

Installation and Operating

MLU 190(t) S 48 Movement for MOBALine

Please read this instructions carefully before installation.



References to the User's Manual

1. The information in this User's Manual can be changed at any time without previous notice. The current version is available for download on www.mobatime.com – Downloads.
2. This User's Manual has been composed with utmost care, in order to explain all details in respect of the operation of the product. Should you, nevertheless, have questions or discover errors in 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 start the setting-up of the product, only once you have correctly understood all information for the installation and of the operation.
5. The installation must only be carried out by skilled staff.
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1. Dimensions, Definitions

Diameter	Type	Art.-No.
30 - 80 cm	Movement: MLU 190 S 48	200848
30 - 80 cm	Movement: MLU 190t S 48	200849

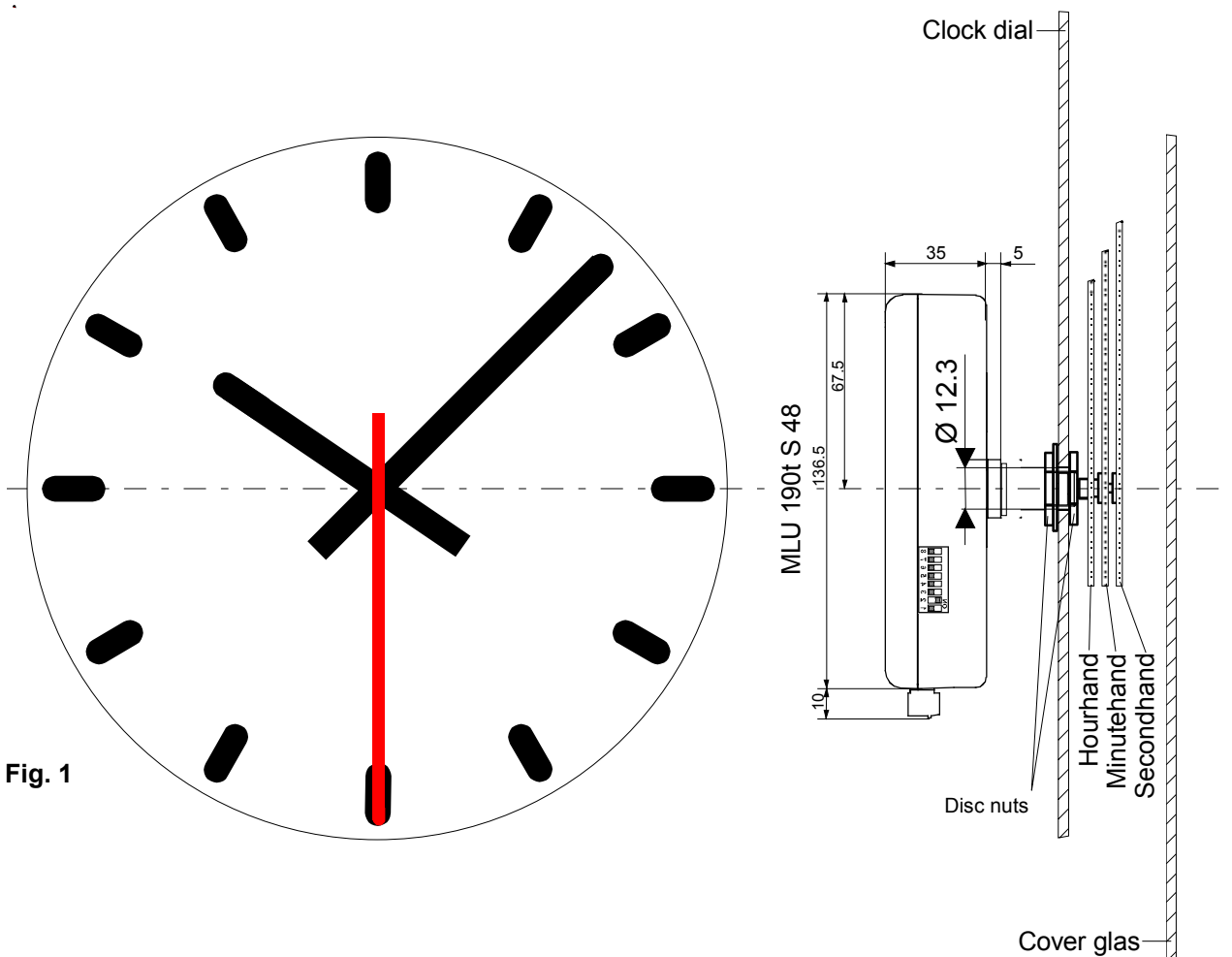


Fig. 1

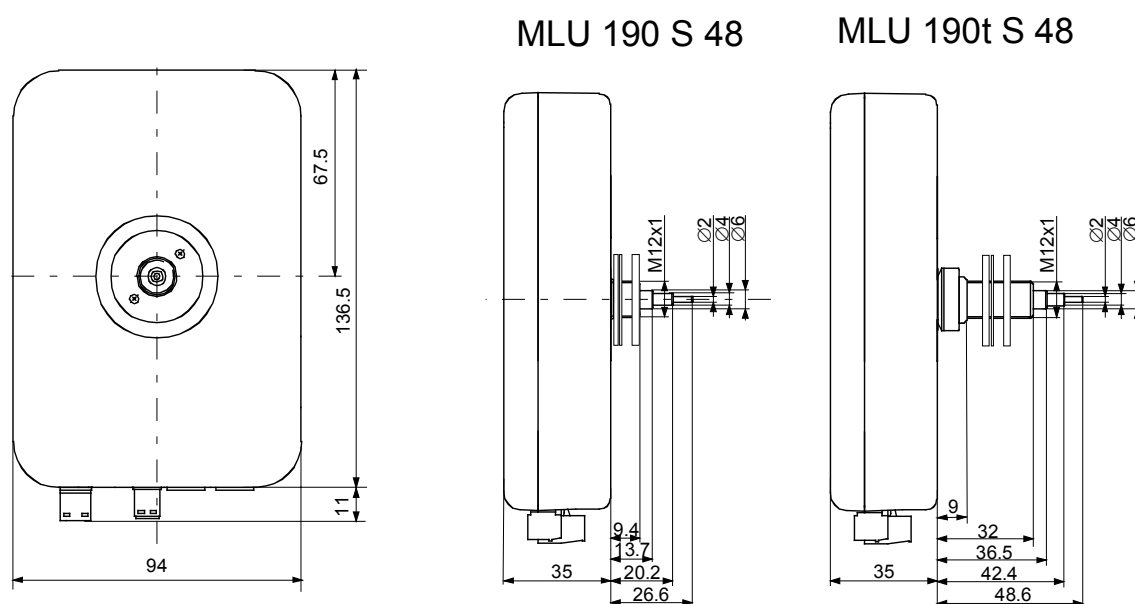


Fig. 2

2. Function description

Self-setting movement with hour, minute and second display. For self-setting slave clocks for indoor or outdoor use with dial diameters up to 80 cm, with or without illumination.

- **MOBALine** controlled with automatic time take-over and daylight saving time change-over by means of the connected **MOBALine** master clock.
- Signalization of missing **MOBALine** code reception after 24 hours by setting the hands to 12 o'clock position.
- Internal quartz clock for precise time display even during a failure of the **MOBALine** signal.
- Upon 48 V power failure, hour and minute hands will keep on running, powered by **MOBALine**. Second hand will stop.
- Single powered by **MOBALine** only possible.
- Different running modes of the second hand, selectable by means of a DIP-switch.

3. Mounting guidelines

3.1 Mounting of movement series MLU 190t S

The dial must be sufficiently stable. The fixing hole must have a diameter of 12.3 mm.

The movement must be fixed in vertical position.

Vide Fig. 3 for the position of mounting parts.

The disc nut (2*) M12 x 1 has to be tightened with a special wrench tool (Art. No. 201998) and a torque wrench with a torque of 4.5 Nm +/- 0.2 Nm.

Attention:

The ring nut (5), the compensation ring (6) and the spring washer (7) must not be removed.

After tightening of the disc nut (2*), the movement must not be wrenched!

3.2 Mounting of hands and Starting-up

3.2.1 Mounting of hands

The shafts of the hour, minute and second hands are positioned ex-work on the reference position (12 o'clock). The hands shall be carefully fixed and tightened on the shafts. Enough space must be provided between the hands. See Fig. 4.

The position 12 o'clock must be checked on each movement after the mounting (Chap.3.2.2).

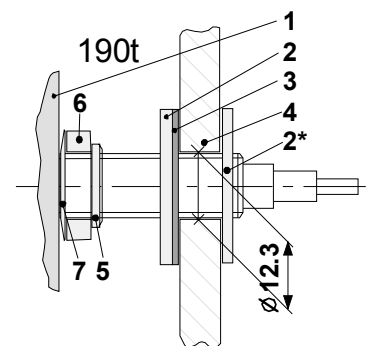


Fig. 3

- 1 Movement
- 2 Disc nut
- 3 Rubber washer
- 4 Dial
- 5 Ring nut
- 6 Compensation ring
- 7 Spring washer

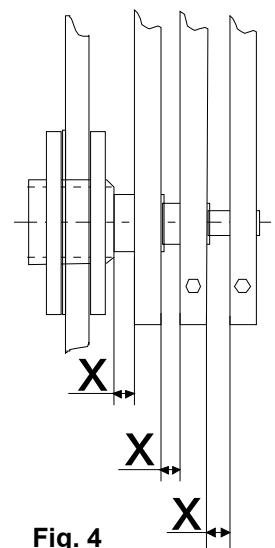


Fig. 4

3.2.2 Starting-up and check of the hand position

- Set DIP switch 1 to **ON** position (12:00 Position, Fig. 5)
- Wire line signal MOBALine or 48V power to the “48V” plug (Fig. 6).
The clock runs to 12 o'clock position.
→ Position of hands OK?
- If the hand position is wrong, carefully loosen the hand, adjust and tighten (don't distort the axis).
→ Check the 12 o'clock position again (initialising by a short power break).
- If the hand position is correct, continue with chapter 4 for further setting up.

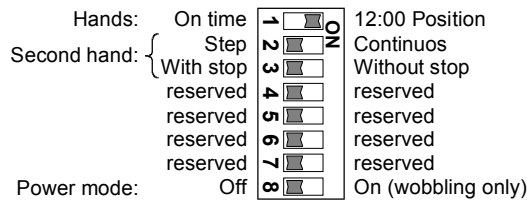


Fig. 5

4. Setting up / Connections

- If the 12 o'clock position of the clock is OK, reset DIP Switch 1 to **OFF** position (Fig. 5).
- Wire the line signal MOBALine to plug “MBL” (see Fig. 6, 8 and 9)
- The hands remain max. 20 seconds in 12 o'clock position, until 2 complete telegrams are received.

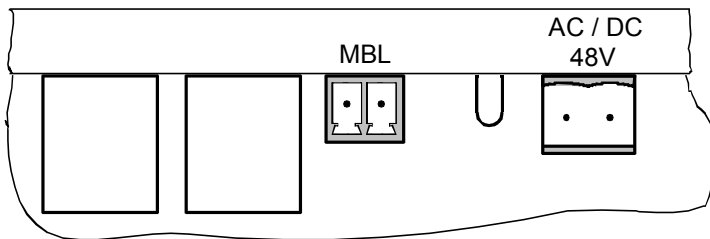


Fig. 6

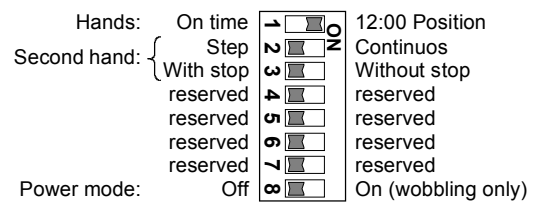


Fig. 7

Example:

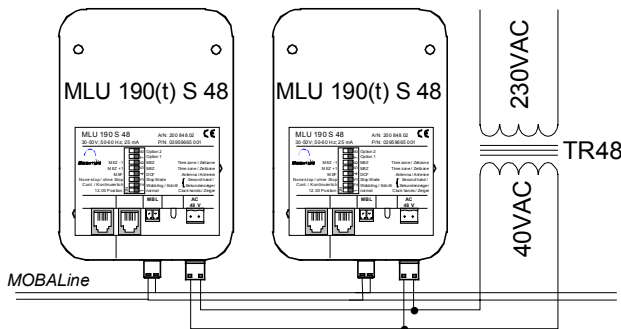


Fig. 8

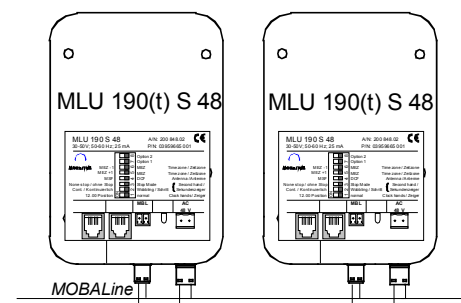


Fig. 9

Attention:
Max. no. of movements per line is limited (due to higher current consumption)
Also refer to “Technical specification”.

5. Technical specification

	MLU 190 S 48	MLU 190t S 48
Synchronisation	MOBALine	
Setting times:		
Running time to reference pos.	6 minutes maximum	
Read in of time	10 – 20 seconds	
Running time for new adjustment	10 seconds – 6 minutes	
Changes of daylight saving time	5.5 minutes maximum	
Operation mode second shaft	<ul style="list-style-type: none"> - Continuous or secondly pace shift (wobbling) - 1 revolution in 60 s or 1 revolution in 58 s with stop at 12.00 position and start with the minute change 	
Operation mode minute shaft	1 step every 60 s	
Operation mode hour shaft	continuous	
Operation voltage	15 – 50 VAC (50 – 60Hz) / 20 – 60 VDC / MOBALine	
Power consumption:		
from 48 V AC or DC	< 25 mA / 40 mA (wobbling power mode)	
from MOBALine, if 48 V is OK	2 mA	
from MOBALine, if 48 V is failed	< 10 mA	
from MOBALine powered only	25 mA / 40 mA (wobbling power mode)	
Number of motors	2 (hour / min. + sec.)	
Dial diameter	25 – 80 cm	
Max. dial thickness	4 mm	14.5 mm
Temperature range	-30 ... +70°C	
Weight	340 g	380 g
Standards	EN 50121-4, EN 61000-6-3	
Safety	EN 60950-1, Protection class II	

Subject to change without notice

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