

SpaceLogic SP90 PIBCV Actuators



Product Description

Schneider Electric **SpaceLogic** SP90 PIBCV Actuators are high accuracy multi-function field bus actuators, specifically designed for use in combination with **SpaceLogic** PIBCV in sizes from DN 10...32 (3/8"...1¼") (not available in all regions). The **SpaceLogic** SP90 Actuator will control hot or chilled water for numerous HVAC equipment.

The high positional accuracy of the actuator, together with the accurate linear flow characteristic of the pressure independent **SpaceLogic** PIBCV valve, allow the SP90 Actuator to be used as a flow indicator. When the SP90 Actuator is connected to temperature sensors across a coil, the heat consumption will also be calculated.

Due to its fine accuracy, high functionality and field bus connectivity, this intelligent device combined with Schneider Electric EcoStruXure platform provides powerful engineering efficiency in the install and commissioning process.

Setup and Operation

Operation efficiency of the plant and service life of the product can all be monitored and captured for maintenance needs. The SP90 and its companion SmartX PIBCV will ensure optimal indoor air comfort. The attachment of the energy cable will enable energy savings due to the ability to sense flow and energy usage across the coil. Setup of the SP90 actuator and valve parameters are made via fieldbus. Control is achieved via field bus or analog inputs.

Features

- Remote commissioning/Pre-set/Flush features
- Flow indication
- LED status
- Auto MAC addressing for and intrinsic alarm reporting for BACnet
- Auto baud rate detection
- Valve blockage alarm
- Broken wire detection on analog control and ground signal
- Mis-wiring protection on any wire up to 30 V
- BACnet MS/TP and Modbus RTU in the same product

Specialist Applications

In addition to a traditional valve actuator function, other specialist applications can be controlled with the SP90 Actuator:

6-Way Changeover Valve (not available in North America)

- Direct connection from SP90 Actuator into the MB10-24T-PLUG, a 6-Way actuator for change over between heating and cooling circuits in 4 pipe systems.
- The regulation of differing design flows for heating and cooling is managed within the SP90 Actuator.
- Only one device on the fieldbus network, no physical I/O needed
- Feedback on position status and alarms.
- 6-Way Changeover is also expandable into Energy valve control and Remote I/O.

Energy Valve Application

- With the Energy functionality, the SP90 Actuator measures the supply and return temperature for calculation of energy usage.
- The emitted power in Kw or BTU is known, thus providing heat map of hydronic energy useage.
- Delta T control can allow override of the flow control from the BMS to ensure maximum coefficient of performance into the chiller or boiler.
- Power limitation mode can be enabled to limit power emission and promote energy savings.

Remote I/O

- The SP90 allows connection to other devices, e.g. room thermostat, window contact, CO2 sensor, humidity sensors, 0...10V fan control etc., and allows efficient wiring practices for devices located close to the actuator eliminating long cable runs to the controller.
- There is no local control; all sensor and I/O inputs are objects passed over the communication line to the controller.

Applicable PIBCV Valve Models

Size	Litres/Hour		Litres/Second		Part No.	
	Qmin	Qnom (100%)	Qmin	Qnom (100%)	Without T/P ports	With T/P Ports
DN10 3/8"	30	150	0.008	0.04	VP228E-10BQLNT	VP228E-10BQL
	55	275	0.015	0.08	VP228E-10BQSNT	VP228E-10BQS
DN15 1/2"	55	275	0.015	0.08	VP228E-15BQLNT	VP228E-15BQL
	90	450	0.025	0.13	VP228E-15BQSNT	VP228E-15BQS
	227	1,135	0.063	0.32	VP229E-15BQHNT	
DN20 3/4"	180	900	0.050	0.25	VP228E-20BQSNT	VP228E-20BQS
	340	1,700	0.094	0.47	VP229E-20BQHNT	
DN25 1"	340	1,700	0.09	0.47	VP229E-25BQSNT	VP229E-25BQS
	545	2,700	0.15	0.76	VP229E-25BQHNT	
DN32 1¼"	640	3,200	0.18	0.89	VP229E-32BQSNT	VP229E-32BQS
	800	4,000	0.22	1.1	VP229E-32BQHNT	

Specifications

Part Number	SP90-24BMM
Product Purpose	Operating Control
Action Type	1
Pollution Degree	3
Impulse Voltage	500v
Movement Type	Linear
Power supply range	24 V ac/dc, ± 25%, 50 / 60 Hz
Power consumption	
Operating	2.7 VA @ 24 Vac / 1.2 W @ 24 Vdc
Standby	1.8 VA @ 24 Vac / 0.7 W @ 24 Vdc
Protection class	III safety extra-low voltage
Electrical connection	Pre-molded plug connector
Control signal	Digital BACnet MS/TP, Modbus RTU
	0...10 VDC, 0...5 VDC, 2...10 VDC, 5...10 VDC, 2...6 VDC, 6...10 VDC, 0...20 mA, 4...20 mA
Impedance	Rin AI:0 >100 kΩ (V); 500 Ω (mA) Rout AO: 1500 Ω
Actuator speed selections (open to close) sec/mm	3, 6, 12, 24, Constant Time
Max. Stroke	7 mm
Force	90 N
Positional accuracy	± 0.05 mm
Accuracy, Calculated Energy Usage	+/- 10%
Working Ambient temp. range	-10°...50 °C (14...122 °F)
Ambient humidity	98% r.h., non-condensing (according to EN 60730-1)
Max. medium temp.	120 °C (248 °F)
Storage temp. range	-40...70 °C (-40...158 °F)
Grade of enclosure	IP54 (IP40 upside-down)
Weight	0.4 kg (0.88 lb)
Approvals	EMC Directive 2004/108/EC, EN 60730-2-14:1997, EN 60730-2-14/A1:2001, EN60730-1:2011 RoHS Directive 2011/65/EU c-UL-us LISTED mark compliance per UL 60730-1 & -2-14 and CAN/CSA E60730-1 & -2-14
Application Software version	4.21
Firmware Version	2.10

BACnet Data

BACnet device profile	BACnet Application Specific Controller (B-ASC)
BACnet protocol	BACnet Master Slave / Token Passing (MS/TP)
BACnet baud rates supported	Auto baud rate detection / 9600 bps / 19200 bps / 38400 bps / 56700 bps / 76800 bps / 115200 bps
Supported baud rates	Auto baud rate detection / 9600 bps / 19200 bps / 38400 bps / 56700 bps / 76800 bps / 115200 bps

Modbus RTU Data

Supported transmission modes	Parity: None (1-8-N-2) / Odd (1-8-O-1) / Even (1-8-E-1) / None (1-8-N-1)
	Data format: Parity (Start bit - Data bits - Parity - Stop bits)

Ordering

SP90 PIBCV Actuator

Description	Part No.
SP90, PIBCV Actuator	SP90-24BMM

MB10 Change over Actuator (not available in all regions)

Part No.	Description
MB10-24T-PLUG	MB10 with plug for SP90
MB10-24T-ENGY	MB10 with SP90 plug and Temp. sensors
MB10-24T-FLEX	MB10 with flexible cable

Note: Basic change over actuator MB10-24T is not designed for connection with SP90

Applicable 6-Way Valves (not available in all regions)

Part No.	Size	Kvs
VB601R-15B	DN15 / Rp 1/2	2.4
VB601R-20B	DN20 / Rp 3/4	4.7

Cable Accessories*

Type	Length (m)	Connections	Standard Cable ¹	Plenum Cable ²
Digital	1.5	bus & power	9114401500	9114401500P
	10.0		9114410000	9114410000P
Daisy chain	0.5	actuator to actuator	9114500500	9114500500P
	1.5		9114501500	9114501500P
	5		9114505000	9114505000P
	10.0		9114510000	9114510000P
Analogue + I/O		Multi-core free wire cable	9114601500	9114601500P
Energy	1.5	PT1000 surface mount temp sensors	9114701500	9114701500P
		PT1000 insertion probe temp sensors	9114801500	9114801500P

* Cables not included with actuator and must be ordered separately.

1 - Standard cable material is Halogen free; Energy cable is PVC.

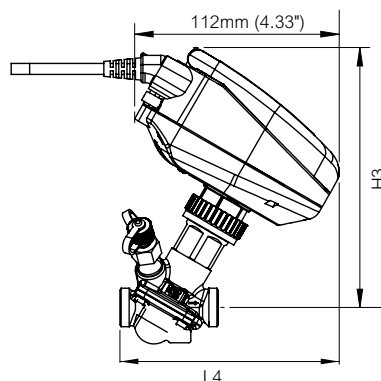
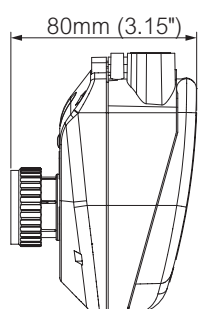
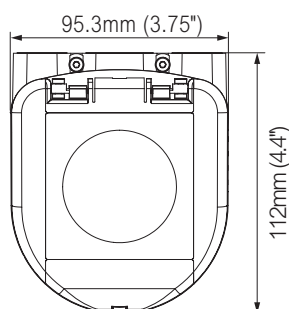
2 - Plenum Cable is available in NAM. Standard Cable is available in EMEA & APAC.

Accessory Pockets/Wells for Insertion Probe Sensors

Description	Brass Part No.	Stainless Steel Part No.
Immersion pocket, 50 mm, G1/2	9121040000	9121050000
Immersion pocket, 100 mm, G1/2	9121041000	9121051000
Immersion pocket, 150 mm, G1/2	9121042000	9121052000
Immersion pocket, 200 mm, G1/2	9121043000	9121053000

Note: 2 x Immersion Pockets/Wells required per device.

Dimensions



Type	L4	H3
DN10 (3/8")	118mm (4.65")	140mm (5.51")
DN15 (1/2")	125mm (4.92")	143mm (5.63")
DN20 (3/4")	133mm (5.24")	145mm (5.71")
DN25 (1")	148mm (5.83")	153mm (6.02")
DN32 (1 1/4")	166mm (6.54")	164mm (6.46")