INSTRUCTION MANUAL

State-of-the-art technology digital clock

ECO-SLH-DC series

addition to the standard DC series instruction manual (for ECO-SLH-DC only)

Certification of the Producer

STANDARDS

The digital clock ECO-SLH-DC has been developed and produced in accordance with the EU Standards 2014/35/EU (LVD), 2014/30/EU (EMC), 2014/53/EU (RED), 2011/65/EU (RoHS), 2012/19/EU (WEEE):

Electrical safety: EN 62368-1
EMC: EN 55032; EN 55024; EN 50121-4

References to the Instruction Manual

1. The information in this Instruction Manual can be changed at any time without notice. The current version is available for download on www.mobatime.com.
2. This Instruction Manual has been composed with the utmost care, in order to explain all details in respect of the operation of the product. Should you, nevertheless, have questions or discover errors on this manual, please contact us.
3. We do not answer for direct or indirect damages, which could occur, when using this Manual.
4. Please read the instructions carefully and only start setting-up the product, after you have correctly understood all the information for the installation and operation.
5. The installation must only be carried out by skilled staff.
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NOTE:
Chapters 2.7 - 15 are the same as in the DC Instruction manual.
Use the DC user manual to control and set parameters for the ECO-SLH-DC clock.

1 Description

The models series ECO-SLH-DC series are optimally suited for use in operating rooms, clean room environments, chemical plants, labs, swimming and fitness centres, as well as in the food and beverage industry, canteen, kitchens, etc. ▪ various synchronization options ▪ anti-glare front polycarbonate glass ▪ protection against water jets, easily washable with water and detergents, harmless to health, reliable ▪ simple keyboard / IR control ▪ front side protection IP 54 make the product suitable for various purposes

1.1 Advantages

- high-quality stainless-steel housing
- flush design, brushed stainless-steel frame, simple installation using four screws
- easily washable with water
- high resistance to washing disinfectants
- anti-glare polycarbonate front glass prevents glare and improves readability
- dust-proof housing, splash proof, IP 54 on the front side

1.2 The clock

- display of time values (either 12 or 24 hours format), four or six-digit, HH:MM or HH:MM:SS format
- display of calendar date in four or six-digit, DD.MM or DD.MM.YY format
- display of temperature in °C or °F, up to two sensors connectable

1.3 Display features

- 7-segment LED display
- digit height for hours and minutes 57 resp. 100 mm, for seconds 38 resp. 57 mm
- readability distance of 25 or 40 m
- single-line or two-line display
- digits in red, pure green, blue, yellow, white or green colour
- manual or automatic adjustment of the luminosity of LED displays
- excellent visibility, even from extremely sharp angles
- alternating time, date and temperature display, duration of the display can be customized

1.4 Housing

- single-sided design
- flush mounting into the wall or panel, fixation by means of four allen screws placed on the front panel
- stainless steel front panel (1.4301, AISI 304, brushed) particularly resistant to acids, cleaning and disinfectant, protected against direct sprays from all direction (limited ingress permitted) and dust
- other kind of stainless steel material on request
- easy installation
- structural depth 39 mm

- anti-glare polycarbonate front glass prevents reflections and improves the readability
- working temperature 0 to + 50°C
- protection degree IP 54

1.5 Stopwatch

- counting upwards from zero, up to 24 hours
- counting downwards from a specified value, with stop at zero, with automatic restart or counting into negative values
- display of intermediate time values, "freezing" of display, cumulated intermediate time
- counting in steps of 1 minute, 1 second or 1/100 seconds
- operation via keyboard or remote IR controller
- possibility to connect another display unit(s)
- possibility of parallel switching over into the time/date or temperature display mode

1.6 Clock and Stopwatch control

- operation of the clock and stopwatch operation via stainless steel keyboard or remote IR controller

1.7 Accessories

- back cover
- DCF 77 signal receiver
- temperature sensor with protection degree IP 66
- stainless steel keyboard for clock and stopwatch control, flush mounting
- remote IR controller for clock set up and stopwatch control

2 Assembly

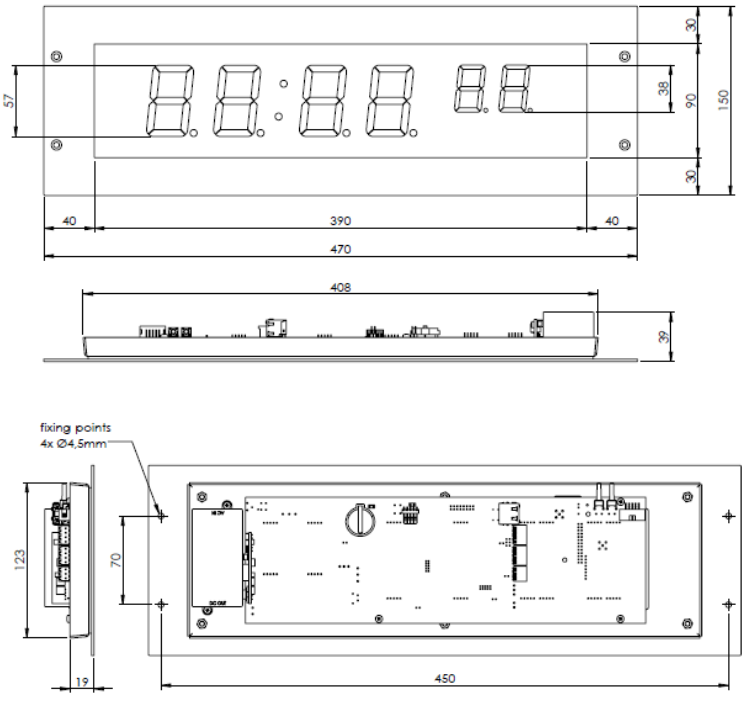
⚠ The connection to the 110/230 V AC power network can only be done by authorized personnel with appropriate qualification and training.

⚠ Danger of electric shock when dismounting the cover with warning triangle.

⚠ The connection to the 110/230 V AC power network should be carried out when the mains power is off

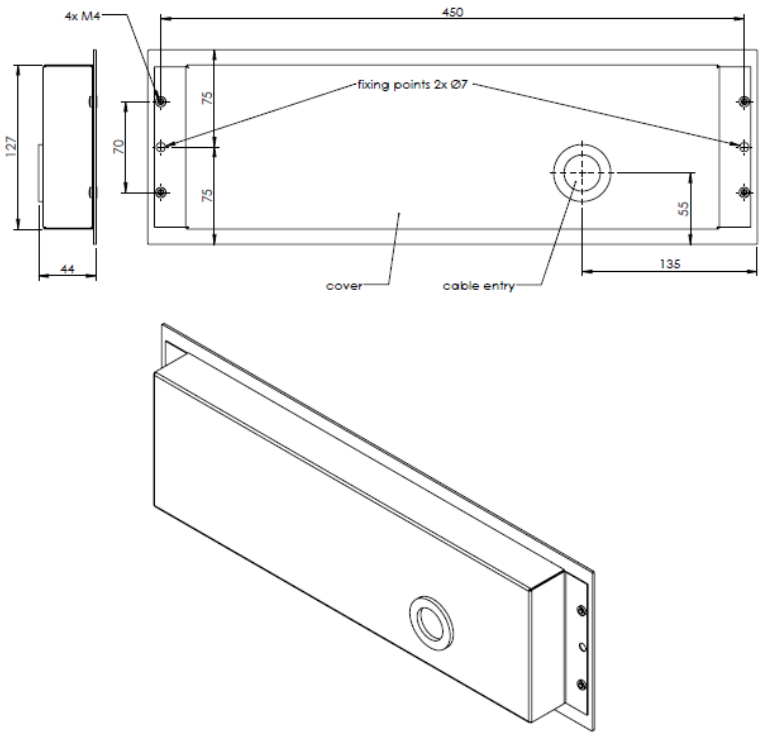
2.1 Clock without back cover

- There exist two basic possibilities of mounting. Mounting of clocks into the wall niche and mounting into the panel. For both mountings is very important to prepare the appropriate holes according to drawings and the clock body.
- For wall niche mounting drill four anchoring holes into the wall, of a diameter adequate to accommodate appropriate screws of 4 to 5 mm diameter. As a template for marking the position of the holes the clock body can be used.
- For panel mounting drill four anchoring holes (diameter 2,6mm) into the panel, of a diameter adequate to accommodate wood-type screws of 4 -5 mm diameter. As a template for marking the position of the holes the clock body can be used.
- On mains powered clock connect the incoming conductors in accordance with the description on the power supply unit using WAGO or equivalent clamps.
- Mount the connectors to the cable of the synchronisation signal line, the temperature sensor cable, to the keyboard cable, Ethernet or to the RS 232 and RS 485 interface cables, if these are used.
- Push the synchronisation line connector, the temperature sensor connector, the keyboard connector, Ethernet connector or the RS 232 and RS 485 jacks into the corresponding terminals on the control PCB (DC user manual chapters 2.8, 2.9). Check the marking of the jack-plugs, in order to prevent their mix-up.
- Put the clock into prepared hole. Check if any cable is not pinched between the clock body and hole / niche edges.
- Fix the clock by four screws to wall / panel.



2.2 Clock with back cover

- The clock consist from clock part and back cover. Dismount the 4 screws and remove the cover.
- There exist two basic possibilities of mounting. Mounting of clocks into the wall niche and mounting into the panel. For both mountings is very important to prepare the appropriate holes according to drawings and the clock back cover.
- For wall niche mounting drill two anchoring holes into the wall, of a diameter adequate to accommodate appropriate screws of 4 to 5 mm diameter. As a template for marking the position of the holes the back cover can be used.
- For panel mounting drill two anchoring holes (diameter 2,6mm) into the panel, of a diameter adequate to accommodate wood-type screws of 4 -5 mm diameter.
  As a template for marking the position of the holes the back cover can be used.
- Pull the incoming conductors through the hole in the back side of the cover and fix the cover to the wall or into panel using appropriate screws.
- On mains powered clock connect the incoming conductors in accordance with the description on the power supply unit using WAGO or equivalent clamps.
- Mount the connectors to the cable of the synchronisation signal line, the temperature sensor cable, to the keyboard cable, Ethernet or to the RS 232 and RS 485 interface cables, if these are used.
- Push the synchronisation line connector, the temperature sensor connector, the keyboard connector, Ethernet connector or the RS 232 and RS 485 jacks into the corresponding terminals on the control PCB (DC user manual chapters 2.8, 2.9). Check the marking of the jack-plugs, in order to prevent their mix-up.
- Put the clock into prepared hole. Check if any cable is not pinched between the clock body and back cover.
- Fix the clock by four delivered screws to back cover.



16 Engineering data

16.1 Standard design of the clock

Specification		ECO-SLH-DC.57.4	ECO-SLH-DC.57.4.2	ECO-SLH-DC.57.6	ECO-SLH-DC.57.6.2	ECO-SLH-DC.57x.6	ECO-SLH-DC.57x.6.2	ECO-SLH-DC.100.4	ECO-SLH-DC.100.6	ECO-SLH-DC.100x.6
	height of the digits [mm]	57	57	57/38	57/38	57	57	100	100 / 57	100
Display	number of digits	4	4	4+2	4+2	6	6	4	4+2	6
	number of lines	1	2	1	2	1	2	1	1	1
Time/Date display format	HH : MM DD.MM	✓	✓					✓		
	HH : MM.SS DD. MM.YY			✓	✓				✓	
	HH : MM : SS DD. MM.YY					✓	✓			✓
Powering	standard	100 - 240 VAC, 50 - 60 Hz								
	VDC (on request)	18—56 VDC (18—40 VAC)								
	PoE variant (IEEE 802.3af)	1 LAN input								
Power consumption [VA]	single sided, mains powered	7	11	8	16	8	16	7	8	10
	single sided, PoE	7	11	8	15	8	15	7	8	10
Crystal timebase	passive running reserve (time + date)	6 years (except PoE)								
	running reserve PoE version	12 hours								
	accuracy at 20° C	± 0,1 s / day without synchronization (after 24 hours of synchronization at constant temperature)								
Accuracy of temperature meassurement	range -10 ÷ +85 °C	±0,5 °C								
	range -50 ÷ +125 °C	±2,0 °C								
Operating environment	temperature	-5 ÷ +50 °C								
	humidity	0 – 95 % (without condensation)								
	protection degree	IP 54								
Weight [kg]	flush mounting N.F	2,6	4	3,3	5	3,5	5,5	4,7	5,8	6,5
Dimensions [mm] (W x H x D)	flush mounting N.F	380 150 39	380 260 39	470 150 39	470 260 39	500 150 39	500 260 39	555 220 39	695 220 39	770 220 39
	flush mounting back cover dimension W1 x H1	318 123	618 233	408 123	408 233	438 123	438 233	493 193	633 193	708 193

Stainless steel keyboard	ECO-SLH-SKF	ECO-SLH-SKF back cover dimension W1 x H1
Dimensions [mm] (W x H x D)	82 x 152 x 50	67 x 139

16.2 Voltage range and electric current consumption of the lines

Type of slave line	Voltage range	Electric current consumption
MOBALine	5 – 30 VAC	6 – 34 uA
MIN, CODE	+- 12 – 30 V	3 – 7 mA
MIN, CODE (on request)	+- 30 – 60 V	3 – 7 mA
IRIG B	20 mVpp – 2 Vpp	20 uA – 2 mA

17 Accessories

17.1 Clock without back cover

- Instruction manual ECO-SLH-DC 1 pc
- Instruction manual DC 1 pc
- Wood screws for fixing the anchoring plate inclusive dowels 4 pcs

17.2 Clock with back cover

- Instruction manual ECO-SLH-DC 1 pc
- Instruction manual DC 1 pc
- Wood screws for fixing 2 pcs

18 Cleaning

Clean surface of clock only. Use soft rags and antistatic detergents. Don't use synthetics.

19 DISPOSAL OF USED BATTERIES

The user is lawfully obligated to return unusable batteries. Disposal of used batteries through household waste is prohibited! Batteries which contain dangerous substances are labelled with a picture of a crossed out trash bin. The symbol means that this product may not be disposed through household waste. Below the symbol, the dangerous substance is indicated with an abbreviation: Cd = Cadmium, Hg = Quicksilver, Pb = Lead. Unusable batteries can be returned free of charge at appropriate collection points of your waste disposal company or at shops that sell batteries. By doing so, you fulfil your legal responsibilities and help protect the environment.

20 GUARANTEE AND MAINTENANCE

- The device is intended for a normal operational environment according to the corresponding norm.
- The following circumstances are excluded from the guarantee:
- inappropriate handling or interventions
- chemical influences
- mechanical defects
- external environmental influences (natural catastrophes)
- Repairs during and after the guarantee period are assured by the manufacturer.

HEADQUARTERS / PRODUCTION

MOSER-BAER AG
Spitalstrasse 7, CH-3454 Sumiswald
Tel. +41 34 432 46 46 / Fax +41 34 432 46 99
moserbaer@mobatime.com / www.mobatime.com

SALES WORLDWIDE

MOSER-BAER SA EXPORT DIVISION
19 ch. du Champ-des-Filles, CH-1228 Plan-les-Ouates
Tel. +41 22 884 96 11 / Fax + 41 22 884 96 90
export@mobatime.com / www.mobatime.com

SALES SWITZERLAND

MOBATIME AG
Stettbachstrasse 5, CH-8600 Dübendorf
Tel. +41 44 802 75 75 / Fax +41 44 802 75 65
info-d@mobatime.ch / www.mobatime.ch

MOBATIME SA
En Budron H 20, CH-1052 Le Mont-sur-Lausanne
Tél. +41 21 654 33 50 / Fax +41 21 654 33 69
info-f@mobatime.ch / www.mobatime.ch

SALES GERMANY, AUSTRIA

BÜRK MOBATIME GmbH
Postfach 3760, D-78026 VS-Schwenningen
Steinkirchring 46, D-78056 VS-Schwenningen
Tel. +49 7720 8535 0 / Fax +49 7720 8535 11
buerk@buerk-mobatime.de / www.buerk-mobatime.de