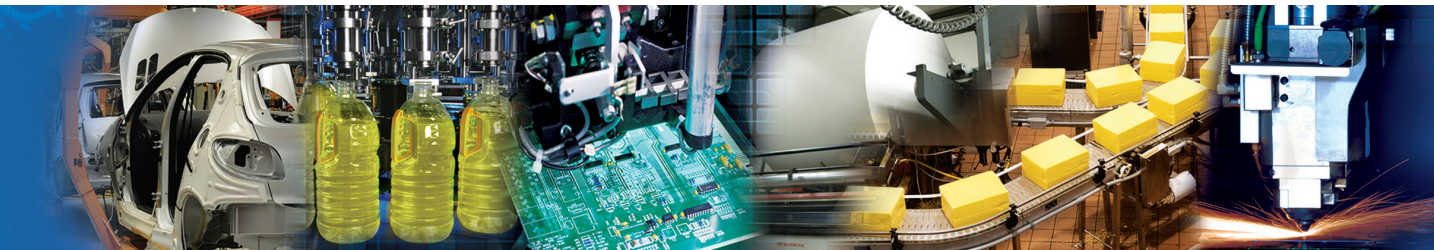


# Sentronic<sup>PLUS</sup>

## Electronic Pressure Regulator

### Installation Manual



**numatics**<sup>®</sup>

  
**EMERSON**<sup>™</sup>  
Industrial Automation

**BCAE** 青岛秉诚自动化设备有限公司  
Automation Solutions 地址：中国·青岛市重庆南路99号海尔云街甲3号楼7F

服务热线：4006-918-365  
网址：<http://www.ivalve.cc>

传真：(86-532)585-10-365  
Email：[sales@bechinas.com](mailto:sales@bechinas.com)

## Sentronic<sup>PLUS</sup> Electronic Pressure Regulator



### General

Sentronic<sup>PLUS</sup> is a 3-way proportional valve with digital control. The Data Acquisition Software (DaS) that comes with Sentronic<sup>PLUS</sup> 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<sup>PLUS</sup> 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

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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

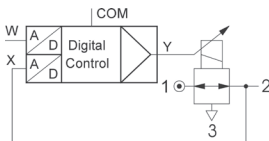
Linearity / pressure measurement: ± 0.5% of span

Repeatability: ± 0.5% of span

**EXPLOSION SAFETY**

Safety code: Ⓜ II 2D Ex tDA21 IP65 T135°C Db  
Ⓜ II 3G Ex nA IIC T4 Gc, 0 ≤ Ta ≤ 50°C

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
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 <sup>7)</sup>	1000 <sup>7)</sup>	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 <sub>v</sub> Flow Factor (K <sub>v</sub> Nm <sup>3</sup> /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

### 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 proof<sup>1)</sup>  
G = DIN connector, 7-pin without display - non-explosion proof<sup>1)</sup>

#### Version (Ports), body

0 = DN6 (G 1/4), ALU 8 = DN6 (G 1/4), Brass  
1 = DN12 (G 1/2), ALU<sup>2)</sup> 9 = DN3 (NPT 1/8), Brass  
2 = DN20 (G 1), ALU<sup>2)</sup> A = DN6 (NPT 1/4), Brass  
4 = DN6 (NPT 1/4), ALU C = DN6 (G 1/4), Stainless Steel  
5 = DN12 (NPT 1/2), ALU<sup>2)</sup> G = DN6 (NPT 1/4), Brass<sup>3)</sup>  
6 = DN20 (NPT 1), ALU<sup>2)</sup> H = DN6 (G 1/4), Brass<sup>3)</sup>  
7 = DN3 (G 1/8), Brass 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 Output 0...10 Volt<sup>4)</sup>  
2 = Feedback Output 0...20 mA 5 = Feedback Output 0...20 mA<sup>4)</sup>  
3 = Feedback Output 4...20 mA 6 = Feedback Output 4...20 mA<sup>4)</sup>

#### 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 - 1.0 bar (14.5)	2 (29)	V2 = 0...-1 bar
02 = 0 - 2.0 bar (29)	3 (44)	Bypass valve
03 = 0 - 3.0 bar (44)	8 (116)	V3 = 0...-1 bar
PA = 0 - 3.4 bar (50)	8 (116)	Shut-off valve, connects to atmosphere on loss of power
05 = 0 - 5.0 bar (73)	8 (116)	
06 = 0 - 6.0 bar (87)	12 (174)	
PB = 0 - 6.9 bar (100)	12 (174)	
10 = 0 - 10.0 bar (145)	12 (174)	
PC = 0 - 10.3 bar (150)	12 (174)	
12 = 0 - 12.0 bar (174)	14 (203)	
PD = 0 - 13.8 <sup>5)</sup> bar (200)	18 (261)	
16 = 0 - 16.0 <sup>5)</sup> bar (232)	18 (261)	
PE = 0 - 17.2 <sup>5)</sup> bar (250)	22 (316)	
20 = 0 - 20.0 <sup>5)</sup> bar (290)	22 (316)	
PF = 0 - 20.7 <sup>5)</sup> bar (300)	22 (316)	
3H = 0 - 30.0 <sup>5)</sup> bar (435)	40 (580)	
5H = 0 - 50.0 <sup>5)</sup> bar (725)	60 (870)	

#### Digital Output

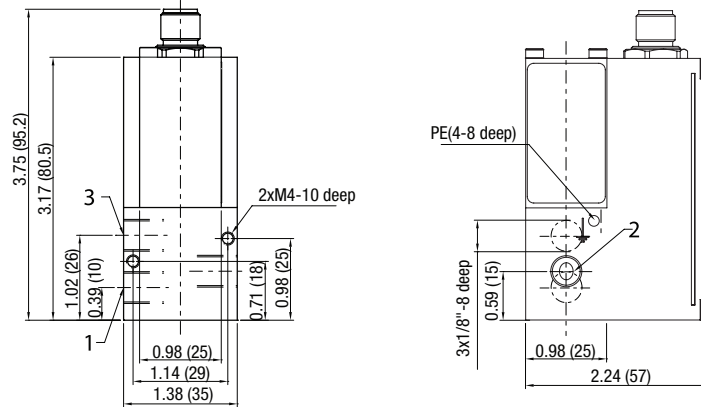
1 = Pressure Switch Output  
PNP ± 5%

Notes: <sup>1)</sup> 7-pin DIN connector allows crossover from 833-354 or 601 Series analog Sentronic version; ships with field installable connector. <sup>2)</sup> Up to max. 12 bar. <sup>3)</sup> Only for pressure ranges from 30 to 50 bar. <sup>4)</sup> Feedback input is needed for dual loop units. <sup>5)</sup> Only for DN3 & DN6 <sup>6)</sup> Only for DN6 body type G or H. Other versions available on request. <sup>7)</sup> For DN6, brass version GorH/1.8A, 44W Information subject to change without notice. For ordering information or regarding your local sales office visit [www.numatics.com](http://www.numatics.com).

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

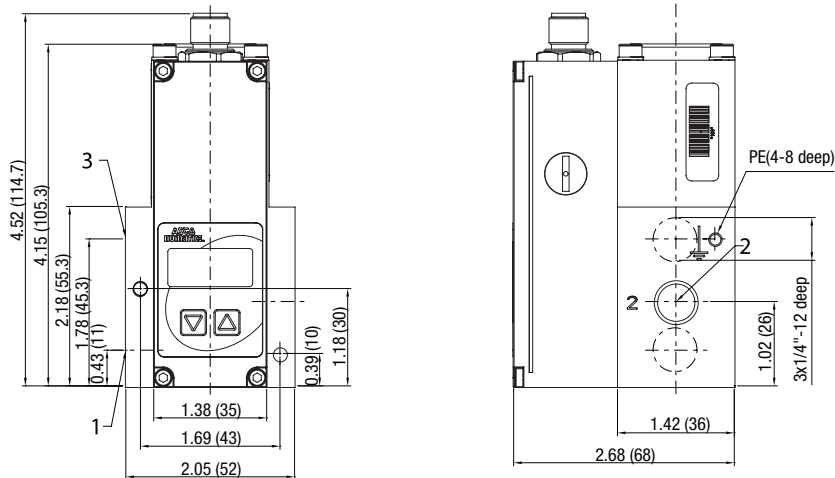
### 1/8 NPT or GTap (DN1 and DN3)

Weight: 1.21 (0.55)



### 1/4 NPT or GTap

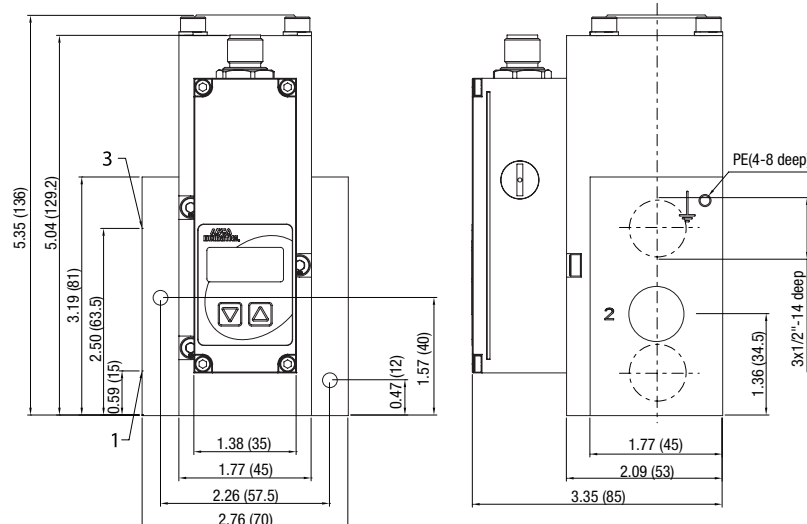
Weight: 1.87 (0.85)



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

### 1/2 NPT or GTap

Weight: 3.64 (1.65)

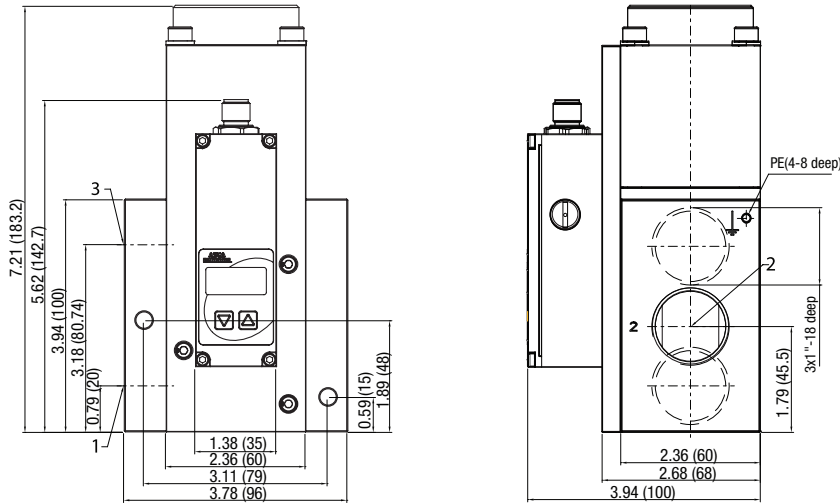


A) Thread M5 - depth 10 (on opposite side); tapped through-hole for M4 screw.

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

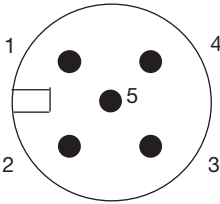
**1 NPT or GTap**

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	TC05F20000000000
5 Pin 12mm FEMALE 90 DEGREE Field Attachable Connectors	Model Number
PG 9 Cable Gland	TD05F20000000000
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 <sup>D</sup> - basic parameters - free download at Numatics.com	99100110
DaS Expert: Data Acquisition Software for Sentronic <sup>D</sup> - 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

\* Do not use with the 1" Sentronic<sup>PLUS</sup>

## 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 mm<sup>2</sup>.  
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.

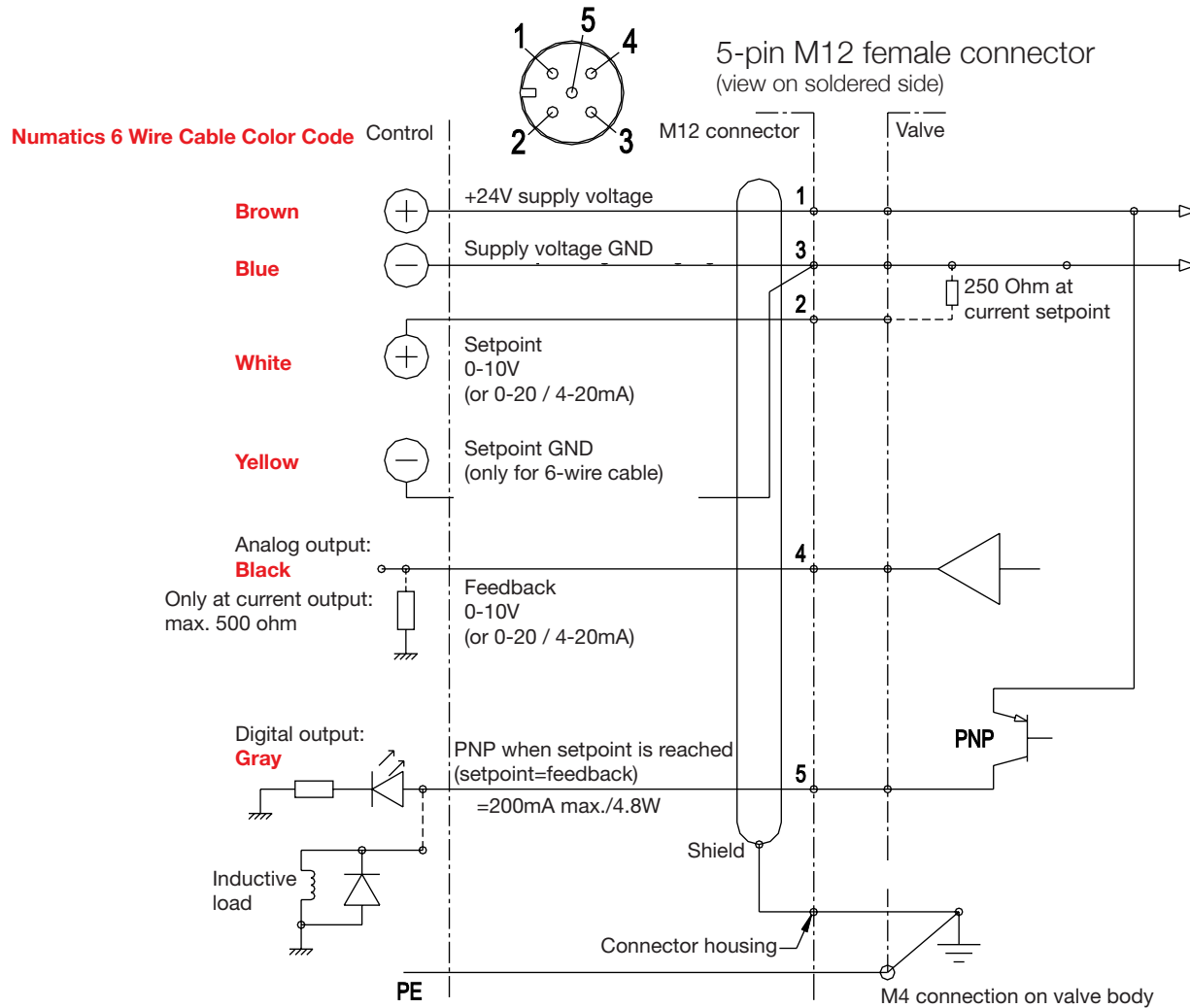
Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes.

**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.

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 body must be grounded with the earthing terminal PE (dia. M4)







World Class Supplier of Pneumatic Components



## World Headquarters

### USA Numatics, Incorporated

46280 Dylan Drive  
Novi, Michigan 48377

P: 248-596-3200  
F: 248-596-3201

### Canada Numatics, Ltd

P: 519-758-2700  
F: 519-758-5540

### México - Ascomatica SA de CV

P: 52 55 58 09 56 40 (DF y Area metropolitana)  
P: 01 800 000 ASCO (2726) (Interior de la República)  
F: 52 55 58 09 56 60

### Brazil Ascovál Ind.e Comercio Ltda

P: (55) 11-4195-5333  
F: (55) 11-4195-3970