

## TIME DIRSTRIBUTING DEVICE (MASTER CLOCK) TYPE MC - 60



Electronic **master clock type MC-60** is designed for controlling time network equipped with **slave analog minute clocks** in such places as railway stations, banks, broker offices, hotels, radio and TV studios etc.

The master clock **enables controlling maximum six analog lines**, consisting on sending every one minute the one-second impulse, shifting analog clocks connected to the given control line by one minute forward.

Main time of the master clock is GMT (Greenwich time). GMT **clock is synchronized by the signals from DCF-77 or GPS antenna**. When there is operating the autonomous master clock (lack of DCF-77 or GPS antenna), programming of the clock is enabled by 100-year calendar.

Leading time in each of the six controlling lines is calculated **independently** in relation to standard GMT time. For each of the lines one can **individually** set time offset in relation to main GMT time and individually define changes of time winter / summer (date and time of change).

Each of the controlling lines has got two clocks, which are independent from the other clocks connected to the line:

- **Main clock of the line:** this clock is the image of a local line time, i.e. the time after taking into account the difference resulting from the time zone and the correction, resulting from seasonal time change winter / summer for the given line.
- **Control clock of the line:** this clock is a big convenience in operation of the line. This clock, set at the first start of the time net to the time, which is indicated by the analog clocks installed in the time network after starting line operation automatically sets network clocks in accordance with the data from main clock of the line.

Operation of the master clock is carried out by means of the keyboard located at the front panel or through the RS232 interface from PC computer using the enclosed software.

The **basic supply** source is mains voltage **230 VAC / 50 Hz**. Due to the possibility of momentary voltage breaks in the mains, the feeder of the master clock is **additionally** equipped with battery of **accumulators 24 V / 1,2 Ah**. This battery **ensures** supporting master clock **operation** with supporting the operation of all analog clocks connected to the time network for the period of **at least 5 hours** in case of the break in the basic supply from mains.

**Mains feeder** and located in its housing control module perform following functions:

- **Automatically re-charges accumulators**, limiting charging current and voltage.
- In case of break in voltage supply from mains automatically **switches over the master clock to supply from battery of accumulators**.
- **Checks the accumulators discharge** level and disconnects them from the master clock in case of lasting break in voltage supply from mains and the drop of accumulators voltage to the value threatening that the accumulators reach the state of deep discharge. This protects the accumulators and ensures their long usage life.

**Additional accumulator 3,6 V / 60 mAh supports the time standard** for approximately one year.

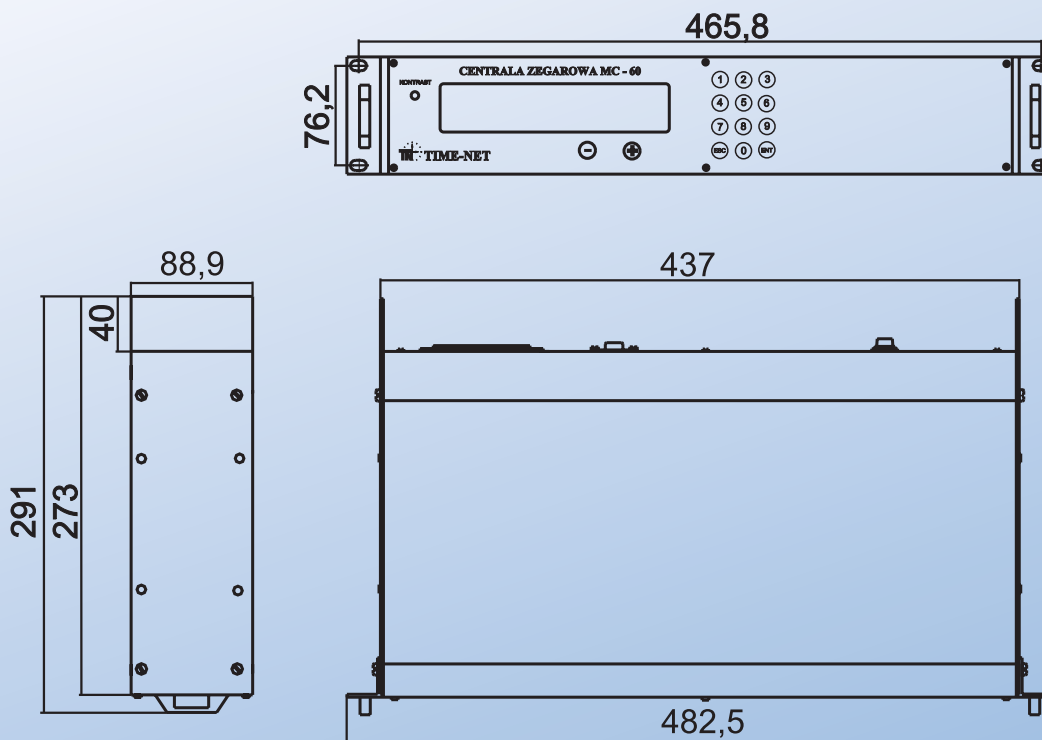
Amplifiers controlling the lines are equipped with **electronic protection against overload or short circuit** in the line.

MC-60 master clock is manufactured in practical housing type 19" with height 2U. At the front panel there is located back-lit LCD display enabling easy operation of the central clock.

Technical data

Precision of indication in the whole operating temperature range:	
- when operating autonomously	2,5 x 10 <sup>-5</sup> (2s / 24 hours)
- when operating with DCF-77 antenna	Equal to atomic standard precision.
Basic supply voltage	220 V 10% 50 Hz 2%
Reserve voltage supporting central clock operation	Internal accumulator 24 V, 1,2 Ah
Reserve voltage for time standard	Internal accumulator 3,6 V, 60 mAh
Power consumption from the mains when time lines are not loaded	Maximum 20 W
Duration of central clock operation with supply from accumulators*	Minimum 5 hours
Duration of time standard operation with supply from accumulators	Approximately 1 year
Duration for full charging of accumulators	Minimum 24 hours
Indication of critical discharge state of accumulators	U <sub>akum</sub> < 21 V
Automatic disconnection of accumulators	At U <sub>akum</sub> equal approximately 20 V.
Maximum number of allowed time lines	6
Maximum load for each time line	120 mA (20 analogue clocks)
Amplitude of voltage pulses at time lines	24 V
Alarm signalization	Optional output Sg type "open collector"
Maximum cross-section of conductors for terminal block	2,5 mm <sup>2</sup>
Weight	5,8 kg
Overall dimensions	465,8 x x 76,2 x 291 mm (see Drg. 1)
Allowed operating environment conditions:	
- temperature range	0C - +40C
- pressure range	70 106 kPa
- relative humidity range	20% - 80%
- atmosphere	Without aggressive vapors or gases
Protection class of housing	IP20

\* ) There is taken into account the possibility for occurrence of time change for summer/winter time at the moment, when there is no supply from the mains (continuous operation of all analogue clocks for the duration of 25 minutes).



Overall dimensions of central clock type MC-60