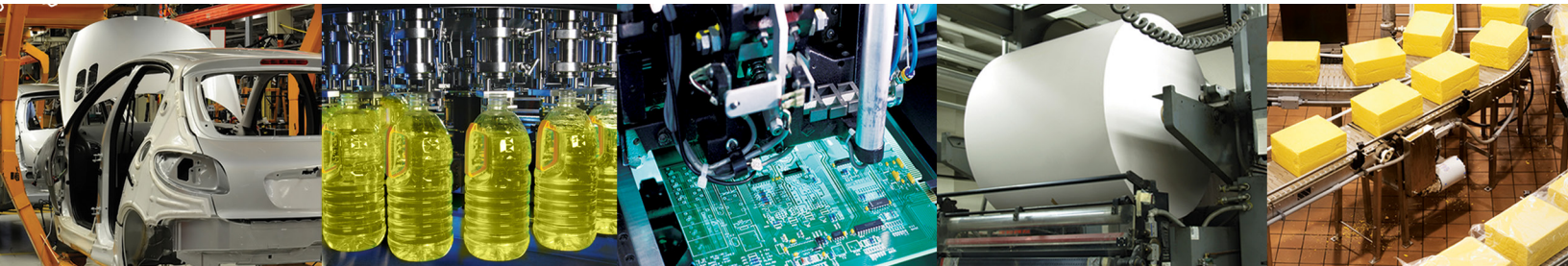


Sentronic^{PLUS} Electronic Pressure Regulator

Installation Manual



Sentronic^{PLUS} Electronic Pressure Regulator

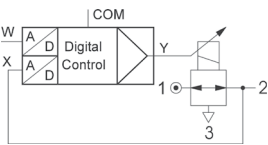


General

Sentronic^{PLUS} is a 3-way proportional valve with digital control. The Data Acquisition Software (DaS) that comes with Sentronic^{PLUS} can be used to adjust the valve's control parameters to a specific application. Command signal, feedback signal and control parameters can be viewed in real time and adjusted as required for an application. Sentronic^{PLUS} can be configured for dual loop control of process variables such as flow, force, speed, RPM, and temperature.

Construction

Direct-operated poppet valve
 Body: See table below.
 Internal parts: Stainless steel and brass
 Seals: FPM (fluoroelastomer) and NBR (nitrile)



Specifications

Fluids: Air or neutral gas, filtered at 50 μm, condensate-free, lubricated or unlubricated

Specifications

Fluids: Air or neutral gas, filtered at 50 μm, condensate-free, lubricated or unlubricated
 Ports: 1/8 - 1/4 - 1/2 - 1 (NPT or GTap)
 Max. operating pressure: See table below.
 Control range: See table below.
 Temperature / fluid: 32°F - 140°F (0°C - 60°C)
 Temperature / ambient: 32°F - 140°F (0°C - 60°C)
 Command signal - analog: 0 - 10 V (impedance 100 KΩ)
 0 - 20 mA/4 - 20 mA (impedance 250 Ω)
 Hysteresis: 1% of span
 Linearity / pressure measurement: ± 0.5% of span
 Repeatability: ± 0.5% of span
EXPLOSION SAFETY
 Safety code: Ⓢ II 3D Ex tc IIIC T135°C Dc X
 Ⓢ II 3G EX ec IIC T4 Gc X, 0 ≤ Ta ≤ 50°C

Electrical Characteristics

Nominal Diameter DN (mm)	Voltage *	Max. Power (W)	Max. Current (mA)	Insulation Class	Degree of Protection	Electrical Connection
1	24 VDC = ±10%	12	500	F	IP 65	5-pin M12 connector or 7-pin DIN connector
3	24 VDC = ±10%	12	500	F	IP 65	5-pin M12 connector or 7-pin DIN connector
6	24 VDC = ±10%	24 ⁷⁾	1000 ¹	F	IP 65	5-pin M12 connector or 7-pin DIN connector
12	24 VDC = ±10%	34	1400	F	IP 65	5-pin M12 connector or 7-pin DIN connector
20	24 VDC = ±10%	44	1800	F	IP 65	5-pin M12 connector or 7-pin DIN connector

* Max. ripple: 10 %

Specifications

Ø Ports	Ø Orifice DN (mm)	Flow	
		C _v Flow Factor (K _v Nm ³ /h)	at 6 Bar (l/min - ANR)
1/8 NPT or GTap	1	0.032 (0.028)	30
1/8 NPT or GTap	3	0.21 (0.18)	210
1/4 NPT or GTap	6	0.70 (0.60)	700
1/2 NPT or GTap	12	1.39 (1.20)	1400
1 NPT or GTap	20	5.57 (4.80)	5600

Notes: ¹⁾ For DN6, brass version GorH/1.8A, 44W

How to Order

6 1 4 3 5 7 E 9 0 1 1 PB

Control Panel

- D = M12 with display - non-explosionproof
- E = M12 without display - explosionproof (ATEX)
- F = DIN connector, 7-pin with display - non-explosion proof¹⁾
- G = DIN connector, 7-pin without display - non-explosion proof¹⁾

Version (ports), body

- | | |
|---------------------------------------|--|
| 0 = DN6 (G 1/4), ALU | 7 = DN3 (G 1/8), Brass |
| 1 = DN12 (G 1/2), ALU ²⁾ | 9 = DN3 (NPT 1/8), Brass |
| 2 = DN20 (G 1), ALU ²⁾ | C = DN6 (G 1/4), Stainless Steel |
| 4 = DN6 (NPT 1/4), ALU | G = DN6 (NPT 1/4), Brass ³⁾ |
| 5 = DN12 (NPT 1/2), ALU ²⁾ | H = DN6 (G 1/4), Brass ³⁾ |
| 6 = DN20 (NPT 1), ALU ²⁾ | J = DN1 (G 1/8), Brass |
| | K = DN1 (NPT 1/8), Brass |

Command Signal

- 0 = 0 ... 10 Volt
- 1 = 0 ... 20 mA
- 2 = 4 ... 20 mA

Feedback

- | | |
|-----------------------------------|--|
| 1 = Feedback output 0 ... 10 Volt | 4 = Feedback input 0 ... 10 Volt ⁴⁾ |
| 2 = Feedback output 0 ... 20 mA | 5 = Feedback input 0 ... 20 mA ⁴⁾ |
| 3 = Feedback output 4 ... 20 mA | 6 = Feedback input 4 ... 20 mA ⁴⁾ |

Options

- A00 = Dual Loop Control
- 018 = Oxygen Clean

Pressure Range

Relative pressure (psi)	Max. inlet pressure bar (psi)	Vacuum (relative)
40 = 0 - 0.1 bar (1.5)	2 (29)	V1 = -1 bar
50 = 0 - 0.5 bar (7.3)	2 (29)	Shut-off valve, connects to vacuum on loss of power
60 = 0 - 1 bar (14.5)	2 (29)	V2 = 0...-1 bar
02 = 0 - 2 bar (29)	3 (44)	Bypass valve
03 = 0 - 3 bar (44)	8 (116)	V3 = 0...-1 bar
05 = 0 - 5 bar (73)	8 (116)	Shut-off valve, connects to atmosphere on loss of power
06 = 0 - 6 bar (87)	12 (174)	
PB = 0 - 6.9 bar (100)	12 (174)	
10 = 0 - 10 bar (145)	12 (174)	
12 = 0 - 12 bar (174)	14 (203)	
16 = 0 - 16 bar ⁵⁾ (232)	18 (261)	
20 = 0 - 20 bar ⁵⁾ (290)	22 (316)	
3H = 0 - 30 bar ⁶⁾ (435)	40 (580)	
5H = 0 - 50 bar ⁶⁾ (725)	60 (870)	

Digital Output

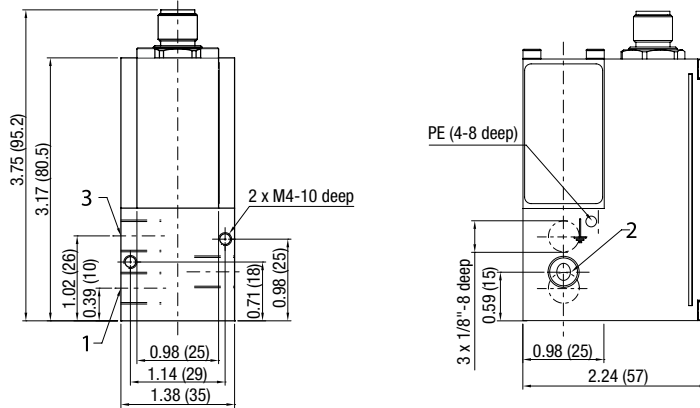
- 1 = Pressure switch output
PNP ± 5 %

Notes: ¹⁾ 7-pin DIN connector allows crossover from 833-354 or 601 Series analog Sentronic version; ships with field installable connector. ²⁾ Up to max. 12 bar. ³⁾ Only for pressure ranges from 30 to 50 bar. ⁴⁾ Feedback input is needed for dual loop units. ⁵⁾ Only for DN3 & DN6 ⁶⁾ Only for DN6 body type G or H. Other versions available on request. ⁷⁾ For DN6, brass version GorH/1.8A, 44W

Dimensions: Inches (mm), Weight in lbs. (kg)

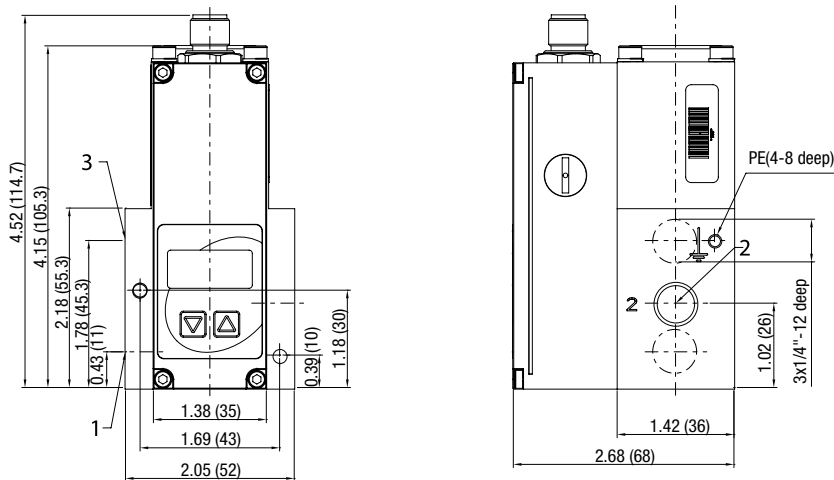
1/8 NPT or GTap (DN1 and DN3)

Weight: 1.21 (0.55)



1/4 NPT or GTap

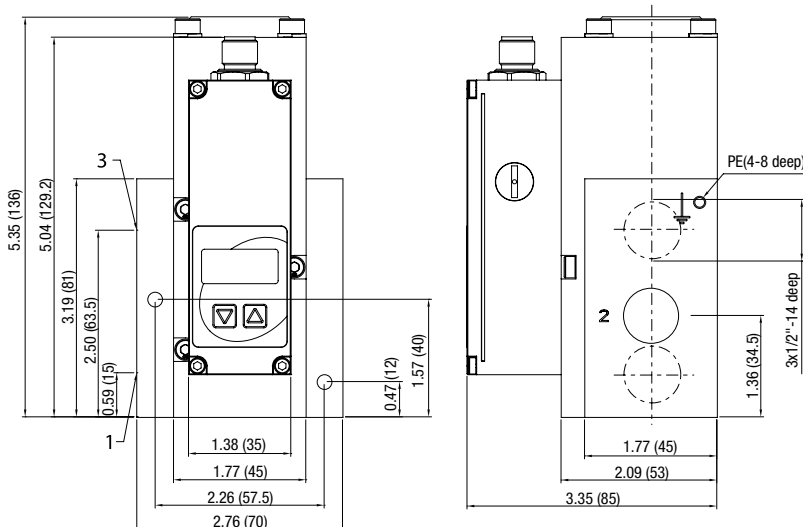
Weight: 1.87 (0.85)



A) Thread M5 - depth 10 (on opposite side); tapped through-hole for M4 screw.

1/2 NPT or GTap

Weight: 3.64 (1.65)

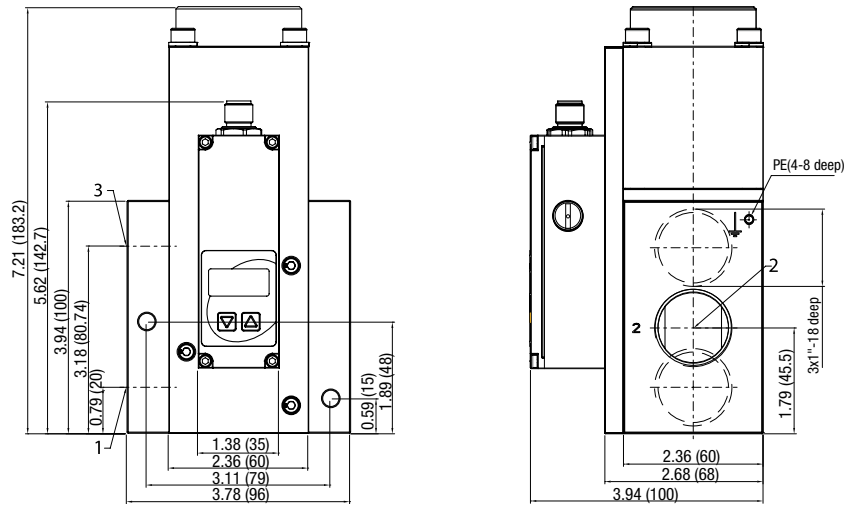


A) Thread M5 - depth 10 (on opposite side); tapped through-hole for M4 screw.

Dimensions: Inches (mm), Weight in lbs. (kg)

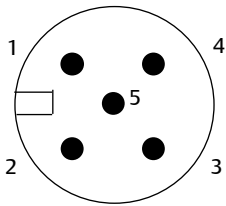
1 NPT or GTap

Weight: 7.50 (3.40)



A) Thread M8 - depth 15 (on opposite side); tapped through-hole for M6 screw.

Connector Pin Out



PIN	Description
1	+24 VDC Supply
2	Command Signal
3	+0 VDC Common (Supply)
	+0 VDC Common (Command Signal)*
4	Analog output (Feedback)
5	Digital output (Pressure switch)
Body	EMV screen

*A 6-wire cable with separate common for the command signal is used for cable lengths over 2 m to minimize the voltage drop for the command signal.

Accessories



5 Pin 12mm FEMALE Straight Field Attachable Connectors	Model Number
PG 9 Cable Gland	TC05F2000000000

5 Pin 12mm FEMALE 90 DEGREE Field Attachable Connectors	Model Number
PG 9 Cable Gland	TD05F2000000000

Micro Female 5 Pole Straight 6 Wire 24 AWG, Shielded	Model Number
3 Meter	TC0503MMS000671Y
5 Meter	TC0505MMS000671Y

Micro Female 5 Pole 90 Degree 6 Wire 24 AWG Euro Color Code, Shielded	Model Number
3 Meter*	TD0503MMS000671Y*
5 Meter*	TD0505MMS000671Y*

PC Software & Cable Connectors	Model Number
DaS Light: Data Acquisition Software for Sentronic ^D - basic parameters - free download at Emerson.com/AVENTICS; full version upon request	Website download
DaS Expert: Data Acquisition Software for Sentronic ^D - full parameters	Consult Factory
Parameter adapter USB, 1m cable (this connector or 88100732 required for DaS software usage)	N50930300100000
RS 232 cable converter; 2m cable with 9-pin Sub-D	88100732

* Do not use with the 1" Sentronic^{PLUS}

Installation and Operating Instructions

1. Before putting into operation carefully check all electrical connections and the supply voltage (24 VDC \pm 10 %). Overload can destroy the electronics. Recommended pre-fuse T2.5 A.
2. The electrical connection is made with a round connector M12x1. The connector must meet the requirements of DIN 60079-15. The product was tested with connector code no. 88100729.

WARNING:

Do not disconnect the plug while under voltage!

When disconnected from power, use supplied protection cover to ensure IP protection.

3. Use shielded cables for the electrical connection of the valve. The shield, connector and control cabinet must be EMC compliant. The valve body must be electrically connected to ground (PE, machine ground). Do not run control cables parallel to high-voltage lines or servo-motor control cables.
4. Min. wire cross-section of supply voltage cable: 0.50 mm².
For longer cabling distances use larger cross-section cables as required.
5. Make sure that the valve is under pressure when a setpoint signal is applied to the valve (applying a setpoint signal with no pressure on the valve will cause it to overheat).
6. Valve orientation - any; preferred orientation is coil up, especially when a dry condensate-free air supply may not be maintained.
7. The valve is factory adjusted.
8. The product must be returned to the factory for repair.

Warning

These products are intended for use in industrial compressed air systems only. Do not use these products where pressures and temperatures can exceed those listed under SPECIFICATIONS.

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 Numatics.

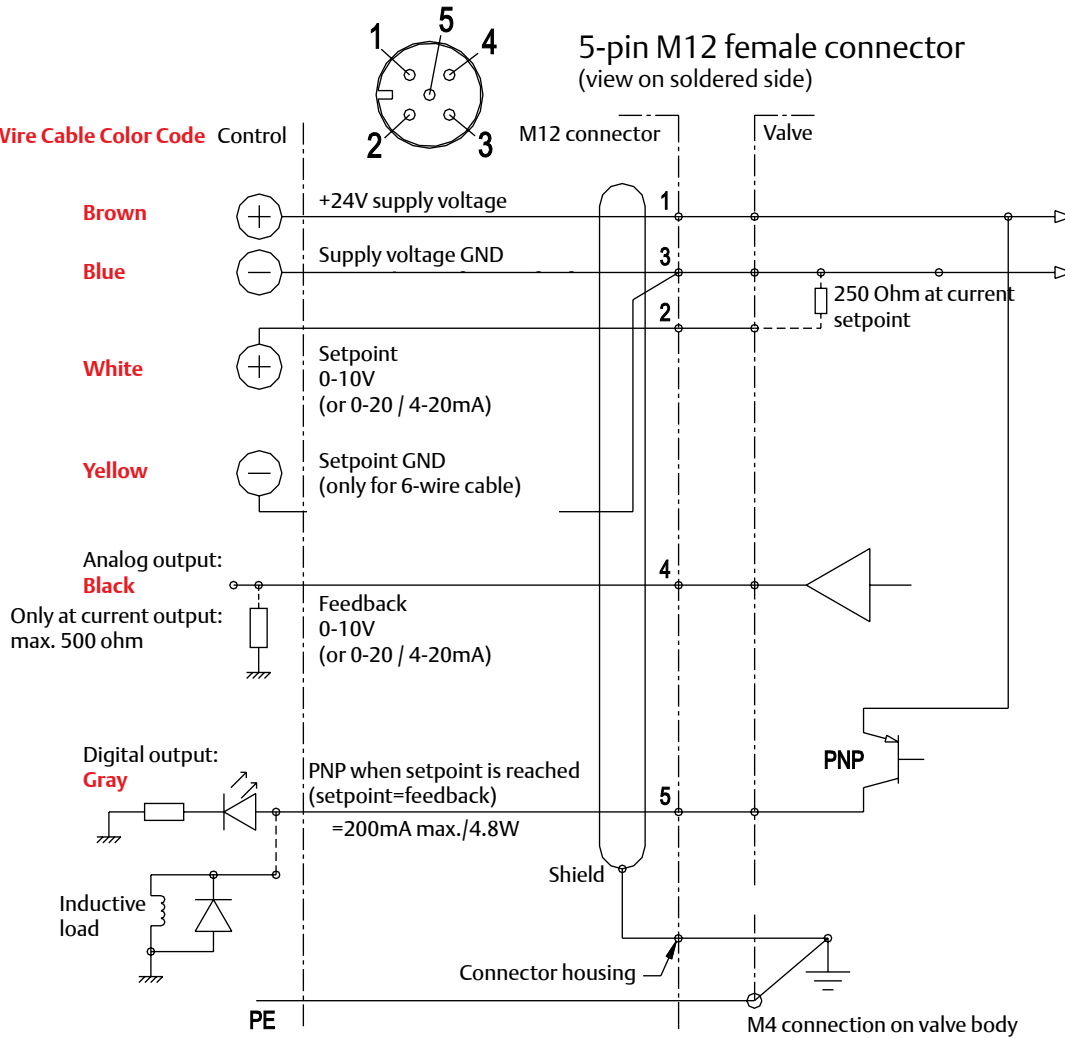
Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

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 failure.

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

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

Electrical Connection



- 1) The valve must only be supplied with 24V DC at a tolerance of +15%/-10% and a max. ripple of 10% (no supply via diode bridge). Overvoltage or a ripple rate exceeding these tolerances can damage the electronics.
- 2) The max. current at the digital output is 200 mA/4.8W (PNP output). The output is protected against short circuit and overload.
- 3) If a relay (inductive load) is connected to the digital output, a freewheel diode or a varistor must be used.
- 4) A shielded cable must be used for protection against interference and EMC.
- 5) The valve housing must be connected to the ground potential with low resistance via the ground connection (ØM4). The eyelet of the grounding cable must be inserted between two toothed washers and fastened with a screw (M4). The tightening torque corresponding to the screw must be observed.