Noticeable
energy savings.

Applications for room and zone control

Water applications

BELIMO

Definition and positioning of Belimo ZoneTight™

Belimo ZoneTight™ designates Belimo regulating devices that are used for room and zone applications in air-conditioning technology.

ZoneTight is made up of two terms:
Zone stands for room and zone applications
Tight stands for a tightly sealing valve

The Belimo ZoneTight™ zone valves are based on characterised control valve technology that has been tried-and-tested millions of times and optimally fulfil requirements.

Energy efficient

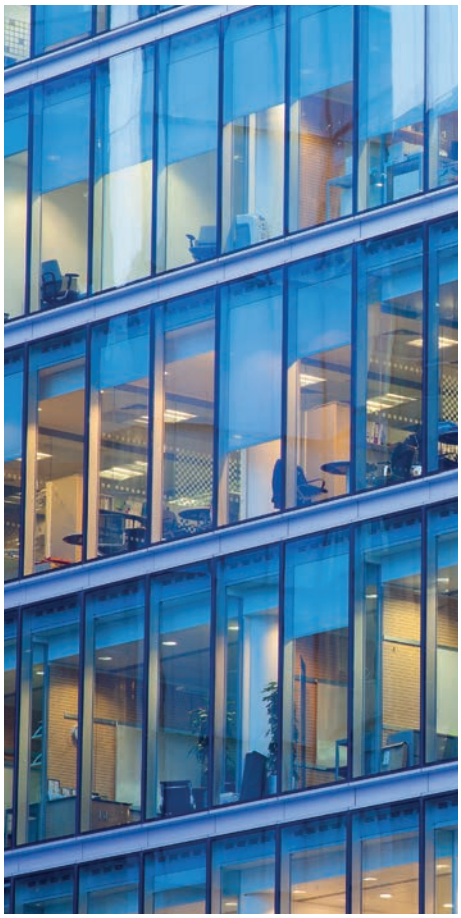
– Tight-sealing characterised control valves prevent valve leakages and thus energy losses
– Highly efficient motor technology reduces the current consumption and guarantees a long service life

Fail-safe

– The ball valve technology is resistant to contamination
– Tried-and-tested, maintenance-free, valve and actuator technology from Belimo guarantees high operating safety and low operating costs
– 5-year guarantee on all Belimo products

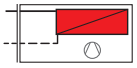
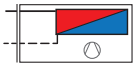
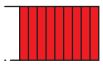
Compact

– Extremely compact design with minimum space requirements in terms of height and width enables space-saving solutions for use in zones/rooms



Room and zone applications

Products and applications

	Fan coil	Fan coil (heating and cooling)	Chilled ceiling	Chilled and heating ceiling	Floor heating	Radiator
						
 QCV	✓✓✓	✓	✓✓✓	✓	✓✓✓	✓✓✓
 PIFLV	✓	✓	✓✓✓	✓	✓	
 PIQCV	✓✓✓	✓	✓✓✓	✓	✓✓	✓✓
 6-way		✓✓✓		✓✓✓		
 6-way EPIV		✓✓✓		✓✓✓		

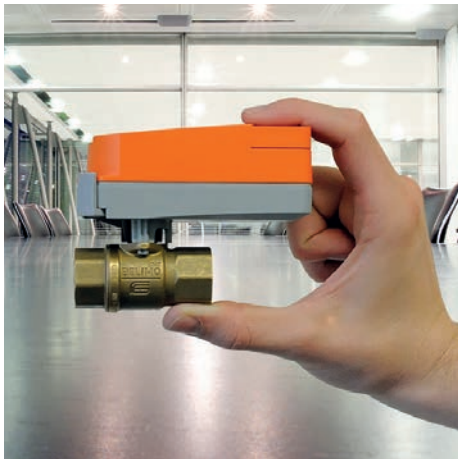
✓✓✓ Common usage ✓✓ Recommended usage ✓ Possible usage

BELIMO

Compact zone valve QCV. Robust, flexible, tight-sealing.

The space-saving QCV (Quick Compact Valve) is available as a 2-way characterised-control valve with nominal diameters of DN 15 and DN 20 and as a 3-way changeover ball valve with the same nominal diameters.

- Tight-sealing characterised control valve prevents circulation losses
- Manually adjustable k_V values with the 2-way characterised control valves
- Automatic adaption to set k_V value
- Minimum power consumption during operation and in standby mode
- Compatible with 24 V, 230 V, open-close/3-point, modulating control, MP-Bus, Modbus and BACnet



Pressure-independent flow limiter valve PIFLV. Simple and resistant.

The PIFLV is a pressure-independent flow limiter valve that was specially developed for zone applications. The valve offers numerous benefits:

- Automatic and permanent hydronic balancing
- High flow capacity even with small nominal diameters
- Design is not sensitive to contamination
- Tight-sealing ball valve prevents circulation losses
- Low power consumption during operation and in standby mode
- Short running times

Pressure-independent zone valve PIQCV. Compact, flexible and efficient.

The pressure-independent PIQCV (pressure-independent quick compact valve) supplies heating/cooling elements constantly with exactly the required amount of eater.

- Optimum room comfort since the end devices are neither over-supplied nor under-supplied
- Low differential pressure required, resulting in high energy efficiency
- Less planning work due to fast and safe valve design
- Time savings due to automatic and permanent hydronic balancing
- Flexible, versatile design options thanks to a compact structure

Precise 6-way zone valve. Compact, safe, economical.

The 6-way zone valve is designed to control a combined heating/cooling element in the 4-pipe system. Its unique technology revolutionises the structure of these systems and replaces four 2-way valves, four actuators and two control units.

- Versatile k_{VS} combinations enable precise and effective control
- Compact and can be installed in low ceilings without difficulty
- No installation errors as it is impossible to mix up the valves
- Operating safety due to reliable decoupling of cooling and heating circuit
- Maximum plant safety with integrated pressure relief function (patent pending)

Pressure-independent 6-way zone valve. Functional, easy to install, versatile.

The electronic, pressure-independent 6-way zone valve from Belimo brings together the high planning reliability and efficiency of the electronic pressure-independent EPIV valve and the ease of installation of the 6-way characterised control valve.

- Time-saving and safe valve design for each sequence in accordance with maximum flow rate
- Automatic, permanent hydronic balancing by the valve
- Ensuring the correct amount of water with differential pressure changes at partial load
- No installation errors as mixing up valves is impossible
- Maximum plant safety with integrated pressure relief function (patent pending)

Guidance

Thank you for your interest in our products. In this brochure you will find information regarding the planning of a building. All Belimo products for room and zone applications are energy saving, reliable and compact. They enable an optimum room climate with minimum energy consumption.

Please contact us for more information.

All chapters have the following structure:

- Description of the relevant application
- Bill of material
- Belimo – features and benefits
- Tender text (in a detailed and short form)

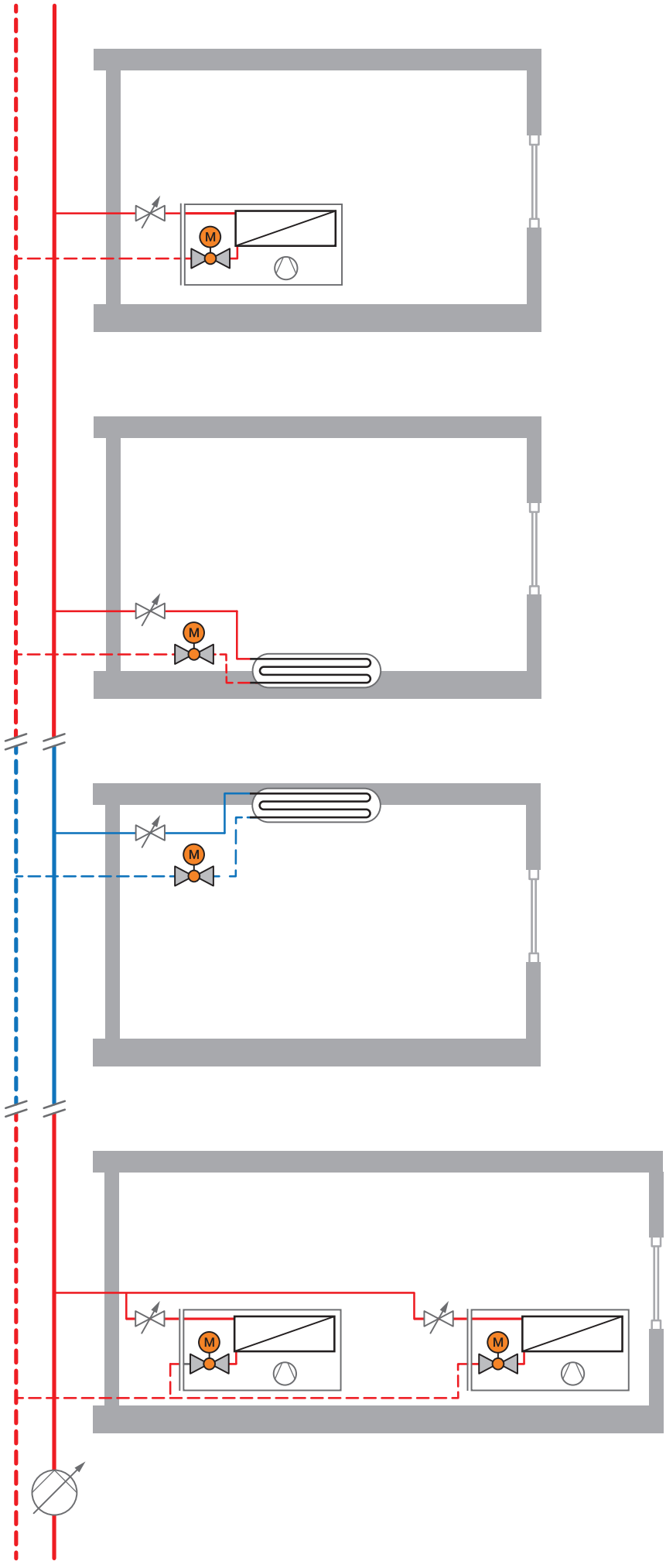
Legend

	Room temperature controller		2-way zone valve QCV
	Temperature sensor		3-way zone valve QCV
	Occupancy switch		PIFLV pressure-independent flow limiter valve
	Window contact		Pressure-independent 2-way zone valve PIQCV
	Condensation sensor		6-way zone valve
	Variable speed pump		Electronic pressure-independent 6-way zone valve EPIV
	Balancing valve		

Disclaimer

Please note that the pictures are examples only and may therefore vary, depending on the type of building. Subject to technical modifications and amendments. Please get in touch with your Belimo contact person to verify the specifications.

Table of contents


M
M
M
M
M

1

Variable-flow 2-pipe system

1.1 Fan coil

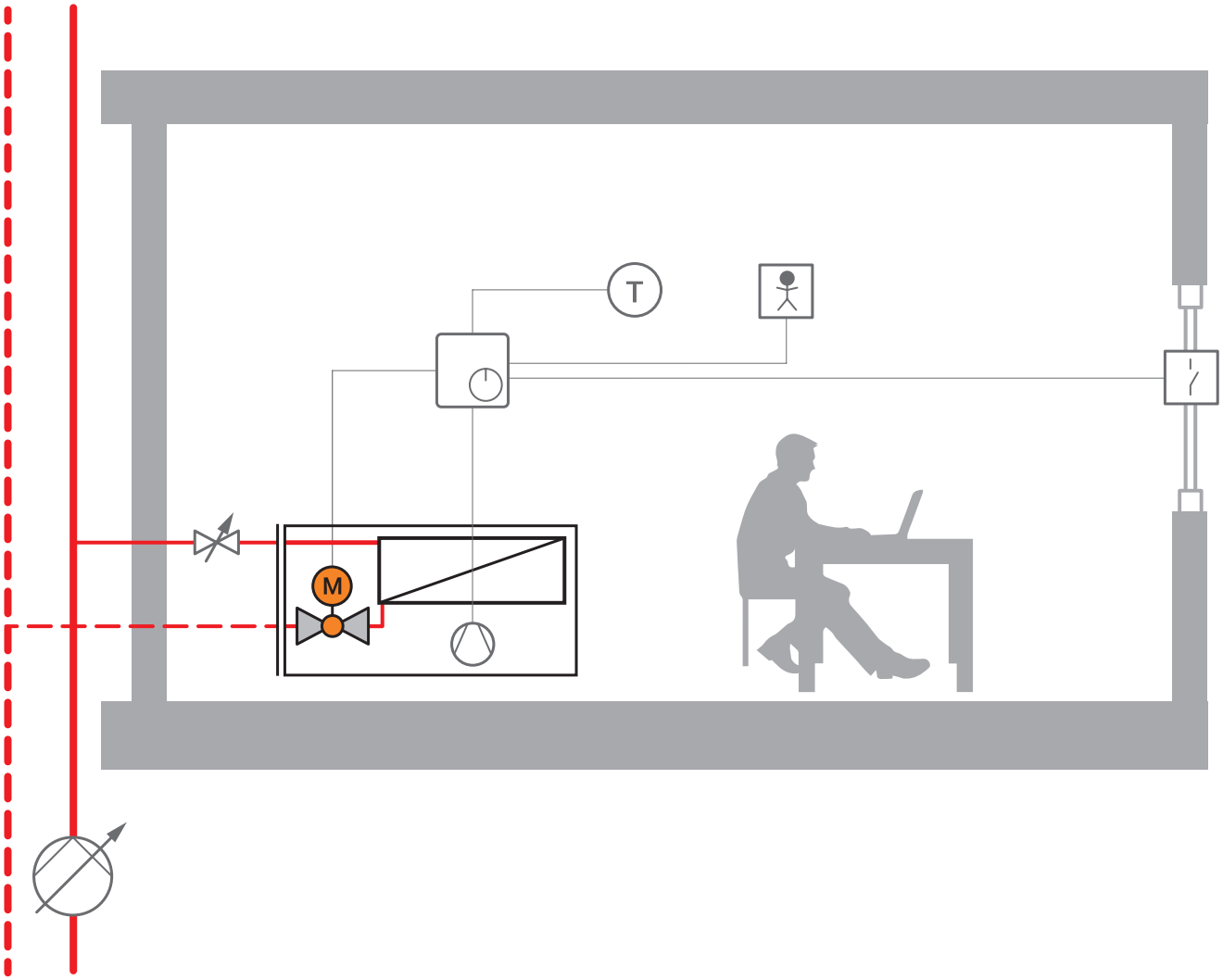


Illustration example

Application description

- Fan coil provides heating energy
- Manual balancing valve for static hydronic balancing of water volume (for full load)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water and air volume controlled via room temperature controller
- Actuator control options: open/close, 3-point, modulating or via bus communication
- Optional functions: occupancy switch, window contact

Controller

Room temperature controller with:

- Air volume adaptation (3 speeds with 3 DO or modulating with 1 AO)
- Water volume adaptation by means of open/close, 3-point, modulating control (0…10 V) or via bus communication

Optional: integration of an occupancy switch and/or window contact signal

Bill of material

Type	Description	Quantity	Costs
C2..Q..[1)]	2-way zone valve QCV, internal thread, DN .... with adjustable k_v value ....-.... m^3/h	1	
CQ24A-SR[3)]	Rotary actuator for zone valves, 1 Nm, AC/DC 24 V, modulating	1	
EXT-OC-ZR-C2..Q	Optional: insulation shell for valve C2..Q, 2-way, DN	1	
ZR23..	Optional: pipe connector for zone valve, DN	2	
	Balancing valve DN	1	
	Work service: hydronic balancing	1/2 h	
	Room temperature controller	1	
	Temperature sensor	1	
	Optional sensors: occupancy switch, window contact		

[1)] Also available with external thread (C4..Q..)
[3)] Other actuator variants available: AC/DC 24 V and AC 230 V, fail-safe, communicative actuator (MP-Bus, BACnet, Modbus)

Belimo – features and benefits

Properties	Benefits
Compact overall structure	Ideal room utilisation and high level of freedom in design
Tight-sealing valve	Complete avoidance of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Equal-percentage flow characteristic without input step	Can be controlled perfectly even in the lowest partial load range
Manually adjustable k_v values	High flexibility in planning, installation and during usage phase
Actuator with low power consumption	Energy cost reduction by up to 90% compared to conventional zone valves
5-year guarantee	Long-term safety

1.2 Floor heating / radiator

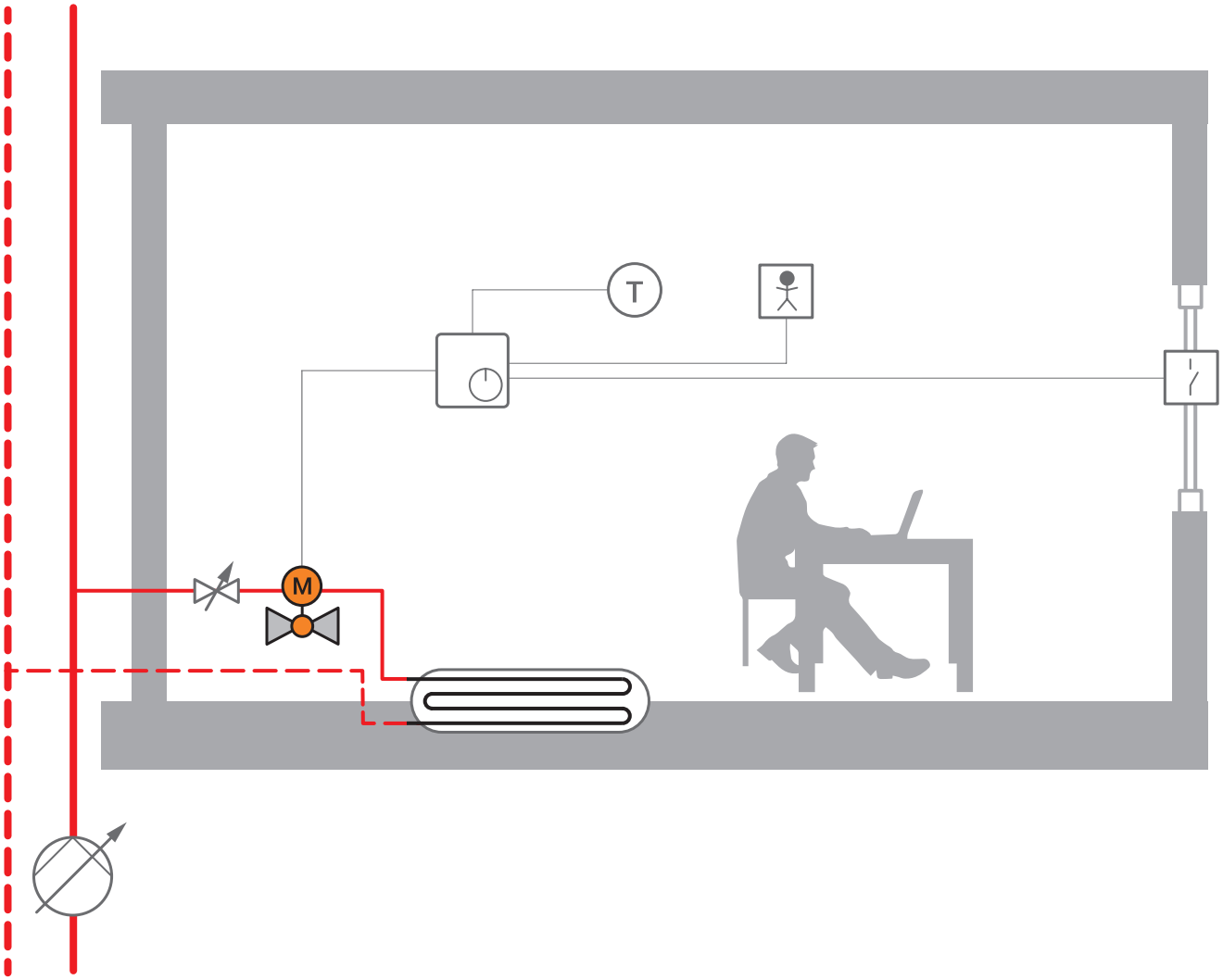


Illustration example

Application description

- Provision of heating energy by means of a heating element mounted on the floor or on the wall
- Manual balancing valve for static hydronic balancing of water volume (for full load)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water volume controlled via room temperature controller
- Actuator control options: open/close, 3-point, modulating or via bus communication
- Optional functions: occupancy switch, window contact

Controller

Room temperature controller with:

- Water volume adaptation by means of open/close, 3-point, modulating control (0…10 V) or via bus communication

Optional: integration of an occupancy switch and/or window contact signal

Bill of material

Type	Description	Quantity	Costs
C2..Q..[1)]	2-way zone valve QCV, internal thread, DN .... with adjustable k_v value ....-.... m^3/h	1	
CQ24A-SR[3)]	Rotary actuator for zone valves, 1 Nm, AC/DC 24 V, modulating	1	
EXT-OC-ZR-C2..Q	Optional: insulation shell for valve C2..Q, 2-way, DN	1	
ZR23..	Optional: pipe connector for zone valve, DN	2	
	Balancing valve DN	1	
	Work service: hydronic balancing	1/2 h	
	Room temperature controller	1	
	Temperature sensor	1	
	Optional sensors: occupancy switch, window contact		

[1)] Also available with external thread (C4..Q..)
[3)] Other actuator variants available: AC/DC 24 V and AC 230 V, fail-safe, communicative actuator (MP-Bus, BACnet, Modbus)

Belimo – features and benefits

Properties	Benefits
Compact overall structure	Ideal room utilisation and high level of freedom in design
Tight-sealing valve	Complete avoidance of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Equal-percentage flow characteristic without input step	Can be controlled perfectly even in the lowest partial load range
Manually adjustable k_v values	High flexibility in planning, installation and during usage phase
Actuator with low power consumption	Energy cost reduction by up to 90% compared to conventional zone valves
5-year guarantee	Long-term safety

1.3 Chilled ceiling

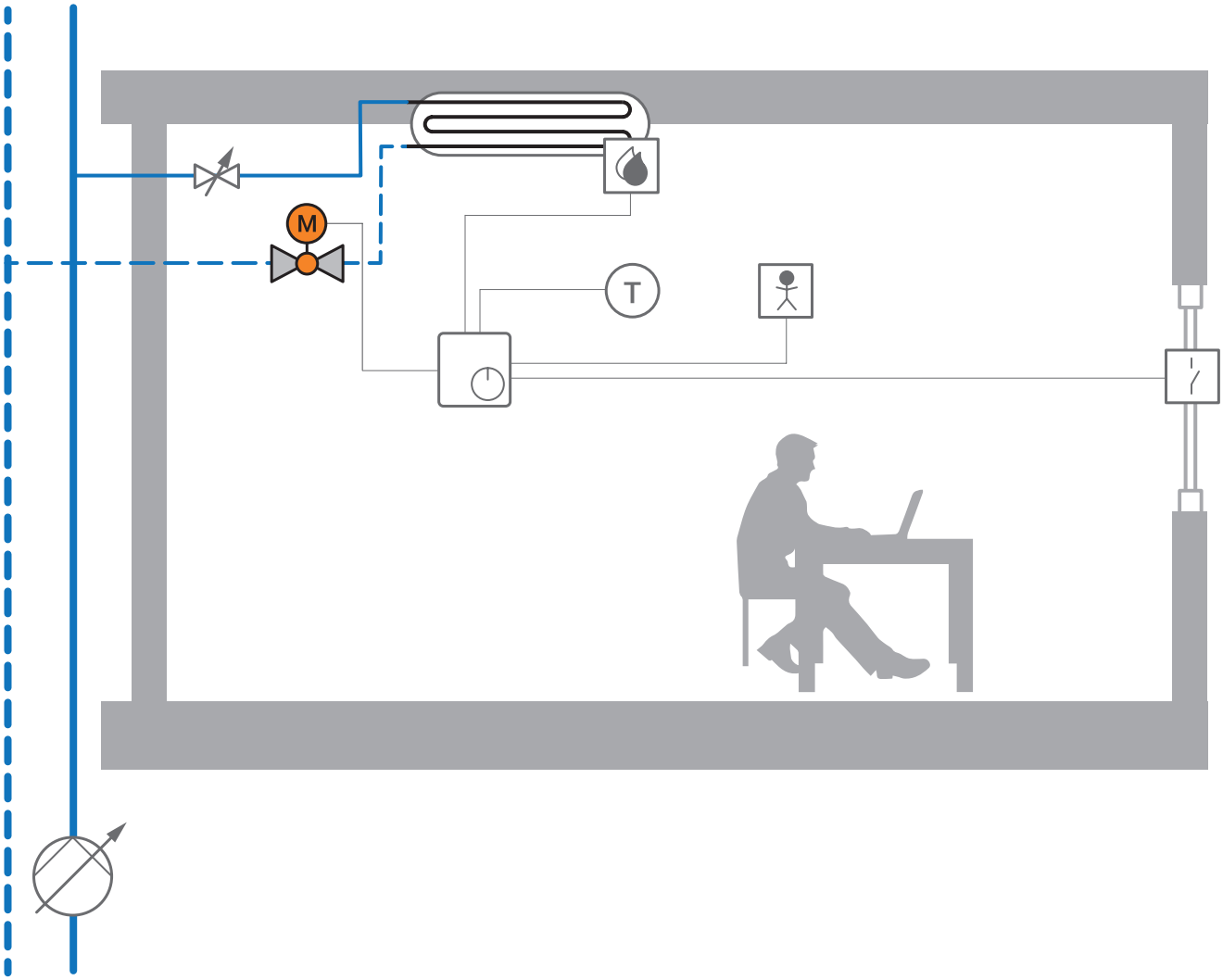


Illustration example

Application description

- Provision of cooling energy by means of a chilled ceiling (additional heating option with central heating/cooling changeover switch)
- Manual balancing valve for static hydronic balancing of water volume (for full load)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water volume controlled via room temperature controller
- Automatic isolate if temperature falls below dew point (condensation)
- Automatic isolate if window is open
- Actuator control options: open/close, 3-point, modulating or via bus communication
- Optional function: occupancy switch

Controller

Room temperature controller with:

- Water volume adaptation by means of open/close, 3-point, modulating control (0…10 V) or via bus communication
- Valve isolate if relevant signal given by condensation sensor
- Valve isolate if window open

Optional: integration of an occupancy switch signal

Bill of material

Type	Description	Quantity	Costs
C2..Q..[1)]	2-way zone valve QCV, internal thread, DN .... with adjustable k_v value ....-.... m^3/h	1	
CQ24A-SR[3)]	Rotary actuator for zone valves, 1 Nm, AC/DC 24 V, modulating	1	
ZCQ-W	Optional: housing cover CQ white	1	
ZR23..	Optional: pipe connector for zone valve, DN	2	
ZCQ-E	Optional: spindle extension CQ (for cooling applications)	1	
	Balancing valve DN	1	
	Work service: hydronic balancing	1/2 h	
	Room temperature controller	1	
	Temperature sensor	1	
	Condensation sensor	1	
	Window contact	1	
	Optional sensors: occupancy switch, window contact		

[1)] Also available with external thread (C4..Q..)
[3)] Other actuator variants available: AC/DC 24 V and AC 230 V, fail-safe, communicative actuator (MP-Bus, BACnet, Modbus)

Belimo – features and benefits

Properties	Benefits
Compact overall structure	Ideal room utilisation and high level of freedom in design
Tight-sealing valve	Complete avoidance of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Equal-percentage flow characteristic without input step	Can be controlled perfectly even in the lowest partial load range
Manually adjustable k_v values	High flexibility in planning, installation and during usage phase
Actuator with low power consumption	Energy cost reduction by up to 90% compared to conventional zone valves
5-year guarantee	Long-term safety

1.4 Several fan coils

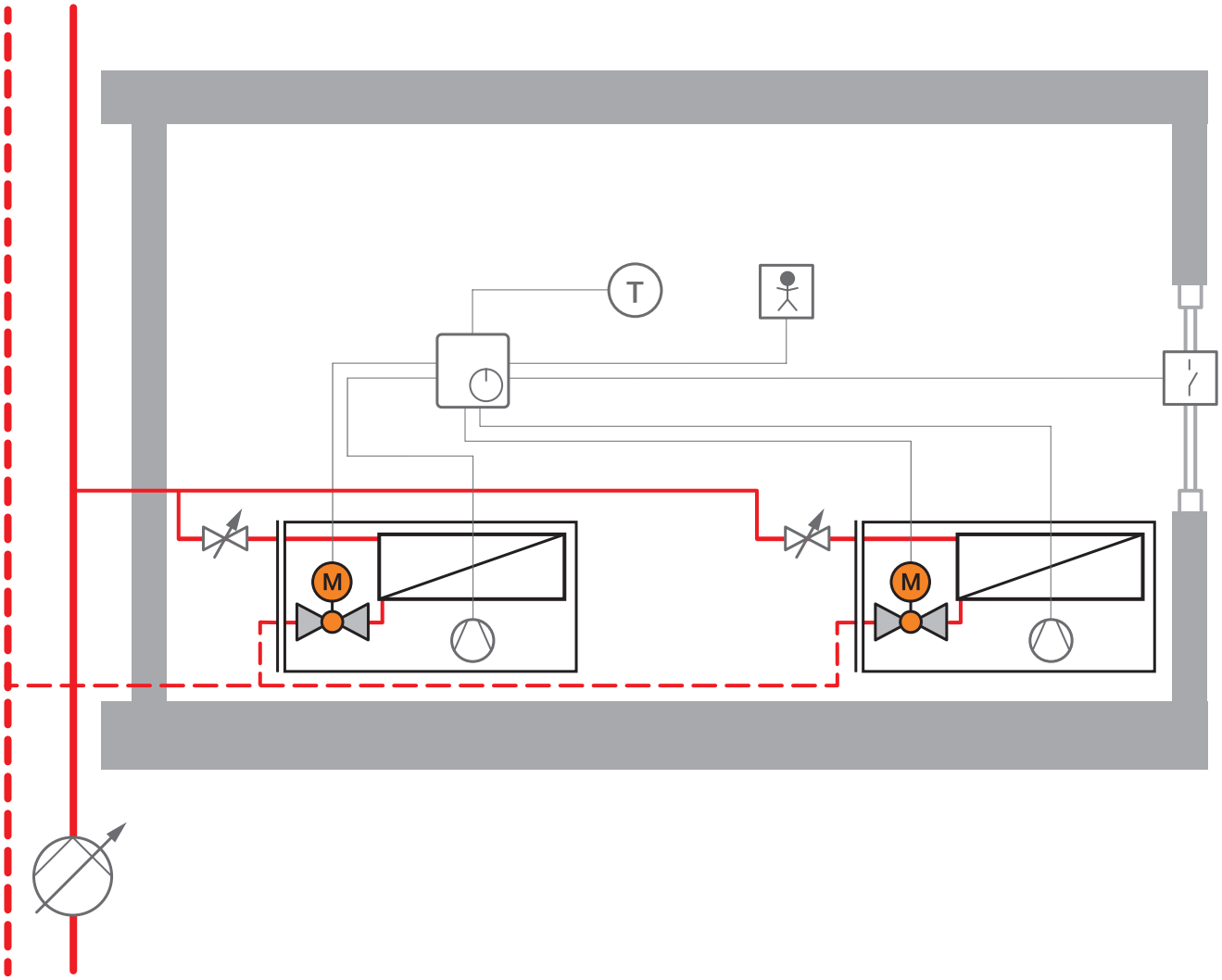


Illustration example

Application description

- Fan coils provide heating energy
- Manual balancing valves for static hydronic balancing of the water volumes (for full load)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water and air volumes controlled via one room temperature controller per zone
- Actuator control options: open/close, 3-point, modulating or via bus communication
- Optional functions: occupancy switch, window contact

Controller

Room temperature controller with:

- Air volumes adaptation (3 speeds with 3 DO or modulating with 1 AO)
- Water volumes adaptation by means of open/close, 3-point, modulating 0…10 V control or via bus communication

Optional: integration of an occupancy switch and/or window contact signal

Bill of material

Type	Description	Quantity	Costs
C2..Q..[1)]	2-way zone valve QCV, internal thread, DN .... with adjustable k_v value ....-.... m^3/h	(*)	
CQ24A-SR[3)]	Rotary actuator for zone valves, 1 Nm, AC/DC 24 V, modulating	(*)	
EXT-OC-ZR-C2..Q	Optional: insulation shell for valve C2..Q, 2-way, DN	(*)	
ZR23..	Optional: pipe connector for zone valve, DN	(*) x 2	
	Balancing valve DN	(*)	
	Work service: hydronic balancing	(*) x 1/2 h	
	Room temperature controller	1	
	Temperature sensor	1	
	Optional sensors: occupancy switch, window contact		

(*) Options for controlling several fan coils via one room temperature controller. The maximum number of controllable devices depends on the room temperature controller
[1)] Also available with external thread (C4..Q..)
[3)] Other actuator variants available: AC/DC 24 V and AC 230 V, fail-safe, communicative actuator (MP-Bus, BACnet, Modbus)

Belimo – features and benefits

Properties	Benefits
Compact overall structure	Ideal room utilisation and high level of freedom in design
Tight-sealing valve	Complete avoidance of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Equal-percentage flow characteristic without input step	Can be controlled perfectly even in the lowest partial load range
Manually adjustable k_v values	High flexibility in planning, installation and during usage phase
Actuator with low power consumption	Energy cost reduction by up to 90% compared to conventional zone valves
5-year guarantee	Long-term safety

Tender Text

C2..Q..

Zone valve (characterised control valve), 2-way with internal thread. For water-side modulating control or shut-off function in air-handling and heating systems. Snap-assembly of the actuator.

Delivery and installation of a tight-sealing 2-way zone valve with equal-percentage characteristic curve and high resistance to contamination.

Construction:	straight-through valve 2-way, DN 15 or DN 20
Connection:	internal thread Rp 1/2" (DN 15) or Rp 3/4" (DN 20) / external thread G 3/4" (DN 15 / DN 20)
k_V value:	max. 4.8 m^3/h, adjustable (DN 15)
k_V value:	max. 8 m^3/h, adjustable (DN 20)
Fluid:	cold and hot water, water with max. 50% volume of glycol

Air-bubble tight, leakage rate A (EN 12266-1)

Characteristic curve:	equal percentage, in the opening range optimised
Fluid temperature:	2...90°C

Permissible operating pressure p_S: 1600 kPa

Close-off pressure dp_S:	520 kPa
Differential pressure dp_{max}:	280 kPa

Housing:	brass body
Closing element:	chrome-plated brass
Spindle:	brass
Stem packing:	o-ring EPDM
Ball seat:	PTFE, o-ring EPDM

Make:	Belimo
Type:	C215Q-F (DN 15)
Type:	C215Q-J (DN 15)
Type:	C220Q-K (DN 20)

Other version available:

– External thread G 3/4" (C4..Q-..)

C2..Q..

CQ24A-SR

Rotary actuator for zone valves. Direct mounting on zone valve by snapping on. Overload protected and without end switch, current reduction in rest position.

Torque:	1 Nm
Nominal voltage:	AC 24 V 50/60 Hz, DC 24 V
Control:	modulating DC 0...10 V
Operating range:	DC 2...10 V
Power consumption:	
- Operation:	0.4 W
- Rest position:	0.3 W
- Rating:	0.9 VA
Connection:	cable 1 m, 4 x 0.34 mm^2
Running time:	75 s / 90°
Protection class:	III protective extra low voltage
Degree of protection:	IP40
EMC:	CE according to 2004/108/EC

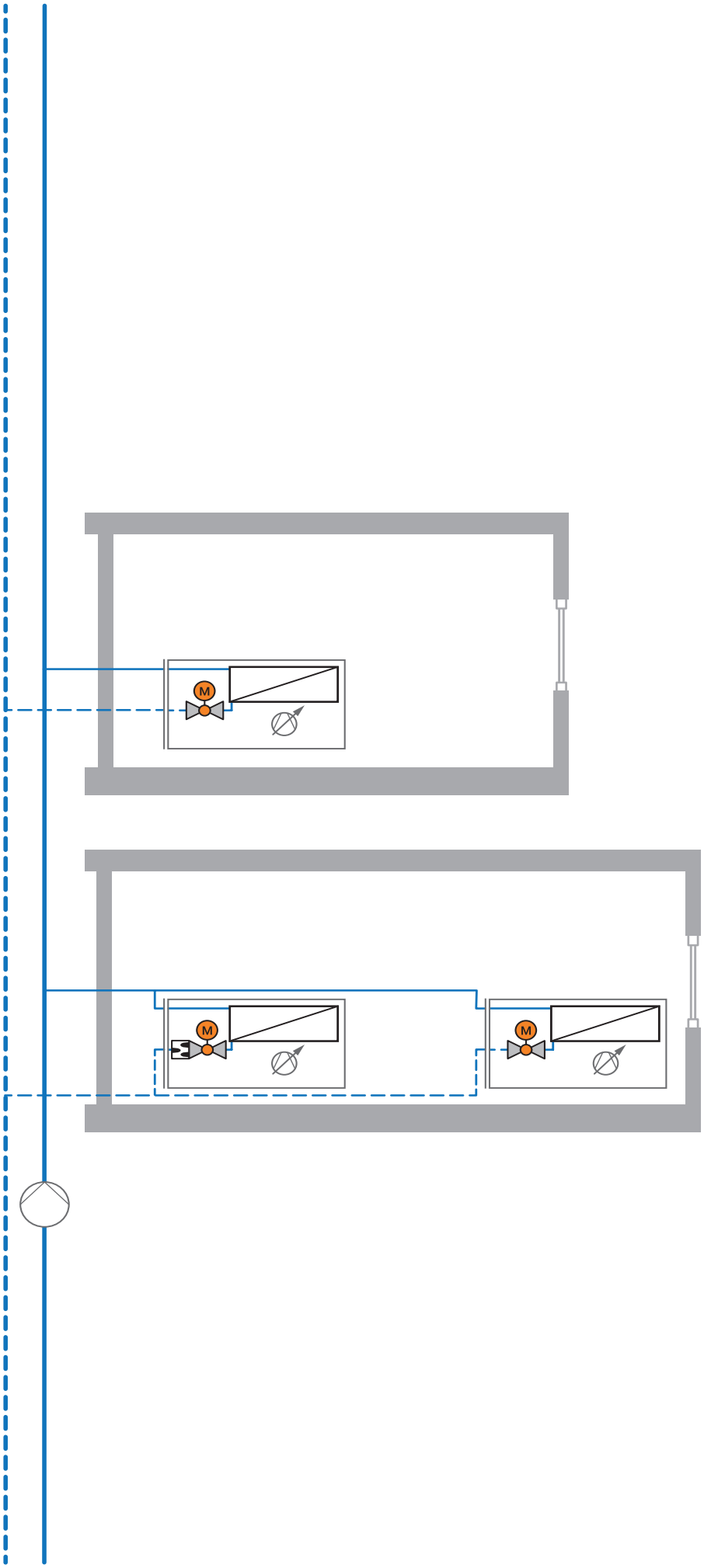
Make:	Belimo
Type:	CQ24A-SR

Other actuator variants:

- AC 230 V
- Modulating DC 0.5...10 V
- Various bus communication protocols
- Fast runners
- Open/close, 3-point
- Fail-safe

Including electrical and mechanical accessories
5-year guarantee

CQ24A-SR


M
M
M

2

Automatically balacing constant-measure 2-pipe system

2.1 Fan coil

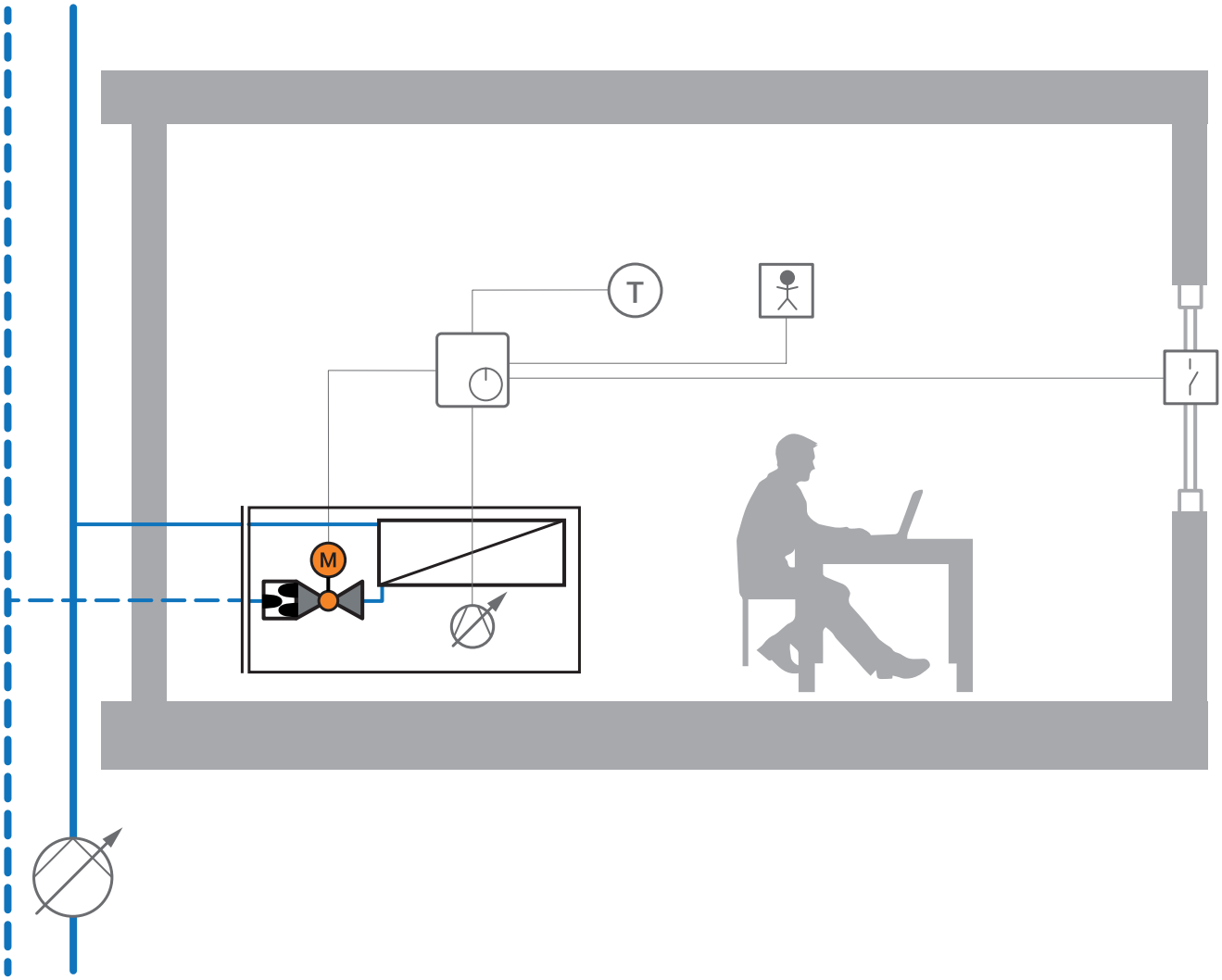


Illustration example

Application description

- Fan coil provides cooling energy
- Pressure-independent zone valve for automatic, permanent hydronic balancing of the constant water volume (for all load states)
- Air volume controlled via room temperature controller
- Actuator control options: open/close or via bus communication (open/close operation only)
- Optional functions: occupancy switch, window contact

Controller

Room temperature controller with:

- Air volume adaptation by means of modulating control or bus communication
- Water volume activation by means of open/close or via bus communication

Optional: integration of an occupancy switch and/or window contact signal

Bill of material

Type	Description	Quantity	Costs
C2..FL-.. R225QFL-..	Pressure-independent 2-way flow limiter valve PIFLV from Belimo, DN .... with constant flow V'$_{nom}$ .... l/h for waterrelated open/close control	1	
CQ24A[3)] LR24A[3)]	Belimo rotary actuator for zone valves, 1 Nm, AC/DC 24 V, open/close rotary actuator for ball valves, 5 Nm, AC/DC 24 V, open/close	1	
ZR23..	Optional: pipe connector for zone valve, DN	2	
	Room temperature controller	1	
	Temperature sensor	1	
	Optional sensors: occupancy switch, window contact		

[3)] Other actuator variants available: AC/DC 24 V and AC 230 V, fail-safe, communicative actuator (MP-Bus, BACnet, Modbus)

Belimo – features and benefits

Properties	Benefits
Pressure-independent	Simple, safe valve design using the nominal flow rate
	Excellent room comfort thanks to constant water volume at all times
Automatic, permanent hydronic balancing	Fast commissioning, no balancing valves required
Compact overall structure	Ideal room utilisation and high level of freedom in design
Tight-sealing valve	Complete prevention of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Actuator with low power consumption	Energy cost reduction by up to 90% compared to conventional zone valves
Constant flow V'$_{nom}$	Simple to plan, install and to use
5-year guarantee	Long-term safety

2.2 Several fan coils

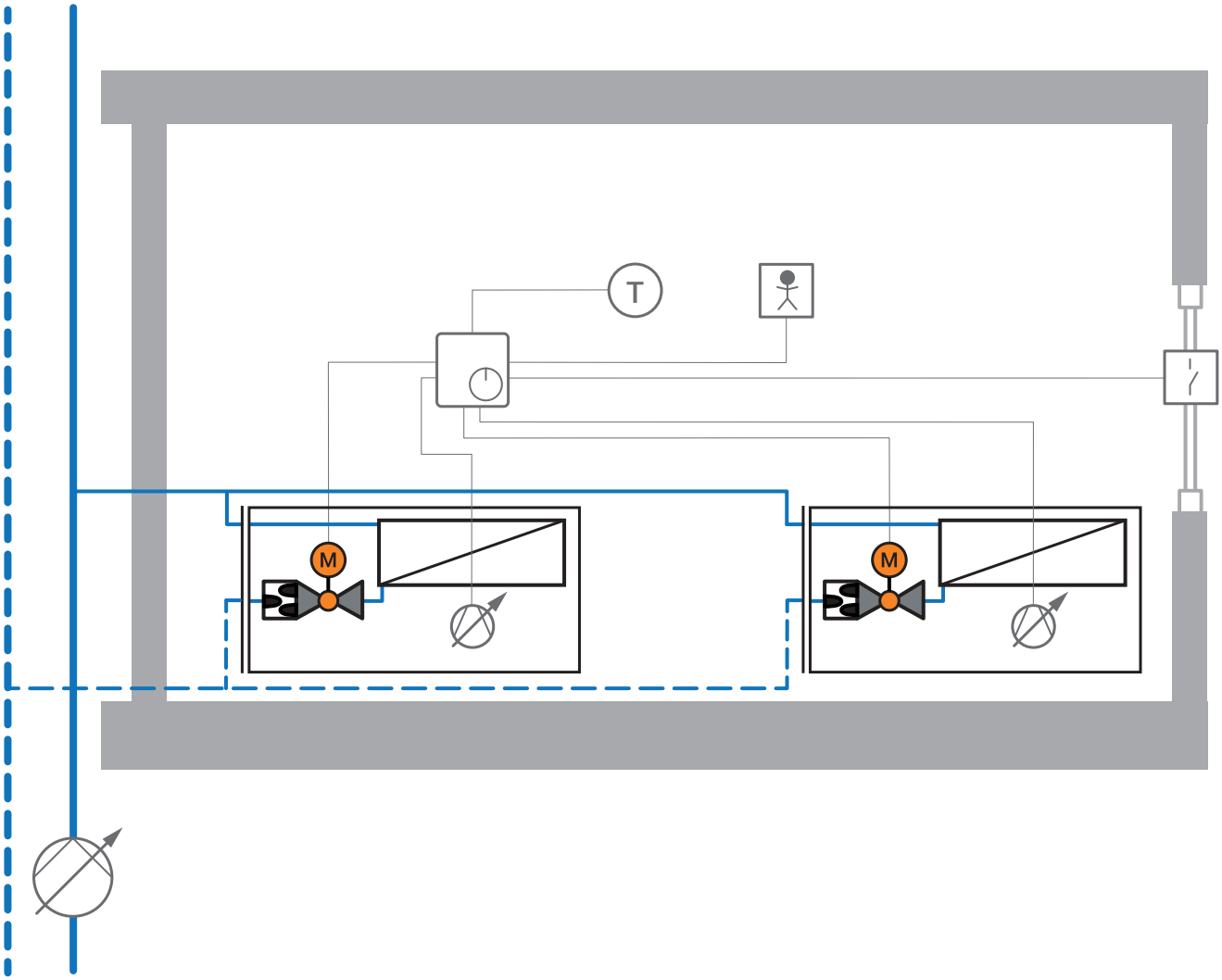


Illustration example

Application description

- Fan coil provides cooling energy
- Pressure-independent zone valve for automatic, permanent hydronic balancing of the constant water volume (for all load states)
- Air volume controlled via room temperature controller
- Actuator control options: open/close or via bus communication (open/close operation only)
- Optional functions: occupancy switch, window contact

Controller

Room temperature controller with:

- Air volume adaptation by means of modulating control or bus communication
- Water volume activation by means of open/close or via bus communication

Optional: integration of an occupancy switch and/or window contact signal

Bill of material

Type	Description	Quantity	Costs
C2..FL-.. R225QFL-J	Pressure-independent 2-way flow limiter valve PIFLV from Belimo, DN .... with constant flow V'$_{nom}$ .... l/h for water-side open/close control	2	
CQ24A[3)] LR24A[3)]	Belimo rotary actuator for zone valves, 1 Nm, AC/DC 24 V, open/close rotary actuator for ball valves, 5 Nm, AC/DC 24 V, open/close	2	
ZR23..	Optional: pipe connector for zone valve, DN	4	
	Room temperature controller	1	
	Temperature sensor	1	
	Optional sensors: occupancy switch, window contact		

[3)] Other actuator variants available: AC/DC 24 V and AC 230 V, fail-safe, communicative actuator (MP-Bus, BACnet, Modbus)

Belimo – features and benefits

Properties	Benefits
Pressure-independent	Simple, safe valve design using the nominal flow rate
	Excellent room comfort thanks to constant water volume at all times
Automatic, permanent hydronic balancing	Fast commissioning, no balancing valves required
Compact overall structure	Ideal room utilisation and high level of freedom in design
Tight-sealing valve	Complete prevention of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Actuator with low power consumption	Energy cost reduction by up to 90% compared to conventional zone valves
Constant flow V'$_{nom}$	Simple to plan, install and to use
5-year guarantee	Long-term safety

Tender Text

C2..FL-..

Pressure-independent zone valve (flow limiter valve), 2-way with internal thread. For water-side open/close control in air treatment and cooling systems. Snap-on actuator mounting, flow limiter valve for constant flow independent of pressure fluctuations.

Delivery and installation of a tight-sealing, pressure-independent 2-way flow limiter valve with automatic hydronic balancing for constant water volume, open/close control and high resistance to contamination.

Construction:	flow limiter valve 2-way, DN 15 to DN 25
Connection:	internal thread Rp 1/2" (DN 15), Rp 3/4" (DN 20) or Rp 1" (DN 25)
Flow V'_{nom}:	200 to 1300 l/h (DN 15)
Flow V'_{nom}:	1200 to 2900 l/h (DN 20)
Flow V'_{nom}:	3600 l/h (DN 25)
Fluid:	cold and hot water, water with max. 50% volume of glycol

Air-bubble tight, leakage rate A (EN 12266-1)

Fluid temperature:	2...60°C

Permissible operating pressure p_S: 1600 kPa

Close-off pressure dp_S:	520 kPa
Differential pressure dp_{max}:	280 kPa

Housing:	brass body (DN15...20), nickel-plated brass body (DN 25)
Closing element:	chrome-plated brass
Spindle:	brass (DN 15...20), nickel-plated brass (DN 25)
Stem packing:	o-ring EPDM
Ball seat:	PTFE, o-ring EPDM

Make:	Belimo	
Type:	C215QFL-..	(DN 15)
Type:	C220QFL-..	(DN 20)
Type:	R225QFL-J	(DN 25)

C2..FL-.. R225FL-J

CQ24A

(CQ24A example for PIFLV up for DN 20)

Rotary actuator for zone valves Direct mounting on zone valve by snapping on. Overload protected and without end switch, current reduction in rest position.

Torque:	1 Nm
Nominal voltage:	AC 24 V 50/60 Hz, DC 24 V
Nominal voltage range:	AC 19.2…28.8 V / DC 21.6…28.8 V
Power consumption:	
- Operation:	0.3 W
- Rest position:	0.2 W
- Rating:	0.6 VA
Connection:	cable 1 m, 3 x 0.75 mm^2
Running time:	75 s / 90°
Protection class:	III protective extra low voltage
Degree of protection:	IP40
EMC:	CE according to 2004/30/EU

Make:	Belimo
Type:	CQ24A

Other actuator variants:

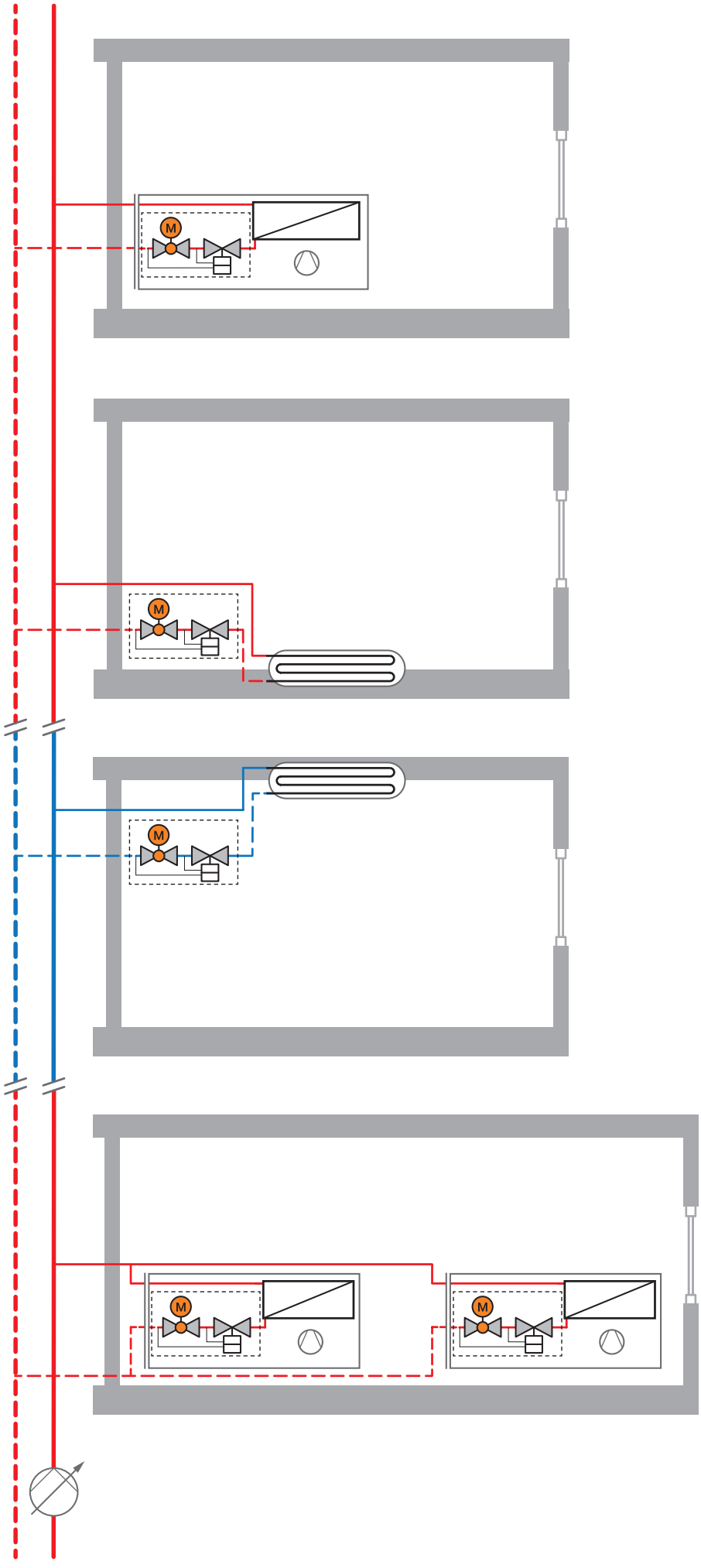
- AC 230 V
- Fast runners
- Various bus communication protocols
- Fail-safe

5 Nm for DN 25:	LR24A

Including electrical and mechanical accessories
5-year guarantee

CQ24A

LR24A


M
M
M
M
M

3

Automatically balancing variable-flow 2-pipe system

3.1 Fan coil

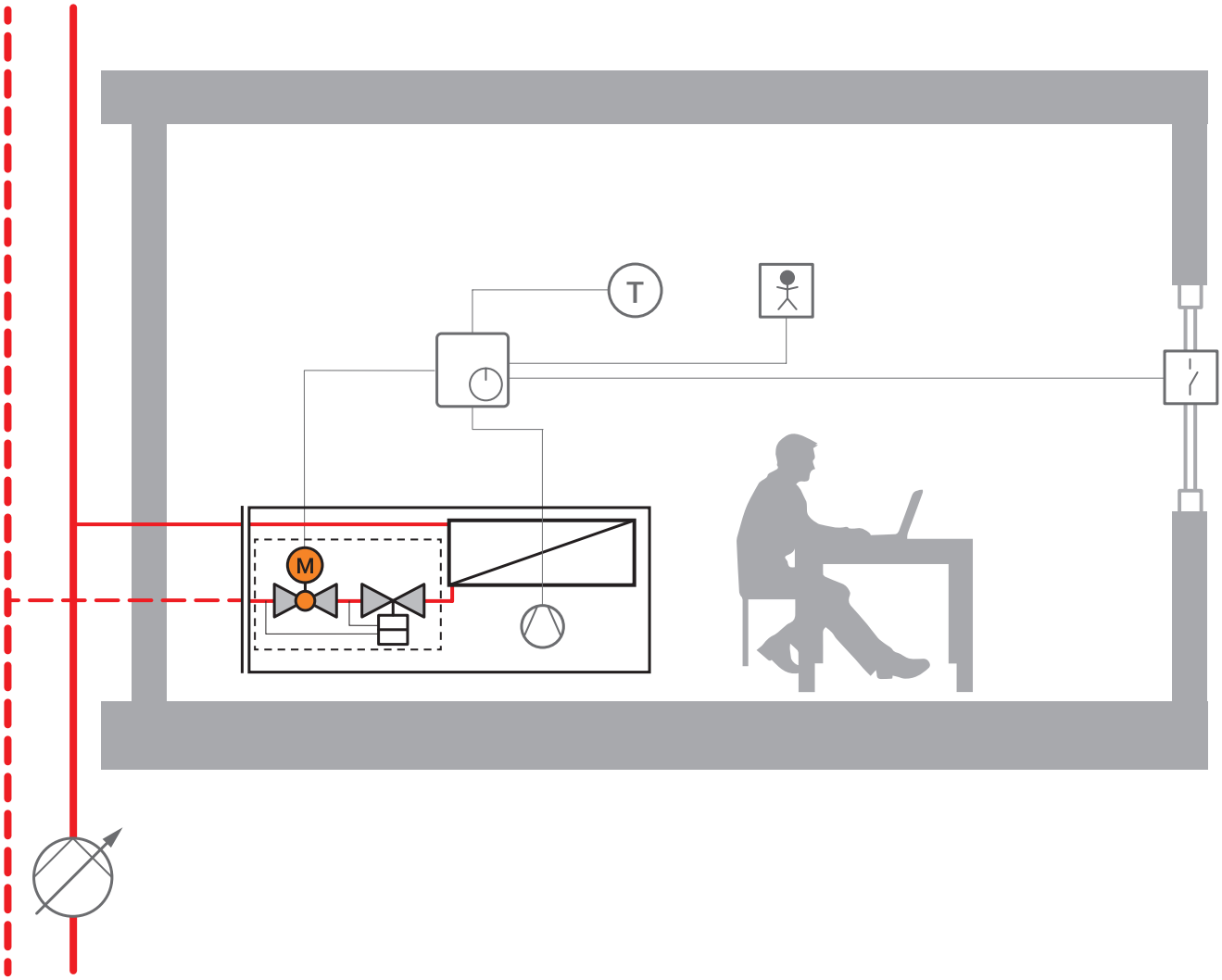


Illustration example

Application description

- Fan coil provides heating energy
- Pressure-independent control valve for automatic, permanent hydronic balancing (for all load states)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water and air volume controlled via room temperature controller
- Actuator control options: open/close, 3-point, modulating or via bus communication
- Optional functions: occupancy switch, window contact

Controller

Room temperature controller with:

- Air volume adaptation (3 speeds with 3 DO or modulating with 1 AO)
- Water volume adaptation by means of open/close, 3-point, modulating control (0…10 V) or via bus communication

Optional: integration of an occupancy switch and/or window contact signal

Bill of material

Type	Description	Quantity	Costs
C2..QP(T)..	Pressure-independent 2-way zone valve PIQCV from Belimo, DN .... with adjustable flow V'_{max} ....-.... l/h	1	
CQ24A-SR[3)]	Rotary actuator for zone valves, 1 Nm, AC/DC 24 V, modulating	1	
EXT-OC-ZQ..-P(T)	Optional: insulation shell for C2..QP(T) valve, 2-way, DN	1	
ZR23..	Optional: pipe connector for zone valve, DN	2	
	Room temperature controller	1	
	Temperature sensor	1	
	Optional sensors: occupancy switch, window contact		

[3)] Other actuator variants available: AC/DC 24 V and AC 230 V, fail-safe, communicative actuator (MP-Bus, BACnet, Modbus)

Belimo – features and benefits

Properties	Benefits
Pressure-independent	Simple, safe valve design using the maximum flow rate, no k_v value calculation required
	Excellent room comfort thanks to correct water volume at all times
Automatic, permanent hydronic balancing	Fast commissioning, no balancing valves required
Compact overall structure	Ideal room utilisation and high level of freedom in design
Tight-sealing valve	Complete prevention of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Equal-percentage flow characteristic without input step	Can be controlled perfectly even in the lowest partial load range
Variable setting option V'_{max}	Maximum flexibility in planning, installation and during usage phase
Actuator with low power consumption	Energy cost reduction by up to 90% compared to conventional zone valves
5-year guarantee	Long-term safety

3.2 Floor heating / radiator

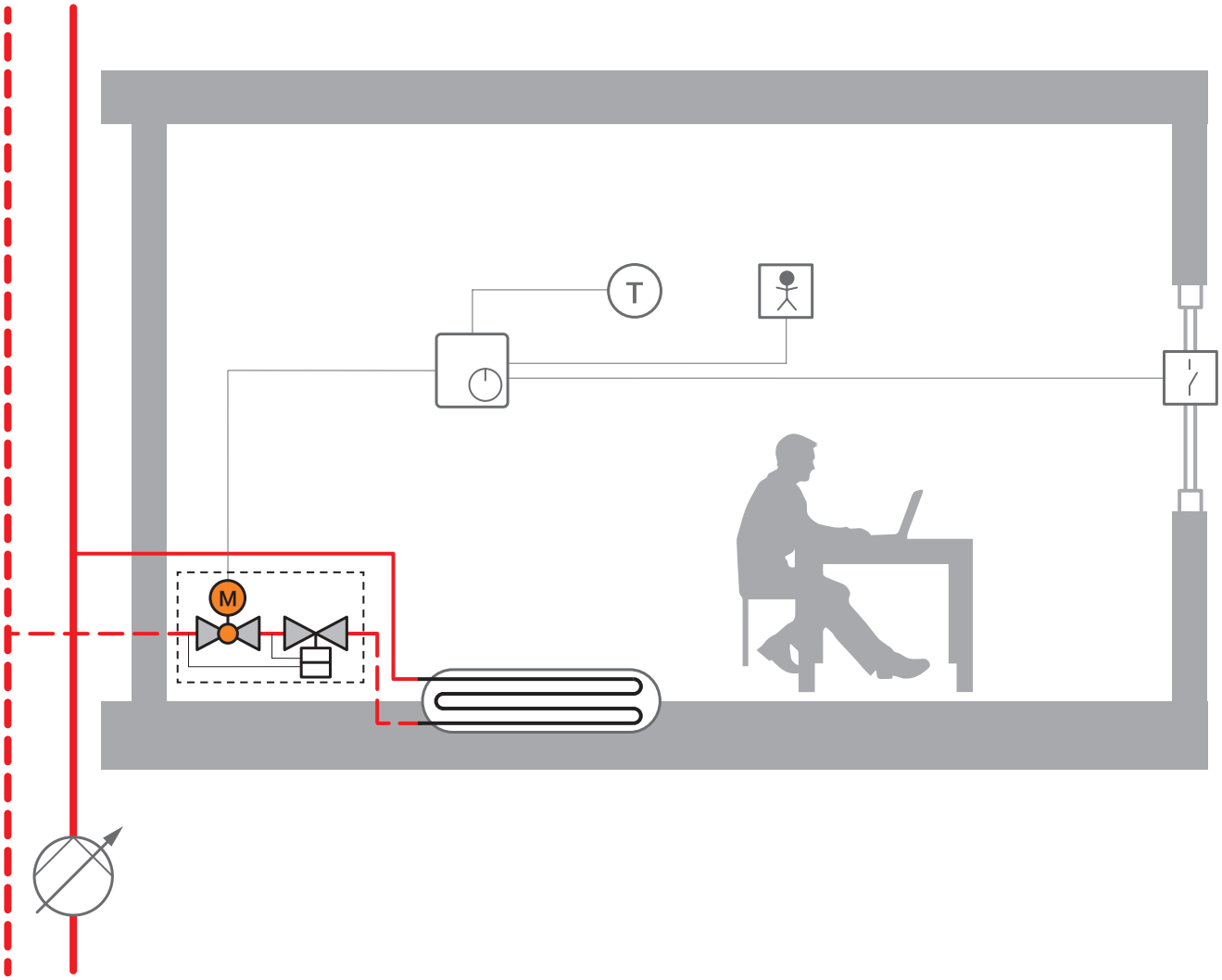


Illustration example

Application description

- Provision of heating energy by means of a heating element mounted on the floor or on the wall
- Pressure-independent control valve for automatic, permanent hydronic balancing (for all load states)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water volume controlled via room temperature controller
- Actuator control options: open/close, 3-point, modulating or via bus communication
- Optional functions: occupancy switch, window contact

Controller

Room temperature controller with:

- Water volume adaptation by means of open/close, 3-point, modulating control (0…10 V) or via bus communication

Optional: integration of an occupancy switch and/or window contact signal

Bill of material

Type	Description	Quantity	Costs
C2..QP(T)..	Pressure-independent 2-way zone valve PIQCV from Belimo, DN .... with adjustable flow V'_{max} ....-.... l/h	1	
CQ24A-SR[3)]	Rotary actuator for zone valves, 1 Nm, AC/DC 24 V, modulating	1	
EXT-OC-ZQ..-P(T)	Optional: insulation shell for C2..QP(T) valve, 2-way, DN	1	
ZR23..	Optional: pipe connector for zone valve, DN	2	
	Room temperature controller	1	
	Temperature sensor	1	
	Optional sensors: occupancy switch, window contact		

[3)] Other actuator variants available: AC/DC 24 V and AC 230 V, fail-safe, communicative actuator (MP-Bus, BACnet, Modbus)

Belimo – features and benefits

Properties	Benefits
Pressure-independent	Simple, safe valve design using the maximum flow rate, no k_v value calculation required
	Excellent room comfort thanks to correct water volume at all times
Automatic, permanent hydronic balancing	Fast commissioning, no balancing valves required
Compact overall structure	Ideal room utilisation and high level of freedom in design
Tight-sealing valve	Complete prevention of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Equal-percentage flow characteristic without input step	Can be controlled perfectly even in the lowest partial load range
Variable setting option V'_{max}	Maximum flexibility in planning, installation and during usage phase
Actuator with low power consumption	Energy cost reduction by up to 90% compared to conventional zone valves
5-year guarantee	Long-term safety

3.3 Chilled ceiling

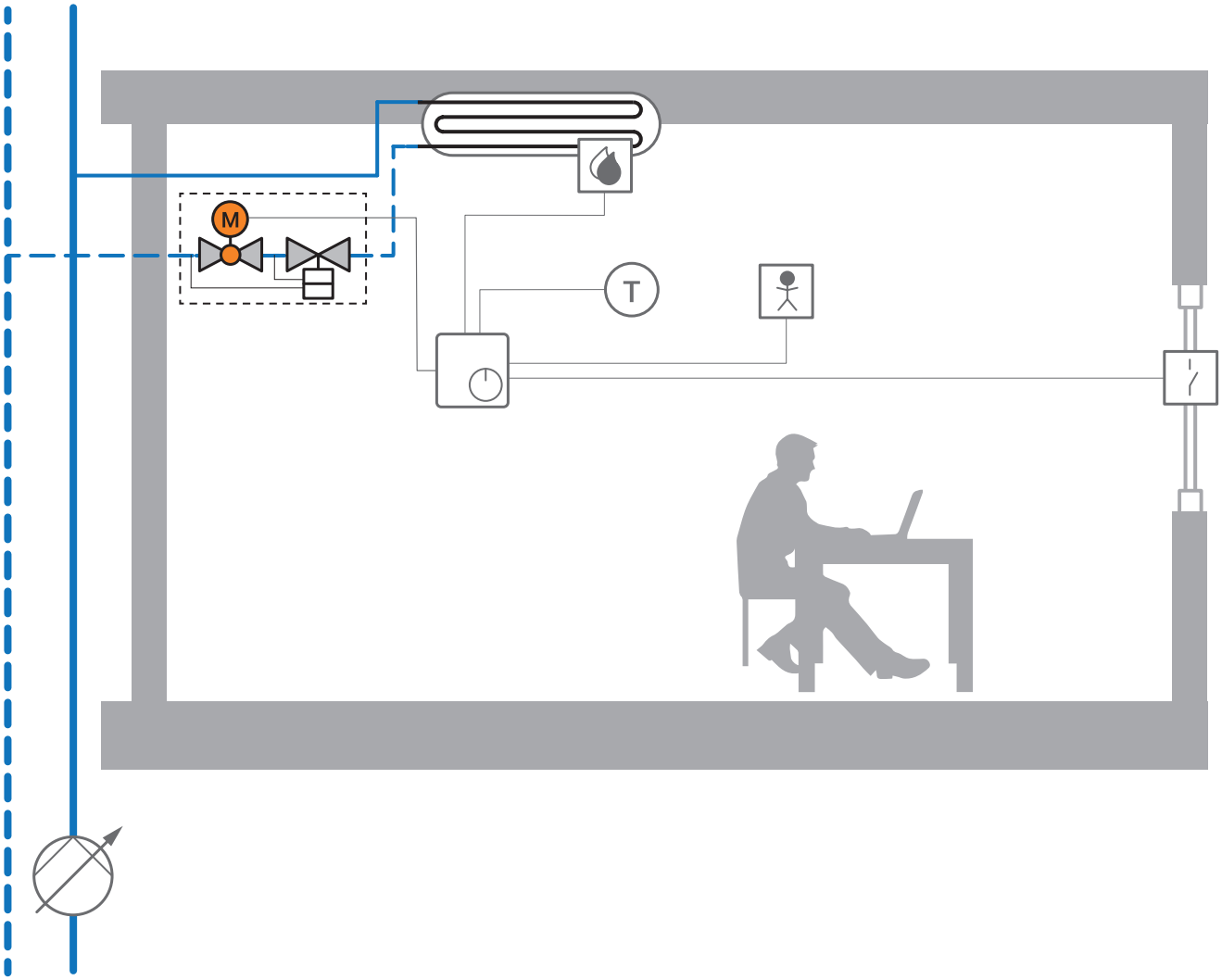


Illustration example

Application description

- Provision of cooling energy by means of a chilled ceiling (additional heating option with central heating/cooling changeover switch)
- Pressure-independent control valve for automatic, permanent hydronic balancing (for all load states)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water volume controlled via room temperature controller
- Automatic isolate if temperature falls below dew point (condensation)
- Automatic isolate if window is open
- Actuator control options: open/close, 3-point, modulating or via bus communication
- Optional function: occupancy switch

Controller

Room temperature controller with:

- Water volume adaptation by means of open/close, 3-point, modulating control (0…10 V) or via bus communication
- Valve isolate if relevant signal given by condensation sensor
- Valve isolate if window open

Optional: integration of an occupancy switch signal

Bill of material

Type	Description	Quantity	Costs
C2..QP(T)..	Pressure-independent 2-way zone valve PIQCV from Belimo, DN .... with adjustable flow V'_{max} ....-.... l/h	1	
CQ24A-SR[3)]	Rotary actuator for zone valves, 1 Nm, AC/DC 24 V, modulating	1	
ZCQ-W	Optional: housing cover CQ white	1	
ZR23..	Optional: pipe connector for zone valve, DN	2	
ZCQ-E	Optional: spindle extension CQ (for cooling applications)	1	
	Room temperature controller	1	
	Temperature sensor	1	
	Condensation sensor	1	
	Window contact	1	
	Optional sensors: occupancy switch, window contact		

[3)] Other actuator variants available: AC/DC 24 V and AC 230 V, fail-safe, communicative actuator (MP-Bus, BACnet, Modbus)

Belimo – features and benefits

Properties	Benefits
Pressure-independent	Simple, safe valve design using the maximum flow rate, no k_v value calculation required
	Excellent room comfort thanks to correct water volume at all times
Automatic, permanent hydronic balancing	Fast commissioning, no balancing valves required
Compact overall structure	Ideal room utilisation and high level of freedom in design
Tight-sealing valve	Complete prevention of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Equal-percentage flow characteristic without input step	Can be controlled perfectly even in the lowest partial load range
Variable setting option V'_{max}	Maximum flexibility in planning, installation and during usage phase
Actuator with low power consumption	Energy cost reduction by up to 90% compared to conventional zone valves
5-year guarantee	Long-term safety

3.4 Several fan coils

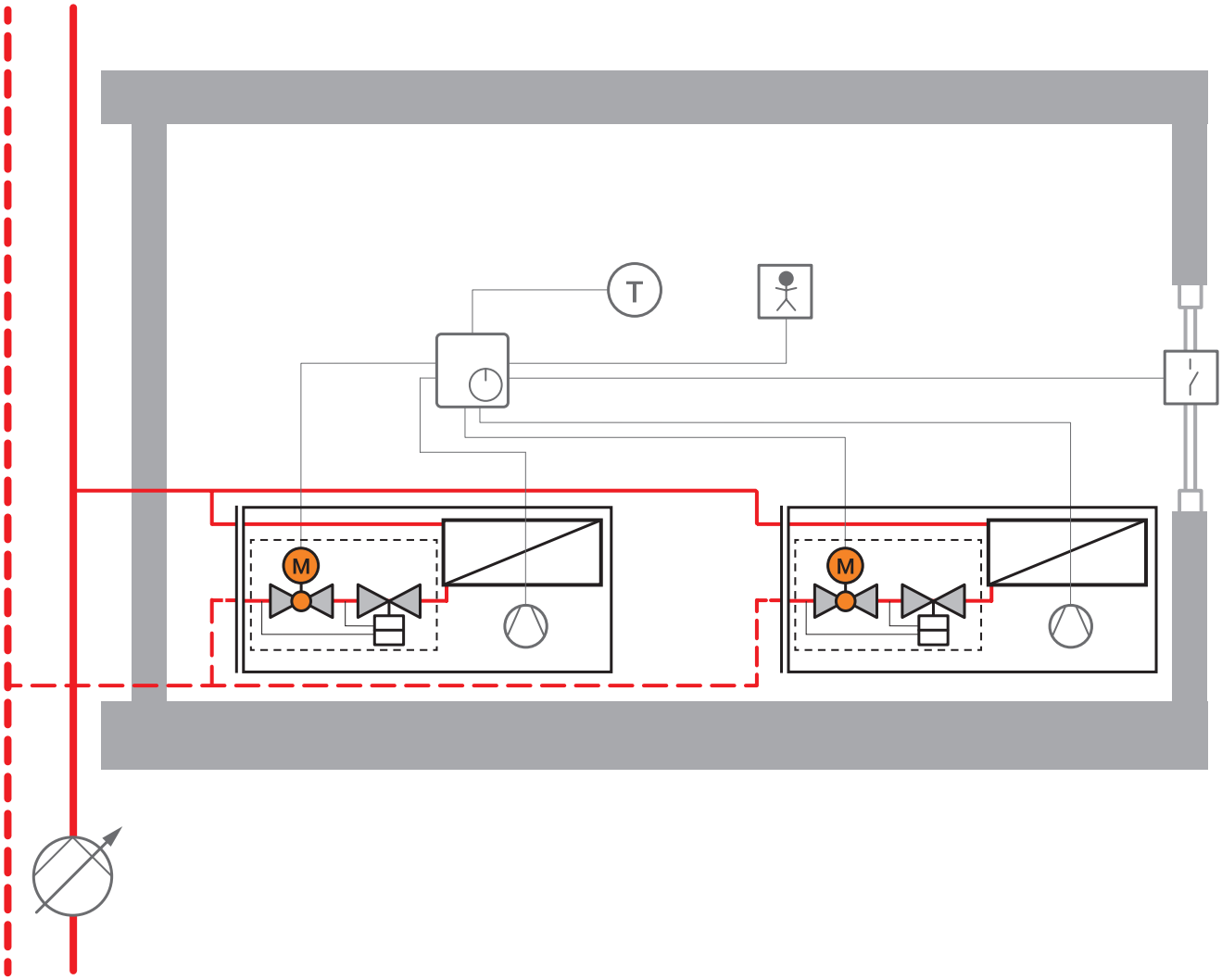


Illustration example

Application description

- Fan coils provide heating energy
- Pressure-independent control valves for automatic, permanent hydronic balancing (for all load states)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water and air volumes controlled via one room temperature controller per zone
- Actuator control options: open/close, 3-point, modulating or via bus communication
- Optional functions: occupancy switch, window contact

Controller

Room temperature controller with:

- Air volumes adaptation (3 speeds with 3 DO or modulating with 1 AO)
- Water volumes adaptation by means of open/close, 3-point, modulating 0…10 V control or via bus communication

Optional: integration of an occupancy switch and/or window contact signal

Bill of material

Type	Description	Quantity	Costs
C2..Q(T)-..	Pressure-independent 2-way zone valve PIQCV from Belimo, DN .... with adjustable flow V'_{max} ....-.... l/h	(*)	
CQ24A-SR[3)]	Rotary actuator for zone valves, 1 Nm, AC/DC 24 V, modulating	(*)	
EXT-OC-ZQ..-P(T)	Optional: insulation shell for C2..QP(T) valve, 2-way, DN	(*)	
ZR23..	Optional: pipe connector for zone valve, DN	(*) x 2	
ZCQ-E	Optional: spindle extension CQ (for cooling applications)	1	
	Room temperature controller	1	
	Temperature sensor	1	
	Optional sensors: occupancy switch, window contact		

(*) Options for controlling several fan coils via one room temperature controller. The maximum number of controllable devices depends on the room temperature controller

[3)] Other actuator variants available: AC/DC 24 V and AC 230 V, fail-safe, communicative actuator (MP-Bus, BACnet, Modbus)

Belimo – features and benefits

Properties	Benefits
Pressure-independent	Simple, safe valve design using the maximum flow rate, no k_v value calculation required
	Excellent room comfort thanks to correct water volume at all times
Automatic, permanent hydronic balancing	Fast commissioning, no balancing valves required
Compact overall structure	Ideal room utilisation and high level of freedom in design
Tight-sealing valve	Complete prevention of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Equal-percentage flow characteristic without input step	Can be controlled perfectly even in the lowest partial load range
Variable setting option V'_{max}	Maximum flexibility in planning, installation and during usage phase
Actuator with low power consumption	Energy cost reduction by up to 90% compared to conventional zone valves
5-year guarantee	Long-term safety

Tender Text

C2..QP(T)-..

Pressure-independent zone valve (characterised control valve), 2-way with internal thread. For water-side modulating control in air-handling and heating systems. Snap assembly of the actuator, pressure reducing valve for constant flow independent of pressure fluctuations. With measurement connections for checking the differential pressure (if provided).

Delivery and installation of a tight-sealing, pressure-independent 2-way valve with automatic hydronic balancing, equal-percentage characteristic curve and high resistance to contamination.

Construction:	straight-through valve 2-way, DN 15, DN 20 or DN 25
Connection:	internal thread Rp 1/2" (DN 15), Rp 3/4" (DN 20) or Rp 1" (DN 25)
Flow V'_{max}:	max. 210 l/h, adjustable [C215QP(T)-B]
Flow V'_{max}:	max. 420 l/h, adjustable [C215QP(T)-D]
Flow V'_{max}:	max. 980 l/h, adjustable [C220QP(T)-F]
Flow V'_{max}:	max. 2100 l/h, adjustable [C225QPT-G]
Fluid:	cold and hot water, water with max. 50% volume of glycol

Air-bubble tight, leakage rate A (EN 12266-1)

Characteristic curve:	equal percentage (VDI/VDE 2178), optimised in the opening range

Fluid temperature: 2...90°C

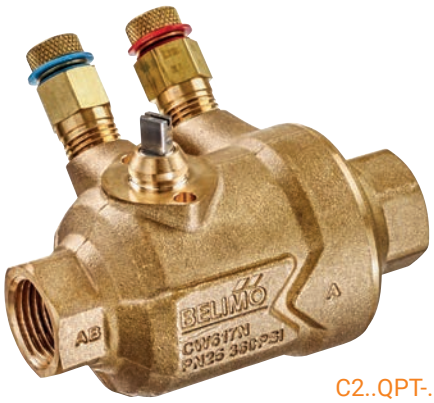
Permissible operating pressure p_S: 1600 kPa

Close-off pressure dp_S:	1400 kPa
Differential pressure:	16...350 kPa

Housing:	brass body
Closing element:	stainless steel
Spindle:	stainless steel
Stem packing:	o-ring EPDM
Ball seat:	PTFE, o-ring EPDM
Diaphragm:	EPDM

Make:	Belimo
Type:	C215QP(T)-B (DN 15, 210 l/h)
Type:	C215QP(T)-D (DN 15, 420 l/h)
Type:	C220QP(T)-F (DN 20, 980 l/h)
Type:	C225QPT-G (DN 25, 2100 l/h)

(T) = version with measurement connector



C2..QPT-..

CQ24A-SR

Rotary actuator for zone valves. Direct mounting on zone valve by snapping on. Overload protected and without end switch, current reduction in rest position.

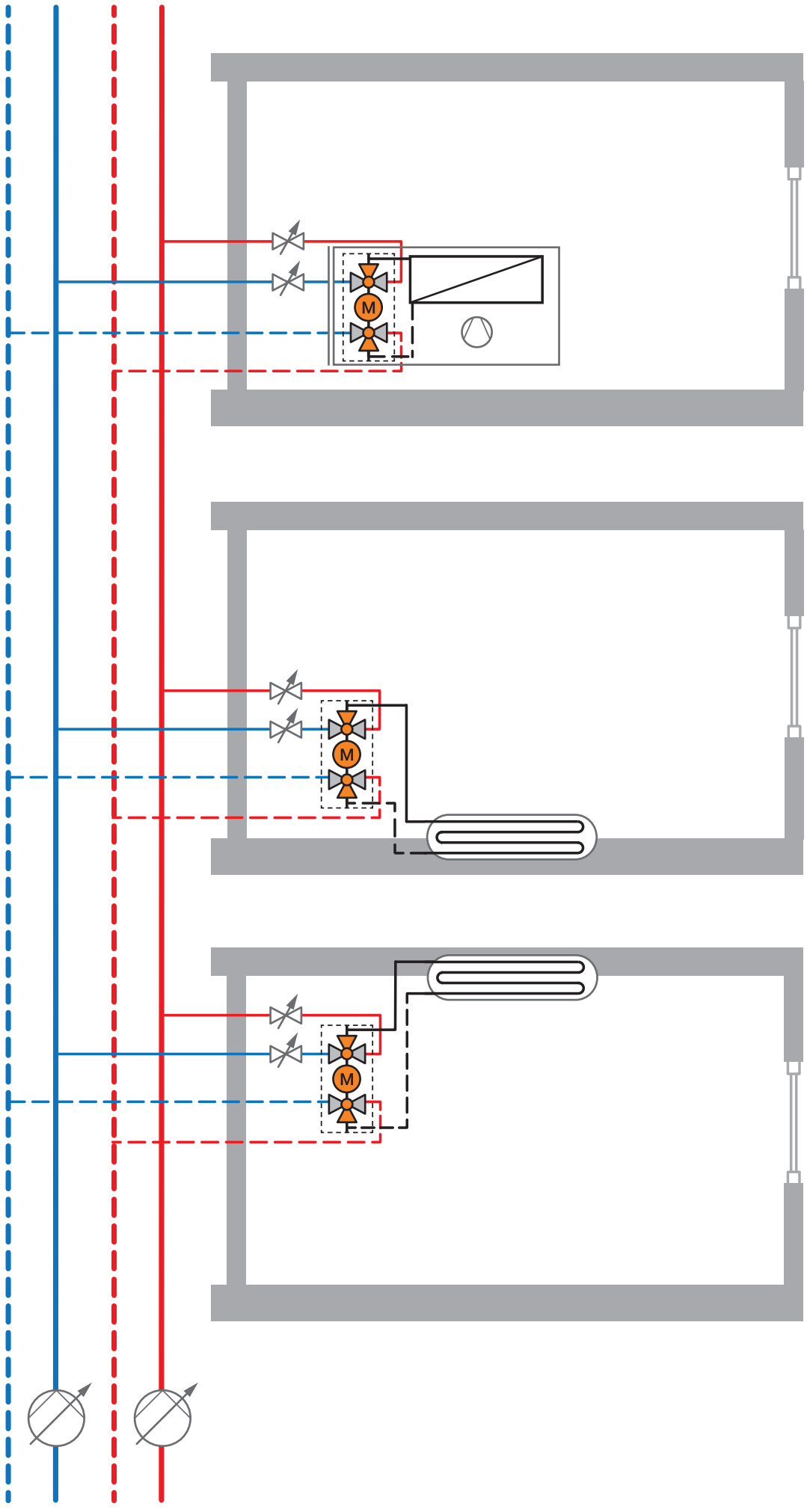
Torque:	1 Nm
Nominal voltage:	AC 24 V 50/60 Hz, DC 24 V
Control:	modulating DC 0...10 V
Operating range:	DC 2...10 V
Power consumption:	
- Operation:	0.4 W
- Rest position:	0.3 W
- Rating:	0.9 VA
Connection:	cable 1 m, 4 x 0.34 mm^2
Running time:	75 s / 90°
Protection class:	III protective extra low voltage
Degree of protection:	IP40
EMC:	CE according to 2004/108/EC

Make:	Belimo
Type:	CQ24A-SR

Other actuator variants:
- AC 230 V
- Modulating (0.5...10 V)
- Various bus communication protocols
- Fast runners
- Open/close, 3-point
- Fail-safe

Including electrical and mechanical accessories
5-year guarantee

CQ24A-SR


M
M
M

4

Variable-flow 4-pipe system

4.1 Fan coil

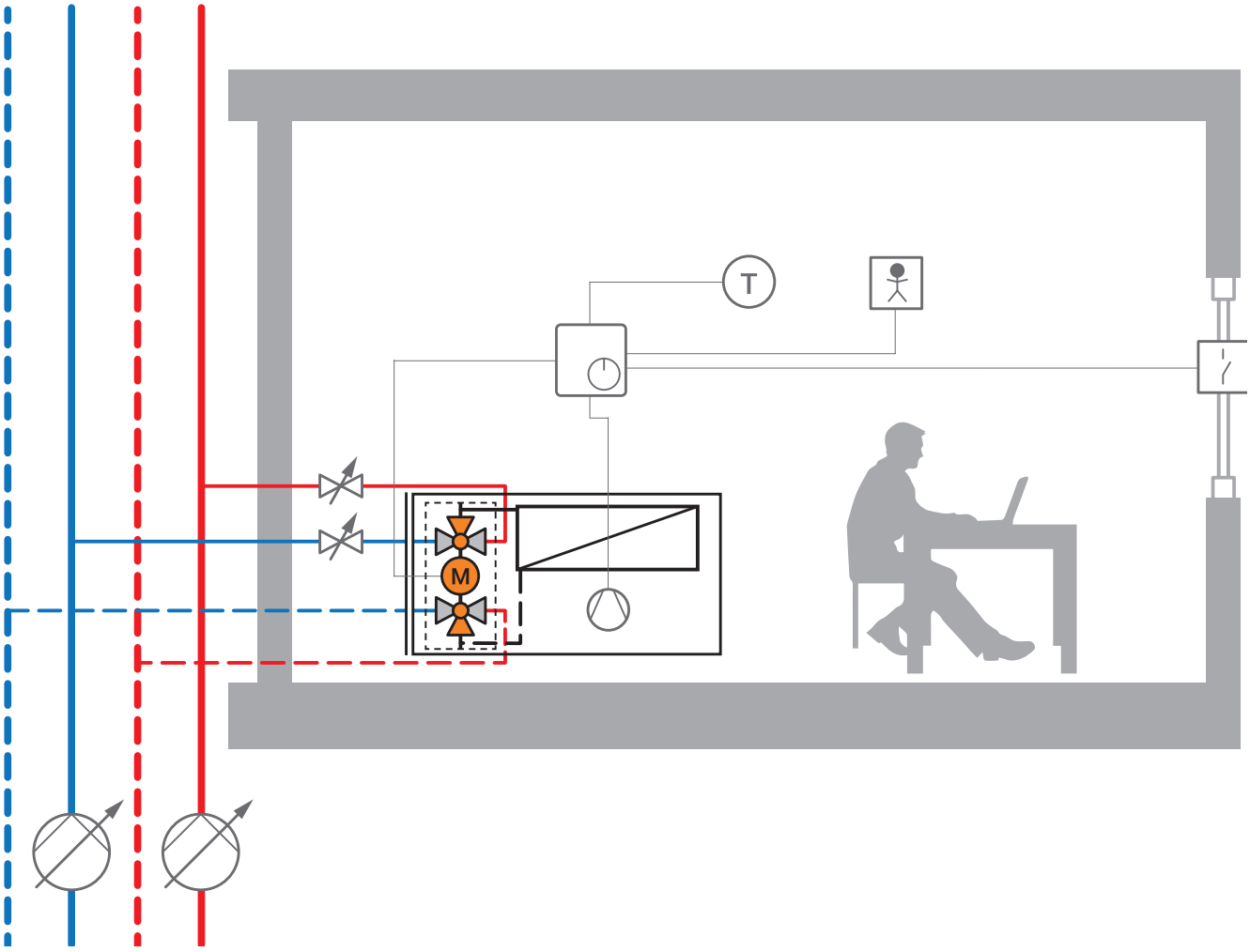


Illustration example

Application description

- Fan coil (with a heat exchanger) provides heating and cooling energy
- 4-pipe system ensures immediate availability of hot and cold water
- 4-pipe system enables cooling of certain rooms while others are being heated
- Manual balancing valve for static hydronic balancing of water volume (for full load)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water and air volume controlled via room temperature controller
- Actuator control options: modulating or via bus communication
- Optional functions: occupancy switch, window contact

Controller

Room temperature controller with:

- Air volume adaptation (3 speeds with 3 DO or modulating with 1 AO)
- Water volume adaptation by means of modulating 0…10 V control or via bus communication

Optional: integration of an occupancy switch and/or window contact signal

Bill of material

Type	Description	Quantity	Costs
R30..-..-..-B..	6-way zone valve from Belimo, DN .., $k_{vs}1$ ... m^3/h, $k_{vs}2$ ... m^3/h	1	
CQ24A-SR[3], LR24A-SR[3], NR24A-SR[3]	Rotary actuator 1 Nm, 24 V, modulating control for DN 15 Rotary actuator 5 Nm, 24 V, modulating control for DN 15 + DN 20 Rotary actuator 10 Nm, 24 V, modulating control for DN 25	1	
EXT-OC-ZR30..	Optional: insulation shell for 6-way valve, DN	1	
ZR23..	Optional: pipe connector for zone valve, DN	6	
ZR-004 ZR-005	Optional: fastening angle for 6-way valve DN 15 + DN 20 Optional: fastening angle for 6-way valve DN 25	1	
	Balancing valve DN	2	
	Work service: hydronic balancing	1 h	
CRK24-B1	Room temperature controller for 6-way zone valve	1	
	Temperature sensor	1	
	Optional sensors: occupancy switch, window contact		

[3] Other actuator variants available: AC/DC 24 V and AC 230 V, fail-safe, communicative actuator (MP-Bus, BACnet, Modbus)

Belimo – features and benefits

Properties	Benefits
Tight-sealing valve	Complete prevention of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Assumes the function of up to four straight-through valves	Reduces planning work, lowers installation and operating costs Eliminates installation errors Only requires one control sequence
Integrated pressure release function	Maximum plant safety
Different k_{vs} values for sequences 1 and 2	Enables optimum design of the cooling and heating sequence
5-year guarantee	Long-term safety

4.2 Floor heating (with cooling)

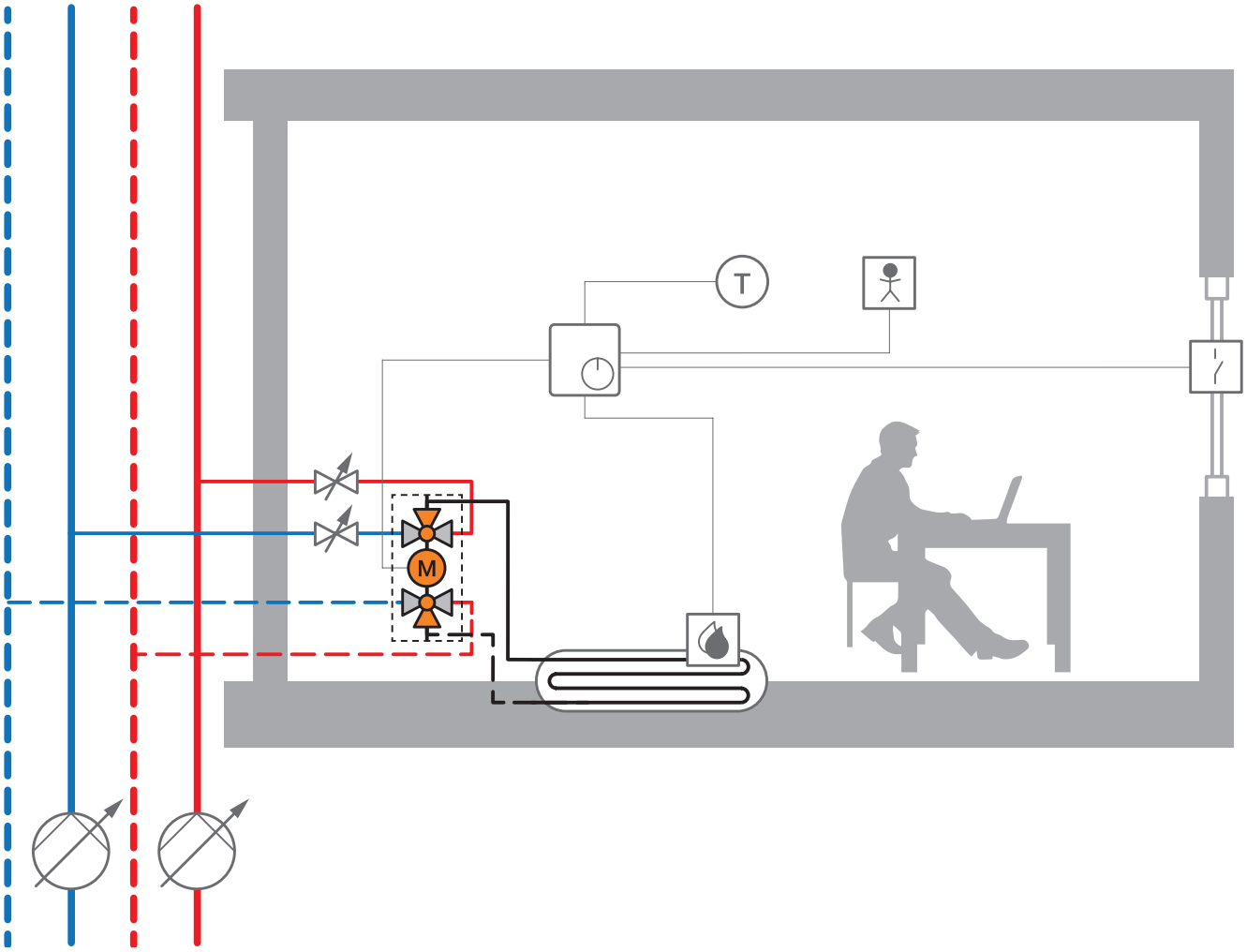


Illustration example

Application description

- Provision of heating energy by means of a heating element mounted on the floor or on the wall
- 4-pipe system ensures immediate availability of hot and cold water
- 4-pipe system enables cooling of certain rooms while others are being heated
- Manual balancing valve for static hydronic balancing of water volume (for full load)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water volume controlled via room temperature controller
- Automatic isolate if temperature falls below dew point (condensation)
- Automatic isolate if window is open
- Actuator control options: modulating or via bus communication
- Optional functions: occupancy switch

Controller

Room temperature controller with:

- Water volume adaptation by means of modulating 0…10 V control or via bus communication
- Valve isolate if relevant signal given by condensation sensor
- Valve isolate if window open

Optional: integration of an occupancy switch signal

Bill of material

Type	Description	Quantity	Costs
R30..-..-..-B..	6-way zone valve from Belimo, DN .., $k_{vs}1$ ... m^3/h, $k_{vs}2$ ... m^3/h	1	
CQ24A-SR[3], LR24A-SR[3], NR24A-SR[3]	Rotary actuator 1 Nm, 24 V, modulating control for DN 15 Rotary actuator 5 Nm, 24 V, modulating control for DN 15 + DN 20 Rotary actuator 10 Nm, 24 V, modulating control for DN 25	1	
EXT-OC-ZR30..	Optional: insulation shell for 6-way valve, DN	1	
ZR23..	Optional: pipe connector for zone valve, DN	6	
ZR-004 ZR-005	Optional: fastening angle for 6-way valve DN 15 + DN 20 Optional: fastening angle for 6-way valve DN 25	1	
	Balancing valve DN	2	
	Work service: hydronic balancing	1 h	
CRK24-B1	Room temperature controller for 6-way zone valve	1	
	Temperature sensor	1	
	Optional sensors: occupancy switch, window contact		

[3] Other actuator variants available: AC/DC 24 V and AC 230 V, fail-safe, communicative actuator (MP-Bus, BACnet, Modbus)

Belimo – features and benefits

Properties	Benefits
Tight-sealing valve	Complete prevention of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Assumes the function of up to four straight-through valves	Reduces planning work, lowers installation and operating costs Eliminates installation errors Only requires one control sequence
Integrated pressure release function	Maximum plant safety
Different k_{vs} values for sequences 1 and 2	Enables optimum design of the cooling and heating sequence
5-year guarantee	Long-term safety

4.3 Chilled and heating ceiling

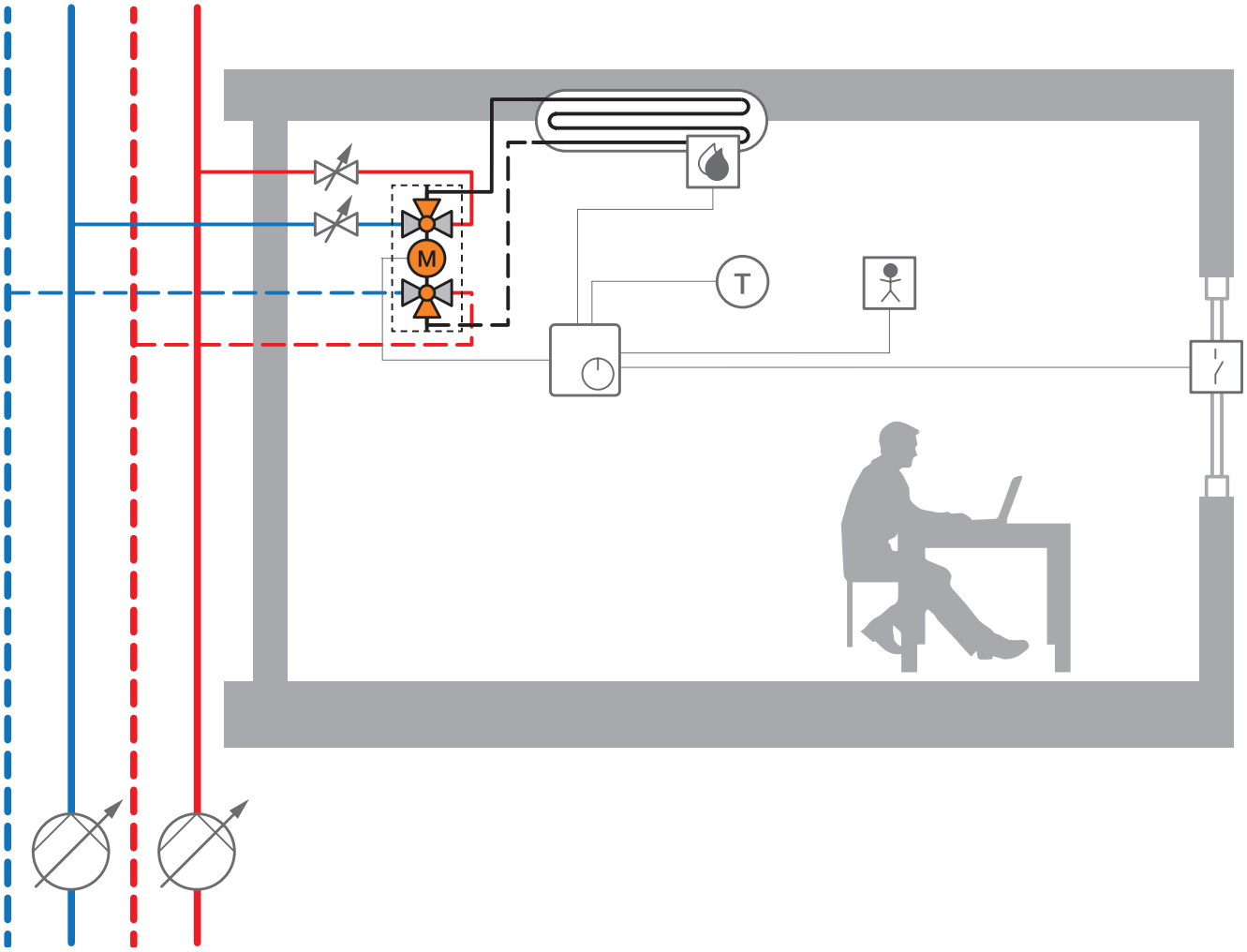


Illustration example

Application description

- Provision of heating energy by means of a combined chilled and heating ceiling
- 4-pipe system ensures immediate availability of hot and cold water
- 4-pipe system enables cooling of certain rooms while others are being heated
- Manual balancing valve for static hydronic balancing of water volume (for full load)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water volume controlled via room temperature controller
- Automatic isolate if temperature falls below dew point (condensation)
- Automatic isolate if window is open
- Actuator control options: modulating or via bus communication
- Optional functions: occupancy switch

Controller

Room temperature controller with:

- Water volume adaptation by means of modulating 0…10 V control or via bus communication
- Valve isolate if relevant signal given by condensation sensor
- Valve isolate if window open

Optional: integration of an occupancy switch signal

Bill of material

Type	Description	Quantity	Costs
R30..-..-..-B..	6-way zone valve from Belimo, DN .., $k_{vs}1$ ... m^3/h, $k_{vs}2$ ... m^3/h	1	
CQ24A-SR[3], LR24A-SR[3], NR24A-SR[3]	Rotary actuator 1 Nm, 24 V, modulating control for DN 15 Rotary actuator 5 Nm, 24 V, modulating control for DN 15 + DN 20 Rotary actuator 10 Nm, 24 V, modulating control for DN 25	1	
EXT-OC-ZR30..	Optional: insulation shell for 6-way valve, DN	1	
ZR23..	Optional: pipe connector for zone valve, DN	6	
ZR-004 ZR-005	Optional: fastening angle for 6-way valve DN 15 + DN 20 Optional: fastening angle for 6-way valve DN 25	1	
	Balancing valve DN	2	
	Work service: hydronic balancing	1 h	
CRK24-B1	Room temperature controller for 6-way zone valve	1	
	Temperature sensor	1	
	Optional sensors: occupancy switch, window contact		

[3] Other actuator variants available: AC/DC 24 V and AC 230 V, fail-safe, communicative actuator (MP-Bus, BACnet, Modbus)

Belimo – features and benefits

Properties	Benefits
Tight-sealing valve	Complete prevention of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Assumes the function of up to four straight-through valves	Reduces planning work, lowers installation and operating costs Eliminates installation errors Only requires one control sequence
Integrated pressure release function	Maximum plant safety
Different k_{vs} values for sequences 1 and 2	Enables optimum design of the cooling and heating sequence
5-year guarantee	Long-term safety

Tender Text

R30..-..-..-B..

Zone valve (characterised control valve), 6-way with internal thread. For water-side changeover or modulating control of thermal heating/cooling elements, with integrated pressure release function.

Delivery and installation of a tight-sealing 6-way valve with two control sequences (heating/cooling) and a high resistance to contamination.

Construction:	6-way valve, DN 15, DN 20 or DN 25
Connection:	internal thread Rp 1/2" (DN 15), Rp 3/4" (DN 20) or Rp 1" (DN 25)
k_{vs} value:	
- Cooling:	... m^3/h
- Heating:	... m^3/h
Fluid:	cold and hot water, water with max. 50% volume of glycol
Air-bubble tight, leakage rate A (EN 12266-1)	
Characteristic curve:	linear
- Sequence 1:	0...30 degrees (cooling recommended)
- Dead zone:	30...60 degrees
- Sequence 2:	60...90 degrees (heating recommended)
Fluid temperature: 6...80°C	
Permissible operating pressure p_s: 1600 kPa	
Differential pressure dp_{max}:	100 kPa

R3015-..-..-B1

Housing:	brass body
Closing element:	chrome-plated brass
Spindle:	brass
Stem packing:	o-ring EPDM
Ball seat:	PTFE, o-ring EPDM
Flow rate diaphragms:	brass
Make:	Belimo
Type:	R3015-..-..-B1 (DN 15) with CQ24A-.. actuator

R3015-..-..-B1

R30..-..-..-B2/B3

Housing:	nickel-plated brass body
Closing element:	chrome-plated brass
Spindle:	nickel-plated brass
Stem packing:	o-ring EPDM
Ball seat:	PTFE, o-ring EPDM
Flow rate diaphragms:	stainless steel
Make:	Belimo
Type:	R3015-..-..-B2 (DN 15) with LR24A-.. actuator
Type:	R3020-..-..-B2 (DN 20) with LR24A-.. actuator
Type:	R3025-..-..-B3 (DN 25) with NR24A-.. actuator

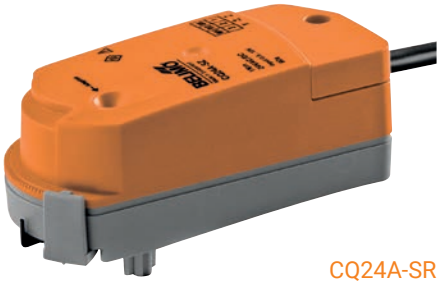
R3015-..-..-B2

CQ24A-SR

Rotary actuator for zone valves R3015-..-..-B1. Direct mounting on zone valve by snapping on. Overload protected and without end switch, current reduction in rest position.

Torque:	1 Nm
Nominal voltage:	AC 24 V 50/60 Hz, DC 24 V
Control:	modulating DC 0...10 V
Operating range:	DC 2...10 V
Power consumption:	
- Operation:	0.4 W
- Rest position:	0.3 W
- Rating:	0.9 VA
Connection:	cable 1 m, 4 x 0.34 mm^2
Running time:	75 s / 90°
Protection class:	III protective extra low voltage
Degree of protection:	IP40
EMC:	CE according to 2004/108/EC
Make:	Belimo
Type:	R3015-..-..-B1 CQ24A-SR

Including electrical and mechanical accessories
5-year guarantee



CQ24A-SR

LR24A-SR

Rotary actuator for zone valves R30..-..-..-B2. Straightforward direct mounting on zone valve with one central screw. Overload protected and without end switch, current reduction in rest position.

Torque:	5 Nm
Nominal voltage:	AC 24 V 50/60 Hz, DC 24 V
Control:	modulating DC 0...10 V
Operating range:	DC 2...10 V
Power consumption:	
- Operation:	1.5 W
- Rest position:	0.4 W
- Rating:	3 VA
Connection:	cable 1 m, 4 x 0.75 mm^2
Running time:	90 s / 90°
Protection class:	III protective extra low voltage
Degree of protection:	IP54
EMC:	CE according to 2004/108/EC
Make:	Belimo
Type:	R30..-..-..-B2 LR24A-SR

Other actuator variants:
- Modulating DC 0.5...10 V
- Various bus communication protocols
- Fast runners

Including electrical and mechanical accessories
5-year guarantee

LR24A-SR

NR24A-SR

Rotary actuator for zone valves R3025-..-..-B3. Straightforward direct mounting on zone valve with one central screw. Overload protected and without end switch, current reduction in rest position.

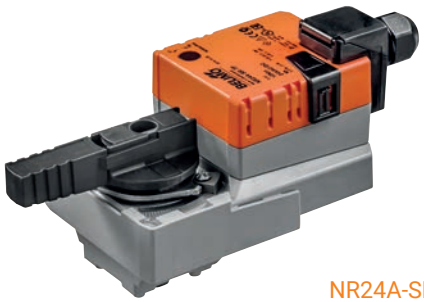
Torque:	10 Nm
Nominal voltage:	AC 24 V 50/60 Hz, DC 24 V
Control:	modulating DC 0...10 V
Operating range:	DC 2...10 V
Power consumption:	
- Operation:	2.5 W
- Rest position:	0.4 W
- Rating:	5 VA
Connection:	cable 1 m, 4 x 0.75 mm^2
Running time:	90 s / 90°
Protection class:	III protective extra low voltage
Degree of protection:	IP54
EMC:	CE according to 2004/108/EC

Make:	Belimo
Type:	R3025-..-..-B3 NR24A-SR

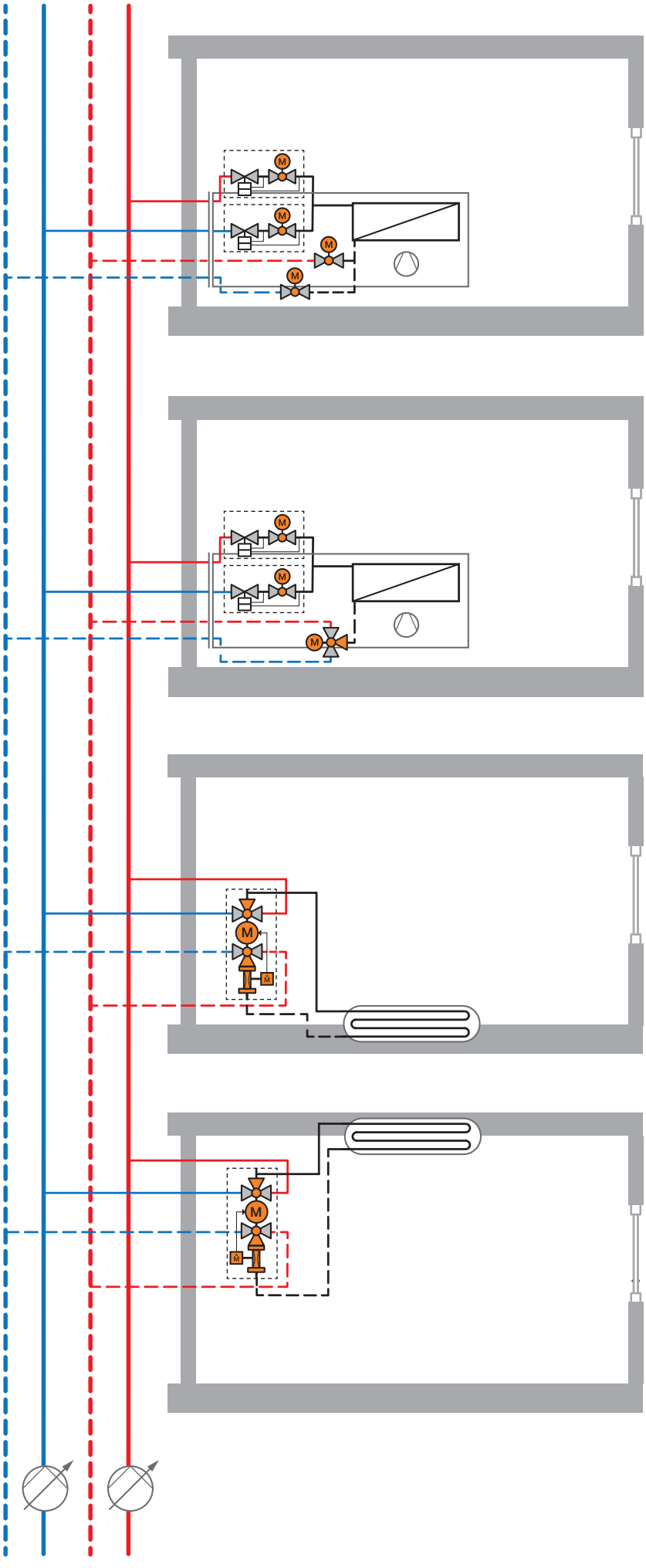
Other actuator variants:

- Modulating DC 0.5...10 V
- Various bus communication protocols
- Fast runners

Including electrical and mechanical accessories
5-year guarantee



NR24A-SR


M
M
M
M
M
M
M
M
M
M
M
M

5

Automatically balancing variable-flow 4-pipe system

5.1 Fan coil

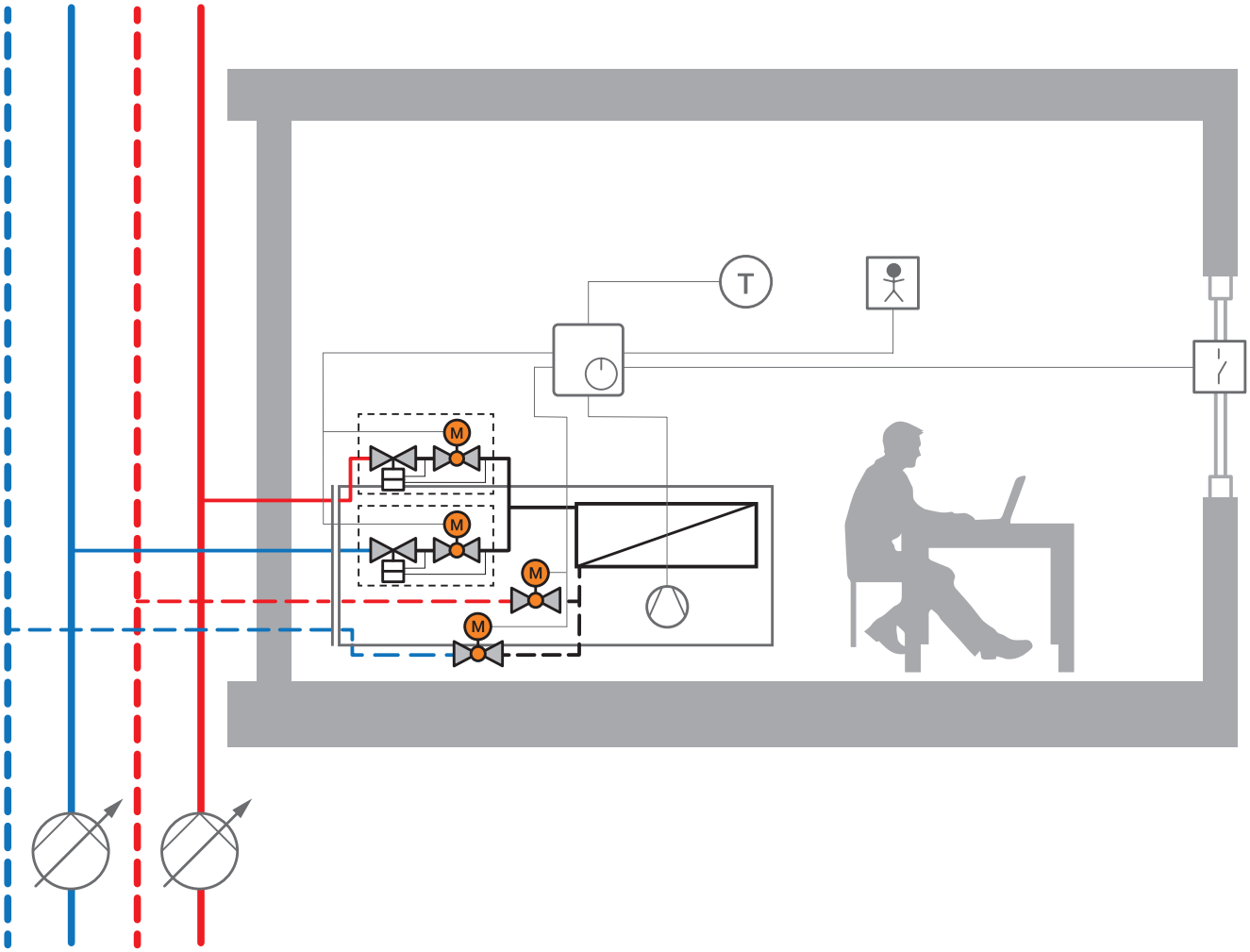


Illustration example

Application description

- Fan coil (with a heat exchanger) provides heating and cooling energy
- 4-pipe system ensures immediate availability of hot and cold water
- 4-pipe system enables cooling of certain rooms while others are being heated
- Pressure-independent control valve for automatic, permanent hydronic balancing (for all load states)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water and air volume controlled via room temperature controller
- Actuator control options (control): 3-point, modulating or via bus communication
- Actuator control options (cooling/heating changeover): open/close or via bus communication
- Optional functions: occupancy switch, window contact

Controller

Room temperature controller with:

- Air volume adaptation (3 speeds with 3 DO or modulating with 1 AO)
- Water-side control for hot and cold water by means of two modulating control signals 0...10 V or 3-point or via bus communication
- Distinction of hot and cold water sequence using two open/close signals

Optional: integration of an occupancy switch and/or window contact signal

Bill of material

Type	Description	Quantity	Costs
C2..QP(T)-..	Pressure-independent 2-way zone valve PIQCV from Belimo, DN .... with adjustable flow V'_{max} ....-.... l/h	2	
CQ24A-SR	Belimo actuator for zone valves, ... V, control: ...	2	
EXT-OC-ZQ..-P(T)	Optional: insulation shell for C2..QP(T) valve, 2-way, DN	2	
C2..Q..	2-way zone valve QCV from Belimo, DN .... with adjustable k_v value ....-.... m^3/h	2	
CQ24A	Belimo actuator for zone valves, 24 V, control: open/close (*)	2	
EXT-OC-ZR-C2..Q	Optional: insulation shell for valve C2..Q, 2-way, DN	2	
ZR23..	Optional: pipe connector for zone valve, DN	8	
	Room temperature controller, 2 analogue outputs, 2 digital outputs	1	
	Temperature sensor	1	
	Optional sensors: occupancy switch, window contact		

(*) also available as a 230 volt version --> CQ230A

Belimo – features and benefits

Properties	Benefits
Pressure-independent	Simple, safe valve design using the maximum flow rate, no k_v value calculation required
	Excellent room comfort thanks to correct water volume at all times
Automatic, permanent hydronic balancing	Fast commissioning, no balancing valves required
Compact overall structure	Ideal room utilisation and high level of freedom in design
Tight-sealing valve	Complete prevention of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Equal-percentage flow characteristic without input step	Can be controlled perfectly even in the lowest partial load range
Variable setting option V'_{max}	Maximum flexibility in planning, installation and during usage phase
Actuator with low power consumption	Energy cost reduction by up to 90% compared to conventional zone valves
5-year guarantee	Long-term safety

5.1.1 Fan coil

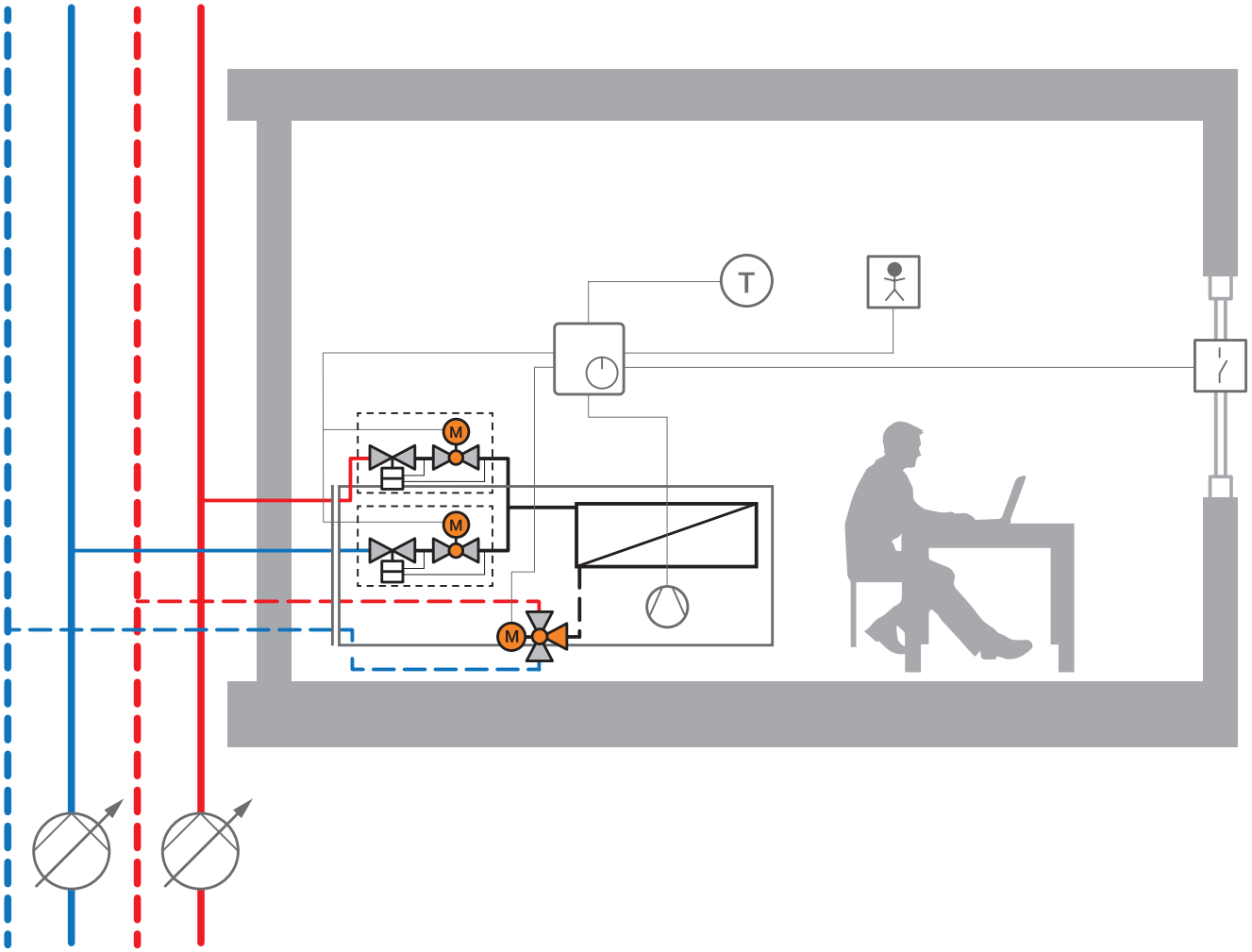


Illustration example

Application description

- Fan coil (with a heat exchanger) provides heating and cooling energy
- 4-pipe system ensures immediate availability of hot and cold water
- 4-pipe system enables cooling of certain rooms while others are being heated
- Pressure-independent control valve for automatic, permanent hydronic balancing (for all load states)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water and air volume controlled via room temperature controller
- Actuator control options (control): 3-point, modulating or via bus communication
- Actuator control options (cooling/heating changeover): open/close or via bus communication
- Optional functions: occupancy switch, window contact

Controller

Room temperature controller with:

- Air volume adaptation (3 speeds with 3 DO or modulating with 1 AO)
- Water-side control for hot and cold water by means of two modulating control signals 0...10 V or 3-point or via bus communication
- Distinction of the hot and cold water sequence using 1 changeover signal

Optional: integration of an occupancy switch and/or window contact signal

Bill of material

Type	Description	Quantity	Costs
C2..QP(T)-..	Pressure-independent 2-way zone valve PIQCV from Belimo, DN .... with adjustable flow V'_{max} ....-.... l/h	2	
CQ24A-SR	Belimo actuator for zone valves, ... V, control: ...	2	
EXT-OC-ZQ..-P(T)	Optional: insulation shell for C2..QP(T) valve, 2-way, DN	2	
C3..Q..	Belimo 3-way changeover zone valve QCV, DN	1	
CQ24A	Belimo actuator for zone valves, 24 V, control: open/close (*)	1	
EXT-OC-ZR-C3..Q-..	Optional: insulation shell for C3..Q valve, 3-way, DN	1	
ZR23..	Optional: pipe connector for zone valve, DN	7	
	Room temperature controller, 2 analogue outputs, 1 digital output	1	
	Temperature sensor	1	
	Optional sensors: occupancy switch, window contact		

(*) also available as a 230 volt version --> CQ230A

Belimo – features and benefits

Properties	Benefits
Pressure-independent	Simple, safe valve design using the maximum flow rate, no k_v value calculation required
	Excellent room comfort thanks to correct water volume at all times
Automatic, permanent hydronic balancing	Fast commissioning, no balancing valves required
Compact overall structure	Ideal room utilisation and high level of freedom in design
Tight-sealing valve	Complete prevention of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Equal-percentage flow characteristic without input step	Can be controlled perfectly even in the lowest partial load range
Variable setting option V'_{max}	Maximum flexibility in planning, installation and during usage phase
Actuator with low power consumption	Energy cost reduction by up to 90% compared to conventional zone valves
5-year guarantee	Long-term safety

5.2 Floor heating (with cooling)

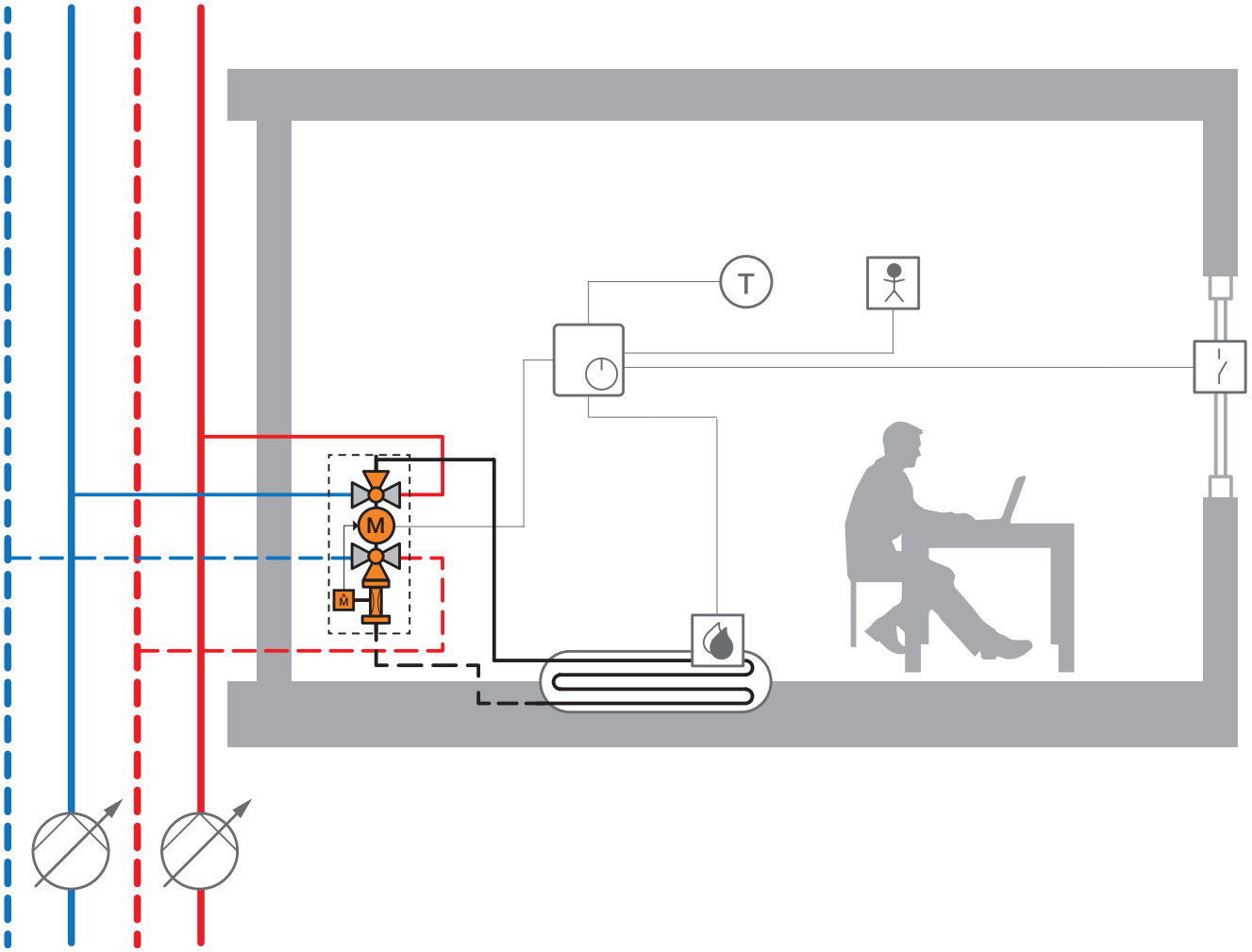


Illustration example

Application description

- Provision of heating energy by means of a heating element mounted on the floor or on the wall
- 4-pipe system ensures immediate availability of hot and cold water
- 4-pipe system enables cooling of certain rooms while others are being heated
- Pressure-independent control valve for automatic, permanent hydronic balancing (for all load states)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water volume controlled via room temperature controller
- Automatic isolate if temperature falls below dew point (condensation)
- Automatic isolate if window is open
- Actuator control options: modulating or via bus communication
- Optional functions: occupancy switch

Controller

Room temperature controller with:

- Water volume adaptation by means of modulating 0…10 V control
- Valve isolate if relevant signal given by condensation sensor
- Valve isolate if window open

Optional: integration of an occupancy switch signal

Bill of material

Type	Description	Quantity	Costs
EP0..R-R6+BAC	Electronic pressure-independent 6-way zone valve from Belimo, DN	1	
EXT-OC-ZR30..	Optional: insulation shell for 6-way valve, DN	1	
ZR23..	Optional: pipe connector for zone valve, DN	6	
ZR-004	Optional: fastening angle for 6-way valve DN 15 + DN 20	1	
	Room temperature controller	1	
	Temperature sensor	1	
	Condensation sensor	1	
	Optional sensors: occupancy switch, window contact		

Belimo – features and benefits

Properties	Benefits
Pressure-independent	Simple, safe valve design using the maximum flow rate, no k_v value calculation required
	Excellent room comfort thanks to correct water volume at all times
Automatic, permanent hydronic balancing	Fast commissioning, no balancing valves required
Tight-sealing valve	Complete prevention of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Equal-percentage flow characteristic without input step	Can be controlled perfectly even in the lowest partial load range
Variable setting option V'_{max}	Maximum flexibility in planning, installation and during usage phase
Actuator with low power consumption	Energy cost reduction by up to 90% compared to conventional zone valves
5-year guarantee	Long-term safety

5.3 Chilled and heating ceiling

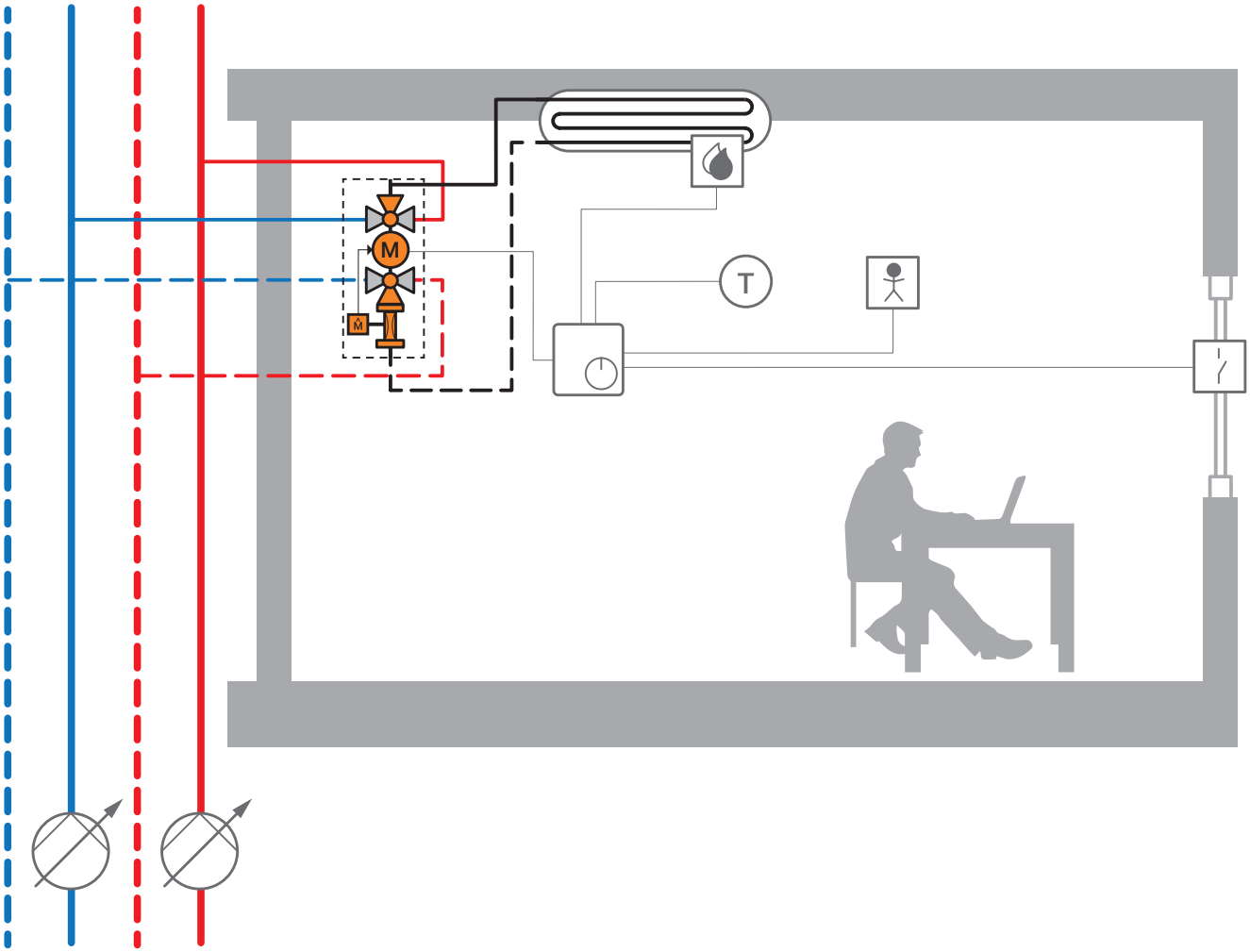


Illustration example

Application description

- Provision of heating energy by means of a combined chilled and heating ceiling
- 4-pipe system ensures immediate availability of hot and cold water
- 4-pipe system enables cooling of certain rooms while others are being heated
- Pressure-independent control valve for automatic, permanent hydronic balancing (for all load states)
- Pump speed control due to the differential pressure at the system's lowest point of pressure
- Water volume controlled via room temperature controller
- Automatic isolate if temperature falls below dew point (condensation)
- Automatic isolate if window is open
- Actuator control options: modulating or via bus communication
- Optional functions: occupancy switch

Controller

Room temperature controller with:

- Water volume adaptation by means of modulating 0…10 V control
- Valve isolate if relevant signal given by condensation sensor
- Valve isolate if window open

Optional: integration of an occupancy switch signal

Bill of material

Type	Description	Quantity	Costs
EP0..R-R6+BAC	Electronic pressure-independent 6-way zone valve from Belimo, DN	1	
EXT-OC-ZR30..	Optional: insulation shell for 6-way valve, DN	1	
ZR23..	Optional: pipe connector for zone valve, DN	6	
ZR-004	Optional: fastening angle for 6-way valve DN 15 + DN 20	1	
	Room temperature controller	1	
	Temperature sensor	1	
	Condensation sensor	1	
	Optional sensors: occupancy switch, window contact		

Belimo – features and benefits

Properties	Benefits
Pressure-independent	Simple, safe valve design using the maximum flow rate, no k_v value calculation required
	Excellent room comfort thanks to correct water volume at all times
Automatic, permanent hydronic balancing	Fast commissioning, no balancing valves required
Tight-sealing valve	Complete prevention of circulation and energy loss
Self-cleaning ball valve	Excellent resistance to contamination, problem-free operation even after long downtimes
Assumes the function of up to four straight-through valves	Reduces planning work, lowers installation and operating costs
	Eliminates installation errors
	Only requires one control sequence
Integrated pressure release function	Maximum plant safety
Different V'_{max} values for sequences 1 and 2	Enables optimum design of the cooling and heating sequence
5-year guarantee	Long-term safety

Tender Text

C2..QP(T)-..

Pressure-independent zone valve (characterised control valve), 2-way with internal thread. For water-side modulating control in air-handling and heating systems. Snap assembly of the actuator, pressure reducing valve for constant flow independent of pressure fluctuations. With measurement connections for checking the differential pressure (if provided).

Delivery and installation of a tight-sealing, pressure-independent 2-way valve with automatic hydronic balancing, equal-percentage characteristic curve and high resistance to contamination.

Construction:	straight-through valve 2-way, DN 15, DN 20 or DN 25
Connection:	internal thread Rp 1/2" (DN 15), Rp 3/4" (DN 20) or Rp 1" (DN 25)
Flow V'_{max}:	max. 210 l/h, adjustable [C215QP(T)-B]
Flow V'_{max}:	max. 420 l/h, adjustable [C215QP(T)-D]
Flow V'_{max}:	max. 980 l/h, adjustable [C220QP(T)-F]
Flow V'_{max}:	max. 2100 l/h, adjustable [C225QPT-G]
Fluid:	cold and hot water, water with max. 50% volume of glycol

Air-bubble tight, leakage rate A (EN 12266-1)

Characteristic curve:	equal percentage (VDI/VDE 2178), optimised in the opening range

Fluid temperature: 2...90°C

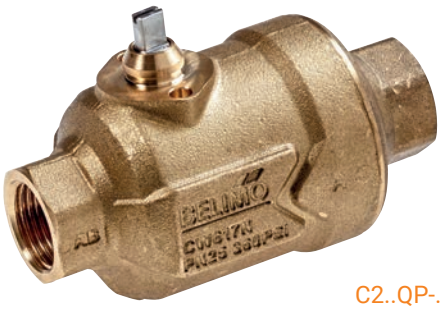
Permissible operating pressure p_S: 1600 kPa

Close-off pressure dp_S:	1400 kPa
Differential pressure:	16...350 kPa

Housing:	brass body
Closing element:	stainless steel
Spindle:	stainless steel
Stem packing:	o-ring EPDM
Ball seat:	PTFE, o-ring EPDM
Diaphragm:	EPDM

Make:	Belimo
Type:	C215QP(T)-B (DN 15, 210 l/h)
Type:	C215QP(T)-D (DN 15, 420 l/h)
Type:	C220QP(T)-F (DN 20, 980 l/h)
Type:	C225QPT-G (DN 25, 2100 l/h)

(T) = version with measurement connector



C2..QP-..

C2..Q..

Zone valve (characterised control valve), 2-way with internal thread. For water-side modulating control or shut-off function in air-handling and heating systems. Snap-assembly of the actuator.

Delivery and installation of a tight-sealing 2-way zone valve with equal-percentage characteristic curve and high resistance to contamination.

Construction:	straight-through valve 2-way, DN 15 or DN 20
Connection:	internal thread Rp 1/2" (DN 15) or Rp 3/4" (DN 20) / external thread G 3/4" (DN 15 / DN 20)
k_V value:	max. 4.8 m^3/h, adjustable (DN 15)
k_V value:	max. 8 m^3/h, adjustable (DN 20)
Fluid:	cold and hot water, water with max. 50% volume of glycol
Air-bubble tight, leakage rate A (EN 12266-1)	
Characteristic curve:	equal percentage, in the opening range optimised
Fluid temperature:	2...90°C
Permissible operating pressure p_S:	1600 kPa
Close-off pressure dp_S:	520 kPa
Differential pressure dp_{max}:	280 kPa

Housing:	brass body
Closing element:	chrome-plated brass
Spindle:	brass
Stem packing:	o-ring EPDM
Ball seat:	PTFE, o-ring EPDM

Make:	Belimo
Type:	C215Q-F (DN 15)
Type:	C215Q-J (DN 15)
Type:	C220Q-K (DN 20)

Other version available:

– External thread G 3/4

C2..Q..

5

CQ24A-SR

Rotary actuator for zone valves. Direct mounting on zone valve by snapping on. Overload protected and without end switch, current reduction in rest position.

Torque:	1 Nm
Nominal voltage:	AC 24 V 50/60 Hz, DC 24 V
Control:	modulating DC 0...10 V
Operating range:	DC 2...10 V
Power consumption:	
- Operation:	0.4 W
- Rest position:	0.3 W
- Rating:	0.9 VA
Connection:	cable 1 m, 4 x 0.34 mm^2
Running time:	75 s / 90°
Protection class:	III protective extra low voltage
Degree of protection:	IP40
EMC:	CE according to 2004/108/EC

Make:	Belimo
Type:	CQ24A-SR

Other actuator variants:
– AC 230 V
– Modulating (0.5...10 V)
– Various bus communication protocols
– Fast runners
– Open/close, 3-point
– Fail-safe

Including electrical and mechanical accessories

CQ24A-SR

CQ24A

Rotary actuator for zone valves. Direct mounting on zone valve by snapping on. Overload protected and without end switch, current reduction in rest position.

Torque:	1 Nm
Nominal voltage:	AC 24 V 50/60 Hz, DC 24 V
Control:	open/close, 3-point
Power consumption:	
- Operation:	0.3 W
- Rest position:	0.2 W
- Rating:	0.6 VA
Connection:	cable 1 m, 3 x 0.75 mm^2
Running time:	75 s / 90°
Protection class:	III protective extra low voltage
Degree of protection:	IP40
EMC:	CE according to 2004/108/EC

Make:	Belimo
Type:	CQ24A

Other actuator variants:
– AC 230 V
– Various bus communication protocols
– Fast runners
– Open/close, 3-point
– Fail-safe

Including electrical and mechanical accessories
5-year guarantee

CQ24A

C3..Q..

3-way changeover zone valve with internal thread for water-side changeover function in air-handling and heating systems.

Delivery and installation of a 3-way changeover valve with high resistance to contamination.

Construction:	3-way changeover valve, DN 15, DN 20 or DN 25
Connection:	internal thread Rp 1/2" (DN 15), Rp 3/4" (DN 20) or Rp 1" (DN 25)
k_{VS} value:	2.5 m^3/h (DN 15) / 4 m^3/h (DN 20)
Fluid:	cold and hot water, water with max. 50% volume of glycol
Air-bubble tight, leakage rate A (EN 12266-1)	
Fluid temperature:	2...90°C
Permissible operating pressure p_S:	1600 kPa
Close-off pressure dp_S:	350kPa
Differential pressure dp_{max}:	280 kPa

Housing:	brass body
Closing element:	chrome-plated brass
Spindle:	brass
Stem packing:	o-ring EPDM
Ball seat:	PTFE, o-ring EPDM

Make:	Belimo
Type:	C315Q-H (DN 15)
Type:	C315Q-J (DN 20)

C3..Q..

EP0..R-R6+BAC

Zone valve, 6-way characterised control valve with sensor-operated flow control for water-side changeover or control of thermal heating/cooling elements, with integrated pressure release function. Consisting of 6-way characterised control valve with actuator and measuring pipe with volumetric flow sensor, parametrisable with ZTH EU.

Delivery and installation of an electronic pressure-independent 6-way zone valve with automatic, permanent hydronic balancing and high resistance to contamination, tight sealing.

Construction:	6-way characterised control valve, DN 15, DN 20
Connection:	internal thread Rp 1/2" (DN 15), Rp 3/4" (DN 20)
V'_{nom} sequence 1:	21 l/min (DN 15) / 39 l/min (DN 20)
V'_{nom} sequence 2:	21 l/min (DN 15) / 39 l/min (DN 20)
Flow V'_{max}:	1.1...21 l/min, adjustable (5-100% of V'_{nom}) (DN 15)
Flow V'_{max}:	2...39 l/min, adjustable (5-100% of V'_{nom}) (DN 20)
Fluid:	cold and hot water, water with max. 50% volume of glycol
Air-bubble tight, leakage rate A (EN 12266-1)	
Characteristic curve:	linear
- Sequence 1:	2...4.7 V (cooling recommended)
- Dead zone:	4.7...7.3 V
- Sequence 2:	7.3...10 V (heating recommended)
Fluid temperature:	6...80°C
Permissible operating pressure p_s: 1600 kPa	
Differential pressure dp_{max}:	110 kPa
Theoretical k_{vs} value:	1.2 m^3/h (DN 15) / 2.3 m^3/h (DN 20)
Torque:	5 Nm
Nominal voltage:	AC 24V 50/60 Hz, DC 24 V
Control signal Y:	DC 0...10V
Operating range:	DC 2...10V
Power consumption:	
- Operation:	2 W
- Rest position:	1.5 W
- Rating:	4.5 VA
Connection:	cable 1 m, 6 x 0.75 mm^2
Manual override:	gear disengagement with push button
Protection class:	III protective extra low voltage
Degree of protection:	IP54
EMC:	CE according to 2004/108/EC
Housing:	nickel-plated brass body
Closing element:	chrome-plated brass
Spindle:	nickel-plated brass
Stem packing:	o-ring EPDM
Ball seat:	PTFE, o-ring EPDM
Measuring pipe:	nickel-plated brass body
Make:	Belimo
Type:	EP015R-R6+BAC (DN 15)
Type:	EP020R-R6+BAC (DN 20)

Including electrical and mechanical accessories
5-year guarantee

EP0..R-R6+BAC

All inclusive.

As a global market leader, Belimo develops innovative solutions for the regulation and control of heating, ventilation and air-conditioning systems. In doing so, actuators, valves, and sensors make up the core business.

With a consistent focus on customer value, we deliver more than just products. We offer you the complete product range of actuator and sensor solutions for the regulation and control of HVAC systems from a single source. At the same time, we rely on tested Swiss quality with a 5-year guarantee. Our worldwide representatives in over 80 countries guarantee short delivery times and extensive support through the entire product life. Belimo does indeed include everything.

"Small" Belimo products have a major impact on comfort, energy efficiency, safety, installation, and maintenance. In short: small devices, big impact.

- 5-year guarantee
- On site around the globe
- Complete product range
- Tested quality
- Short delivery times
- Comprehensive support

EN – 2020 – Subject to technical modifications

BELIMO Automation AG
Brunnenbachstrasse 1, 8340 Hinwil, Switzerland
Phone + 41 43 843 62 63, info@belimo.ch, www.belimo.com

BELIMO®