

Amplifier module with constant current controller for proportional valves

- Control of one solenoid
- Easy mounting directly on bearing rails acc. to EN 50022
- Standard voltage and current signal for setpoint inputs
- Control from computer also possible
- Impressed solenoid current, thus no change in the control variable due to environmental influences (e. g. temperatures and main fluctuations)



Technical data

Mounting position:

Any position

Operating temperature:

0 to +50°C

Weight:

0,18 kg

Protection class:

IP 20

Electrical connection:

Screw terminals up to 2,5mm²

Ordering information

Drive electronics for proportional valve,
output current 0 to 1000 mA

Type: 5980127

Symbol





General information

Type	Version	Output currents * (mA)	Drive electronics for valve
5980126	0 to 2400 mA	0 to 1600/2400	4090022 VP40 ND 2 (data sheet 6.6.020)
			4088XXX VP40 ND 4, 6, 8 (data sheet 6.6.022)
5980127	0 to 1000 mA	0 to 400/800/1000	4090020 VP40 ND 2 (data sheet 6.6.020)
			4090021 VP40 ND 2 (data sheet 6.6.020)

* internally switchable

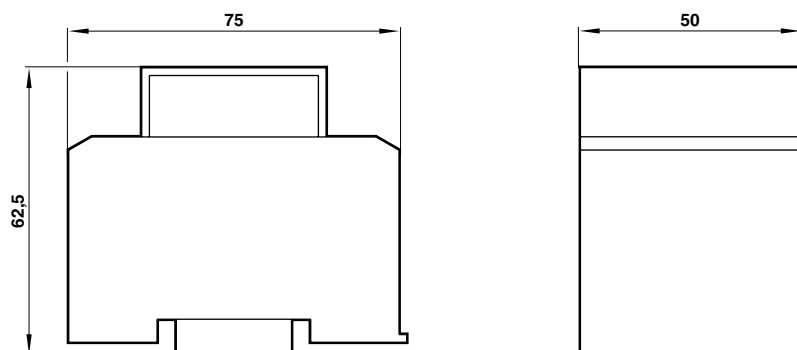
Electrical information

Supply with residual ripple $\leq 10\%$ (U_B)	18 to 32 V DC														
	Version (for more details see table above)														
	0 to 1000 mA			0 to 2400 mA											
Output current for solenoid * (mA)	0 to 400	0 to 1600	0 to 1000	0 to 1600	0 to 2400										
Current consumption amplifier (mA)	400	700	800	1400	2200										
Solenoid resistance R_{20} (Ω)	2,5 to 28	2,5 to 14	2,5 to 11	2,5 to 7	2,5 to 4,5										
Internal fuse	MT 1.0 A			F 2.0 A											
Output for supply of setpoint adjuster	15V, 3mA														
Zero-point adjustment (selectable via jumper)	0 to 30% I_{Amax}														
Zero-point shift (offset) at setpoint $w = 0$															
or															
Zero-point jump with setpoint $w \geq 2\%$	0 to 30% I_{Amax}														
Drive limitation	0 to 100% I_{Amax}														
Superimposed dither (amplitude)	0 to 30% I_{Amax}														
Dither frequency (internally selectable)	40/80 Hz														
Ramp shaper adjustment time (selectable via jumper)	< 2 ** [ms]														
Valid for rising or falling ramp															
Ramp off															
Ramp on	approx. 0,18 to 18 s **														
Setpoint w (selectable via jumper)	<table border="0"> <tr> <td>Setpoint U_E</td> <td>0 to 10 V</td> </tr> <tr> <td>Input resistance R_i</td> <td>>330 kΩ</td> </tr> <tr> <td>Setpoint I_E</td> <td>0 to 20 mA</td> </tr> <tr> <td>Setpoint I_E</td> <td>4 to 20 mA</td> </tr> <tr> <td>Input resistance R_i</td> <td><135 Ω</td> </tr> </table>					Setpoint U_E	0 to 10 V	Input resistance R_i	>330 k Ω	Setpoint I_E	0 to 20 mA	Setpoint I_E	4 to 20 mA	Input resistance R_i	<135 Ω
Setpoint U_E						0 to 10 V									
Input resistance R_i						>330 k Ω									
Setpoint I_E						0 to 20 mA									
Setpoint I_E	4 to 20 mA														
Input resistance R_i	<135 Ω														
Voltage input															
Current input															

* Selectable via jumper

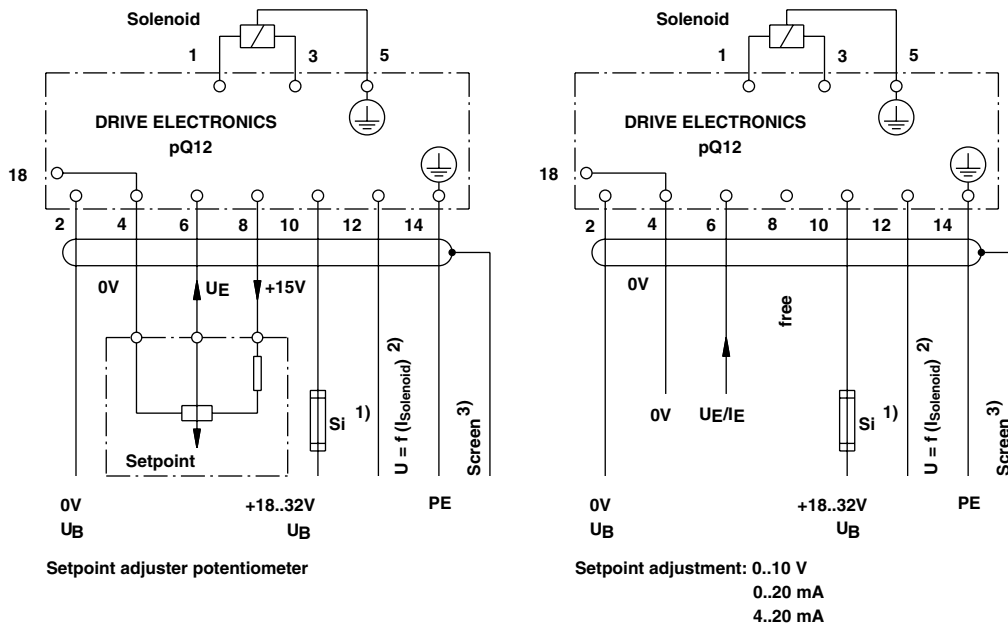
** With stepwise change of setpoint $\Delta w = 100\%$

General dimensions





Connection diagrams

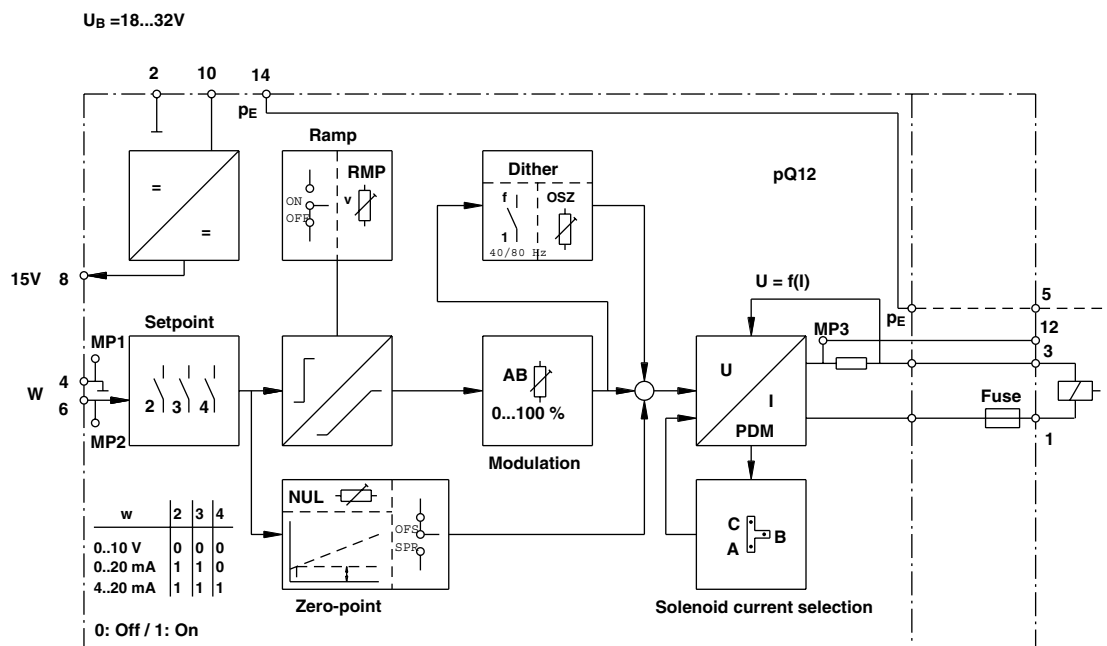


- 1) Recommended fuse: MT 1.0 A for amplifier 5980127
MT 2.5 A for amplifier 5980126
- 2) **Definition** $U = f(I_{\text{Solenoid}})$

Version	Assignment	Measured value (measured against Mp1)
0 ... 1000 mA	1 mV corresp. to 3 mA	0 ... 325 mV
0 ... 2400 mA	1 mV corresp. to 10 mA	0 ... 240 mV

- 3) Screen connection: setpoint of 0 V

Description of function: Block diagram

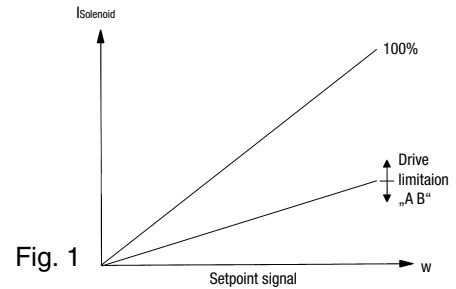




Definitions

Drive limitation „A B“ (Fig. 1)

If the customer-specific working range represents only part of the valve adjustment range, the trimming potentiometer „A B“ can be used to match the working range to the full setpoint signal from 0 to 100%. This provides the possibility of assignment a defined pressure or a defined flow volume to the end point in order to obtain greater resolution.

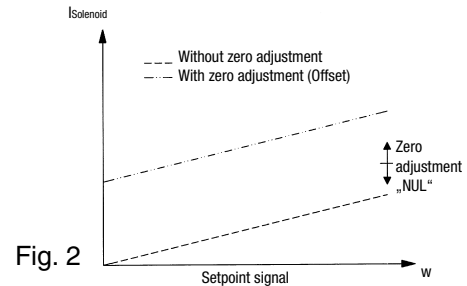


Zero point

Via a potentiometer the solenoid current can be increased. This is possible in two ways. For the selection use jumper D2 according to the installation instructions

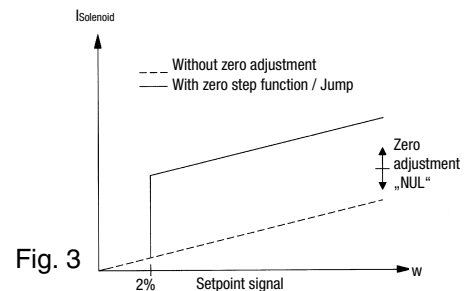
Zero-shift (Fig. 2)

Via the trimming potentiometer „NUL“ the solenoid current can be increased. This provides the possibility of assigning a defined pressure or defined flow volume to the start point (setpoint = 0).



Zero-step function (Fig. 3)

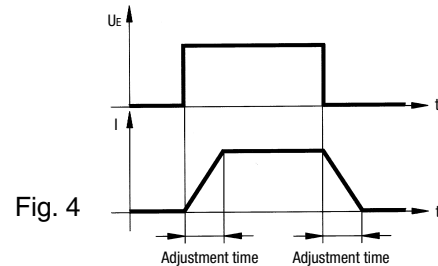
By means of the zero-step function, valve overlapping can be eliminated. As soon as the setpoint adjustment is exceeded by more than 2% the solenoid current is raised corresponding to the adjustment of the trimming potentiometer „NUL“. This way it is assured that with setpoint = 0 the solenoid current is 0 mA.



Ramp shaper (Fig. 4)

Trimming potentiometer F2 „RMP“

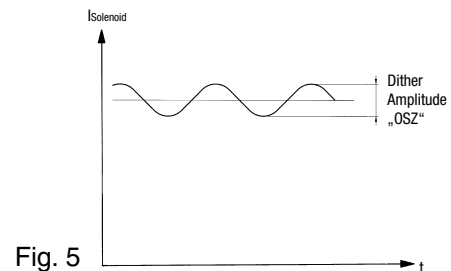
The ramp module provides a ramp-like change of the solenoid current if the setpoint changes abruptly. The final value of the solenoid current thereby corresponds to the set point. The adjustment time between two working points can be adjusted, measured with a setpoint change of 100%. The ramp shaper is switched off with the jumper F1 (refer to installation instructions).



Dither amplitude (Fig. 5)

Trimming potentiometer „OSZ“

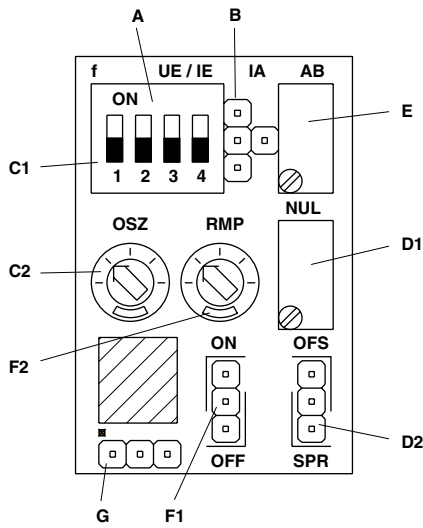
In order to improve the hysteresis characteristics in a valve, static friction on the valve piston must be avoided. This is achieved by superimposing a dither signal on the valve current. Via the trimming potentiometer „OSZ“ the amplitude of the superimposed current can be adjusted within the range of 0 to 30% of the rated current. Optimum setting is achieved when small changes in the setpoint are registered on the final control element. The minimum dither amplitude possible should be used at all times. The frequency can be switched on from 40 Hz to 80 Hz with the switch C1 (refer to installation instructions).





Installation instructions

View of the electronics



- A Setpoint preselection
- B Selecsion of solenoid current
- C1 Super imposed dither (frequency)
- C2 Super imposed dither (amplitude)
- D1 Zero-point shift
- D2 Zero-point function
- E Modulation limitation
- F1 Ramp on/off
- F2 Ramp time
- G Check points

Trimming potentiometer

Designation	Range adjustment	Direction of rotation on potentiometer		Basic setting factory adjusted
		counterclockwise	clockwise	
E Modulation limitation „AB“ (mA)	0	100 %	100 %	100 %
D1 Zero-point „NUL“ (% I _A max)	0	30	0	0
F2 Ramp „RMP“ approx. (s)	0,18	18	18	18
C2 Supperimposed dither „OSZ“ (% I _A max)	0	30	15	15






A Setpoint preselecion

Setpoint 0 ... 10 V ¹⁾ 0 ... 20 mA 4 ... 20 mA

Switch positions



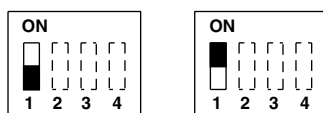
B Selection of solenoid current

Version	0 ... 1000 mA	0 ... 800	0 ... 1000	0 ... 2400 mA	0 ... 2400
Output current range (mA)	0 ... 400	0 ... 800	0 ... 1000	0 ... 1600	0 ... 2400
Jumpers	A 	B 	C 	A 	C 
	¹⁾			¹⁾	

C1 Superimposed dither

Frequency 40 Hz ¹⁾ 80 Hz

Switch positions



¹⁾ Factory adjusted

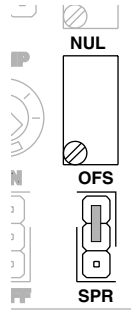


D2 Zero-point adjustment

Jumper

Zero-shift function
Zero-step function

Position „OFS“ 1)
Position „SPR“

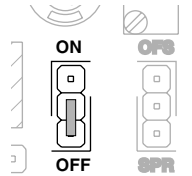


F1 Ramp shaper

Jumper

Ramp OFF
Ramp ON

Position „OFF“ 1)
Position „ON“

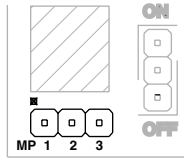


1) Factory adjusted

Check points

G Check points

MP1 = 0 V (reference potential)
MP2 = Setpoint
MP3 = Solenoid current



Definition

Setpoint	Measured value (measured against MP1)
0 ... 10 V	0 ... 10 V
0 ... 20 mA	0 ... 2 V
4 ... 20 mA	0,4 ... 2 V

Definition $U = f(I_{\text{Solenoid}})$

Setpoint	Assignment	Measured value (measured against MP1)
0 ... 1000 mA	1 mV corresp. to 3 mA	0 ... 325 mV
0 ... 2400 mA	1 mV corresp. to 10 mA	0 ... 240 mV

Warning

These products are intended for use in industrial systems only. Do not use these products where pressures and temperatures can exceed those listed under 'Technical Data'.

Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult Norgren.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in

fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such a failure.

System designers must provide a warning to end users in the system instruction manual if protection against a failure mode cannot be adequately provided.

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products where applicable.



Instructions for electrical installation

1. Voltage supply

Voltage supply 18 ... 32 V (incl. residual ripple). Excess voltage may destroy the electronic system!

2. Avoidance of interferences

2.1 Screening

In order to prevent interferences by electric fields, screened lines must be used. The screen must be connected to PE (see circuit diagram)

2.2 Laying of cables

Supply and signalling lines shall not be laid in parallel to power mains or high-voltage lines.

3. Line cross section

According to VDE 01134.

Zero potentials

For zero potentials (0 V), the supply voltage and the setpoint signal, two separate wires must be used in order to prevent distortion of the setpoints.

General

Repairs and servicing

Do not attempt to repair the product by yourself. After repair tasks, certain adjustments and test procedures have to be performed, which can only be done by qualified and authorised personnel. Products in need of repair may be sent to the following address:

IMI Norgren Herion Fluidtronic GmbH & Co. KG
Föhrenbachstraße 1, D-73630 Remshalden

Tel.: +49 (0) 71 51 / 70 88 -0

Fax: +49 (0) 71 51 / 70 88 -55

Abroad:

Your local representative dealer or agent will forward the product to the manufacturer for repair.

Please indicate a description of the error, malfunction or failure with the product you send in for repair. You should always state the serial number and the purchase date.

For servicing and repairing the products, we can offer experienced and qualified personnel. In case you need our assistance, please contact the following address:

IMI Norgren Herion Fluidtronic GmbH & Co. KG
Föhrenbachstraße 1, D-73630 Remshalden

Tel.: +49 (0) 71 51 / 70 88 -0

Fax: +49 (0) 71 51 / 70 88 -55

Abroad:

Your local representative dealer or agent.

Transport, storage, default setting, cleaning

The product can only be transported and stored in the original Norgren Herion packaging which ensures suitable protection against mechanical damage.

The product is shipped in a ready-to-operate-state (default settings). After correct installation, it is ready for use.

In case it is necessary to clean product, we recommend sending it back to the manufacturer. The correct address can be found under repairs and servicing.

