

Installation and Operating

MLU 190(t) and MLU 190t 1/2 Min. Movement for MOBALine

Please read this instructions carefully before installation.



References to the User's Manual

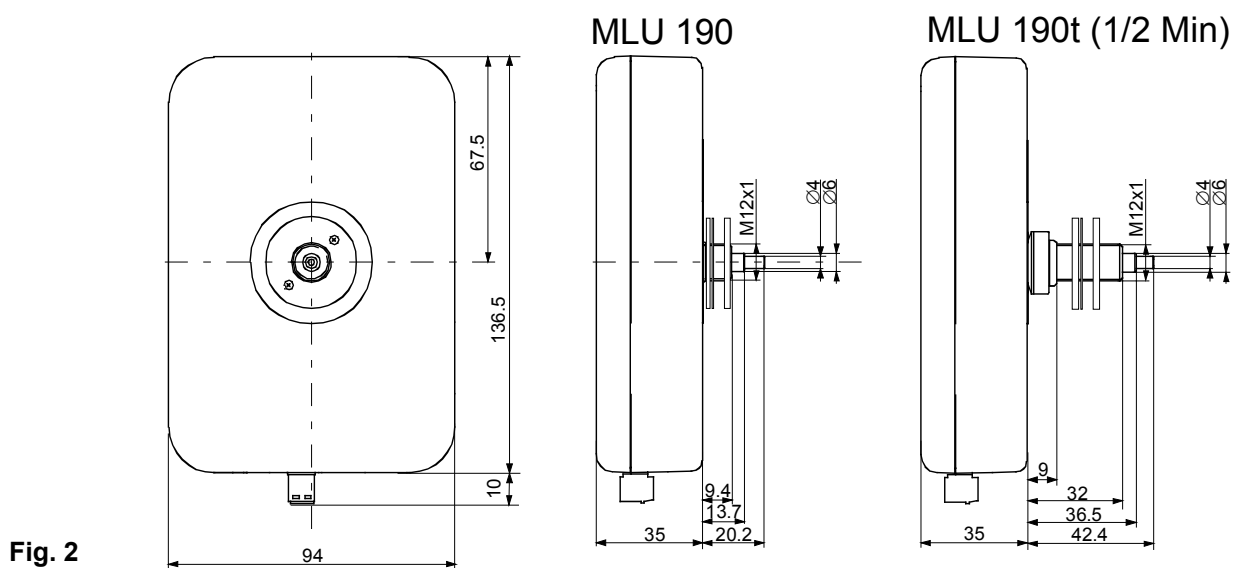
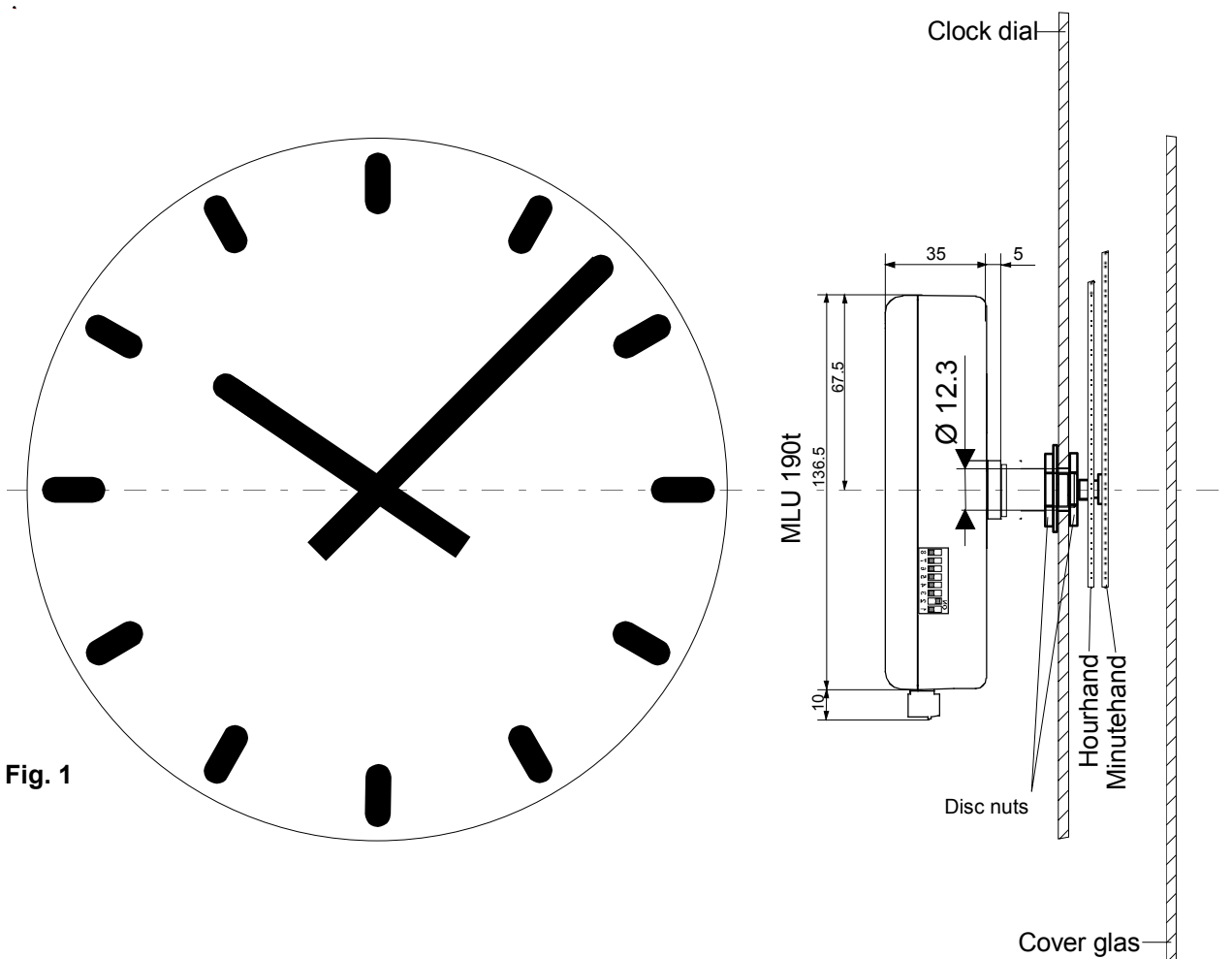
1. The information in this User's Manual can be changed at any time without previous notice. The current version is available for download on www.mobatime.com – Downloads.
2. This User's Manual has been composed with utmost care, in order to explain all details in respect of the operation of the product. 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	200844
30 - 80 cm	Movement: MLU 190t	200845
30 - 80 cm	Movement: MLU 190t ½ Min.	201788



2. Function description

Self-setting movement with hour and minute 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.
- Powered from **MOBALine** only. No external power needed.

3. Mounting guidelines

3.1 Mounting of movement series 190t

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).

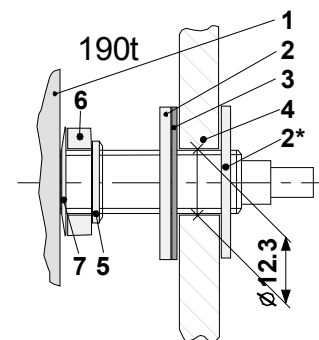


Fig. 3

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

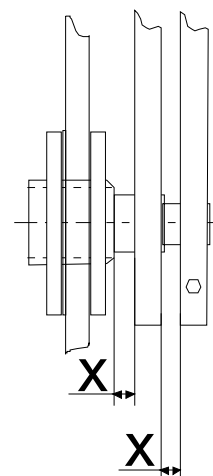


Fig. 4

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 to the "MLB" 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.
→ Check the 12 o'clock position again (initialising by an interruption of the power supply).
- If the hands position is correct, continue with chapter 4 for further setting up.

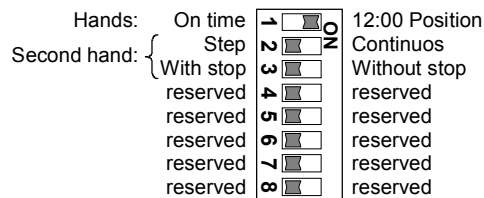


Fig. 5

4. Setting up / Connections

- If the 12 o'clock position of the clock is OK, reset DIP Switch **1** to **OFF** position (Fig. 5).
- The hands remain max. 20 seconds in 12 o'clock position, until 2 complete telegrams are received.

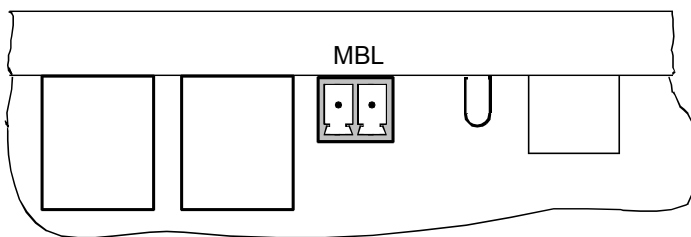


Fig. 6

Example:

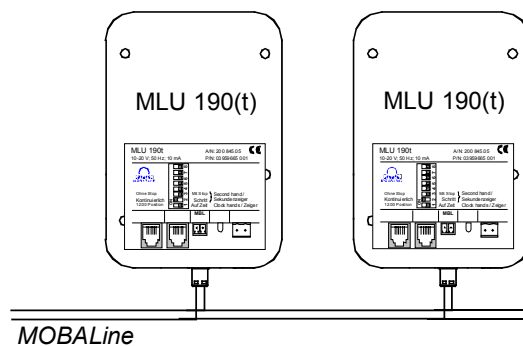


Fig. 7

5. Technical specification

	MLU 190	MLU 190t
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 minute shaft	1 step every 60 s	
Operation mode hour shaft	continuous	
Operation voltage	10 - 20 VAC 50 – 60 Hz	
Current consumption from MOBALine	10 mA maximum	
Number of motors	1 (hour / min.)	
Dial diameter	25 – 80 cm	
Max. dial thickness	4 mm	14.5 mm
Temperature range	-30 ... +70°C	
Weight	320 g	360 g
Standards	EN 50121-4, EN 61000-6-3	
Safety	EN 60950-1, Protection class II	

	MLU 190t ½ Min.	
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 minute shaft	1 step every 30 s	
Operation mode hour shaft	continuous	
Operation voltage	10 - 20 VAC 50 – 60 Hz	
Power consumption from MOBALine	max. 10 mA	
Number of motors	1 (hour / min.)	
Dial diameter	25 – 80 cm	
Max. dial thickness	14.5 mm	
Temperature range	-30 ... +70°C	
Weight	360 g	
Standards	EN 50121-4, EN 61000-6-3	
Safety	EN 60950-1, Protection class II	

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