

MOUNTING AND INSTRUCTION MANUAL

MOBALine-Booster

Please read these instructions carefully before installation.



Product Certification



STANDARDS

The MOBALine-Booster was developed and produced in accordance with the EU Guidelines

2004 / 108 / EC

96 / 48 / EC

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 at 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. Please do not hesitate to contact us if you have any questions. Thank you for reporting any possible mistakes.
3. We do not answer for direct or indirect damages which could occur when using this manual.
4. Read the instructions carefully. Only start setting-up the product if you have understood the information for installation and operation.
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1 Safety

1.1 Safety instructions



Read this chapter and the entire instruction manual carefully and follow all instructions listed. This is your assurance for dependable operations and a long life of the device. Keep this instruction manual in a safe place to have it handy every time you need it.

1.2 Symbols and Signal Words used in this Instruction Manual

	Danger! Please observe this safety message to avoid electrical shock! There is danger to life!
	Warning! Please observe this safety message to avoid bodily harm and injuries!
	Caution! Please observe this safety message to avoid damages to property and devices!
	Notice! Additional information for the use of the device.

1.3 Intended use

The **MOBALine-Booster** is a device for the amplification of MOBALine lines with regard to output and range.

Please refer to section 3.3 – Function description – for a detailed function description.



1.4 Observe operating safety!

- Never open the housing of the device! This could cause an electric short or even a fire, which would damage your device. Do not modify your device!
- The device is not intended for use by persons (including children) with limited physical, sensory, or mental capacities or a lack of experience and/or knowledge.
- Keep packaging such as plastic films away from children. There is the risk of suffocation if misused.

1.5 Consider the installation site!

- To avoid any operating problems, keep the device away from moisture and avoid dust, heat, and direct sunlight. Do not use the device outdoors.
- The MOBALine-Booster is designed for DIN rails and should only be operated installed on a DIN rail.
- By operating the device, the heat sinks attached to the sides get warm. Make sure there is enough air circulation for the heat to dissipate.



Danger! Make sure

that you wait before using the device after any transport until the device has reached the ambient air temperature. Great fluctuations in temperature or humidity may lead to moisture within the device caused by condensation, which can cause a short.



1.6 Observe electromagnetic compatibility!

The device complies with the requirements of EMC directive 2004/108/EC and 96/48/EC

2 Maintenance

2.1 Troubleshooting: Repairs

If you cannot rectify the problems, contact your supplier from whom you have purchased the device.

Any repairs must be carried out at the manufacturer's plant.

Disconnect the power supply immediately and contact your supplier, if ...

- liquid has entered your device
- the device does not properly work and you cannot rectify this problem yourself.

2.2 Cleaning

- Please make sure that the device remains clean especially in the area of the connections, the control elements, and the display elements.
- Clean your device with a damp cloth only.
- Do not use solvents, caustic, or gaseous cleaning substances.

2.3 Disposing



Device

At the end of its life cycle, do not dispose of your device in the regular household rubbish. Return your device to your supplier who will dispose of it correctly.



Packaging

Your device is packaged to protect it from damages during transport.

Packaging is made of materials that can be disposed of in an environmentally friendly manner and properly recycled.

3 General Information: Introduction

3.1 Scope of delivery

Please check that the delivery is complete and notify your supplier within 14 days of receipt of the delivery if it is not complete.

In the package purchased by you, you have received:

- MOBALine-Booster for DIN rail mounting
- Switch-mode power supply (DIN rail mounting) for MOBALine-Booster
- Wall mounting set comprising
 - DIN rails
 - Dowels and screws
- Power supply cable between switch-mode power supply and MOBALine-Booster

3.2 Technical data

See chapter 7 Technical data.

3.3 Device designation in this manual

This manual relates to the **MOBALine-Booster**. For purposes of better readability the designation **booster** is used in the following sections.

3.4 Function description

The MOBALine-Booster is a device for the amplification of MOBALine lines with regard to output and range. For this purpose the MOBALine input signal is adapted and amplified.

The booster monitors the external supply voltage, the voltage of the MOBALine input signal and the current of the MOBALine output signal (overload detection).

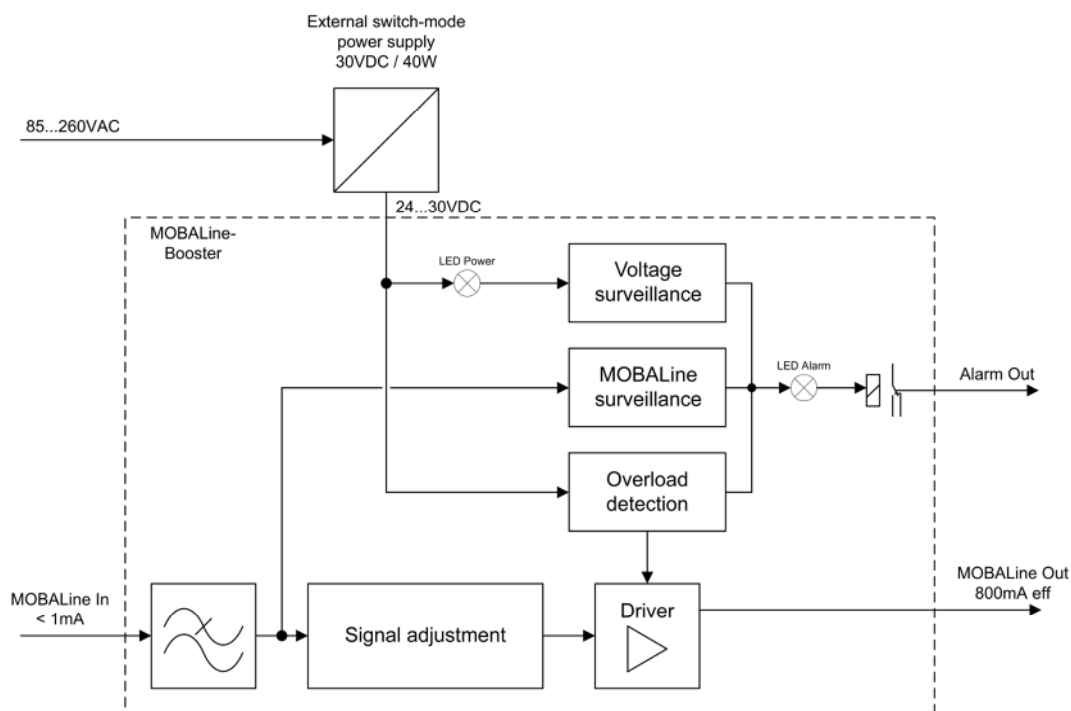
If one of the three monitoring systems detects an error, the booster switches off and generates an alarm, which is signaled by the red alarm LED and with the alarm relay.

After five seconds the booster turns itself back on, provided that the monitoring system has detected no further errors.

The signal is only amplified with the booster, therefore it is transparently transmitted, i.e. without changes to content.

The booster is supplied by the external switch-mode power supply included in the scope of supply, which can be operated directly from the power supply. If a power supply is available, the Power LED lights up.

The following illustration shows the block circuit diagram of the MOBALine-Booster:



3.4.1 Monitoring

The MOBALine-Booster carries out the following tests to check for correct operation:

Test	Threshold value
Supply voltage	Lower than 21 V → error
MOBALine input voltage	Lower than 9 V effective → error
MOBALine output current	Higher than 800 mA effective → error

3.4.2 Alarm system

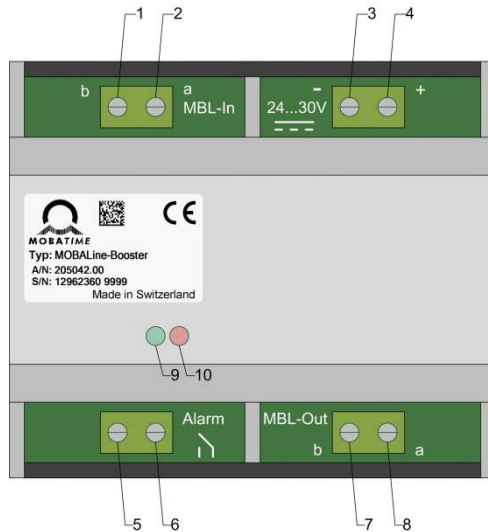
The alarm output and the alarm LED acknowledge an active error only if it persists for at least two seconds without interruption.

If the alarm output and the alarm LED have been activated, they remain activated for at least five seconds, even if all errors have disappeared earlier.

4 Configuration, displays and connections

4.1 MOBLine-Booster

The booster has the following connections and displays:

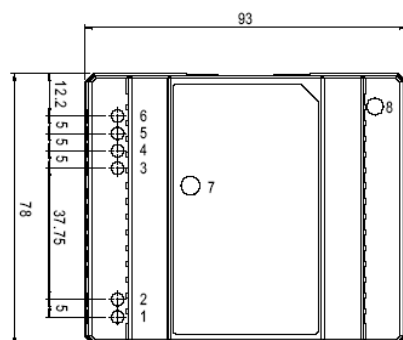


No.	Group	Caption	Meaning and function	
1	MOBALine In	b	MOBALine input signal, connection b	
2		a	MOBALine input signal, connection a	
3	Supply	"-"	Negative power supply connection	
4		"+"	Positive power supply connection	
5	Alarm	none	Alarm relay connection	Alarm = contact open
6		none	Alarm relay connection	
7	MOBALine Out	B	MOBALine output signal, connection b	
8		A	MOBALine output signal, connection a	
9	Display	none	Power LED (green)	ON: Power OK
10		none	Alarm LED (red)	ON: Alarm

The LEDs are located inside the case. However they are visible through the ventilation slit in the case.

4.2 External switch-mode power supply


The supplied switch-mode power supply DR-30-24 has the following connections, displays and controls:



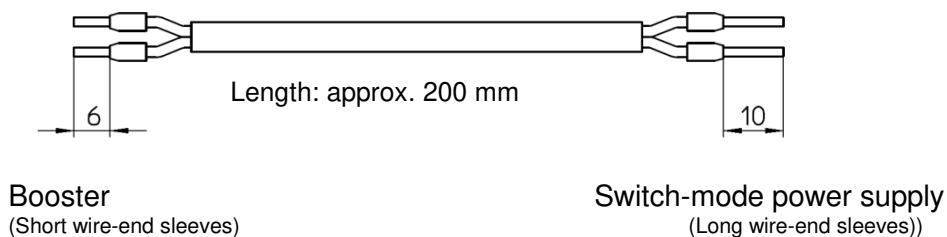
No.	Type	Caption	Meaning
1	Connection	N	Connection for the neutral conductor from the power supply
2	Connection	L	Connection for the conductor from the power supply
3 & 4	Connection	V+	Connections for the positive output voltage
5 & 6	Connection	V-	Connections for the negative output voltage
7	LED	DC OK	Status LED of DC output. ON = OK
8	Trimmer	VADJ	Control for adjustment of the output voltage

5 Mounting and installation

To mount the MOBALine-Booster and activate it for the first time, the following procedure can be followed:

1. Mount the DIN rail in the desired place.
2. Fit booster and switch-mode power supply DR-30-24 onto the rail.
3. Connect supply between switch-mode power supply and booster with the power supply cable included in the scope of delivery. NB: The power supply cable does not have connections of equal length on both sides:
 - a. From the power supply cable connect the blue wire with the longer wire-end sleeve to connection V- (connection 5 or 6) of the switch-mode power supply.
 - b. From the power supply cable connect the brown wire with the longer wire-end sleeve to connection V+ (connection 3 or 4) of the switch-mode power supply.
 - c. From the power supply cable connect the blue wire with the shorter wire-end sleeve to connection - (connection 3) of the booster.
 - d. From the power supply cable connect the brown wire with the shorter wire-end sleeve to connection + (connection 4) of the booster.
-  4. **Important:** Turn ADJ trimmer at the switch-mode power supply with a screwdriver clockwise as far as it will go (set output voltage to maximum).
5. If necessary, connect the alarm output of the booster (connections 5 and 6).
6. Connect the MOBALine output of the booster (connections 7 and 8).
7. Connect power supply to the switch-mode power supply.
 - a. Connect neutral conductor to switch-mode power supply at N (connection 1).
 - b. Connect phase to switch-mode power supply at L (connection 2).
 - c. The DC OK LED of the switch-mode power supply and the Power LED (green) of the booster must now light up. If not, the installation must be checked.
 - d. The alarm LED of the booster lights up as this still has no input signal.
8. Connect the MOBALine input of the booster (connections 1 and 2).
9. After a short time the alarm LED of the booster must go out.

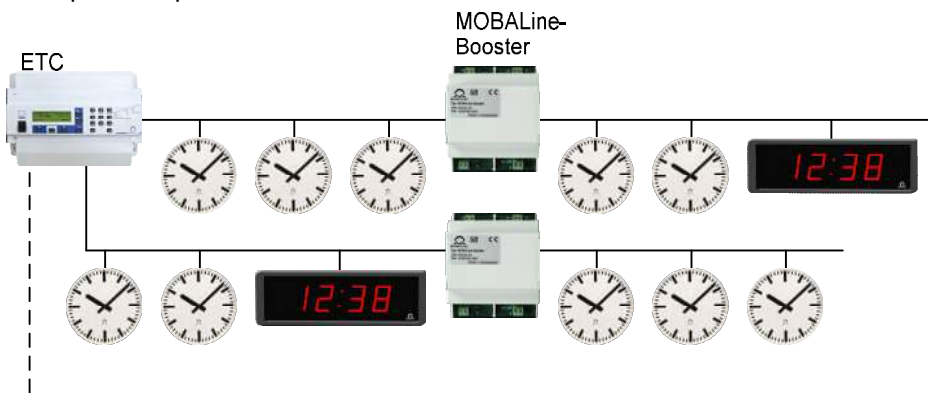
The following illustration shows the power supply cable included in the scope of delivery (art. no. 203004):



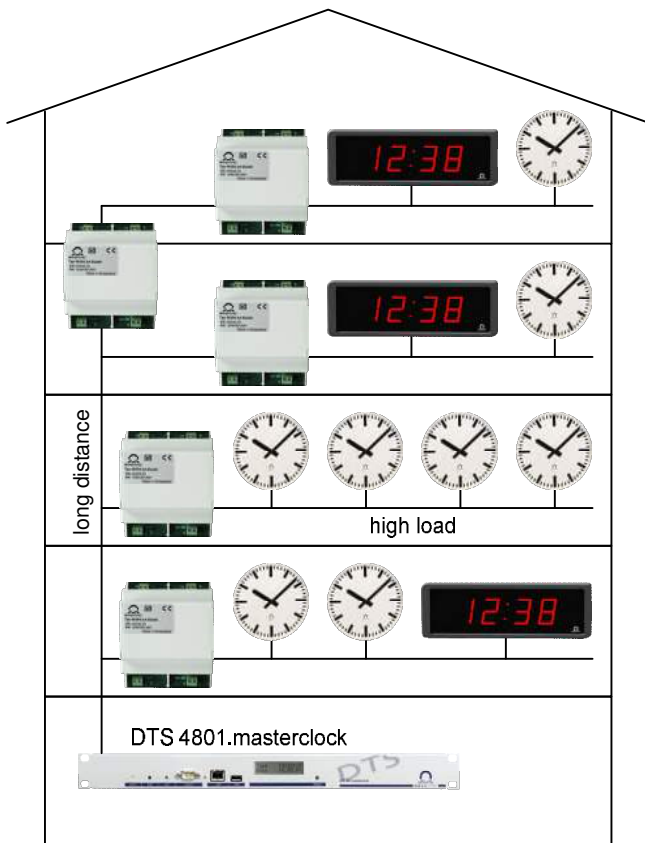
6 Application examples

Up to 2 boosters can be used in a series. If more boosters are used serially, the signal gets distorted and can not be reliably detected by clocks anymore.

Example 1: Airport



Example 2: Office building



7 Technical data

7.1 MOBALine-Booster

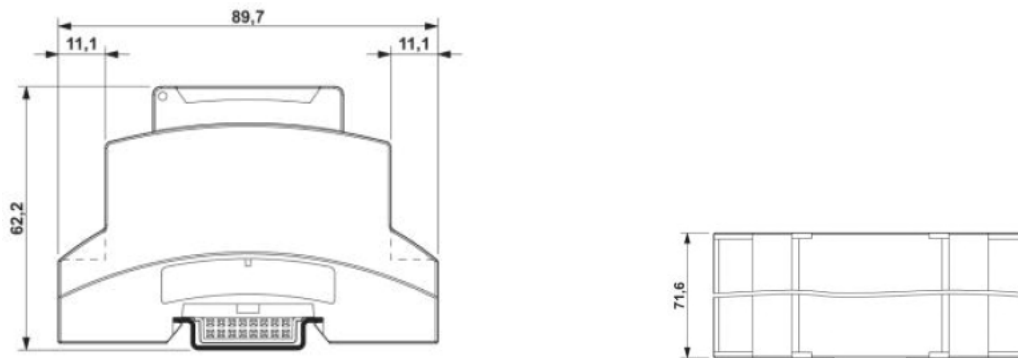
MOBALine input	Minimum level	10 V _{eff}
	Maximum load	<1 mA
MOBALine output	Maximum output load	800 mA
	Output voltage	15 – 18 V _{eff}
Supply	Voltage range	24 – 30 VDC
	Max. input current	1 A
Display	Alarm	LED (red)
	Power	LED (green)
Alarm relay	DC output	30 W, max. 60 VDC or 1 A
	AC output	60 VA, max. 30 VAC or 1 A
Environment	Temperature	0...+70 °C
Dimensions	71.6 x 89.7 x 62.2 mm (W x H x D)	

7.2 External switch-mode power supply

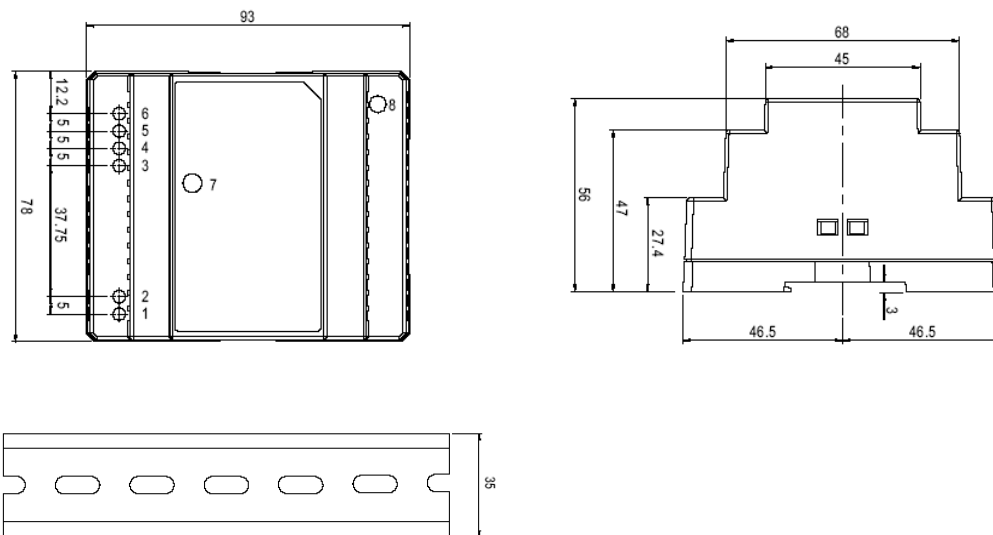
Model	Mean Well DR-30-24	
Order number	701722	
Input	AC voltage range	85 – 264 VAC
	AC frequency range	47 – 63 Hz
	DC voltage range	120 – 370 VDC
Output	Output voltage	24 V (adjustable)
	Output current	0 – 1.5 A
Temperature range	–20...+60 °C	
Dimensions	78 x 93 x 59 mm (W x H x D)	

8 Dimensions

8.1 MOBALine-Booster



8.2 External supply-mode power supply



ADMISSIBLE DIN-RAIL: TS35/7.5 OR TS35/15

Length 142 mm



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