



8 reasons for using
6-way valves.

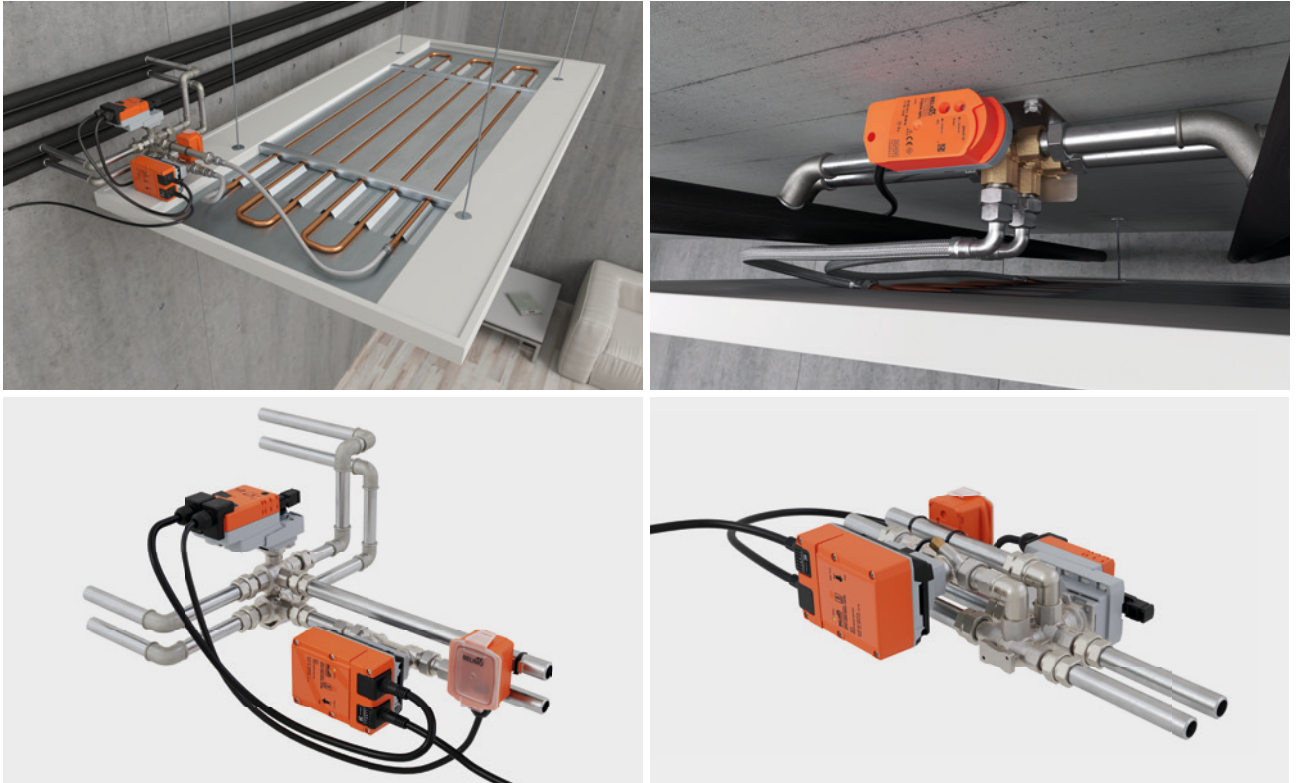
6-way valves from Belimo



Learn more
[belimo.com](https://www.belimo.com)

BELIMO[®]

Maximum efficiency for optimum indoor comfort.



Recognising needs and finding unconventional solutions, that is what makes Belimo extraordinary. One such solution is the innovative 6-way valve for combined heating/cooling elements in the 4-pipe system. Instead of four valves and actuators, only one is required. This makes electrical connection easier, simplifies control and reduces the number of data points required. The installation effort and possible sources of error are thus reduced to a minimum. Furthermore, Belimo offers the greatest selection of 6-way zone valves, both pressure-dependent and pressure-independent.

With state-of-the-art electronics, Belimo has enhanced the 6-way zone valve to create an "all-in-one" control unit. With its continuous flow measurement, the electronic pressure-independent 6-way zone valve EPIV determines water quantity in real time. As a result, the desired level of room comfort is ensured at all times, even with partial loads and differential pressure fluctuations.

Belimo's electronic pressure-independent 6-way zone valve is now available with intelligent condensation monitoring. If condensation occurs due to low flow temperatures, moisture damage can be prevented thanks to the integrated logic.

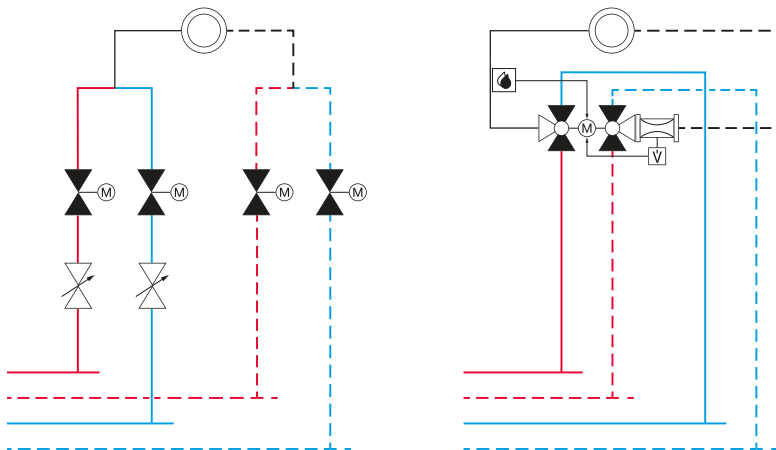
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- 7 Excellent control characteristics with minimum effort**
- 8 Air-bubble tight with maximum plant safety**

1. One device for everything.

Simple installation

The 6-way zone valve replaces two conventional control valves and two open/close valves. In combination with our flow sensor, the electronic pressure-independent 6-way zone valve EPIV replaces two conventional control valves, two open/close valves, and two balancing valves, meaning up to six individual field devices. This reduces installation costs to a minimum.



Two control, open/close and balancing valves each

One 6-way zone valve EPIV

PROS

- Reduced effort at the time of installation
- Compact construction with integrated condensation monitoring
- Simple cabling and system integration
- Lower costs than with individual components

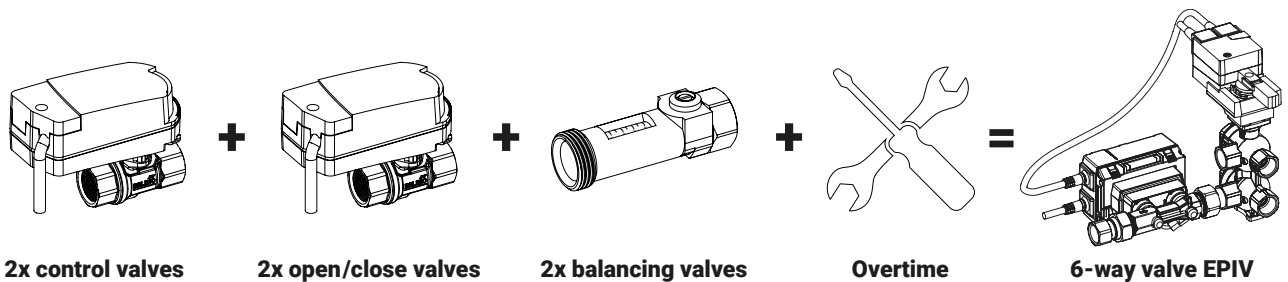


MP⁺BUS

Modbus

ASHRAE BACnet™

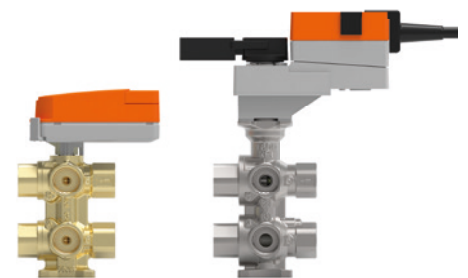
Flow control for combined heated and chilled ceilings. Easier than ever before:



The low weight of the 6-way zone valve is an advantage during transport, and the small body size simplifies its installation considerably.

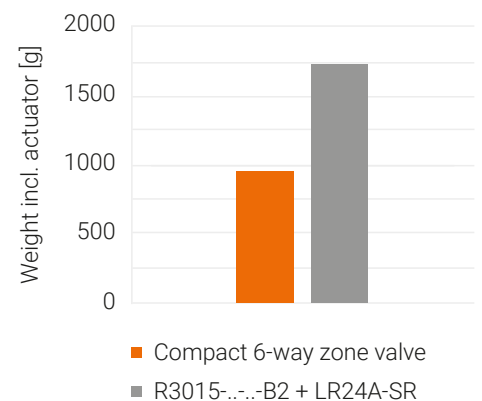
All-round efficiency – now even more compact and economical

- Precise and effective control with extremely compact construction, easy to integrate in suspended ceilings, even where space is limited.
- 6 cm (33%) smaller compared to conventional models (e.g. R3015-...-B2 + LR24A-SR).
- Easier and faster actuator mounting (without tools).



Reduced weight

- Compact 6-way-zone valve:
6-way zone valve B1 (700 g) + CQ actuator (240 g) = 940 g
- Weight savings of ~40% compared to R3015-...-B2 + LR24A-SR
- Reduced installation costs
- Fast installation



Minimise spatial requirements in suspended ceilings and enlarge usable space in the building

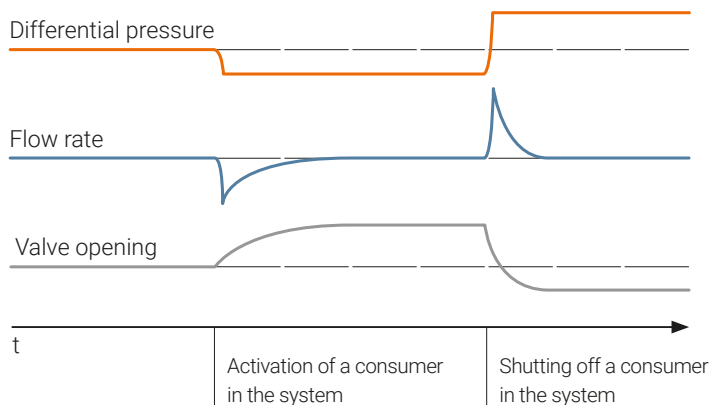
Small spatial requirement of only 103 mm in suspended ceilings.



2. Transparent, pressure-independent control.

Permanent hydronic balancing

Pressure-dependent valves cannot compensate for pressure fluctuations, which in turn leads to flow fluctuations in the system. Pressure-independent valves, on the other hand, can ensure the desired flow rate and are therefore independent of changes in the system. The electronic pressure-independent 6-way zone valve EPIV can be used to meet precisely this requirement by means of flow control. The correct amount of water is always ensured, even with differential pressure changes and in partial load operation.



PROS

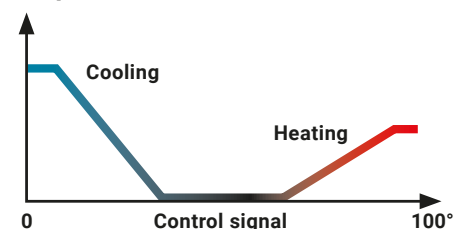
- Manual hydronic balancing of the heating and cooling system is dispensed with, quick to configure
- The correct amount of water is ensured, even with differential pressure changes and in partial load operation

Hydronic balancing is reduced to a minimum

In pressure-dependent systems, the typical arrangement consists of a manual balancing valve in series with a pressure-dependent control valve. All parts of the heating and cooling system must therefore be precisely coordinated with one another manually. With the electronically pressure-independent 6-way zone valve EPIV, this is no longer necessary, thus avoiding a long and costly commissioning process. Furthermore, the EPIV is quick to configure, as the k_{vs} value does not have to be calculated.

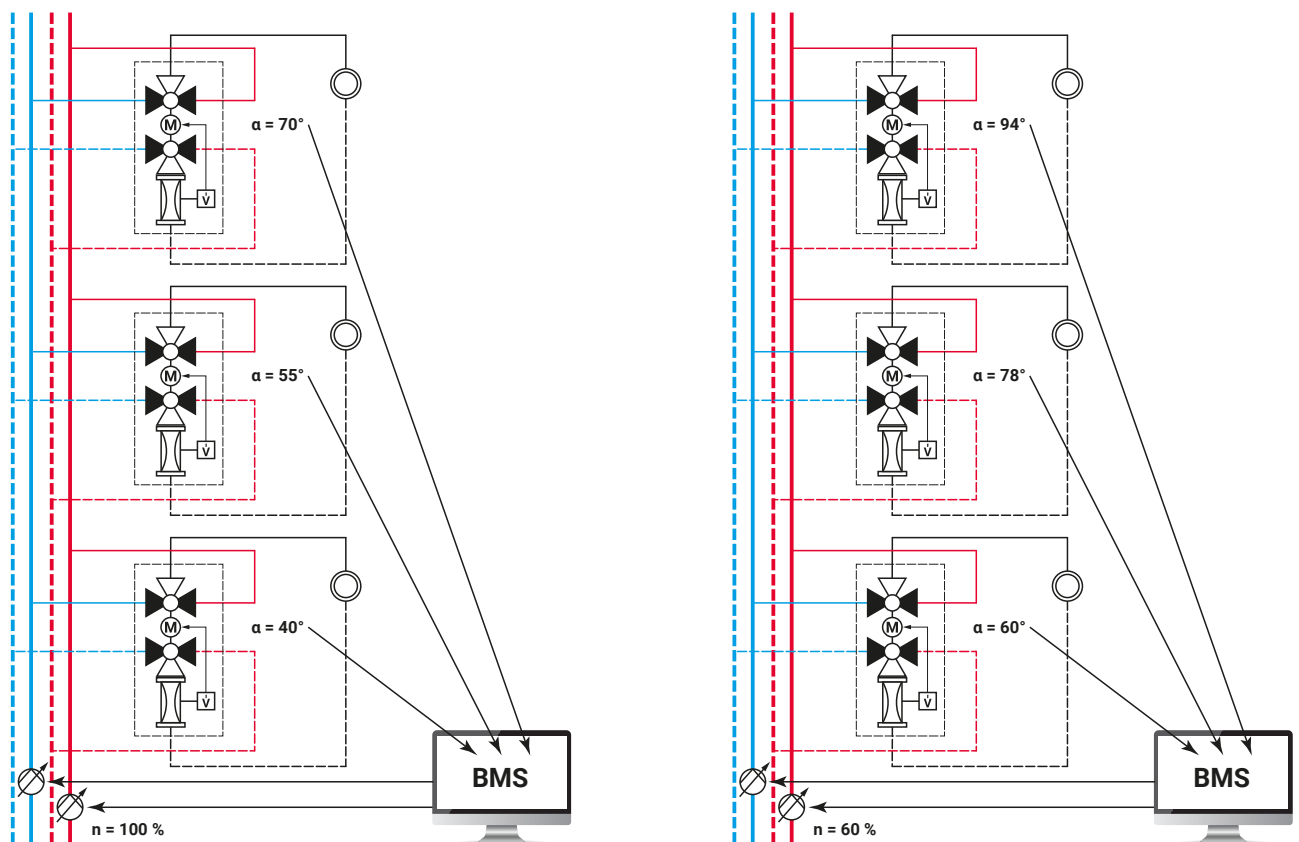
- Classic: Different K_{vs} values for cooling and heating.
- Electronic: Different, easily adjustable V_{max} values for cooling and heating. Quick to configure as the k_{vs} value does not have to be calculated.

Sequences



Optimised pump operation based on the position of the electronic PI valves

The electronic pressure-independent 6-way zone valve EPIV automatically adjusts the valve opening to ensure the flow required by the building automation system (BMS). For this, the set valve opening as a function of the setpoint and the differential pressure can be read out from the BMS via the zone valve. The point of the highest differential pressure in the system can be determined by recording the feedback signals of all of the valves. Optimum control of the pump head is thus provided, based on the valve that is widest open in the current operating state.



Compensation for pressure fluctuations by changing the valve opening.

Optimised, energy-saving operation.

3. Simple, time-saving commissioning.

Simple parameterisation, setup and monitoring

The Belimo Assistant and NFC (Near Field Communication) enables easy parameterisation and maintenance directly via smartphone/tablet or PC/laptop (Windows). With the Belimo Assistant, the devices can be parameterised intuitively and commissioning values can be logged.

Key performance indicators (KPIs) make it easier to determine the condition of the system, thus ensuring reliable operation. Numerous diagnostic parameters show how the device interacts with the system. If servicing is required, it is possible to draw up a failure analysis quickly.

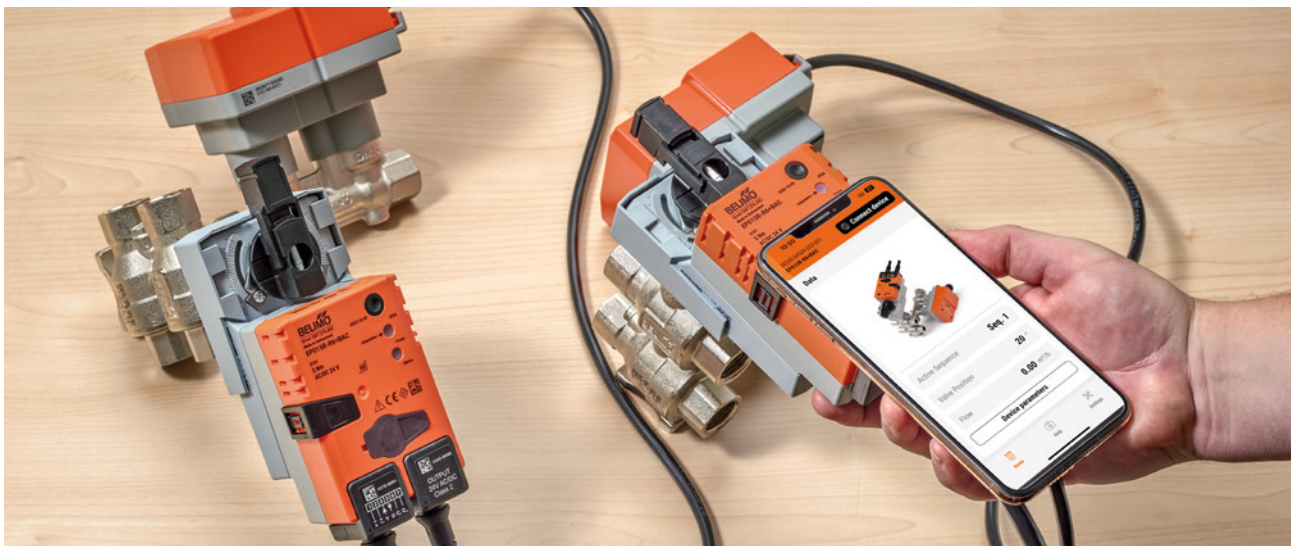
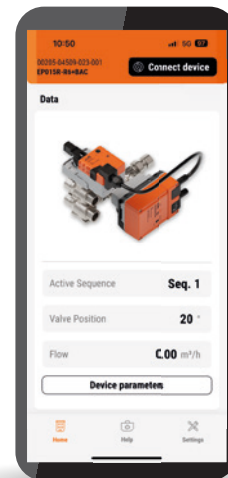
Time savings at the building site

The electronically pressure-independent 6-way zone valve EPIV offers de-energised parameterisation prior to installation.

The Belimo Assistant supports the design process and offers fast and simple commissioning at your fingertips. The digital approach and full transparency makes your work easier.

PROS

- The Belimo Assistant allows easy commissioning and maintenance
- The 6-way zone valve EPIV offers powerful parameterisation via smartphone, prior to installation



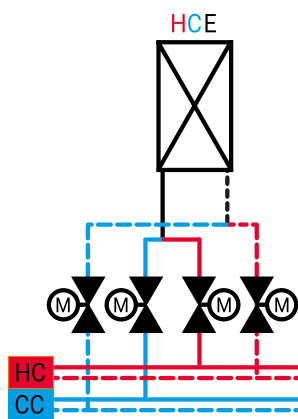
4. Safe, precise and no condensation.

No assembly or wiring errors

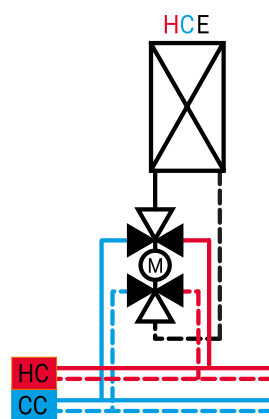
Instead of four valves and actuators, only one device is required. No need to worry anymore about installation errors as it is impossible to mix up the valves.

Simultaneous switch-on of cooling and heating is prevented by the reliable decoupling of cooling and heating circuit.

The integrated condensation monitoring (optional) detects condensation at an early stage and protects systems from moisture damage.



Conventional solution with four 2-way valves



Solution with a 6-way characterised control valve

PROS

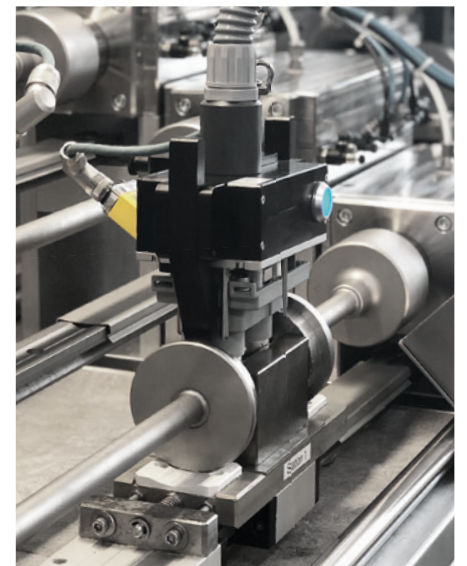
- Elimination of possibility of installation errors caused by mixing up the valves
- Simultaneous switch-on of cooling and heating is prevented
- Precise, dirt-resistant flow control



High quality measurement

Belimo's 6-way zone valve EPIV uses ultrasonic time-of-flight technology, and is dirt-resistant, wear-free, and precise in its measurements. This is achieved thanks to a fast-measuring cycle.

Multi-point wet calibration of the devices prior to shipment ensures high accuracy and repeatability in the entire flow measurement range.



5. Simple, future-proof integration.

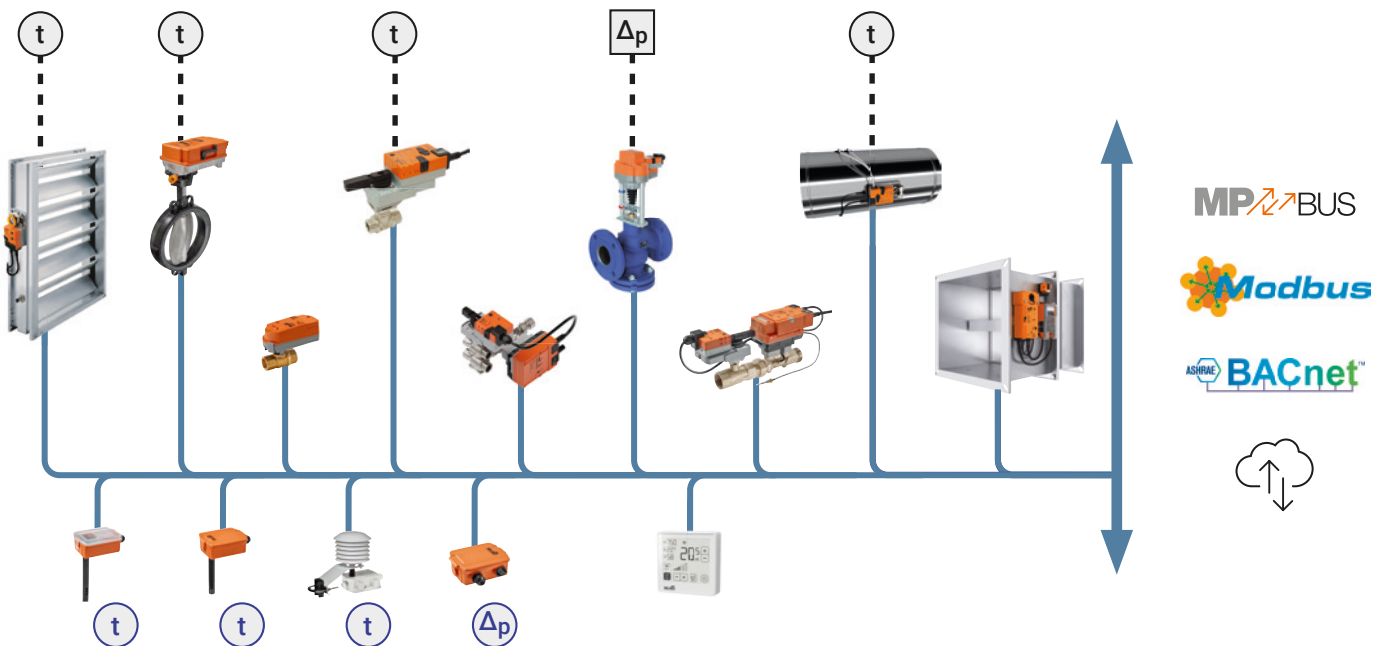
The future is connected

The 6-way valves can be integrated directly into the building automation system (BMS) via MP-Bus from Belimo, BACnet, MS/TP, Modbus or conventionally.

With conventional control via analogue control signal, BACnet or Modbus can be used for communicative feedback. In this way, optimized pump operation based on the position of the electronic PI valves can for example be ensured via the BMS for the 6-way zone valve EPIV.

PROS

- Integration via MP-Bus from Belimo, BACnet MS/TP, Modbus or conventional
- Optimised pump operation can be ensured
- Energy-efficient system operation is guaranteed over the entire service life



Transparent and proven

By measuring, calculating, and visualising important system data, energy-efficient system operation is guaranteed over the entire service life.

With the electronically pressure-independent 6-way zone valve EPIV, important system parameters such as flow rate and valve position can be transmitted to the building management system. The functionality of the valve can be checked at any time and is therefore guaranteed.

6. Reduced energy consumption.

No holding torque necessary

The 6-way zone valve EPIV replaces four short stroke globe valves with thermal actuators and is more economical in terms of energy consumption due to its design. Thanks to the pressure-compensated characterised control valve design, no holding torque is required to maintain the set valve position. The position does not change, even without an attached actuator.

In the case of conventional short stroke globe valves with thermal actuators, a force must be continuously applied to the spindle by the actuator in order to keep the valve in the desired position. If the actuator is removed, the valve may move out of the desired position.

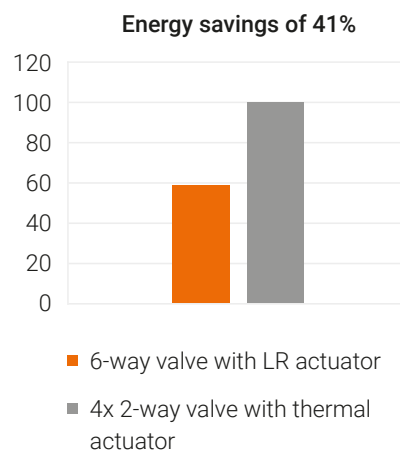
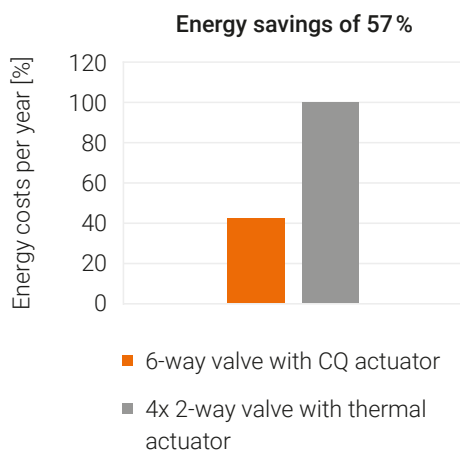
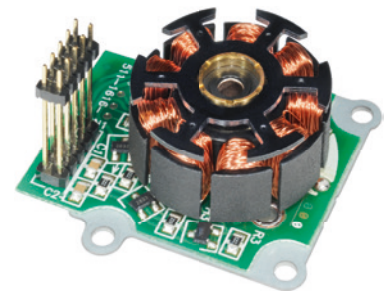
PROS

- No holding torque is necessary to maintain the set valve position
- The patented actuator control system features dynamic holding force detection
- Annual actuator energy consumption can be reduced by up to 57%

Actuators from Belimo – safe and energy-efficient with dynamic holding force detection

The power consumption of an actuator appears to be negligible at first glance. However, when viewed over the entire life cycle, the use of energy-efficient solutions offers considerable potential for savings in terms of energy and costs.

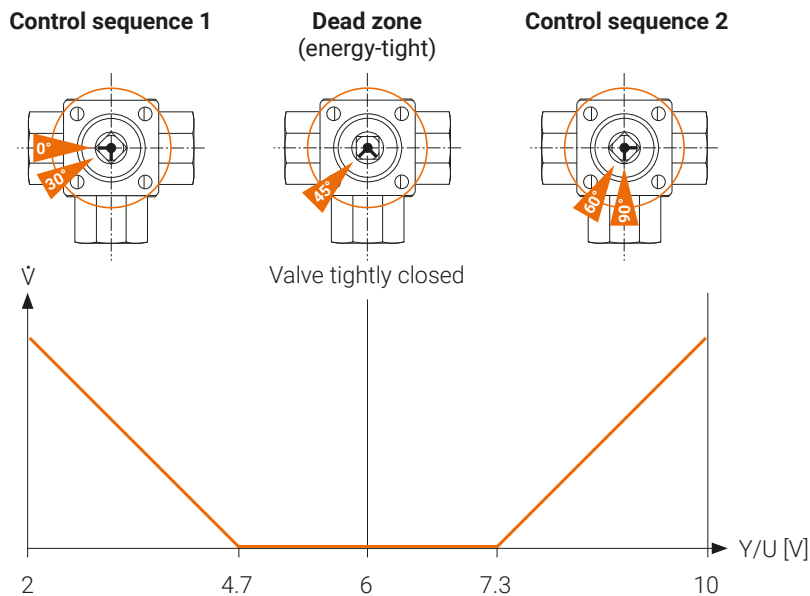
Belimo actuators guarantee safe and energy-saving operation of characterised control valves. The patented actuator control system from Belimo features dynamic holding force detection. This ensures that only just as much current as necessary is used to keep the dampers or valves in position. This can reduce the annual actuator energy consumption by up to 57%.



7. Excellent control characteristics with minimum effort.

Low wiring effort and expense thanks to just one data point

Now only one valve and one actuator are required instead of four – this makes electrical connection easier, simplifies control and reduces the number of data points required. The installation effort and possible sources of error are thus reduced to a minimum.



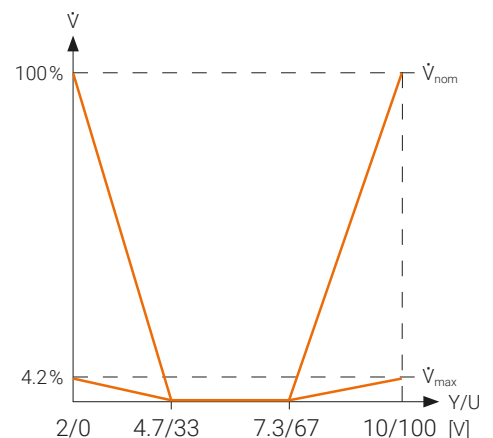
Direct flow control

The 6-way zone valve EPIV interprets the flow control signal as a flow setpoint. The valve changes the opening position to maintain the required flow, making the physical position of the valve dependent on flow and current pressure conditions. The desired flow rate is automatically maintained.

Flow control is a control algorithm that establishes a defined relationship between the control signal and the flow. The valve interprets the control signal as 0 to 100% of the specified flow rate. The control is pressure-independent in flow control mode.

PROS

- Only one electrical connection and one data point
- The desired flow rate is automatically maintained
- The control is pressure-independent in flow control mode
- Installation effort and sources of error are reduced to a minimum

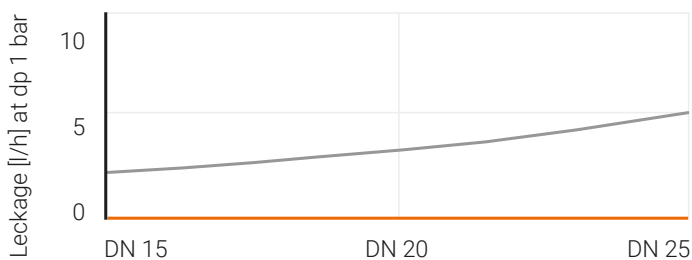


8. Air-bubble tight with maximum plant safety.

Absolute seal integrity

Thanks to its design, no leakage and air-bubble tight in the closed position. The tight-closing 6-way characterised control valve reliably prevents internal leakage in the closed state and thus inadvertent consumption with zero load.

There is a reduced energy requirement for heating and cooling. For this, the heating and cooling circuit in neutral position is interrupted by the lower open/close valve. The leakage rate of the 6-way valve corresponds to Leakage rate A according to EN12266-1.



PROS

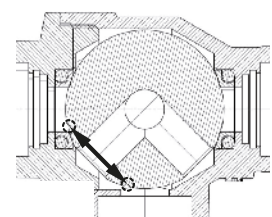
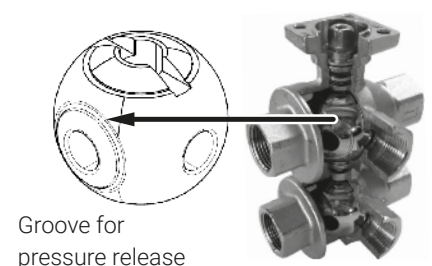
- Air-bubble tight – no leakage in the closed position
- The 6-way characterised control valves have an integrated pressure release function
- No blockade by dirt particles possible

- Characterised control valve with leakage rate 0% (Leakage rate A as per EN 12266-1)
- Globe valve with leakage rate > 0.05% of k_{vs}

Maximum plant safety with patented pressure release function

In cases of combined heating/cooling control elements, the medium remains enclosed when the element is in the closed position (no heating or cooling). The pressure in the heating/cooling element can rise or fall due to changes in fluid temperature caused by the ambient temperature. The 6-way characterised control valves from Belimo have an integrated pressure release function for the purpose of compensating for such pressure changes.

The upper ball of the characterised control valve is thereby equipped with a groove that, when the characterised control valve is in the closed position, sets up a connection between the inlet and outlet of the ball valve. This groove provides compensation for any differential pressure that may arise. The pressure compensation proceeds automatically in the closed position.



Pressure release in 45° position

From customer requirement to customer benefit.

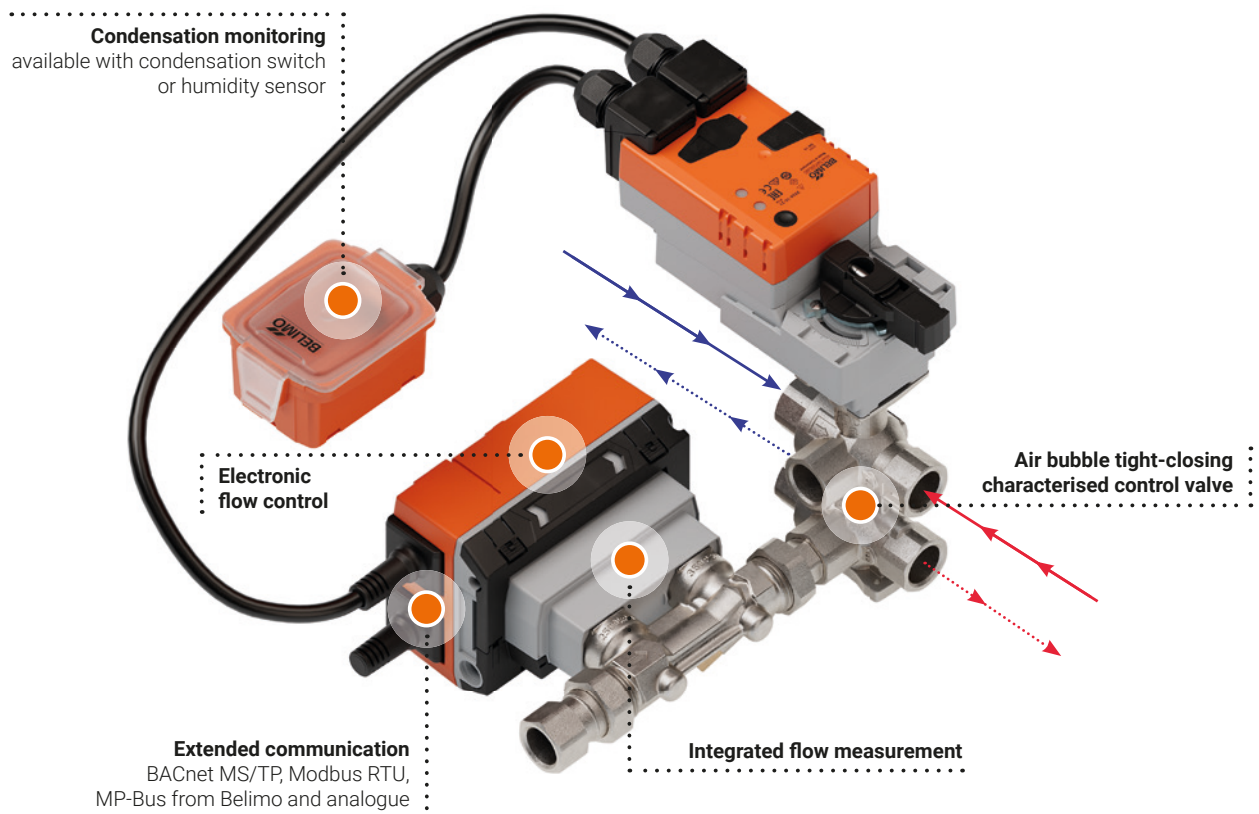
6-way zone valve EPIV

The electronic pressure-independent 6-way EPIV from Belimo combines the advantages of a 6-way zone valve with the functions of the electronic pressure-independent valve. Thanks to the ultrasonic flow measurement, the right amount of water is always guaranteed, which ensures a high level of room comfort. Commissioning is quick and intuitive using the Belimo Assistant (NFC), even if the device is not connected to the power supply. Available in sizes DN 15/20/25.

Belimo's electronic pressure-independent 6-way zone valve is now available with intelligent condensation monitoring. If condensation occurs due to low flow temperatures, moisture damage can be prevented thanks to the integrated logic.

PROS

- Time-saving and safe valve selection in accordance with maximum flow rate for each sequence
- Automatic, permanent hydronic balancing through the valve
- Securing the correct amount of water with differential pressure changes and with partial load
- Maximum plant safety with integrated pressure-release function (Patent: EP3143315B1)
- Versatile control options, simple commissioning and control via NFC





	6-way zone valve R3015-...-B1 (CQ actuator)	6-way zone valve R30...-...-B2 (LR actuator)		6-way zone valve R3025-...-B3 (NR actuator)
Valve type	Pressure-dependent	Pressure-dependent		Pressure-dependent
Nominal diameter	DN 15	DN 15	DN 20	DN 25
K_{vs} [m ³ /h]	0.25...0.63	0.25...1.8	0.63...4	6.3
Weight including actuator [kg]	0.85	1.65	2.65	4.5
Installation height with actuator [mm]	143	203	231	254
Nominal voltage	AC/DC 24V	AC/DC 24V		AC/DC 24V
Control	0...10V Belimo MP-Bus BACnet, Modbus	0...10V Belimo MP-Bus BACnet, Modbus LonWorks, KNX		0...10V Belimo MP-Bus BACnet, Modbus LonWorks, KNX
Power in rest position [W]	0.3	0.4		0.4
Flow measurement	-	-		-
Hydronic balancing	Manual	Manual		Manual
Tool-free actuator assembly	x	-		-



	6-way zone valve EPIV (EP..R6+BAC)			6-way zone valve EPIV with condensation switch (EP..R6+BAC-HH1 and -HH2)			6-way zone valve EPIV with humidity sensor (EP..R6+BAC-HHM)		
Valve type	Pressure-independent			Pressure-independent			Pressure-independent		
Nominal diameter	DN 15	DN 20	DN 25	DN 15	DN 20	DN 25	DN 15	DN 20	DN 25
V'_{nom} [l/h]	1500	2500	3500	1500	2500	3500	1500	2500	3500
Weight including actuator [kg]	2.6	3.8	5.6	2.9	4.1	6.0	2.9	4.1	6.0
Installation height with actuator [mm]	211	239	265	211	239	265	211	239	265
Nominal voltage	AC / DC 24 V			AC / DC 24 V			AC / DC 24 V		
Control	0...10V Belimo-MP-Bus BACnet, Modbus			0...10V Belimo-MP-Bus BACnet, Modbus			0...10V Belimo-MP-Bus BACnet, Modbus		
Power in rest position [W]	3.7			4.5			4.5		
Flow measurement	x			x			x		
Hydronic balancing	Automatic			Automatic			Automatic		
Condensation monitoring	-			x			x		

All inclusive.

Belimo is the global market leader in the development, production, and sales of field devices for the energy-efficient control of heating, ventilation and air-conditioning systems. The focus of our core business is on damper actuators, control valves, sensors and meters.

Always focusing on customer value, we deliver more than only products. We offer you the complete product range for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a five-year warranty. Our worldwide representatives in over 80 countries guarantee short delivery times and comprehensive support through the entire product life. Belimo does indeed include everything.

The "small" Belimo devices have a big impact on comfort, energy efficiency, safety, installation and maintenance.

In short: Small devices, big impact.



5-year warranty



On site around the globe



Complete product range



Tested quality



Short delivery times



Comprehensive support

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