5

5-year warranty

Technical data

Functional data	Valve Size	2" [50]
	Fluid	chilled or hot water, up to 60% glycol
	Fluid Temp Range (water)	0...250°F [-18...120°C]
	Body Pressure Rating	400 psi
	Body pressure rating note	400 psi
	Close-off pressure Δps	200 psi
	Flow characteristic	A-port equal percentage, B-port modified for constant common port flow
	Servicing	maintenance-free
	Flow Pattern	3-way Mixing/Diverting
	Leakage rate	0% for A – AB, <2.0% for B – AB
	Controllable flow range	75°
	Cv	57
	Cv Flow Rating	A-port: as stated in chart B-port: 70% of A – AB Cv
Materials	Valve body	Nickel-plated brass body
	Stem	stainless steel
	Stem seal	EPDM (lubricated)
	Seat	PTFE
	Characterizing disk	TEFZEL®
	Pipe connection	NPT female ends
	O-ring	EPDM (lubricated)
	Ball	stainless steel
Suitable actuators	Non-Spring	ARB(X)
	Spring	AF

Safety notes

⚠️

- WARNING: This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

Product features

Application   This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable or constant flow.

Flow/Mounting details

Three-way Mixing

A — INLET
AB — OUTLET
Characterizing Disc (where applicable)
B Port Disc (All 3-way models)
BYPASS — B

Three-way Diverting

A — OUTLET
AB — INLET
Characterizing Disc (where applicable)
B Port Disc (All 3-way models)
OUTLET — B

Dimensions

Dimensional drawings

ARB, ARX

Type	DN			Weight [kg] [kg]			
B350	50			2.5			

A	B	C	D	E	F	H1
10.5" [267]	4.9" [125]	7.7" [196]	6.0" [152]	1.7" [44]	2.6" [66]	0.8" [20]

ARB N4, ARX N4
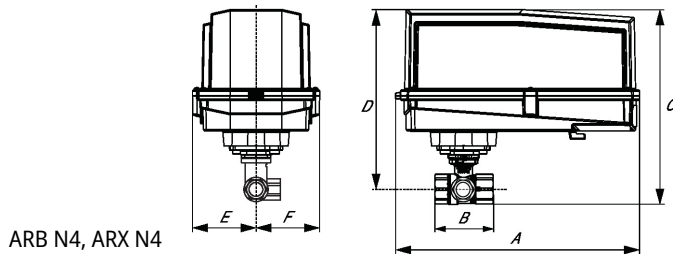
A	B	C	D	E	F
11.4" [289]	4.9" [125]	9.8" [249]	8.0" [203]	3.1" [80]	3.1" [80]

ARQB, ARQX
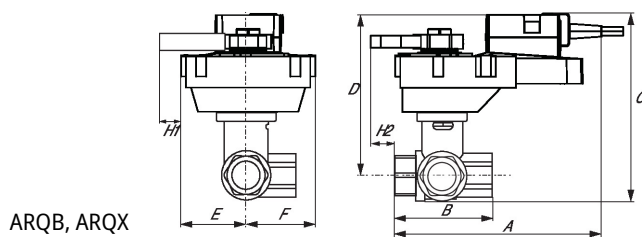
A	B	C	D	E	F	H1	H2
9.9" [251]	4.9" [125]	8.3" [211]	6.6" [168]	2.3" [58]	2.6" [66]	0.8" [20]	0.6" [15]

AFRB, AFRX
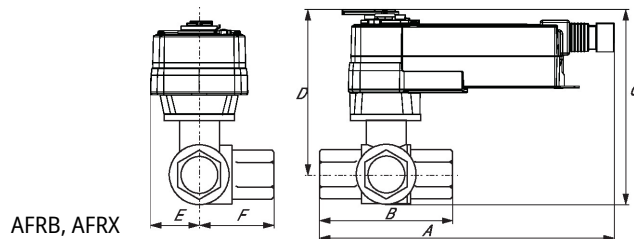
A	B	C	D	E	F
11.3" [286]	4.9" [125]	8.3" [211]	6.6" [168]	2.6" [66]	2.6" [66]

AFRB N4, AFRX N4

A	B	C	D	E	F
13.0" [330]	4.9" [125]	11.8" [300]	9.9" [251]	3.7" [95]	3.7" [95]

Technical data

Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Power consumption in operation	3.5 W
	Power consumption in rest position	1.3 W
	Transformer sizing	6 VA (class 2 power source)
	Electrical Connection	18 GA plenum cable with 1/2" conduit connector, degree of protection NEMA 2 / IP54, 3 ft [1 m] 10 ft [3 m] and 16ft [5 m]
	Overload Protection	electronic thoughout 0...90° rotation
Functional data	Operating range Y	2...10 V
	Operating range Y note	4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor)
	Input Impedance	100 kΩ for 2...10 V (0.1 mA), 500 Ω for 4...20 mA, 1500 Ω for PWM, On/Off and Floating point
	Operating range Y variable	Start point 0.5...30 V End point 2.5...32 V
	Options positioning signal	variable (VDC, on/off, floating point)
	Position feedback U	2...10 V
	Position feedback U note	Max. 0.5 mA
	Position feedback U variable	VDC variable
	Direction of motion motor	selectable with switch 0/1
	Manual override	external push button
	Angle of rotation	90°
	Angle of rotation note	adjustable with mechanical stop
	Running Time (Motor)	default 150 s, variable 90...150 s
	Running time motor variable	90...150 s
	Noise level, motor	45 dB(A)
	Position indication	Mechanically, pluggable
Safety data	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2
	Enclosure	UL Enclosure Type 2
	Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU Listed to UL 2043 - suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC
	Quality Standard	ISO 9001
	Ambient temperature	-22...122°F [-30...50°C]
	Storage temperature	-40...176°F [-40...80°C]
	Ambient humidity	Max. 95% RH, non-condensing
	Servicing	maintenance-free

Weight	Weight	2.6 lb [1.2 kg]

Product features

Mode of operation	Local Control SY2~12, 110vac Mod

Accessories

Gateways	Description	Type
	Gateway MP to BACnet MS/TP	UK24BAC
	Gateway MP to Modbus RTU	UK24MOD
	Gateway MP to LonWorks	UK24LON

Electrical accessories	Description	Type
	Battery backup system, for non-spring return models	NSV24 US
	Battery, 12 V, 1.2 Ah (two required)	NSV-BAT
	Service Tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices	ZTH US

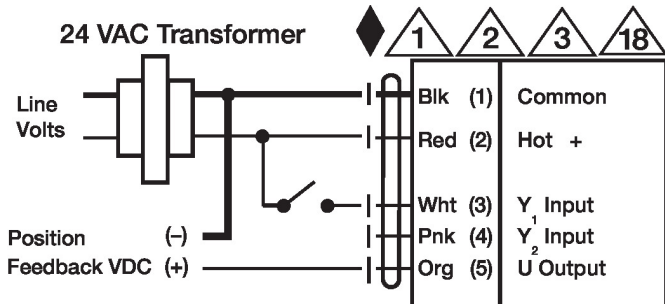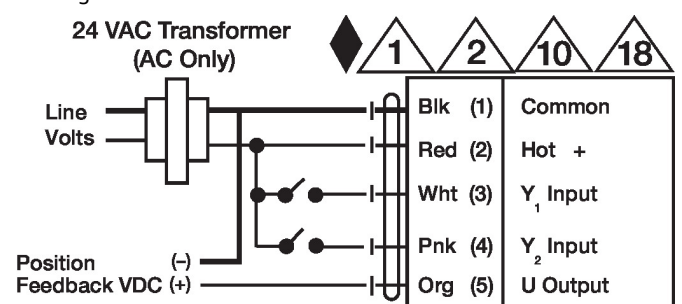| Service tools	Description	Type
	Connection cable 10 ft [3 m], A: RJ11 6/4 ZTH EU, B: 3-pin Weidmüller and supply connection	ZK4-GEN
	Service Tool, with ZIP-USB function, for programmable and communicative Belimo actuators, VAV controller and HVAC performance devices	ZTH US

Electrical installation

INSTALLATION NOTES

△1 Provide overload protection and disconnect as required.

△2 Actuators may be connected in parallel. Power consumption and input impedance must be observed.

△3 Actuators may also be powered by DC 24 V.

△5 Only connect common to negative (-) leg of control circuits.

△7 A 500 Ω resistor (ZG-R01) converts the 4...20 mA control signal to 2...10 V.

△8 Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 V line.

△10 For triac sink the Common connection from the actuator must be connected to the Hot connection of the controller. Position feedback cannot be used with a triac sink controller; the actuator internal common reference is not compatible.

△12 IN4004 or IN4007 diode. (IN4007 supplied, Belimo part number 40155).

△18 Actuators with plenum cable do not have numbers; use color codes instead.

◆ Meets cULus requirements without the need of an electrical ground connection.

⚠ Warning! Live electrical components!

During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.
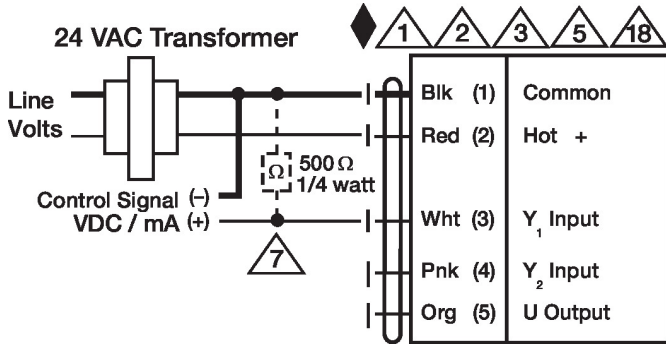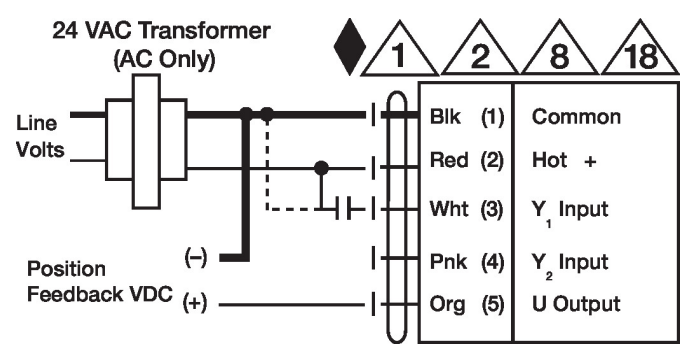
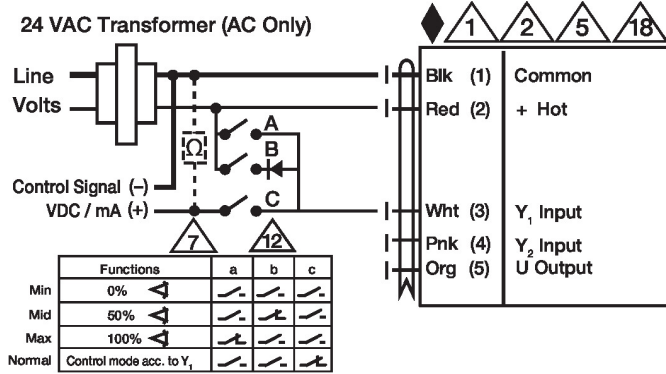### Wiring diagrams

On/Off

Floating Point

VDC/mA Control

24 VAC Transformer

◆ /1/ /2/ /3/ /5/ /18/

Line Volts

Control Signal (–)
VDC / mA (+)

500 Ω
1/4 watt

/7/

Blk	(1)	Common
Red	(2)	Hot +
Wht	(3)	Y₁ Input
Pnk	(4)	Y₂ Input
Org	(5)	U Output

PWM Control

24 VAC Transformer (AC Only)

◆ /1/ /2/ /8/ /18/

Line Volts

Position Feedback VDC (–) (+)

Blk	(1)	Common
Red	(2)	Hot +
Wht	(3)	Y₁ Input
Pnk	(4)	Y₂ Input
Org	(5)	U Output

Override Control

24 VAC Transformer (AC Only)

◆ /1/ /2/ /5/ /18/

Line Volts

Control Signal (–)
VDC / mA (+)

A
B
C

/7/ /12/

Blk	(1)	Common
Red	(2)	+ Hot
Wht	(3)	Y₁ Input
Pnk	(4)	Y₂ Input
Org	(5)	U Output

	Functions	a	b	c
Min	0%			
Mid	50%			
Max	100%			
Normal	Control mode acc. to Y₁			

Dimensions