LABOR-ASTER

AMPLIFIER MODULE WITH SEPARATION
Type: WZM ±1A

INSTRUCTION MANUAL

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1. Introduction.

The purpose of this instruction manual is to provide the users of WZM±1A AMPLIFIER MODULE with SEPARATION with the general technical data of the device and to explain the basics of its functioning and operation. The installation and maintenance conditions, as well as procedures in case of failure are given.

2. Scope of supply. Warranty.

The device is dispatched to the recipient in individual and/or bulk containers together with the collective Warranty valid for 12 months. The manufacturer guarantees the service within the warranty period and afterwards at the head office.
Instruction Manual come with the batch of devices in amounts agreed with the recipient.

3. Application.

WZM±1A AMPLIFIER MODULE applies to the conversion of input low current signals into high current output signal. The device enables galvanic separation of input, output and feed circuit.
WZM ±1A AMPLIFIER MODULE holds a protection system against impulse surge on connecting lines and features improved resistance to radio electrical disturbances.
Each WZM amplifier is equipped in binary input "Shutdown" for emergency purpose (emergency valve closing). When the binary input is active the amplifier is ignoring the analog input and forcing the output to limits according to technical data table.

4. Technical data.

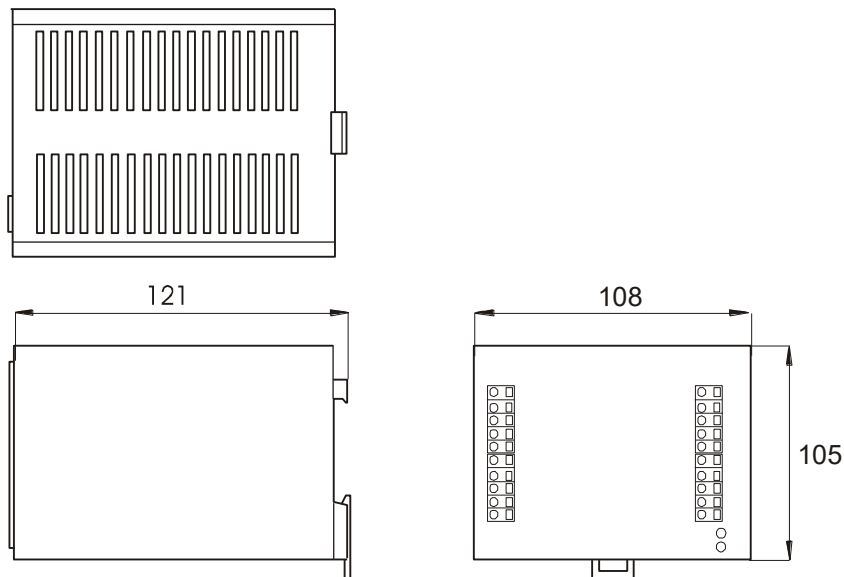| PARAMETERS	type WZM±1A
Input signal:	- **(-10 … +10) V**
Input resistance	- 1 kΩ
Output signal	- **(-1A … +1) A**
Load resistance	- (8 … 12) Ω
Output power	- as agreed (max 15 W)
Supply voltage / Power consumption	- U_n=24Vdc (20...28 V) / max 20 W
Accuracy class	- 0,2 %
Effect of supply voltage and load resistance fluctuations	- $\pm$ 0,1%
Temperature coefficient	- ± 0,05 % / °C
Zero point and SPAN setting	- $\pm$ 7.5 % by means of potentiometers It is not recommended to adjust the ZERO potentiometer. Calibration ZERO only in the service.
Time constatnt	- 15 ms
Output to control the output current	- 0 ÷ 0,5V (recommended measurement using an input with a resistance R>100 kΩ)
Galvanic separation	- separation of input, output and supply circuits from each other
Insulation test voltage between circuits	- **1 kV**
Output signal failure default value (comes to effect after 24 V voltage is applied on binary input "Shutdown")	- after agreement (+1 A)

5. Technical characteristics.

5. 1. Block scheme of the device.

For the block scheme see the appendix 1.

5. 2. Housing description and construction.

The device is placed in a steel sheet-made, lacquer coated housing. The housing protection rate corresponds to IP30 (connectors IP20). See figure below for housing look and dimensions (in mm).

6. Installation. Operating conditions.

6. 1. Assembling and connections.

Serial No.		LABOR-ASTER Poland 04-218 Warsaw Czechowicka 19 Street tel. +48 22 610 71 80 labor@labor-automatyka.pl		
⊘ ⊘	**Relay 1**	**Output**	-	⊘
			+	⊘
⊘ ⊘	**Relay 2**	**Control output**	-	⊘
			+	⊘
⊘ ⊘	⏚ ⏚	**Binary input "Shutdown"**	-	⊘
			+	⊘
⊘ + ⊘ -	**Supply2 24Vdc**	**Control input**		⊘ ⊘
⊘ + ⊘ -	**Supply2 24Vdc**	**Input**	-	⊘
			+	⊘

AMPLIFIER MODULE TYPE WZM±1A

SPAN ⊘
ZERO ⊘

Labelling of connecting terminals

The device is designed to be mounted on the standard 35 mm TS rail exclusively. The housing rail catch should be oriented vertically. Allow a distance of at least 5 mm between the housing and neighbouring device side-walls.

External terminals require copper cables with the wire diameter up to 2,5 mm. Wire endings should be protected with clam sleeves or twisted with no tin coating. Twisted cables for input and output circuits of signal lines and separate tracks for signal and feed lines are recommended.

Cables tracks should cross under right angle. Twisted, shield cables are required for zones with high electromagnetic interference. Installation in heated and ventilationed rooms or boxes or ventilationed cases put in roofed rooms (second class equipment).

6. 2. Normal operating conditions.

Ambient temperature	- 5 °C...+50 °C
Relative humidity	- 30,..80 %
Atmospheric pressure	- 80,..120 kPa
Constant and variable magnetic field	- 0,..400 A/m
Sinusoidal vibrations (within range of 5...80 Hz)	- up to 1 g
Ambient atmosphere	- dust and corrosive vapours free
Working position	- housing catch vertically
Warming up time	- 15 minutes

7. Settings and calibrations.

According to the recipient specifications the manufacturer sets:

- the type and value of the input and output signal
- time constant

There is no possibility for the user to change the above, factory settings. However, the zero - point and the measurement range span are subject to user adjustment within limits of ±7,5%. Two holes in the front panel of the device give access to potentiometers marked as "ZERO" and "SPAN" allowing the zero-point and range span corrections respectively.

8. Usage, maintenance, service: examinations, repairs

8. 1. Periodical survey

While normal working the device doesn't demand any special maintenance and settings corrections. Surveys should be carried on periodically according to the users control standards. During the survey external examination of the device condition is required. Wiring terminals and cramps should be controlled and fixed if needed. Attention should be paid to faultfinding falling into subsequent categories:

- mechanical damages
- loosening of electrical connections and fixing to the mounting rail
- legibility and integrity of the rating plate.

8. 2. Non – periodical survey.

8. 2. 1. Lack of output signal.

If the generator ON status LED lights, the voltage supply and input signal are correct the lack of output signal is due to the input or output signal connecting line failure. If the generator LED is off it is likely that the cause is the breakdown of a fuse in feed circuit. The fuse can be replaced only by the manufacturer (LABOR–ASTER) or manufacturer - trained personnel. It is forbidden to use fuses with higher rating than said in the documentation and on printed circuit board.

8. 2. 2. Other type failures.

In case of malfunction make sure that the voltage supply of the unit is in range of 20 ÷ 28 Vdc. When the non – stabilized source of power is used make sure that the voltage supply value never drops below 20 V.

If the voltage supply is correct but the malfunction persists the next step would be to verify the input signal transmission characteristic at the initial, middle and terminal point of the measurement range. ZERO and SPAN potentiometers allow the correction of occurring discrepancies for initial and terminal points of measurements range respectively. The correction cycle should be repeated until desired accuracy is attained.

No repairs and interference into the electronic system of the device are permissible. Only the manufacturer or his representative are authorized to carry out repairs and examinations of the device.

9. Labelling and types of mounting.
The device is labelled with type name: WZW and is available in mountings tailored to the customer needs.

10. Packing, storage and transport.

10. 1. Packing.
Individual packaging or bulk container are equally recommended, provided they prevent damages of the device during the transport. Indoor space, air temperature above 15^0C and relative humidity below 85% are required for packing of the device.

10. 2 . Storage.
The devices should be stored in bulk containers. Indoor space, ambient atmosphere – free of corrosive vapours and substances, with temperatures ranging from $+5^0$C to $+40^o$ C are required for storage of the devices.

10. 3. Transport.
Individual packaging or bulk container are equally appropriate for transport. The packaging should prevent the translocation of the device during the transport. Air, see and surface transport are suitable, provided the direct influence of atmospheric factors on the device is eliminated.

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Appendix 1.
WZM AMPLIFIER MODULE

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Block scheme

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