Sentronic$^{PLUS}$ | 614 Series
Proportional Technology
SentronicPLUS is a digitally operated pressure regulator valve. This valve accurately adjusts pressure, flow, force, speed, and linear or angular positions. All orifices have the same diameter for short response times whether increasing or exhausting pressure. The valve components are designed to provide control at an extremely low hysteresis.

SentronicPLUS regulates pressure up to 725 psi (50 bar) and can be used in potentially explosive atmospheres according to ATEX Directive 94/9/EC.

With the Data Acquisition Software (DaS) and the RS232 interface, it is now possible to optimally adjust the valve’s control parameters to a specific application. The scope function allows you to log and read out the system’s response in real time.

The DaS capabilities streamline the development process and identify application-specific problems at an early stage. Saved control parameters can be loaded at any time and used as a reference for maintenance and error detection. Saved parameters can also be used for future production so that valves are factory-set to a specific application.
All Sentronic valves are tested before leaving our manufacturing facilities. Each valve is provided with a test certificate showing all the test results.

**Advantages**
- Minimum hysteresis
- Quick response times
- Very high sensitivity
- Standard 50 µm filtration
- No constant air consumption
- Analog command signal
- Analog feedback output
- PC communication
- Digital Control
- Easy change of control parameters

**Vacuum Control Options**

**V1 ”Shut-off“ version**
The valve is connected between the vacuum pump and the system to be regulated as shown in the diagram below. As long as the level of vacuum is not reached, the Sentronic®PLUS valve allows free flow between the pump and the load system. When the setpoint is reached, the valve closes the circuit and no more air is consumed. In the event of leakage of the load system, the valve provides regulation by reconnecting the volume to the vacuum pump. When the 24 VDC is switched off, the valve connects the outlet to maximum vacuum.

**V2 ”By-pass“ version**
The vacuum pump operates continuously and the Sentronic®PLUS is installed in a branch to regulate the level of the vacuum in the load system as a function of the setpoint by allowing a variable rate of air at atmospheric pressure to enter the system.

In this case, port 3 must be plugged.

**V3 ”Shut-off“ version**
Version V3 has the same function as version V1, but connects the outlet to atmosphere on loss of power. There is no current to the proportional coil when zero vacuum is commanded.

**Operating Principle**

**Increasing Pressure**
The pressurization piston is operated and the flow from port 1 to port 2 is released.

**Exhausting Pressure**
The exhaust piston is lifted and the flow from port 3 to port 2 is released.

**Maintaining Pressure**
The exhaust piston is in its central position: the flow between port 2 and port 1 or port 3 is blocked.

- To accelerate vacuum control, it is possible to apply pressure (max. 2 bar) instead of atmospheric pressure to port 1 in the V1 Shut-off version or to port 3 in the V3 Shut-off version.
How to Order

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

Version (ports), Body
0 = DN6 (G 1/4), ALU
1 = DN12 (G 1/2), ALU
2 = DN20 (G 1), ALU
4 = DN8 (NPT 1/4), ALU
5 = DN12 (NPT 1/2), ALU
6 = DN20 (NPT 1), ALU
7 = DN3 (G 1/8), Brass
8 = DN6 (G 1/4), Brass
9 = DN3 (NPT 1/8), Brass
A = DN6 (NPT 1/4), Brass
C = DN6 (G 1/4), Stainless Steel
G = DN6 (NPT 1/4), Brass
H = DN6 (G 1/4), Brass
J = DN1 (G 1/4), Brass
K = DN1 (NPT 1/4), Brass

Command Signal
0 = 0 – 10 V
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
5 = Feedback input 0 – 20 mA
6 = Feedback input 4 – 20 mA

Options
A09 = Dual loop control
018 = Oxygen clean

Pressure Range

Output Pressure (ps)

Max. Inlet Pressure (ps)

Vacuum (relative)
V1 = 0 to -1 bar
Shut-off valve, connects to vacuum on loss of power
V2 = 0 to -1 bar
Bypass valve
V3 = 0 to -1 bar
Shut-off valve, connects to atmosphere on loss of power

Absolute Pressure Ranges Available on Request

Output Pressure (psi)
40 = 0 – 0.1 bar (1.5)
50 = 0 – 0.5 bar (7.3)
60 = 0 – 1 bar (14.5)
02 = 0 – 2 bar (29)
03 = 0 – 3 bar (44)
PA = 0 – 3.4 bar (50)
05 = 0 – 5 bar (73)
06 = 0 – 6 bar (87)
07 = 0 – 6.9 bar (100)
10 = 0 – 10 bar (145)
12 = 0 – 12 bar (174)
15 = 0 – 12.8 bar (184)
16 = 0 – 16 bar (232)
18 = 0 – 16 bar (232)
20 = 0 – 20 bar (296)
22 = 0 – 20 bar (296)
25 = 0 – 25 bar (363)
30 = 0 – 30 bar (435)
35 = 0 – 35 bar (513)
40 = 0 – 40 bar (580)
50 = 0 – 50 bar (735)
60 = 0 – 60 bar (870)

Digital Output
1 = Pressure switch output PNP ± 5%

Notes:
1 7-pin DIN connector allows crossover from 833-354 or 601 Series legacy 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 DN1, DN3 & DN6
6 Only for DN6 body type G or H. Other versions available on request.
**SentronicPLUS Electronic Pressure Regulator**

SentronicPLUS 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 SentronicPLUS 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. SentronicPLUS can be configured for dual loop control of process variables such as flow, force, speed, RPM, and temperature.

<table>
<thead>
<tr>
<th>Fluids</th>
<th>Ambient Temperature</th>
<th>Body</th>
<th>Internal Parts</th>
<th>Seals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air or neutral gas, filtered at 50 μm, condensate-free, lubricated or unlubricated</td>
<td>0 °C to 60 °C (32 °F to 140 °F)</td>
<td>Aluminum</td>
<td>Stainless steel and brass</td>
<td>NBR (nitrile) and FPM (fluoroelastomer)</td>
</tr>
</tbody>
</table>

**General Valve Information**

- **Fluid Temperature:** 0 °C to 60 °C (32 °F to 140 °F)
- **Command Signal- analog:** 0 - 10 V (impedance 100 KΩ), 0 - 20 mA / 4 - 20 mA (impedance 250 Ω)
- **Ports:** 1/8, 1/4, 3/8 (NPT or GTap)
- **Construction:** Direct-operated Poppet Valve
- **Hysteresis:** ± 0.5% of span
- **Linearity/ pressure measurement:** ± 0.5% of span
- **Repeatability:** ± 0.5% of span

**Explosion Safety**

- **Safety code:** Ex d IIC T135°C, Ex nA IIC T4
- **EC type examination certificate number:** IBEExU07ATEX1173

**Electrical Characteristics**

<table>
<thead>
<tr>
<th>Nominal Diameter DN (mm)</th>
<th>Voltage *</th>
<th>Max. Power (W)</th>
<th>Max. Current (mA)</th>
<th>Insulation Class</th>
<th>Degree of Protection</th>
<th>Electrical Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24 VDC ± 10%</td>
<td>12</td>
<td>500</td>
<td>F</td>
<td>IP65</td>
<td>5-pin M12 connector or 7-pin DIN connector</td>
</tr>
<tr>
<td>3</td>
<td>24 VDC ± 10%</td>
<td>12</td>
<td>500</td>
<td>F</td>
<td>IP65</td>
<td>5-pin M12 connector or 7-pin DIN connector</td>
</tr>
<tr>
<td>6</td>
<td>24 VDC ± 10%</td>
<td>24</td>
<td>1000</td>
<td>F</td>
<td>IP65</td>
<td>5-pin M12 connector or 7-pin DIN connector</td>
</tr>
<tr>
<td>12</td>
<td>24 VDC ± 10%</td>
<td>34</td>
<td>1400</td>
<td>F</td>
<td>IP65</td>
<td>5-pin M12 connector or 7-pin DIN connector</td>
</tr>
<tr>
<td>20</td>
<td>24 VDC ± 10%</td>
<td>44</td>
<td>1800</td>
<td>F</td>
<td>IP65</td>
<td>5-pin M12 connector or 7-pin DIN connector</td>
</tr>
</tbody>
</table>

- *Max. ripple: 10%*
- *For DN6, brass version G or H/1.8A, 44W*

<table>
<thead>
<tr>
<th>Ø Ports</th>
<th>Ø Orifice DN (mm)</th>
<th>Cv, Flow Factor (K, Nm³/h)</th>
<th>Flow at 6 Bar (l/min - ANR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8 NPT or GTap</td>
<td>1</td>
<td>0.032 (0.028)</td>
<td>30</td>
</tr>
<tr>
<td>1/8 NPT or GTap</td>
<td>3</td>
<td>0.21 (0.18)</td>
<td>210</td>
</tr>
<tr>
<td>1/4 NPT or GTap</td>
<td>6</td>
<td>0.70 (0.60)</td>
<td>700</td>
</tr>
<tr>
<td>1/2 NPT or GTap</td>
<td>12</td>
<td>1.39 (1.20)</td>
<td>1400</td>
</tr>
<tr>
<td>1 NPT or GTap</td>
<td>20</td>
<td>5.57 (4.80)</td>
<td>5600</td>
</tr>
</tbody>
</table>

* Specifications

Visit our website at ASCO.com or contact us at (800) 972-2726
Dimensions: inches (mm)

1/8 NPT or GTap (DN1 and DN3)
Weight: 0.55kg (1.21lbs)

1/4 NPT or GTap
Weight: 0.85kg (1.87lbs)

1/2 NPT or GTap
Weight: 1.65kg (3.64lbs)

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

1 NPT or GTap
Weight: 3.40kg (7.50lbs)

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

Connector Pin Out

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+24 VDC Supply</td>
</tr>
<tr>
<td>2</td>
<td>Command Signal</td>
</tr>
<tr>
<td>3</td>
<td>+0 VDC Common (Supply)</td>
</tr>
<tr>
<td>4</td>
<td>+0 VDC Common (Command Signal)*</td>
</tr>
<tr>
<td>5</td>
<td>Analog output (Feedback)</td>
</tr>
<tr>
<td></td>
<td>Digital output (Pressure switch)</td>
</tr>
<tr>
<td></td>
<td>Body EMV screen</td>
</tr>
</tbody>
</table>

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

Accessories

5 Pin 12mm FEMALE Straight Field Attachable Connectors
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 24 AWG, Shielded
3 Meter
TC0503MMS000671Y
5 Meter
TC0505MMS000671Y

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

PC Software & Cable Connectors
DaS Light: Data Acquisition Software for Sentronic® - basic parameters - free download at asco.com
99100110
DaS Expert: Data Acquisition Software for Sentronic® - full parameters
Consult Factory
RS 232 cable converter; 2m cable with 9-pin Sub-D connector required for software usage
88100732

* Do not use with the 1" Sentronic® Plus