SmartX Actuators
MG350V

The platform of the future for a wide range of globe valve applications

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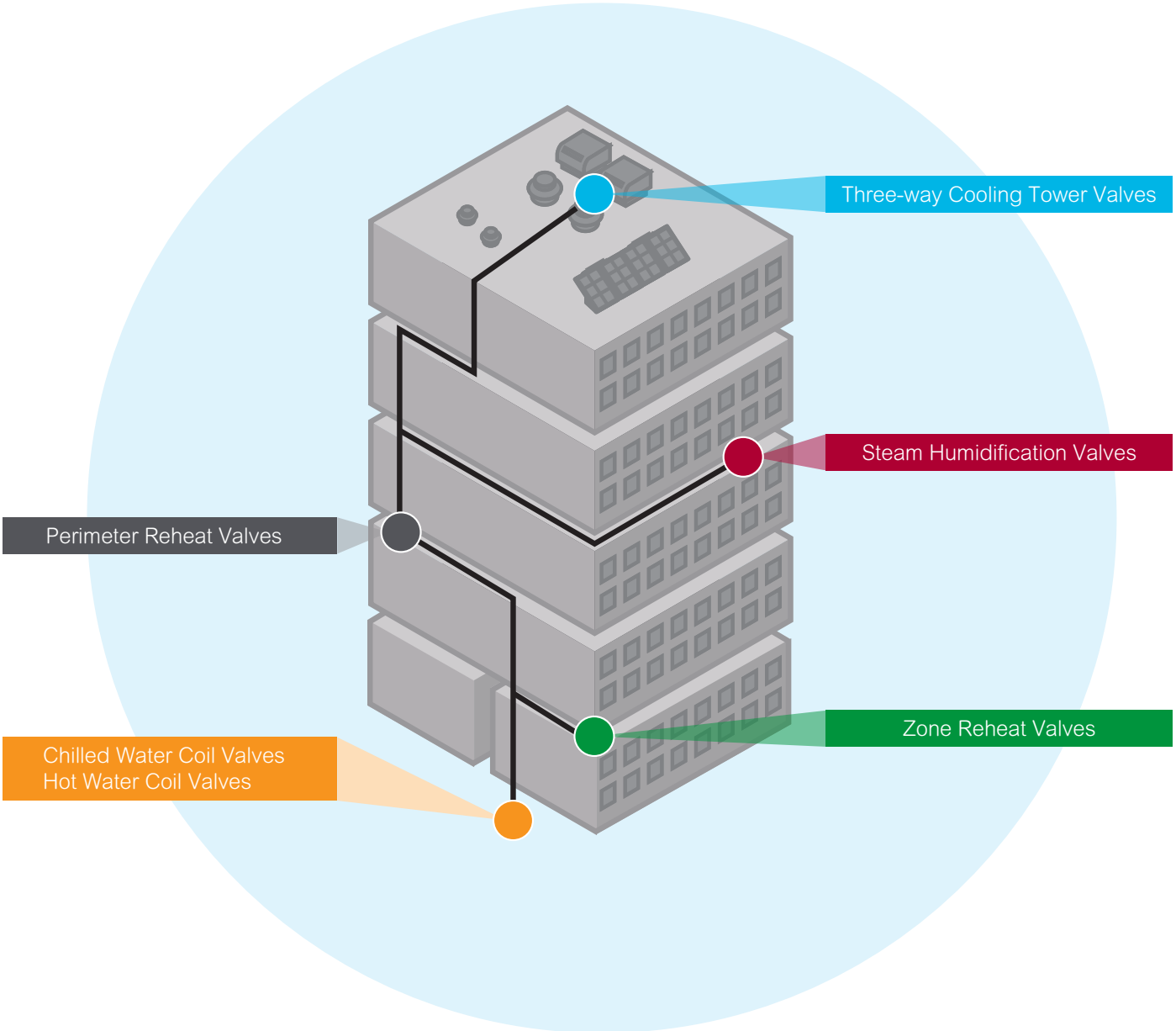
MG350V Applications

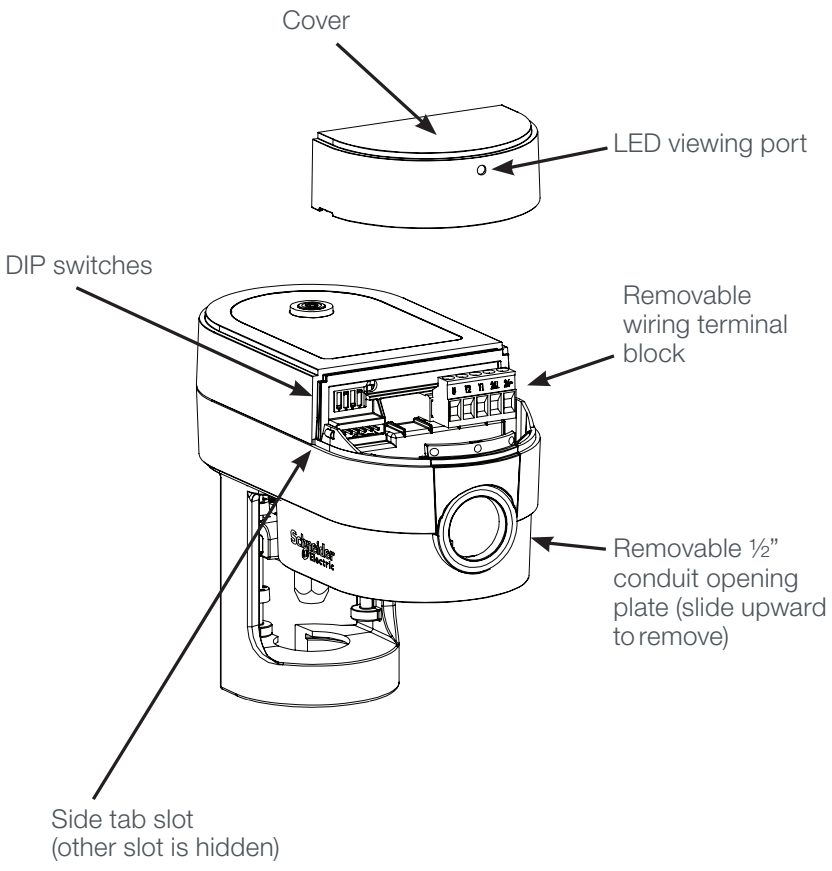
HVAC can account for 40% of energy costs in a building. Efficient, smart buildings start at their foundation with reliable control devices like the SmartX MG350V. The MG350V delivers critical data on system conditions to the higher level BMS in a wide range of globe valve applications.



Smart starts at the foundation of the BMS with devices like the SmartX Actuator MG350V. If the device level is not performing - neither is the BMS.

MG350V Overview

The MG350 is the platform of the future that represents the evolution of Schneider Electric's decades of experience in the design and manufacture of valve actuators and other HVAC products. Smart devices like the MG350V provide precise building control and deliver critical information to the BMS about changes in the physical environment and the state of the valve/actuator operation.



Features and Benefits

- Provides direct mounting on 1/2" to 2" VB-7000 globe valves with no additional linkage required
- Compatible with 1/2" to 1-1/4 " obsolete VB-9000 globe valves
- Bi-color LED status delivers visual indication of valve motion and alarm notification
- Auto calibration provides precise control by scaling the input signal to match the exact travel of the valve stem
- Stall protection throughout the stroke means uninterrupted, smooth control
- Field selectable feedback signal is compatible with a wide range of controllers
- Manual override with automatic release ensures fail safe operation
- Range offers users a choice with: floating, two position, proportional and pulse width modulating (PWM) model options
- Integral linkage delivers design simplicity
- Five year warranty

Schneider Electric Globe Valve and Actuators - Product Overview and Specifications

MG350V globe valve actuators are non-spring return electromechanical SmartX Actuators.

Schneider Electric Globe Valve Actuator Ranges

Range Name	Description	Family	Electric Non Spring Return Operation				Electric Spring Return Operation			Pneumatic Spring Return Operation	
			Proportional	Floating	Pulse Width Modulated	Two Position	Proportional	Floating	Two Position	Proportional: Two Position	Proportional with Positive positioner
SmartX	Originally developed by Schneider Electric in the United States under the DuraDrive brand. Upgraded in 2015 to SmartX with new features.	Mx51-710x					●	●	●		
		Mx51-720x, Mx61-720x [1]					●	●	●		
		MG350V	● New	● New	● New	● New					
Forta	Developed by Schneider Electric in Europe. Introduced to North America in 2008 because of its flexibility and ease of setup. [2]	M400, M800, M1500	●			● 3-Wire					
		M900					● New		● New, 3-Wire		
Legacy	Earlier North American actuators developed by Schneider Electric (Barber Colman, Siebe, Invensys). Still popular because of their value and reliability.	MK-2690, MK-4xxx, MK-6xxx, MK-8xxx								●	●
		MA-521x, MP-521x, MP-541x, MP-5513, MPR-5613					●		●		

[1] The Mx51-720x, Mx61-720x actuator are higher force versions of the Mx51-710x for large valves and high close-off applications.

[2] Forta actuators have universal inputs for proportional and floating operation. The new M900 Forta actuator will have both spring return up and down and NEMA 4 options.

Valve Body Families*

Valve Size	VB-7000 (two way NC, two way NO, three way mixing, three way diverting)	VB-8000 (two way NC, two way NO, three way diverting/mixing)	VB-9313 (three way mixing)
1/2"	●		
3/4"	●		
1"	●		
1-1/4"	●		
1-1/2"	●		
2"	●		
2-1/2"		●	●
3"		●	●
4"		●	●
5"		●	●
6"		●	●

*For more detailed specification information access the NAM Globe Valves and Actuators Catalog on the Exchange. https://ecobuilding.schneider-electric.com/

New MG350V Actuator Family Overview

Part Number	Input Signal	Position Feedback Output Signal	Approx Timing in seconds for 1/2" (12.7 mm) Stroke	Max. Stroke in inch (mm)	Force lbf (N)	Availability
MG350V-24F	Three-Wire Floating[1]	-	102	21/32 16.5	78 (350)	Q3 2016
MGF350V-24FP	Three-Wire Floating, PMW [1,2]	2 to 10 Vdc, 0 to 5 Vdc[3]	64	21/32 16.5	67 (300)	Q4 2016
MG350V-24M	2 to 10 Vdc, 0 to 10 Vdc	-	102	21/32 16.5	78 (350)	Q3 2016
MGF350V-24MP	2 to 10 Vdc, 0 to 10 Vdc, 4 to 20 mA	2 to 10 Vdc, 0 to 5 Vdc[3]	64	21/32 16.5	67 (300)	Q4 2016

[1] Also compatible with two-position Form A 24 Vac/Vdc input signals.

[2] Field-selectable 0.59 to 2.93 sec and 0.1 to 25.5 sec PWM ranges.

[3] Field selectable. The 2 to 10 Vdc output signal range also includes an alarm signal.

Product Support Services email: productsupport@schneider-electric.com

Exchange: https://ecobuilding.schneider-electric.com

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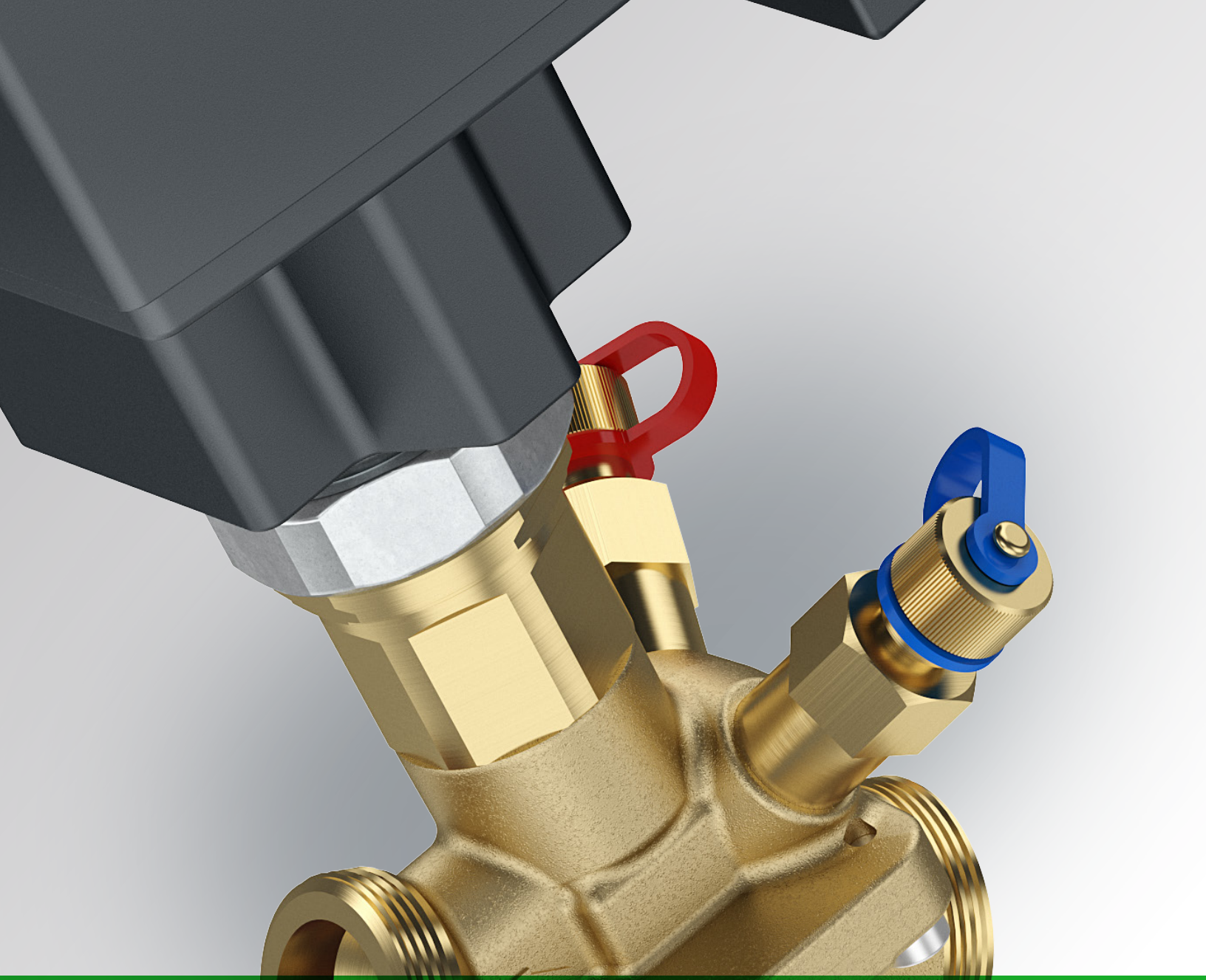

SmartX Pressure Independent Balancing and Control Valves (SmartX PIBCV)

Technology that Delivers Total Efficiency

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Perfecting balance and control

A complete range of valve sizes from 1/2” to 10” that achieve optimal flow control, room comfort and energy efficiency in a wide range of HVAC applications.

Schneider Electric’s comprehensive range of Pressure Independent Balancing and Control Valves (PIBCV) deliver an optimal solution for hydronic balancing in a wide range of HVAC applications. How do they do it?

Schneider Electric’s PIBCV technology is able to deliver efficiencies across valve selection, installation, and operation that optimize flow rate, occupant comfort and energy savings. When a device level control system can do all that it addresses critical customer requirements for performance, energy efficiency and cost optimization.

Combining a control and balancing valve in one, Schneider Electric’s PIBCV technology regulates volumetric flow regardless of pressure fluctuations in the hydronic system. Precisely controlling flow reduces hunting, provides stable room temperature and extends actuator life. These efficiencies also ensure optimal energy usage and no costly overflows. In short, SmartX PIBCV technology ensures HVAC systems will run smoother with greater operating efficiencies and reduced maintenance cost.

Schneider Electric’s new PIBCV offer acts as the foundation of the BMS - connected to pressure sensors, variable speed drives and ultimately SmartStruxure controllers.

Imagine the number of control valves in a large building. The potential to save energy is huge. But how? With Schneider Electric PIBCV technology. The technology to be future ready today.

Helping customers solve complex building challenges

Installers / Mechanical Contractors

- Flow rates are factory set
  - with field adjustability
- Actuator LEDs indicate valve status
- Automatic hydronic balancing
- Integrated design means / faster installation, less leak paths

Specifiers

- Product selection simplified
  - no calculations needed
- Room temperature control
  - Less commissioning / balancing
  - Cost effective

Building Owners

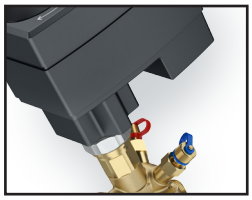
- Optimized comfort control
  - Quick to achieve target temperature
- Energy efficient
  - Flow limiting: no overflow, optimized output against the coil.
- Actuator LEDs indicate valve status
- Flexibility to adjust flow rate to changing heating/cooling demand

Technology that delivers total efficiency

Design	> Compact design integrates the valve, flow limiter and pressure regulator.
Selection	> Selection is based on coil flow rate, eliminating the need for Cv calculations.
Installation	> Modular design enables straightforward and error free installation.
Operation	> Performs a continual balancing function to maintain system performance at varying loads.
	> Predictable flow throughout valve travel eliminates over-pumping and saves energy.
	> Constant flow performance reduces actuator movement, hunting, and wear on the valve assembly.
Maintenance	> Allows simple troubleshooting during system operation.

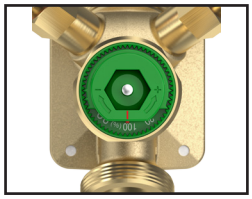
Valves pair with a full range of spring return and non-spring return actuators

The Schneider Electric Competitive Edge



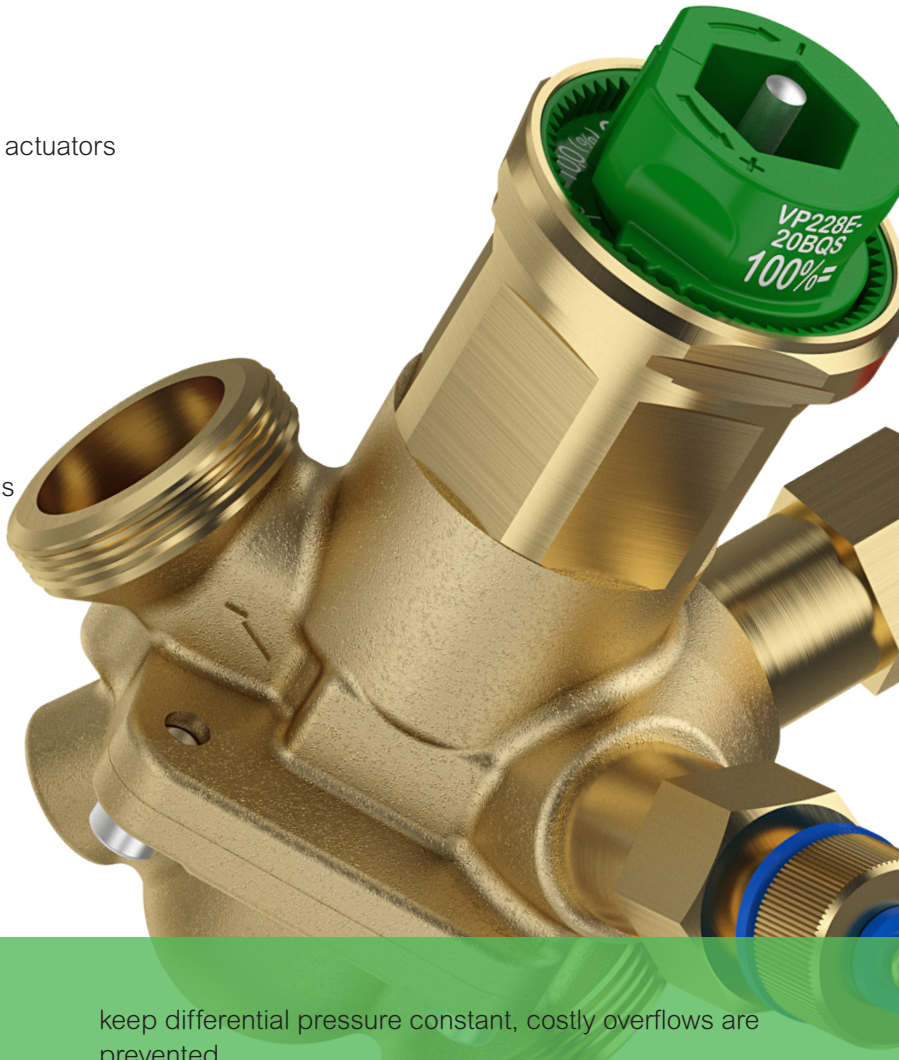
Valve Actuator

- Wide range of compatible actuators
- Manual override



Flow Limiter

- Full stroke maintenance
- Manual and pre-set options



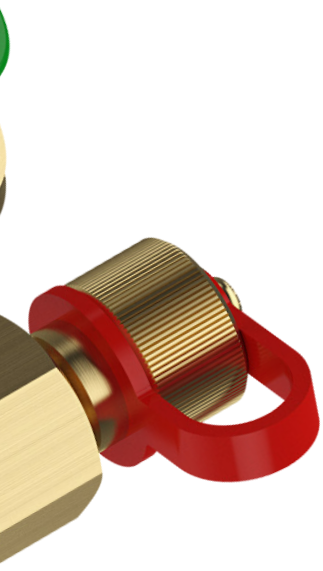
How a PIBCV solution works

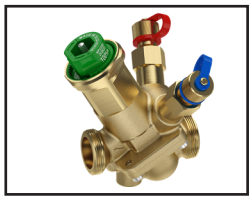
Properly controlling water flow and temperatures is the central function of an HVAC installation. Control valves are crucial to important processes and they need to be precisely calculated to achieve optimal working conditions. Schneider Electric's PIBCV solution consists of 4 main components: the valve actuator, the flow limiter, the control valve and the differential pressure regulator.

The flow through a valve is determined by the flow coefficient and the differential pressure across the valve. Because Schneider Electric's PIBCV solution can keep differential pressure constant, costly overflows are prevented.

If the differential pressure across the valve increases, the integrated membrane will move down and close the pressure controller. If the differential pressure decreases, the membrane will instantly move up again. Conclusion, constant Δp across the control valve, results in accurate flow limitation and 100% authority.

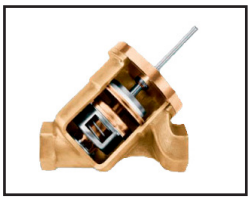
Taking balancing technology to a new level





Control Valve
Combines three functions in one valve body:

- Pressure Controller – ensures pressure independence
- Automatic Balancing – Limits maximum flow rate
- Control Valve – precisely regulates flow to match demand



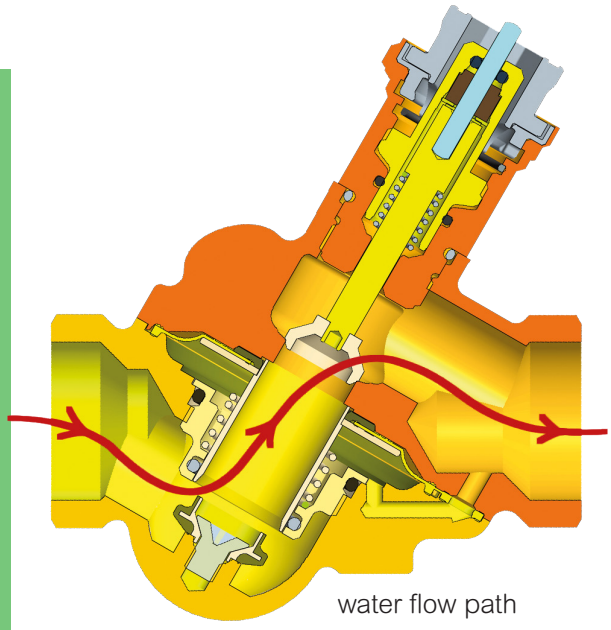
Pressure Regulator

- Maintains valve authority
- Simplifies troubleshooting during operation

The yellow lower part of the valve body holds the differential pressure controller. The differential pressure controller restricts the opening in front of the control valve to maintain a constant differential pressure.

The orange upper part of the valve body contains both the control valve and balancing valve components.

In order to perform the balancing function, the maximum height of the control valve can be adjusted, effectively limiting the maximum flow. The adjustment is made by rotating a graduated ring at the top of the valve stem to a percentage position, indicating the maximum flow through the valve. The control valve is operated by applying a downward force to the top of the valve stem.

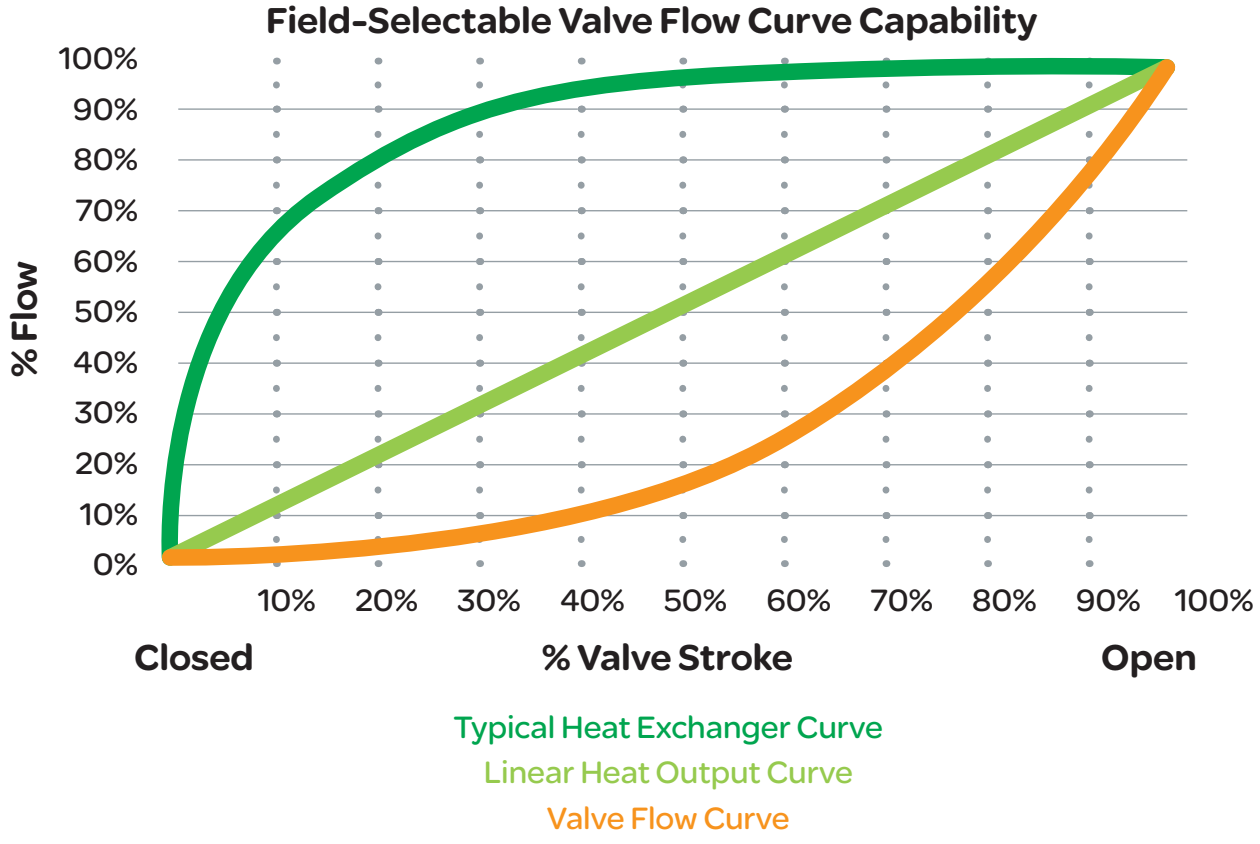


water flow path

Achieve maximum valve authority through tight flow control

Schneider Electric's PIBCV technology differentiates itself in its ability to maintain constant differential pressure across the 2-way valve component. Maximum valve authority is achieved through its ability to constantly adjust and compensate for fluctuations in system pressure.

The PIBCV solution not only limits flow, but keeps it within a specific range to eliminate underflow and overflows through the coil and maximize operational efficiencies. The benefits of this functionality are clear when considering the constant pressure variances that happen in a typical water system and the impact it has on overall system performance.



Smart starts at the foundation of SmartStruxure™ solution with Schneider Electric's Pressure Independent Balancing and Control technology. It provides precise building control and delivers critical information to the BMS about changes in the physical environment and the state of valve/actuator operation. Designed to help optimize valve performance in a variety of HVAC applications, Schneider Electric's PIBCV solution helps customers contain HVAC costs and optimize building performance.

If the device level control is not performing as it should – neither is the BMS.

Valve Selection

½" to 1-1/4" SmartX VP228E/VP229E PIBCVs with NPT Female End Pieces

Image	Valve Size	Available Flow Rates (GPM)	Actuator Part Number and Type				
			MP131-24F Floating Non Spring Return	MP131-24MP Proportional Non Spring Return	MP131-24T Two Position Non Spring Return	MP300-SRU Universal Spring Return Open	MP300-SRD Universal Spring Return Closed
 without PT ports	1/2"	0.5, 1.0, 1.5, 2.0. 2.5, 3.0, 3.5, 4.0, 4.5, 5.0	√	√	√*	√	√
	3/4"	4.0, 5.5, 6.0, 6.5, 7.0, 7.5	√	√	√*	√	√
 with PT ports*	1"	7.5, 8, 8.5, 9.0, 9.5, 10, 11, 12	√	√	√*	√	√
	1-¼"	13, 14, 15, 16, 17	√	√	√*	√	√

- VP228E/VP229E valves are available with or without* PT ports.
- Consult SmartX PIBC ½" to 10" Assemblies, F-27947 for complete details.
- Universal input signal actuators accept both floating and proportional input signals.

* Factory assemblies not available for all flow rates

1-½" to 2" SmartX VP220E PIBCVs with NPT Female End Pieces

Image	Valve Size	Available Flow Rates (GPM)	Actuator Part Number and Type		
			MP500C Universal Non Spring Return	MP500C-SRU Universal Spring Return Open	MP500C-SRD Universal Spring Return Closed
	1-½"	18, 19, 20, 22, 24, 26, 28, 30, 32	√ Forta	√ Forta	√ Forta
	2"	34, 36, 38, 40, 44, 48, 52	√ Forta	√ Forta	√ Forta

- All VP220E valves come with PT ports.
- Consult SmartX PIBC ½" to 10" Assemblies, F-27947 for complete details.
- Forta Universal input signal actuators accept both floating and proportional input signals.

2-½" to 4" SmartX VP220A Flanged PIBCVs

Image	Valve Size	Available Flow Rates (GPM)	Actuator Part Number and Type		
			MP500C Universal Non Spring Return	MP500C-SRU Universal Spring Return Open	MP500C-SRD Universal Spring Return Closed
	2-½"	56, 60, 65, 70, 75, 80	√ Forta	√ Forta	√ Forta
	3"	90, 100	√ Forta	√ Forta	√ Forta
	4"	165	√ Forta	√ Forta	√ Forta

- All VP220A valves come with PT taps.
- Consult SmartX PIBC ½" to 10" Assemblies, F-27947 for complete details.
- Forta Universal input signal actuators accept both floating and proportional input signals.

5" to 6" SmartX VP220A Flanged PIBCVs (Available Q2 2017)

Image	Valve Size	Available Flow Rates (GPM)	Actuator Part Number and Type		
			MP2000-NSR Universal Non Spring Return	MP2000-SRU Universal Spring Return Open	MP2000-SRD Universal Spring Return Closed
	5"	395, 485	√	√	√
	6"	640, 830	√	√	√

- All VP220A valves come with PT taps.
- Consult SmartX PIBC ½" to 10" Assemblies, F-27947 for complete details.
- Universal input signal actuators accept both floating and proportional input signals.

8" to 10" SmartX VP222A Flanged PIBCVs (Available Q2 2017)

Image	Valve Size	Available Flow Rates (GPM)	Actuator Part Number and Type
			MP500C Universal Non Spring Return
	8"	880, 1188	√
	10"	1320, 1630	√

- All VP222A valves come with PT taps
- Universal input signal actuators accept both floating and proportional input signals.

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