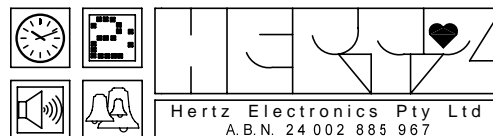
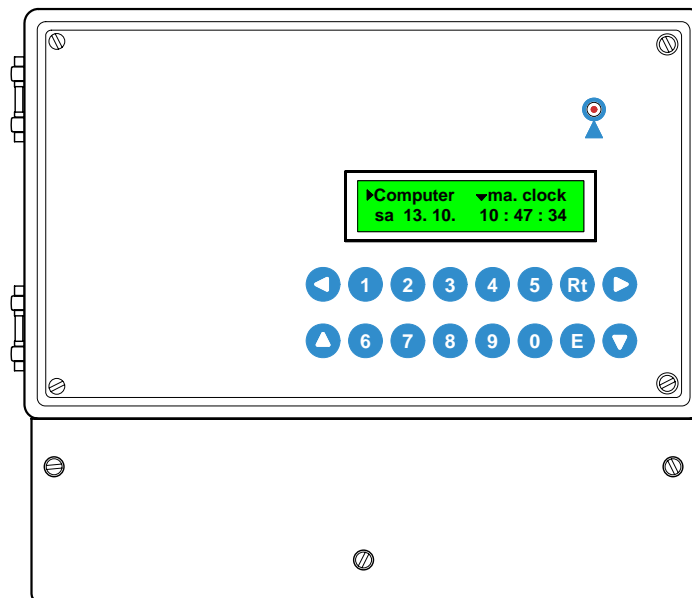


Computer Master Clock KHU2711

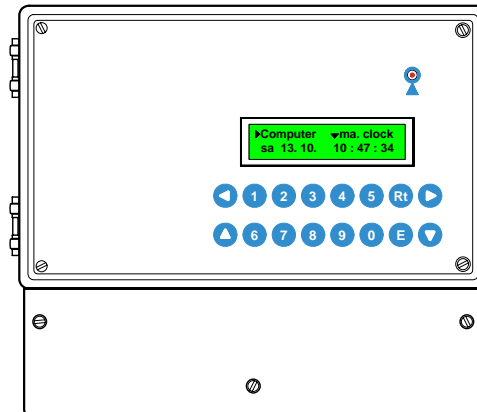
Operating Manual



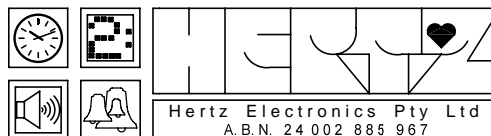
539 GLENMORE ROAD, EDGECLIFF NSW 2027
PH: -61-2 -9363 3029 FAX: -61 -2 -9327 7827
email address: sales@hertzelectronics.com.au
hertz web site: WWW.hertzelectronics.com.au

Computer Master Clock KHU2711

Quick Set up Manual

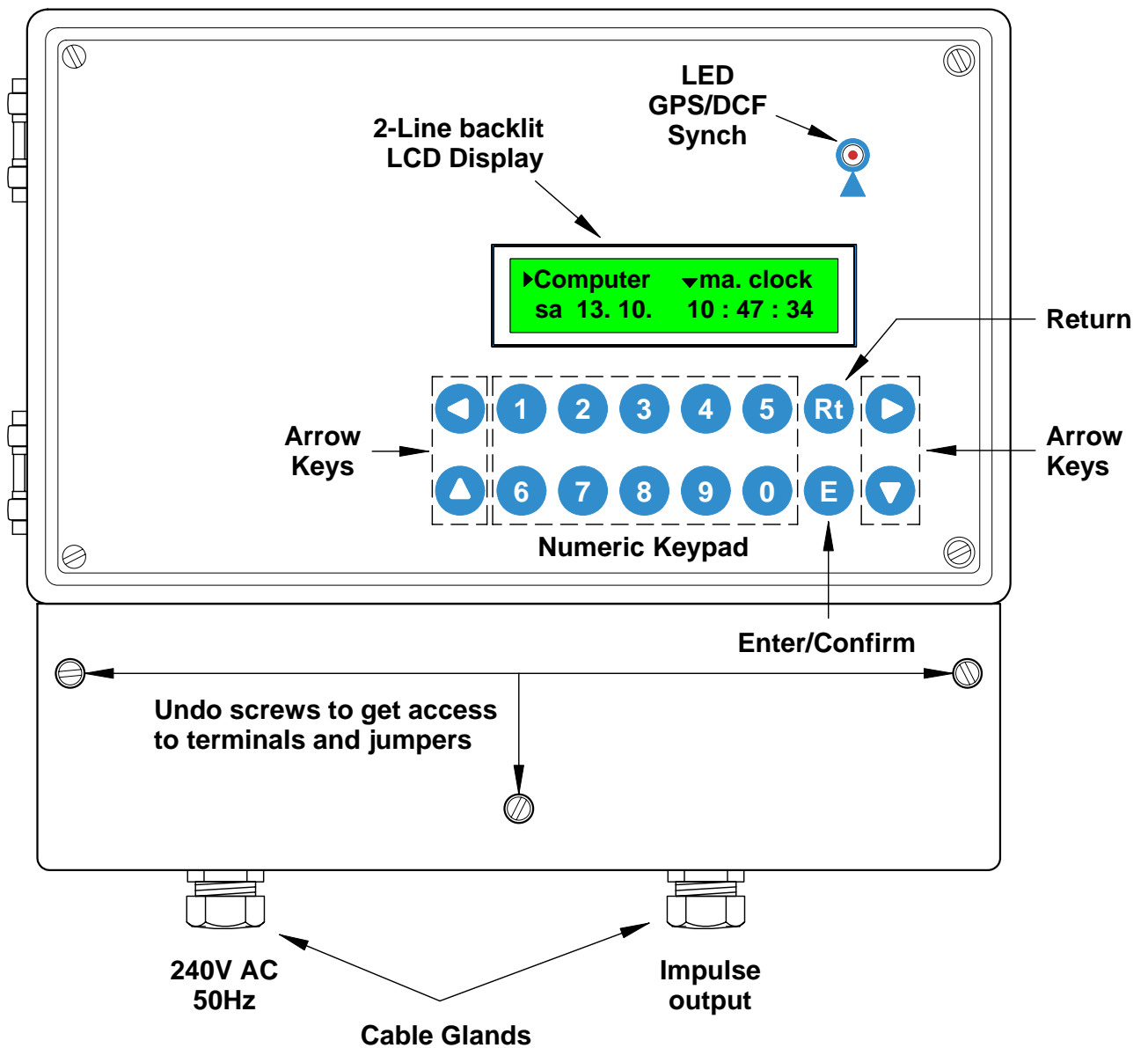


1. Install the master controller
2. Connect the controller to mains power (240VAC 50Hz)
3. Do not connect the slave clocks at this stage
4. Turn the impulse output off (Menu "Lines")
5. Load the time base with local time (Menu "System")
6. Load the time base with the current date (Menu "System")
7. Program all other parameters (Menu "System")
8. Check the impulse cable for short or open circuits.
9. Minimum line resistance: 96 Ohm
10. Connect the impulse cable to the master controller
11. Synchronise the slave clocks with the master clock by entering the time displayed by the slave clock into the line time display.

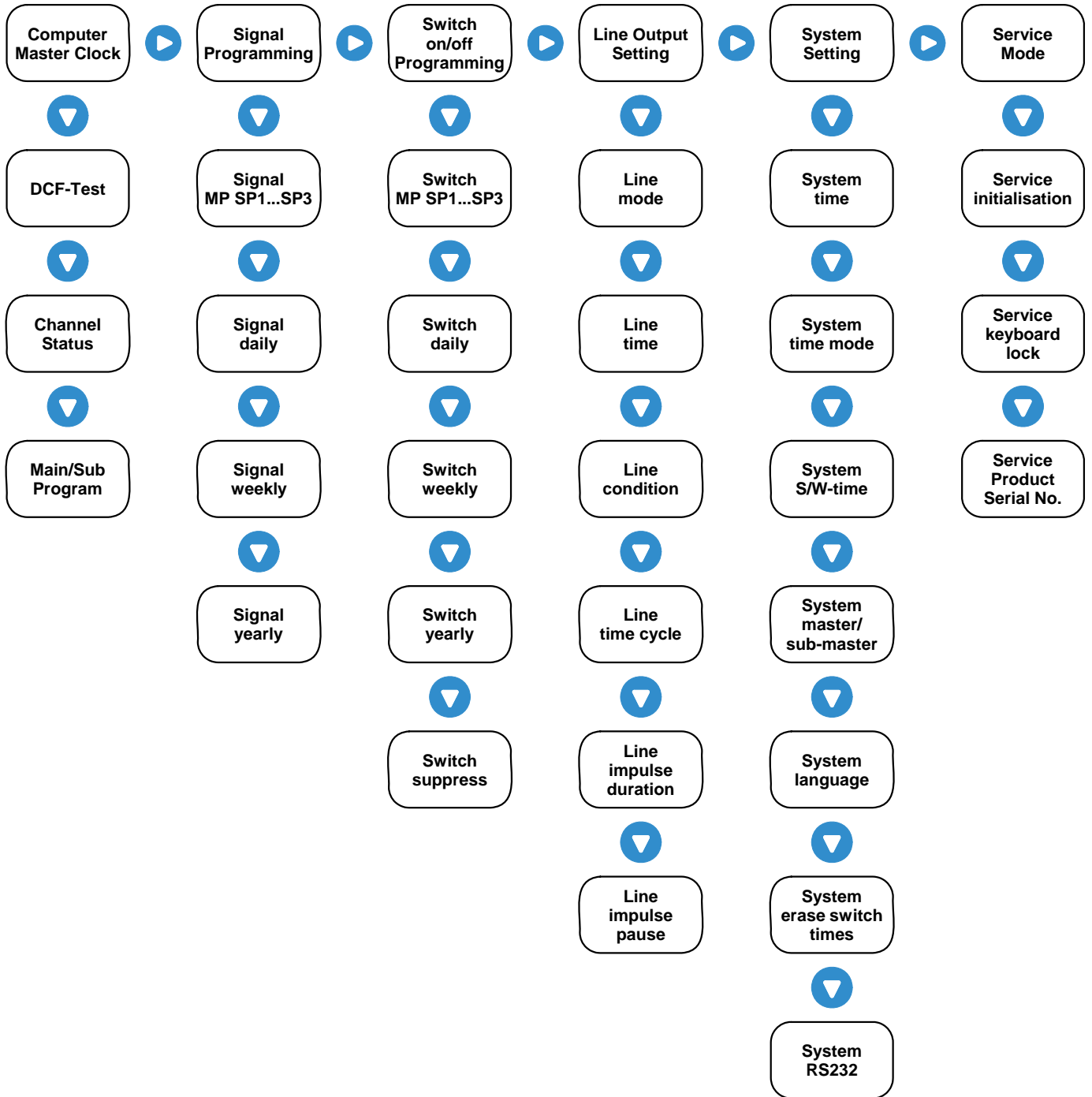


539 GLENMORE ROAD, EDGECLIFF NSW 2027
PH: -61-2 -9363 3029 FAX: -61 -2 -9327 7827
email address: sales@hertzelectronics.com.au
hertz web site: WWW.hertzelectronics.com.au

KHU2711 Control Elements



KHU2711 Menu Structure

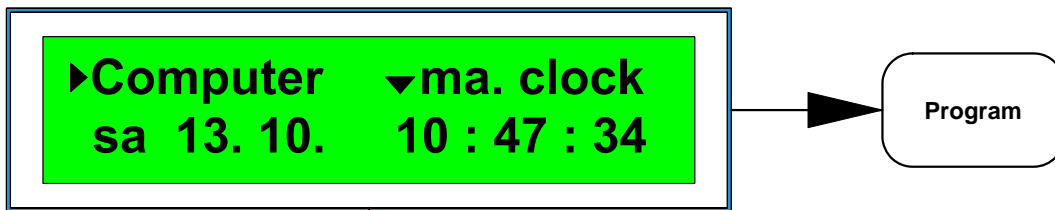


KHU2711 Main Menu

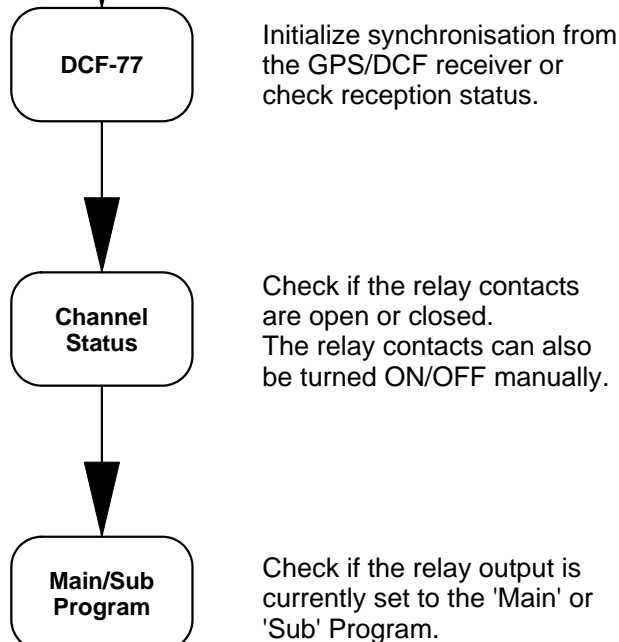
The initial screen displays the weekday, date and time and enables monitoring of settings and functions of the master clock in normal operating mode. By pushing the down arrow key it is possible to check or change some functions.

▶ Press the right arrow key to:

Get to the program menus:
Signal Times > Switch Times >
Adjust Lines > Adjust System >
Service Mode



▼ Press the down arrow key to:



KHU2711
Channel Status and Manual ON/OFF Switching

▶Computer ▼ma. clock
sa 13. 10. 10 : 47 : 34

Press ▼ 2x

channel ◆ condition
■

Press 1 1x (Channel 1 turns on)

channel ◆ condition
■ 1

Press 1 1x (Channel 1 is permanently on and display flashing)

channel ◆ condition
■ 1

Press 1 1x (Channel 1 turns off and display blanks)

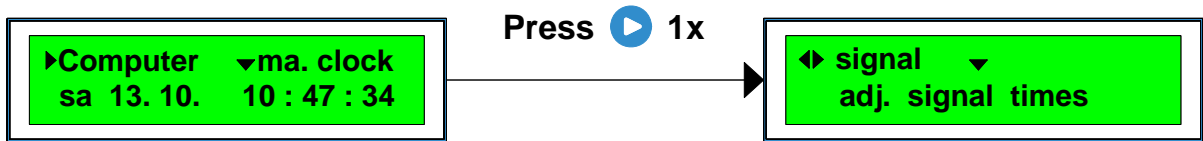
channel ◆ condition
■

Auto return to
Main Menu in
approx. 30 sec

KHU2711 "Signal" MENU - Daily

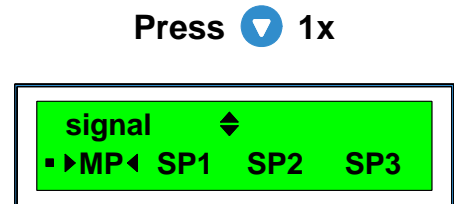
Signal Programming - Daily

1. Prepare a schedule of all signal times on paper to assist data entry.
2. Enter Daily Signal events



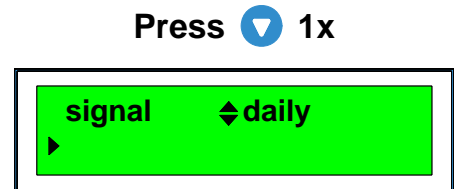
1. Signal Time: Select 'Main' or 'Sub' Program

The signal program provides 1x main 'MP' and 3x sub-programs 'SP1' 'SP2' 'SP3'. The factory default is main program 'MP'. To change to another program press 'Enter' **E** then toggle to the required program and confirm with 'Enter' **E**. It is possible to program daily, weekly and yearly signal times into the selected program. Full programming details on following pages.



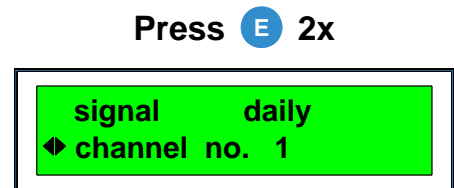
2. Signal Time: Programming of Daily Events

Push the down arrow key **V** once to enter daily events. Pushing the down arrow key **V** again moves to 'weekly', another push down to 'yearly'. These entries are explained on following pages.



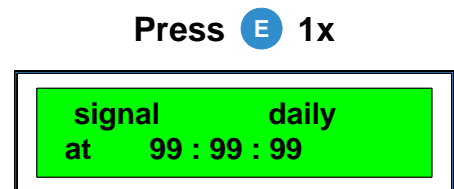
3. Signal Time: Enter Channel No.

Press 'Enter' **E** twice, the channel no. 1 flashes. The software provides for four relay output channels, however this master unit is equipped with only one relay. Therefore ensure to stay on channel 1.



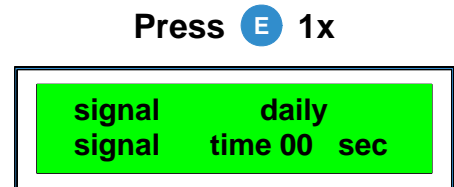
4. Signal Time: Enter a signal event time

Using the numeric keyboard enter a signal event time in hours, minutes and seconds. Always enter double digits, e.g. '08' for 8 o'clock. Then press 'Enter' **E** to confirm.



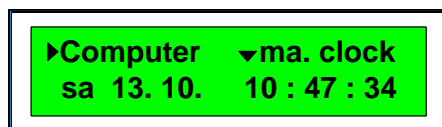
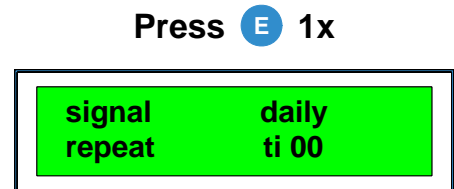
5. Signal Time: Enter Signal Duration

Using the numeric keyboard enter the signal duration from 1 to 99 seconds. Always enter double digits, e.g. '01' for 1 second. The relay will close for the pre-programmed time. Then press 'Enter' **E** to confirm and to move to the signal repetition 'Repeat' entry.



6. Signal Time: Enter Signal Repetition

Using the numeric keyboard enter the signal repetition from 1 to 15 times. Always enter double digits, e.g. '01' for 1 time. The signal will be repeated as often as programmed. If one repeat was programmed then the bells will ring twice. The original entry plus one repeat. Then press 'Enter' **E** to confirm and to move to the beginning for further entries. Or if you are finished with data entry, do nothing and the display will return within approx. 30 sec. to the main menu.



Main Menu

Auto return to Main Menu in approx. 30 sec



Press **E** 1x

to more 'daily' entries

KHU2711 "Signal" MENU - Weekly

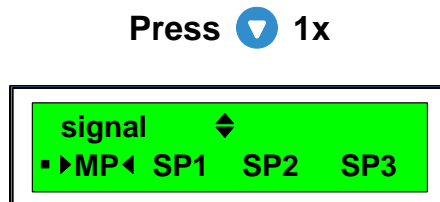
Signal Programming - Weekly

1. Prepare a schedule of all signal times on paper to assist data entry.
2. Enter Weekly Signal events



1. Signal Time: Select 'Main' or 'Sub' Program

The signal program provides 1x main 'MP' and 3x sub-programs 'SP1' 'SP2' 'SP3'. The factory default is main program 'MP'. To change to another program press 'Enter' **E** then toggle to the required program and confirm with 'Enter' **E**. It is possible to program daily, weekly and yearly signal times into the selected program. Full programming details on following pages.



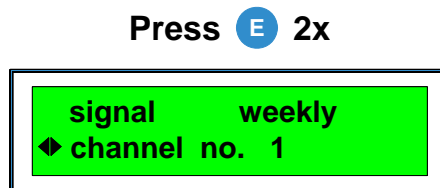
2. Signal Time: Programming of Weekly Events

Push the down arrow key **V** twice to enter weekly events. Pushing the down arrow key **V** again moves to 'yearly', another push down back to the top. For 'yearly' entries refer to the next page.



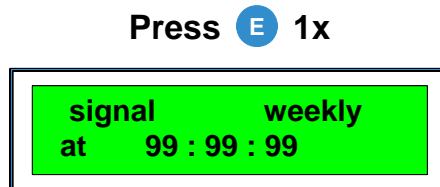
3. Signal Time: Enter Channel No.

Press 'Enter' **E** twice, the channel no. 1 flashes. The software provides for four relay output channels, however this master unit is equipped with only one relay. Therefore ensure to stay on channel 1.



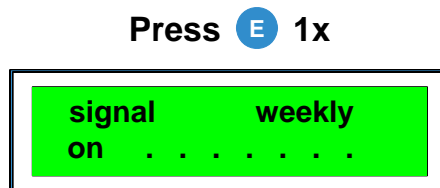
4. Signal Time: Enter a signal event time

Using the numeric keyboard enter a signal event time in hours, minutes and seconds. Always enter double digits, e.g. '08' for 8 o'clock. Then press 'Enter' **E** to confirm.



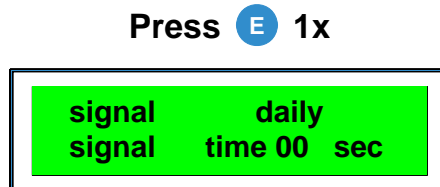
5. Signal Time: Enter weekdays

Using the keyboard numbers 1 - 7 enter the required weekdays. 1=Mon, 2=Tue, 3=Wed, 4=Thu, 5=Fri, 6=Sat, 7=Sun. Any combination of weekdays. Then press 'Enter' **E** to confirm.



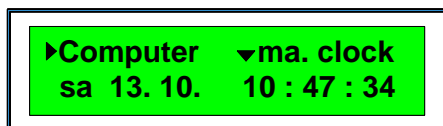
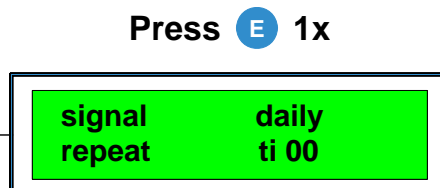
6. Signal Time: Enter Signal Duration

Using the numeric keyboard enter the signal duration from 1 to 99 seconds. Always enter double digits, e.g. '01' for 1 second. The relay will close for the pre-programmed time. Then press 'Enter' **E** to confirm and to move to the signal repetition 'Repeat' entry.



7. Signal Time: Enter Signal Repetition

Using the numeric keyboard enter the signal repetition from 1 to 15 times. Always enter double digits, e.g. '01' for 1 time. The signal will be repeated as often as programmed. If one repeat was programmed then the bells will ring twice. The original entry plus one repeat. Then press 'Enter' **E** to confirm and to move to the beginning for further entries. Or if you are finished with data entry, do nothing and the display will return within approx. 30 sec. to the main menu.



Main Menu

Auto return to Main Menu in approx. 30 sec

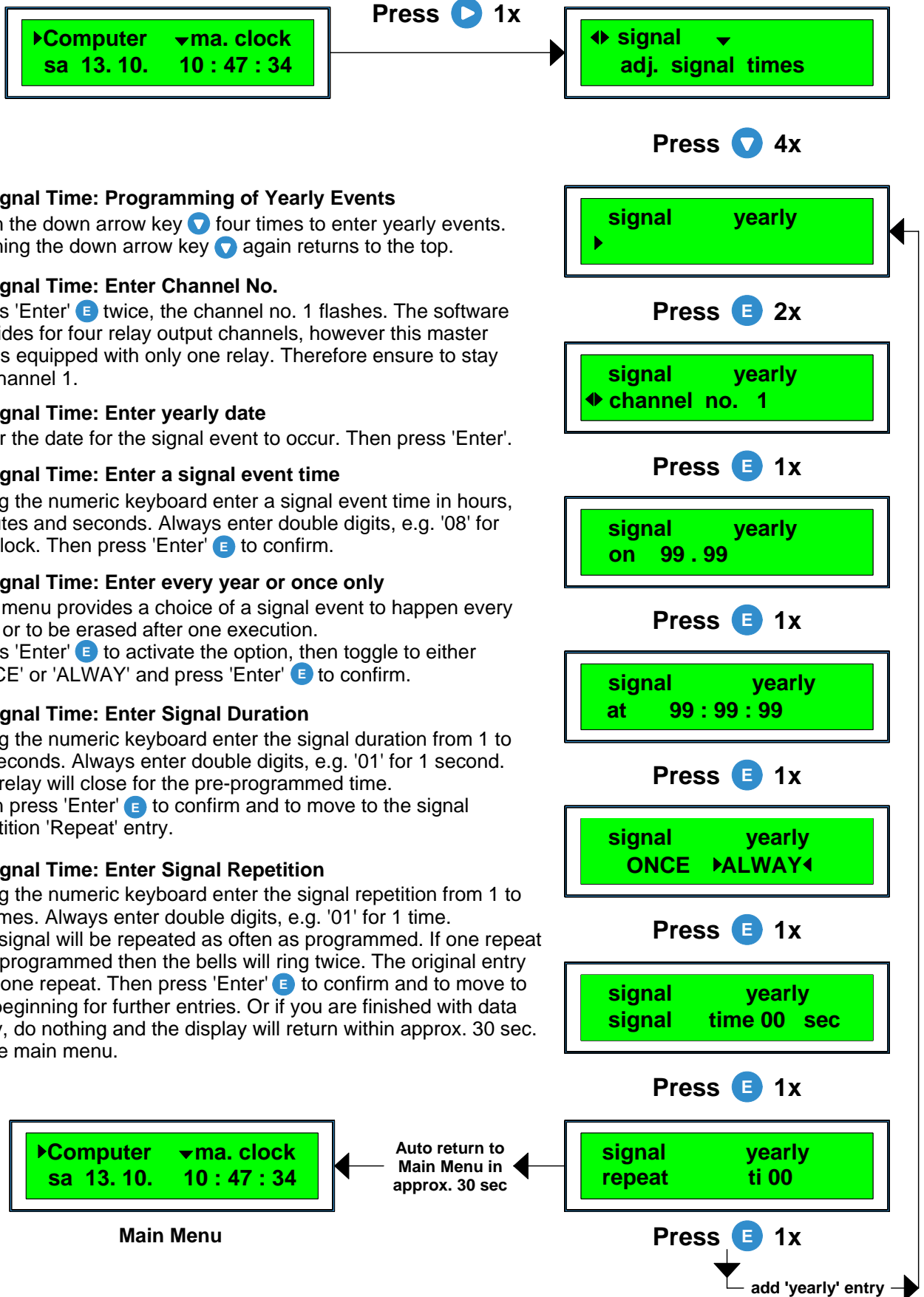
Press **E** 1x

add 'weekly' entry

KHU2711 "Signal" MENU - Yearly

Signal Programming - Yearly

1. Prepare a schedule of all signal times on paper to assist data entry.
2. Enter Yearly Signal events



1. Signal Time: Programming of Yearly Events

Push the down arrow key ▼ four times to enter yearly events. Pushing the down arrow key ▼ again returns to the top.

2. Signal Time: Enter Channel No.

Press 'Enter' E twice, the channel no. 1 flashes. The software provides for four relay output channels, however this master unit is equipped with only one relay. Therefore ensure to stay on channel 1.

3. Signal Time: Enter yearly date

Enter the date for the signal event to occur. Then press 'Enter'.

4. Signal Time: Enter a signal event time

Using the numeric keyboard enter a signal event time in hours, minutes and seconds. Always enter double digits, e.g. '08' for 8 o'clock. Then press 'Enter' E to confirm.

5. Signal Time: Enter every year or once only

This menu provides a choice of a signal event to happen every year or to be erased after one execution.

Press 'Enter' E to activate the option, then toggle to either 'ONCE' or 'ALWAY' and press 'Enter' E to confirm.

6. Signal Time: Enter Signal Duration

Using the numeric keyboard enter the signal duration from 1 to 99 seconds. Always enter double digits, e.g. '01' for 1 second. The relay will close for the pre-programmed time.

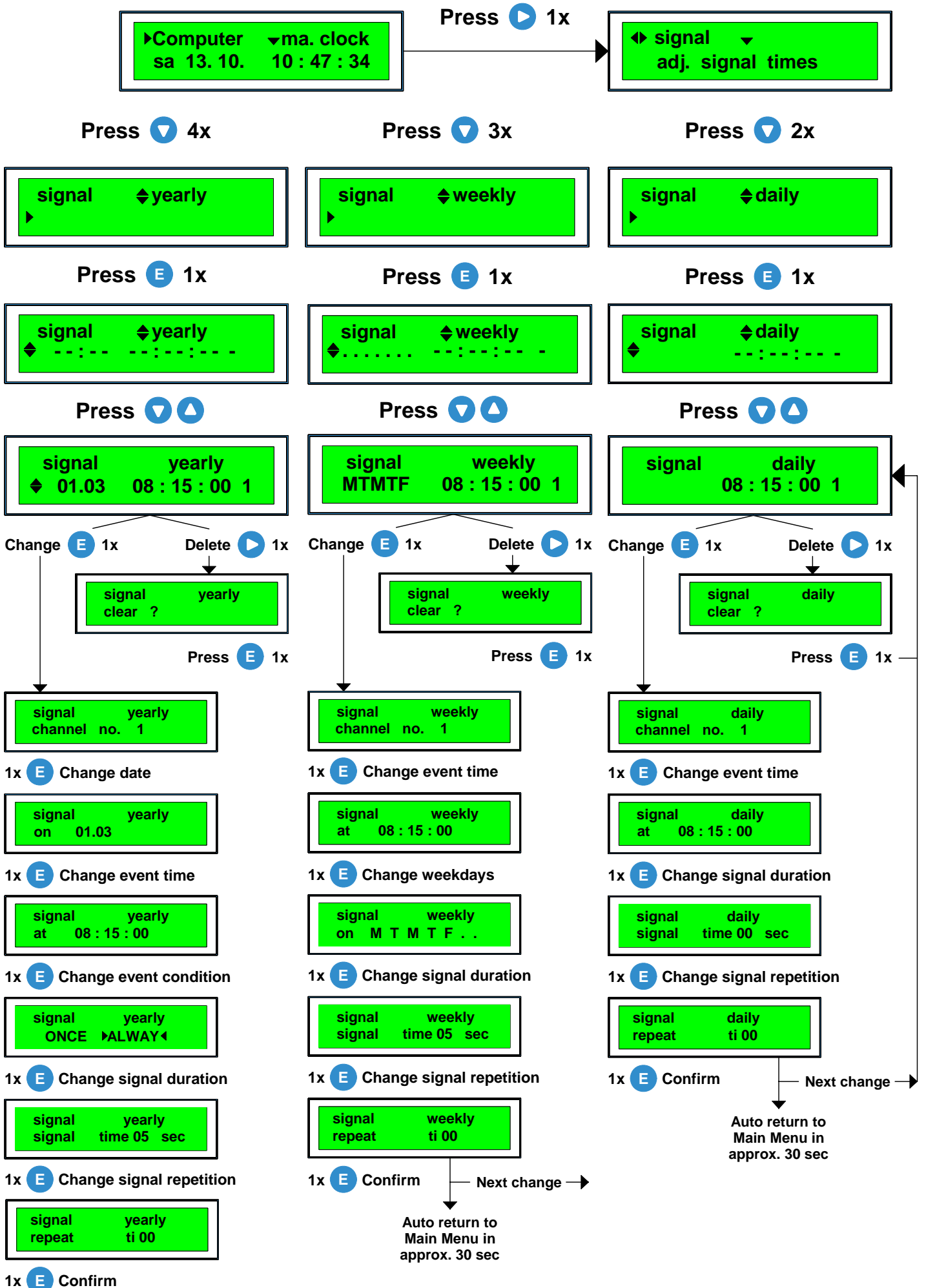
Then press 'Enter' E to confirm and to move to the signal repetition 'Repeat' entry.

7. Signal Time: Enter Signal Repetition

Using the numeric keyboard enter the signal repetition from 1 to 15 times. Always enter double digits, e.g. '01' for 1 time.

The signal will be repeated as often as programmed. If one repeat was programmed then the bells will ring twice. The original entry plus one repeat. Then press 'Enter' E to confirm and to move to the beginning for further entries. Or if you are finished with data entry, do nothing and the display will return within approx. 30 sec. to the main menu.

KHU2711 "Signal" MENU - Signal Edit



KHU2711 "Lines" MENU

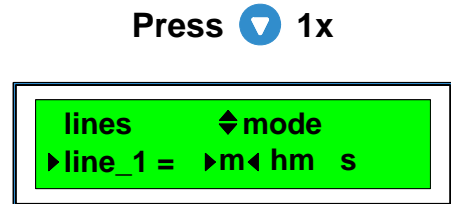
Impulse Output Set Up

1. Set the output line to minute, half minute or second impulse.
2. Enter the line time. (The time displayed on the slave clock dials)
3. Turn the impulse output on or off. (e.g. for maintenance, expansion)
4. Set the counting cycle to 12 or 24 hours. (Digital clocks require 24h)
5. Set the impulse duration (The length of the impulse)
6. Set the impulse pause (The pause length between impulses)



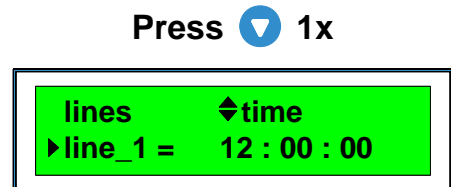
1. Impulse Output: Lines Mode (Impulse rate)

Output line 1 has been factory set to 'm' (minute impulses), the most common setting. But it could also be changed to 'hm' (half minute) or 's' (second). If you need to change the setting: Press 'Enter' and toggle with to the right to highlight 'hm' or 's'. To confirm the change press 'Enter' again. Check impulse duration!



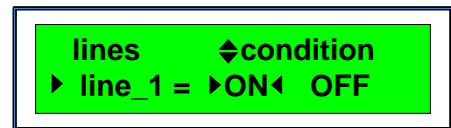
2. Impulse Output: Lines Time (Synchronise clocks)

Turn the impulse output off. Check the time displayed on the clock dials, e.g. installed indoor, public and/or tower clocks. Ensure all clocks that form part of the system are manually set to the same time. New clocks are supplied with the hands on 12 o'clock. Press 'Enter' and dial in the time as displayed on the slave clocks. Confirm by pressing 'Enter' again. The output line will turn on and catch up automatically.



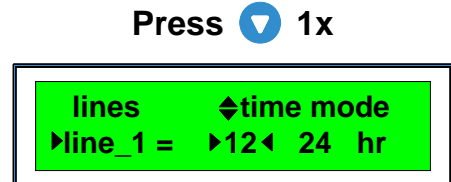
3. Impulse Output: Lines Condition

The impulse output can be switched off for maintenance work or if the time base under 'System' need to be set or corrected. Press 'Enter' and toggle with to the right to highlight 'OFF'. To confirm the change press 'Enter' again.



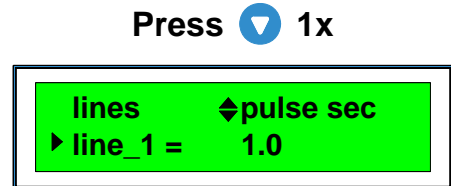
4. Impulse Output: Time Mode (Counting cycle)

The impulse output counting cycle can be set to 12 or 24 hours. Analogue clocks operate on a 12 hour cycle, digital on 24 hours. If only analogue clocks are connected to the output keep the cycle on 12 hours. If digital clocks are installed as well set the cycle to 24 hours. Automatic correction will take longer.



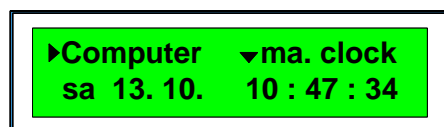
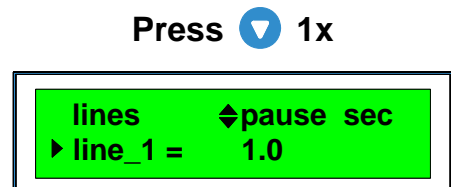
5. Impulse Output: Impulse Duration

Set the impulse duration according to the needs of connected clocks. Internal clocks function correctly with the impulse duration set to 1.0 sec. Tower and facade clocks might require 2 - 8 sec. If the cable run is very long set the impulse length to a min. of 2.0 sec. Press 'Enter' program the seconds and confirm with 'Enter'.



6. Impulse Output: Impulse Pause

Set the impulse pause to the same length as the impulse duration. Some larger movements might require a longer pause to operate properly. Press 'Enter' and dial in the required pause length in seconds. Press 'Enter' to confirm.



Main Menu

Auto return to
Main Menu in
approx. 30 sec

KHU2711 "System" MENU - A

Time Base Set Up

1. Set time base to local time
2. Set the current date
3. Set date mode
4. Set daylight saving dates



1. System Time: Set Time Base to Local Time

Before changing the time base turn the impulse output off. Go back to "Lines adjust lines" and down to "lines condition". Turn the output off and then return to "System adjust system". (Ring the Telstra talking clock to obtain accurate local time.) Press 'Enter' **E** to program the time base with local time. The hours flash, program the current hours. The minutes flash, program the current minutes. The seconds flash, program the seconds 10 or 20 seconds ahead of current time. Wait for the Telstra clock to catch up and press 'Enter' **E** with the third beep. The time base is now set to the accurate local time and the display advances automatically to the date screen.

2. System Time: Set the current Date

Press 'Enter' **E** the day flashes. Set the current day. The cursor moves automatically to the month. Set the current month. The cursor moves to the last two digits of the year. Set the current year. Press 'Enter' **E** to confirm. Now press the right arrow key **▶** to move to the date mode setting.

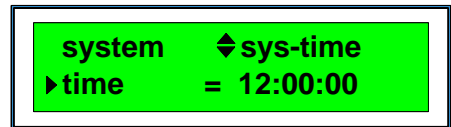
3. System Time: Set Date Mode

The date display can be set to 'Month-Day' or 'Day-Month'. The standard is 'Day-Month' and has been factory set. To change it to 'Month-Day' as it is required in America do the following: Press 'Enter' then toggle to 'M-D' and press 'Enter' to confirm.

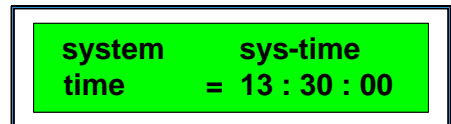
4. System Time: Set Daylight Saving Dates

Daylight saving change over dates can be set to 'off', 'automatic' or 'date'. Turn the daylight saving change over 'off' in areas without daylight saving. The automatic 'AUTO' setting is for the European area only. The 'Date' setting applies in other areas and can be set to the first Sun in October (+1h) and first Sunday in April (-1h). Toggle with **▶** to the right. S/W-time appears with the ON (+1h) date. Press 'Enter' and change the month, if necessary, then press 'Enter' to confirm. Now press the up or down arrow key to select the required Sunday. Toggle with **▶** to the right. The OFF (-1h) date appears. Press 'Enter' and change the month, if necessary, then press 'Enter' to confirm. Now press the up or down arrow key to select the required Sunday.

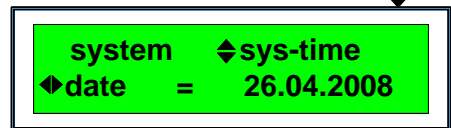
Press **▼** 1x



Press **E** 1x



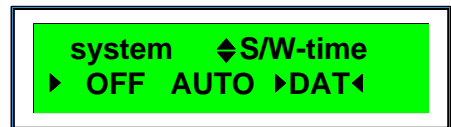
Press **E** 1x



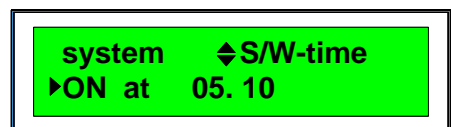
Press **E** 1x **▼** 1x



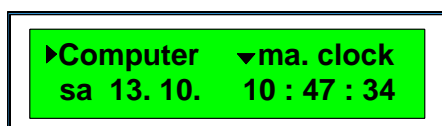
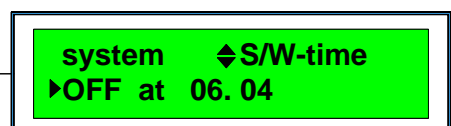
Press **▼** 1x



Press **▶** 1x



Press **▶** 1x



Auto return to Main Menu in approx. 30 sec

Main Menu

KHU2711 "System" MENU - B

Time Base Set Up

5. Set mode of operation
6. Set the menu language
7. Clear the entire relay program
8. Set the RS232 baud rate



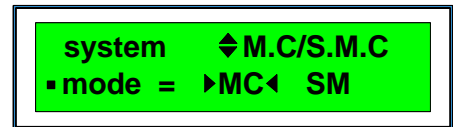
Press 4x

5. System Time: Set Mode of Operation

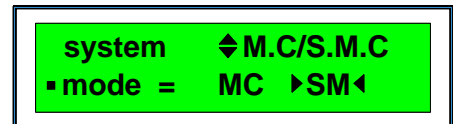
The master clock can be set to 'SM' sub-master mode to be able to synchronise with an existing master controller providing an alternating minute impulse output. The impulse cable must be connected to the UHU terminal of the sub-master.

Only the seconds are being synchronised allowing the sub-master to function independently. The sub-master will continue to operate in case of main-master failure.

To set the master clock to 'SM' sub-master mode press the 'Enter' key, then toggle with the key to 'SM'. Press 'Enter' again to confirm. The master is now set to function as a sub-master.



Press 1x

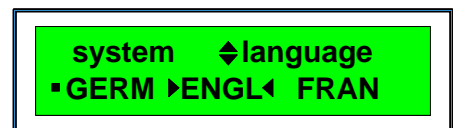


Press 1x

6. System Time: Set the Menu Language

The master clock software provides for three menu languages. German (GERM) - English (ENGL) - French (FRAN)

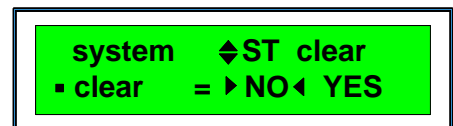
The master is delivered with the english language pre-selected, however it can easily be changed to another option. Press 'Enter' then select with the right or left arrow key the desired language. Then confirm with 'Enter' .



Press 1x 1x

7. System Time: Clear the entire Relay Program

This menu allows to erase the entire relay program (signal + switch times). Press 'Enter' , then toggle with the right arrow key to highlight 'YES'. Then press 'Enter' . A safety confirmation window appears asking 'Clear'? If the entire relay program is supposed to be erased confirm with 'Enter' .



Press 1x

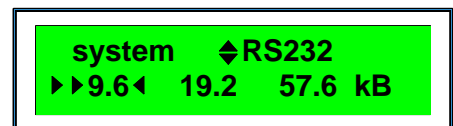
8. System Time: Set RS232 Baud Rate

This menu allows selection of the RS232 baud rate.

(9.6 - 19.2 - 57.6 kB) The factory default is: 9.6 kB

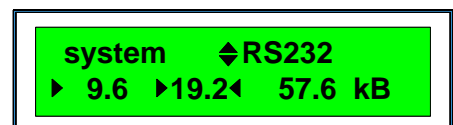
If a change to a higher speed is desired do the following:

Press 'Enter' , then toggle with the right arrow key to the required baud rate. Then press 'Enter' to confirm.

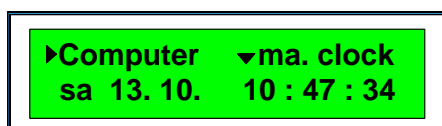


Press 1x

For detailed information on the RS232 output, please see next page.



Press 1x 1x



Auto return to Main Menu in approx. 30 sec

Main Menu

KHU2711 "System" MENU

RS232

RS-232 Asynchron:

The RS232c serial code is widely used and also known as V.24. This type of serial code is in use for communication between two units, that can both transmit (Tx) and receive (Rx) data.

Bidirectional data transmission requires a minimum of three wires: one for transmit (Tx), one for receive (RxD) and one common ground.

The signals of a RS232 serial code are of bipolar nature. The logic '0' is represented by +12V, the logic '1' by -12V. This type of serial code provides a much better signal-to-noise ratio than a 5V parallel signal transmission as a LPT-Centronics type. This enables transmission over relatively long cable runs without significant signal distortion.

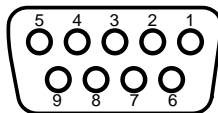
However, the maximum length of cable should not be over 20m at baud rates faster than 19.6kB/s.

9 pin D-connector pin assignment KHU2711

9 pin Sub-D	Signal Type	Signal Description
-	Shield	Shield of cable
2	Transmit (TxD0)	Transmit data from master to PC
3	Receive (RxD0)	Receive data from Master to PC
5	Signal Ground	GND
7	TxD1	Transmit data from Master to PC (flash)
8	RxD1	Receive data from master to PC (flash)
9	DCF77-EMU	DCF signal for RF transmitter
1-4-6	connected	Connect pins in PC connector
7-8	connected	Connect pins in PC connector

Two leads are available for the RS232 connection:

1. Cable for data transmission
2. Cable for software updates (flash)



Sub-D 9-pin Female Connector

Transmission Protocol

8 Bit	2 Stop Bit	no parity	Baud rate as selected in menu
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Transmission Format

The data transmission is generally executed in ASCII format

System Time

(• = blank)

Transmission of 20 characters + CR;

Transmission rate: every second

STX • TT.MM.JJJJ • HH : MM : SS CR ETX

STX	Start of Transmit		
TT	Day (1...31)	2 ASCII characters	
MM	Month (1...12)	2 ASCII characters	
JJJJ	Year (0...99)	4 ASCII characters	
HH	Hour (0...24)	2 ASCII characters	
MM	Minute (0...59)	2 ASCII characters	
SS	Second (0...59)	2 ASCII characters	
ETX	End of Transmit		

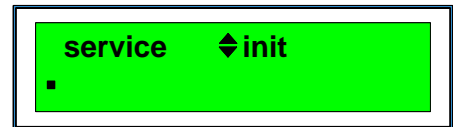
KHU2711 "Service" MENU

Service Mode

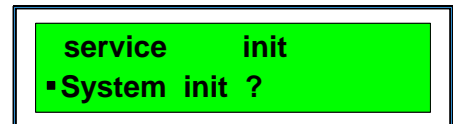
1. Initialization
2. Keyboard lock code entry
3. Product serial number



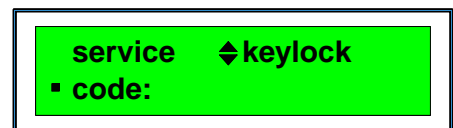
Press 1x



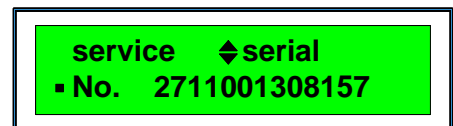
Press 1x



Press 1x 1x



Press 1x 1x



1. Initialization

This menu allows the initialization of the software. There are two reasons for initialization:

1. After a software upgrade
2. To return the clock to the factory settings.

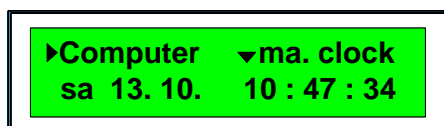
If the clock needs to be initialized press 'Enter' , the display changes to ' System init. ?'
Press 'Enter' to initialize.

2. Keyboard Lock Code Entry

Please refer to the next page for information on how to enter the keyboard lock code. Keyboard lock code: 7896

3. Product Serial Number

This menu provides the product serial number. In case of product related queries please provide this number with your enquiry. The pictured number is just an example.



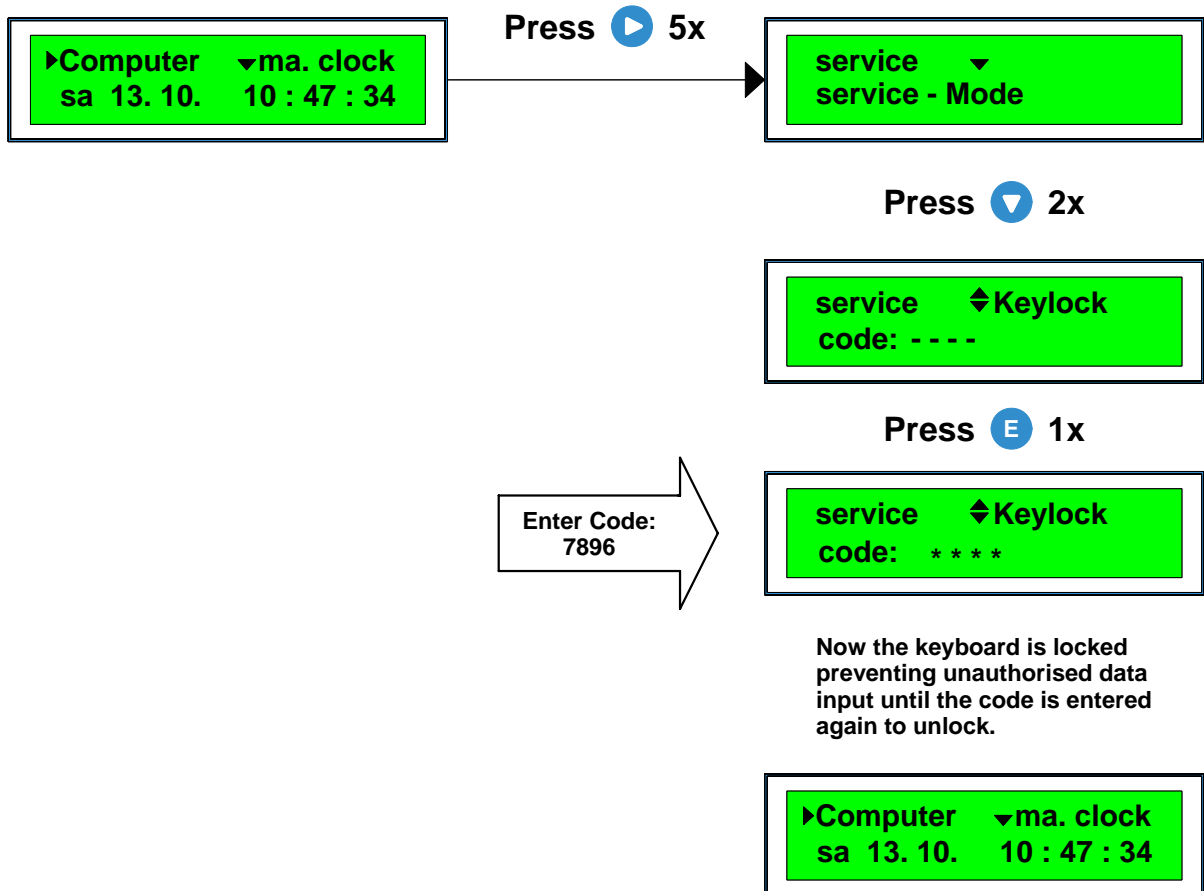
Main Menu

Auto return to
Main Menu in
approx. 30 sec

KHU2711 "Service" MENU

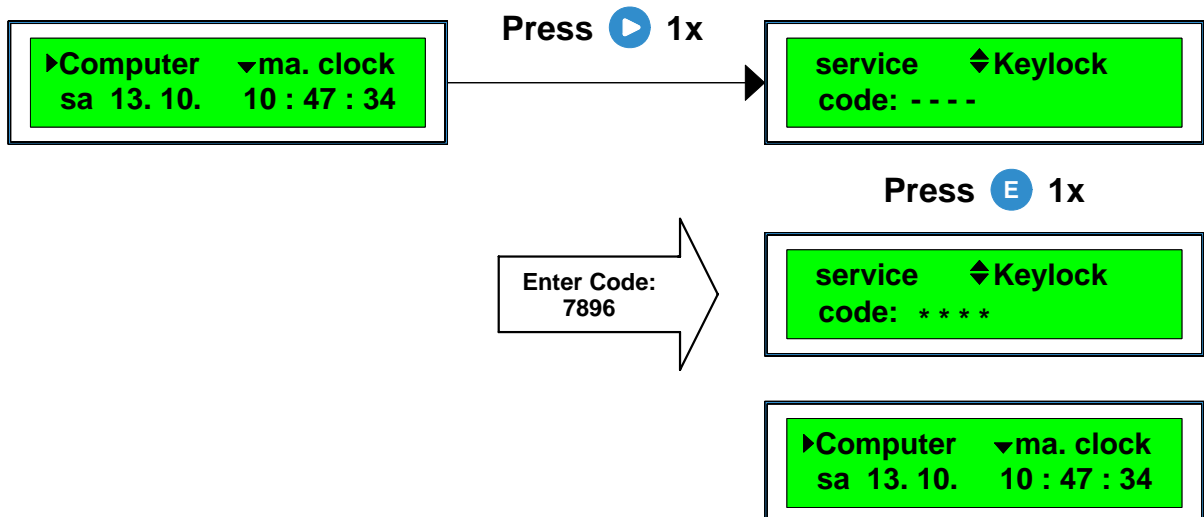
Lock Keyboard

The keyboard can be locked to prevent unauthorised operation of the master controller. The lock code is: 7896



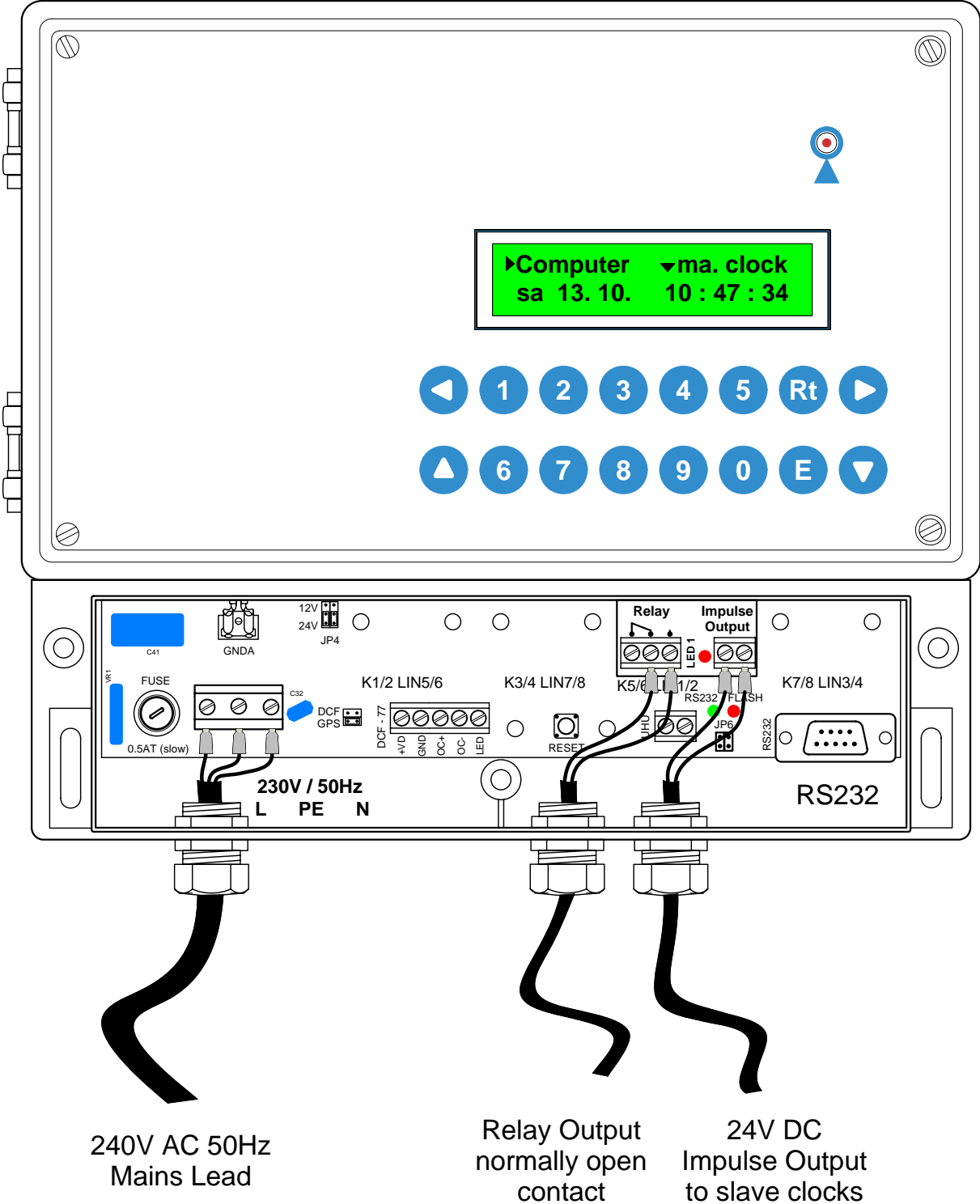
Unlock Keyboard

Unlock the keyboard to enable data entry.
The lock code is: 7896



The keyboard is now unlocked.

KHU2711 Connections



KHU2700 Series

Computer Master Clock with programmable relays
Made in Germany

KHU2700 MASTER CLOCK

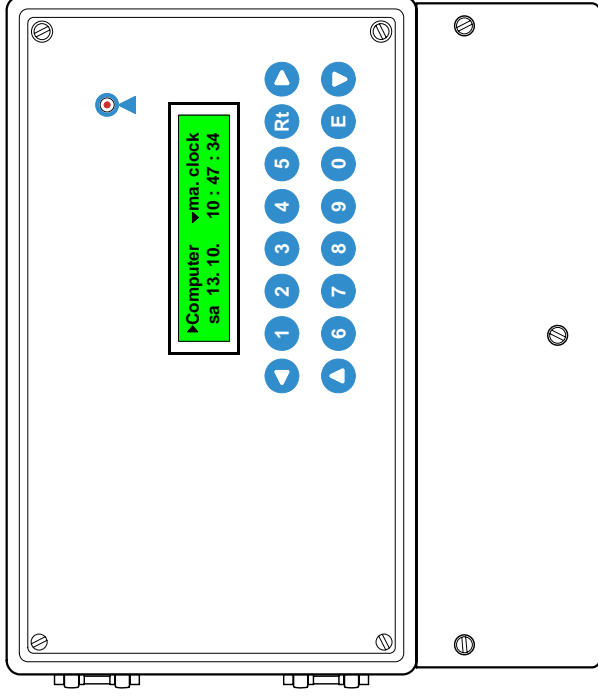
- Operating conditions: max. ambient temperature: -20 to +70 deg. C, relative humidity: between 10 - 90% non condensing, for dust free indoor applications without exposure to direct sunlight
- 3x months battery back-up
- Date programmable daylight saving change-over
- Keyboard lock via 4-digit code number
- Output Capacity:
 - minute impulse 12/24VDC 500/250mA (35x clocks)
 - programmable impulse length: 0.1 - 9 sec
 - programmable impulse pause: 0.1 - 9 sec
- Slave clock output programmable for minute, half minute and second impulses
- Master or Sub-Master operation (MC or SMC)
- Power Supply: 230/240VAC 50/60Hz 12VA
- Dimensions: KHU2700 HxWxD 205x240x124 weight: 1.3kg
- Case: wall mounting: plastic, light grey to RAL 7035, IP40
- Accuracy: built-in quartz crystal: +/- 1 min/year at 20-22 deg. C

PROGRAMMABLE RELAY CIRCUIT

- 1x relay with floating contacts (NO, NC)
- Up to 300x time entries (daily, weekly, yearly + suppress)
- Seconds resolution
- Impulse (bells) and on/off programming
- Programmable impulse length: 1-99 sec
- Programmable impulse repetition: 0 - 15 times
- 1x Master and 3x Sub Programs

ORDER CODES

KHU2711 = 1x alternating impulse output for 35 clocks
1x programmable relay output
KHU2722 = 2x alternating impulse outputs for 2x 35 clocks
2x programmable relay outputs



KHU2711 Wall Mounting Unit

KHU2711 Computer Master Clock

