OVERVIEW
SVP3000 Alphaplus series Smart Valve Positioners are microprocessor based current-to-pneumatic valve positioners. The SVP3000 Alphaplus receives a DC current signal from control devices and controls the openings of valves. In addition to this basic function, SVP3000 Alphaplus has communication capabilities, automatic configuration program, and self-diagnostics functions that increase productivity and efficiency of plant operation.

FEATURES
Easy to use, easy to maintain
• Auto setup
Its auto-setup software is a fully-automatic configuration program. Unlike other brands of smart positioner, the SVP3000 Alphaplus has no external device requirements. No hand-helds or PC are required for basic configuration and the program can be run off a switch.
• Smart field communication
Smart communication is possible for calibration and configuration of SVP using an Azbil Corporation’s Field Communication Software (CommStaff) model CFS100 that is compatible for use with all an Azbil Corp. smart field instruments.
Valve diagnostic
(for model AVP102, software version 4.9 or newer)
Following parameters can be monitored by HART communicator or Control Valve Maintenance Support System “Valstaff”.
• Stick Slip • Cycle Count
• Total Stroke • Shut-Off Count
• Travel Histogram • Max. Travel Speed.
Optimum settings for various application
• Positive seating setting
When the process needs tight shut-off of valves, this setting assures valve’s original shut-off performance continuously by cutting off unnecessary supply pressure to actuator at a specified signal point.
• Flow characteristic customization
Valve’s overall characteristics can be modified to suit the installed process by setting customized In/Out characteristic of positioner.
• Precise split-range setting
SVP can be installed for split range applications with no extra instrumentation. Because signal range can be configured easily using the Smart Field Communicator, you can optimize positioner’s signal range to the process character.

Effective and reasonable maintenance
• Reduce spare-parts inventory
Because every specification can be changed through software configuration, lower spare parts inventory is possible.
• Self-diagnostics
Self-diagnostics program of SVP assures quick and correct action for failure of control valves.

China RoHS
This device is used in the Oil & Gas, Petrochemical, Chemical, Pulp & Paper, Food & Beverage, Machinery, Steel/Metal & Mining, and Automobile industries and therefore does not fall under the China RoHS Legislation. If this device is used in semiconductor manufacturing equipment, labeling on the device and documents for the China RoHS may be required. If such documents are required, consult an Azbil Corp. representative.
FUNCTIONAL SPECIFICATIONS

Applicable actuator
- Single acting actuator
- Linear and rotary motion actuator

Approvals

**NEPSI Intrinsically safe approval for model AVP100**

Ex ia IIC T4-T6 Ga

| T4 | at -40°C to +60°C |
| T5 | at -40°C to +60°C |
| T6 | at -40°C to +40°C |

The barriers should be NEPSI certified types and comply with the following condition as follows.

\[
V_i = 30V, I_i = 95mA, P_i = 0.66W, C_i = 6nF, L_i = 0.2mH
\]

**NEPSI Intrinsically safe approval for model AVP102**

Ex ia IIC T4-T6 Ga

| T4 | at -40°C to +60°C |
| T5 | at -40°C to +60°C |
| T6 | at -40°C to +40°C |

The barriers should be NEPSI certified types and comply with the following condition as follows.

\[
U_i = 30V, I_i = 100mA, P_i = 1.0W, C_i = 0.015\mu F, L_i = 0.2mH
\]

The circuit shall be considered to be connected to ground from a safety point of view.

Control signal input

4-20 mA DC (Split Range Configurable-4mA span Min.)

Input resistance

- Model AVP100: 300 Ω max./20 mA DC
- Model AVP102: 600 Ω max./20 mA DC

Output characteristics

- Linear, Equal percentage, Quick opening
- Custom user characteristics (16 points)

Stem travel range

Feedback lever Angle ± 4° to ± 20°

Valve stem rotation 90° max. (rotary motion actuator)

Bypass operation

Auto / Manual switch (For single acting actuator only)

Air supply pressure

140 to 700 kPa (1.4 to 7.0 kgf/cm²)

Air consumption

\[
\begin{align*}
4 \ell (N)/\text{minutes} \text{ at maximum } 140 \text{ kPa (1.4 kgf/cm²)} \\
5 \ell (N)/\text{minutes} \text{ at maximum } 280 \text{ kPa (2.8 kgf/cm²)} \\
6 \ell (N)/\text{minutes} \text{ at maximum } 500 \text{ kPa (5.0 kgf/cm²)}
\end{align*}
\]

Maximum air deliver flowrate

110L(N)/minutes at 140 kPa (1.4 kgf/cm²)

Lightning protection

Peak value of voltage surge: 12 kV

Peak value of current surge: 1000A

Vibration tolerance

2G (5 to 400 Hz) with standard mounting kit on Azbil Corporation’s HA actuator

Ambient temperature limits
-40°C to 80°C for general model

NEPSI Intrinsically safe: -20°C to 60°C

Ambient humidity limits
10% to 90% RH

Configuration tools

Model CFS100 (Field Communication Software CommStaff)

PERFORMANCE SPECIFICATIONS

Accuracy

For 8 mA ≤ input signal span ≤ 16 mA
± 1% F.S. (± 2.5% with custom output characteristics)

For 4 mA ≤ input signal span < 8 mA, ± 1.5% F.S.

PHYSICAL SPECIFICATIONS

Enclosure classification

IEC529 IP66, NEMA Type 4X equivalent

Finish

Baked acrylic

Color

Dark blue

Material

Body: Aluminum casting

Pilot relay cover: PBT

Weight

Positioner: 1.7 kg

INSTALLATION

Air connections

1/4NPT internal thread

Electrical connections

1/2NPT internal thread

Conditions of supply air

Particles

Maximum diameter 3 μm

Oil mist

None acceptable

Dew point

10°C below ambient temperature

Specifications for instrument air (JIS C1805-1 (2006))

| Particles | Maximum diameter 3 μm |
| Oil mist | None acceptable |
| Dew point | Less than 1 ppm at mass |

Humidity of the air supply

The dew point should be at least 10°C lower than the temperature of this device.

To meet the above specifications for instrument air, install the air purification devices listed in Table 1 properly in the specified installation location.

### Table 1  Examples of air purification devices

<table>
<thead>
<tr>
<th>Installation location</th>
<th>Air purification device</th>
<th>SMC Corp.</th>
<th>CKD Corp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressor outlet or main line</td>
<td>Line filter</td>
<td>AFF Series</td>
<td>AF Series</td>
</tr>
<tr>
<td>Mist separator</td>
<td>AM Series</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminal device</td>
<td>Air combination</td>
<td>AW30</td>
<td>M3000 (S type)</td>
</tr>
</tbody>
</table>
TYPICAL INSTALLATION

Figure 1 shows wiring for model AVP100/102 (Smart positioner). In this case, you can communicate with SVP at its terminal.

MODEL SELECTION

<table>
<thead>
<tr>
<th>Model</th>
<th>Selections</th>
<th>Options</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVP100</td>
<td>- (1)</td>
<td>- (2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Analog Signal (4 to 20mA DC)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVP102</td>
<td>- (1)</td>
<td>- (2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Analog Signal (4 to 20mA DC) with HART communication protocol</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) Structure
- Water-proof
- NEPSI Intrinsically safe

(2) (3) Supply Air-pressure
- None
- 140 < Ps ≤ 150 kPa with T-joint and pressure gauge (200 kPa)
- 150 < Ps ≤ 300 kPa with T-joint and pressure gauge (400 kPa)
- 300 < Ps ≤ 450 kPa with T-joint and pressure gauge (600 kPa)
- 450 < Ps ≤ 700 kPa with T-joint and pressure gauge (1000 kPa)

Classification
- 1X
- 2X
- 3X
- 4X

Pressure gauge
- None
- With bracket for PSA1, 2
- With bracket for PSA3, 4
- With bracket for HA2, 3
- With bracket for HA4

T-joint
- None
- DS
- DQ
- DT
- DN

Configuration

Useless otherwise specified, the Smart Valve Positioner will be shipped with the following configuration:

1. Input control signal
   - 4 to 20 mA
   - The minimal span for custom range = 4 mA
2. Output characteristic
   - Linear
   - EQ or QO can be ordered or set by user.
3. Valve action
   - Direct (Plug above seat)
   - Reverse (Plug below seat) can be ordered or set by user.