Numerical Displays for Displaying Time, Date and Temperature

NDC Series Digital Clocks

The NDC series digital clocks are designed for displaying time, date and temperature in a numerical form. In their design, the maximum emphasis was put on the functional reliability and aesthetic appearance. NDC 57/x and 100/x models are suitable especially the use in architecturally demanding bank interiors, public institutions, companies, etc. As a standard, they are delivered in platinum matt grey surface finish. Superbright 7-segment LED modules are used as displaying elements. The larger NDC 160/x, 212/x types are designed for outdoor or industrial indor/outdoor use. They have double-casing protection with an internal steel frame and an external aluminum frame. These types of the NDC clock series use ultrabright LEDs, which ensure their good visibility even in direct sunlight.

The level of brightness of NDC series clocks is controlled manually or automatically according to the intensity of the surrounding light. A local or remote temperature sensor and GPS receiver can be connected to all types of NDC clocks, which allows to achieve a long-term GPS time precision without the necessity to adjust time. The user can choose automatic switching from the summer to winter time and back (Daylight Saving Time) and utilize stopwatch and count-up/down features for exact time measurements. A switching contact of a built-in relay is available, activated upon the end of counting down/up or activated according to programmed time intervals, which allows to use the clock for time signalling at schools. The clocks are ready for installation into unified time displaying systems – their synchronisation in a network is secured by their connection to the NDC-net (simple 2-wire connection through a standard RS485 serial interface) and by the user configuration.

The clocks can be pre-programmed for displaying time, date, temperature, as a stopwatch, for counting-up/down and for alternate displaying the above readings and thus to be adjusted for displaying according to individual needs. Moreover, a time shift can be set, which allows to use the clocks in various time zones even with the synchronisation through the GPS. Wireless IR remote control (like a TV control) allows to set the time, the date and the programming of the clock. If external time synchronisation is used (e.g. GPS receiver), the time and date are adjusted automatically.

The clocks are designed for the installation on a wall, NDC 160/x and 212/x types are supplied with a tilting wall bracket as a standard.

Parameters of NDC digital clocks in details

- **Time** – Hours:Minutes or Hours:Minutes:Seconds reading, time zone setting, time correction of ±23 hours 59 minutes, automatic Daylight Saving Time option.
- **Date** – Day.Month or Day.Month.Year reading (depending on type of clock).
- **Temperature** – -99° ÷ -10°, -9.9° ÷ 99.9° or -99°C ÷ -10°C, -9.9°C ÷ 99.9°C reading range, if local or remote thermal sensor is connected.
- **Stopwatch mode** – Start/Stop/Freeze/Reset, resolution in hundredths of seconds, automatic decreasing of resolution, when seconds are filled up, of the stopwatch by IR remote control, by local or by remote close contact.
- **Counter** – count-up or count-down – user defined counting limit in the range 1s to 99 days, 23 hours, 59 minutes, 59 seconds, automatic adjustment of the reading format, Start/Stop/Resume/Reset, contact of built-in or remote relay is closed, when the counter reaches the limit, control of the counter by IR remote control, by a local or remote close contact.
- **Switch clock mode** – user defined 16 switching times of the built-in or remote relay, adjustable relay switch-on state period in the range 0.01 – 99s, setting of switch-on days (weekly calendar Sunday – Saturday).
- The clock allows **alternate display** of the above data, while the user can program the duration of their displaying in the range 0 – 60s.
- The clocks are ready for installation into **system for displaying unified time** by their connection to the NDC-net bus (2-wire RS485 connection).
- Optional **external time synchronisation** by means of a synchronisation module connected to the NDC-net bus, e.g. GPS receiver.
- Optional connection of local or remote **thermal sensor**.
- **Time precision –** ±5 sec/month (autonomous time, in +20°C ÷ +30°C temperature range), or the precision is given by the precision of the synchronisation, if an external synchronisation module is connected (e.g. GPS).
- **Inputs/Outputs** – RS485 interface for the connection to the NDC-net bus (with the galvanic insulation for an extra fee), an input for the connection of a local button (close contact, max. 5 m cable length) for controlling the stopwatch/counter (with the galvanic insulation for an extra fee), an input for connecting a local temperature sensor (max. 5 m), built-in output relay 2A/250VAC, which can be closed for 0.1s – 99s in the counter mode or in the switch clock mode.
- **Automatic** (depending on ambient light conditions) or **manual brightness setting** in 15 levels.
- Clock **programming and setting** wirelessly by means of IR remote control up to 20 m.

Standard accessories

- Flexible power cord, fixed to back panel via cable gland (NDC 100/x, 57/x).
- Hanging brackets, attached on the back panel (NDC 100/x, 57/x).
- Connector for power supply cable (for models NDC 160/x and 212/x only).
- Tilting console for wall mounting (for models NDC 160/x and 212/x only).

Optional accessories

- IR remote control for manual setting of clock parameters.
- Local temperature sensor.
- Remote temperature sensor with RS485 interface.
- GPS Receiver for time synchronisation.
- GPS Network Time Server RS485.

Date and temperature reading

Numerical Displays for Displaying Time, Date and Temperature

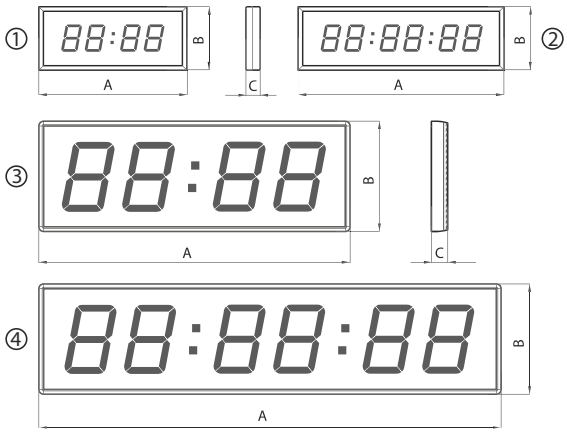
NDC Series
Digital Clocks

Technical specifications

Type	Readability range	Digit height	Number of digits	Time format	Date format	Temperature format	Display element type	Inputs/Outputs
NDC 57/4	23 m	57 mm	4	HH:MM	DD.MM	-55° ÷ 99,9°	7-segments superbright LED modules	NDC-net (RS485); IR Remote Control; GPS Receiver; External Contact (Trigger Input); Temperature Sensor; Relay 2A/250VAC.
NDC 57/6	23 m	57 mm	6	HH:MM:SS	DD.MM.YY	-55°C ÷ 99,9°C		
NDC 100/4	40 m	100 mm	4	HH:MM	DD.MM	-55° ÷ 99,9°		
NDC 100/6	40 m	100 mm	6	HH:MM:SS	DD.MM.YY	-55°C ÷ 99,9°C		
NDC 160/4	70 m	160 mm	4	HH:MM	DD.MM	-55° ÷ 99,9°	Ultrabright smd LEDs	
NDC 160/6	70 m	160 mm	6	HH:MM:SS	DD.MM.YY	-55°C ÷ 99,9°C		
NDC 212/4	100 m	212 mm	4	HH:MM	DD.MM	-55° ÷ 99,9°		
NDC 212/6	100 m	212 mm	6	HH:MM:SS	DD.MM.YY	-55°C ÷ 99,9°C		

Dimensions and weights

Type	Figure number	Width A [mm]	Height B [mm]	Thickness C [mm]	Protection class	Weight [kg]
NDC 57/4	①	360	150	38	IP 20	1,7
NDC 57/6	②	460	150	38	IP 20	2,2
NDC 100/4	①	530	200	38	IP 20	3,3
NDC 100/6	②	730	200	38	IP 20	4,4
NDC 160/4	③	705	360	130	IP 54	17,6
NDC 160/6	④	990	360	130	IP 54	21,8
NDC 212/4	③	930	400	130	IP 54	23,1
NDC 212/6	④	1330	400	130	IP 54	29,1



Optional accessories

1 2 3 4 5

1. **IR Remote Control** BQS 062 for clock setting and programming. Range of control: 20 m max. (perpendicular distance); dimensions (l x w x h): 55 x 22 x 200 mm; power supply: 2 pcs. of AAA battery.
2. **Temperature Sensor** for local connection to NDC 57/x, NDC 100/x with RJ11 type connector or to NDC 160/x, NDC 212/x with Binder type connector, 2 m cable; precision of the sensor: ±0,5°C in the temperature measuring range -10 ÷ +80°C, max. measuring range -30 ÷ +80°C; dimensions: 76 x 15 x 73 mm.
3. **Temperature Sensor RS485** for remote bus connection; cable length as required; precision of the sensor: ±0,5°C in the temp. range -10°C ÷ +80°C, max. measuring range -30°C ÷ +80°C; dimensions: 65 x 44 x 138 mm.
4. **GPS Receiver for time synchronisation**; cable length 5 m or 10 m, depending on receiver type ordered; dimensions: 60 x 66 x 100 mm
5. **GPS Network Time Server RS485** for time synchronisation via serial bus line RS485 (NDC-Net bus); dimensions: 142 x 67 x 140 mm. Usually used when distance between NDC and GPS Receiver antenna must be longer than 10 m.

ELEN, s.r.o., Ľubochnianska 16, 080 06 Ľubotice, Slovensko, tel.: +421 / 51 77 33 700, fax: +421 / 51 75 99 142
GSM brána: +421 / 905 637 717, +421 / 911 637 716, e-mail: sales@elen.sk, www.elen.sk