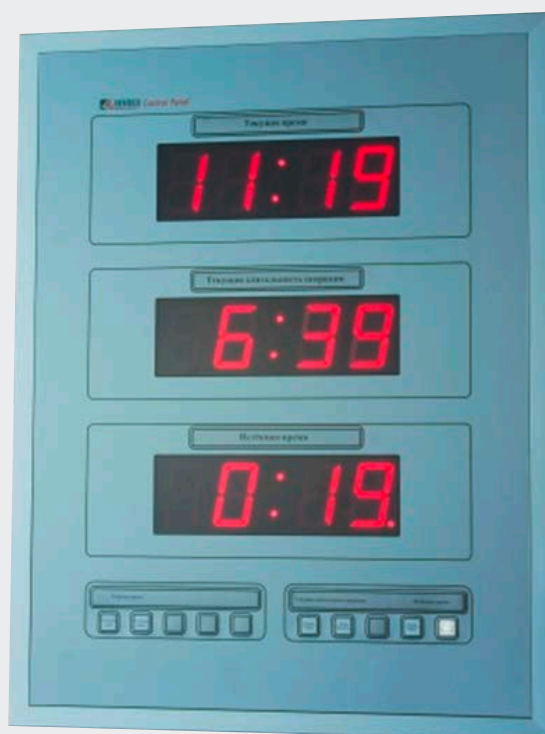# Clock and Timer Panels

Time-of-Day Clock, General Clock - Timer Displays
Elapsed Timer, Countdown Timer

Clock and Timer Panels
Time-of-Day Clock, Elapsed Timer, Countdown Timer

Panel

Characteristics

- Individual combinations of clocks and timers
- Analogue or digital clock
- Various time synchronisation options e.g.
  - NTP network time protocol
  - GPS signal
  - radio controlled DCF77-signal (in Europe only)
  - polarized minutes DC impulse
  - stand-alone by the 50 Hz of the supply voltage
  - MOBA line signal
- Digital timer for elapsed time or count-down time
- Countdown time can be programmed to stop at zero
  optional: to continue with elapsed time
- Optional: showing time interval (laps), freeze timer or accumulating time intervals
- Timer steps by seconds
  optional 1/100 sec or minutes
- 7-segment digital LED displays can easily be read at a distance up to 25m
- Extra bright 57 mm digital red LED display, optional also in yellow, green or blue
- Sensor controlled automatic or manual intensity control of the display
- Individual enclosures for surface wall mounting or flush mounting with bezel frame
- Surface with antibacterial front foil or 4 mm glass
- Background of the surface in standard silver colour matching the enclosure or its bezel frame
- Many other background colours on request

Application

Clock and Timer systems are often used in medically used areas like operating theatres, intensive care units and even none medical area. Not only to display of the accurate time of day is very important in many applications but also the information of the elapsed time or a countdown time.

In most applications the time of day is shown by an analogue clock whereas the timers are of digital type in all cases. To distinguish the digital displays between time of day, elapsed time and a countdown time the display colours are different in these multiple clock-timer applications.

Description of the Time of Day Clocks

The time of day clocks are of an analogue type in most cases but also extra bright digital LED displays are being used.

The clock display is being synchronized by a signal from a remote master clock. This can either be a signal transmitted from a time server via LAN using the Network Time Protocol (NTP), a GPS signal via an antenna or in Europe the DCF77 signal. Simple synchronisation can also be achieved by using polarized DC impulses of an existing installation. An analogue clock can be synchronized simply by the 50 Hz Frequency of the supply voltage. The dial of the analogue clock is printed on a white background with black Arabic numbers. The size of the analogue dial is 165x165 mm. The digital clock can be set to a 12 hour or 24 hour display mode. The four digits are 57mm in height (HH:MM). On six digit displays the seconds are 38 mm in height (HH:MM:SS).

Description of the Timers

The timers are running independent to a master clock since no synchronisation is required. The timers can be controlled by a simple timer remote control or by an alarm and control panel of the FM, TM or TCP series. The timers can be pre-set either as an elapsed timer or as a countdown timer.

Elapsed Timer:

Start/Stop Resume	Start the timer at 00:00 . Stop will halt the timer and won't continue in the background. Resume will activate the timer again.
Interim Time/Reset	Interim time will stop the timer display but the elapsed time will Continue to count up. Reset will set the elapsed time back to 00:00 .

The elapsed timer will count upwards in seconds up to 24hours.

Countdown Timer:

Start/Stop Resume	Starts a countdown from a pre-set initial time down to 00:00. Stop will halt the countdown and won't continue in the Back ground. Resume will activate the timer again.
Interim Time/Reset	Interim time will stop the countdown display (laps) but the timer will continue to countdown. Reset will set the elapsed time back to a pre-set time.
Setting initial time	Pre-setting the initial time for a countdown.

The countdown will stop at 00:00 .

Mechanical Design

The clock and timer panels do come in various designs of front plates and enclosures. All panels are equipped with concealed hinges and the **screw less front plates** are covered by a **unique life-long antibacterial foil surface** or a 4mm thick safety glass plate for easy cleaning. The standard background colour is silver matching the aluminium colour of the bezel frame and surface mounted enclosure. A wide variety of different background colours can optionally be chosen from. Two enclosures with a minimum depth of 90mm are available:

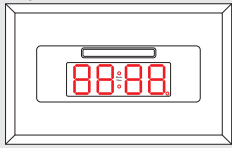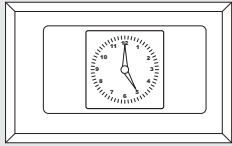- **Flush-mounting with aluminium bezel frame (UPB)**
  The bezel frame made of anodised aluminium makes it possible to cover a gap between the flush-mounting housing and the wall of up to approx. 12 mm. It is possible to compensate for a height difference of up to 20 mm.
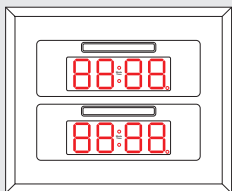
- **Surface mounted (AP)**
  The anodised aluminium surface-mounting enclosure AP is suitable both for pure surface-mounting and also for partially recessed mounting.
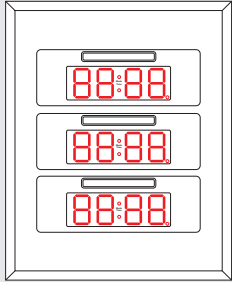
Standard Configuration Table

Single Display (■ = standard configuration)

Function	Front	Enclosure	Control	Display	Face	Sync.	Standard Display
■ Time of Day Clock	■ Foil ☐ Glass	■ UPB 483x300x100 mm (WxHxD) ☐ AP 450x260x60 mm (WxHxD)	■ External via control panel ☐ Internal push button	■ Digital LED colour ■ red optional: ☐ yellow ☐ green ☐ blue ☐ Analogue	■ HH:MM ☐ HH:MM:SS ☐ Dial	■ NTP ☐ minute pulse DC 12/24/48/60 V ☐ 50 Hz ☐ GPS, or DCF77	Dwg# 9800643
■ Elapsed Timer ☐ Countdown Timer				■ Digital LED colour ■ red optional: ☐ yellow ☐ green ☐ blue	■ HH:MM ☐ HH:MM:SS	- / -	Dwg# 9800646

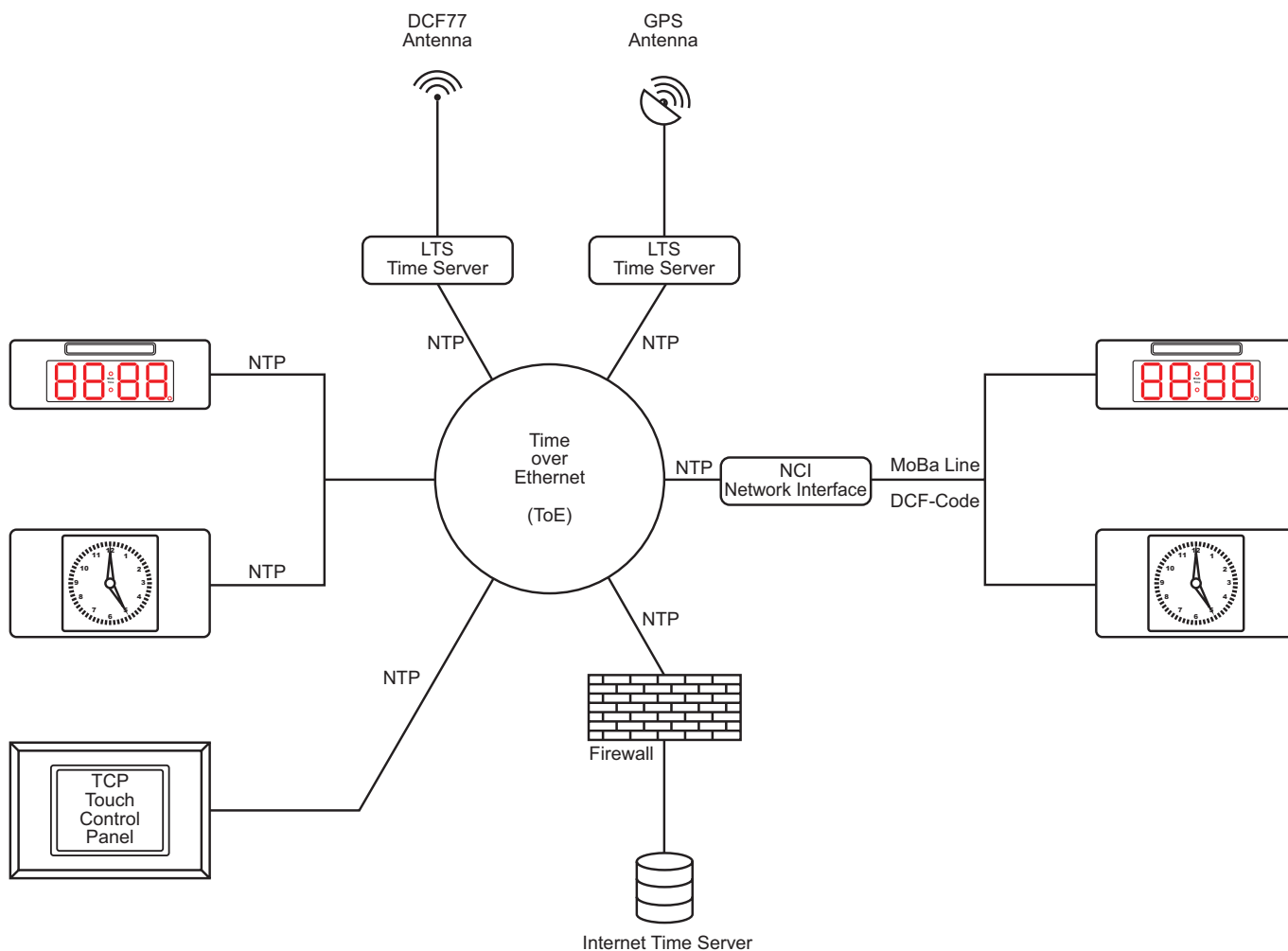### Doppelanzeige (■ = Standardkonfiguration)

Function	Front	Enclosure	Control	Display	Face	Sync.	Standard Display
■ Time of Day Clock	■ Foil ☐ Glass	■ UPB 483x300x100 mm (WxHxD) ☐ AP 450x260x60 mm (WxHxD)	■ External via control panel ☐ Internal push button	■ Digital LED colour ■ red optional: ☐ yellow ☐ green ☐ blue ☐ Analogue	■ HH:MM ☐ HH:MM:SS ☐ Dial	■ NTP ☐ minute pulse DC 12/24/48/60 V ☐ 50 Hz ☐ GPS, or DCF77	Dwg# 9800644
■ Elapsed Timer ☐ Countdown Timer				■ Digital LED colour ■ red optional: ☐ yellow ☐ green ☐ blue	■ HH:MM ☐ HH:MM:SS	- / -	

Dreifach Anzeige (■ = Standardkonfiguration)

Function	Front	Enclosure	Control	Display	Face	Sync.	Standard Display
■ Time of Day Clock	■ Foil ☐ Glass	■ UPB 483x300x100 mm (WxHxD) ☐ AP 450x260x60 mm (WxHxD)	■ External via control panel ☐ Internal push button	■ Digital LED colour ■ red optional: ☐ yellow ☐ green ☐ blue ☐ Analogue	■ HH:MM ☐ HH:MM:SS ☐ Dial	■ NTP ☐ minute pulse DC 12/24/48/60 V ☐ 50 Hz ☐ GPS, or DCF77	Dwg# 9800645
■ Elapsed Timer ☐ Countdown Timer				■ Digital LED colour ■ red optional: ☐ yellow ☐ green ☐ blue	■ HH:MM ☐ HH:MM:SS	- / -	
■ Elapsed Timer ☐ Countdown Timer				■ Digital LED colour ■ red optional: ☐ yellow ☐ green ☐ blue	■ HH:MM ☐ HH:MM:SS	- / -	

Typical Time Distribution

Possible time distribution via Time over Ethernet (ToE) using the Network Time Protocol (NTP):

DCF77
Antenna

GPS
Antenna

LTS
Time Server

LTS
Time Server

NTP

NTP

NTP

Time
over
Ethernet

(ToE)

NTP

NCI
Network Interface

MoBa Line

DCF-Code

NTP

NTP

NTP

NTP

TCP
Touch
Control
Panel

Firewall

Internet Time Server

DWg# 9800655

Further ways of Time Distribution

Clock systems can be synchronized either by Time over Ethernet via the NTP protocol or optional via polarized minute DC impulses. Systems with minute impulse are widely spread out in older installations.

Other ways of synchronisation are the MoBa line time signal or the DCF-code transmission via an additional Network Clock Interface (NCI). The simplest way of synchronisation is by using the 50 Hz frequency of the supply voltage.

Supply of Clock and Timer

Single clocks and timers are being supplied by a 230 V/50 Hz voltage or optional via a DC 24 V voltage. Only single clock displays may optionally be supplied via the RJ45-Ethernet connection. In this case an Power over Ethernet switch is mandatory from the Ethernet side.

Because a timer does not need an Ethernet connection, all double or triple clock and timer displays are generally utilized to accommodate a 230 V/50 Hz supply or optional a DC 24 V supply.

Additional Clock Functions (Optional)

Apart from the standard settings these functions can also be set or chosen from:

- Time display in 12 or 24 hour cycle; four-digit (HH:MM) or six-digit (HH:MM:SS) format.
  Digits of the same height on request (HH:MM SS); optionally four-digit or six-digit format (including indication of the year);
- Possibility of zero visualisation or suppression of the initial zero when displaying the time and date;
- Display of the calendar date in four-digit or six-digit format including indication of the year.
- Temperature indication (providing the temperature sensor is connected) in °C or °F.
- Alternating indication of time, date and temperature, with adjustable period of each of the displayed data;
- Eight-digit display format on request (time: HH:MM; date: DD.MM.)
 Six digit display format on request (Time: HH:MM:SS) seconds at the same height as hours and minutes

Additional Timer Functions (Optional)

Apart from the standard timer settings these functions can also be set or chosen from:

- Upwards counting, starting from zero, up to 24 hours;
- Countdown from a set up value, with stop at zero or automatic restart or counting to negative values;
- Indication of interim times or "freezing" of the display or accumulated interim time;
- Counting per one minute, one second or 1/100 second;
- Control using the controller or remote control unit;
- Internal relay – possibility to adjust the time period of a closing relay contact in the time countdown mode when passing to zero
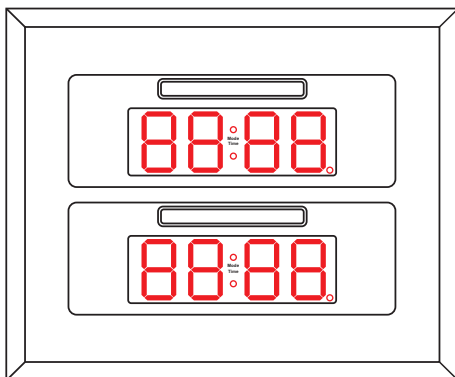
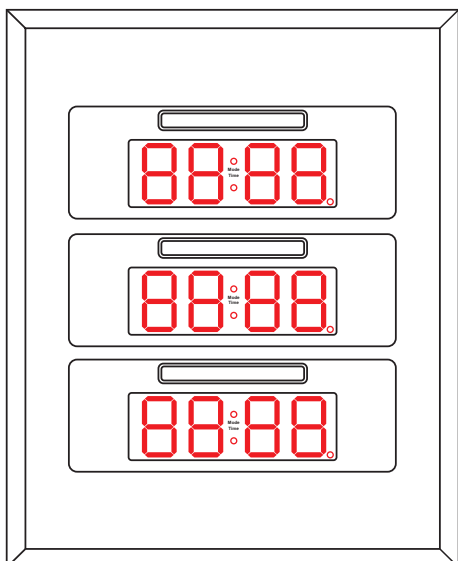## Typical Clock-Timer Arrangements

Single Display (analogue)
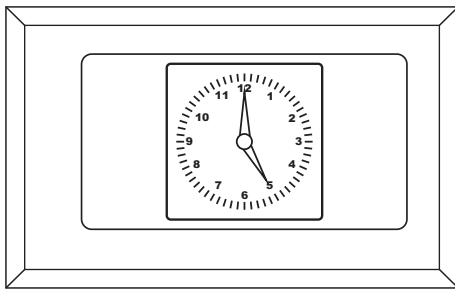
Single Display (digital)
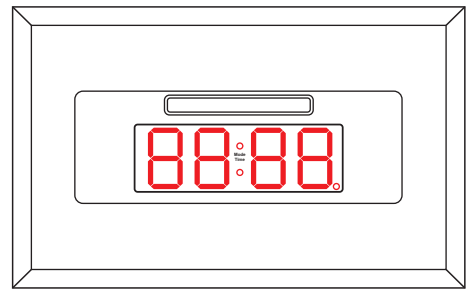
Dual Display

Triple Display

Technical Data

Analogue Time of day Clock SEN00

Synchronisation	NTP (via a time server)
Connection	RJ45
Supply	PoE (Power over Ethernet)
Accuracy without synchronisation	± 0.3 sec/day
Face/dail dimensions	165x165 mm
Weight/analogue clock	ca. 0.5 kg

Digital Time of Day Clock, Elapsed-, Countdown Timer

Synchronisation (Time of Day Clock only)	
Time over Ethernet	NTP
Optional:	
Time server	LTS
GPS	Antenna GPS 4500
DCF77	Antenna DCF450
Accuracy without synchronisation	± 0.3 sec/day
Backup capacity time and data	approx. 6 years
	(without display)
Internal battery	CR2032
Operating temperature	0 … 35 ℃
Protection class	max. IP54
	(depending on installation)
Digit height	
four digits HH:MM	hours, minutes = 57 mm
six digits HH:MM:SS	hours, minutes = 57 mm
	seconds = 37 mm
7-segment LED colour	red
	Optional: green, yellow, blue
Reading distance	25 m
Weight/display	0.5 kg

Electrical

Supply voltage	AC 100…240 V, 47…63 Hz
Power consumption	
four digits HH:MM	red: 7 VA
	yellow, green, blue: 10 VA
six digits HH:MM:SS	red: 9 VA
	yellow, green, blue: 14 A
Conductor	max. 2.5 mm^2
Protection type	earthed/grounded
Front Plate	(Other colours optional)
Antibacterial front foil	silver
4mm safety glass	silver

Enclosure dimensions/Weights

Single Display

Digital Clock/Timer		
Flush mounted (UPB), typically	(WxHxD)	483 x 300 x 100 mm
Weight		ca. 4 kg
Surface mounted (AP), typically	(WxHxD)	450 x 260 x 60 mm
Weight		ca. 4 kg

Analogue Clock		
Flush mounted (UPB), typically	(WxHxD)	483 x 340 x 100 mm
Weight		ca. 3 kg
Surface mounted (AP), typically	(WxHxD)	450 x 300 x 60 mm
Weight		ca. 3 kg

Dual Display

Flush mounted (UPB), typically	(WxHxD)	483 x 400 x 100 mm
Weight		ca. 6 kg
Surface mounted (AP), typically	(WxHxD)	450 x 360 x 60 mm
Weight		ca. 6 kg

Triple Display

Flush mounted (UPB), typically	(WxHxD)	483 x 600 x 100 mm
Weight		ca. 8 kg
Surface mounted (AP), typically	(WxHxD)	450 x 560 x 60 mm
Weight		ca. 8 kg

Reference	Drawing
Single Display	
Time of Day Clock / Elapsed Timer / Countdown Timer (digital)	9800643
Time of Day Clock (analogue)	9800646
Dual Display	
Time of Day Clock (digital) with Clock+Elapsed Timer (digital)	9800644
Triple Display	
Time of Day Clock (digital) with Elapsed Timer (digital) with Countdown Timer (digital)	9800645