



## Mini Computer Master Clock with DCF 77 radio or GPS control for up to 20 slave clocks

**HN 60i / 60a**

**HN 61i / 61a**

The „mini“ master clock is a device used to control small-scale systems of unified time, with up to 20 pieces of slave clocks and up to 8 pieces of school bells (signaling devices). The clock is mounted to the DIN rail and is finding its use mostly in schools and plants of reduced size.

One slave line 24 V / 150 mA, one or two programmable relay contacts, switching program with a weekly cycle up to 399 programmable lines. Integrated GPS receiver on HN 61i / 61a. Audio output on HN 60a / 61a.

## TECHNICAL DESCRIPTION

### Basic properties

- LDC display with 2 x 16 characters
- easy operation using 6 keys located on the front panel
- multi language support
- monitoring quality of DCF 77, WWVB, MSF or GPS signal
- possibility of configuration for any time zone
- USB for connection of flash memory drive with saved switch programs
- powered by mains 115 or 230 VAC or by DC power 12 or 24 VDC

### Switching channels

1 or 2 programmable relay contacts freely configurable for switching based on:

- weekly program cycle with up to 399 programmable lines
- astronomical calendar with sunrise and sunset time calculation based on entry of geographical coordinates
- manual switching with various modes (ON/OFF, push-button, timer)

### Time base

The clock is controlled by a microprocessor and locked to its own precise crystal time base.

Local time calculation with automatic DST:

- entry of desired zone from standard timezone table

### Design

conventional type

- plastic box of IP 20, for mounting on a DIN rail - 6M or 9M width

for indoor use

- mounting to a wall, IP 40

for outdoor use

- mounting to a wall, IP 65

### Slave line

freely adjustable for the transmission of:

- polarized minute impulses
- polarized half-minute impulses
- polarized second impulses

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

### Other I/O

- input for the connection of DCF, WWVB, MSF receiver or GPS receiver (with DCF output)
- SMA connector for external GPS antenna and synthetic passive DCF output on HN 61i / 61a
- output 24 VDC with adjustable current limit to 200 mA (for powering of school bells or other devices), can serve as 24 VDC power input alternatively
- terminal for connection of external backup battery with adjustable current limit
- mono audio output (HN 60a / 61a only)

### 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 external backup batteries
- optional external backup maintenance-free lead-acid batteries



design IP 40



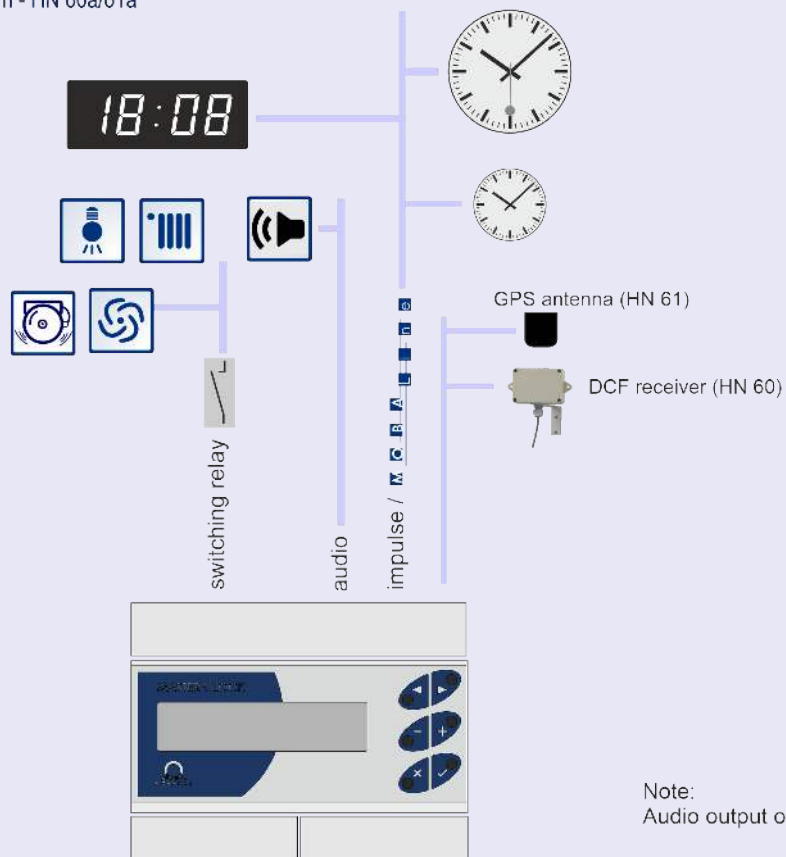
design IP 65

## TECHNICAL DATA

Model		HN 60i	HN 61i	HN 60a	HN 61a
mounting on a DIN rail		6 MD		9 MD	
Slave clock line	number	1			
	type	polarized minute, half-minute or second impulses			
	electical parameters	12 / 24 V, max. 150 mA			
Switching relay contact	number	1	2		
	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	✓			
	mono audio output 3,5 jack	-		1 (2 outputs)	
	output 12 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 synchronization	±0.1 s/day (after 24 hrs of synchronization at constant temperature)			
	synchronized	±10 ms			
Enviroment	operating temperature	from -30 to +70°C			
	relative humidity	max. 95% without condensation			
Dimensions (mm) / Weight (kg)	IP 20	106 (6 MD) x 90 x 58 mm / 0.6 kg		161 (9 MD) x 90 x 58 mm / 0.6 kg	
	IP 40	146 x 180 x 82 mm / 0.9 kg		256 x 200 x 94 mm / 1.6 kg	
	IP 65	146 x 240 x 111 mm / 1.3 kg		256 x 333 x 129 mm / 2.7 kg	
Options / Accessories					
DCF 77 radio receiver	AD 650	✓	-	✓	-
BP 60/50 12V	back-up battery pack Lead battery 0.8 Ah, 12 V	Dimensions [mm] Weight [kg]	106 (6M) x 92 x 40 mm / 0.5 kg		
HN..SSR2	striking module		53 (3M) x 90 x 62 mm / 0.2 kg (for HN 60m / 61m only)		
HN 6x IP 40 case	for indoor wall mounting		✓		
HN 6x IP 65 case	for outdoor wall mounting		✓		

## CONNECTION SCHEME

HN 60i/61i - HN 60a/61a



Note:  
Audio output on HN 60a / 61a only