always comes first.

As long as an error is stored, i.e. it has not been deleted (see menu 4.2), the red LED "alarm" below the display lights up and the alarm contact (option) is switched.

Menu 4.2

Edit error messages

In menu 4.2 the error message is displayed and can be deleted.

Select the menu item: "menu, 4, 2".

```
4.2 ← messages (1/2)
13 short circuit →
```

The messages are scrolled through with the arrow keys ◀▶ and **deleted** with the "edit" key, not fixed. In the example opposite, 1 of a total of 2 stored error messages is displayed.

When the error counter is to 0, the red alarm LED goes out.



"Deleting" the messages does

not eliminate the current error (in the example short circuit on slave clock line 3)! See the following pages.

1. Short circuit on slave clock line(s)

```
4.2* messages (2/2)
14 short circuit 4
```

First eliminate the error, in this case "short circuit on slave clock line "4". **Then** press the "edit" key to continue.

```
line 1 set?
1=NO      2=YES
```

Press the number key "2" (YES) to delete the message and to reset line 4 (The status is set to "ON") All connected slave clocks of this line reset themselves to the current time.

2. Lx overload (overload on individual slave clock lines)

The message "Lx overload" (x = no. of line) appears if the permissible load for a slave clock line has been exceeded. The line status (menu 2.2) of the corresponding line is set to "off", **the affected line is stopped**.

Troubleshooting: Reduce the number of connected slave clocks on the corresponding line or install a pulse amplifier (accessory). If the message is deleted by pressing the "edit" key in menu 4.2, the line can be reset in the dialogue which follows or it remains in the switched-off state.

3. Overload (total output power of master clock exceeded)

The message "Overload" appears if a line exceeds the total load of the master clock or if the sum of the loads of several or all slave clock lines exceeds the total load of the master clock. The line status (menu 2.2) of all lines is set to "off", **all lines are stopped**.

Troubleshooting: Reduce the number of connected slave clocks on the lines or install a pulse amplifier (accessory). All slave clock lines must be put back into operation manually in menu 2.3.

4. Power failure

The message "Power failure" appears when the **power supply** of the master clock (100-240 VAC/50-60 Hz, observe type plate) is no longer available. If the master clock has a power reserve battery (option), those slave clock lines remain in operation for which the function "Power reserve on" has been activated in menu 2.7. If the master clock does not have a power reserve, the master clock stops operation and all connected slave clocks remain in operation. The line status (menu 2.2) is set to "off", the lines are stopped. The display of the master clock and the alarm LED go out. When the power is restored, the master clock calculates the difference from the time of the power failure to the current time and resets all slave clock lines (all slave clocks) to the current time.

Troubleshooting: Make sure that power is applied to terminal ② (see page 15) is connected to the power supply and check the microfuse ① (see page 18). If the microfuse is **defective**, replace it. The message "Power failure" is **automatically** removed from the error list when the power supply is applied again.

If the error message "Power failure" is still displayed, the master clock must be sent to PEWETA for repair. If the "Power failure" message is deleted by pressing the "edit" button in menu 4.2, the error message will automatically reappear after 5 minutes.

5. Undervoltage

The message "undervoltage" appears if the power supply fails (100-240 VAC/50-60 Hz, observe the type plate) and if the voltage of the power reserve battery drops below 10 V. All slave clock lines are stopped.

Troubleshooting: This is a consequential error of the message "Power failure". For troubleshooting, see point 4 "Power failure". The message "undervoltage" is **automatically** removed from the error list when the power supply is applied again (after mains return). The lines are **automatically put** back into operation.

6. Power reserve battery (option) empty - System stopped

The message "Battery empty - system stopped" appears if the power supply of the master clock (100-240 VAC/50-60 Hz, observe rating plate) is no longer available, the master clock has a power reserve battery, but the voltage of the batteries is below 18 V (in 24 V operation) or below 8 V (in 12 V operation).

All slave clocks "stopped", even *DCFport24 telegram slave clocks* are no longer supplied with voltage and stopped. The master clock can no longer be operated via the keyboard. If the voltage of the batteries falls below 6 V, the display goes out. If the voltage drops below 4 V, the alarm LED goes out and the alarm relay opens.

Troubleshooting: This is a consequential error of the message "Undervoltage". For troubleshooting, see point 5 "Power failure". The message "Battery empty - system stopped" is **automatically** removed from the error list when power is restored (after power recovery). The lines are **automatically put** back into operation.

Menu 5 - System

Menu 5.1

System

In menu 5.1, system settings of the master clock can be changed.

Select the menu item: "menu, 5, 1".

```
5.1 → system
```

Press the arrow key ▼ to enter menu 5.2.

Menu 5.2

Change passcode for keyboard and web interface

The keypad can be locked with a passcode. The operation and programming of the master clock is thus protected against accidental changes or intentional manipulation.

The passcode is also required to log in for the web interface (see page 75).

Input via the key combination: "menu, 5, 2".

```
5.2 → system  
change pass code?
```

In menu 5.2 it is possible to change the passcode.

In the delivery state, the **code is 0000**, keypad is **not locked**. (Cancel with the "menu" key). If you want to change the code and activate the locking, press "edit".

```
old code:  
0000
```

First enter the **old** code with the numeric keys, i.e. **0000** if it has not been changed (a bar flashes above the bar during entry). Confirm the entry with "edit".

```
new code:  
_ _ _ _
```

If the **old** code was entered correctly, you will be prompted to enter a **new** code (a bar flashes above the bar during entry). Make a note of your selected 4-digit code and then enter the selected code.

Confirm entry with "edit".



Make a note of your passcode!

The lock is automatically activated **10 minutes** after the last keyboard operation!

Code **0000** deactivates the keypad lock, **the keypad is not locked**.

Unlocking the keyboard

If the keypad has been locked, the operator is prompted to enter the keypad code:

```
please enter code:  
_ _ _ _
```

Enter the keypad code with the numeric keys "0" to "9" (a bar flashes above the changeable field) and confirm with "edit". The keypad is **unlocked** and will be locked again after 10 minutes without keypad actuation.

Menu 5.3

Set language

In menu 5.3 it is possible to choose between the languages German and English.
The factory setting is "German".

Select the menu item: "menu, 5, 3".

```
5.3# System
language German
```

If you want to **change** the language shown in the display, press "edit". If you do not want to change the language displayed, press "menu".

```
5.3 System
language *English
```

Select "**English**" with the arrow keys ▼.
 Confirm with the "edit" key.

```
1.1# master clock
23:45:59 Su27.03.22
```

The display shows the complete menu navigation in English language. The American formats for date and time can be adjusted in menu 1.6 and 1.7 if desired.

Menu 5.4

Switch RS232 interface on/off

In menu 5.4 the RS232 interface can be switched on and off.
Factory setting is "off".

Select the menu item: "menu, 5, 4".

```
5.4# system
RS232      off
```

Press the "edit" key...

```
5.4 system
RS232      *on
```

Use the arrow keys ▲ or ▼ to select "on" or "off" to **activate** or **de-activate** the sending of data on the RS232 interface.
 Confirm with the "edit" key.



The description of the RS232 interface can be found on page 35.

Menu 5.5

Line voltage 24V / 12V

In menu 5.5, you can choose between 24 V and 12 V for the voltage of the slave clock lines.
Factory setting is "24 V".

Select the menu item: "menu, 5, 5".

```
5.5# system
line volt 24V
```

Press the "edit" key...

```
5.5 system
line volt=12V
```

Use the arrow keys ▲ or ▼ to select between 24 V and 12 V.
 Confirm with the "edit" key.



Slave clocks and master clocks are delivered from the factory for 24 V line voltage.
 Only change the voltage if you want to connect 12 V slave clocks.



The line voltage of the master clock and the voltage of the slave clocks must always be identical.

Menu 5.6

Factory settings

Here all parameters of the master clock will be set back to the **factory presets**.
 Switch events entered (menu 3.2) are retained and are **not** deleted!



Attention!
 Here all entries, with the exception of the switch events, are reset to the factory presets.
 The options NTP server and NTP client must be set by entering the code be activated again (see page 83).

Select the menu item: "menu, 5, 6".

```
5.6# system
factory preset?
```

Press "edit"...

```
factory preset?
1=NO      2=YES
```

... and select:
 - Numeric key "1": Cancel process
 - Numeric key "2": Reset to factory settings

Menu 5.7

Update

In menu 5.7 you can update the system software of the master clock if a more recent version is available. An update fixes errors and/or expands the range of functions.

A new version, if offered, can be found on the Internet at the following link:

<https://www.peweta.com/download>

You will find the software version of your master clock in menu 5.7. A higher version number means a more recent software version.

Select the menu item: "menu, 5, 7".

```
5.7* System V1.01
update to _____
```

The software status is displayed at the top right.

If a more recent version is offered, download it.

Copy the file to a USB stick.

Use a USB stick with the following characteristics:

- Type: USB-A
- Size: Minimum 1 GB to maximum 32 GB
- Format: FAT32 (exFAT and other formats are not recognised)

```
5.7* system V1.01
update to V1.07
```

Insert the USB stick into the USB interface (See page 13, number 26).

The version number of the file on the USB stick appears at the bottom right of the display.

Press the "edit" button to confirm...

```
update system?
1=NO      2=YES
```

...and select:

- Numeric key "1": Cancel process
- Numeric key "2" Execute update

```
update successful
```

If the update was carried out successfully, it is confirmed.

Now remove the USB stick.

Press the "edit" key.

The master clock now starts with the new software version.



Depending on the scope of the update, the master clock may be reset to its factory settings. All line and system parameters must then be entered again. The switching events are not affected by this.

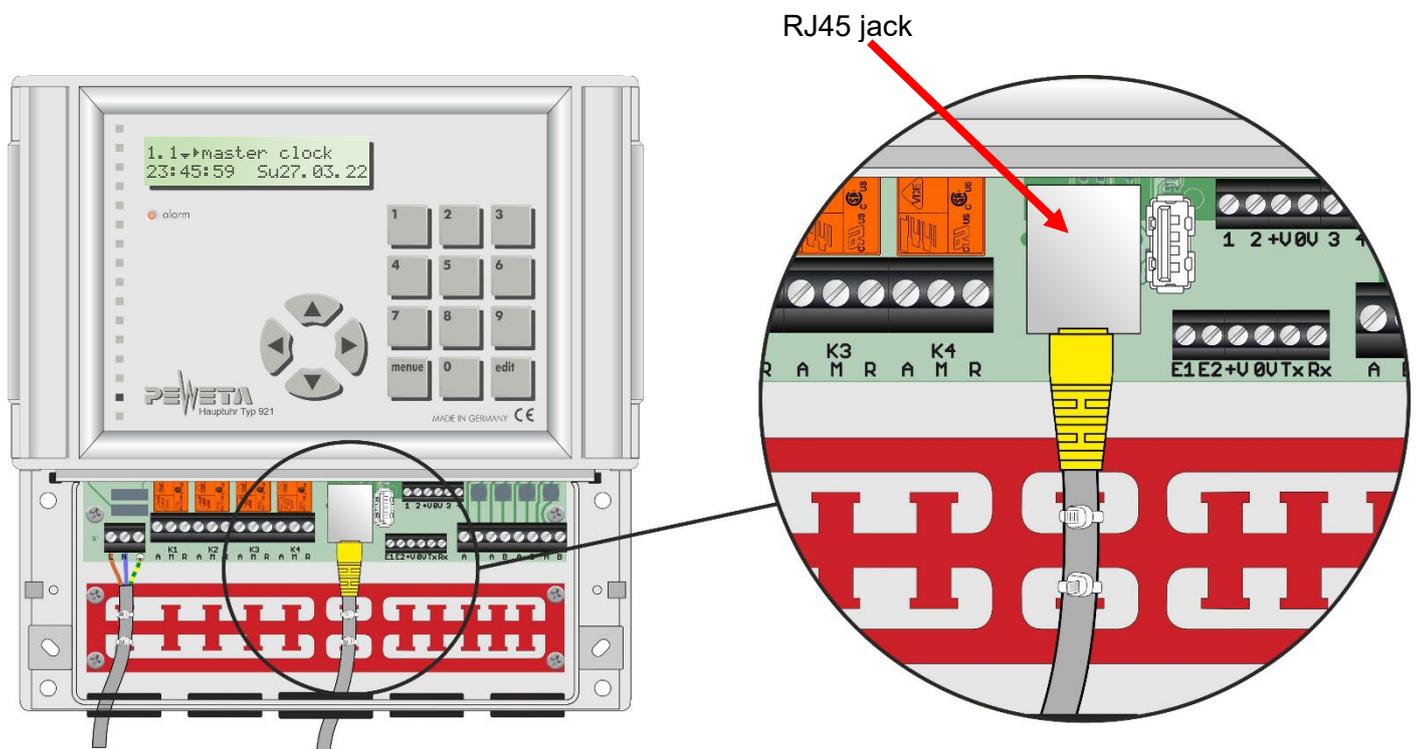
Menu 6 - Network

The master clock has a network interface RJ45 Ethernet IEEE 802.3 10/100Base-T for integration into a network/LAN. The network interface enables:

- Operation of all functions via an internet browser from a PC, mobile phone or tablet.
- Master clock as NTP server (option-99). Synchronises NTP clients such as NTP clocks, PCs, printers, etc.
- Synchronisation to an NTP time server (option, instead of DCF77 or GNSS radio receiver).
- Sending status and error messages via SYSLOG or e-mail.

Establish network connection

Connect your network to the RJ45 socket of the master clock.



Menu 6.1

Network

Select the menu item: "menu, 6, 1".

6. 1 → network

With the arrow key ▼ you enter the menu 6.2

Menu 6.2

DHCP

In menu 6.2 you can choose between DHCP and fixed IPv4.
Factory setting is "on".

Select the menu item: "menu, 6, 2".

```
6.2# network
DHCP on
```

Leave **"on"** for the assignment of the IPv4 parameters from a DHCP server. Continue to menu 6.3 with the arrow key ▼ ...

```
6.2 network
DHCP→off
```

...or confirm with the "edit" key and the arrow keys ▲.
 Select **"off"** to set the IPv4 parameters manually.
 Confirm with the "edit" key.

Menu 6.3

IPv4 address

In menu 6.3, the assigned IPv4 address is displayed if DHCP is activated ("on").
 If DHCP is deactivated ("off"), the IPV4 address can be entered here and is then displayed.

Select the menu item: "menu, 6, 3".

```
6.3#network
addr 192.168.001.100
```

If DHCP is "off" press the "edit" button....

```
6.3 network
addr 192.168.##00.000
```

...and enter the desired **IPv4 address** using the numeric keys (a bar flashes above the changeable value).
 Confirm with the "edit" key.



The factory setting for the host name consists of the letters "HU" followed by a minus sign and the last 6 digits of the Mac address. Example: "HU-507f00".
 The host name can be changed via the web interface in the System menu.

Menu 6.4

Net mask

In menu 6.4, the assigned netmask is displayed if DHCP is activated ("on").
 If DHCP is deactivated ("off"), the netmask can be entered here and is then displayed.

Select the menu item: "menu, 6, 4".

```
6.4# network
mask 255.255.255.000
```

If DHCP is "off" press the "edit" button....

```
6.4 network
mask 255.255.##00.000
```

...and enter the desired **netmask** using the numeric keys (a bar flashes above the changeable value).
 Confirm with the "edit" key.

Menu 6.5

Standard Gateway

In menu 6.5, the assigned standard gateway is displayed if DHCP is activated ("on").
If DHCP is deactivated ("off"), the standard gateway can be entered here and is then displayed.

Select the menu item: "menu, 6, 5".

```
6.5# network
gwaw 192.168.001.001
```

If DHCP is "off" press the "edit" button....

```
6.5 network
gwaw 192.168.##00.000
```

...and enter the address of the desired **standard gateway** using the numeric keys (a bar flashes above the changeable value).
Confirm with the "edit" key.

Menu 6.6

DNS server

In menu 6.6, the assigned DNS server is displayed if DHCP is activated ("on").
If DHCP is deactivated ("off"), the DNS server can be entered here and is then displayed.

Select the menu item: "menu, 6, 6".

```
6.6# network
DNS 192.168.001.005
```

If DHCP is "off" press the "edit" button....

```
6.6 network
DNS 192.168.##00.000
```

...and enter the address of the desired **DNS server** via the numeric keys (a bar flashes above the changeable value).
Confirm with the "edit" key.

Menu 6.7

MAC address

The MAC address of the master clock is displayed in menu 6.7.

Select the menu item: "menu, 6, 7".

```
6.7# network
mac 64fb81 507f00
```

Use the "menu, 1, 1" keys to access the main menu.

Menu 7 - NTP client

Menu 7 is only available if you have purchased the "NTP client" option and the option code has been entered on the web page (see page 83) has been entered. The option "NTP client" enables the synchronization of the system time of the master clock with an NTP server. The configuration can be done as described below via the keypad of the master clock or via the web page of the master clock (see from page 75).

Select the menu item: "menu, 7, 1".

```
7.1 → NTP client
```

NTP client:

with the arrow key ▼ continue to menu 7.2.

```
7.2 † NTP client
DHCP off
```

DHCP:

If NTP servers are transferred via "DHCP option 42", these can be adopted automatically. The NTP servers must be stored in your DHCP server under option 42. Press the "edit" key and set DHCP to "on" with the arrow key ▼. A maximum of 3 NTP servers are adopted.

Confirm with the "edit" key.

If the DHCP option 42 is not configured in your DHCP server, leave DHCP in this menu in "off" status and store up to 3 NTP servers in the following menu 7.3.

```
7.3 † NTP client
Srv1 16.40.135.3 ■
```

NTP server address:

If DHCP is set to "off" in menu 7.2, up to 3 NTP servers can be entered manually.

Press key 1 for NTP server 1, key 2 for NTP server 2 or key 3 for NTP server 3. To enter or change, confirm with the "edit" key (a bar flashes above the changeable number). If DHCP is set to "on" in menu 7.2, a change will be overwritten with the next DHCP request.

The IP address can only be entered numerically via the keypad.

Via the web page (see from page 75) you can assign an alphanumeric address (DNS).

```
7.4 NTP client
rx Multic † No
```

Receive multicast:

Press the "edit" key and set "rx Multic" to "**Yes**" with the arrow key ▼. Confirm with the "edit" key.

```
7.5 † NTP client
Srv1 24.000.001.001
```

Multicast address:

To enter or change, confirm with the "edit" key (a bar flashes above the changeable number). The default address is 224.000.001.001 according to IANA RFC 5771.

Confirm with the "edit" key.

Use the "menu, 1, 1" keys to access the main menu.



If all values have been entered in menu 7, the time reference must be set to NTP in menu 1.2 of the master clock (see "Selecting the time base" on page 38). Finally, check in menu 1.2 (see "Checking continuous synchronization with an NTP server" on page 39) whether synchronization is taking place.



If at least 1 NTP server is entered in menu 7.2, a request is made every 64 seconds.

Menu 8 - NTP server

Menu 8 is only available if you have purchased the "NTP server" option and the option code has been entered on the web page (see page 83) has been entered.

The "NTP server" option allows NTP clients to synchronize their time with the master clock.

The configuration can be done via the keypad of the master clock as described below or via the web page of the master clock (see from page 75).

Select the menu item: "menu, 8, 1".

8.1← NTP server

NTP server:

with the arrow key ▼ continue to menu 8.2.

8.2⊕ NTP server
Status OK

Status:

The status is displayed here:

OK = The master clock responds to an NTP request with a valid time.

Alarm = The master clock responds to an NTP request with set alarm bit and an invalid time.

The stratum is set to 16.

8.3⊕ NTP server
Stratum 1

Stratum:

The stratum is displayed here:

If a DCF77 or GNSS radio receiver is connected, the master clock is a stratum 1 NTP server.

If there is no synchronization to DCF77 or GNSS for 24 hours, the status is set to "Alarm" and the stratum changes to 16.

8.4 NTP server
tx Multic⊕No

Send multicast:

Press the "edit" key and set "ts Multic" to "**Yes**" with the arrow key ▼. Confirm with the "edit" key.

8.5* NTP server
McAd 24.000.001.001

Multicast address:

To enter or change, confirm with the "edit" key (a bar flashes above the changeable number). The default address is 224.000.001.001 according to IANA RFC 5771.

Confirm with the "edit" key.

8.6 NTP server
Interval⊕1024 sec.

Multicast Interval:

Here you can select the interval at which multicast is to be sent.

Press the "edit" key and use the arrow keys ▼▲ to select the desired interval.

Use the "menu, 1, 1" keys to access the main menu.



After switching on the master clock, e.g. during initial commissioning, the status is set to "Alarm" and the stratum to "16", NTP clients cannot synchronize with the master clock. As soon as the master clock has synchronized itself via DCF77 radio receiver, GNSS radio receiver or to an NTP server, the status changes to "OK".



The master clock can be NTP client and NTP server at the same time. The stratum of the master clock's NTP server is then equal to the stratum of the NTP server with which the master clock synchronizes **plus 1**.

Web interface

The web interface of the master clock is compatible with:

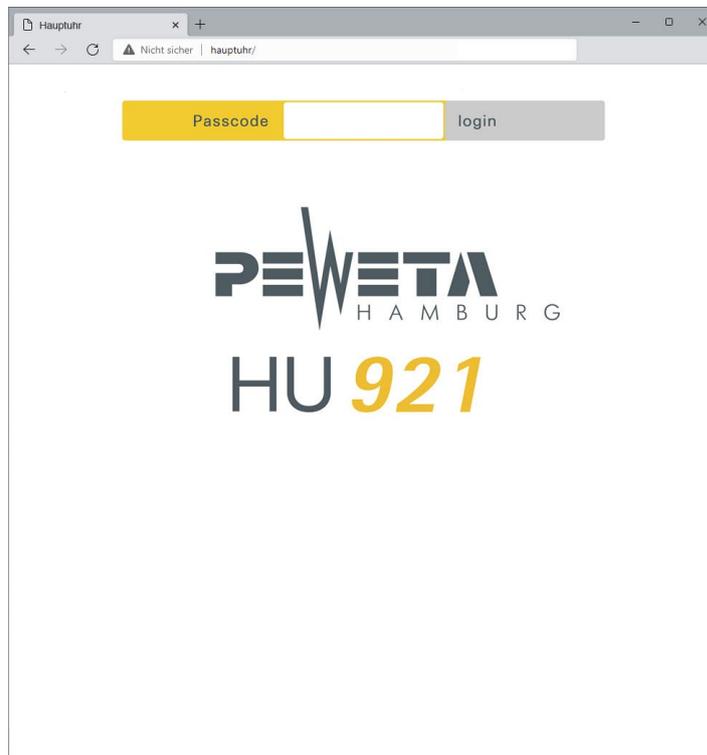
MS-Edge as of version 99
Mozilla Firefox as of version 97
Google Chrome as of version 99
Safari as of version 15

The factory setting for the host name of the master clock consists of the letters "HU" followed by a minus sign and the last 6 digits of the MAC address:

Example: "HU-507f00".

Enter the host name in the address line of your web browser and you will be taken to the web interface:

Example: <http://HU-507f04/>



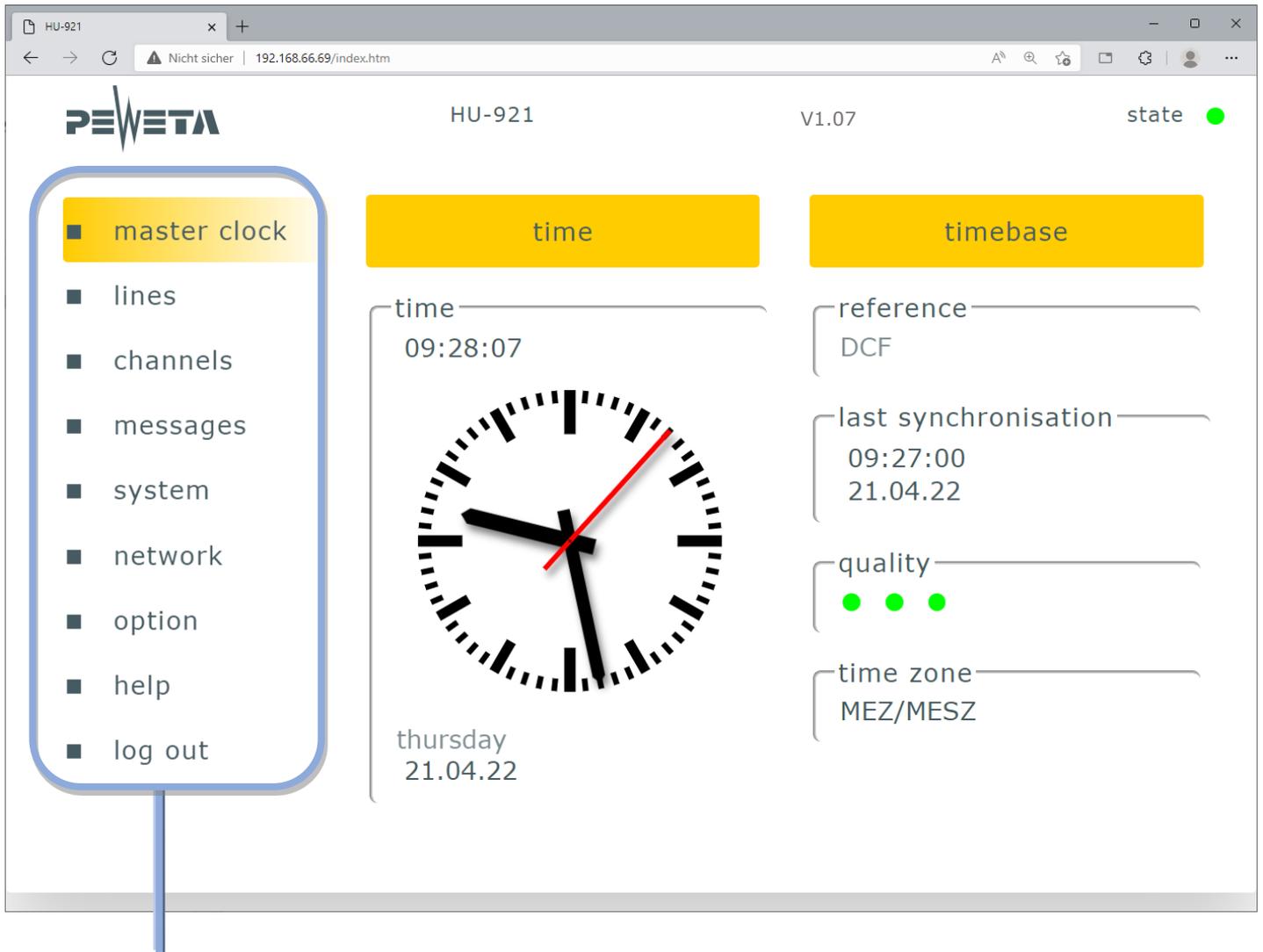
Passcode

The passcode for the web interface corresponds to the passcode in menu 5.2 (see page 66). Enter the passcode and confirm with "login".



Factory setting for the passcode is "0000
The passcode cannot be changed via the web interface.
The passcode can be changed via the keypad of the master clock in menu 5.2
(see page 66).

Main menu



Main menu

The main menu corresponds to the menu on page 19.

Master clock: Menu 1

Lines: Menu 2

Channels: Menu 3

Messages: Menu 4

System: Menu 5

Network: Menu 6

Option: Menu 7

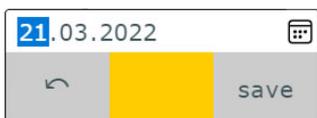
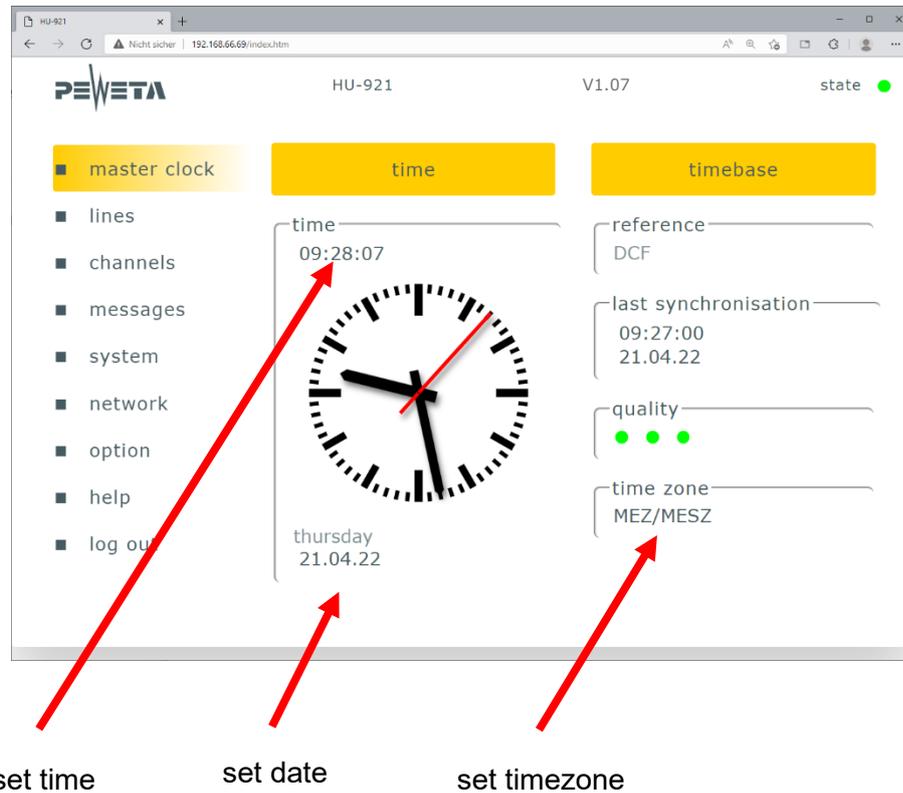
Help: Menu only in the web interface

Logout: Logout logs the user out of the master clock.

Master clock menu

Functions

The functions that can be selected and values displayed in the "master clock" menu correspond to the description of menu 1 on pages 38 to 44 of this manual.



Entries in the pop-up are cancelled by pressing the "arrow key" or confirmed with "save".

Lines menu

Functions

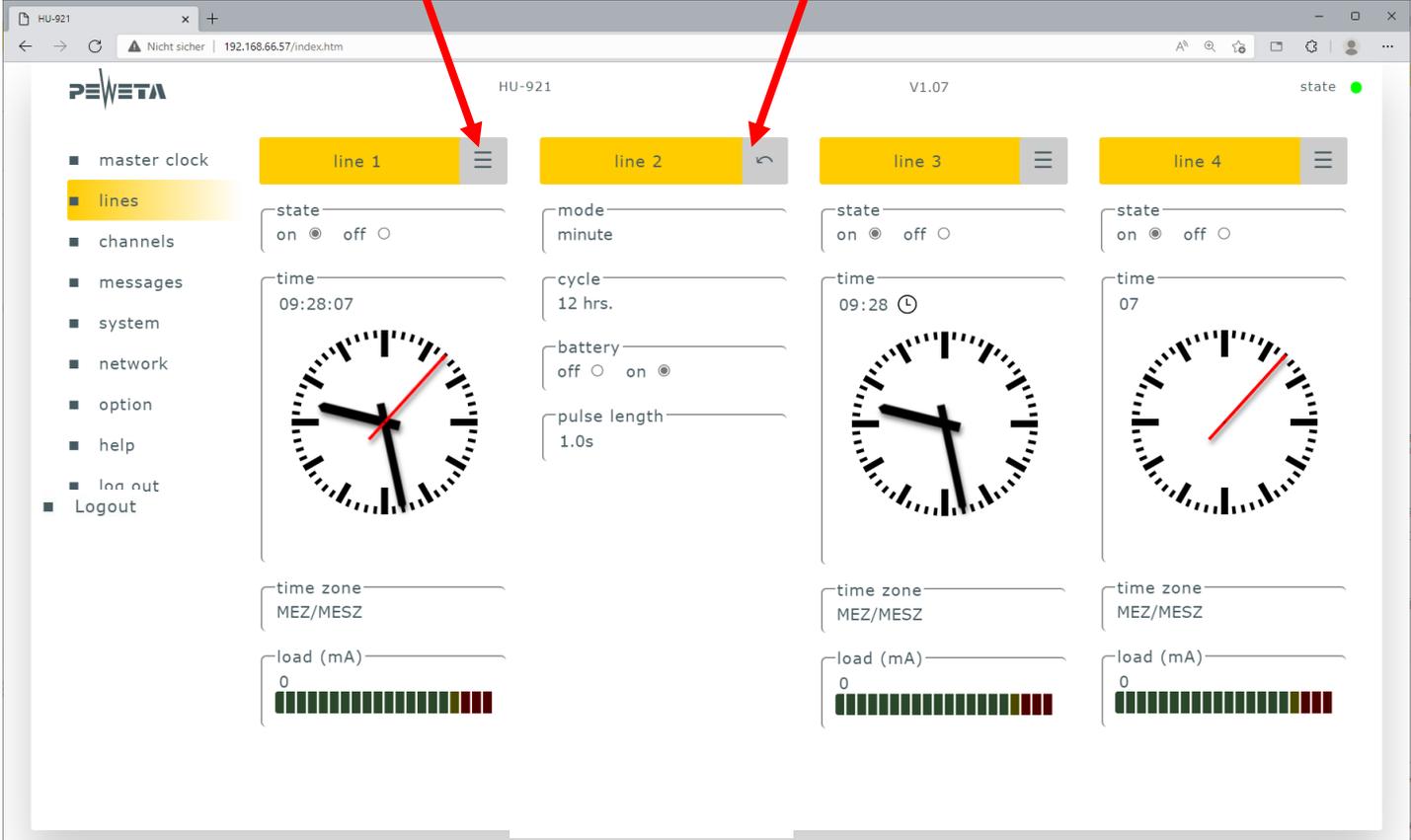
The functions that can be selected in the "Lines" menu and the values displayed correspond to the description of menu 2 on pages 45 to 50 of this manual.

Change to mode, cycle, power
reserve and pulse length



Back to status, time,
Time zone and load





The screenshot shows a web browser window displaying the PEWETA V1.07 interface for device HU-921. The 'lines' menu is active, showing four lines (line 1 to line 4). Each line has a yellow header bar with a menu icon. Line 1 is selected. The interface displays various settings for each line, including state (on/off), time, time zone (MEZ/MESZ), and load (mA). Line 2 has additional settings for mode (minute), cycle (12 hrs.), battery (off/on), and pulse length (1.0s). Red arrows point to the menu icons of line 1 and line 2, with text explaining the actions: 'Change to mode, cycle, power reserve and pulse length' and 'Back to status, time, Time zone and load'.



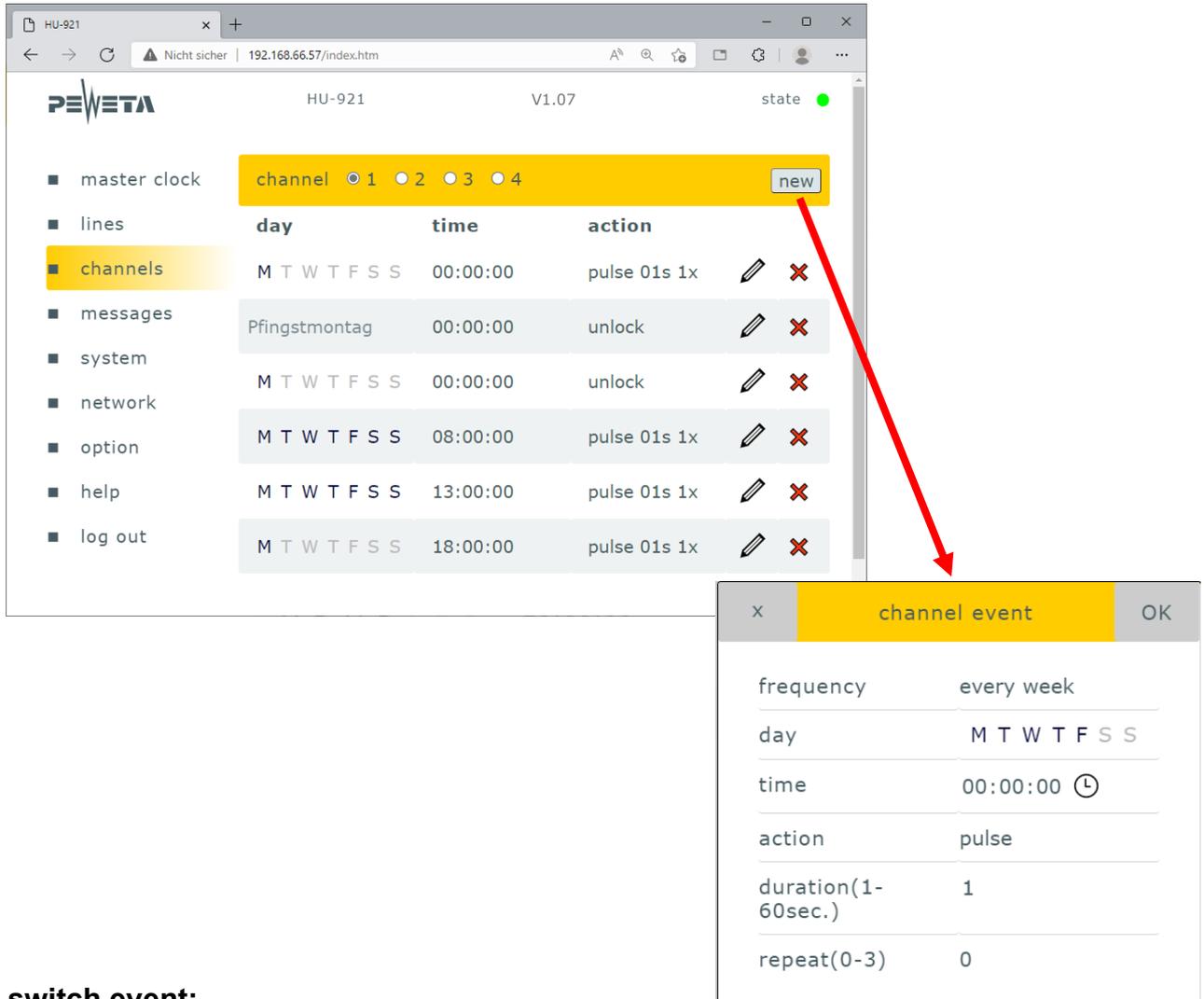
Before making any changes to the mode, cycle, power reserve and/or pulse length, set the status of the line to "Off".

All changes in this menu are applied immediately, there is no confirmation prompt. confirmation request.

Channels menu

Functions

The functions that can be selected in the "Channels" menu and the values displayed correspond to the description of menu 3 on pages 51 to 62 of this manual.



The screenshot shows the PEWETA web interface for device HU-921. The 'channels' menu is selected, displaying a table of events. A 'new' button is visible in the top right of the channels section. A dialog box titled 'channel event' is open, showing the following configuration:

parameter	value
frequency	every week
day	M T W T F S S
time	00:00:00 ⌚
action	pulse
duration(1-60sec.)	1
repeat(0-3)	0

Create switch event:

1. Select channel 1 to 4.
2. Button "new" opens a dialogue box, enter the desired values here.
3. Confirm with "OK" or cancel with "X".

Delete switch event:

Press  to delete the adjacent switch event.

Delete with "OK" or cancel with "X"

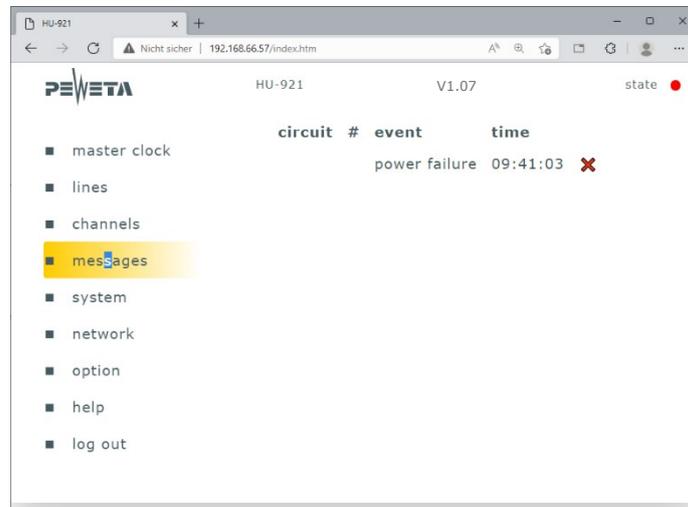


Edit switch event:

Press  to edit the adjacent switch event.

Messages menu

The events displayed in the "Messages" menu correspond to the description of menu 4 on pages 63 to 65 of this manual.



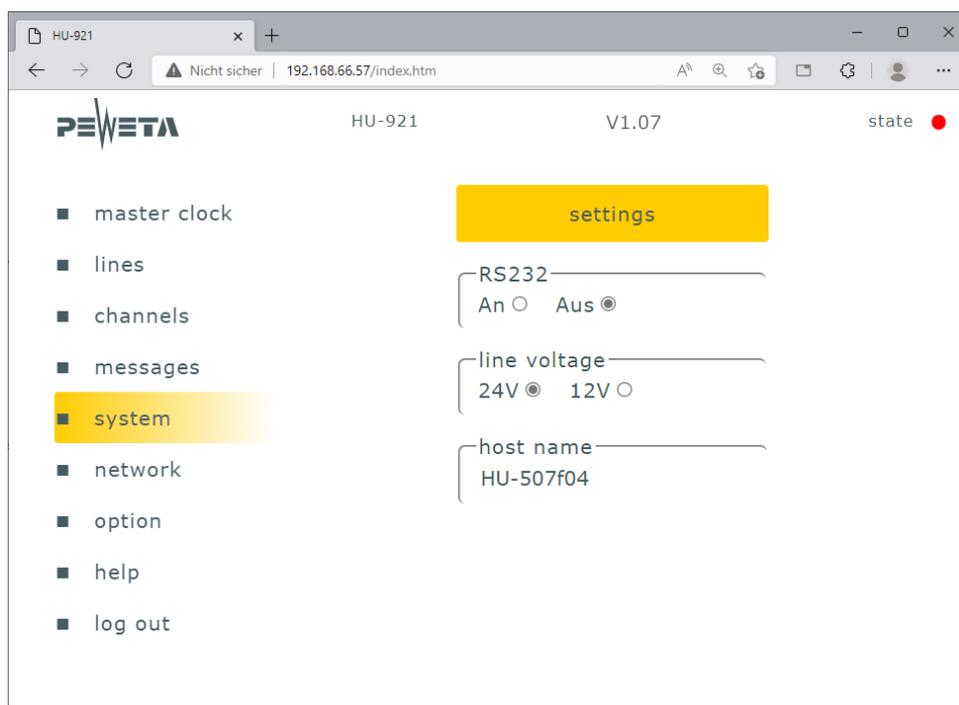
After the error has been corrected, the event can also be deleted by using the **X** button.

Delete with "OK" or cancel with "X"



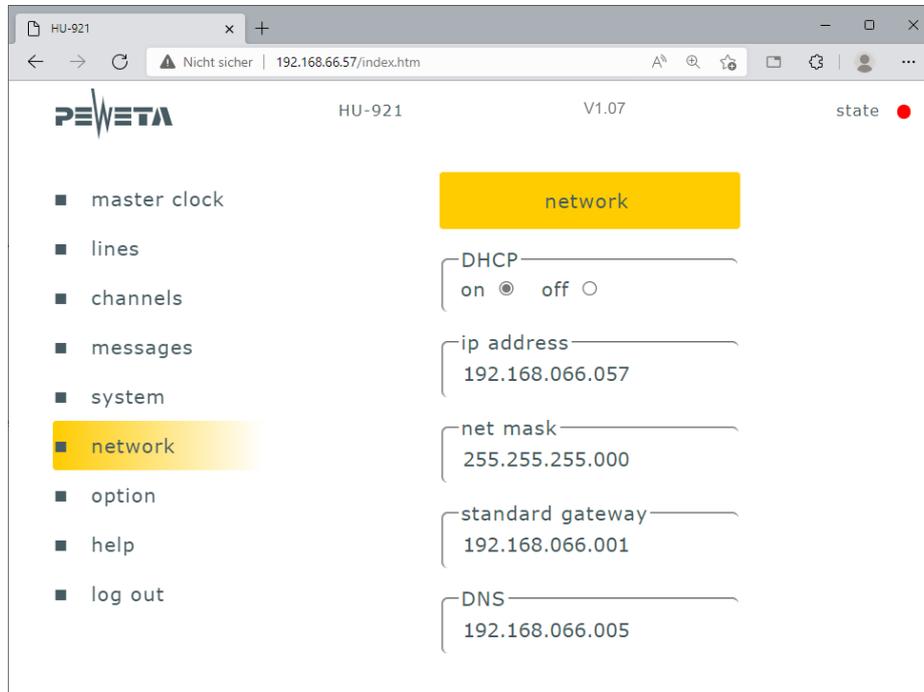
System menu

The functions that can be selected in the "System" menu and the values displayed correspond to the description of menu 5 on pages 66 to 69 of this manual.

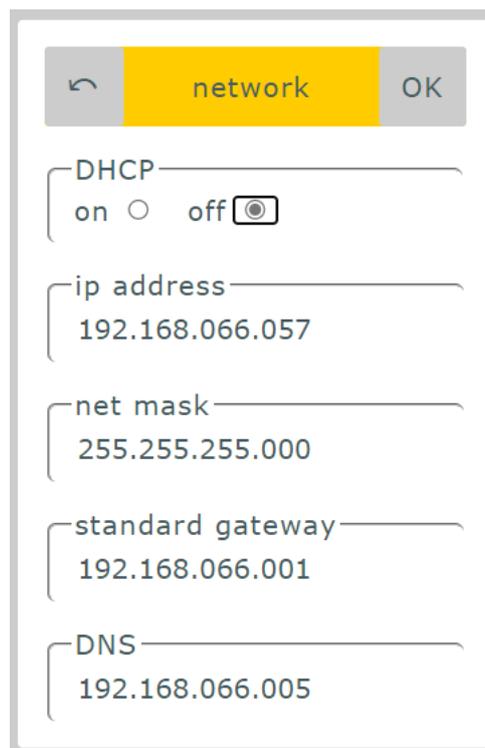


Network menu

The IPV4 parameters displayed in the "Network" menu correspond to the description of menu 6 on pages 70 to 72 of this manual.



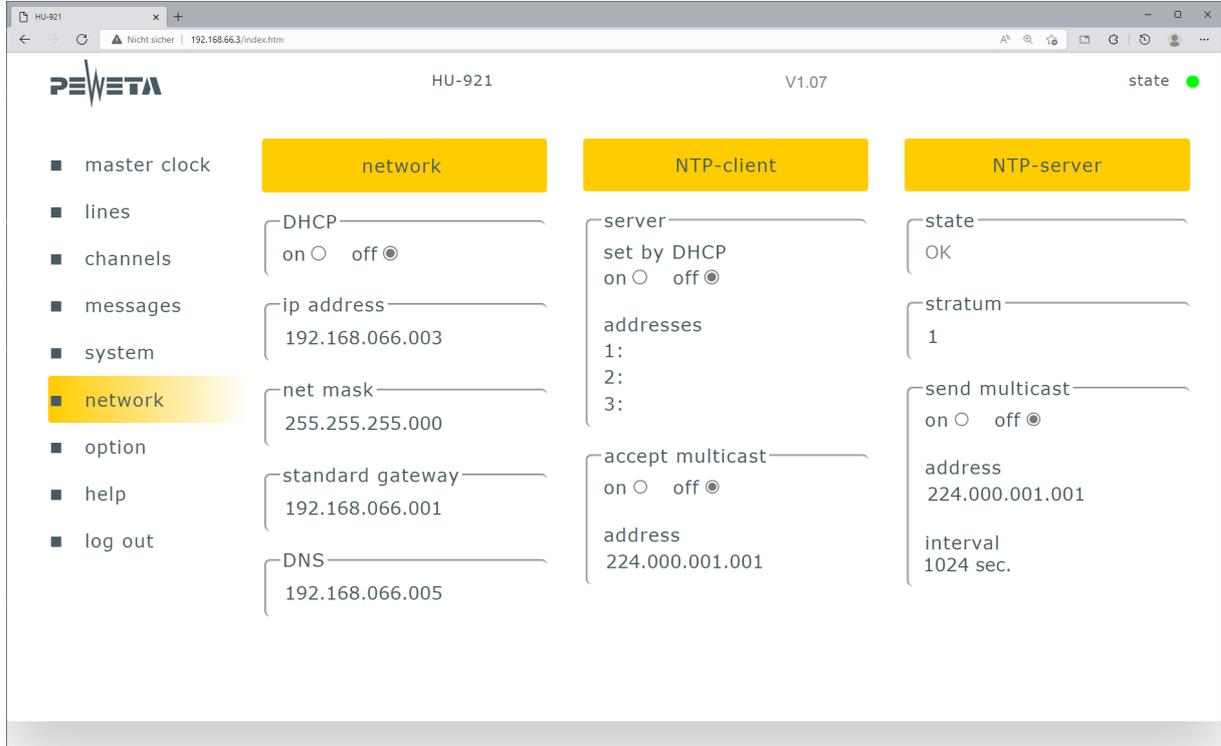
A pop-up opens when DHCP is changed to "off". If all IPV4 parameters are set, confirm with "OK" or exit the pop-up without making any changes by using the "arrow key".



Network menu - NTP client / NTP server

When the NTP server and NTP client options are purchased and enabled in the Options menu, the NTP client and/or NTP server groups are added to the network menu.

The selectable functions correspond to menus 7 and 8 on pages 73 and 74.



The screenshot shows a web browser window displaying the PEWETA configuration interface for device HU-921 (V1.07). The interface is organized into a sidebar menu and three main configuration columns.

Sidebar Menu:

- master clock
- lines
- channels
- messages
- system
- network** (highlighted)
- option
- help
- log out

network Column:

- DHCP: on off
- ip address: 192.168.066.003
- net mask: 255.255.255.000
- standard gateway: 192.168.066.001
- DNS: 192.168.066.005

NTP-client Column:

- server: set by DHCP on off
- addresses: 1: 2: 3:
- accept multicast: on off
- address: 224.000.001.001

NTP-server Column:

- state: OK
- stratum: 1
- send multicast: on off
- address: 224.000.001.001
- interval: 1024 sec.

Options menu

When purchasing the NTP server and NTP client options, the supplied code for enabling the option must be entered here.

If the option is ordered/delivered together with the master clock, the code is included on a separate sheet of this manual. If the option is ordered subsequently, the code will be delivered by e-mail as a PDF.

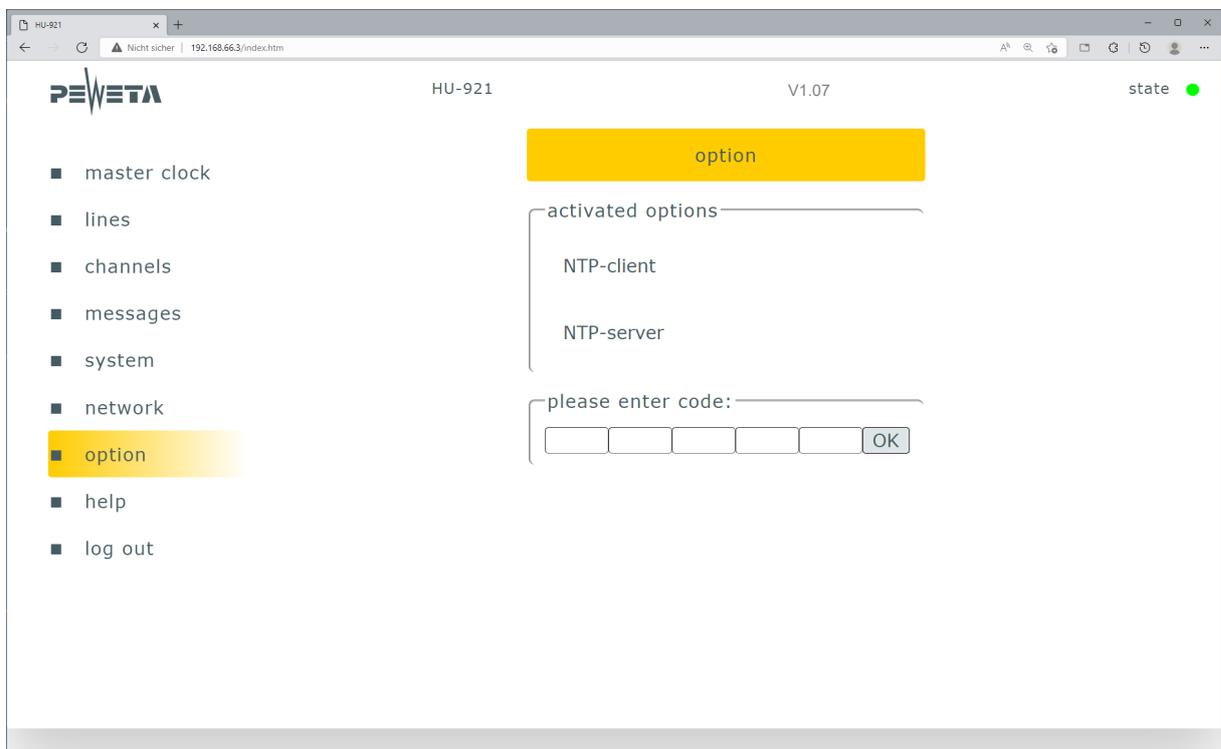
If the code was entered correctly and confirmed with "OK", the master clock must be restarted.

To do this, press the RESET key (see page 13 / point 18).

After the restart,

the enabled options appear under "enabled options".

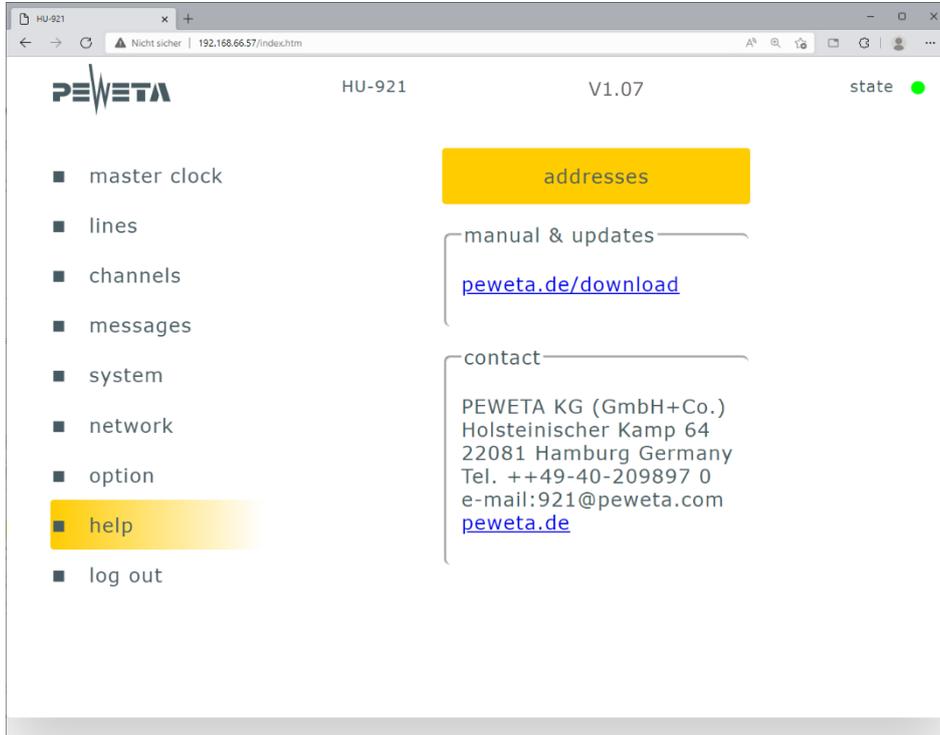
In the LCD menu of the master clock, the menu structure (see page 19) is extended by menu 7 "NTP client" and/or menu 8 "NTP server".



After resetting the master clock to factory settings (see page 68), the options are deactivated and must be reactivated by entering the code!

Help menu

In the menu item Help you will find a link to the current operating instructions and firmware.

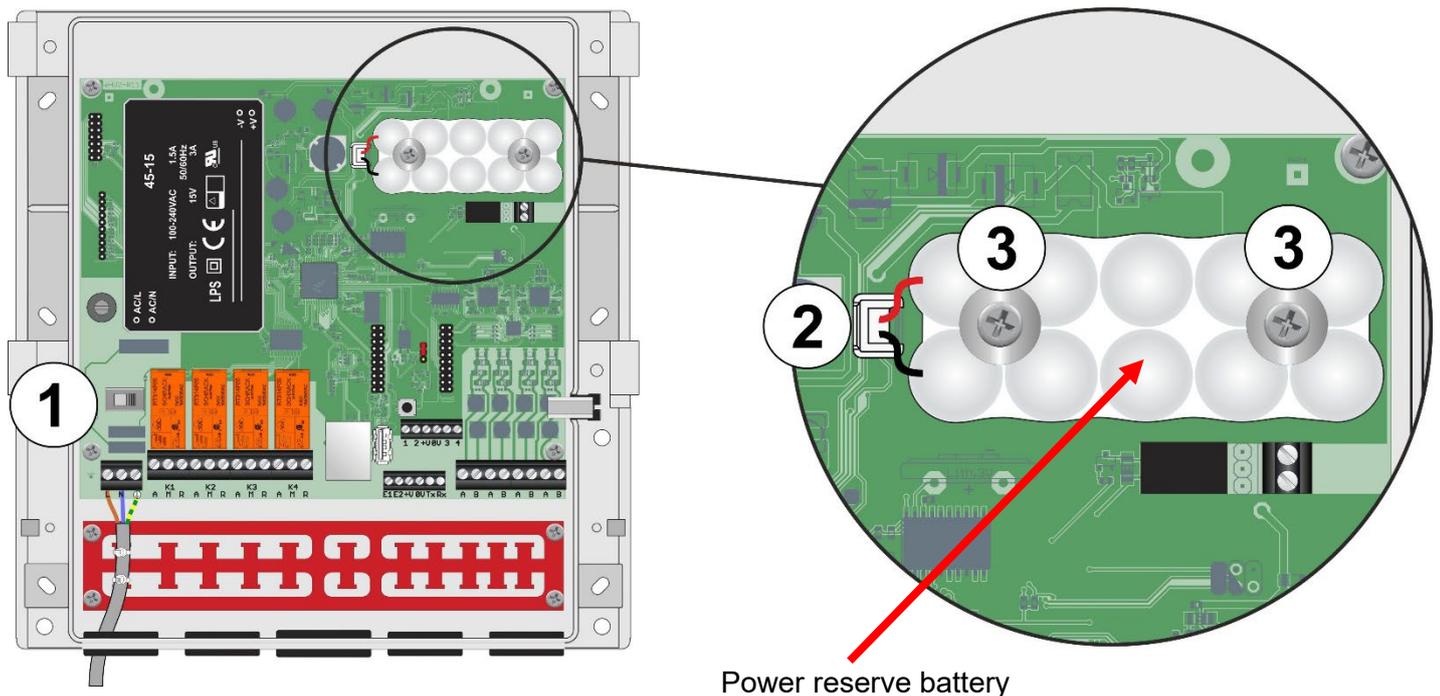


Replace power reserve battery

If the master clock has a power reserve battery (option), it must be replaced after 5 years at the latest. The power reserve battery has a voltage of 12 V and a nominal capacity of 1500 mA.

The capacity decreases over time.

The power reserve battery may only be replaced by an original PEWETA power reserve battery.
PEWETA item number: 400.194



1. Loosen the screws of the terminal strip cover and remove the cover.
2. Use a wide, narrow flat-blade screwdriver to prise open the front of the housing in the gap and Swivel the front of the housing to the left.
3. Slide the operating switch ① to the "OFF" position, to the left (see illustration above).
4. Pull the plug ② power reserve battery (at the plug, not at the cables) out of the socket.
5. Remove the two screws ③ .
6. Mount the new power reserve battery in reverse order.
7. Dispose of the replaced battery, see "Disposing of old appliances" on page 88.

Technical data

Housing	
Material	ABS (Acrylonitrile Butadiene Styrene)
Colour	RAL 7035 light grey
Dimensions (H x W x D)	239 x 236 x 85 mm

Electrical values	
Power supply	Fixed connection (clamp connection)
Mains voltage	100-240 VAC/50-60 Hz (observe type plate)
Line voltage	24 V (standard) or 12 V
Power consumption max.	Base load < 2VA, depending on line load up to 35 VA 1 A at 24 V and 12 V, distributed over a maximum of four lines
Total pulse current max.	Up to 160 clocks at minute pulse with 6mA/clock
Emergency power supply (option)	Battery 12 V/1.5 Ah
Pulse memory	Automatic readjustment after power failure

Time outputs	
Number of slave clock lines	1, 2 or 4, depending on version
Pulse types	Second, second with creeping minute, half-minute, minute, PEWETA <i>DCFport24</i> , minute/DCFport24 combined.
World time function	Presets and freely configurable for each line and system
Data interface	USB 2.0 type A, RS232
Alarm contact (option)	30 V/0.5 A potential-free, monostable
LAN	RJ45 Ethernet IEEE 802.3 10/100Base-T IPV4 (manual/DHCP), SNMP, HTTP, Syslog Optional (S)NTP client and/or server

Signalling device	
Number of switching channels	0, 2 or 4, depending on version
Number of switching events	> 300 with block formation
Relay system / circuit type	Bistable / potential-free changeover contact
Contact load	250 VAC/2 A

Environmental values	
Protection class	IP 32 (EN 60 529)
Protection class	I
Ambient temperature	0° C to 40° C
Weight	1.8 kg to 2.3 kg (approx.), depending on version

Reference sources (accessories)	
Quartz oscillator (internal)	(TCXO), accuracy: +/- 0.1 seconds / 24 hrs.
DCF77 radio receiver	Supplied with 5 m connection cable, extendable up to 100 m Cable type LIYCY 4 x 0.25mm ²
GNSS radio receiver	Satellites: GPS, Galileo, GLONASS Supplied with 20 m connection cable, interchangeable up to 80 m Cable type: Belden H155
LAN	Synchronisation to an NTP server

EG Konformitätserklärung **EC Declaration of Conformity**

Der Unterzeichner, der den nachstehenden Hersteller vertritt
The undersigned, representing the following manufacturer

Hersteller / Manufacturer: PEWETA KG (GmbH + Co.)
Holsteinischer Kamp 64 - 66
22081 Hamburg
Tel.: 0 40 / 20 98 97 - 0
Fax.: 0 40 / 20 98 97 - 96
E-Mail: zeit@peweta.de

erklärt hiermit, dass das Produkt in Übereinstimmung ist mit den Bestimmungen der nachstehenden EG-Richtlinie(n) (einschließlich aller zutreffenden Änderungen)
herewith declares that the product is in conformity with the provisions of the following EC directive(s) (including all applicable amendments)

Produktbeschreibung: Hauptuhr Typreihe 921
Product specification: Master clock Type series 921

Richtlinie / Directive: 93/68/EWG

Richtlinie / Directive: 2014/35/EU (Niederspannungsrichtlinie / low voltage directive)
Normen / standards: EN 62368-1 (2014 + AC:2015+A11:2017)

Richtlinie / Directive: 2014/30/EU (Elektromagnetische Verträglichkeit / electromagnetic compatibility)
Normen / standards: EN 55032 class B (2015)
EN 55035 (2017)
EN 61000-4-2 (2009)
EN 61000-4-3 (2006) + A1 (2008) + A2 (2010)
EN 61000-4-4 (2012)
EN 61000-4-5 (2014) + A1 (2017)
EN 61000-4-6 (2014)
EN 61000-4-11 (2004) +A1 (2017)

Richtlinie / Directive: 2011/65/EU (Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten/ restriction of the use of certain hazardous substances in electrical and electronic equipment)

Die letzten beiden Ziffern des Jahres in dem die CE-Kennzeichnung angebracht wurde: 22
Last two digits of the year in which the CE marking was affixed: 22

Anbringung des CE-Zeichens: Bedienungsanleitung / Produkt / Verpackung
Place of CE marking: Manual, product, packing

Ort, Datum / place, date: Hamburg, 15.03.2022



Mathias Prien / Geschäftsführer

Disposal of old appliances



This product is a b2b device (business-to-business) and may not be delivered to collection points of the public waste management authorities and added by them to the containers which are to be collected free of charge by the manufacturers / authorised representatives (§ 3 No. 10 ElektroG). Accordingly, PEWETA KG (GmbH + Co.) is not obliged to collect b2b waste equipment from transfer points.

PEWETA KG (GmbH + Co.) will take care of the proper disposal of this device after the end of use. For this purpose, this device can be sent to PEWETA KG (GmbH + Co.) for disposal free of charge with paid postage and must be marked "ZUR ENTSORGUNG". If the proper disposal is carried out by the customer himself, PEWETA KG (GmbH + Co.) will not be liable for any costs incurred.

This product was placed on the market after August 13, 2005.



If you have any questions, suggestions or require further product information, please do not hesitate to contact us.

PEWETA KG (GmbH + Co.)
Holsteinischer Kamp 64-66
22081 Hamburg

Tel +49 40 / 20 98 97 - 0
info@peweta.de
www.peweta.com