E.A.COMBS LIMITED

TIMING SOLUTIONS

Time

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CLOCKS AND CLOCK SYSTEMS
THERMOMETERS

CLOCKS AND CLOCK SYSTEMS, THERMOMETERS

We offer the devices in different **digit heights: 5cm, 10cm and 20cm.** Such diversity of the glowing digit sizes enables adjusting the device to the mounting location and to the user's needs.

APPLICATION

- **inside buildings: production halls, receptions, swimming pools, workplaces, halls, corridors, waiting rooms, schools**
- **outside: over building entrances (as an element of the façade raising the prestige), open sports facilities**
- **stations, platforms, airports, passenger information, logistics centres**
- **inside public transport vehicles**
- **in pylons, welcome signs and advertising totems**

SERIES COMPARISON

The devices of all series offer identical functionality, but differ in the time presentation format and the housing making technology.

Parameter	ZA Series	ZB Series	ZAH Series	ZBH Series
Time presentation format	HH:MM	HH:MM:SS	HH:MM	HH:MM:SS
Housing technology	PrestigeLine	PrestigeLine	Hermetic	Hermetic
Resistance to adverse weather conditions	IP66	IP66	IP66	IP66
Front	Polycarbonate	Polycarbonate	Anti-reflection surface	Anti-reflection-surface

ADVANTAGES OF THE DEVICES
(the equipment of the devices depends on the selected option)

Function CLOCK	Automatic brightness control	Remote operation through the website or using the IR remote control
Function CALENDAR	Built-in operational relay	Built-over power supply units
Function THERMOMETER	Resistant to adverse weather conditions (IP66)	Readability in bright sunlight
Low weight	GPS satellite time synchronisation	Easy to keep clean
High energy efficiency	NTP Internet time synchronisation	Clock function MASTER
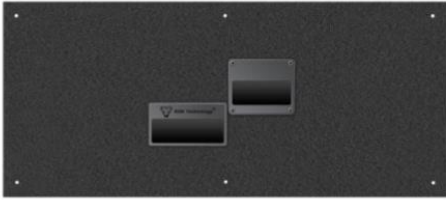
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HOUSINGS TECHNOLOGIES

The comparison of the device housing technologies is shown below. The mechanical differences between the housing technologies enable the choice of an option appropriate for the mounting location and the method of installation.

	PrestigeLine (on the example of ZA20)	Hermetic (on the example of ZAH20)
Front		
Side		
Back		

AVAILABLE MODELS

PrestigeLine

Digit height 50 mm	
ZA5	ZB5

Digit height 100 mm	
ZA10	ZB10

Digit height 200 mm	
ZA20	ZB20

Hermetic

Digit height 100 mm	
ZAH10	ZBH10

Digit height 200 mm	
ZAH20	

TIME SYNCHRONISATION, CLOCK SYSTEMS

Time in the clocks can be set manually by the user or using the function of automatic time synchronisation – available in two options:

1. GPS Time Synchronisation

Although the GPS has been created for positioning (i.e. defining the location), it can be also used for other purposes. In the received GPS signal there is embedded information about the current time and date. This time is very accurate, because it is determined on the basis of atomic standards. It may be slow or fast by just one millionth of a second per month. For the proper operation, it is required to place the receiver in the location providing "visibility" of the sky.

Advantages of the GPS synchronisation:
- provides precise time synchronisation from the GPS satellites, on the basis of atomic standards,
- does not require any configuration,
- does not require any connection to the Internet,
- operates in every location on the Earth,
- the LED signalling proper signal reception is embedded in the receiver.

To take advantage of the satellite time synchronisation, you should equip the clock with the optional **GPS Receiver.**

2. NTP time server client

NTP (Network Time Protocol) – is a communication protocol supporting precise, stable and safe synchronisation of clocks with any time server through the computer network. A great advantage of this solution is possibility of simultaneous synchronisation of a large number of devices. The synchronisation may be executed:

- from your own local time server – the Internet access is not required
- from a public remote time server – the Internet access is required

Every clock can be configured as a local NTP time server – as described below.

The advantages of the NTP synchronisation:
- provides precise time synchronisation with the NTP servers
- possibility of simultaneous synchronisation of many clocks from the same server
- operation of five different time servers (1 primary and 4 alternative) provides reliable synchronisation
- changing the time server from the primary to an alternative one is carried out automatically when a failure is detected.

The NTP time synchronisation is carried out via the Ethernet (the interface is included in the standard equipment of every clock).

Function of the local NTP time server

Every clock of ZA/ZB series may be a central clock (MASTER) which, in the LAN, will provide the time source for other clocks (Slave). In consequence, it is easy to create a clock system in which the central clock can receive time from different sources, such as: a GPS receiver, a public NTP server or its own internal clock.
Providing synchronised time to all clocks guarantees that everybody uses the same time source. It is extremely important for workplaces, production halls, schools, stations, platforms, etc.
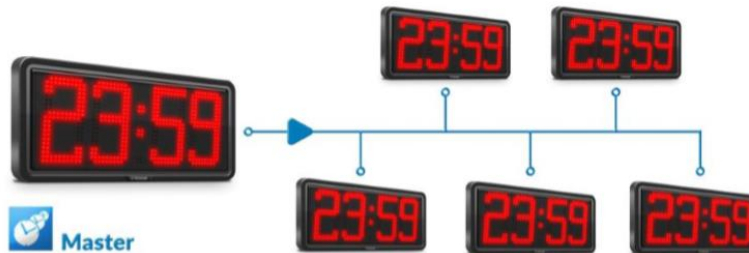
SAMPLE CLOCK CONNECTION DIAGRAMS

The clocks synchronised from the local NTP server (LAN):

The clocks synchronised from the remote NTP server (the Internet):

The MASTER clock synchronised from the GPS, which is, at the same time, a local NTP server for other clocks in the network:

SYNCHRONISATION OF THE DISPLAYED CONTENT

In addition to the time synchronisation, our clocks have a function of the displayed content synchronisation. It means that all devices which operate in one network display the same information at the same time. It is a very useful function for the installations of two or more clocks located close to each other, eg.:
- two sides of the pylon with clocks,
- several clocks showing different times on the Earth,
- public transport stations,
- polygonal (many-sided) information poles
- etc.

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In the installations with the synchronisation of the content, you may activate the function of transferring the value of the measured temperature from the MASTER clock to other clocks through the network. This functionality supports, e.g.:
- presentation of the temperature on several devices at the same time, using only one temperature probe
- presentation of the temperature measured by another device (MASTER) in the remote location
- avoiding the presentation of divergent measurements, caused by different locations of temperature probes
- etc.

SENSOR   **NETWORK**
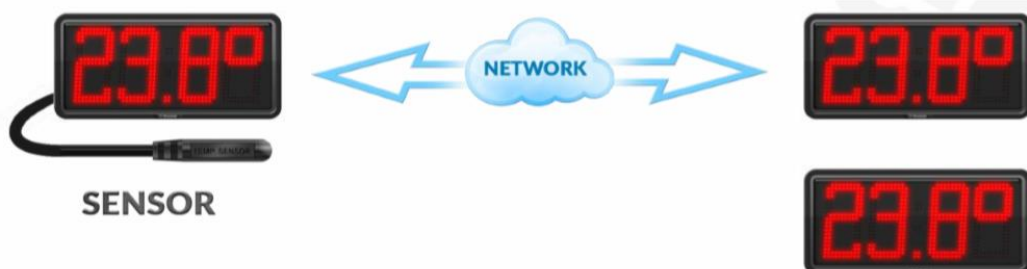
SETTINGS MANAGEMENT – WEB PANEL

Every device has a built-in **WEB PANEL**, which is available through the computer network in the Internet browser. The management through the WEB PANEL may be carried out using a computer, a tablet, a smartphone or another device providing the Internet browser.

The advantages of the solution:
- embedded functionality
- clear and tabular preview of the settings (the website)
- possibility of managing many devices from one place through the computer network
- possibility of remote management through the Internet – from every location in the world

SETTINGS MANAGEMENT – IR REMOTE CONTROL

To mangage the devices you may use **the IR remote control.** Every remote control has a unique code preventing unauthorised individuals from making any changes in it. The remote control is assigned to one or more clocks. It is also possible to assign many remote controls to one clock.

The advantages of this solution:
- operation without a computer
- no need of installing a computer network
- direct verification of the applied changes on the device display

NOTICE:
- For the L (lan) clocks, the IR remote control is an optional accessory – see the table
- Some functions or settings may be unavailable

OPERATIONAL RELAY

The clocks have an embedded operational relay which can signal up to 30 alarms. The duration of each alarm is set independently within the range of 1 second – 59 seconds. There is a possibility of setting the alarms in a weekly mode. The examples of the apllication:

- activating an industrial buzzer signalling e.g. breaks or changes at the workplace
- activating a school bell
- giving a time signal for another device /system

DAYLIGHT SAVING TIME / STANDARD TIME

The clock supports the activation of the automatic time change from the standard time to the daylight saving time and from the daylight saving time to the standard time (DST – Daylight Saving Time). The change is made for Europe, USA, Canada, Australia and Israel.

STOPWATCH FUNCTION

In addition to displaying the time, date and temperature, the clocks support counting time. There are 3 available modes:

a) Stopwatch
b) Timer Up - timer counting up from 0 to the preset value
c) Timer Down – timer counting down from the preset value to 0

NOTICE:
Managing of the Stopwatch function is only possible by IR Remote.

AUTOMATIC BRIGHTNESS CONTROL – SENSOR

Only the automatic brightness control based on **the measurement of ambient light by the sensor** ensures real adjustment of the display brightness to the current lightning conditions of the surroundings.

Current measurement by the sensor is always up-to-date, because it takes into account changes of the position of the Sun in relation to the display, changes of cloud cover during a day, and also shortening and lengthening of a day during a year.

In addition to the automatic brightness control based on the sensor, there is a possibility to manually select and block one of 10 brightness levels.

TIME ZONES

The clock allows you to set the selected time zone in relation to the UTC.

ECO MODE

The devices are equipped with an embedded ECO operation mode which supports automatic deactivation of the devices at night or at the preset time intervals.

Prices list:

PrestigeLine

MODEL	CONTROL	DIGIT HEIGHT	HEIGHT	WIDTH	THICKNESS	WEIGHT	POWER CONS.
ZA5-R	Remote IR	50 mm	141 mm	298 mm	42 mm	1 kg	10W
ZA5-L	LAN, WWW	50 mm	141 mm	298 mm	42 mm	1 kg	10W
ZA5-L POE+	LAN, WWW	50 mm	141 mm	298 mm	42 mm	1 kg	10W
ZB5-R	Remote IR	50 mm	141 mm	408 mm	42 mm	1,5 kg	14W
ZB5-L	LAN, WWW	50 mm	141 mm	408 mm	42 mm	1,5 kg	14W
ZB5-L POE+	LAN, WWW	50 mm	141 mm	408 mm	42 mm	1,5 kg	14W
ZA10-R	Remote IR	100 mm	186 mm	349 mm	45 mm	1,5 kg	10W
ZA10-L	LAN, WWW	100 mm	186 mm	349 mm	45 mm	1,5 kg	10W
ZA10-L POE+	LAN, WWW	100 mm	186 mm	349 mm	45 mm	1,5 kg	10W
ZB10-R	Remote IR	100 mm	186 mm	512 mm	45 mm	2,0 kg	15W
ZB10-L	LAN, WWW	100 mm	186 mm	512 mm	45 mm	2,0 kg	15W
ZB10-L POE+	LAN, WWW	100 mm	186 mm	512 mm	45 mm	2,0 kg	15W
ZA20-R	Remote IR	200 mm	288 mm	616 mm	45 mm	3,0 kg	14W
ZA20-L	LAN, WWW	200 mm	288 mm	616 mm	45 mm	3,0 kg	14W
ZA20-L POE+	LAN, WWW	200 mm	288 mm	616 mm	45 mm	3,0 kg	14W
ZB20-R	Remote IR	200 mm	288 mm	900 mm	45 mm	4,0 kg	20W
ZB20-L	LAN, WWW	200 mm	288 mm	900 mm	45 mm	4,0 kg	20W
ZB20-L POE+	LAN, WWW	200 mm	288 mm	900 mm	45 mm	4,0 kg	20W

Hermetic

MODEL	CONTROL	DIGIT HEIGHT	HEIGHT	WIDTH	THICKNESS	WEIGHT	POWER CONS.
ZAH10-R	Remote IR	100 mm	160 mm	330 mm	33 mm	1,5 kg	10W
ZAH10-L	LAN, WWW	100 mm	160 mm	330 mm	33 mm	1,5 kg	10W
ZAH10-L POE+	LAN, WWW	100 mm	160 mm	330 mm	33 mm	1,5 kg	10W
ZBH10-R	Remote IR	100 mm	160 mm	490 mm	33 mm	2,0 kg	15W
ZBH10-L	LAN, WWW	100 mm	160 mm	490 mm	33 mm	2,0 kg	15W
ZBH10-L POE+	LAN, WWW	100 mm	160 mm	490 mm	33 mm	2,0 kg	15W
ZAH20-R	Remote IR	200 mm	270 mm	590 mm	33 mm	3,0 kg	14W
ZAH20-L	LAN, WWW	200 mm	270 mm	590 mm	33 mm	3,0 kg	14W
ZAH20-L POE+	LAN, WWW	200 mm	270 mm	590 mm	33 mm	3,0 kg	14W

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ADDITIONAL OPTIONS	DESCRIPTION
GPS time synchronisation (GPS receiver)	The time synchronisation using the worldwide satellite system - GPS. The GPS receiver with a built-in antenna, resistant to adverse weather conditions. The GPS synchronisation supports the time accuracy of one second; it automatically switches the clock from the daylight saving time to the standard time and the other way round.
Additional IR remote control	In standard, each "R" clock has an IR remote control, you can buy and assign additional remote to the "L" clock.
Air temperature probe	The display, in addition to its standard function (clock and calendar), is enriched with the temperature measurement. The temperature is displayed in the LED field of the display alternately with time and date. The range of the measured temperatures: -50°C ÷ +99°C
Water temperature probe (hermetic)	The display, in addition to its standard function (clock and calendar), is enriched with the temperature measurement. The temperature is displayed in the LED field of the display alternately with time and date. The range of the measured temperatures: -50°C ÷ +99°C The cable length – see the description in the position "Cable extension".
Perpendicular frame supporting the clock of ZA/ZB series	The frame to mount ZA/ZB clocks – single-sided or double-sided. Useful when the clock is mounted perpendicularly to the wall.
Holders for hanging ZA / ZB series clocks	Holders for hanging ZA / ZB clocks – single-sided or double-sided. Useful for mounting devices, eg. to the ceiling.
Cable extension	Hermetic cable connector. The power cord: the standard length 2m; max. 100m. The GPS receiver cable: the standard length 10m; max. 50m. The temperature probe cable: the standard length 2m; max. 50m. The surcharge applies to the extension of each running metre over the standard length
Buzzer (acoustic signalling device) standard	The industrial acoustic signalling device made of mechanically resistant synthetic material ABS. The power supply 230V, 3W. The intensity of the acoustic signal 88dB.
Buzzer (acoustic signalling device of increased volume))	The industrial acoustic signalling device made of mechanically resistant synthetic material ABS. The power supply 230V, 3W. The intensity of the acoustic signal 108dB.
Green or blue LEDs	The standard LED colour options: yellow, amber and red. For selecting a different colour there is a surcharge over the net value of the device in the standard version.
White LEDs	For selecting the white colour there is a surcharge over the net value of the device in the standard version.

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