Sentronic*PLUS*

Electronic Pressure Regulator

Installation Manual

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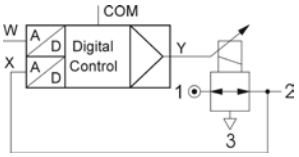
EMERSON™
Industrial Automation

Sentronic^{PLUS} Electronic Pressure Regulator



General

Sentronic^{PLUS} is a 3-way proportional valve with digital control. Its construction allows the valve to be used in potentially explosive atmospheres according to ATEX Directive 94/9/EC. The valve also has pressure ranges from 1.5 psi to 725 psi.

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. Settings can be saved and loaded at any time for reference or diagnostics. 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

Ports:	1/8 - 1/4 - 1/2 - 1 (NPT or GTap)
Max. operating pressure:	See table below
Control range:	See table below
Temperature / fluid:	32ºF - 140ºF (0ºC - 60°C)
Temperature / ambient:	32ºF - 140ºF (0ºC - 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:	⟨Ex⟩ II 2D Ex tDA21 IP65 T135°C, for use in Zone 21 ⟨Ex⟩ II 3G Ex nA II T4, for use in Zone 2
EC type examination certificate no.:	IBExU07ATEX1173

Electrical Characteristics

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

How to Order

6 1 4 3 5 7 9 0 1 1 PB

Version (ports), body
0 = DN6 (G 1/4), ALU
1 = DN12 (G 1/2), ALU[1)]
2 = DN20 (G 1), ALU[1)]
4 = DN6 (NPT 1/4), ALU
5 = DN12 (NPT 1/2), ALU[1)]
6 = DN20 (NPT 1), ALU[1)]
7 = DN3 (G 1/8), Brass
9 = DN3 (NPT 1/8), Brass
C = DN6 (G 1/4), Stainless Steel
G = DN6 (NPT 1/4), Brass[2)]
H = DN6 (G 1/4), Brass[2)]

Command Signal
0 = 0 ... 10 Volt
1 = 0 ... 20 mA
2 = 4 ... 20 mA

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

Pressure Range

Relative pressure (psi)	Max. inlet pressure bar (psi)
40 = 0 - 0.1 bar (1.5)	2 (29)
50 = 0 - 0.5 bar (7.3)	2 (29)
60 = 0 - 1 bar (14.5)	2 (29)
02 = 0 - 2 bar (29)	3 (44)
03 = 0 - 3 bar (44)	8 (116)
05 = 0 - 5 bar (73)	8 (116)
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[4)] (232)	18 (261)
20 = 0 - 20 bar[4)] (290)	22 (316)
3H = 0 - 30 bar[5)] (435)	40 (580)
5H = 0 - 50 bar[5)] (725)	60 (870)

Digital Output
1 = Pressure switch output PNP ± 5 %

Options
A00 = Dual loop control
018 = Oxygen clean

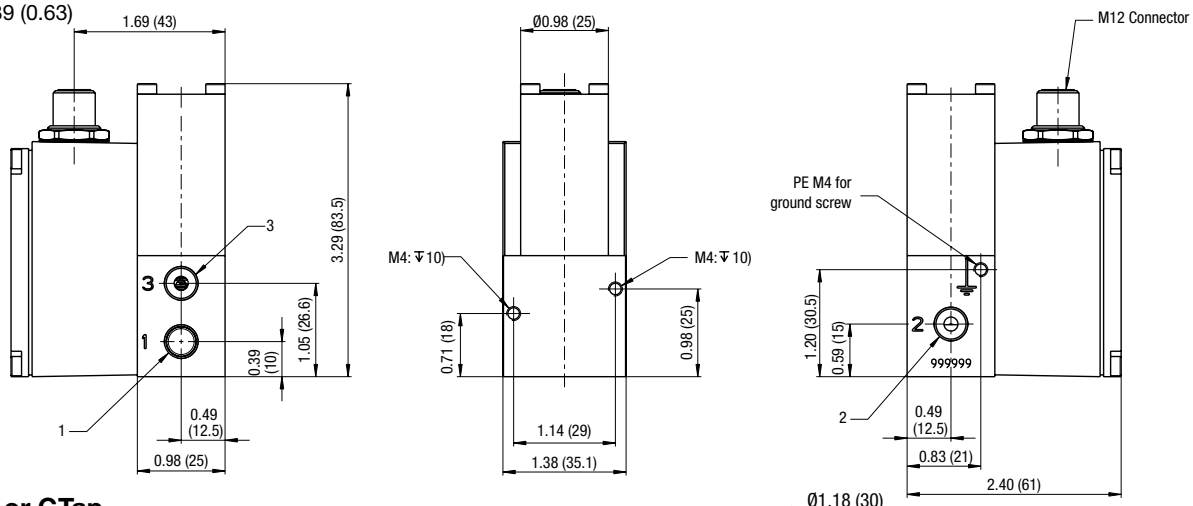
Vacuum (relative)
V3 = 0 ... -1 bar Shut-off valve
Consult factory for a bypass version vacuum regulator

Notes:
[1)] Up to max. 12 bar [2)] Only for pressure ranges from 30 to 50 bar [3)] Feedback input is needed for dual loop units [4)] Only for DN3 & DN6
[5)] Only for DN6 body type G or H. Other versions available on request.

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

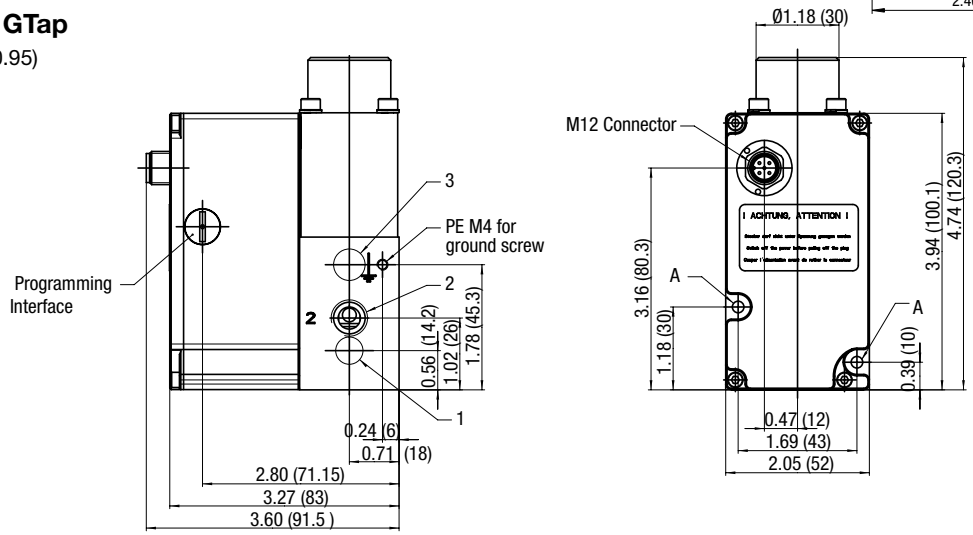
1/8 NPT or GTap

Weight: 1.39 (0.63)



1/4 NPT or GTap

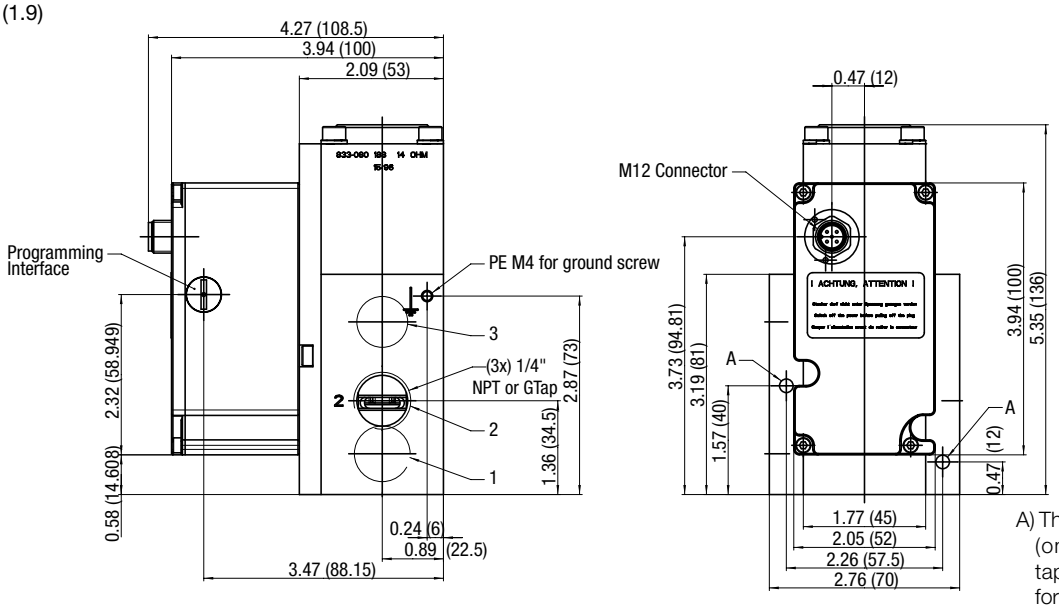
Weight: 2.09 (0.95)



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

1/2 NPT or GTap

Weight: 4.19 (1.9)

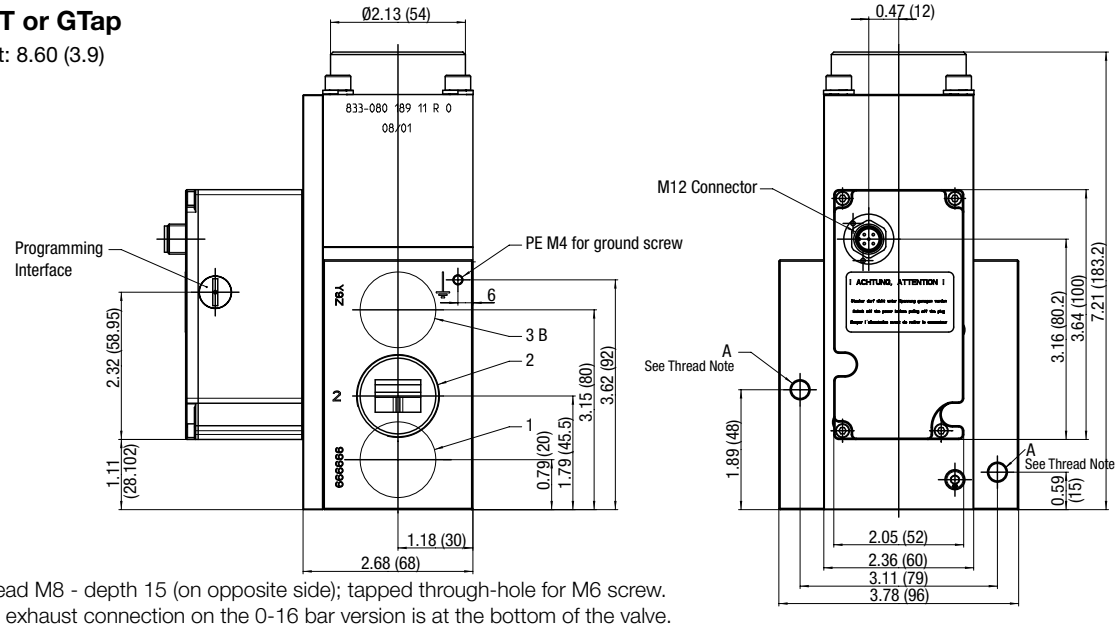


A) Thread M5 - depth 10 (on opposite side); tapped through-hole for M4 screw.

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

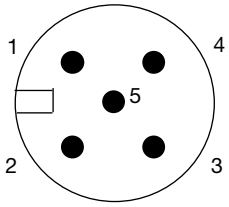
1 NPT or GTap

Weight: 8.60 (3.9)



A) Thread M8 - depth 15 (on opposite side); tapped through-hole for M6 screw.
B) The exhaust connection on the 0-16 bar version is at the bottom of the valve.

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	TC05F20000000000

5 Pin 12mm FEMALE 90 DEGREE Field Attachable Connectors	
PG 9 Cable Gland	TD05F20000000000

Micro Female 5 Pole Straight 6 Wire 22 AWG, Shielded	
3 Meter	TC0503MMS000671Y
5 Meter	TC0505MMS000671Y

Micro Female 5 Pole 90 Degree 6 Wire 22 AWG Euro Color Code, Shielded	
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 Numatics.com	99100110
DaS Expert: Data Acquisition Software for SENTRONIC^D - full parameters - CD-ROM	99100111
RS 232 cable converter; 2m cable with 9-pin Sub-D (plug connector)	88100732
RS 232 cable converter; 2m cable with 9-pin Sub-D (screw connector)	833-993708

Installation and Operating Instructions

1. Before putting into operation carefully check all electrical connections and the supply voltage (24 VDC ±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 mm^2.
   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. The valve is factory adjusted.
7. 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.

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