

FlowCon SM 50-150mm

Pressure Independent Control Valve



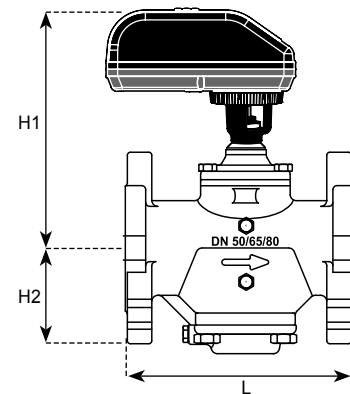
SPECIFICATIONS

Pressure rating:	4000 kPa / 580 psi
Temperature rating, media:	-20°C to +120°C / -4°F to +248°F
Temperature rating, ambient:	-10°C to +50°C / +14°F to +122°F
Material:	
- Diaphragm:	Hydrogenated acrylonitrile-butadiene-rubber
- Body:	Ductile iron ASTM A395 Grade 60-40-18
- O-rings:	EPDM
- Internal metal components:	Stainless steel
End connection:	Universal flange connections which can be used with both ISO and ANSI Flanges and mounting kits are not supplied by FlowCon ¹
Body tappings:	1/4" ISO
Maximum close off pressure:	600 kPa / 87 psi
Maximum operational ΔP:	600 kPaD / 87 psid
Maximum allowable operating pressure:	1600 kPaD / 232 psid
Shut-off leakage:	ANSI / FCI 70-2 2006 / IEC 60534-4 - Class IV
Flow rate range:	1.48-29.5 l/sec / 23.4-468 GPM

Note1: 2x16mm studs and 4x16mm bolts with nuts are supplied with SM.3.x.x.x.

DIMENSIONS AND WEIGHTS (NOMINAL) (measured in mm unless noted)

Model no.	Valve size	L	H1	H2	Weight ² (kgs.)
SM.3.X	50	224	252	95	15.0 ³
	65				
	80				
SM.4.X	80	320	292	135	31.0
	100				32.0 (SM.4.3)
SM.5.X	125	422	343	180	61.0
	150				



Note 2: Weight includes valve and actuator.
 Note 3: Including studs, bolts and nuts provided with valve.

MODEL NUMBER SELECTION⁴

Insert valve body size:
3=50-80mm, 2"-3" **4**=80-100mm, 3"-4" **5**=125-150mm, 5"-6"

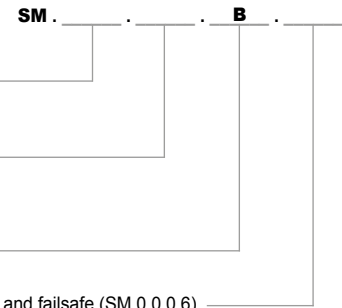
Insert dP control range:
0=30-600 kPaD, 4.5-87 psid (SM.3 only)
1=30-600 kPaD, 4.5-87 psid
2=35-600 kPaD, 5.1-87 psid
3=50-600 kPaD, 7.3-87 psid (SM.4 only)

Insert p/t plug requirements:
B=p/t plugs (standard)

Insert actuator selection:
3=display (SM.0.0.0.3) **4**=display and failsafe (SM.0.0.0.4) **5**=display and BACnet (SM.0.0.0.5) **6**=display, BACnet and failsafe (SM.0.0.0.6)

Example: SM.3.1.B.4=SM 2"-3" body for 30-600 kPaD with p/t plugs and failsafe actuator.

Note 4: Model no. and pressure range are indicated on label affixed to body.



ACTUATOR SPECIFICATIONS⁵

FlowCon SM.0.0.0.3, SM.0.0.0.4, SM.0.0.0.5 (with BACnet) and SM.0.0.0.6 (with BACnet) actuators

- Supply voltage: 24V AC/DC
- Power consumption: 12VA
- Frequency: 50/60 HZ
- Control input: 0-10V DC, 2-10V DC, 0-20mA, 4-20mA, 2-position or 3-point floating
- Feedback position output: Automatic match of control input, 0-10V DC, 2-10V DC or 4-20mA
- Turn time: 190 seconds (from closed to fully open valve)
- Electrical connection: 5 wires 22 AWG halogen free cable, 1 meter
 For BACnet versions another 3 wires 22 AWG halogen free cable, 1 meter
- Direction of rotation: Bi-directional
- Humidity rating: 5 to 95% RH non condensing
- Housing material: UL94 V0-rated plastic
- Housing insulation: IP54 including up-side-down mounting
- Programming: External programming of all settings, interface of buttons and display
- Calibration: Automatic calibration at startup
- Valve - actuator coupling: Easy snap coupling
- BACnet device profile: BACnet Application Specific Controller (B-ASC) type server
- BACnet protocol: BACnet Master Slave/Token passing (MS/TP)
- BACnet baud rates supported: 9600, 19200, 38400 and 76800
- BACnet services (BIBBS) supported: DS-RP-B, DS-WP-B, DM-DDB-B, DM-DOB-B and DM-DCC-B.

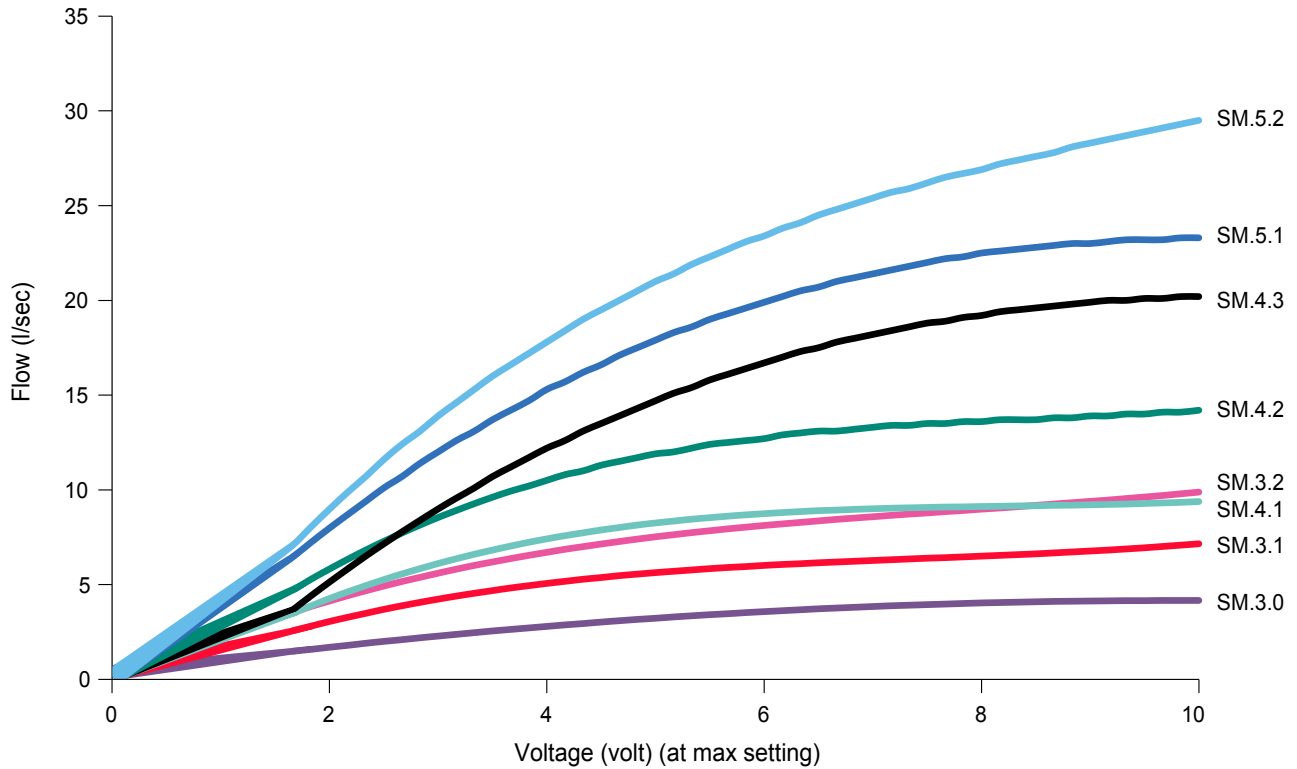
Note 5: FlowCon warranty is voided using other actuators than supplied or recommended by FlowCon International.

FLOW RATE TABLE

Model no.	Valve size		Control range		Minimum setting			Maximum setting		
	mm	inch	kPaD	psid	l/sec	l/hr	GPM	l/sec	l/hr	GPM
SM.3.0	50	2"	30-600	4.5-87	1.48	5310	23.4	4.16	15000	65.9
	65	2 1/2"								
	80	3"								
SM.3.1	50	2"	30-600	4.5-87	2.57	9240	40.7	7.15	25700	113
	65	2 1/2"								
	80	3"								
SM.3.2	50	2"	35-600	5.1-87	3.55	12800	56.3	9.89	35600	157
	65	2 1/2"								
	80	3"								
SM.4.1	80	3"	30-600	4.5-87	3.49	12600	55.4	9.38	33800	149
	100	4"								
SM.4.2	80	3"	35-600	5.1-87	4.73	17000	75.0	14.2	51000	225
	100	4"								
SM.4.3	80	3"	50-600	7.3-87	3.68	13300	58.3	20.2	72700	320
	100	4"								
SM.5.1	125	5"	30-600	4.5-87	6.48	23300	103	23.3	83800	369
	150	6"								
SM.5.2	125	5"	35-600	5.1-87	7.10	25600	113	29.5	106000	468
	150	6"								

Accuracy: Greatest of either $\pm 5\%$ of controlled flow rate or $\pm 2\%$ of maximum flow rate.

CONTROL CURVE AT MAXIMUM PRE-SETTING⁶



Note 6: Above curves show the control curve of the valves in maximum allowed pre-setting condition and may vary if lower pre-settings are selected. The valves will always have 1000 positions between the pre-set flow value and 0V if control range is selected to 0-10V.

FLANGE MATCH SM HOUSING

Model no.	Flange size (inch)	ASME B16.5 weld neck flanges		ASME B16.5 slip on flanges		Flange size (mm)	EN1092-1 ⁸				EN1092-1 ⁹			
		Class 150	Class 300	Class 150	Class 300		PN10	PN16	PN25	PN40	PN10	PN16	PN25	PN40
SM.3.x	2	-	✓	-	✓	50	✓	✓	✓	✓	✓	✓	✓	✓
	2 1/2	✓	✓	✓	✓	65	✓	✓	✓	✓	✓	✓	✓	✓
	3	✓	✓	-	-	80	✓	✓	✓	✓	-	-	-	-
SM.4.x	3	✓	✓	✓	✓	80	✓	✓	✓	✓	✓	✓	✓	✓
	4	✓	✓	-	-	100	✓	✓	✓	✓	-	-	-	-
SM.5.x	5	✓	✓	✓	✓	125	✓	✓	✓	✓	✓	✓	✓	✓
	6	✓	-	-	-	150	✓	✓	✓	✓	-	-	-	-

Note 8: Type 02 and 35/36/37 (loose plate flange with welding neck / pressed collar with long neck / pressed collar) or Type 04 and 34 (loose plate flange with weld-neck collar) or Type 11 with flange facing A/B (weld-neck flange with flat face or raised face).

Note 9: Type 12 with flange facing A/B (hubbed slip-on flange with flat face or raised face).

GENERAL DESCRIPTION

The SM Series are self balancing dynamic flow control valves that are pressure independent, two-way, modulating to accept digital or analog input signals. The valves accept 2-10V DC, 4-20mA, digital 2-position or digital 3-point floating input signals. Each valve has an adjustable maximum flow rate setting to enable flow limitation and balancing to the coils or zones that the valves are controlling.

All SM actuators are microprocessor based with a self-calibrating feature.

The SM valve is of the wafer style for fitting between flanges. They are available in three different valve bodies for flange connections.

GENERAL SPECIFICATIONS

1. PRESSURE INDEPENDENT DYNAMIC CONTROL VALVE FLOWCON SM

- 1.1. Contractor shall install dynamic control valves where indicated in drawings.
- 1.2. Valve shall be an electronic, dynamic, modulating, 2-way pressure independent control device.
- 1.3. Pressure independent dynamic control valve shall accurately control flow, independent of system pressure fluctuation.
- 1.4. Maximum flow setting shall be adjustable to 51 different settings within the range of the valve size.
- 1.5. Valve and actuator coupling shall have snap couplings for fast mounting and demounting.

2. VALVE ACTUATOR

- 2.1. Valve and actuator coupling shall have snap couplings for fast mounting and demounting.
- 2.2. Actuator housing shall be rated to IP54 including up-side-down mounting.
- 2.3. Actuator shall be driven by a 24V AC/DC motor and shall accept 0-10V DC, 2-10V DC, 0-20mA, 4-20mA, 2-position or 3-point floating electric input signal.
- 2.4. Actuator shall be capable of providing same as input, 4-20mA, 0-10V DC or 2-10V DC feedback signal to the control system.
- 2.5. Automatic calibration of valve position shall be standard.
- 2.6. Actuator shall include display and buttons for external programming of all settings.
- 2.7. External display of current valve flow, maximum valve flow, input signal, feedback signal and operational direction shall be standard.
- 2.8. Optional fail safe system to power valve to either open (max. setting) or closed position from any position in case of power failure shall be available.
- 2.9. Optional BACnet connection for remote setting and control of actuator shall be available.

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GENERAL SPECIFICATIONS (continued)

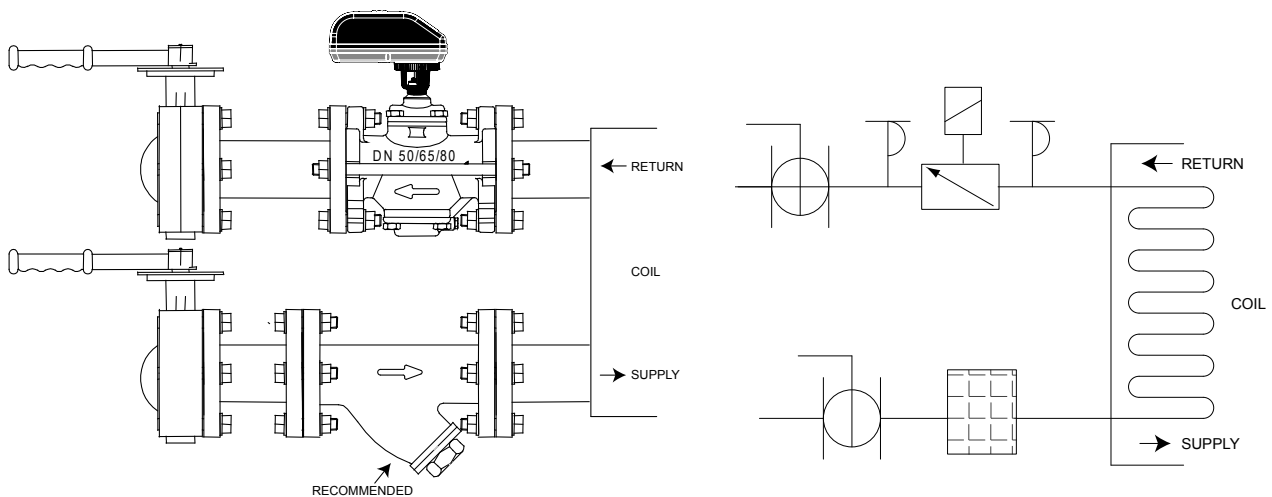
3. VALVE HOUSING

- 3.1. Valve housing shall consist of ductile iron ASTM A395 Grade 60-40-18 rated at no less than 4000 kPa static pressure and +120°C.
- 3.2. Valve housing shall be permanently marked to show direction of flow.
- 3.3. Valve housing shall be for installation between flanges.
- 3.4. Dual pressure/temperature test plugs for verifying accuracy of flow performance shall be provided for all valve sizes.
- 3.5. Identification label according to PED-requirements shall be available for all valves.

4. FLOW REGULATOR / AUTOMATIC BALANCING UNIT

- 4.1. Flow regulation unit shall be manufactured of stainless steel and hydrogenated acrylonitrile-butadiene-rubber and shall be capable of controlling flow within $\pm 5\%$ rated flow rate or $\pm 2\%$ of maximum flow rate.
- 4.2. Flow regulation unit shall be accessible for change-out or maintenance.

APPLICATION AND SCHEMATIC EXAMPLE



UPDATES

For latest updates please see www.flowcon.com

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