Stainless Steel UVA, VVA & SVA Variable Venturi Air Valve

General Description

The ***Smart*** **Valve** is a factory calibrated, easy to install and commission venturi air flow control valve. It provides fast-acting, stable and precise airflow control of fume hood exhaust, general exhaust and supply air for labs, vivaria and cleanroom applications.

Smart **Valve** uses a mechanical pressure independent regulator that decouples the pressure independence function from the air flow control function. As long as the differential pressure across the valve is in the range of 150 to 750 Pa, the valve will respond to any air flow changes within less than 1 second with an accuracy of ±5% of the commanded value.

The ***Smart*** **Valve** is orientation sensitive. The valve must be ordered for horizontal, vertical UP, vertical DOWN orientation.

Every ***Smart*** **Valve** is factory calibrated using 0.5% accuracy instrumentation traceable to NIST using a 50 points characterization curve. Every **Smartvalve** is identified by a unique serial number and its minimum and maximum capacity. It can be ordered calibrated to the minimum and maximum operating flows for its specific application, assuring speedy system start up and commissioning. The ***Smart*** **Valve** is a fully distributed

Single body Stainless Steel venturi

microprocessor-based intelligent air terminal with multiple inputs and outputs. It provides zone air flow control based on room pressurization, temperature, relative humidity, dilution ventilation and air quality.

The air flow control of VVA & SVA venturi valves is via standalone loop, from a room controller or from a Building Automation System. Each variable venturi valve is factory calibrated to respond to an input command corresponding to the desired air flow. An optional air flow sensor is available to verify the air flow. The ***Smart*** **Valve** is particularly well suited for laboratories, pharmaceutical clean rooms, vivaria, healthcare facilities and in HEPA filter application where flow control is critical to system performance.

Feature

- Less than 1 sec. response time to changes in duct pressure
- Turndown ratio up to 20:1, duct velocities as low as 0.5m/s
- Individual valve factory calibration results in faster start up and commissioning
- Available in normally open or normally close configuration
- Pressure independent in the range of 150 to 750Pa
- Less than 1 sec. response time to changes in commanded air flow signal
- Accurate to within ±5% of air flow command signal over complete airflow range
- Modbus RTU or BACnet MS/TP protocol

Single body Stainless Steel venturi

- Controls available via network write, 0-10VDC or dry contact
- Multiple I/O points available for control flexibility
- Airflow accuracy is independent of duct entry and exit configurations
- Circular slip fit or rectangular flange

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Specifications & Dimensions

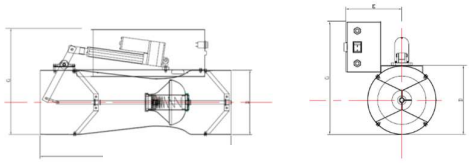
Table 1: Valve					
Designation		Description	Size	Flow range (m^3/h)	Weight (kg)
Material	Body & Cone	Stainless Steel 304, 316, Heresite or PFA coating optional	108	60 - 1,150	10.00
	Shaft	SS316, PFA coating optional	110	85 - 1,700	11.00
	Bracket	SS316, PFA coating optional	210	170 - 3,400	20.00
	Spring	Stainless steel spring	112	150 - 2,500	12.00
Operating pressure range		150 to 750 Pa	212	300 - 5,000	23.00
Accuracy		±5% command signal	114	340 - 4,250	14.00
Operating range	Temperature	0°C to 50°C	214	680 - 8,500	29.00
	R.H.	10% to 90% non-condensing			

Table 2

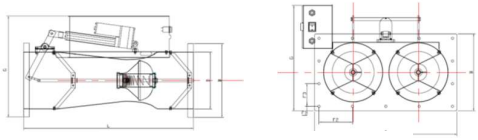
Valve code	Duct mounting	Dimensions (mm)							
		D	A	B	L	G	F1	F2	F3
108 - C30	Round slip-fit	200	X	X	596	330	X	X	X
110 - C40	Round slip-fit	250	X	X	554	378	X	X	X
210 - R42	Rectangular flange	X	580	310	554	416	15	110	94
112 - C50	Round slip-fit	300	X	X	680	435	X	X	X
212 - R52	Rectangular flange	X	680	360	680	455	15	130	110
114 - C60	Round slip-fit	365	X	X	763	471	X	X	X
214 - R62	Rectangular flange	X	801	422	763	500	17	192	97

Controller				
		SVA	VVA	UVA
Signal inputs/ outputs	AI0	0-10kΩ	0-10kΩ	0-10kΩ
	AI1	0-10VDC	0-10VDC	0-10VDC
	AI2	0-10VDC	X	X
	AI3	0-10VDC	X	X
	DI1	Dry contact	Dry contact	Dry contact
	DI2	Dry contact	Dry contact	X
	DI3	Dry contact	X	X
	AO1	0-10VDC	0-10VDC	0-10VDC
	AO2	0-10VDC	X	X
	DO1	220VAC, 1A	220VAC, 1A	X
	DO2	220VAC, 1A	220VAC, 1A	X
	DO3	220VAC, 1A	X	X
	DO4	220VAC, 1A	X	X
Communication Protocol	M Port	Modbus RTU	Modbus RTU	Modbus RTU
	S Port	BACnet MS/TP	X	X
	Speed	9,600 Baud	9,600 Baud	9,600 Baud
Full stroke time		High speed linear electric actuator < 1.5 s		
Fail safe (optional)		Designated position or last position		
FMS (optional)		Designated position or last position		
Power		24VAC @ 50/60 Hz or 220 VAC @ 50/60 Hz		
Certificate		CE		

BACnet or Lon System is available with UVA model for BMS linkup



Single body Round slip-fit



Dual bodies Rectangular flanged

Applications

The ***Smart*** **Valve** is designed for standalone airflow control system for critical airflow applications. It provides high-speed, rugged and reliable airflow controls for critical environment such as laboratories, vivarium facilities, pharmaceutical clean rooms, healthcare facilities and HEPA filtration systems.

The ***Smart*** **Valve** has built in analog & digital signals inputs & outputs. The analog input is a 0-10VDC, and the digital input is a dry contact usually used for receiving signals such as pressure, temperature, humidity, IAQ, or other sensor and contactor. The ***Smart*** **Valve** system can be scaled to any CMH readings and configured for applications such as full VAV, multi-position VAV, emergency override, purge ventilation, smoke removal, or simple CAV functions.

Each ***Smart*** **Valve** can be ordered factory calibrated to design requirements, resulting in a smooth startup and trouble-free commissioning by your ***Smart*** **Valve** supplier.

Smart **Valve** *is also available in Aluminium valve body, please contact your local supplier for further information.*

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Models Code

SVA – E 1 10 C – M N C F S – H L M S L

Basic models
UVA – Base variable venturi
VVA - Variable venturi
50 points flow calibration
SVA - Smart variable venturi
50points flow calibration

Valve materials
E - Body and cone SS304
Shaft and bracket SS316
F - Body and cone SS316
Shaft and bracket SS316
G - All hardware SS316
with PFA coating

Number of valve bodies[4]
1 - One valve body
2 - Two valve bodies
3 - Three valve bodies
4 - Four valve bodies

Valve size
08 - DN200mm
10 - DN250mm
12 - DN300mm
14 - DN350mm

Duct Connection (Table 2)

Air flow / Pressure range (Table 1)
M – Medium Pressure 150 – 750 Pa

Insulation
N - None
B - 10mm flexible close cell polyethylene

Flow feedback
C - Calibration curve
V[3] - Vortex flow sensor

Electric valve actuator
F - High speed, 1.5s full stroke

Controllable valves
S - Single valve
D[2] - Dual valves

Flow orientations
H - Horizontal
U - Vertical up flow
D - Vertical down flow

Fail safe
D - Designated position
L - Last position

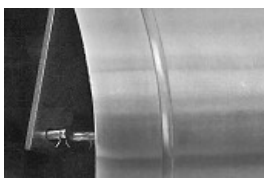
Communication protocol
M - Modbus RTU

Valve pressure drop alarm
S[1] - DP switch, 100Pa pre-set
T - DP sensor, 0-1000Pa
N - None

Power
L – 24 VAC, 50/60 Hz
H – 220 VAC, 50/60 Hz

1. DP switch input for UVA model required a separate or third party DI point to take in the signal.
2. Dual 14" valves (214) required 2 individual linear actuators to overcome the torque.
3. Vortex flow measurement station is an external add on device required an extension of valve body length and a minimum velocity of 2m/s for installation.
4. For three valves body and above, please consult the factory for more detail.

Note: Stainless Steel *Smart* Venturi Air Valves additional features.



Additional groove for valve body strengthening and ease in installation.