

# Proportional Pressure Regulator with Flapper-Nozzle Control, Type 100X 53.40...53.57

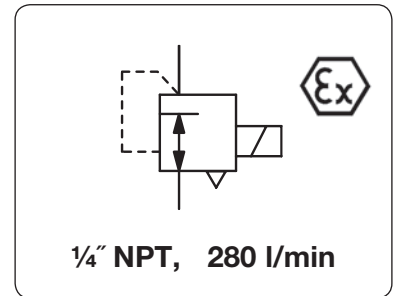
**Description** The pneumatic proportional valve translates an electrical command signal into a proportional pneumatic outlet signal (I/P or E/P converter). The transducer works on the flapper-nozzle principle. The electrical command signal generates a magnetic field in the coil. At the lower end of the coil there is a flapper valve which operates against a precision ground nozzle to create back pressure on the control diaphragm of a booster relay. The current flowing through the coil produces a force which proportionately controls the nozzle back pressure. This control pressure is applied to a servo mechanism which operates the high flow inlet and exhaust valves. An integral volume booster provides excellent flow capacity to give fast response in the majority of applications, including dead end service.

**Two-wire system** For the two-wire system no additional supply voltage is necessary. The current consumption is 20 mA in the 1 bar range and 60 mA in the 8 bar range. Also available with declining characteristic curve.

**Three-wire system** Additional supply voltage of 12 to 28 V necessary for the amplifier. Thereby the signal input is high-impedance (10 k $\Omega$ ). The current consumption is only 1 mA at 10 V.

**Atex version** intrinsically safe according to Atex II 1 G Ex ia IIC T4

**Mounting position** upright, protection against vibration is necessary



## General features

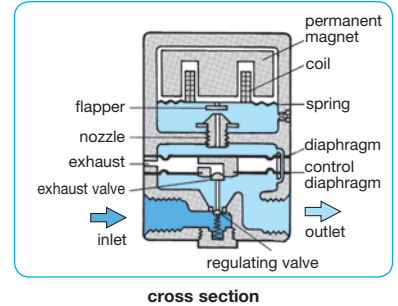
**Description** Flapper-nozzle principle: The electromagnetic field changes the space between flapper and nozzle and thus generates a proportional pressure variation.

**Mounting position** upright  $\pm 15^\circ$       **Protection class** IP 65

**Temperature range** -10 °C to 60 °C / 14 °F to 140 °F

**Note** protection against vibration is necessary

**Material** Body: zinc die-cast and plastic      Elastomer: NBR/Buna-N  
Magnet: Magloy      Flapper and nozzle: plastic and copper



## Pneumatic features

**Media** dry, un lubricated and 5  $\mu$ m filtered compressed air or non-corrosive gases

**Supply pressure** max. 1.4 bar at pressure range 0.2...1 bar, max. 6 bar for 0.14...4 bar, max. 10 bar for 0.14...8 bar

**Flow rate** 280 l/min\*1

**Exhaust** The exhaust valve's diameter is three times greater than the regulating valve's diameter.

**Air consumption** max. 2 l/min, max. 1% of volume flow

## Electrical features

**Supply voltage** 12...28 V DC  $\pm 10\%$ , necessary for three-wire systems only.  
current consumption 25 mA (100X) or current consumption 64 mA (101X) at 12 V supply voltage

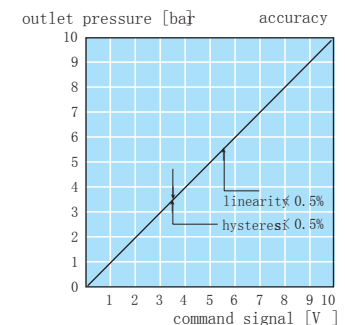
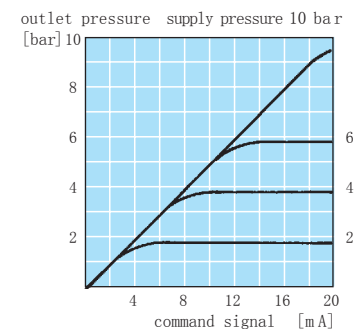
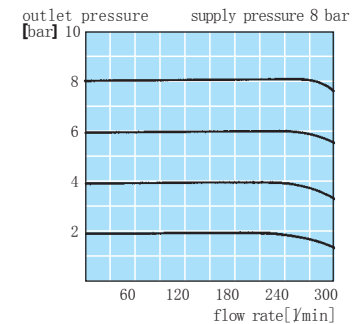
**Command signal** 4...20 mA / 0...60 mA / 1...10 V, adjustable to 0...10 mA / 0...20 mA / 1...5 V  
optionally declining characteristic curve

**ATEX version** ATEX II 1 G Ex ia IIC T4

**Impedance** 10 k $\Omega$  at voltage signal  
150  $\Omega$  or 200  $\Omega$  at current signal

**Electrical connector** square connector according to DIN 43650, size 30 x 30 mm

**Note** For long connection lines shielding is to be used. Pay attention to voltage drops. As the case may be, current signal is preferable.



## Accuracy

<b>Linearity</b>	< 0.5 % FS at type 100X	< 1% FS at type 101X
<b>Hysteresis</b>	< 0.3 % FS at type 100X	< 0.5% FS at type 101X
<b>Response sensitivity</b>	< 0.07% FS at type 100X	< 0.3% FS at type 101X
<b>Repeatability</b>	< 0.5 % FS at type 100X	< 1% FS at type 101X
<b>Regulating time</b>	< 1 s over pressure range and 0.1 l volume flow	

## Adjustment

**Zero point** The zero point can be considerably increased, e.g. from 0.2 bar to 0.6 bar. External adjustment via potentiometer "ZERO".

**Range** The maximum pressure value of the control range can be reduced by up to 20%, e.g. from 1 to 0.8 bar. External adjustment via potentiometer "RANGE".

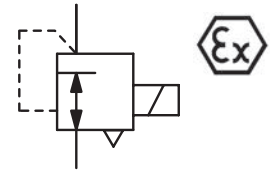
\*1 at 7 bar supply pressure and 1.4 bar outlet pressure



# Proportional Pressure Regulator with Flapper-Nozzle Control, Type 100X 53.40...53.57

## Technical features

- Pressure range** 0.2...1 bar and 0.14...4 / 6 or 8 bar
- Command signal** 4 ... 20 mA, 1...10 V and 0...60 mA
- Exhaust** nominal size 3x larger than on the main valve
- ATEX version** up to 3 bar
- Adjustment** zero point and range
- Flow rate** 280 l/min
- Linearity** < 0.5% or < 1%
- Hysteresis** < 0.3% or < 0.5%
- Response sensitivity** < 0.07% or < 0.3%
- Repeatability** < 0.05% or < 0.1%
- Regulating time** < 1 s
- Air consumption** < 2 l/min, max. 1% of volume flow



1/4" NPT, 280 l/min

Type	Supply voltage VDC	Two-/Three-wire system	Impedance Ω/kΩ	Command signal mA/V	Pressure range bar	Order number
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## Proportional pressure valve Type 100X

Type	Supply voltage VDC	Two-/Three-wire system	Impedance Ω/kΩ	Command signal mA/V	Pressure range bar	Order number
100X	-	2	100 Ω	4 ... 20 mA	0.2 ... 1	53.4021.00
100XS	-	2	200 Ω	1 ... 10 V	0.2 ... 1	53.4421.00
100X-IS	ATEX version	2	200 Ω	4 ... 20 mA	0.2 ... 1	53.4921.00
101XA	12 ... 28	3	10 kΩ	1 ... 10 V	0.14 ... 4	53.5600.3X
100X	-	2	150 Ω	4 ... 20 mA	0.14 ... 4	53.4000.5X
101XA	12 ... 28	3	200 Ω	4 ... 20 mA	0.14 ... 6	53.5701.2X
101X	-	2	150 Ω	0 ... 60 mA	0.14 ... 8	53.5024.00
101XS	-	2	150 Ω	1 ... 10 V	0.14 ... 8	53.5424.00
101XA	12 ... 28	3	200 Ω	4 ... 20 mA	0.14 ... 8	53.5724.00
101XA	12 ... 28	3	10 kΩ	1 ... 10 V	0.14 ... 8	53.5624.00



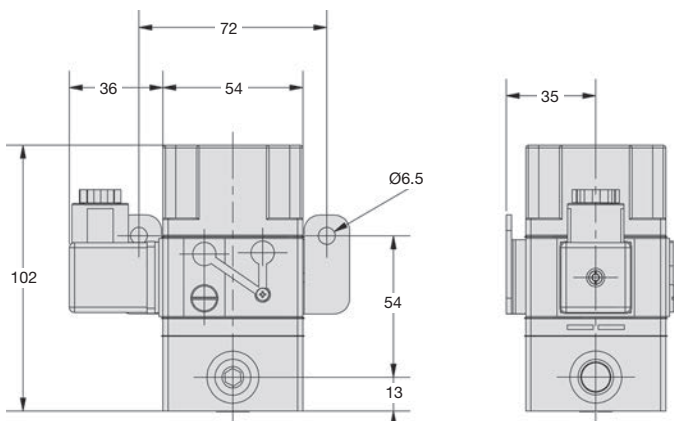
53.4021.00

## Special options, add the appropriate letter

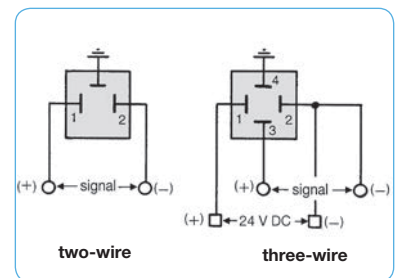
G1/4	connection thread	53. .... B
declining characteristic curve	inverted outlet	53. .... X59
deviant pressure range	to be indicated in clear text	53. .... XX
mounting clips	for DIN rail	53. .... C



53.4021.00C  
with mounting clips



53.40...53.57



connection diagram

\*1 at 7 bar supply pressure and 1.4 bar outlet pressure



Order example:  
53.4021.00

China website: www.duray-control.cn

