

Proportional-amplifier

- Plug amplifier for direct assembly on the valve
- Protection class IP65
- 24 and 12 VDC supply voltage
- Housing-types for solenoids from □ 29

P02
 DIN 43 650
 ISO 4400

DESCRIPTION

Proportional amplifier for direct assembly on the valve. Pin layout according to DIN 43650, Type A (ISO 4400) for solenoids from □ 29 or larger. Protection class of the plug amplifier is IP65, mounted according to DIN 40050. The connector cable is already mounted in the plug.

FUNCTION

The proportional amplifier has a clock-pulsed final stage. The clock frequency acts as dither and can be steplessly adjusted. Minimum and maximum solenoid current can be adjusted separately. Furthermore, a linear ramp is integrated. By means of the input release/block, the function can be blocked. A stabilized output voltage is available for supplying external pre-set value transmitters.

APPLICATIONS

The amplifier is suitable for different applications because of its splash water proof design. The easyness of connection allows to put it into operation without help of special tools. All settings are easily adjustable. The plug can be rotated by 180°.

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TYPE CODE

| | | | | | | | | | |
|---|----------------------------|----|---|---|---|---|---|---|---|
| Plug | P | 02 | A | 0 | 1 | □ | □ | # | □ |
| Type number | | | | | | | | | |
| Housing A for solenoids □ 29 or larger | | | | | | | | | |
| with cable connection | | | | | | | | | |
| 1-solenoid version | | | | | | | | | |
| Supply voltage | | | | | | | | | |
| 24 VDC | 24 V proportional solenoid | D2 | | | | | | | |
| 12 VDC | 12 V proportional solenoid | D3 | | | | | | | |
| Preset value input 0...+ 8 VDC (only for 12 VDC) | 3 | | | | | | | | |
| Preset value input 0...+ 10 VDC (only for 24 VDC) | 4 | | | | | | | | |
| Design-Index (Subject to change) | | | | | | | | | |

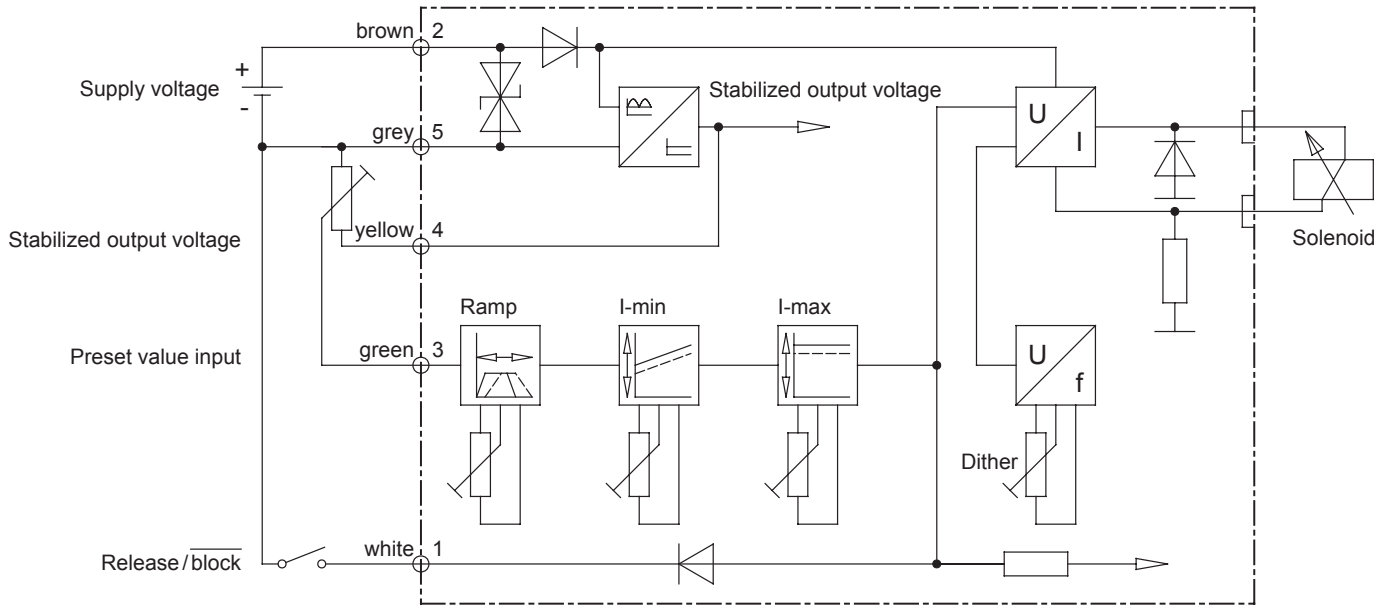
GENERAL SPECIFICATIONS

| | |
|---------------------|--|
| Plug housing | polyamide |
| Plug | polycarbonate |
| Weight | 160 g |
| Connections | mounted cable, length 1,5 m (on request, cable length 5 m/10 m) |
| Ambient temperature | see curve max. ambient temp. |

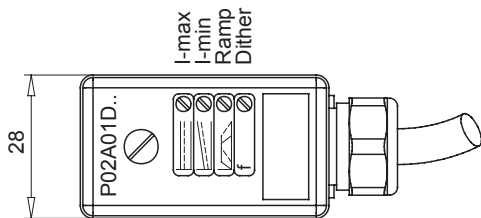
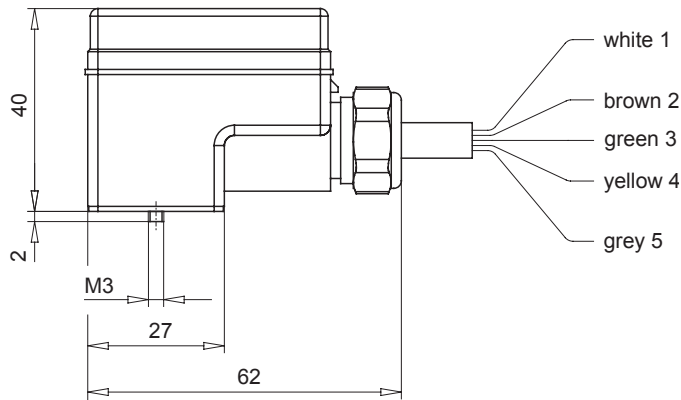
ELECTRICAL SPECIFICATIONS

| | | |
|---------------------------|--|------------------------|
| Supply voltage | 24 VDC | tolerance: 22...36 VDC |
| | 12 VDC | tolerance: 11...18 VDC |
| Preset value input | 0...+10 VDC | (0...+ 8 VDC) |
| Input resistance | ≥ 100 kΩ | |
| Stabilized output voltage | | |
| 24 V-version: | 10 VDC, max. load 2 mA | |
| 12 V-version: | 8 VDC, max. load 2 mA | |
| Dither | frequency adjustable 60...250 Hz | |
| Works setting | 200 Hz | |
| No load-power | 24 VDC: 0,3 W | 12 VDC: 0,2 W |
| Solenoid current | for 24 Volt solenoid | |
| | min. current I_{min} adjustable | 30..400 mA |
| | works setting | 150 mA |
| | max. current I_{max} adjustable | I_{min} ..1200 mA |
| | works setting | 700 mA |
| | for 12 Volt solenoid | |
| | min. current I_{min} adjustable | 80..800 mA |
| | works setting | 300 mA |
| | max. current I_{max} adjustable | I_{min} ..1800 mA |
| | works setting | 1200 mA |
| Ramp | 1 ramp up/down adjustable with same potentiometer. | |
| Ramp time | 0,25..6 s. | |
| EMC | | |
| Immunity | EN 61 000-6-2 | |
| Emission | EN 61 000-6-4 | |

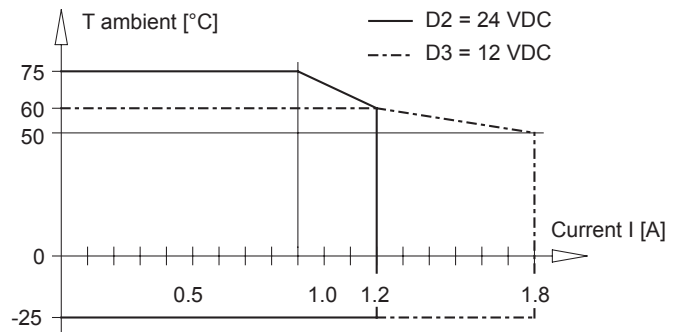
BLOCK DIAGRAM



DIMENSIONS



MAX. AMBIENT TEMPERATURE CURVE



If mounted on the solenoid □ 60/12V the current has to be limited to 1.8 A, otherwise the proportional-amplifier could be overloaded.

ADDITIONAL INFORMATIONS

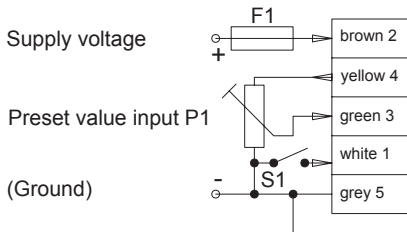
| | Wandfluh-Dokumentation register |
|---|---------------------------------|
| Proportional directional control valves | 1.10 |
| Proportional pressure control valves | 2.3 |
| Proportional flow control valves | 2.6 |

START-UP

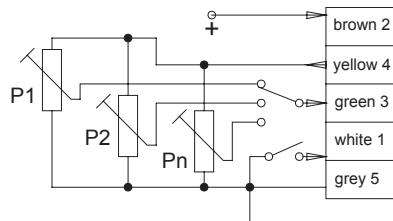
This data sheet is enclosed with each proportional-amplifier.

Connection examples

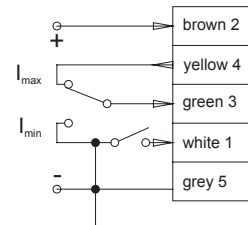
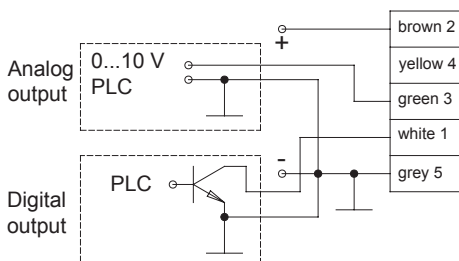
Connection with external preset value potentiometer


 F1: 24 V = 1,6 A quick-break
 12 V = 2,5 A quick-break
 P1 = 10 k Ω
 S1 = release/block

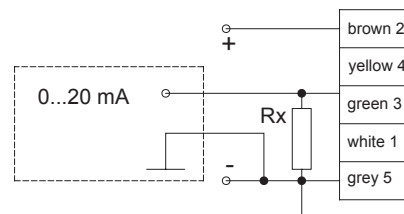
Connection with n preset value potentiometers


 P1 – Pn = 50 k Ω

Connection with preset value switch


 Connection with external power source release/block
 with PLC, PC or NC


Connection with external current source


 Rx = 470 Ω / 0,5 W for 24 VDC
 Rx = 390 Ω / 0,5 W for 12 VDC

Connection instructions
Supply voltage (brown, grey)

The connection has to be done as shown above:

- + pole = brown
- pole = grey (Ground)

Stabilized output voltage (yellow)

 The output can be used for supplying an external preset input. The maximum load is 2 mA.
 (R preset input \geq 5 k Ω)

Preset value input (green)

The analog preset value signal 0...+10 VDC (0...+8 VDC / 12 V-version) has to be connected here.

Release/block (white)

If the line is not connected, the proportional amplifier is released. If the line is connected to ground, the amplifier is blocked.

Mounting

With a screw driver the bottom of the amplifier can be lifted-off and turned by 180°.

Setting instructions
Minimum current I_{min}

 Adjust the external preset value to 0%. Adjust the solenoid current with the potentiometer I_{min} to a value which results in the desired minimum output of the consumer.

Maximum current I_{max}

 Adjust the external preset value to 100%. Adjust the solenoid current with the potentiometer I_{max} to a value which results in the desired maximum output of the consumer.

Dither

With the potentiometer Dither, adjust the frequency of the modulated solenoid current to the value which results in the desired sensitivity of the consumers.

- Turning the potentiometer to the right: Higher frequency.
- Turning the potentiometer to the left: Lower frequency.

Ramp

There is a common potentiometer mounted for the «ramping up/ramping down» functions.

- Turning the potentiometer to the right: Long ramping time.
- Turning the potentiometer to the left: Short ramping time.