

Proportional directional valve amplifier AMP08D

AMP08D is amplifier for controls of hydraulic proportional valves with two solenoids. Depending on the polarity of the input reference is operated one of the two solenoids of the valve, and depending on the value of the reference is regulated current through the respective solenoid.

The main features of AMP08D are:

- switching power supply with a wide input voltage range
- differential analog input
- digital input for enable of the amplifier
- power solenoid drivers for currents up to 2,5 A
- PWM outputs 200 Hz
- trimmer for adjustment of the ramps from 60 ms up to 5 s
- trimmers for adjustment of the min and max currents separately for both solenoids
- input range deadband for control from joystick
- protection against reverse connection of the power supply
- protection against overvoltage in the power supply
- protection against overload and short circuit in the outputs
- internal replaceable fuse on power supply

There are provided 5 multiturn trimmers:

- \int - It adjusts the length of the leading/ trailing edge of the output current to reach the reference.

For each solenoid have two trimmers for setting the current:



- Z - It adjusts the current at the minimum value of the input reference
- G - It adjusts the current at the maximum value of the input reference.

These two trimmers allow adjusting the steering zone of the valve. The output current of the amplifier is given by:

$$y = G \cdot x + Z, \text{ where}$$

y - is the output in percentages;

x - is the input in percentages;

G - is the value from trimmer G- number from 0,5 to 1

Z - is the value from trimmer Z- from 0% to 50%.

LEDs for status indication are 4:

-POW - lights when the power supply voltage is between working limits

-O1 - lights when is controlled output 1 of amplifier

-O2 - lights when is controlled output 2 of amplifier

-EN/ERR - lights green (when on terminal EN is applied voltage for enabling of the amplifier and input voltage is between $\pm 0,1V$ and $\pm 10V$) or lights red (when on terminal EN the voltage is bellow min limit or input voltage is outside $\pm 0,1V \pm 10V$).

AMP08D is for DIN mount and can be used to control valves up to 60W.

Technical specifications

Power supply	12..30 VDC
- overvoltage protection	33 VDC
- reverse connection protection	internal replaceable fuse 3 A
Input reference signal	± 10 V
-dead band	$\pm 0,1$ V
-input resistance	20 k Ω
Enable input EN	> 9,5 V ; Rin =2,6 k Ω
Trimmers to adjust	multiturn
- $\square \square$ -ramps	0,06 ... 5 s
- Z -zero current	from 0% to 50%
- G -max current	from 0.5 to 1
Nominal output current	2,5 A
Output voltage	PWM 200 Hz
Control algorithm of current	integral
Cables	20 m max
Dimensions (w x h x d)	52 x 90 x 58 mm
Installation	DIN rail 35 mm
Connectors	1,5 mm ²
Working conditions	0 $^{\circ}$ C ... +50 $^{\circ}$ C
Storage conditions	-20 $^{\circ}$ C... +70 $^{\circ}$ C

Указания за настройка

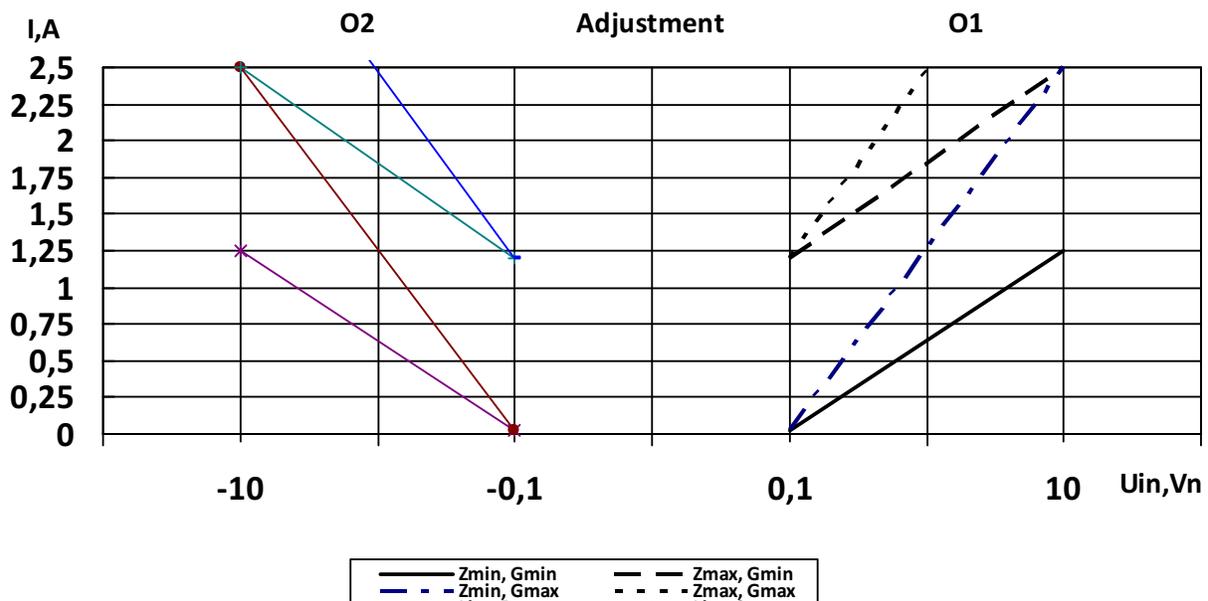
In most cases there is no need to adjust the trimmers. When necessary, adjustments must be made in the following sequence (the example is for pressure valve):

1. To the input is fed 0,1 V. With potentiometer zero (denoted by Z) is set outlet pressure of the valve to be on the required minimum.

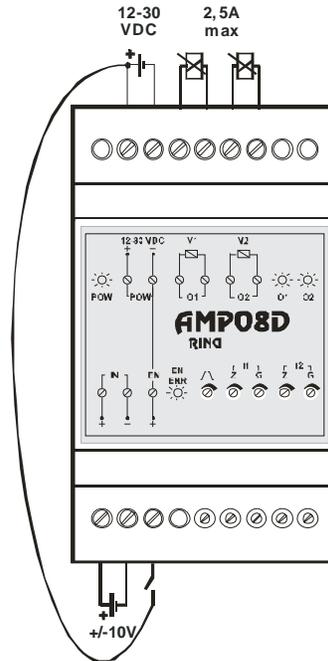
2. Submitted 10 V reference. With potentiometer gain (denoted by G) adjusts the valve outlet pressure to a maximum value.

This procedure is repeated with -0,1 V and -10 V input signal to adjust the second solenoid.

3. Adjust the speed of rise/ fall (with potentiometer marked $\square \square$) of the output current. Time is measured by entrance to input a single pulse (transition from 0 to 10 V).



Wiring diagram and pin assignment

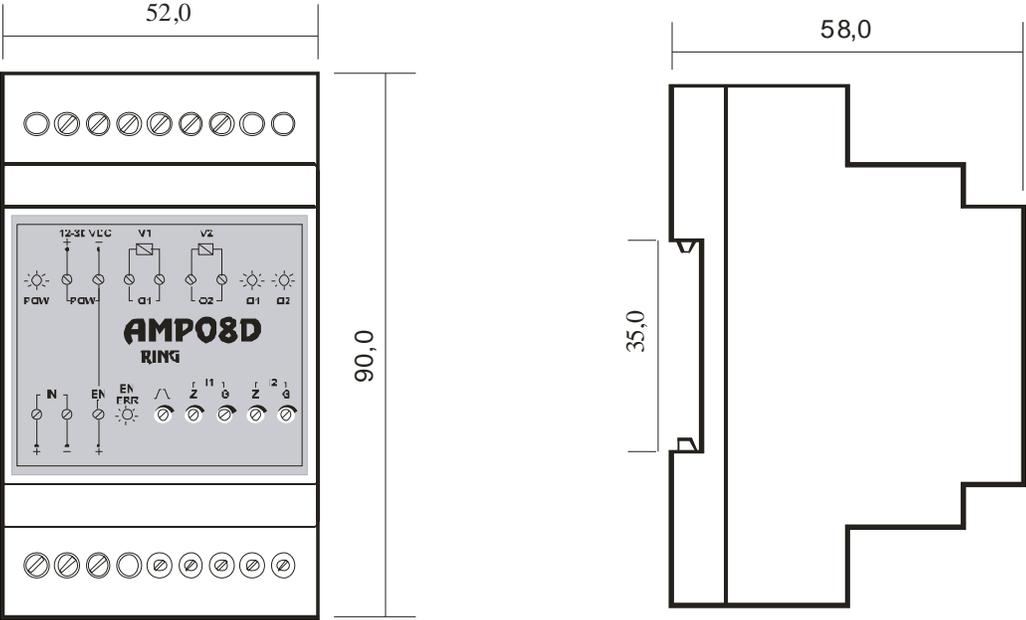


NAME	DESCRIPTION	VALUE
POW+	Power supply voltage "+"	12 – 30 VDC
POW-	Power supply voltage "-"	
O1	Output for first solenoid connection (Operated at current 12-20 mA)	2,5 Arms max
O1		
O2	Output for second solenoid connection (Operated at current 4-12 mA)	2,5 Arms max
O2		
EN	Enable input	>9,5 VDC
IN+	Reference input "+"	0 ± 10 V
IN-	Reference input "1"	

⚠ **Caution!**

⚠ Do not use free-wheeling diode on solenoid outputs.

Mechanical dimensions and mounting



AMP08D is mount on DIN rail 35 mm

Warnings

- The amplifier can be operated only at specified operating conditions.
- The amplifier not be operated in the presence of corrosive gas and large dusty conditions.
- The amplifier should not be installed near the equipment and devices emitting strong electromagnetic fields.
- Wiring of the amplifier can be made only when the power is off.
- The wires connected to the inputs must be shielded and separated from those that are connected to the outputs and the power supply to avoid mutual influence.
- For proper operation of the amplifier the supply voltage is necessary to be well filtered. Closest to the power terminals must have electrolytic capacitor with a minimum value 2000 μF / 50V.
- Parallel to the coil of the valve should not be connected free-wheeling diode or other protective device.
- The manufacturer has set the parameters so that the amplifier to work well in certain situations. The user needs to set parameters alone according to the specific object and needs.