

# SVP3000 Alphaplus

## Smart Valve Positioner

### Model AVP100/102

#### **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 handhelds 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  $\Omega$  max./ 20 mA DC

Model AVP102: 600  $\Omega$  max./ 20 mA DC

### Output characteristics

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

### Stem travel range

Feedback lever Angle  $\pm 4^\circ$  to  $\pm 20^\circ$

Valve stem rotation  $90^\circ$  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/cm<sup>2</sup>)

### Air consumption

4  $\ell(N)$ /minutes maximum at 140 kPa (1.4 kgf/cm<sup>2</sup>)

5  $\ell(N)$ /minutes maximum at 280 kPa (2.8 kgf/cm<sup>2</sup>)

6  $\ell(N)$ /minutes maximum at 500 kPa (5.0 kgf/cm<sup>2</sup>)

### Maximum air deliver flowrate

110L(N)/minutes at 140 kPa (1.4 kgf/cm<sup>2</sup>)

### 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  $\leq$  input signal span  $\leq$  16 mA

$\pm 1\%$  F.S. ( $\pm 2.5\%$  with custom output characteristics)

For 4 mA  $\leq$  input signal span  $<$  8 mA,  $\pm 1.5\%$  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  $\mu m$

#### Oil mist

None acceptable

#### Dew point

10°C below ambient temperature

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

#### Particles

Maximum diameter 3  $\mu m$

#### Oil mist

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

Installation location	Air purification device	SMC Corp.	CKD Corp.
Compressor outlet or main line	Line filter	AFF Series	AF Series
	Mist separator	AM Series	
Terminal device	Air combination	AW30	M3000 (S type)

## TYPICAL INSTALLATION

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

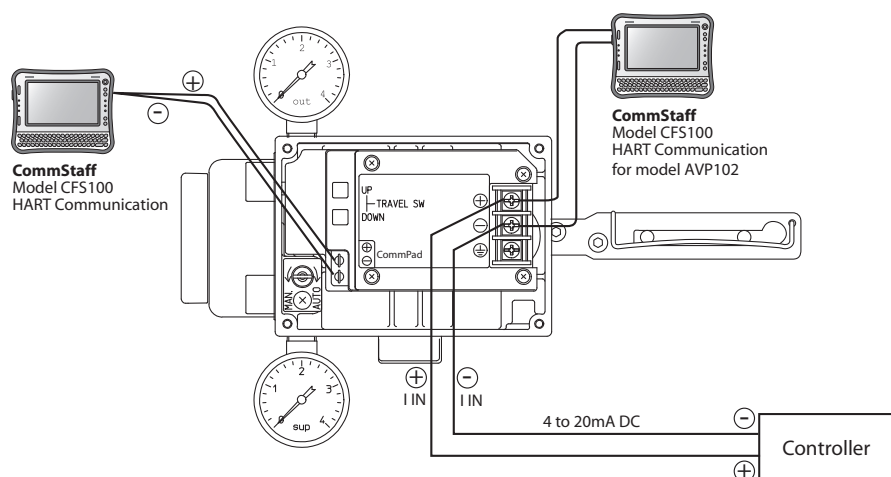


Figure 1 Wiring for model AVP100/102

## MODEL SELECTION

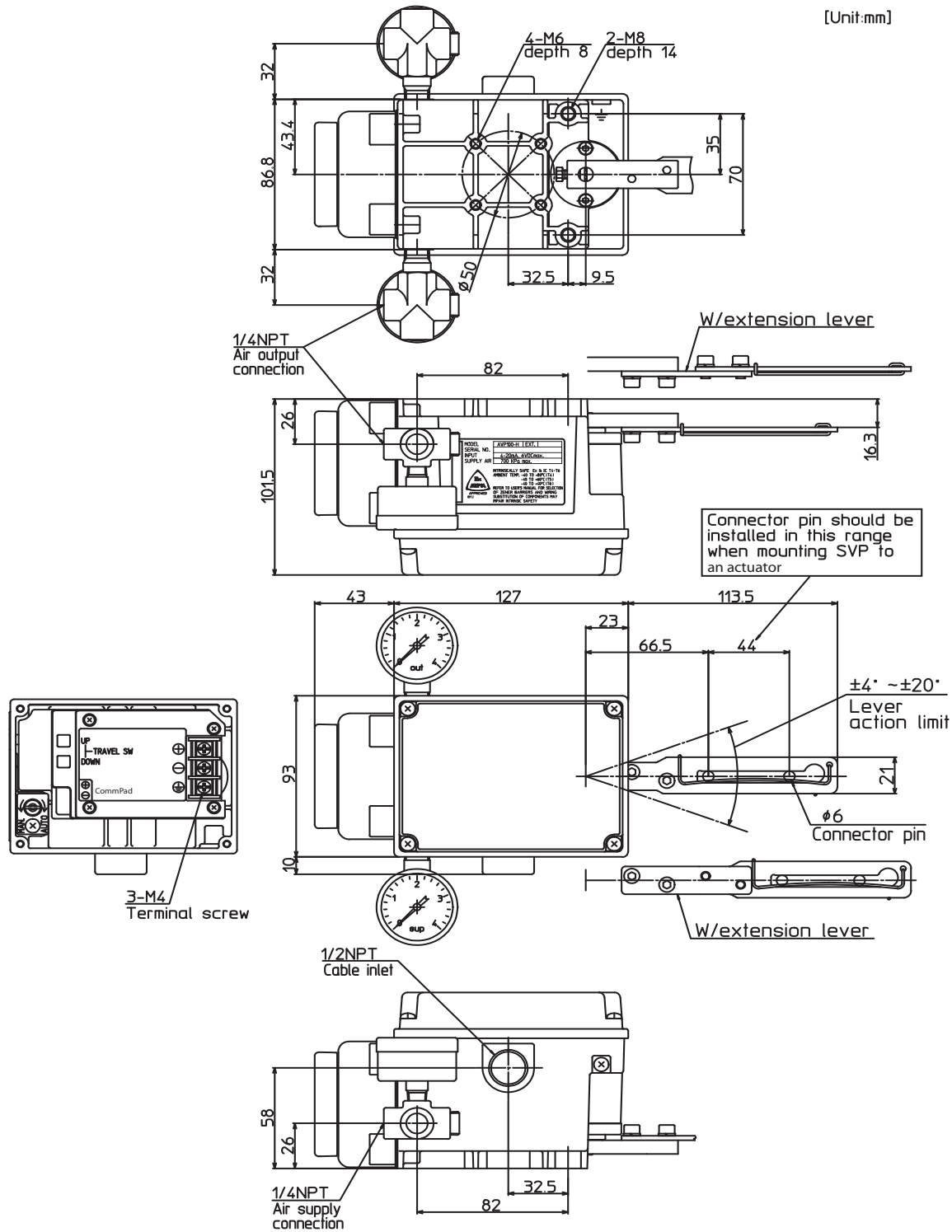
Model	Selections	Options
AVP100	- (1) -	(2) (3) - (4) (5)
Analog Signal (4 to 20mA.DC.)		
AVP102	- (1) -	(2) (3) - (4) (5)
Analog Signal (4 to 20mA.DC.) with HART communication protocol		

		Code
(1) Structure	Water-proof	P
	NEPSI Intrinsically safe	H
(2) (3)	None	XX
Supply Air-pressure	$140 < P_s \leq 150$ kPa with T-joint and pressure gauge (200 kPa)	1X
Classification	$150 < P_s \leq 300$ kPa with T-joint and pressure gauge (400 kPa)	2X
Pressure gauge	$300 < P_s \leq 450$ kPa with T-joint and pressure gauge (600 kPa)	3X
T-joint	$450 < P_s \leq 700$ kPa with T-joint and pressure gauge (1000 kPa)	4X
(4) (5) Option	None	XX
	With bracket for PSA1, 2	DS
	With bracket for PSA3, 4	DQ
	With bracket for HA2, 3	DT
	With bracket for HA4	DN

Configuration Following shows default and optional settings of each configurable parameter of SVP

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. |

**DIMENSIONS**

Please read the "Terms and Conditions" from the following URL before ordering or use:

<http://www.azbil.com/products/bi/order.html>

Specifications are subject to change without notice.

**azbil**

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