



USER MANUAL

Mini Master clock HN 60i, HN 61i

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1. DESCRIPTION

The „mini“ master clock is a device used to control small-scale systems of unified time, with up to 20 pieces of slave clocks. The clock is mounted to the DIN rail and is finding its use mostly in schools and plants of reduced size.

HN 60i

- one slave line 24 V / 150 mA
- 1 programmable relay contact
- 1 week program up to 399 program lines
- DCF synchronization

HN 61i

- one slave line 24 V / 150 mA
- 1 programmable relay contact
- 1 week program up to 399 program lines
- synchronization via GPS
- synthetic DCF output

1.1. Basic equipment level

- LCD display 2x16 characters
- easy operation using 6 keys located on the front panel
- well-arranged user menu, multilingual menu
- configuration of time zone synchronization, line, switching contact
- monitoring quality of DCF 77, WWVB, MSF or DCF signal reception
- USB connector for flash memory drive with save switch programs
- powered by mains 115 or 230 VAC, or 12 or 24 VDC power supply

Time-base

- clock is controlled by a microprocessor and has own precise crystal base local time calculation with automatic DTS
- entry of desired zone from standard timezone table

Slave line

freely adjustable for the transmission of:

- polarized minute pulses
- polarized half-minute pulses
- polarized second pulses
- serial code MOBATIME

The impulse length, gap length and cycle type can be set for all types of impulse lines.

Daylight saving time processing

- via DCF receiver or by setting the time zone when synchronizing from GPS
- respecting timezone settings

Switching channel

programmable controlled switching

- weekly program cycle, up to 399 programmable lines
- switching according to calculated sunrise / sunset time (from geographic coordinates)

manual switching

- ON/OFF mode (by repeated depression of the pushbuttons the channel becomes switched on and off)
- pushbutton mode (during the keeping the pushbuttons depressed the channel is switched on)
- the timer mode (pushing the buttons causes the channel to be switched on for a specified predefined time period)

Operation reserve

passive

- internal backup battery for RTC in case of power loss
- as soon as the power becomes resumed the slave clocks adjust automatically and in an accelerated mode to the proper time, the channel state corresponds to the actual time

active

- internal circuit for charging the accumulators
- optional external maintenance-free lead-acid batteries
- low-power mode for longer running time on back-up battery

Other I / O

- optional RS 485
- output 24 V (usable for bells) and 14 V (usable for bells and charging backup battery), summary current limit up to 200 mA
- input for DCF receiver connection for HN 60i
- input for GPS antenna connection for HN 61i

Design

- conventional type
plastic case of IP 20 for DIN rail mounting, width 6M
- for indoor use
plastic case IP40 for mounting to a wall
- for outdoor use
plastic case IP65 for mounting to a wall
- rack mounting in 19" rack cabinet; 1U height

1.2. Accessories

- AD 650, DCF 77.5 kHz radio receiver, for indoor and outdoor placement, standard cable length 2 m (max. 200 m), for HN 60i
- GPS antenna for HN 61i, cable length 5 m
- battery pack with maintenance free Pb accumulator 12 V / 0.8 Ah, provides for continuous operation of the MASTER clock, including the connected slave clocks in case of a power outage, for a period of approx. 24 hours.

2. INSTALLATION

2.1. Installation environment

The following installation places should be avoided:

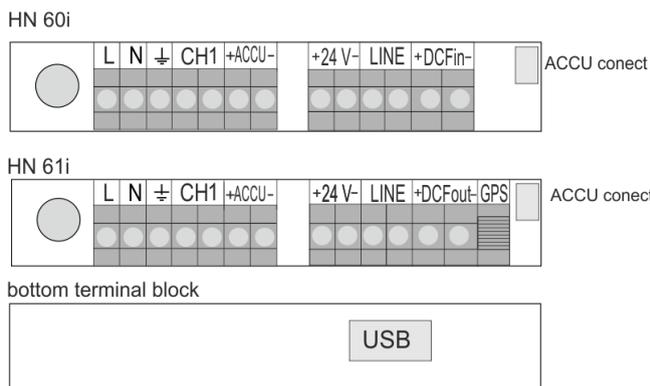
- within the reach of medium-voltage operated equipment
- places exposed to direct impact of solar radiation

2.2. Installation procedure

- Snap the clock box onto the DIN rail or for rack variant into the 19" rack cabinet
- Terminate all supply cables on the terminal box at the top of the clock box, or on the back of the rack cabinet, respectively.
- The wall mounting case has holes for supply cables in the top and rear of the case .
- Connect the DCF receiver (GPS antenna), slave clock line cables, switching circuit, power cable.
- Connect the 230 V mains power lines. When Master clock is set correctly and slave clock are synchronized, clock display the current time.

2.3. Terminal board connection

DIN rail version



Rack version



2.4. Description of DIN rail version terminals

Fuse	MST fuse T100 mA / 250V
L N PE	mains rated voltage of 230 VAC, 50 Hz
CH1	connection switched circuits, 250 V, 6 A, 1500 VA, with possibility of programming or manual switching
+ VDC -	24V output for powering other external devices (eg school bells) can also be used as a 24 V power supply
+ ACCU -	14 V output for powering external devices or charging of external battery
L1	slave line connection terminals
DCF IN	DCF input for HN 60i
DCF OUT	synthetic DCF output for HN 61i
GPS	SMA connector for GPS antenna, for HN 61i only

2.5. Description of the rack version terminals

Euro connector with fuse 100 mA / 250 V for connection of the mains supply voltage

RELAY 1	connection of switching circuits, 250 V ~, 6 A, 1500 VA, with programmable or manual switching
RELAY 2	stand-by switching for audio output
IO 1 - IO 4	universal OC switching outputs
IO 5 - IO 6	universal input
GPS	screw connector for GPS antenna connection, for HN61i only
DCF IN	input for DCF receiver connection, for HN 60i version
DCF OUT	synthetic DCF output for slave clock synchronization, for HN 60i version
LINE 1	slave line 1 connection
+24 VDC	24 V output to power external devices (e.g. school bells)
+14 VDC	14 V output to power external devices
RS485TRE	connection of RS485 bus terminating resistor
RS485	communication bus
AUDIO	line audio output to 3.5 mm jack connector

2.6. Slave line connection

Connect the slave clock to terminal the L1. Set the type of slave line depending on the type of clock

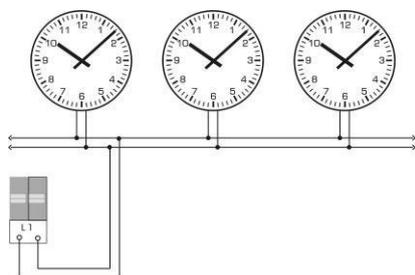


Fig.: Connection of clock to unified pulse line

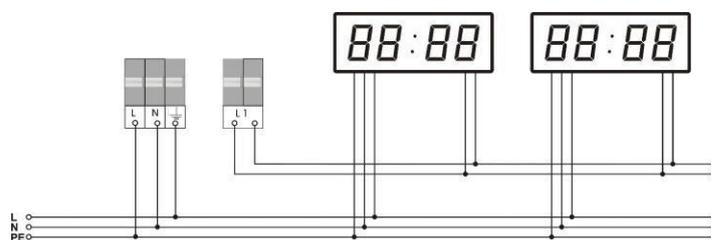
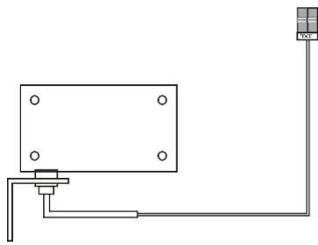


Fig.: Connection of digital clock to system of unified time

2.7. DCF connection

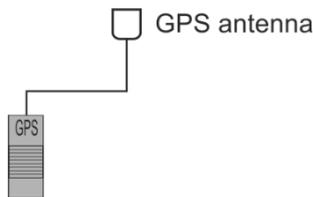
The DCF receiver serves for fully automatic adjustment and synchronization of time using the DCF radio signal with a coverage within the diameter of 1500 km around the Germany city Frankfurt am Main. Comprehensive information about time and date is then transmitted into the DCF transmitter located in Meinflingen near to Frankfurt. The transmitter transmits long-wave signals at 77.5 kHz frequency. The DCF receiver guarantees absolutely precise time data with automatic transition to the summer time.



Generally the DCF receiver is supplied with 2 m long cable, but it can be located also at a longer distance, in which case it is advisable to connect it via a twisted pair of up to 200 m. Do not install the receiver close to buildings consisting of metallic steel structures, near to PCs, TV and radio receivers or in places surrounded with thick walls or into underground or cellar areas.

Fig.: Connection of the DCF Receiver

2.8. GPS Antenna connecting



The magnetic GPS antenna can be connected to the HN 61i variant

2.9. Switching channel

The CH1 terminal (or RELAY 1) serves to control the externally connected equipment. School bells or external equipment can be powered with 24 V DC.

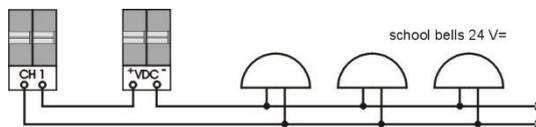


Fig. : Connection of school bells

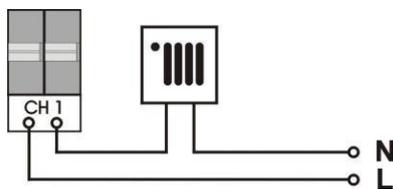


Fig. : Connection of external devices with mains supply 230 VAC

3. LCD DISPLAY - INFORMATION SCREENS



Fig .: DIN rail variant front panel



Fig .: Rack variant front panel

There is a slot for the uSD card, a line audio output for a 3.5 mm jack connector and a USB connector for connecting a flash drive.

In the basic display mode you can scroll through the information screens on the LCD display:

MASTER	time and date information, manual time and date adjustment
LINE	information about the state of slave line; time adjustment for the slave line
CHANNEL	information about the state of channel
SYNCHRONIZATION QUALITY	information about the receipt and the quality of the DCF and GPS synchronisation signal
VERSION	information about Master clock model and SW version

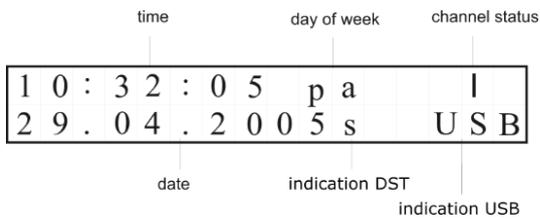
Button function:

	switching information screens browsing
simultaneously 	manual control of the switching channel

Note: the function of keys depends on the screens chosen and is not the same for any screen.

3.1. The MASTER screen

Provides for the basic mode of display. From all the „screens“ you can jump back into the MASTER screen by operating the **X** button.

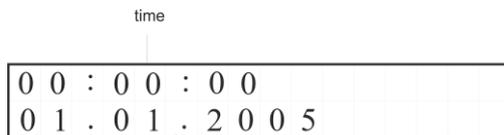


Button function:

- simultaneously **X** ✓ manual control of switching channel
- scrolling to the LINE screen
- correction of seconds: ± 30 secs.
- +** input to manual time and date setting
- ✓** input to MAIN menu

3.1.1. Manually setting the time and date

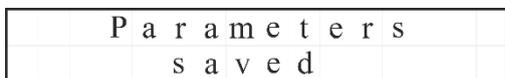
Set the time and date manually when operating without a DCF or GPS receiver.



- ◀ ▶** move around the items
- + -** change the blinking item (automatic change when pressed down and held)
- ✓** storage of values entered and return to the MASTER screen
- X** return without storing the values entered

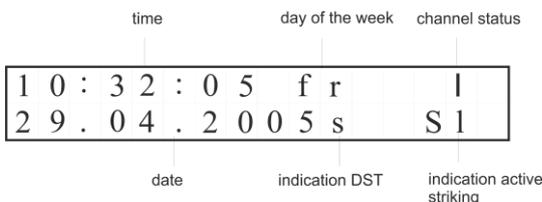
Press the **+** button. The cursor flashes now on the position of the hours. Enter the time value in the hh **➤** mm **➤** form using the **+** and **-** buttons. The cursor is now blinking on the date position. Enter the date in the dd **➤** mm **➤** yy form.

Confirm the values set up by operating the **✓** button.



Day of the week and DST status are calculated automatically.

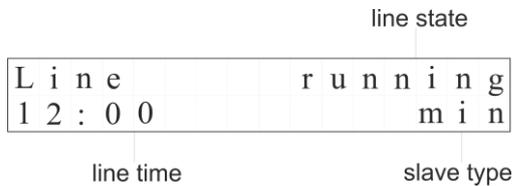
The display shows either the Central European (w) or summer (s) time.



To make the adjustment more easier and to provide the time correction within the scope of ± 30 secs. the button **-** is used.

3.2. The LINE screen

This screen shows the operation state of the slave line. This is displayed when push 1x the ► button from the MASTER screen.



Button function in Line screen mode:

- start / stop the slave line
- + slave line time setting
- ✓ enter the slave line menu (the adjustment is described in chap. 8)
- ◀ or ✕ return to the MASTER screen
- moving to the CHANNEL screen

slave line status can be:

- stop* line is stopped, it is possible to set the line time
- running* line normal operation
- fast fwd* accelerated catch up cycle
- waiting* line in waiting mode; time necessary to correct the time of slave clocks is shorter than the time necessary for accelerated catch-up cycle
- overload* line is overloaded or short circuit on line
- 12pos + stop* accelerated catch-up cycle with automatic stop on 12:00

3.2.1. Setting the time of slave line

Set the slave pulse line time in stop mode. Set the same time on all slave clocks before starting the line. Enter this time as the slave time. To setting, press the button + from the LINE screen. (Line type settings are described in Chap.8.)

Button function:

- ◀ ▶ move around items
- + - change the blinking item (while holding auto load)
- ✓ save the entered values and return to the LINE screen
- ✕ return without saving

Set slave line time in following format:

- minute line *hh: mm*
- half-hour line *hh: mm: 00 or hh: mm: 30*
- seconds line *hh: mm: ss*

Note: For MOBATIME code line the current line time is displayed without possibility to change.

3.3. CHANNEL screen

This screen is displayed by 2x the ► button from the MASTER screen.

3.3.1. Channel is controlled by active weekly program or manually

												channel time		
C	H	:	0		0	7	:	4	4	:	1	6		
p	u	s	h		b	u	t	t	o	n				

Button function:

entry to the selection of weekly program selection for the purpose of editation (setting is described in chapter 9.1)

- moving to the STRIKING screen
- ◀ return to the LINE screen
- ✕ return to MASTER screen

3.3.2. Channel switches according to calculated of sunrise and sunset times.

			channel state (0 or 1)									time off illumination					
C	H	:	1		o	f	f	.	0	7	:	5	0				
I	l	l	u	m	i	n	.	o	n	.	1	6	:	4	5		

Button function:

- ✓ entry to coordinate settings and channel switching on / off correction (setting is described in chap. 9.2)
- move to the STRIKING screen
- ◀ return to the LINE screen
- ✕ return to the MASTER screen

3.4. STRIKING screen

This is displayed when push 3x the ► button from MASTER screen

It only works when the striking is activated in the menu.

If the striking is enabled in the MAIN menu, can be displayd the time period when the striking is off, the type of striking and whether it is currently striking. For rack version only.

S	t	r	i	k	i	n	g								
O	f	f		2	2	-	0	6				1	/	4	

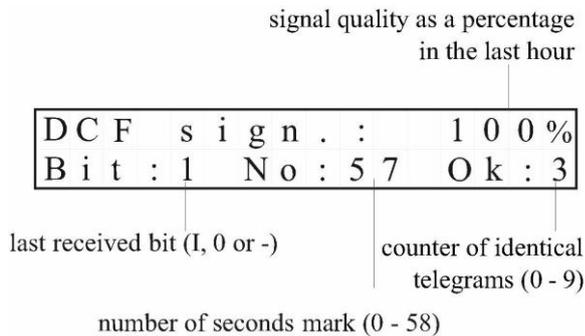
breakdown time type of striking

- move to the SYNCHRONIZATION screen
- ◀ return to the CHANNEL screen
- ✕ return to the MASTER screen

3.5. SYNCHRONIZATION QUALITY SCREEN

3.5.1. DCF

When clock is synchronized with the DCF radio signal, its quality can be monitored. It will be displayed when push 3x(4x) the ► button from the MASTER screen.

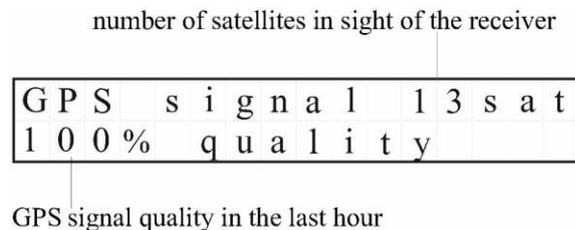


Button function:

- move to VERSION screen
- ◀ return to STRIKING screen
- ✕ return to the MASTER screen

3.5.2. GPS

When clock is synchronized with the DCF radio signal, its quality can be monitored. It is displayed by pressing ► button 3x (4x) from the MASTER screen.

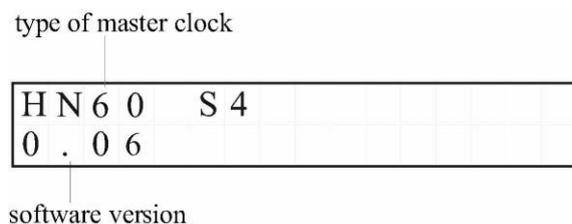


Button function:

- move to the VERSION screen
- ◀ return to STRIKING screen
- ✕ return to the MASTER screen

3.6. VERSION screen

This is displayed when push the ► button 4x (5x) from MASTER screen.



Button function:

- or ✕ move to the MASTER screen
- ◀ return to SYNCHRONIZATION screen

4. MAIN MENU

Press the ✓ to enter MAIN MENU.

The display shows:

M a i n m e n u			
T i m e z o n e			

Menu items:

<i>Synchronization</i>	set up synchronization source
<i>Time zone</i>	time zones configuration
<i>Slave line</i>	slave line parameters settings
<i>Channel setup</i>	channel settings
<i>Week program</i>	edit the weekly program
<i>Striking</i>	adjusting the parameters and type of striking for rack version only

Button functions:

◀ or ▶	change item
✓	confirm selection and enter settings
✕	return to the MASTER screen

5. SYNCHRONIZATION

When Mater clock has only one synchronization source, you cannot select another. It is preset for HN60i there is DCF and for HN61i is only GPS.

In the MAIN Menu press the ✓ button to select *SYNCHRONIZATION*.

synchronization source
(DCF or GPS)

T	y	p	e	:					D	C	F
---	---	---	---	---	--	--	--	--	---	---	---

6. SET TIME ZONES

This function is used to set time zones of slave line, channel, master clock time view, and synchronization sources. See the Mobatime Time zone table in chapter 12.

In the MAIN Menu press the ✓ button to select *Time Zones*.

The menu contains two pages between which you can scroll if an item that is set with the ◀ and ▶ button doesn't blinking.

The display shows:

L i n e	T Z :					2
C h a n n e l	T Z :					2

By pressing the ▶ button you can go to the screen:

L o c a l	T Z :					2
S y n c	T Z :					2

Button functions:

- ◀ ▶ moving items; or the menu pages, if the item being set isn't blinking
- + ✓ enter the item settings on the current page
- + - change the blinking item (while holding auto load)
- ✓ save the entered values and return to MASTER screen
- x return without saving

default values for second line:

pulse length	0.3 s
gap length	0.2 s

Note about setting a second line:

For a second line, $\Sigma \text{ imp} + \text{gap}$ can't be higher than 10, if = 10 no fast operation is possible.

Button functions:

<	>	move between items
+	-	change the blinking item (while holding auto load)
	✓	save the entered values and return to LINE screen
	✕	return without saving

8. CHANNEL SETTING - CHANNEL PARAMETERS CH 1

Use this function to set the channel switching mode.

In the MAIN Menu press the ✓ button to select *Channel* setup.

Options:

<i>Program / manually</i>	channel switches according to the weekly program or manually/ function to set the mode for manual switching of the channel
<i>Illumination</i>	channel switches according to calculated sunrise and sunset times

Buttons function:

◀ ▶	change item selection
✓	confirm selection and open submenu

Note:

The channel can be switched manually in all information screens. If sunrise / sunset switching is set, the channel can not be switched manually.

8.1. Program / Manual

Press the ✓ button to select Program / manually.

The display shows:

M	a	n	.	s	w	i	t	c	h										
p	u	s	h		b	u	t	t	o	n									

Options:

<i>timer</i>	by pressing the button the channel will switch to predefined period of time 00:01-15:59 (mm:ss)
<i>on / off</i>	press to turn on, press to turn off
<i>push button</i>	the channel is switched on while the button held (default)

Buttons function:

◀ ▶	moving between items
+ -	change the blinking item
✓	save the entered values and return to CHANNEL screen
✕	return without storing

8.2. Switching illumination by calculated sunrise and sunset time

Press to ✓ button to select Illumination.

Calculated times apply to the specified geographic coordinates. For places with specific conditions, it is possible to adjust the time for switching off and switching off the channel. Adjusting the value to the positive value speeds up the evening switching-on and extends the switching-off time in the morning.

Example: no correction: switch on 19:20 – switch off 6:32; correction + 10 min: 19:10 - 6:42;
correction -10 min: 19:30 - 6:22.

The display shows:

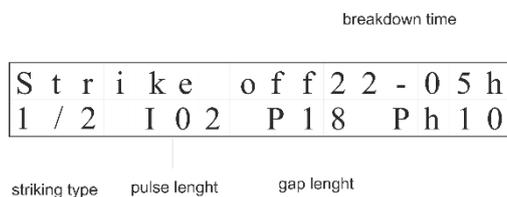


Button functions:

- ◀ ▶ moving between items
- + - change the blinking item
- ✓ save the entered values and return to CHANNEL screen
- ✕ return without saving

10. STRIKING

This function is used to set the parameters and type of striking, for rack version only.
In the MAIN Menu press the ✓ button to select *Striking*.



Options:

- 22-06 setting of the beginning and end of the time period when the striking is switched off
 e.g. at setting 22-06 the last hit is at 22:00 and the the striking starts the next day at 6:00
- 1/2 adjusting the type striking; the choice is 1/2, 1/4, and off
- I enter the pulse length in tenths of a second (01-99)
- P enter the pulse gap length (01-99)
- Ph enter the length of the gap between the ¼ and the hour striking (01-99)

Button functions:

- < > move between the items
- + change the blinking item
- x return to MAIN MENU
- ✓ save the entered values

11. TECHNICAL PARAMETERS

Model		HN 60i	HN 61i
Slave clock line	number	1	
	type	polarized minute, half-minute or second impulses, MOBA TIME serial code	
	electrical parameters	24V, max. 150 mA	
Switching relay contact	number	1	
	weekly program	with up to 399 switching commands	
	astronomical calendar	with entry of geographical coordinates for sunrise/sunset calculation	
	manual switching	selection of different control modes	
	electrical parameters	max. 250 VAC, max. 6 A, 1500 VA	
Other I/O	input of DCF signal	✓	-
	output of DCF signal (synthetic passive)	-	✓
	GPS input for external antenna	-	✓
	USB	✓	
	output 14 and 24 VDC, max. 200 mA summary current	✓	
Back-up at power failure	passive for RTC	about 5 years by lithium battery	
	active for full functionality	internal circuit for charging the external battery	
Power supply	AC (mains)	115 or 230 VAC ±5 %, 50-60 Hz	
	DC	12 or 24 VDC ±10 %	
Accuracy (at about 20°C)	without synchronisation	± 0,1 s per day	
	synchronised	± 10 ms	
Environment	operating temperature	from -30 to + 70°C	
	relative humidity	max. 95% without condensation	
Dimensions (mm) / Weight (kg)	IP 20	106 (6M) x 90 x 58 mm / 0.6kg	
	IP 40	140 x 165 x 74 mm / 0.8kg	
Weight (kg)	IP 65	145 x 240 x 113 mm / 1.2kg	
	19" rack mounting	483 x 44 (1U) x 127 mm / 1,5 kg	
Accessories			
DCF 77 radio receiver	AD 650	✓	-
GPS magnetic antenna	Standard cable length 5m	-	✓
Back-up battery pack	Lead battery 0,8 Ah, 12 V	✓	

12. TIME ZONE TABLE

Time zone entries in the standard season table, (version 10.2).

No.	City / State	UTC Offset	DST	Standard → DST	DST → Standard
00	UTC (GMT), Monrovia	0	No		
01	London, Dublin, Lisbon	0	Yes	Last Sun. Mar. (01:00)	Last Sun. Oct. (02:00)
02	Brussels, Amsterdam, Berlin, Bern, Copenhagen, Madrid, Oslo, Paris, Rome, Stockholm, Vienna, Belgrade, Bratislava, Budapest, Ljubljana, Prague, Sarajevo, Warsaw, Zagreb	+1	Yes	Last Sun. Mar. (02:00)	Last Sun. Oct. (03:00)
03	Athens, Helsinki, Riga, Tallinn, Sofia, Vilnius	+2	Yes	Last Sun. Mar. (03:00)	Last Sun. Oct. (04:00)
04	Bucharest	+2	Yes	Last Sun. Mar. (03:00)	Last Sun. Oct. (04:00)
05	Pretoria, Harare, Kaliningrad	+2	No		
06	Amman	+2	Yes	Last Thu. Mar. (23:59)	Last Fri. Oct. (01:00)
07	UTC (GMT)	0	No		
08	Istanbul, Kuwait City, Minsk, Moscow, Saint Petersburg, Volgograd	+3	No		
09	Praia, Cape Verde	-1	No		
10	UTC (GMT)	0	No		
11	Abu Dhabi, Muscat, Tbilisi, Samara	+4	No		
12	Kabul	+4.5	No		
13	Adamstown (Pitcairn Is.)	-8	No		
14	Tashkent, Islamabad, Karachi, Yekaterinburg	+5	No		
15	Mumbai, Kolkata, Chennai, New Delhi, Colombo	+5.5	No		
16	Astana, Thimphu, Dhaka, Novosibirsk	+6	No		
17	Bangkok, Hanoi, Jakarta, Krasnoyarsk	+7	No		
18	Beijing, Hong Kong, Singapore, Taipei, Irkutsk	+8	No		
19	Tokyo, Seoul, Yakutsk	+9	No		
20	Gambier Island	-9	No		
21	South Australia: Adelaide	+9.5	Yes	1 st Sun. Oct (02:00)	1 st Sun. Apr. (03:00)
22	Northern Territory: Darwin	+9.5	No		
23	Brisbane, Guam, Port Moresby, Vladivostok	+10	No		
24	Sydney, Canberra, Melbourne, Tasmania: Hobart	+10	Yes	1 st Sun. Oct. (02:00)	1 st Sun. Apr. (03:00)
25	UTC (GMT)	0	No		
26	UTC (GMT)	0	No		
27	Honiara (Solomon Is.), Magadan, Noumea (New Caledonia)	+11	No		
28	Auckland, Wellington	+12	Yes	Last Sun. Sep. (02:00)	1 st Sun. Apr. (03:00)
29	Majuro (Marshall Is.), Anadyr	+12	No		
30	Azores	-1	Yes	Last Sun. Mar. (00:00)	Last Sun. Oct. (01:00)
31	Middle Atlantic	-2	No		
32	Brasilia	-3	Yes	3 rd Sun. Oct. (00:00)	3 rd Sun. Feb. (00:00)
33	Buenos Aires	-3	No		
34	Newfoundland	-3.5	Yes	2 nd Sun. Mar. (02:00)	1 st Sun. Nov. (02:00)
35	Atlantic Time (Canada)	-4	Yes	2 nd Sun. Mar. (02:00)	1 st Sun. Nov. (02:00)
36	La Paz	-4	No		
37	Bogota, Lima, Quito	-5	No		
38	New York, Eastern Time (US & Canada)	-5	Yes	2 nd Sun. Mar. (02:00)	1 st Sun. Nov. (02:00)
39	Chicago, Central Time (US & Canada)	-6	Yes	2 nd Sun. Mar. (02:00)	1 st Sun. Nov. (02:00)

40	Tegucigalpa, Honduras	-6	No		
41	Phoenix, Arizona	-7	No		
42	Denver, Mountain Time	-7	Yes	2 nd Sun. Mar. (02:00)	1 st Sun. Nov. (02:00)
43	Los Angeles, Pacific Time	-8	Yes	2 nd Sun. Mar. (02:00)	1 st Sun. Nov. (02:00)
44	Anchorage, Alaska (US)	-9	Yes	2 nd Sun. Mar. (02:00)	1 st Sun. Nov. (02:00)
45	Honolulu, Hawaii (US)	-10	No		
46	Midway Islands (US)	-11	No		
47	Mexico City, Mexico	-6	Yes	1 st Sun. Apr. (02:00)	Last Sun. Oct. (02:00)
48	Adak (Aleutian Is.)	-10	Yes	2 nd Sun. Mar. (02:00)	1 st Sun. Nov. (02:00)
49	UTC (GMT)	0	No		
50	UTC (GMT)	0	No		
51	UTC (GMT)	0	No		
52	UTC (GMT)	0	No		
53	UTC (GMT)	0	No		
54	Ittoqqortoormit, Greenland	-1	Yes	Last Sun. Mar. (00:00)	Last Sun. Oct. (01:00)
55	Nuuk, Qaanaaq, Greenland	-3	Yes	Last Sat. Mar. (22:00)	Last Sat. Oct. (23:00)
56	Not used				
57	Western Australia: Perth	+8	No		
58	Caracas	-4.5	No		
59	CET standard time	+1	No		
60	Not used				
61	Not used				
62	Baku	+4	Yes	Last Sun. Mar. (04:00)	Last Sun. Oct. (05:00)
63	UTC (GMT)	0	No		
64	UTC (GMT)	0	No		

In countries where the DST switch date changes annually (e.g. Iran, Israel), the time zone has to be defined manually in the user time zone table (entries 80 – 99).

Legend:

UTC: Universal Time Coordinate, equivalent to GMT
DST: Daylight Saving Time
DST Change: Daylight Saving Time changeover
Standard → DST: Time change from Standard time (Winter time) to Summer time
DST → Standard: Time change from Summer time to Standard time (Winter time)

Example:

2nd last Sun. Mar. (02:00) Switch over on the penultimate Sunday in March at 02.00 hours local time.

13. WARRANTY and REPAIRS

- The HN 60i&HN 61i master clock meets the requirements of the following standards:
Electrical safety EN62268-1
EMC - EN 55032, EN 55024, EN 50121 – 4
CE Applied EU directives:
2006/95/ES (LVD), 2004/108/ES (EMC),
2011/65/EU (RoHS), 2002/96/EC (WEEE)
- The device is to be located outside of working radius of medium voltage power sources. Also can not be exposed to direct impact of solar radiation.
- The device is covered with a 24-month warranty starting from the date of product sale. The warranty does not refer to defects that have been caused by the following:
 - unprofessional handling or interference
 - chemical effects
 - mechanical damage
 - the external impact (such as natural disasters, etc.)Servicing during the warranty and post-warranty period is carried out by the manufacturer

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