



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

Model **HN 60&61 / HN 60i&61i**

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 bell (signaling devices). The clock is mounted to the DIN rail or into the 19“ rack

and is finding its use mostly in schools and plants of reduced size. One slave line 24 V / 150 mA, one programmable relay contact, switching program with a weekly cycle up to 399 programmable lines. Integrated GPS receiver (HN 61 only).

TECHNICAL DESCRIPTION

Basic properties

- LCD display with 2x16 characters
- easy operation using 6 keys located on the front panel
- well-arranged user menu
- 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 230VAC or by DC power 12 or 24 VDC

Switching channel

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
- striking function
- 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 width

for indoor use

- mounting to a wall, IP 40
- 19" rack mount type - 1U height (for HN 60&61 only)

for outdoor use

- mounting to a wall, IP 65



19" rack mount

Slave line

freely adjustable for the transmission of:

- MOBALine (for HN 60&61 only)
- MOBATIME serial code
- 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 61
- output 24 VDC with adjustable current limit to 200 mA (for powering of bells or other devices), can serve as 24VDC power input alternatively
- terminal for connection of external backup battery with adjustable current limit

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 or dry cells



design IP 65



design IP 40

TECHNICAL DATA

| Model | | HN 60 | HN 61 | HN 60i | HN 61i |
|-------------------------------|---|--|-------|--|--------|
| Slave clock line | number | 1 | | | |
| | type | MOBALine, polarized minute, half-minute or second impulses, MOBATIME serial code | | polarized minute, half-minute or second impulses, MOBATIME 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 | 146 x 180 x 82 mm / 0.9kg | | | |
| Weight (kg) | IP 65 | 146 x 240 x 111 mm / 1.3kg | | | |
| | 19" rack mount | 483 x 44 (1U) x 127 mm / 1.5kg | | - | |
| Option / Accessories | | | | | |
| DCF 77 radio receiver | AD 650 | ✓ | - | ✓ | - |
| GPS magnetic antenna | standard cable length 5m | - | ✓ | - | ✓ |
| BP 60/50 12V | back-up battery pack Lead battery 0,8 Ah, 12 V | ✓ | | | |
| HN 6x IP 40 case | for indoor wall mounting | ✓ | | | |
| HN 6x IP 65 case | for outdoor wall mounting | ✓ | | | |

Master screen

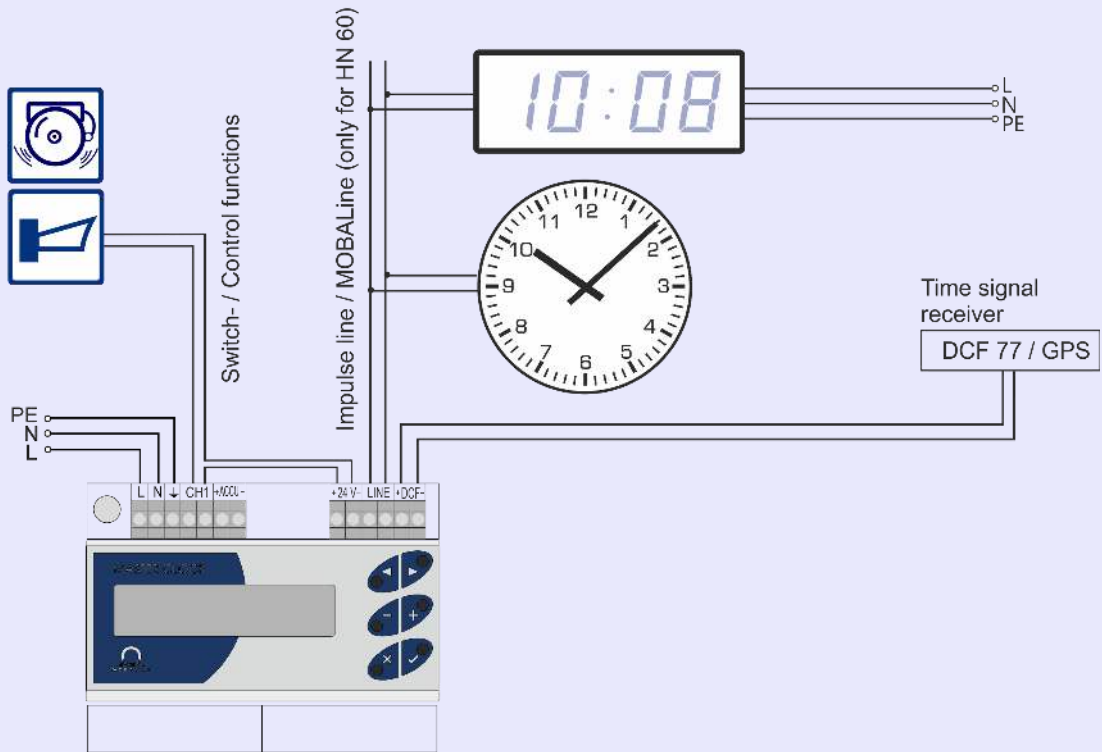
| | | | | | | | | | | | | |
|---|---|---|------|---|---|---|------------------------|---|---|----------------------------|--|---|
| 1 | 0 | : | 3 | 2 | : | 0 | 5 | f | r | | | l |
| 2 | 9 | . | 0 | 4 | . | 2 | 0 | 0 | 5 | s | | ^ |
| | | | date | | | | summer time indication | | | channel locking indication | | |

Slave line screen

| | | | | | | | | | | | | | | |
|---|---|---|---|---|--|--|--|---|---|--------------------|---|-----------|---|---|
| L | i | n | e | 1 | | | | r | u | n | n | i | n | g |
| 1 | 2 | : | 0 | 0 | | | | | | | | | | m |
| | | | | | | | | | | time of slave line | | line type | | |

CONNECTION SCHEME

HN 60 / HN 60i connection scheme



HN 61/ HN 61i connection scheme

