Advanced butterfly valves provide energy savings and optimal performance in Kuhn Champignon's mushroom plant facility.

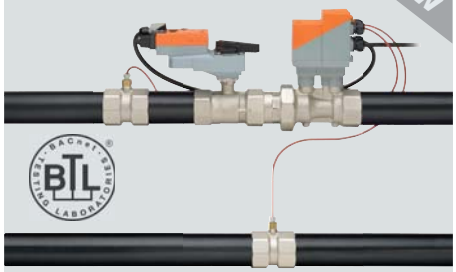
2017
Product Range Overview

Effective April 1, 2017

BELIMO®

Innovations in Comfort, Energy Efficiency, and Safety for Your Buildings

ZoneTight Zone Valves
Efficient in Every Way



Belimo Energy Valves™
Solving Low Delta T Leveraging IoT

Advanced Butterfly Valves
Intelligent, Energy Efficient, and Reliable for High Flow Applications

Sensors
Seamlessly Integrated

Fire & Smoke Damper Actuators
Technology that Saves Lives

ZIP Economizer™
Fast Route to Reliable Energy Savings

6-Way ePIV
Time-saving, Compact Performance Solution

Retrofit Solutions
Get Up and Running in Record Time

Electronic Fail-Safe Damper Actuators
Versatile Performance with Low Energy Consumption

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EXPERIENCE **EFFICIENCY**

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GMB, AMB, NMB, LMB, CMB Non-Spring Return Damper Actuator Product Range

		Power Supply		Power Consumption		Running Time	Control Input			Control Input MFT				Position Feedback			Bulk Pack	NEMA 4/4X Option		Add-On Accessory	
		24 VAC ± 20%, 50/60 Hz VDC ±10%	100 VAC to 240 VAC	VA Rating	Wattage Running (Holding)	Motor Drive	On/Off	Floating Point	2-10 VDC or 4-20 mA (w/500 Ω Resistor)	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default) Adjustable with MFT	5 kΩ Resistive Feedback	10 kΩ Resistive Feedback	Quantity of Actuators Included in Bulk Pack	Enclosure (Part No. +N4 or +N4H)[1]	1 SPDT, 3A (0.5A Inductive) @ 250V	S1A or S2A	Potentiometer
GMB Series 360 in-lbs [40 Nm] Approx. 90 sq.ft.	GMB24-3	●		6	4.0 (2.0)	150	●	●										●		●	●
	GMB24-SR	●		6.5	4.5 (2.0)	150			●					●				●		●	●
	GMB24-MFT† Ⓐ	●		7	4.0 (1.5)	150				●	●	●	●	●						●	●
AMB Series 180 in-lbs [20 Nm] Approx. 45 sq.ft.	AMB24-3	●		5.5	2.5 (0.5)	95	●	●										●		●	●
	AMB24-3-S	●		5.5	2.5 (0.5)	95	●	●											●	●	●
	AMB24-SR	●		5	2.5 (0.4)	95			●					●				●		●	●
	AMB24-MFT Ⓐ	●		6	3.5 (1.3)	150				●	●	●	●	●						●	●
NMB Series 90 in-lbs [10 Nm] Approx. 22 sq.ft.	NMB24-3	●		4	2.0 (0.2)	95	●	●										●		●	●
	NMCB24-3	●		4	2.5 (0.2)	45	●	●												●	●
	NMB24-SR	●		5	2.5 (0.4)	95			●					●				●		●	●
	NMCB24-SR	●		5	2.5 (0.4)	45			●					●						●	●
	NMB24-MFT Ⓐ	●		6	3.5 (1.3)	150				●	●	●	●	●						●	●
LMB Series 45 in-lbs [5 Nm] Approx. 11 sq.ft.	LMB24-3	●		2	1.5 (0.2)	95	●	●												●	●
	LMCB24-3	●		2.5	1.5 (0.2)	35	●	●												●	●
	LMB24-3.1	●		2	1.5 (0.2)	95	●	●									24 pc.			●	●
	LMB24-3-S	●		2	1.5 (0.2)	95	●	●											●	●	●
	LMB24-3-T	●		2	1.5 (0.2)	95	●	●												●	●
	LMCB24-3-T	●		2.5	1.5 (0.2)	35	●	●												●	●
	LMB24-3-T.1	●		2	1.5 (0.2)	95	●	●									36 pc.			●	●
	LMB24-3-P5-T	●		2	1.5 (0.2)	95	●	●							●					●	●
	LMB24-3-P5-T.1	●		2	1.5 (0.2)	95	●	●							●		36 pc.			●	●
	LMB24-3-P10-T	●		2	1.5 (0.2)	95	●	●								●				●	●
	LMB24-SR	●		3	1.5 (0.4)	95			●					●						●	●
	LMCB24-SR	●		3	1.5 (0.4)	35			●					●						●	●
	LMB24-SR.1	●		3	1.5 (0.4)	95			●					●			24 pc.			●	●
	LMB24-SR-T	●		3	1.5 (0.4)	95			●					●						●	●
	LMCB24-SR-T	●		3	1.5 (0.4)	35			●					●						●	●
	LMB24-SR-T.1	●		3	1.5 (0.4)	95			●					●			36 pc.			●	●
	LMB24-MFT Ⓐ	●		5	2.5 (1.2)	150				●	●	●	●	●						●	●
	LMB24-HM Ⓑ	●		2	1.5 (0.2)	95														●	●
	LMB24-10P-HM Ⓑ	●		2	1.5 (0.2)	95										●				●	●
CMB Series 18 in-lbs [2 Nm] Approx. 4.5 sq.ft.	CMB24-3	●		1.5	1.0 (0.2)	35	●	●													
	CMB24-3.1*	●		1.5	1.0 (0.2)	35	●	●									20 pc.				
	CMB120-3		●	3.5	1.5 (1.0)	35	●	●													
	CMB24-3-T	●		1.5	1.0 (0.2)	35	●	●													
	CMB24-3-T.1*	●		1.5	1.0 (0.2)	35	●	●									20 pc.				
	CMB24-SR-R	●		2.5	1.5 (0.5)	35			●					●							
	CMB24-SR-L	●		2.5	1.5 (0.5)	35			●					●							

† Dual mounting on a single shaft is possible for 720 in-lb (-MFT wired Master-Slave). Please call Belimo Customer Service for details.
Ⓐ Shipped default. 150 seconds running time, 2-10 VDC control input and feedback. Field programmable with MFT tools.
Ⓑ Drop-in replacement of LM24(-10P)-HM VAV actuator.
[1]Heater option for NEMA 4/NEMA 4X has a list price adder.
* Z-PICM position indicator and Z-ARCM anti-rotation bracket sold separately.

AMQB, NMQB, LMQB Quick Running Non-Spring Return Damper Actuator Product Range

		Power Supply		Power Consumption		Running Time	Control Input			Control Input MFT				Position Feedback			Add-On Accessory	
		24 VAC ± 20%, 50/60 Hz, VDC ±10%	100 VAC to 240 VAC	VA Rating	Wattage Running (Holding)	Motor Drive	On/Off	Floating Point	2-10 VDC or 4-20 mA (w/500 Ω Resistor)	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default) Adjustable with MFT	5 kΩ Resistive Feedback	10 kΩ Resistive Feedback	S1A or S2A	Potentiometer
AMQB Series 140 in-lbs [16 Nm] Approx. 16 sq.ft.	AMQB24-1	●		23	15 (1.5)	7	●										●	●
	AMQB24-MFT Ⓐ	●		23	15 (1.5)	7				●		●		●			●	●
NMQB Series 70 in-lbs [8 Nm] Approx. 12 sq.ft.	NMQB24-1	●		20	13 (1.5)	4	●										●	●
	NMQB24-MFT Ⓐ	●		20	13 (1.5)	4				●		●		●			●	●
LMQB Series 35 in-lbs [4 Nm] Approx. 8.5 sq.ft.	LMQB24-1	●		20	13 (1.5)	2.5	●										●	●
	LMQB24-MFT Ⓐ	●		20	13 (1.5)	2.5				●		●		●			●	●

Ⓐ Shipped default. 2-10 VDC control input and feedback. Field programmable with MFT tools.

AHB, AHQB, LHB, LHQB, LUB Non-Spring Return Damper Actuator Product Range

		Power Supply		Power Consumption		Running Time	Control Input			Control Input MFT				Position Feedback		
		24 VAC ± 20%, 50/60 Hz, VDC ±10%	100 VAC to 240 VAC	VA Rating	Wattage Running (Holding)	Motor Drive	On/Off	Floating Point	2-10 VDC or 4-20 mA (w/500 Ω Resistor)	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default) Adjustable with MFT	5 kΩ Resistive Feedback	10 kΩ Resistive Feedback
AHB Series 101 lbf [450 N Force] 4"or 8" stroke	AHB24-3-100	●		4.5	2.0 (0.5)	150*	●	●								
	AHB24-3-200	●		4.5	2.0 (0.5)	150*	●	●								
	AHB24-SR-100	●		4.5	2.5 (0.5)	150*			●					●		
	AHB24-SR-200	●		4.5	2.5 (0.5)	150*			●					●		
AHQB Series 44 lbf [200 N Force] 4" stroke	AHQB24-1-100	●		23	13 (1.5)	7*	●									
	AHQB24-MFT-100 Ⓐ	●		23	13 (1.5)	7*				●		●		●		
LHB Series 34 lbf [150 N Force] 4"or 8" stroke	LHB24-3-100	●		3	1.5 (0.5)	150*	●	●								
	LHB24-3-200	●		3	1.5 (0.5)	150*	●	●								
	LHB24-SR-100	●		3	1.5 (0.5)	150*			●					●		
	LHB24-SR-200	●		3	1.5 (0.5)	150*			●					●		
LHQB Series 22 lbf [100 N Force] 4" stroke	LHQB24-1-100	●		23	13 (1.5)	3.5*	●									
	LHQB24-MFT-100	●		23	13 (1.5)	3.5*				●		●		●		
LUB Series 27 in-lbs [3 Nm] Approx. 6 sq.ft.	LUB24-3	●		2.5	1.0 (0.5)	150**	●	●								
	LUB24-SR	●		3	3.0 (0.5)	150**			●					●		

*Running time is per 4 inches [100 mm] of travel.
**Running time is 150 seconds per 90°.

Ⓐ Shipped default. 2-10 VDC control input and feedback. Field programmable with MFT tools.

Custom Non-Spring Return Damper Actuator Product Range

5 YEAR WARRANTY

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		Power Supply		Power Consumption		Running Time	Control Input					Control Input MFT				Position Feedback		Custom Options		NEMA 4/4X Option	Add-on Accessory	
		24 VAC ± 20%, VDC ± 10%	100 to 240 VAC	VA Rating	Wattage Running (Holding)	Motor Drive Range (Default)	On/Off	Floating Point	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	0-20V Phasecut	Honeywell Series 90, 0-135 Ω	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default)	VDC Variable, Start 0 to 8, Span 2-10 VDC	10 ft. (3 m) Cable / 16 ft. (5 m) Cable	Terminal Strip NEMA 1/IP20 / 2/IP54	Enclosure (Part No. +N4 or +N4H)[1]	S1A or S2A	Potentiometer
GMX Series 360 in-lbs [40 Nm] Approx. 90 sq.ft.	GMX24-3	●		6	4.0 (2.0)	150	●	●										●		●	●	●
	GMX24-SR	●		6.5	4.5 (2.0)	150			●							●		●		●	●	●
	GMX24-PC	●		7	4.0 (1.5)	150				●						●		●			●	●
	GMX120-3		●	7	4.0 (2.0)	150	●	●										●			●	●
	GMX24-MFT†	●		7	4.0 (1.5)	75-300 (150)			●			●	●	●	●	●	●	●		●	●	●
AMX Series 180 in-lbs [20 Nm] Approx. 45 sq.ft.	AMX24-3	●		5.5	2.5 (0.5)	95	●	●										●			●	●
	AMX24-3-T	●		5.5	2.5 (0.5)	95	●	●											●	●	●	●
	AMX24-SR	●		5	2.5 (0.4)	95			●							●		●			●	●
	AMX24-SR-T	●		5	2.5 (0.4)	95			●							●			●	●	●	●
	AMX24-PC	●		5.5	3.5 (1.3)	90				●						●		●			●	●
	AMX120-3		●	7	3.0 (0.6)	95	●	●										●			●	●
	AMX120-SR		●	7.5	4.0 (1.0)	95			●							●		●			●	●
	AMX24-MFT	●		6	3.5 (1.3)	90-300 (150)			●			●	●	●	●	●	●	●		●	●	●
	AMCX24-MFT	●		6	3.5 (1.3)	35-120 (35)			●			●	●	●	●	●	●	●			●	●
	AMX24-MFT95	●		6	3.5 (1.3)	75-150 (150)					●					●	●	●			●	●
AMQ Series 140 in-lbs [16 Nm]	AMQX24-MFT	●		26	15 (1.5)	7-15 (7)						●		●		●	●	●			●	●
NMX Series 90 in-lbs [10 Nm] Approx. 22 sq.ft.	NMX24-3	●		4	2.0 (0.2)	95	●	●										●			●	●
	NMX24-3-T	●		4	2.0 (0.2)	95	●	●											●	●	●	●
	NMX24-SR	●		5	2.5 (0.4)	95			●							●		●			●	●
	NMX24-SR-T	●		5	2.5 (0.4)	95			●							●			●	●	●	●
	NMX120-3		●	5.5	2.5 (0.6)	150	●	●										●			●	●
	NMX120-SR		●	6.5	3.5 (1.0)	150			●							●		●			●	●
	NMX24-MFT	●		6	3.5 (1.3)	45-150 (150)			●			●	●	●	●	●	●	●		●	●	●
	NMX24-MFT95	●		6	3.5 (1.3)	45-150 (150)					●					●	●	●			●	●
	NMCX24-MFT	●		5	3.0 (0.6)	20-75 (20)			●							●	●	●			●	●
NMQ Series 70 in-lbs [8 Nm]	NMQX24-MFT	●		23	13 (1.5)	4-20 (4)						●		●		●	●	●			●	●
LMX Series 45 in-lbs [5 Nm] Approx. 11 sq.ft.	LMX24-3	●		2	1.5 (0.2)	95	●	●										●			●	●
	LMX24-3-T	●		2	1.5 (0.2)	95	●	●											●		●	●
	LMX24-SR	●		3	1.5 (0.4)	95			●							●		●			●	●
	LMX24-SR-T	●		3	1.5 (0.4)	95			●							●			●		●	●
	LMX120-3		●	4	2.0 (0.5)	150	●	●										●			●	●
	LMX120-SR		●	4.5	2.5 (1.0)	150			●							●		●			●	●
	LMX24-MFT	●		5	2.5 (1.2)	35-200 (150)			●			●	●	●	●	●	●	●			●	●
	LMX24-MFT95	●		5	2.5 (1.2)	35-150 (150)					●					●	●	●			●	●
LMQ Series 35 in-lbs [4 Nm]	LMQX24-MFT	●		23	13 (1.5)	2.5-10 (2.5)			●			●		●		●	●	●			●	●
AHX Series 101 lbf [450 N Force] 4", 8", or 12" stroke	AHX24-3*	●		4.5	2.0 (0.5)	150*	●	●										●				
	AHX24-SR*	●		4.5	2.5 (0.5)	150*			●							●		●				
	AHX24-MFT*	●		6	3.5 (1.3)	150*			●			●	●	●	●	●	●	●				
AHQ Series **44** lbf [200 N Force]	AHQX24-MFT-100	●		23	13 (1.5)	7-20 (7)*			●			●		●		●	●	●				
LHX Series 34 lbf [150 N Force] 4", 8", or 12" stroke	LHX24-3*	●		3	1.5 (0.5)	150*	●	●										●				
	LHX24-SR*	●		3	1.5 (0.5)	150*			●							●		●				
	LHX24-MFT*	●		5	2.5 (1.2)	75-150 (150)*			●			●	●	●	●	●	●	●				
LHQ Series **22** lbf [100 N Force]	LHQX24-MFT-100	●		23	13 (1.5)	3.5-15 (3.5)*			●			●	●	●		●	●	●				
LUX Series 27 in-lbs [3 Nm]	LUX24-3	●		2.5	1.0 (0.5)	150	●	●										●				
	LUX24-SR	●		3	1.5 (0.5)	150			●							●		●				
	LUX24-MFT	●		5	2.5 (1.2)	75-150 (150)			●			●	●	●	●	●	●	●				

*The LH and AH linear series actuators come in three different stroke lengths [4, 8, or 12 in]. The part number is followed by -100, -200, -300 respectively. The default running time is 150 seconds per 4 inches [100 mm]. Running time is adjustable depending on model: LH Series: 70-270, 140-540, 200-810, on the -100, -200, -300 models respectively.
AH Series: 150-600, 300-1200, 450-1800, on the -100, -200, -300 models respectively. LHQ and AHQ available in 4 inch version only.

† Dual mounting on a single shaft is possible for higher 720 in-lbs (-MFT wired Master-Slave). Please call Belimo Customer Service for details.

[1]Heater option for NEMA 4/NEMA 4X has a list price adder.

EF, AF, NF, Spring Return Damper Actuator Product Range

5 YEAR WARRANTY

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		Power Supply				Power Consumption		Running Time(s)		Control Input				Control Input MFT						Position Feedback		Auxiliary Switches
		24 VAC ± 20%, 50/60 Hz, VDC ± 10%	24 to 240 VAC +10%/- 20%, 50/60 Hz 24 to 125 VDC ± 10%	120 VAC ± 10%	230 VAC ± 10%	VA Rating, Actuator/Heater	Wattage Running/Heater (Holding)	Motor Drive (Default)	Spring Return	On/Off	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	0-10 V Phasecut	Honeywell Series 90, 0-135 Ω	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default)	VDC Variable, Start 0.5 to 8, Span 2-10 VDC	2 SPDT, 3 A (0.5 A inductive) @ 250V
EFB Series 270 in-lbs [30 Nm] Approx. 66 sq. ft.	EFB24	●				16	9.5 (4.5)	75	<20♦	●												
	EFB24 N4	●				16	9.5 (4.5)	75	<20♦	●												
	EFB24-S	●				16	9.5 (4.5)	75	<20♦	●												●
	EFB120			●	●	21	9.5 (4.5)	75	<20♦	●												
	EFB120-S			●	●	21	9.5 (4.5)	75	<20♦	●												●
	EFB120-S N4			●	●	21	9.5 (4.5)	75	<20♦	●												●
	EFB24-SR	●				14	8 (4.5)	95	<20♦		●									●		
	EFB24-SR N4	●				14	8 (4.5)	95	<20♦		●									●		
	EFB24-SR-S	●				14	8 (4.5)	95	<20♦		●									●		●
	EFB24-MFT	●				16	9.5 (4.5)	60…150 (150)	<20♦		●			●	●	●	●	●	●			
	EFB24-MFT-S	●				16	9.5 (4.5)	60…150 (150)	<20♦		●			●	●	●	●	●	●			●
AFB Series 180 in-lbs [20 Nm] Approx. 45 sq. ft.	AFB24	●				7.5	5 (2.5)	<75	20♦	●												
	AFB24-S	●				7.5	5 (2.5)	<75	20♦	●												●
	AFBUP		●			8.5*	7 (3.5)	<75	20♦	●												
	AFBUP-S		●			8.5*	7 (3.5)	<75	20♦	●												●
	AFB24-SR	●				8.5	5.5 (3)	95	<20♦		●									●		
	AFB24-SR-S	●				8.5	5.5 (3)	95	<20♦		●									●		●
	AFB24-PC	●				10	7.5 (3)	150	<20♦			●								●		
	AFB24-MFT	●				10	7.5 (3)	70…220 (150)	<20♦		●			●	●	●	●	●	●			
	AFB24-MFT-S	●				10	7.5 (3)	70…220 (150)	<20♦		●			●	●	●	●	●	●			●
	AFB24-MFT95	●				10	7.5 (3)	70…220 (150)	<20♦				●							●	●	
	AFB24 N4H	●				7.5/25	5/25(3)	<75	20♦	●												
	AFB24-S N4H	●				7.5/25	5/25(3)	<75	20♦	●												●
	AFBUP N4H		●			8.5*/25	7/25 (3)	<75	20♦	●												
	AFBUP-S N4H		●			8.5*/25	7/25 (3)	<75	20♦	●												●
	AFB24-SR N4H	●				8.5/25	5.5/25 (3)	95	<20♦		●									●		
	AFB24-SR-S N4H	●				8.5/25	5.5/25 (3)	95	<20♦		●									●		●
	AFB24-MFT N4H	●				10/25	7.5/25 (3)	70…220 (150)	<20♦		●			●	●	●	●	●	●			
	AFB24-MFT-S N4H	●				10/25	7.5/25 (3)	70…220 (150)	<20♦		●			●	●	●	●	●	●			●
	AFB24-MFT95 N4H	●				10/25	7.5/25 (3)	70…220 (150)	<20♦				●							●	●	
NFB Series 90 in-lbs [10 Nm] Approx. 22 sq. ft.	NFB24	●				8.5	6 (2.5)	<75	<20♦	●												
	NFB24-S	●				8.5	6 (2.5)	<75	20♦	●												●
	NFBUP		●			6.5**	6 (2.5)	<75	20♦	●												
	NFBUP-S		●			6.5**	6 (2.5)	<75	20♦	●												●
	NFB24-SR	●				6	3.5 (2.5)	95	<20♦		●									●		
	NFB24-SR-S	●				6	3.5 (2.5)	95	<20♦		●									●		●
	NFB24-MFT	●				9	6.5 (3)	40…150 (150)	<20♦		●			●	●	●	●	●	●			
	NFB24-MFT-S	●				9	6.5 (3)	40…150 (150)	<20♦		●			●	●	●	●	●	●			●
	NFB24 N4H	●				8.5/25	6/25 (2.5)	<75	<20♦	●												
	NFB24-S N4H	●				8.5/25	6/25 (2.5)	<75	20♦	●												●
	NFBUP N4H		●			6.5**/25	6/25 (2.5)	<75	20♦	●												
	NFBUP-S N4H		●			6.5**/25	6/25 (2.5)	<75	20♦	●												●
	NFB24-SR N4H	●				6/25	3.5/25 (2.5)	95	<20♦		●									●		
	NFB24-SR-S N4H	●				6/25	3.5/25 (2.5)	95	<20♦		●									●		●
	NFB24-MFT N4H	●				9/25	6.5/25 (3)	40…150 (150)	<20♦		●			●	●	●	●	●	●			
	NFB24-MFT-S N4H	●				9/25	6.5/25 (3)	40…150 (150)	<20♦		●			●	●	●	●	●	●			●

♦ <60 seconds @ -22°F [-30°C].
* 8.5 VA for 120 VAC; 7 VA for 24 VAC, 18 VA for 240 VAC.
** 6.5 VA for 120 VAC; 6 VA for 24 VAC; 9.5 VA for 240 VAC.
NEMA 4 Heater: add "H" to the end of select "N4", for example NFB24-MFT N4H. All AF/NF NEMA 4 models are configured for a CCW spring return rotation.
AF/NF NEMA 4 actuators without heater option are listed on page 6.

LF, TF
Spring Return
Damper Actuator
Product Range

5 YEAR WARRANTY

CE LISTED 94 D5 TEMP. IND. & REG. EQUIP. c UL us

		Power Supply			Power Consumption		Running Time(s)		Control Input					Control Input MFT				Position Feedback		Auxiliary Switches
		24 VAC ± 20%, 50/60 Hz, VDC ± 10%	120 VAC ± 10%	230 VAC ± 10%	VA Rating, Transformer Sizing	Wattage Running (Holding)	Motor Drive (Default)	Spring Return	On/Off	Floating Point	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	3 kΩ NTC Type 10 Thermistor	6 - 9 VDC, 20 VDC Output Voltage	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default)	VDC Variable, Start 0.5 to 8, Span 2-10 VDC	1 SPDT, 3 A (0.5 A inductive) @ 250V
LF Series 35 in-lbs [4 Nm] Approx. 8.5 sq. ft.	LF24 US	●			7	5 (2.5)	<40 to 75	<25♦	●											
	LF24-S US	●			7	5 (2.5)	<40 to 75	<25♦	●											●
	LF120 US		●		7.5	5.5 (3.5)	<40 to 75	<25♦	●											
	LF120-S US		●		7.5	5.5 (3.5)	<40 to 75	<25♦	●											●
	LF230 US			●	7	5 (3)	<40 to 75	<25♦	●											
	LF230-S US			●	7	5 (3)	<40 to 75	<25♦	●											●
	LF24-SR US	●			5	2.5 (1)	150	<25♦			●							●		
	LF24-SR-S US	●			5	2.5 (1)	150	<25♦			●							●		●
	LF24-SR-E US	●			5	2.5 (1)	150	<25♦			●							●		
	LF24-3 US	●			5	2.5 (1)	150	<25♦		●										
	LF24-3-S US	●			5	2.5 (1)	150	<25♦		●										●
	LF24-ECON-R03 US	●			5	2.5 (1)	95	<25♦				●						●		
	LF24-MFT US	●			5	2.5 (1)	75…300 (150)	<25♦			●			●	●	●	●	●	●	
	LF24-MFT-S US	●			5	2.5 (1)	75…300 (150)	<25♦			●			●	●	●	●	●	●	●
	LF24-MFT-20 US	●			6	3.5 (1.5)	150	<25♦					●	●	●	●	●	●	●	
	LF24-MFT-S-20 US	●			6	3.5 (1.5)	150	<25♦					●	●	●	●	●	●	●	●
	LFC24-3-R US	●			5	2.5 (1)	90	<25♦		●										
	LFC24-3-S US	●			5	2.5 (1)	90	<25♦		●										●
TFB Series 22 in-lbs [2.5 Nm] Approx. 5.5 sq. ft.	TFB24	●			5	2 (1.3)	<75	<25♦	●											
	TFB24-S	●			5	2 (1.3)	<75	<25♦	●											●
	TFLB24	●			5	2 (1.3)	<75	<75	●											
	TFB120		●	●	5	2.5 (1.3)	<75	<25♦	●											
	TFB120-S		●	●	5	2.5 (1.3)	<75	<25♦	●											●
	TFLB120		●	●	5	2.5 (1.3)	<75	<75	●											
	TFCB120-S		●	●	6	3 (1.5)	<30	<25♦	●											●
	TFB24-SR	●			4	2 (1)	95	<25♦			●							●		
	TFB24-SR-S	●			4	2 (1)	95	<25♦			●							●		●
	TFB120-SR		●	●	5.5	2.5 (2)	95	<25♦			●							●		
	TFB24-3	●			4	2.5 (1)	95	<25♦		●										
	TFB24-3-S	●			4	2.5 (1)	95	<25♦		●										●
	TFB24-MFT	●			4	2.5 (1)	75…300 (150)	<25♦			●			●	●	●	●	●	●	
	TFB24-MFT-S	●			4	2.5 (1)	75…300 (150)	<25♦			●			●	●	●	●	●	●	●

♦ <60 seconds @ -22°F [-30°C].

Custom Spring Return Damper Actuator Product Range

5 YEAR WARRANTY

CE LISTED 94 DS TEMP. IND. & REG. EQUIP. c UL us

		Power Supply				Power Consumption		Running Time(s)		Control Input			Control Input MFT				Position Feedback		Auxiliary Switches	Cable Options
		24 VAC ± 20%, 50/60 Hz, VDC ± 10%	24 to 240 VAC +10%/- 20%, 50/60 Hz 24 to 125 VDC ± 10%	120 VAC ± 10%	230 VAC ± 10%	VA Rating, Actuator/Heater	Wattage Running/Heater (Holding)	Motor Drive (Default)	Spring Return	On/Off	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	Honeywell Series 90, 0-135 Ω	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default)	VDC Variable, Start 0.5 to 8, Span 2-10 VDC	2 SPDT, 3 A (0.5 A inductive) @ 250V	10 ft. (3 m) or 16 ft. (5 m) cable
EFX Series 270 in-lbs [30 Nm] Approx. 66 sq. ft.	EFX24	●				16	9.5 (4.5)	75	<20♦	●										●
	EFX24-S	●				16	9.5 (4.5)	75	<20♦	●									●	●
	EFX120			●	●	21	9.5 (4.5)	75	<20♦	●										●
	EFX120-S			●	●	21	9.5 (4.5)	75	<20♦	●									●	●
	EFX24-SR	●				14	8 (4.5)	95	<20♦		●						●			●
	EFX24-SR-S	●				14	8 (4.5)	95	<20♦		●						●		●	●
	EFX24-MFT	●				16	9.5 (4.5)	60…150 (150)	<20♦		●		●	●	●	●	●	●		●
	EFX24-MFT-S	●				16	9.5 (4.5)	60…150 (150)	<20♦		●		●	●	●	●	●	●	●	●
	EFX24-S N4	●				16	9.5 (4.5)	75	<20♦	●									●	
	EFCX24-S N4	●				16	9.5 (4.5)	75	<10♦♦	●									●	
	EFX24-S N4H	●				16/21	9.5/21 (4.5)	75	<20♦	●									●	
	EFX120-S N4			●	●	21	9.5 (4.5)	75	<20♦	●									●	
	EFCX120-S N4			●	●	21	9.5 (4.5)	75	<10♦♦	●									●	
	EFX120-S N4H			●	●	21/22	9.5/22 (4.5)	75	<20♦	●									●	
	EFX120-SR N4			●	●	21	9(5.5)	95	<20♦		●						●			
	EFX120-SR-S N4			●	●	21	9(5.5)	95	<20♦		●						●		●	
	EFX24-SR-S N4	●				14	8 (4.5)	95	<20♦		●						●		●	
	EFX24-SR-S N4H	●				14/21	8/21 (4.5)	95	<20♦		●						●		●	
	EFX24-MFT-S N4	●				16	9.5 (4.5)	60…150 (150)	<20♦		●		●	●	●	●	●	●	●	
	EFX24-MFT-S N4H	●				16/21	9.5/21 (4.5)	60…150 (150)	<20♦		●		●	●	●	●	●	●	●	
AFX Series 180 in-lbs [20 Nm] Approx. 45 sq. ft.	AFX24	●				7.5	5 (2.5)	<75	20♦	●										●
	AFX24-S	●				7.5	5 (2.5)	<75	20♦	●									●	●
	AFXUP		●			8.5*	7 (3.5)	<75	20♦	●										●
	AFXUP-S		●			8.5*	7 (3.5)	<75	20♦	●									●	●
	AFX24-SR	●				8.5	5.5 (3)	95	<20♦		●						●			●
	AFX24-SR-S	●				8.5	5.5 (3)	95	<20♦		●						●		●	●
	AFX24-MFT	●				10	7.5 (3)	70…220 (150)	<20♦		●		●	●	●	●	●	●		●
	AFX24-MFT-S	●				10	7.5 (3)	70…220 (150)	<20♦		●		●	●	●	●	●	●	●	●
	AFX24-MFT95	●				10	7.5 (3)	70…220 (150)	<20♦			●					●	●		
	AFX24 N4	●				7.5	5 (2.5)	<75	20♦	●										●
	AFX24-S N4	●				7.5	5 (2.5)	<75	20♦	●									●	●
	AFXUP N4		●			8.5*	7 (3.5)	<75	20♦	●										●
	AFXUP-S N4		●			8.5*	7 (3.5)	<75	20♦	●									●	●
	AFX24-SR N4	●				8.5	5.5 (3)	95	<20♦		●						●			●
	AFX24-SR-S N4	●				8.5	5.5 (3)	95	<20♦		●						●		●	●
	AFX24-MFT N4	●				10	7.5 (3)	70…220 (150)	<20♦		●		●	●	●	●	●	●		●
	AFX24-MFT-S N4	●				10	7.5 (3)	70…220 (150)	<20♦		●		●	●	●	●	●	●	●	●
	AFX24-MFT95 N4	●				10	7.5 (3)	70…220 (150)	<20♦			●					●	●		
NFX Series 90 in-lbs [10 Nm] Approx. 22 sq. ft.	NFX24	●				8.5	6 (2.5)	<75	20♦	●										●
	NFX24-S	●				8.5	6 (2.5)	<75	20♦	●									●	●
	NFXUP		●			6.5**	6 (2.5)	<75	20♦	●										●
	NFXUP-S		●			6.5**	6 (2.5)	<75	20♦	●									●	●
	NFX24-SR	●				6	3.5 (2.5)	95	<20♦		●						●			●
	NFX24-SR-S	●				6	3.5 (2.5)	95	<20♦		●						●		●	●
	NFX24-MFT	●				9	6.5 (3)	40…150 (150)	<20♦		●		●	●	●	●	●	●		●
	NFX24-MFT-S	●				9	6.5 (3)	40…150 (150)	<20♦		●		●	●	●	●	●	●	●	●
	NFX24 N4	●				8.5	6 (2.5)	<75	20♦	●										●
	NFX24-S N4	●				8.5	6 (2.5)	<75	20♦	●									●	●
	NFXUP N4		●			6.5**	6 (2.5)	<75	20♦	●										●
	NFXUP-S N4		●			6.5**	6 (2.5)	<75	20♦	●									●	●
	NFX24-SR N4	●				6	3.5 (2.5)	95	<20♦		●						●			●
	NFX24-SR-S N4	●				6	3.5 (2.5)	95	<20♦		●						●		●	●
	NFX24-MFT N4	●				9	6.5 (3)	40…150 (150)	<20♦		●		●	●	●	●	●	●		●
	NFX24-MFT-S N4	●				9	6.5 (3)	40…150 (150)	<20♦		●		●	●	●	●	●	●	●	●

♦ <60 seconds @ -22°F [-30°C]. ♦♦ <15 seconds @ -22°F [-30°C]. * 8.5 VA for 120 VAC; 7 VA for 24 VAC, 18 VA for 240 VAC. ** 6.5 VA for 120 VAC; 6 VA for 24 VAC; 9.5 VA for 240 VAC

Custom Spring Return Damper Actuator Product Range

TFX Series
22 in-lbs [2.5 Nm]
Approx. 5.5 sq. ft.

	Power Supply			Power Consumption		Running Time(s)		Control Input			Control Input MFT				Position Feedback		Auxiliary Switches	Cable Options
	24 VAC ± 20%, 50/60 Hz, VDC ± 10%	120 VAC ± 10%	230 VAC ± 10%	VA Rating, Transformer Sizing	Wattage Running (Holding)	Motor Drive (Default)	Spring Return	On/Off	Floating Point	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default)	VDC Variable, Start 0.5 to 8, Span 2-10 VDC	1 SPDT, 3 A (0.5 A inductive) @ 250V	10 ft. (3 m) or 16 ft. (5 m) cable
TFX24	●			5	2 (1.3)	<75	<25♦	●										●
TFX24-S	●			5	2 (1.3)	<75	<25♦	●									●	●
TFX120		●	●	5	2.5 (1.3)	<75	<25♦	●										●
TFX120-S		●	●	5	2 (1.3)	<75	<25♦	●									●	●
TFCX120-S		●	●	6	3 (1.5)	<30	<25♦	●									●	●
TFX24-SR	●			4	2 (1)	95	<25♦			●					●			●
TFX24-SR-S	●			4	2 (1)	95	<25♦			●					●		●	●
TFX24-3	●			4	2.5 (1)	95	<25♦		●									●
TFX24-3-S	●			4	2.5 (1)	95	<25♦		●								●	●
TFX24-MFT	●			4	2.5 (1)	75…300 (150)	<25♦			●	●	●	●	●	●	●		●
TFX24-MFT-S	●			4	2.5 (1)	75…300 (150)	<25♦			●	●	●	●	●	●	●	●	●

♦ <60 seconds @ -22°F [-30°C]

GKB, NKQB Electronic Fail-Safe Damper Actuator Product Range

		Power Supply	Power Consumption		Running Time		Control Input			Position Feedback	Add-On Accessory	
		24 VAC ± 20%, 50/60 Hz, VDC ±10	VA Rating, Actuator/Heater	Wattage Running/Heater (Holding)	Motor Drive	Fail-Safe	On/Off	Floating Point	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	2-10 VDC (Default)	S1A or S2A (with Z-SPA for NKQ)	Potentiometer (with Z-SPA for NKQ)
GKB Series 360 in-lbs [40 Nm] Approx. 90 sq. ft.	GKB24-3*	●	21	11 (3)	150	35	●	●			●	●
	GKB24-SR	●	21	11 (3)	150	35			●	●	●	●
	GKB24-3-T N4H*	●	21/21	11/21 (3)	150	35	●	●			●	●
	GKB24-SR-T N4H	●	21/21	11/21 (3)	150	35			●	●	●	●
	GKB24-MFT-T N4H†	●	21/21	11/21 (3)	150	35			●	●	●	●
NKQB Series 54 in-lbs [6 Nm] Approx. 12 sq. ft.	NKQB24-1	●	22	11 (3)	4	4	●				●	●
	NKQB24-SR	●	22	11 (3)	4	4			●	●	●	●

*GK...24-3 is VAC only
†Piggy back mounting on a single shaft for -MFT wired Master-Slave, 720 in-lbs maximum load, and 1" minimum diameter shaft.
NEMA 4 actuators without heater option are listed below.

Custom Electronic Fail-Safe Damper Actuator Product Range

		Power Supply	Power Consumption		Running Time(s)		Control Input			Control Input MFT				Position Feedback		Cable Options	Add-On Accessory	
		24 VAC ± 20%, 50/60 Hz, VDC ± 10%	VA Rating, Transformer Sizing	Wattage Running (Holding)	Motor Drive (Default)	Fail-Safe	On/Off	Floating Point	2-10 VDC (Default) 4-20 mA (w/500 Ω Resistor)	On/Off	Floating Point	Start and Span adj., Start 0.5 to 30 VDC, Span 2.5 to 32 VDC	PWM adj., 0.02 to 50.0 Seconds	2-10 VDC (Default)	VDC Variable, Start 0.5 to 8, Span 2 to 10 VDC	10 ft. (3 m) or 16 ft. (5 m) cable	S1A or S2A (with Z-SPA for NKQ)	Potentiometer (with Z-SPA for NKQ)
GKX Series 360 in-lbs [40 Nm] Approx. 90 sq. ft.	GKX24-3*	●	21	11 (3)	90, 150 (150)	35	●	●								●	●	●
	GKX24-SR	●	21	11 (3)	90, 150 (150)	35			●					●		●	●	●
	GKX24-MFT†	●	21	11 (3)	90, 150 (150)	35			●	●	●	●	●	●	●	●	●	●
	GKX24-3-T N4*	●	21	11 (3)	90, 150 (150)	35	●	●									●	●
	GKX24-SR-T N4	●	21	11 (3)	90, 150 (150)	35			●					●			●	●
	GKX24-MFT-T N4	●	21	11 (3)	90, 150 (150)	35			●	●	●	●	●	●	●		●	●
NKQX Series 54 in-lbs [6 Nm] Approx. 12 sq. ft.	NKQX24-1	●	22	11 (3)	4, 7, 10 (4)	4	●									●	●	●
	NKQX24-SR	●	22	11 (3)	4, 7, 10 (4)	4			●					●		●	●	●
	NKQX24-MFT	●	22	11 (3)	4, 7, 10 (4)	4			●	●		●		●	●	●	●	●
AHKX Series 101 lbf [450 N Force] Approx. 4" stroke	AHKX24-MFT-100	●	22	11 (3)	90, 150 (150)	35			●	●	●	●	●	●	●	●		

*GK...24-3 is VAC only
†Piggy back mounting on a single shaft for -MFT wired Master-Slave, 720 in-lbs maximum load, and 1" minimum diameter shaft.

FSAF*A, FSAFB, FSNF, FSLF, FSTF Fire and Smoke Spring Return Damper Actuator Product Range

5 YEAR WARRANTY

LISTED 94D5 TEMP. IND. & REG. EQUIP. c UL us

		Power Supply			Power Consumption	Running Time(s)		Control Input	Auxiliary Switches	
		24 VAC/DC	120 VAC	230 VAC	VA Rating	Motor Drive	Spring Return	On/Off	2 SPST	2 SPDT
FSAF*A Series 180 in-lbs [20 Nm] Approx. 18 sq. ft. @ 350°F	FSAF24A	●			32‡	<25	<15	●		
	FSAF24A-S	●			32‡	<25	<15	●	●	
	FSAF120A		●		38‡	<25	<15	●		
	FSAF120A-S		●		38‡	<25	<15	●	●	
	FSAF230A			●	37‡	<25	<15	●		
	FSAF230A-S			●	37‡	<25	<15	●	●	
FSAFB Series 180 in-lbs [20 Nm] Approx. 18 sq. ft. @ 250°F	FSAFB24-SR	●			9	<75	<20	2-10 VDC		
	FSAFB24-SR-S	●			9	<75	<20	2-10 VDC		●
FSNF Series 70 in-lbs [8 Nm] Approx. 12 sq. ft. @ 350°F	FSNF24 US	●			24‡	<15	<15	●		
	FSNF24-S US	●			24‡	<15	<15	●		●
	FSNF120 US		●		23‡	<15	<15	●		
	FSNF120-S US		●		23‡	<15	<15	●		●
	FSNF230 US			●	23‡	<15	<15	●		
	FSNF230-S US			●	23‡	<15	<15	●		●
FSLF Series 30 in-lbs [3.5 Nm] Approx. 4 sq. ft. @ 350°F	FSLF24 US	●			15‡	<15	<15	●		
	FSLF24-S US	●			15‡	<15	<15	●	●	
	FSLF120 US		●		18‡	<15	<15	●		
	FSLF120-S US		●		18‡	<15	<15	●	●	
	FSLF230 US			●	17‡	<15	<15	●		
	FSLF230-S US			●	17‡	<15	<15	●	●	
FSTF Series*  18 in-lbs [2 Nm] Approx. 1.5 sq. ft. @ 250°F	FSTF24 US	●			3	<75	<25	●		
	FSTF24-S US	●			3	<75	<25	●	●	
	FSTF120 US		●		3.5	<75	<25	●		
	FSTF120-S US		●		3.5	<75	<25	●	●	
	FSTF230 US			●	5.5	<75	<25	●		
	FSTF230-S US			●	5.5	<75	<25	●	●	

‡VA Rating Note:

The FSAF*A, FSNF, and FSLF series actuators draw more current when driving against any stops. Neither UL nor Belimo require any local fusing or breakers. If used, see individual data sheets for End Stop current draws and current limit values.

*See retrofit installation instructions for details.

Use FSTF actuators only for dampers less than 1.5 sq.ft. at 250°F.

Use FSLF for dampers 4 sq.ft. and less at 350°F. No linkages are currently available.

Use FSNF for dampers 4-12 sq.ft. at 350°F and use FSAF*A for larger dampers and multisection applications.

Linkages are available for FSAF*A & FSAFB, FSNF, and FSTF.

Control Valve Product Range

Energy Valve Product Range

		Valve Nominal Size		2-way Valve	Suitable Actuators	
	GPM Range	Inches	DN [mm]	Valve Model	Non-Spring Return	Electronic Fail-Safe
NPT	1.65 - 5.5*	½	15	EV050S-055	LRB(X)24-EV(-G)	AKRB(X)24-EV(-G)
NPT	3.1 - 10.3*	¾	20	EV075S-103	LRB(X)24-EV(-G)	AKRB(X)24-EV(-G)
NPT	5.5 - 18.2*	1	25	EV100S-182	LRB(X)24-EV(-G)	AKRB(X)24-EV(-G)
NPT	8.6 - 28.5*	1¼	32	EV125S-285	NRB(X)24-EV(-G)	AKRB(X)24-EV(-G)
NPT	11.9 - 39.6*	1½	40	EV150S-396	NRB(X)24-EV(-G)	AKRB(X)24-EV(-G)
NPT	22.8 - 76.1*	2	50	EV200S-761	ARB(X)24-EV(-G)	AKRB(X)24-EV(-G)
NPT	30-100*	2	50	EV200S-1000**	ARB(X)24-EV(-G)	AKRB(X)24-EV(-G)
Flanged ANSI 125	38 - 127*	2½	65	EV250S-127	ARB(X)24-EV(-G)	AKRB(X)24-EV(-G)
Flanged ANSI 125	54 - 180*	3	80	EV300S-180	ARB(X)24-EV(-G)	AKRB(X)24-EV(-G)
Flanged ANSI 125	95 - 317*	4	100	EV400S-317	GRB(X)24-EV	GKRB(X)24-EV
Flanged ANSI 125	149 - 495*	5	125	EV500S-495	GRB(X)24-EV	GKRB(X)24-EV
Flanged ANSI 125	214 - 713*	6	150	EV600S-713	GRB(X)24-EV	GKRB(X)24-EV
Flanged ANSI 250	38 - 127*	2½	65	EV250S-127-250	EVX24-EV-L	AVKX24-EV-L
Flanged ANSI 250	54 - 180*	3	80	EV300S-180-250	EVX24-EV-L	AVKX24-EV-L
Flanged ANSI 250	95 - 317*	4	100	EV400S-317-250	EVX24-EV-B	AVKX24-EV-B
Flanged ANSI 250	149 - 495*	5	125	EV500S-495-250	EVX24-EV-B	AVKX24-EV-B
Flanged ANSI 250	214 - 713*	6	150	EV600S-713-250	EVX24-EV-B	AVKX24-EV-B

*V'nom = Maximum flow for each valve body size.
** Media temperature range is 39°F to 250°F [4°C to 120°C]

Mode of Operation

The Energy Valve is an energy metering pressure independent control valve that optimizes, documents, and proves water coil performance.

Product Features

Measures Energy: using its built-in electronic flow sensor and supply and return temperature sensors.
Controls Power: with its Power Control logic, providing linear heat transfer regardless of temperature and pressure variations.
Manages Delta T: by solving Low Delta T Syndrome. In addition, it reduces pumping costs while increasing chiller/boiler efficiency by optimizing coil efficiency.

Actuator Specifications

Control type	modulating
Manual override	LR, NR, AR, GR, AKR, GKR, EV, AVK
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting

Valve Specifications

Service	chilled or hot water, 60% glycol (open loop and steam not allowed)
Flow characteristic	equal percentage/linear
Controllable flow range	75°
Action	stem up - open A to AB
Sizes	½", ¾", 1", 1¼", 1½", 2", 2½", 3", 4", 5", 6"
End fitting	NPT female (½"- 2") pattern to mate with ANSI 125 or 250 flange (2½"- 6")
Materials	
Body	
Valve	forged brass, nickel plated (½"- 2") cast iron - GG25 (2½"- 6")
Sensor housing	forged brass, nickel plated (½"- 2") ductile iron - GGG50 (2½"- 6")
Ball	stainless steel
Stem	stainless steel
Plug	stainless steel (-250)
Seats	Teflon® PTFE, stainless steel (-250)
Characterizing disc	Tefzel® (½"- 2") stainless steel (2½"- 6")
Stem packing	EPDM (lubricated), NLP (-250)
Media temp range	14°F to 250°F [-10°C to +120°C], 39°F to 250°F [4°C to 120°C](EV200S-1000)
Body pressure rating	360 psi (½"- 2"), ANSI 125, Class B (2½"- 6") ANSI 250 (2½"-6") (-250)
Close-off pressure	200 psi (½"- 2"), 100 psi (2½"- 6"), varies by size (-250)
Differential pressure range (ΔP)	see Product Guide and Price List
Leakage	0%, ANSI Class IV (-250)
Inlet length to meet specified measurement accuracy	5x nominal pipe size (NPS)
Communication	BACnet IP, BACnet MS/TP, listed by BTL, web server, Modbus RTU/IP, Belimo MP-Bus
Remote temperature sensor length	
½"- 2"	2 ft. 7.5 in. [0.8 m] short, 9.8 ft. [3 m] long
2½"- 6"	32.8 ft. [10 m]

Control Valve Product Range

Electronic Pressure Independent Control Valve (ePIV) Product Range

		Valve Nominal Size		2-way Valve	Suitable Actuators	
	GPM Range	Inches	DN [mm]	Valve Model	Non-Spring Return	Electronic Fail-Safe
NPT	1.65 - 5.5*	½	15	P2050S	LRX24-EP	AKRX24-EP
	6 - 10.3*	¾	20	P2075S		
	11.1 - 18.2*	1	25	P2100S		
	18 - 28.5*	1¼	32	P2125S	NRX24-EP	
	26.1 - 39.6*	1½	40	P2150S		
	32.7 - 76.1*	2	50	P2200S	ARX24-EP	
	80-100**	2	50	P2200S		
Flanged ANSI 125	80 - 127*	2½	65	P6250S	ARX24-PI	AKRX24-PI
	133 - 180*	3	80	P6300S		
	195 - 317*	4	100	P6400S	GRX24-PI	GKRX24-PI
	335 - 495*	5	125	P6500S		
	515 - 713*	6	150	P6600S		
Flanged ANSI 250	38 - 127*	2½	65	P6250S-250	EVX24-PI-L	AVKX24-PI-L
	54 - 180*	3	80	P6300S-250		
	95 - 317*	4	100	P6400S-250	EVX24-PI-B	AVKX24-PI-B
	149 - 495*	5	125	P6500S-250		
	214 - 713*	6	150	P6600S-250		

*V'nom = Maximum flow for each valve body size.
** Applies to 2" ePIV models P2200S-800 through P2200S-1000 only.
Note: For NPT, ANSI 125 and ANSI 250 versions, flows can be field set to 30% of nominal flow rate.

ePIV

Equal Percentage Characteristic

Mode of Operation

The Electronic Pressure Independent Control Valve (ePIV) is a two-way valve which is unaffected by pressure variations in a system.

Product Features

Provides constant flow regardless of pressure variations in the system. Simplified valve sizing and selection, no Cv calculations required.

Actuator Specifications

Control type	modulating
Manual override	LR, NR, AR, GR, AKR, GKR, EV, AVK
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting

Valve Specifications

Service	chilled or hot water, 60% glycol (open loop and steam not allowed)
Flow characteristic***	equal percentage/linear
Sizes	½", ¾", 1", 1¼", 1½", 2", 2½", 3", 4", 5", 6"
End fitting	NPT female (½"-2") pattern to mate with ANSI 125 flange (2½"-6") and ANSI 250 (-250) models
Materials	
Body	
Valve	brass, nickel plated (½"-2") cast iron-GG25 (2½"-6")
Sensor housing	forged brass, nickel plated (½"-2") ductile iron- GGG50 (2½"-6")
Ball	stainless steel
Plug	stainless steel (-250)
Stem	stainless steel
Seats	Teflon® PTFE, stainless steel (-250)
Characterizing disc	Tefzel® (½"- 2") stainless steel (2½"-6")
Stem packing	EPDM (lubricated), NLP (-250)
Media temp range	14°F to 250°F [-10°C to +120°C], 39°F to 250°F [4°C to 120°C]**
Body pressure rating	360 psi (½" to 2") ANSI 125, Class B (2½"-6") ANSI 250 (2½"-6") (-250)
Close-off pressure	200 psi (½"- 2") 100 psi (2½"-6") varies by size (-250)
Differential pressure range (ΔP)	see Product Guide and Price List
Leakage	0%, ANSI Class IV (-250)
Flow sensor technology	ultrasonic (½"- 2") magnetic (2½"-6")
Inlet length to meet specified measurement accuracy	5x nominal pipe size (NPS)
Conductivity of media	min. 20uS/cm (Applies to sizes 2½" [DN65] to 6" [DN150] only.)

***The flow characteristic can be changed by using the Belimo PC-Tool software.

Control Valve Product Range

Factory Set Pressure Independent Characterized Control Valve Product Range

		Valve Nominal Size		2-way NPT	Suitable Actuators				
	GPM	Inches	DN [mm]	Valve Model	Non-Spring Return			Spring Return	
					LRB24-3	LRX24-MFT	LRX120-3	TFRX24-MFT	LF24-MFT US
Models with (-P) have integral PT ports / Forged Body	0.5	½	15	P2050B005 (-P)					
	1	½	15	P2050B010 (-P)					
	1.5	½	15	P2050B015 (-P)					
	2	½	15	P2050B020 (-P)					
	2.5	½	15	P2050B025 (-P)					
	3	½	15	P2050B030 (-P)					
	3.5	½	15	P2050B035 (-P)					
	4	½	15	P2050B040 (-P)					
	4.5	½	15	P2050B045 (-P)					
	5	½	15	P2050B050 (-P)					
	5.5	½	15	P2050B055 (-P)					
	6	¾	20	P2075B060 (-P)					
	6.5	¾	20	P2075B065 (-P)					
	7	¾	20	P2075B070 (-P)					
	7.5	¾	20	P2075B075 (-P)					
	8	¾	20	P2075B080 (-P)					
	8.5	¾	20	P2075B085 (-P)					
	9	¾	20	P2075B090 (-P)					
	9.5	¾	20	P2075B095 (-P)					
	10	¾	20	P2075B100 (-P)					
Models with (-P) have external PT ports / Cast Body	18	1¼	32	PICCV-32-018 (-P)		ARX24-MFT			AFRX24-MFT
	19	1¼	32	PICCV-32-019 (-P)					
	20	1¼	32	PICCV-32-020 (-P)					
	21	1¼	32	PICCV-32-021 (-P)					
	22	1¼	32	PICCV-32-022 (-P)					
	23	1¼	32	PICCV-32-023 (-P)					
	24	1¼	32	PICCV-32-024 (-P)					
	25	1¼	32	PICCV-32-025 (-P)					
	26	1¼	32	PICCV-32-026 (-P)					
	26	1½	40	PICCV-40-026 (-P)					
	27	1½	40	PICCV-40-027 (-P)					
	28	1½	40	PICCV-40-028 (-P)					
	29	1½	40	PICCV-40-029 (-P)					
	30	1½	40	PICCV-40-030 (-P)					
	31	1½	40	PICCV-40-031 (-P)					
	32	1½	40	PICCV-40-032 (-P)					
	33	1½	40	PICCV-40-033 (-P)					
	33	2	50	PICCV-50-033 (-P)					
	34	2	50	PICCV-50-034 (-P)					
	35	2	50	PICCV-50-035 (-P)					
	36	2	50	PICCV-50-036 (-P)					
	37	2	50	PICCV-50-037 (-P)					
	38	2	50	PICCV-50-038 (-P)					
	39	2	50	PICCV-50-039 (-P)					
	40	2	50	PICCV-50-040 (-P)					
	44	2	50	PICCV-50-044-P					
	48	2	50	PICCV-50-048-P					
	52	2	50	PICCV-50-052-P					
	56	2	50	PICCV-50-056-P					
	60	2	50	PICCV-50-060-P					
	65	2	50	PICCV-50-065-P					
	70	2	50	PICCV-50-070-P					
	75	2	50	PICCV-50-075-P					
	80	2	50	PICCV-50-080-P					

5 YEAR WARRANTY

PICCV

Equal Percentage Characteristic

Mode of Operation

The Pressure Independent Characterized Control Valve (PICCV) is a two-way valve which combines the functionality of a control valve and a pressure regulating valve, creating one precise product which is unaffected by pressure variations in a system.

Product Features

Constant flow regardless of pressure variations in the system at set degrees of ball opening. Maximizes chiller, preventing energizing additional chillers due to low ΔT. Simplified valve sizing and selection, no C_V calculations required.

(-P) ΔP verification across valve using PT ports.

Actuator Specifications

Control type	
-3	on/off, floating point
-MFT	modulating, 2-10 VDC (configurable)
Manual override	LRB, LRX, AFRX, ARX
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting (additional cable lengths are available)

Valve Specifications

Service	chilled or hot water, 60% glycol max
Flow characteristic	equal percentage
Controllable flow range	75°
Sizes	½", ¾", 1¼", 1½", 2"
End fitting	NPT female
Materials	
Body	brass, nickel plated
Ball	chrome plated brass
Stem	nickel plated brass
Seats	Teflon® PTFE
Seat o-rings	Viton®
Characterizing disc	
½" and ¾"	brass
1" to 2"	Tefzel®
Stem o-rings	EPDM (lubricated)
Diaphragm	
½" and ¾"	Nomex reinforced silicone
1¼" to 2"	polyester reinforced silicone
Regulator components	stainless steel/brass/Nitrile
Spring	stainless steel
Media temp. range	0°F to 212°F [-18°C to +100°C]
PT ports, optional	½" to ¾" integral 1¼" to 2" external
Body pressure rating	
600 psi	½", ¾"
400 psi	1¼", 1½", 2"
Close-off pressure	200 psi
Differential pressure (ΔP) range	5 to 50 psi
Leakage	ANSI Class IV (0.01% of rated valve capacity at 50 psi differential)

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Control Valve Product Range

Field Set Pressure Independent Characterized Control Valve Product Range

Valve is supplied at maximum flow in the full open position only.
Field adjustment is necessary to achieve lower flow.

	Valve Nominal Size		2-way NPT	Suitable Actuators	
GPM Range	Inches	DN [mm]	Valve Model	Non-Spring Return	
0...(0.5-1.5)	½	15	P2050B010	KRB24-3	LRB24-SA
0...(1.6-3.0)	½	15	P2050B025		
0...(3.0-5.6)	½	15	P2050B055		
0...(5.7-10)	¾	20	P2075B100		

ΔP verification across valve using PT ports (-P)

	Valve Nominal Size		2-way NPT	Suitable Actuators	
GPM Range	Inches	DN [mm]	Valve Model	Non-Spring Return	
0...(0.5-1.5)	½	15	P2050B010-P	KRB24-3	LRB24-SA
0...(1.6-3.0)	½	15	P2050B025-P		
0...(3.0-5.6)	½	15	P2050B055-P		
0...(5.7-10)	¾	20	P2075B100-P		

Flow verification using ΔP across orifice (-F)

	Valve Nominal Size		2-way NPT	Suitable Actuators	
GPM Range	Inches	DN [mm]	Valve Model	Non-Spring Return	
0...(0.5-1.5)	½	15	P2050B010-F	KRB24-3	LRB24-SA
0...(1.6-3.0)	½	15	P2050B025-F		
0...(3.0-5.6)	½	15	P2050B055-F		
0...(5.7-10)	¾	20	P2075B100-F		

PICCV

Equal Percentage Characteristic

Mode of Operation

The Pressure Independent Characterized Control Valve (PICCV) is a two-way valve which combines the functionality of a control valve and a pressure regulating valve, creating one precise product which is unaffected by pressure variations in a system.

Product Features

Once field set the valve will provide constant flow regardless of pressure variations in the system at set degrees of ball opening. Maximizes chiller, preventing energizing additional chillers due to low ΔT. Simplified valve sizing and selection, no C_V calculations required.

(-P) ΔP verification across valve using PT ports.
(-F) Flow verification using ΔP across flow orifice.

Valve is supplied at maximum flow in the full open position only.
Field adjustment is necessary to achieve lower flow.

Actuator Specifications	
Control type	on/off, floating point (KRB), modulating (LRB..-SA)
Manual override	KRB, LRB...-SA
Electrical connection	3 ft. [1 m] cable (no conduit on KR) ½" conduit fitting on LR only

Valve Specifications	
Service	chilled or hot water, 60% glycol max
Flow characteristic	equal percentage
Controllable flow range	75°
Sizes	½", ¾"
End fitting	NPT female
Materials	
Body	brass, nickel plated
Ball	chrome plated brass
Stem	nickel plated brass
Seats	Teflon® PTFE
Seat o-rings	Viton®
Characterizing disc	brass
Stem o-rings	EPDM (lubricated)
Diaphragm	Nomex reinforced silicone
Regulator components	stainless steel/brass/Nitrile
Spring	stainless steel
Media temp. range	0°F to 212°F [-18°C to +100°C]
KR valve assembly	0°F to 176°F [-18°C to +80°C]
Body pressure rating	600 psi
Close-off pressure	200 psi
Differential pressure (ΔP) range	5 to 50 psi
Leakage	ANSI Class IV (0.01% of rated valve capacity at 50 psi differential)

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Control Valve Product Range

ZoneTight Pressure Independent Zone Valve (PIQCV) Product Range

	Valve Nominal Size		2-way NPT with PT ports	Suitable Actuators	
GPM	Inches	DN [mm]	Valve Model	Non-Spring Return	Fail-Safe
0.9*	½	15	Z2050QPT-B	CQ Series	CQK Series
2.0*	½	15	Z2050QPT-D		
4.3*	½	15	Z2050QPT-F		
9.0*	¾	20	Z2075QPT-G		

*Maximum flow. Max value can be field adjusted, see actuator instructions.

	Clip Position for Flow Adjustment (GPM)							
	1	2	3	4	5	6	N	No Clip
Z2050QPT-B	N/A	N/A	N/A	N/A	0.4	N/A	0.8	0.9
Z2050QPT-D	0.2	0.3	0.4	0.6	0.9	1.3	1.8	2.0
Z2050QPT-F	N/A	0.6	0.9	1.3	1.9	2.8	3.6	4.3
Z2075QPT-G	N/A	1.8	2.7	3.7	4.9	6.3	7.7	9.0
Actuator Runtime	30 sec.	37 sec.	43 sec.	49 sec.	55 sec.	62 sec.	68 sec.	75 sec.

For additional intermediate settings see technical documentation or the ZoneTight flow capacity setting tool on www.zonetight.com or www.belimo.us.

5 YEAR WARRANTY

PIQCV

Mode of Operation

The ZoneTight Pressure Independent Zone Valve (PIQCV) is a two-way valve which combines the functionality of a control valve and a pressure regulating valve, creating one precise product which is unaffected by pressure variations in a system.

Product Features

Constant flow regardless of pressure variations in the system at set degrees of ball opening. Maximizes chiller ΔT, preventing energizing additional chillers due to low ΔT. Simplified valve sizing and selection, no C_V calculations required.

Actuator Specifications

Control type	
-3	on/off, floating point
-SR	modulating, 2-10 VDC
Manual override	use actuator to turn valve stem
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting screw terminals
Power consumption	
CQ..	0.3 W running, 0.2 W holding
CQK..	2.5 W running, 0.5 W holding
CQ..UP	1 W running, 0.7 W holding
Power supply	24V (110-240 VAC, UP)
Transformer sizing	
CQ..	0.6 VA
CQK..	5 VA
CQ..UP	2 VA

Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	equal percentage
Controllable flow range	75°
Sizes	½", ¾"
End fitting	NPT female
Materials	
Body	forged brass
Ball	stainless steel
Stem	stainless steel
Seats	Teflon© PTFE
O-rings	PTFE
Spring	stainless steel
Media temp. range	36°F to 212°F [2°C to 100°C]
Media temp. limit	250°F [120°C]
Maximum allowable operating temperature	212°F [100°C]
PT ports	2
Body pressure rating	360 psi
Close-off pressure	200 psi
Differential pressure (ΔP) range	5 to 50 psi
Leakage	0%

If temperature exceeds 212°F [100°C] operating range due to a boiler control failure the valve will safely contain the hot water but manufacturers product warranty becomes invalid.

Control Valve Product Range

ZoneTight Zone Valve (QCV) Product Range

		Valve Nominal Size		2-way NPT	3-way NPT	Suitable Actuators	
	C_V	Inches	DN [mm]	Valve Model		Non-Spring Return	Fail-Safe
NPT	1.4*	½	15	Z2050Q-F		CQ Series	CQK Series
	5.9*	½	15	Z2050Q-J			
	9.8*	¾	20	Z2075Q-K			
	1	½	15		Z3050Q-E		
	2.7	½	15		Z3050Q-H		
	4.6	¾	20		Z3075Q-J		
Sweat	1.4*	½	15	Z2050QS-F			
	5.9*	½	15	Z2050QS-J			
	9.8*	¾	20	Z2075QS-K			
	1	½	15		Z3050QS-E		
	2.7	½	15		Z3050QS-H		
	4.6	¾	20		Z3075QS-J		

*Maximum flow. Max value can be field adjusted, see actuator instructions.

	V'max End Stop Positions										V'nom
	1	2	3-	3	4	4+	5	5+	6	N	No end stop
Z2050Q(S)-F (½")	0.1	N/A	0.2	N/A	N/A	0.4	N/A	0.6	0.8	1.2	1.4
Z2050Q(S)-J (½")	0.5	0.7	N/A	1.2	1.7	N/A	2.4	N/A	3	4.8	5.9
Z2075Q(S)-K (¾")	0.5	1.0	N/A	1.5	2.3	N/A	3.3	N/A	4.6	6.6	9.8

Mode of Operation

The ZoneTight Zone Valve (QCV) is operated by a rotary actuator. The actuators are controlled by a standard voltage for on/off control, a modulating signal, or 3-point control system which moves the ball of the valve to the position dictated by the control system.

Product Features

The equal percentage characteristic of the flow is ensured by the design of the ball. This characteristic provides linear heating or cooling output from the coil improving energy efficiency and comfort.

Actuator Specifications

Control type	
-3	on/off, floating point
-SR	modulating, 2-10 VDC
Manual override	use actuator to turn valve stem
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting screw terminals
Power consumption	
CQ..	0.3 W running, 1.5 W holding
CQK..	3 W running, 1 W holding
CQ..UP	1.5 W running, 1.1 W holding
Power supply	24 VAC/DC (110-230 VAC, UP)
Transformer sizing	
CQ..	0.6 VA
CQK..	8 VA
CQ..UP	2 VA

Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	equal percentage (2-way) linear (3-way)
Controllable flow range	75° (2-way), 90° (3-way)
Sizes	½", ¾"
End fitting	NPT female sweat
Materials	
Body	forged brass
Ball	chrome plated brass
Stem	brass
Seats	Teflon® PTFE
O-rings	EPDM (lubricated)
Media temp. range	36°F to 212°F [2°C to 100°C]
Media temp. limit	250°F [120°C]
Maximum allowable operating temperature	212°F [100°C]
Body pressure rating	360 psi
Close-off pressure	75 psi
Maximum differential pressure (ΔP)	40 psi
Leakage	0%

Teflon® is a registered trademark of DuPont™

If temperature exceeds 212°F [100°C] operating range due to a boiler control failure the valve will safely contain the hot water but manufacturer's product warranty becomes invalid.

Control Valve Product Range

6-Way Characterized Control Valve Product Range (½")

		Valve Nominal Size		6-way NPT	Suitable Actuators	
Sequence 1 C_V	Sequence 2 C_V	Inches	DN [mm]	Valve Model	Non-Spring Return	
0.29	0.29	½	15	B315-029-029	LRB24-SR	LRX24-MFT
0.29	0.46	½	15	B315-029-046		
0.29	0.73	½	15	B315-029-073		
0.29	1.16	½	15	B315-029-116		
0.29	1.50	½	15	B315-029-150		
0.46	0.29	½	15	B315-046-029		
0.46	0.46	½	15	B315-046-046		
0.46	0.73	½	15	B315-046-073		
0.46	1.16	½	15	B315-046-116		
0.46	1.50	½	15	B315-046-150		
0.73	0.29	½	15	B315-073-029		
0.73	0.46	½	15	B315-073-046		
0.73	0.73	½	15	B315-073-073		
0.73	1.16	½	15	B315-073-116		
0.73	1.50	½	15	B315-073-150		
1.16	0.29	½	15	B315-116-029		
1.16	0.46	½	15	B315-116-046		
1.16	0.73	½	15	B315-116-073		
1.16	1.16	½	15	B315-116-116		
1.16	1.50	½	15	B315-116-150		
1.50	0.29	½	15	B315-150-029		
1.50	0.46	½	15	B315-150-046		
1.50	0.73	½	15	B315-150-073		
1.50	1.16	½	15	B315-150-116		
1.50	1.50	½	15	B315-150-150		
1.75	2.0	½	15	B315-175-200		
2.0	1.75	½	15	B315-200-175		
2.0	2.0	½	15	B315-200-200		

5 YEAR WARRANTY

CCV

Linear Characteristic

Mode of Operation

The control valve is operated by an electronic actuator that responds to a modulating VDC/4…20 mA control signal. The actuator will then move the ball of the valve to the position dictated by the control signal thus changing the flow.

Product Features

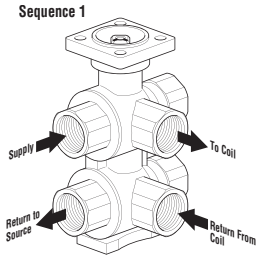
Linear characteristic, complete close-off.

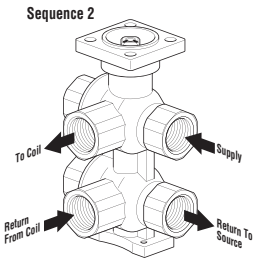
Actuator Specifications

Control type	2-10 VDC multi-function technology (MFT)
Manual override	LR...
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting

Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	linear
Controllable flow range Sequence 1 Sequence 2	 (0 to 30° angle) Dead zone 30° to 60° (60° to 90° angle)
Sizes	½"
End fitting	NPT
Materials Body Ball Stem Seats Seat o-rings Characterizing disc O-rings	 nickel plated brass chrome plated brass nickel plated brass Teflon® PTFE EPDM chrome plated steel EPDM
Media temperature range	43°F to 180°F [6°C to 82°C]
Body pressure rating	232 psi
Close-off pressure	50 psi
Maximum differential pressure (ΔP)	15 psi
Leakage	0%





Control Valve Product Range

6-Way Characterized Control Valve Product Range (¾”)

		Valve Nominal Size		6-way NPT	Suitable Actuators	
Sequence 1 C_V	Sequence 2 C_V	Inches	DN [mm]	Valve Model	Non-Spring Return	
0.73	0.73	¾	20	B320-073-073	LRB24-SR	LRX24-MFT
0.73	1.16	¾	20	B320-073-116		
0.73	1.86	¾	20	B320-073-186		
0.73	2.9	¾	20	B320-073-290		
1.16	0.73	¾	20	B320-116-073		
1.16	1.16	¾	20	B320-116-116		
1.16	1.86	¾	20	B320-116-186		
1.16	2.9	¾	20	B320-116-290		
1.86	0.73	¾	20	B320-186-073		
1.86	1.16	¾	20	B320-186-116		
1.86	1.86	¾	20	B320-186-186		
1.86	2.9	¾	20	B320-186-290		
2.9	0.73	¾	20	B320-290-073		
2.9	1.16	¾	20	B320-290-116		
2.9	1.86	¾	20	B320-290-186		
2.9	2.9	¾	20	B320-290-290		
2.9	4.0	¾	20	B320-290-400		
2.9	4.7	¾	20	B320-290-470		
4.0	2.9	¾	20	B320-400-290		
4.0	4.0	¾	20	B320-400-400		
4.0	4.7	¾	20	B320-400-470		
4.9	2.9	¾	20	B320-490-290		
4.9	4.0	¾	20	B320-490-400		
4.9	4.7	¾	20	B320-490-470		

5 YEAR WARRANTY

CCV

Linear Characteristic

Mode of Operation

The control valve is operated by an electronic actuator that responds to a modulating VDC/4…20 mA control signal. The actuator will then move the ball of the valve to the position dictated by the control signal thus changing the flow.

Product Features

Linear characteristic, complete close-off.

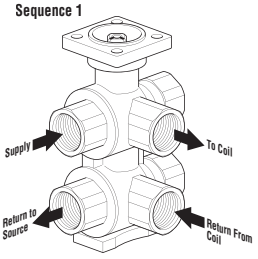
Actuator Specifications

Control type	2-10 VDC multi-function technology (MFT)
Manual override	LR...
Electrical connection	3 ft. [1 m] cable with ½” conduit fitting

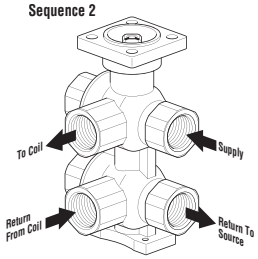
Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	linear
Controllable flow range Sequence 1 Sequence 2	 (0 to 30° angle) Dead zone 30° to 60° (60° to 90° angle)
Sizes	¾”
End fitting	NPT
Materials Body Ball Stem Seats Seat o-rings Characterizing disc O-rings	 nickel plated brass chrome plated brass nickel plated brass Teflon® PTFE EPDM chrome plated steel EPDM
Media temperature range	43°F to 180°F [6°C to 82°C]
Body pressure rating	232 psi
Close-off pressure	50 psi
Maximum differential pressure (ΔP)	15 psi
Leakage	0%

Sequence 1



Sequence 2



Control Valve Product Range

6-Way Electronic Pressure Independent Characterized Control Valve Product Range

Flow	Valve Nominal Size		6-way NPT	Suitable Actuators
Vnom/GPM	Inches	DN [mm]	Valve Model	Non-Spring Return
5.5	½	15	P3050B6-K	LRX24-LP-EP6
10.3	¾	20	P3075B6-J	

5 YEAR WARRANTY

CCV

Linear Characteristic

Mode of Operation

The control valve is operated by an electronic actuator that responds to a modulating 2-10 VDC control signal. The actuator will then move the ball of the valve to the position dictated by the control signal and change the flow.

Product Features

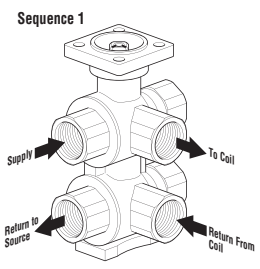
Linear characteristic, complete close-off.

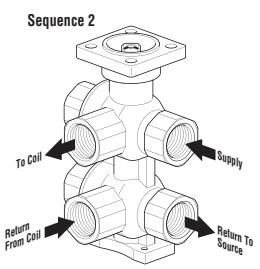
Actuator Specifications

Control type	modulating
Manual override	LRX24-LP-EP6
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting

Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	linear
Controllable flow range	
Sequence 1	(0 to 30° angle) Dead zone 30° to 60°
Sequence 2	(60° to 90° angle)
Sizes	½", ¾"
End fitting	NPT
Materials	
Body	nickel plated brass
Ball	chrome plated brass
Stem	nickel plated brass
Seats	Teflon® PTFE
Seat o-rings	EPDM
Characterizing disc	chrome plated steel
O-rings	EPDM
Media temperature range	43°F to 180°F [6°C to 82°C]
Body pressure rating	232 psi
Close-off pressure	50 psi
Maximum differential pressure (ΔP)	15 psi
Leakage	0%





Control Valve Product Range

Zone Valve Product Range

	Valve Nominal Size		2-way NPT	2-way Sweat	Suitable Actuators			
C_V	Inches	DN [mm]	Valve Model		Normally Closed		Normally Open	
1	½	15	ZONE215N-10	ZONE215S-10	Zone	Zone (with Switch)	Zone	Zone (with Switch)
2.5	½	15	ZONE215N-25	ZONE215S-25				
3.5	½	15	ZONE215N-35	ZONE215S-35				
3.5	¾	20	ZONE220N-35	ZONE220S-35				
5	¾	20	ZONE220N-50	ZONE220S-50				
8	1	25	ZONE225N-80	ZONE225S-80				

	Valve Nominal Size		3-way NPT	3-way Sweat	Suitable Actuators	
C_V	Inches	DN [mm]	Valve Model		Normally Closed	
1	½	15	ZONE315N-10	ZONE315S-10	Zone	Zone (with Switch)
2.5	½	15	ZONE315N-25	ZONE315S-25		
3.5	½	15	ZONE315N-35	ZONE315S-35		
3.5	¾	20	ZONE320N-35	ZONE320S-35		
5	¾	20	ZONE320N-50	ZONE320S-50		
8	1	25	ZONE325N-80	ZONE325S-80		

2 YEAR WARRANTY

Mode of Operation

Zone valves provide a convenient way to create individual zones or equipment isolation in a hydronic system. Utilizing one pump along with multiple zone valves, flow can be started, stopped, or diverted through the system to provide individual room or area comfort control and energy savings.

Product Features

Zone valve is designed to fit in compact areas where on/off control is required using 24 VAC or 120 VAC.

Actuator Specifications

Control type	on/off
Manual override	NC versions only
Electrical connection	6" [15 cm] wire lead 120V; 18" [45 cm] wire lead 24V

Valve Specifications

Service	chilled or hot water, 50% glycol
Flow characteristic	
Two-way	on/off
Three-way	on/off, diverting
Sizes	½", ¾" and 1"
End fitting	NPT female or sweat
Materials	
Body	forged brass
Stem	stainless steel
Stem seals	EPDM
Paddle	EPDM
Media temp range	32°F to 212°F [0°C to 100°C]
Body pressure rating	300 psi
Close-off pressure	20-75 psi
Leakage	ANSI Class III 0.1%

Control Valve Product Range

Characterized Control Valve (CCV) Product Range

	Valve Nominal Size		2-way NPT	3-way NPT	Suitable Actuators					
C_V	Inches	DN [mm]	Valve Model		Non-Spring Return		NEMA 4X	Spring Return		NEMA 4
0.3	½	15	B207(B)	B307(B)	TR Series	LR Series	NR Series	TFR Series	LF Series	AFR Series
0.46	½	15	B208(B)	B308(B)						
0.8	½	15	B209(B)	B309(B)						
1.2	½	15	B210(B)	B310(B)						
1.9	½	15	B211(B)	B311(B)						
3	½	15	B212(B)	B312(B)						
4.7	½	15	B213(B)	B313(B)						
7.4	½	15	B214(B)							
10	½	15	B215(B)	B315(B)						
16	½	15	B216(B)*	B316(B)*						
4.7	¾	20	B217(B)	B317(B)						
7.4	¾	20	B218(B)	B318(B)						
10	¾	20	B219(B)							
14	¾	20	B220(B)*							
14	¾	20		B320(B)						
24	¾	20	B221(B)*	B321(B)*						
7.4	1	25	B222	B322						
10	1	25	B223	B323						
19	1	25	B224							
30	1	25	B225*	B325*						
10	1¼	32	B229							
19	1¼	32	B230*							
10	1¼	32		B329		AR Series	AR Series		AFR Series	AFR Series
19	1¼	32		B330						
25	1¼	32	B231	B331						
37	1¼	32	B232*							
19	1½	40	B238	B338						
29	1½	40	B239	B339						
37	1½	40	B240*	B340						
46	1½	40		B341						
29	2	50	B248	B347						
37	2	50		B348						
46	2	50	B249	B349						
57	2	50	B250*	B350						
65	2	50	B251							
68	2	50		B351						
83	2	50		B352						
85	2	50	B252							
120	2	50	B253							
240	2	50	B254*							

* Models without characterizing discs. (B) Models with chrome plated brass ball and nickel plated brass stem

5 YEAR WARRANTY

CCV

Equal Percentage Characteristic

Mode of Operation

The Characterized Control Valve is operated by a rotary actuator. The actuators are controlled by a standard voltage for on/off control, a modulating signal, or floating point control system which move the ball of the valve to the position dictated by the control system.

Product Features

The equal-percentage characteristic of the flow is ensured by the integral characterizing disc. This characteristic provides linear heating or cooling output from the coil improving energy efficiency and comfort.

Actuator Specifications	
Control type	on/off, floating point, 2-10 VDC, multi-function technology (MFT)
Manual override	TR, LR, AR, NR, AFR series
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting or covered screw terminal strip

Valve Specifications	
Service	chilled or hot water, up to 60% glycol
Flow characteristic	A-port equal percentage B-port modified for constant common port flow
Controllable flow range	75°
Sizes	½", ¾", 1", 1¼", 1½", 2"
End fitting	NPT female
Materials	
Body	forged brass, nickel plated
Ball	stainless steel or chrome plated brass
Stem	stainless steel or nickel plated brass
Seats	Teflon® PTFE
Seat o-rings	EPDM
Characterizing disc	
½"- 1 ½" (2-way)	Tefzel®
½"-1" (3-way)	Tefzel®
2" (2-way) B248-B249	Tefzel®
2" (2-way) B251-B253	stainless steel
1¼"- 2" (3-way)	stainless steel
Stem o-rings	EPDM
Media temp. range	0°F to 250°F [-18°C to +120°C]
Body pressure rating	
2-way	
All ½", ¾", and 1"	600 psi
1¼" up to B230	600 psi
1¼" from B231	400 psi
1½" - 2"	400 psi
3-way	
All ½", ¾", and 1"	600 psi
1¼"- 2"	400 psi
Close-off pressure	200 psi
Maximum differential pressure (ΔP)	50 psi
Leakage	0% for A to AB < 2.0% for B to AB
Cv rating	B port: 70% of A to AB C_V

Tefzel® and Teflon® are registered trademarks of DuPont

Control Valve Product Range

Characterized Control Valve (CCV) Product Range

	Valve Nominal Size		2-way NPT	Suitable Actuators		
C_V	Inches	DN [mm]	Valve Model	Non-Spring Return	Spring Return	NEMA 4
60	2½	65	B261	AR Series	AFR Series	AR/AFR Series
75	2½	65	B262			
110	2½	65	B263			
150	2½	65	B264			
210	2½	65	B265*			
70	3	80	B277			
130	3	80	B278			
170	3	80	B280*			

* Models without characterizing disc

5 YEAR WARRANTY

CCV

Equal Percentage Characteristic

Mode of Operation

The Characterized Control Valve is operated by a rotary actuator. The actuators are controlled by a standard voltage for on/off control, a modulating signal, or floating point control system which move the ball of the valve to the position dictated by the control system.

Product Features

The equal-percentage characteristic of the flow is ensured by the integral characterizing disc. This characteristic provides linear heating or cooling output from the coil improving energy efficiency and comfort.

Actuator Specifications	
Control type	on/off, floating point, 2-10 VDC, multi-function technology (MFT)
Manual override	AR and AFR series
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting or covered screw terminal strip

Valve Specifications	
Service	chilled or hot water, up to 60% glycol
Flow characteristic	A-port equal percentage
Controllable flow range	75°
Sizes	2½", 3"
End fitting	NPT female
Materials	
Body	forged brass, nickel plated
Ball	stainless steel
Stem	stainless steel
Seats	Teflon® PTFE
Seat o-rings	EPDM
Characterizing disc	Tefzel®
Stem o-rings	EPDM
Media temp. range	0°F to 212°F [-18°C to +100°C]
Body pressure rating	400 psi
Close-off pressure	100 psi
Maximum differential pressure (ΔP)	30 psi
Leakage	0% for A to AB

Tefzel® and Teflon® are registered trademarks of DuPont

Control Valve Product Range

Characterized Control Valve (CCV) Product Range

	Valve Nominal Size		2-way Flanged	Suitable Actuators					
C_V	Inches	DN [mm]	Valve Model	Non-Spring Return		Spring Return	Electronic Fail-Safe	NEMA 4	NEMA 4X
70	2½	65	B6250S-070	AR		AFR		AFR	AR
110	2½	65	B6250S-110						
110	3	80	B6300S-110						
186	4	100	B6400S-186		GR		GKR	GR	GKR
290	5	125	B6500S-290						
400	6	150	B6600S-400						

5 YEAR WARRANTY

CCV

Equal Percentage Characteristic

Mode of Operation

The Characterized Control Valve is operated by a rotary actuator. The actuators are controlled by a standard voltage for on/off control, a modulating signal, or floating point control system which move the ball of the valve to the position dictated by the control system.

Product Features

The equal-percentage characteristic of the flow is ensured by the integral characterizing disc. This characteristic provides linear heating or cooling output from the coil improving energy efficiency and comfort.

Actuator Specifications	
Control type	on/off, floating point, 2-10 VDC, multi-function technology (MFT)
Manual override	AR, GR, AFR and GKR series
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting or covered screw terminal strip

Valve Specifications		
Service	chilled or hot water, up to 60% glycol max.	
Flow characteristic	A-port equal percentage	
Controllable flow range	75°	
Sizes	2½", 3", 4", 5", 6"	
End fitting	ANSI Class 125 flange, flat face*	
Materials		
Body	cast iron GG25	
Ball	stainless steel	
Stem	stainless steel	
Seats	Teflon® PTFE	
Seat o-rings	EPDM rubber	
Characterizing disc	stainless steel	
Stem o-rings	EPDM	
Media temp. range	0°F to 250°F [-18°C to +120°C]	
Body pressure rating	ANSI 125, Class B	
	°F	Psi
	-20° to +150°	200
	200°	180
	225°	180
	250°	175
Close-off pressure	100 psi	
Maximum differential pressure (ΔP)	50 psi	
Leakage	0% for A to AB	

*125 psi flanges have a plain flat face and should not be bolted to a raised face flange.

Control Valve Product Range

High Temperature Characterized Control Valve (HTCCV) Product Range

	Valve Nominal Size		2-way NPT	Suitable Actuators			
C_V	Inches	DN [mm]	Valve Model	Non-Spring Return		Spring Return	
0.29	½	15	B215HT029	TR Series	LR Series	TFR Series	LF Series
0.46	½	15	B215HT046				
0.73	½	15	B215HT073				
1.16	½	15	B215HT116				
1.86	½	15	B215HT186				
2.90	½	15	B215HT290				
4.55	½	15	B215HT455*				
1.86	¾	20	B220HT186				
2.90	¾	20	B220HT290				
4.64	¾	20	B220HT464				
7.31	¾	20	B220HT731				
9.28	¾	20	B220HT928				
13.20	¾	20	B220HT1320				
4.64	1	25	B225HT464				
7.31	1	25	B225HT731				
11.60	1	25	B225HT1160				
18.56	1	25	B225HT1856				
28.00	1	25	B225HT2800				

* modified equal percentage.

HTCCV

Equal Percentage Characteristic

Mode of Operation

The control valve is operated by an electronic actuator that responds to a standard voltage for on/off control, by a modulating VDC/4…20 mA, or 3-point control system. The actuator will then move the ball of the valve to the position dictated by the control signal or voltage and change the flow.

Product Features

Equal-percentage characteristic of the flow. B215HT455 model has a modified equal percentage characteristic.

Actuator Specifications

Control type	on/off, floating point, 2-10 VDC multi-function technology (MFT)
Manual override	only TR, LR series
Electrical connection	3 ft. [1 m] cable with ½"conduit fitting (except TR)

Valve Specifications

Service	hot water, up to 60% glycol, steam
Flow characteristic	A-port equal percentage
Controllable flow range	75°
Sizes	½", ¾", 1"
End fitting	NPT female
Materials	
Body	brass (DZR) P-CuZn35Pb2
Ball	stainless steel
Stem	stainless steel
Seat	ETFE
Stem packing	Viton®
Characterizing disc	ETFE
Seat o-rings	EPDM
Body pressure rating	600 psi
Media temperature range	
Steam	250°F [120°C]
Water	60°F to 266°F [16°C to 130°C]
Close-off pressure	200 psi
Maximum differential pressure (ΔP)	
Steam	15 psi
Water	60 psi partially open ball 116 psi full open only (Model #B215HT455)
Maximum inlet pressure	
Steam	15 psi
Leakage	0%

Control Valve Product Range

Ball Valve Product Range

	Valve Nominal Size		2-way NPT	3-way NPT	Suitable Actuators		
C_V	Inches	DN [mm]	Valve Model		Non-Spring Return		Spring Return
1	½	15	B2050VS-01*		LM Series	SY Series	LF Series
2	½	15	B2050VS-02*				
4	½	15	B2050VS-04*				
15	½	15	B2050VS-15*				
30	¾	20	B219VS		NM Series		NF Series
51	¾	20	B220VS				
43	1	25	B224VS				AF Series
68	1	25	B225VS		AM Series		
48	1¼	32	B232VS				
84	1½	40	B239VS		GM Series		
177	1½	40	B240VS				
108	2	50	B249VS				
15	½	15	B2050VSS-15*		NM Series		LF
30	¾	20	B219VSS				NF
43	1	25	B224VSS		AM		AF Series
108	2	50	B249VSS		GM		
6.4	½	15		B315L**	LR Series		LFR Series
12.8	¾	20		B320L**			
11	1	25		B325L**			
34	1¼	32		B332L**	NR		AFR Series
57	1½	40		B340L**	AR Series		
87	2	50		B350L**			

* For hot only or cold only applications. Not for temperature changeover applications.
** Not for steam applications

NOTE: Industrial ball valves (B2..VS, B2..VSS) have serviceable components. Proper maintenance of these parts will ensure a longer in-service life for the valves. The seats of these valves will require replacement at an interval consistent with number of full cycles the valve has be operated, or as field condition dictates.

2 YEAR WARRANTY

Mode of Operation

The control valve is operated by an electronic actuator that responds to a standard voltage for on/off control, by a modulating VDC/4…20 mA, or 3-point control system. The actuator will then move the ball of the valve to the position dictated by the control signal thus changing the flow.

Product Features

Modified equal percentage of flow for B2. Modified linear flow for B3.
B3...L valves are for diverting applications and are not rated for steam.

Actuator Specifications

Control type	on/off, floating point, modulating, 2-10 VDC multi-function technology (MFT)
Manual override	LM, NM, GM, AM, SY, AF, NF, GK
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting (excluding SY)

Valve Specifications

Service	chilled or hot water, (60% glycol), steam (2-way)
Flow characteristic	modified equal percentage (B2), modified linear (B3...L)
Sizes	½", ¾", 1", 1¼", 1½", 2"
End fitting	FNPT
Materials	
Body	bronze (B2..VS) stainless steel (B2..VSS) nickel plated brass (B3..L)
Ball	stainless steel, bronze (B2050VSS-15) chrome plated brass (B3..L)
Stem	stainless steel nickel plated brass (B3..L)
Seats	
2-way	MPTFE, RPTFE (B2050)
3-way	Teflon PTFE
Stem packing	
2-way NPT	MPTFE
O-rings	NPT EPDM (B3..L)
Media temp range	
B2..VS	-22°F to +280°F [-30°C to +138°C]
B2..VSS	-22°F to +298°F [-30°C to +148°C]
B3...L	0°F to 250°F [-18°C to +120°C]
Body pressure rating	
3-way	600 psi DN 15-25 (B3..L ½"-1") 400 psi DN 32-50 (B3..L 1¼" - 2")
Maximum inlet pressure	
Steam	35 psi B2..VS 50 psi B2..VSS
Leakage	ANSI Class IV (B2..VS, VSS) 0% (B3..L)

Control Valve Product Range

V Ball Valve Product Range

	Valve Nominal Size		2-way NPT	2-way Flanged	Suitable Actuators			
C_V	Inches	DN [mm]	Valve Model		Non-Spring Return		Spring Return	Electronic Fail-Safe
024	1	25	B2100VB-024		SY Series	AM Series	NF Series	
055	1½	40	B2150VB-055					
077	2	50	B2200VB-077				AF	
207	3	80		B6300VB-207				GK Series
350	4	100		B6400VB-350		GM	EF	
507	6	150		B6600VB-507				

NOTE: Industrial ball valves have serviceable components. Proper maintenance of these parts will ensure a longer in-service life for the valves. The seats of these valves will require replacement at an interval consistent with number of full cycles the valve has be operated, or as field condition dictates.

2 YEAR WARRANTY

Equal Percentage Characteristic

Mode of Operation

The control valve is operated by an electronic actuator that responds to a standard voltage for on/off control, by a modulating VDC/4…20 mA, or 3-point control system. The actuator will then move the ball of the valve to the position dictated by the control signal thus changing the flow.

Product Features

Equal percentage of flow

300:1 rangeability

ANSI Leakage Class IV

Actuator Specifications

Control type	on/off, floating point, modulating, 2-10 VDC multi-function technology (MFT)
Manual override	all models
Electrical connection	3 ft. [1 m] cable with ½" conduit fitting, terminal block

Valve Specifications

Service	chilled or hot water, (60% glycol), steam
Flow characteristic	equal percentage
Sizes	1", 1½", 2", 3", 4", 6"
End fitting	SAE NPT female (1" to 2") ANSI flanged (3" to 6")
Materials	
Body	carbon steel
Characterizing ball	hardened chrome plated stainless steel
Stem	stainless steel
Seats	Teflon®
O-rings	ALFAS
Stem packing	spring loaded Teflon® V-ring
Bushings	Stanyl PA46
Media temp. range	380°F max.
Body pressure rating	NPT ANSI 300 (1" to 2") Flanged ANSI 150 (3" to 6")
Maximum ΔP steam	100 psi
Maximum ΔP water	100 psi
Close-off pressure	
Water	150 psi
Steam	200 psi
Maximum inlet pressure	
Steam	200 psi
Leakage	ANSI Class IV

Control Valve Product Range

Globe Valve Product Range

	Valve Nominal Size		2-way NPT	3-way NPT	Suitable Actuators		
C_V	Inches	DN [mm]	Valve Model		Non-Spring Return	Spring Return	Electronic Fail-Safe
0.4	½	15	G212	–	LV Series	LF Series	LVK Series
1.3	½	15	G213	–			
2.2	½	15	G214	–			
4.4	½	15	G215	–			
0.4	½	15	G212S	–			
1.3	½	15	G213S	–			
2.2	½	15	G214S	G314			
4.4	½	15	G215S	G315			
4.4	½	15	–	G315D			
5.5	¾	20	G219	–			
7.5	¾	20	G220	–			
5.5	¾	20	G219S	–			
7.5	¾	20	G220S	G320			
7.5	¾	20	–	G320D			
10	1	25	G224	–	SV Series	NF Series	SVK Series
14	1	25	G225	–			
10	1	25	G224S	–			
14	1	25	G225S	G325			
14	1	25	–	G325D			
20	1¼	32	G232	–			
20	1¼	32	G232S	G332			
20	1¼	32	–	G332D			
28	1½	40	G240	–		AFX Series	
28	1½	40	G240S	G340			
28	1½	40	–	G340D			
40	2	50	G250	–			
40	2	50	G250S	–			
41	2	50	–	G350			
40	2	50	–	G350D			

Mode of Operation

The control valve is operated by an electronic actuator that responds to a standard voltage for on/off control, by a modulating 2-10 VDC/ 4…20 mA, 3-point control system. The actuator will then move the plug of the valve to the position dictated by the control signal thus changing the flow.

Product Features

Equal percentage (G2) and linear (G3) flow curve options available for a wide variety of HVAC applications. Capable of being used for heating, cooling, and steam service. Repack and rebuild kits are available to extend the life of the valve without full replacement.

Actuator Specifications

Control type	on/off, floating point, 2-10 VDC, multi-function technology (MFT)
Manual override	all models except LF
Electrical connection	3 ft [1 m] cable with ½" conduit fitting

Valve Specifications

Service	chilled or hot water, 60% glycol, steam
Flow characteristic	G2 - equal percentage G2S, G3, G3D - linear
Sizes	½", ¾", 1", 1¼", 1½", 2"
End fitting	NPT female
Materials	
Body	bronze
Stem	stainless steel
Plug	brass stainless steel: G2..S
Seat	bronze stainless steel: G2..S
Stem packing	spring loaded TFE
Disc / Seal	composition EPDM G2 Teflon® G2...S
Media temp. range	refer to valve spec. pages in the Product Guide and Price List
Body pressure rating	250 psi
Maximum inlet pressure	
Steam	35 psi G2 100 psi G2...S
Maximum differential pressure (ΔP)	
Water	35 psi (241 kPa)
Steam	20 psi (138 kPa) G2 35 psi (241 kPa) G2...S
Rangeability	5:1 (G212..) 15:1 (G213..) 25:1 (G214..) 40:1 (G215..) 50:1 (G219..) 60:1 (G220.., G224..) 75:1 (all others) 500:1 (G3..)

Control Valve Product Range

Globe Valve Product Range

	Valve Nominal Size		2-way Flanged	Suitable Actuators		
C_V	Inches	DN [mm]	Valve Model	Non-Spring Return	Spring Return	Electronic Fail-Safe
65	2½	65	G665C	EV Series	AFX Series	AVK Series
65	2½	65	G665CS			
65	2½	65	G665C-250			
65	2½	65	G665CS-250			
65	2½	65	G665LCS			
85	3	80	G680C			
85	3	80	G680CS			
85	3	80	G680C-250			
85	3	80	G680CS-250			
85	3	80	G680LCS			
170	4	100	G6100C			
170	4	100	G6100CS			
170	4	100	G6100C-250			
170	4	100	G6100CS-250			
170	4	100	G6100LCS			
263	5	125	G6125C			
263	5	125	G6125CS			
263	5	125	G6125C-250			
263	5	125	G6125CS-250			
263	5	125	G6125LCS			
344	6	150	G6150C			
344	6	150	G6150CS			
344	6	150	G6150C-250			
344	6	150	G6150CS-250			
344	6	150	G6150LCS			

The G...(C)(CS)(LCS) Series valve is a pressure compensated valve that allows high close-off ratings while utilizing standard actuation.

Mode of Operation

The control valve is operated by an electronic actuator that responds to a standard voltage for on/off control, a modulating 2-10 VDC/4…20 mA, or 3-point control system. The actuator will then move the plug of the valve to the position dictated by the control signal thus changing the flow.

Product Features

Equal percentage (G6) and linear (G7) flow curve options available for a wide variety of HVAC applications. Capable of being used for heating, cooling, and steam service. Repack and rebuild kits are available to extend the life of the valve without full replacement.

Actuator Specifications

Control type	on/off, floating point, 2-10 VDC multi-function technology (MFT)
Manual override	all models
Electrical connection	3 ft [1 m] cable with ½" conduit fitting

Valve Specifications

Service	chilled or hot water, 60% glycol, steam
Flow characteristic	
G6	A-port equal percentage
G6LCS	linear
Sizes	2½", 3", 4", 5", 6"
End fitting	ANSI flanged
Materials	
Body	cast iron
Stem	stainless steel
Plug	bronze
Seat	
G6	stainless steel
G6...S	stainless steel
Stem packing	
G6	bronze trimmed: NLP (EPDM)
G6S	stainless trimmed: NLP (EPDM)
Media temp. range	refer to valve spec. pages in the Product Guide and Price List
Body pressure rating	
G6, 125# ANSI flange	125 psi
G6, 250# ANSI flange	250 psi
Maximum inlet pressure	
Water	150 psi (1034 kPa) G6C, G6CS 250 psi (1724 kPa) G6C...250, G6CS...250
Steam	35 psi (241 kPa) G6C, G6C...250 100 psi (690 kPa) G6CS, G6CS...250
Maximum differential pressure (ΔP)	
Water	25 psi (172 kPa) G6C, G6C...250 50 psi (345 kPa) G6CS, G6CS...250
Steam	15 psi (103 kPa) G6C, G6C...250
Rangeability	85:1 (G665..), 91:1 (G680..) 98:1 (G6100..), 100:1 (G6125..) 98:1 (G6150..)

Control Valve Product Range

Globe Valve Product Range

	Valve Nominal Size		3-way Flanged	Suitable Actuators		
C_V	Inches	DN [mm]	Valve Model	Non-Spring Return	Spring Return	Electronic Fail-Safe
68	2½	65	G765	EV / RV Series	AFX Series	AVK Series
68	2½	65	G765S			
68	2½	65	G765-250			
68	2½	65	G765S-250			
85	3	80	G780			
85	3	80	G780S			
85	3	80	G780-250			
85	3	80	G780S-250			
190	4	100	G7100			GK Series
190	4	100	G7100S			
190	4	100	G7100-250			
190	4	100	G7100S-250			
280	5	125	G7125	RV Series		
280	5	125	G7125S			
280	5	125	G7125-250			
280	5	125	G7125S-250			
340	6	150	G7150			
340	6	150	G7150S			
340	6	150	G7150-250			
340	6	150	G7150S-250			
68	2½	65	G765D	EV Series	AFX Series	AVK Series
68	2½	65	G765DS			
68	2½	65	G765DS-250			
85	3	80	G780D			
85	3	80	G780DS			
85	3	80	G780DS-250			
154	4	100	G7100D			
154	4	100	G7100DS			
154	4	100	G7100DS-250			
195	5	125	G7125D			
195	5	125	G7125DS			
195	5	125	G7125DS-250			
248	6	150	G7150D			
248	6	150	G7150DS			
248	6	150	G7150DS-250			

Mode of Operation

The control valve is operated by an electronic actuator that responds to a standard voltage for on/off control, a modulating 2-10 VDC/4…20 mA, or 3-point control system. The actuator will then move the plug of the valve to the position dictated by the control signal thus changing the flow.

Product Features

Equal percentage (G6) and linear (G7) flow curve options available for a wide variety of HVAC applications. Capable of being used for heating, cooling, and steam service. Repack and rebuild kits are available to extend the life of the valve without full replacement.

Actuator Specifications

Control type	on/off, floating point, 2-10 VDC multi-function technology (MFT)
Manual override	all models
Electrical connection	3 ft [1 m] cable with ½" conduit fitting

Valve Specifications

Service	chilled or hot water, 60% glycol
Flow characteristic	linear
Sizes	2½", 3", 4", 5", 6"
End fitting	flanged
Materials	
Body	cast iron
Stem	stainless steel
Plug	bronze
Seat	
G7	stainless steel
G7...S	stainless steel
Stem packing	
G7	bronze trimmed: NLP (EPDM)
G7...S	stainless trimmed: NLP (EPDM)
Media temp. range	refer to valve spec. pages in the Product Guide and Price List
Body pressure rating	
G7, 125# ANSI flange	125 psi
G7, 250# ANSI flange	250 psi
Maximum inlet pressure	
Water	150 psi (1034 kPa) G7, G7S 250 psi (1724 kPa) G7...250, G7S...250
Maximum differential pressure (ΔP)	
Water	25 psi (172 kPa) G7, G7...250 50 psi (345 kPa) G7S,G7S...250
Rangeability	50:1

Control Valve Product Range

Resilient Seat Butterfly Valve Product Range

	C_V 90°	C_V 60°	Valve Nominal Size IN	Valve Nominal Size DN [mm]	2-way Valve Model	Non-Spring Return HDU LU	Non-Spring Return L	Non-Spring Return HD	Spring Return HD	Electronic Fail-Safe L	Electronic Fail-Safe HD
	115	44	2	50	F650			AR	AF Series		
	196	75	2½	65	F665			GR Series			
	302	116	3	80	F680	AR GR					GKR
	600	230	4	100	F6100	GR		DR	PR Series		DKR
	1022	392	5	125	F6125						PKR Series
	1579	605	6	150	F6150	DR					
NEW	3136	1202	8	200	F6200L	PR	PR			PKR	
NEW	5340	2047	10	250	F6250L						
NEW	8250	3162	12	300	F6300L						
	11917	4568	14	350	F6350				SY Series (2 Year Warranty)		
	16388	6282	16	400	F6400						
	21705	8320	18	450	F6450						
	27908	10698	20	500	F6500						
	43116	16528	24	600	F6600						
						NEW				NEW	NEW

	C_V 90°	C_V 60°	Valve Nominal Size IN	Valve Nominal Size DN [mm]	3-way Valve Model	Non-Spring Return HDU	Non-Spring Return L	Non-Spring Return HD	Spring Return HD	Electronic Fail-Safe L	Electronic Fail-Safe HD
	115	44	2	50	F750			AM	AF		
	196	75	2½	65	F765			GM Series			
	302	116	3	80	F780	GM					GK
	600	230	4	100	F7100	2* GM Series		PR Series			PKR Series
	1022	392	5	125	F7125						
	1579	605	6	150	F7150						
NEW	3136	1202	8	200	F7200L		PR			PKR	
NEW	5340	2047	10	250	F7250L						
NEW	8250	3162	12	300	F7300L						
	11917	4568	14	350	F7350			SY Series (2 Year Warranty)			
	16388	6282	16	400	F7400						
	21705	8320	18	450	F7450						
							NEW			NEW	

5 YEAR WARRANTY

Mode of Operation

Butterfly valves are capable of handling higher flow rates with relatively low pressure loss. These valves may be used for isolation (shut-off) service or throttling service within a range of 0-60 degrees for two-way valves. Butterfly valves are controlled with a maintenance-free electronic actuator or manually with an ergonomic handle or gear operator.

Product Features

The unique disc and seat design ensures positive valve seating while maintaining low seating torque.

Actuator Specifications

Control type	on/off, floating point, modulating, 2-10 VDC, multi-function technology (MFT)
Manual override	all models
Electrical connection	3 ft. [1 m] cable terminal block

Valve Specifications

Service	chilled, hot water, 60% glycol
Flow characteristic	F6 modified equal percentage F7 modified linear
Sizes	2" to 24"
End fitting	for ASME/ANSI Class 125/150 flanges
Materials	
Body	ductile iron ASTM A536
Body finish	HD Series: epoxy powder coat **L Series: polyester**
Disc	304 stainless steel
Shaft	HD Series: 416 stainless steel **L Series: 420 stainless steel**
Seat	EPDM
O-rings	EPDM
Bushings	HD Series: RPTFE **L Series: steel, PFE**
Media (water) temp. range	-22°F to +250°F [-30°C to +120°C]
Body pressure rating	consistent with ASME/ANSI Class 125
Close-off pressure	HDU, LU: 50 psi, 3" to 10" HD: 200 psi, 2" to 6", & 12" 150 psi, 14" to 24" **L: 200 psi**
Rangeability	10:1
Maximum velocity	12 FPS
Leakage	0%

Control Valve Product Range

Grooved Butterfly Valve Product Range

		Valve			Suitable Actuators				
		Valve Nominal Size		2-way	Non-Spring Return			Spring Return	Electronic Fail-Safe
C_V 90°	C_V 60°	IN	DN [mm]	Valve Model					
115	36	2	50	F650VIC	AM Series		SY Series (2 Year Warranty)	AF Series	
260	80	2½	65	F665VIC		GM Series			
440	140	3	80	F680VIC					
820	250	4	100	F6100VIC			DR Series		GK
1200	370	5	125	F6125VIC					
1800	560	6	150	F6150VIC					
3400	1050	8	200	F6200VIC					
5800	1800	10	250	F6250VIC					
9000	2790	12	300	F6300VIC					

		Valve			Suitable Actuators			
		Valve Nominal Size		3-way	Non-Spring Return			Spring Return
C_V 90°	C_V 60°	IN	DN [mm]	Valve Model				
115	36	2	50	F750VIC	AM		SY Series (2 Year Warranty)	AF
260	80	2½	65	F765VIC		GM Series		
440	140	3	80	F780VIC				
820	250	4	100	F7100VIC				
1200	370	5	125	F7125VIC				
1800	560	6	150	F7150VIC				
3400	1050	8	200	F7200VIC				
5800	1800	10	250	F7250VIC				
9000	2790	12	300	F7300VIC				

Mode of Operation

Grooved butterfly valves are designed for body pressures ranging from full vacuum to 300 psi and for bi-directional, dead end services to full body pressure. The valve patented seat design ensures full 360° sealing. The pressure-enhanced seat compresses to form a larger seating area as the pressure increases. Valve construction and performance meet and exceed MSS-SP-67 requirements.

Product Features

The unique single offset disc and seat design ensures positive valve seating while maintaining low seating torque.

Actuator Specifications

Control type	on/off, floating point, modulating, 2-10 VDC, multi-function technology (MFT)
Manual override	all models
Electrical connection	3 ft. [1 m] cable terminal block

Valve Specifications

Service	chilled, hot water, 60% glycol
Flow characteristic	F6 modified equal percentage F7 modified linear
Sizes	2" to 12"
End fitting	grooved ANSI/AWWA (C606)
Materials*	
Body	ductile iron ASTM A536, grade 65-45-12
Body finish	black alkyd enamel
Disc	electrolysis nickel coated ductile iron
Shaft	416 stainless steel
Seat	EPDM
Bearings	fiberglass with TFE lining
Media temp. range	-22°F to +250°F [-30°C to +120°C]
Body pressure rating	300 psi
Close-off pressure	200 psi (for most combinations)
Rangeability	100:1
Maximum velocity	20 FPS
Leakage	0%

*VIC®300 Masterseal™ is manufactured by Victaulic Company

Control Valve Product Range

High Performance Butterfly Valve Product Range

		2-way Valves			Suitable Actuators					
		Valve Nominal Size	Valve Model		Non-Spring Return				Spring Return		Electronic Fail-Safe	
C_V 90°	C_V 60°	Inches	ANSI 150	ANSI 300	150		300		150	300	150	300
102	56	2	F650-150SHP	F650-300SHP	GM Series	SY Series (2 Year Warranty)	GM Series	SY Series (2 Year Warranty)	AF Series	AF Series	GK Series	GK Series
146	80	2½	F665-150SHP	F665-300SHP								
228	125	3	F680-150SHP	F680-300SHP								
451	248	4	F6100-150SHP	F6100-300SHP								
714	392	5	F6125-150SHP	F6125-300SHP								
1103	607	6	F6150-150SHP	F6150-300SHP								
2064	1135	8	F6200-150SHP	F6200-300SHP								
3517	1934	10	F6250-150SHP	F6250-300SHP								
4837	2660	12	F6300-150SHP	F6300-300SHP								
6857	3592	14*	F6350-150SHP	F6350-300SHP								
9287	4865	16*	F6400-150SHP	F6400-300SHP								
11400	6270	18*	F6450-150SHP	F6450-300SHP								
14420	7590	20*	F6500-150SHP	F6500-300SHP								
22050	11550	24*	F6600-150SHP	F6600-300SHP								

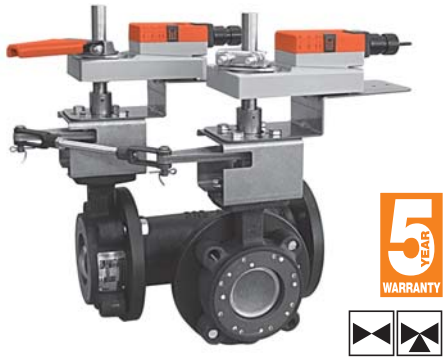
Note: C_V values listed for ANSI Class 150 Butterfly Valves. Please consult the technical documentation for ANSI Class 300 C_V values and configurations.

* Contact customer service at 800-543-9038 for availability. Longer lead times may apply.

		3-way Valves			Suitable Actuators					
		Valve Nominal Size	Valve Model		Non-Spring Return				Electronic Fail-Safe	
C_V 90°	C_V 60°	Inches	ANSI 150	ANSI 300	150		300		150	300
100	52	2	F750-150SHP	F750-300SHP	GM Series	SY Series (2 Year Warranty)	GM Series	SY Series (2 Year Warranty)	GK Series	GK Series
143	75	2½	F765-150SHP	F765-300SHP						
223	117	3	F780-150SHP	F780-300SHP						
435	228	4	F7100-150SHP	F7100-300SHP						
688	361	5	F7125-150SHP	F7125-300SHP						
1041	546	6	F7150-150SHP	F7150-300SHP						
1911	1001	8	F7200-150SHP	F7200-300SHP						
3194	1673	10	F7250-150SHP	F7250-300SHP						
4428	2319	12	F7300-150SHP	F7300-300SHP						
5702	2986	14*	F7350-150SHP	F7350-300SHP						
8243	3988	16*	F7400-150SHP	F7400-300SHP						
9712	5088	18*	F7450-150SHP	F7450-300SHP						

Note: C_V values listed for ANSI Class 150 Butterfly Valves. Please consult the technical documentation for ANSI Class 300 C_V values and configurations.

* Contact customer service at 800-543-9038 for availability. Longer lead times may apply.



Mode of Operation

High performance butterfly valves are designed for modulating and isolation service and feature a machined seat design and blow out proof solid shaft, providing better torque consistency, which offers longer actuator life and reduced risk of leakage. Available for a variety of high temperature and pressure ratings i.e., ASME/ANSI Class 300 or 150. Valve sizes range from 2 to 24 inches, with rangeabilities of 100:1, 0% leakage ratings, and a maximum valve velocity of 32 FPS.

Product Features

Unique body seat and double offset disc design ensures positive valve sealing to help assure leak free performance in water applications while maintaining low seating torque.

Actuator Specifications

Control type	on/off, floating point, modulating, 2-10 VDC, multi-function technology (MFT)
Manual override	all models
Electrical connection	3 ft. [1 m] cable terminal block

Valve Specifications

Service	chilled or hot water, 60% glycol, steam to 50 psi
Flow characteristic	F6 modified equal percentage, unidirectional F7 modified linear, unidirectional
Sizes	2" to 24"
End fitting	ASME/ANSI Class 150 or 300
Materials	
Body	carbon steel full lug
Disc	316 stainless steel
Shaft	17-4 PH stainless
Seat	RTFE
Gland seal	TFE
Bearings	glass backed PTFE
Media temp. range	-22°F to +400°F [-30°C to +204°C]
Body pressure rating	150 SHP: ASME/ANSI Class 150 300 SHP: ASME/ANSI Class 300
Close-off pressure	150: 285 psi, 300: 600 psi
Rangeability	100:1
Maximum velocity	32 FPS
Leakage	0%

Double Dead End Service: Utilizes larger retainer ring set screws to allow the valve to be placed at the end of the line without a down stream flange in either flow direction while still holding full pressure.

Outdoor Air Sensor Product Range

Temperature / Humidity

Outside air mounted temperature sensor, or combination temperature and humidity sensors are wired directly to DDC controllers for local HVAC equipment control or integrated as a global data point to the building managements system (BMS) with BACnet or Modus with selected multi-range models. Optional weather shield protects the sensor from rain and radiant heat from the sun.

Accuracy Temperature	
01UT	PT.. = ±0.5°F @ 32°F [±0.3°C @ 0°C] Ni.. = ±0.7°F @ 32°F [±0.4°C @ 0°C] NTC.. = ±0.3°F @ 77°F [±0.2°C @ 25°C]
22UT	±1% of measuring range @ 70°F [21°C]
22UTH	±0.9°F @ 77°F [±0.5°C @ 25°C]
Humidity	±2% between 10 to 90% RH @ 70°F [21°C]
Power Supply	DC 15...24 V (± 10%), AC 24 V (± 10%) DC 15...24 V (± 10%) (4-20 mA)
Cable Entry	cable gland PG11 Ø6 to 10 mm, with strain relief Ø6 to 8 mm, ½" conduit adapter included
Degree of Protection	NEMA 4X, IP65

22UTH510X

22UTH

22UT

Modbus BACnet c UL us 5 YEAR WARRANTY

Measuring Values				Measuring Ranges																Additional Features		
				Measuring Range Temperature												Relative Humidity	Absolute Humidity	Dewpoint	Enthalpy			
Temperature		Output Signal Temperature (default)	Output Signal Humidity (default)	Multirange	-30°F to +120°F [-35°C to +50°C]	-30°F to +130°F [-50°C to +50°C]	-30°F to +195°F [-35°C to +90°C]	-40°F to +160°F [-40°C to +60°C]	0°F to 100°F [-15°C to +35°C]	0°F to 150°F [0°C to 160°C]	0°F to 200°F [-20°C to +80°C]	0°F to 250°F [-10°C to +120°C]	30°F to 480°F [0°C to 250°C]	40°F to 90°F [-20°C to +80°C]	40°F to 140°F [0°C to 50°C]	40°F to 240°F [0°C to 100°C]	0 to 100% RH (non condensing)	0 to 50 g/m³ (default) 0 to 80 g/m³	0°F to 200°F [-20°C to +80°C] 40°F to 140°F [0°C to 50°C] (default)	0 to 85 kJ/kg	Communication	Weather Shield	Probe Length [mm]
01UT-5A	Passive	PT100			●																	
01UT-5B		PT1000			●																	
01UT-5E		Ni1000			●																	
01UT-5L		NTC10k2			●																	
01UT-5M		NTC10K3			●																	
01UT-5Q		NTC20K			●																	
22UT-52	Active	DC 0-5V (DC 0-10V)		8	●	•			●	●		●	●	●		●							1" [25]
22UT-54		4-20 mA		8	●	•			●	●		●	●	●		●							1" [25]
Humidity / Temperature																						
22UTH-51	Active	DC 0-5V (DC 0-10V)	DC 0-5V (DC 0-10V)	4	●			●		•				●		•	●	●	●			
22UTH-53		4-20 mA	4-20 mA	4	●			●		•				●		•	●	●	●			
22UTH-510B	Passive	PT1000	DC 0-5V (DC 0-10V)		●											•	●	●	●			
22UTH-510E		Ni1000	DC 0-5V (DC 0-10V)		●											•	●	●	●			
22UTH-510L		NTC10k2	DC 0-5V (DC 0-10V)		●											•	●	●	●			
22UTH-510M		NTC10K3	DC 0-5V (DC 0-10V)		●											•	●	●	●			
22UTH-510Q		NTC20K	DC 0-5V (DC 0-10V)		●											•	●	●	●			
22UTH-530B		PT1000	4-20 mA		●											•	●	●	●			
22UTH-530E		Ni1000	4-20 mA		●											•	●	●	●			
22UTH-530L		NTC10k2	4-20 mA		●											•	●	●	●			
22UTH-530M		NTC10K3	4-20 mA		●											•	●	●	●			
22UTH-530Q		NTC20K	4-20 mA		●											•	●	●	●			
22UTH-510X	Active	DC 0-5V (DC 0-10V)	DC 0-5V (DC 0-10V)	4	●			●		•				●		•	●	●	●		●	
22UTH-530X		4-20 mA	4-20 mA	4	●			●		•				●		•	●	●	●		●	
22UTH-550X		DC 0-5V (DC 0-10V)	DC 0-5V (DC 0-10V)		●		●									•	●	●	●	Modbus RTU	●	
22UTH-560X		DC 0-5V (DC 0-10V)	DC 0-5V (DC 0-10V)		●		●									•	●	●	●	BACnet MS/TP	●	

• Factory setting (setting ranges are configurable on the sensor).

Please note: For temperature and humidity sensors, the °F and °C are not direct conversions. °F is the standard range for the United States, and °C is the standard range for Canada and Latin America.

Duct / Immersion Sensor Product Range

Temperature

Duct and immersion temperature sensors for duct and pipe applications provides air or water temperature (with A-22P-A series Thermowell) readings to air handling equipment, unitary HVAC equipment, and central plants. Duct flange mount sensors with adjustable mounting flange are ideal for HVAC equipment that do not require electrical conduit for example AHU, FCU and VAV applications.

Accuracy	PT.. = ±0.5°F @ 32°F [±0.3°C @ 0°C] Ni.. = ±0.7°F @ 32°F [±0.4°C @ 0°C] NTC.. = ±0.3°F @ 77°F [±0.2°C @ 25°C]
Cable Entry	cable gland PG11 Ø6 to 10 mm, with strain relief Ø6 to 8 mm, ½" conduit adapter included
Degree of Protection	
01DT	NEMA 4X, IP65
01CT	NEMA 4X, IP67

01DT
Duct / Immersion

Thermowell (A-22P) accessory, refer to page 41

01CT
Duct Flanged Mount

Measuring Values			Measuring Range				
			Temperature				
Temperature		Output Signal Temperature	-60°F to +320°F -50°C to +160°C	-60°F to +300°F -50°C to +150°C	-30°F to +210°F -35°C to +100°C	Probe Length [mm]	Cable Length [m]
01DT-5AH	Passive	PT100	●			2" [50]	
01DT-5AL		PT100	●			4" [100]	
01DT-5AN		PT100	●			6" [150]	
01DT-5AP		PT100	●			8" [200]	
01DT-5AR		PT100	●			12" [300]	
01DT-5AT		PT100	●			18" [450]	
01DT-5BH		PT1000	●			2" [50]	
01DT-5BL		PT1000	●			4" [100]	
01DT-5BN		PT1000	●			6" [150]	
01DT-5BP		PT1000	●			8" [200]	
01DT-5BR		PT1000	●			12" [300]	
01DT-5BT		PT1000	●			18" [450]	
01DT-5EH		Ni1000	●			2" [50]	
01DT-5EL		Ni1000	●			4" [100]	
01DT-5EN		Ni1000	●			6" [150]	
01DT-5EP		Ni1000	●			8" [200]	
01DT-5ER		Ni1000	●			12" [300]	
01DT-5ET		Ni1000	●			18" [450]	
01DT-5LH		NTC10k2		●		2" [50]	
01DT-5LL		NTC10k2		●		4" [100]	
01DT-5LN		NTC10k2		●		6" [150]	
01DT-5LP		NTC10k2		●		8" [200]	
01DT-5LR		NTC10k2		●		12" [300]	
01DT-5LT		NTC10k2		●		18" [450]	
01DT-5MH		NTC10K3		●		2" [50]	
01DT-5ML		NTC10K3		●		4" [100]	
01DT-5MN		NTC10K3		●		6" [150]	
01DT-5MP		NTC10K3		●		8" [200]	
01DT-5MR		NTC10K3		●		12" [300]	
01DT-5MT		NTC10K3		●		18" [450]	
01DT-5QH		NTC20K		●		2" [50]	
01DT-5QL		NTC20K		●		4" [100]	
01DT-5QN		NTC20K		●		6" [150]	
01DT-5QP		NTC20K		●		8" [200]	
01DT-5QR		NTC20K		●		12" [300]	
01DT-5QT		NTC20K		●		18" [450]	
01CT-5BL		PT1000			●	4" [100]	6.5 ft. [2]
01CT-5BP		PT1000			●	8" [200]	6.5 ft. [2]
01CT-5LL		NTC10k2			●	4" [100]	6.5 ft. [2]
01CT-5LP		NTC10k2			●	8" [200]	6.5 ft. [2]
01CT-5ML		NTC10K3			●	4" [100]	6.5 ft. [2]
01CT-5MP		NTC10K3			●	8" [200]	6.5 ft. [2]
01CT-5QL		NTC20K			●	4" [100]	6.5 ft. [2]
01CT-5QP		NTC20K			●	8" [200]	6.5 ft. [2]

Please note: For temperature and humidity sensors, the °F and °C are not direct conversions. °F is the standard range for the United States, and °C is the standard range for Canada and Latin America.

Duct / Immersion and Duct Averaging Sensor Product Range

Temperature

Immersion temperature sensor for duct and pipe applications provides air or water temperature readings to air handling equipment, unitary HVAC equipment, and central plants.

Duct averaging sensors with 10 or 20 foot [3 or 6 meter] probes are for applications where stratified layers of hot and cold air can occur when outside air and return air are mixed. PT1000 version is true averaging and one continuous RTD across entire length of the probe to combat against air stratification problems.

Accuracy	
22DT, 22MT	±1% of measuring range @ 70°F [21°C]
01MT	PT.. = ±0.5°F @ 32°F [±0.3°C @ 0°C] Ni.. = ±0.7°F @ 32°F [±0.4°C @ 0°C] NTC.. = ±0.3°F @ 77°F [±0.2°C @ 25°C]
Power Supply	DC 15...24 V (± 10%), AC 24 V (± 10%) DC 15...24 V (± 10%) (4-20 mA)
Cable Entry	cable gland PG11 Ø6 to 10 mm, with strain relief Ø6 to 8 mm, ½" conduit adapter included
Degree of Protection	NEMA 4X, IP65

22DT
Duct / Immersion

Mounting Flange
(A-22D-A03) accessory
for 22DT models, refer to
page 41

22MT
Duct Averaging

Measuring Values			Measuring Ranges										Additional Features
				Temperature									
Temperature		Output Signals (default)	Multirange	-60°F to +175°F [-50°C to +80°C]	-30°F to +130°F [-50°C to +50°C]	0°F to 150°F [0°C to 160°C]	0°F to 100°F [-15°C to +35°C]	0°F to 250°F [-10°C to +120°C]	32°F to 120°F [0°C to 50°C]	30°F to 480°F [0°C to 250°C]	40°F to 90°F [-20°C to +80°C]	40°F to 240°F [0°C to 100°C]	Probe Length
22DT-52H	Active	DC 0-5V (DC 0-10V)	8		●	●	●	●		●	●	●	2" [50 mm]
22DT-52L		DC 0-5V (DC 0-10V)	8		●	●	●	●		●	●	●	4" [100 mm]
22DT-52N		DC 0-5V (DC 0-10V)	8		●	●	●	●		●	●	●	6" [150 mm]
22DT-52P		DC 0-5V (DC 0-10V)	8		●	●	●	●		●	●	●	8" [200 mm]
22DT-52R		DC 0-5V (DC 0-10V)	8		●	●	●	●		●	●	●	12" [300 mm]
22DT-52T		DC 0-5V (DC 0-10V)	8		●	●	●	●		●	●	●	18" [450 mm]
22DT-54H		4-20 mA	8		●	●	●	●		●	●	●	2" [50 mm]
22DT-54L		4-20 mA	8		●	●	●	●		●	●	●	4" [100 mm]
22DT-54N		4-20 mA	8		●	●	●	●		●	●	●	6" [150 mm]
22DT-54P		4-20 mA	8		●	●	●	●		●	●	●	8" [200 mm]
22DT-54R		4-20 mA	8		●	●	●	●		●	●	●	12" [300 mm]
22DT-54T		4-20 mA	8		●	●	●	●		●	●	●	18" [450 mm]
Duct Averaging													
01MT-5B4	Passive	PT1000		●									10 ft [3 m]
01MT-5B5		PT1000		●									20 ft [6 m]
01MT-5E4		Ni1000		●									10 ft [3 m]
01MT-5E5		Ni1000		●									20 ft [6 m]
01MT-5L4		NTC10k2							●				10 ft [3 m]
01MT-5L5		NTC10k2							●				20 ft [6 m]
01MT-5M4		NTC10K3							●				10 ft [3 m]
01MT-5M5		NTC10K3							●				20 ft [6 m]
01MT-5Q4		NTC20K							●				10 ft [3 m]
01MT-5Q5		NTC20K							●				20 ft [6 m]
22MT-524	Active	DC 0-5V (DC 0-10V)	8		●	●	●	●		●	●	●	10 ft [3 m]
22MT-525		DC 0-5V (DC 0-10V)	8		●	●	●	●		●	●	●	20 ft [6 m]
22MT-544		4-20 mA	8		●	●	●	●		●	●	●	10 ft [3 m]
22MT-545		4-20 mA	8		●	●	●	●		●	●	●	20 ft [6 m]

• Factory setting (setting ranges are configurable on the sensor).

Please note: For temperature and humidity sensors, the °F and °C are not direct conversions. °F is the standard range for the United States, and °C is the standard range for Canada and Latin America.

Cable Sensor and Low Limit Detection Product Range

Temperature

Cable temperature sensors with two-inch stainless steel probe are designed to measures air or water temperature (with A-22P-A Thermowell) for HVAC equipment located indoors that does not require electrical conduit.

Duct mounted low-temperature detection sensors with vapor filled copper capillary tube are used to protect water coils from freezing within the air handling equipment. Any section of the capillary tube that is below the setpoint will cause the vapor to condense to a liquid and trip the SPDT contact. Reset option is manual or automatic.

Accuracy	
01DTS	±0.9°F [±0.5°C]
22CT	±1% of measuring range @ 70°F [21°C]
01CT	PT.. = ±0.5°F @ 32°F [±0.3°C @ 0°C]
	Ni.. = ±0.7°F @ 32°F [±0.4°C @ 0°C]
	NTC.. = ±0.3°F @ 77°F [±0.2°C @ 25°C]
Power Supply	
22CT	DC 15...24 V (±10%), AC 24 V (±10%)
	DC 15...24 V (± 10%) (4-20 mA)
Cable Entry	
01DTS	cable gland cap nut with strain relief Ø6 to 8 mm
22CT	cable gland PG11 Ø6 to 10 mm, with strain relief Ø6 to 8 mm, ½" conduit adapter included
Degree of Protection	
01DTS, 22CT	NEMA 4X, IP65
01CT	NEMA 4X, IP67

22CT
Cable

01DTS
Low Temp Limit Dectection

01CT
Cable

Measuring Values			Measuring Ranges										Additional Features	
			Temperature											
		Output Signals (default)	-30°F to 130°F [-50°C to 50°C]	-30°F to 160°F [-35°C to 70°C]	-30°F to 210°F [-35°C to 100°C]	0°F to 100°F [-15°C to 35°C]	0°F to 150°F [0°C to 160°C]	0°F to 250°F [-10°C to 120°C]	30°F to 480°F [0°C to 250°C]	40°F to 90°F [-20°C to 80°C]	40°F to 140°F [0°C to 50°C]	40°F to 240°F [0°C to 100°C]	Probe Length	Cable length [m]
Cable														
Temperature														
22CT-52H	Active	DC 0-5V (DC 0-10V)	●			●	●	●	●	●	●	●	2" [50 mm]	6.5 ft. [2]
22CT-54H	Active	4-20 mA	●			●	●	●	●	●	●	●	2" [50 mm]	6.5 ft. [2]
01CT-5AH	Passive	PT100			●								2" [50 mm]	6.5 ft. [2]
01CT-5BH	Passive	PT1000			●								2" [50 mm]	6.5 ft. [2]
01CT-5EH	Passive	Ni1000			●								2" [50 mm]	6.5 ft. [2]
01CT-5LH	Passive	NTC10k2			●								2" [50 mm]	6.5 ft. [2]
01CT-5MH	Passive	NTC10K3			●								2" [50 mm]	6.5 ft. [2]
01CT-5QH	Passive	NTC20K			●								2" [50 mm]	6.5 ft. [2]

Measuring Values						Measuring Ranges	Additional Features	
		Output Signal	Reset		Setpoint Range	Temperature		
		SPDT	Auto	Manual	5°F to 55°F [-10°C to 12°C]	-30°F to 160°F [-35°C to 70°C]	Probe Length [m]	
Low Temperature Limit Detection								
Temperature (Frost Protection)								
01DTS-504	Switch	●	●		●	●	10 ft [3]	
01DTS-504X	Switch	●		●	●	●	10 ft [3]	
01DTS-505	Switch	●	●		●	●	20 ft [6]	
01DTS-505X	Switch	●		●	●	●	20 ft [6]	

Please note: For temperature and humidity sensors, the °F and °C are not direct conversions. °F is the standard range for the United States, and °C is the standard range for Canada and Latin America.

Duct Sensor Product Range

Temperature / Humidity

Duct mounted combination temperature and humidity sensors are factory set to relative humidity to manage occupant comfort settings. Field selectable with absolute humidity output which determines the moisture content, dew point output manages space moisture, enthalpy output defines the amount of outside air for free cooling by the air handling equipment with integrated economizer sequence.

Accuracy Temperature	Active = ±0.9°F @ 77°F [±0.5°C @ 25°C] PT.. = ±0.5°F @ 32°F [±0.3°C @ 0°C] Ni.. = ±0.7°F @ 32°F [±0.4°C @ 0°C] NTC.. = ±0.3°F @ 77°F [±0.2°C @ 25°C]
Humidity	±2% between 10 to 90% RH @ 70°F [21°C]
Power Supply	DC 15...24 V (± 10%), AC 24 V (± 10%) DC 15...24 V (± 10%) (4-20 mA)
Cable Entry	cable gland PG11 Ø6 to 10 mm, with strain relief Ø6 to 8 mm, ½" conduit adapter included
Degree of Protection	NEMA 4X, IP65

22DTH
Duct Humidity / Temperature

Mounting Flange
(A-22D-A34) accessory
for 22DTH models, refer to
page 41

Modbus BACnet c UL us 5 YEAR WARRANTY

Measuring Values					Measuring Ranges										Additional Features	
					Temperature					Relative Humidity	Absolute Humidity	Dew Point	Enthalpy		
Humidity / Temperature		Output Signal Temperature	Output Signal Humidity (default)	Multirange	-30°F to 160°F [-35°C to 70°C]	40°F to 140°F [0°C to 50°C]	-40°F to 160°F [-40°C to 60°C]	0°F to 100°F [-15°C to 35°C]	0°F to 200°F [-20°C to 80°C]	0 to 100% RH non-condensing	0 to 50 g/m³ (default) 0 to 80 g/m³	0°F to 200°F [-20°C to +80°C] 40°F to 140°F [0°C to 50°C] (default)	0 to 85 kJ/kg	Communication	Probe Length
22DTH-51M	Active	DC 0-5V (DC 0-10V)	DC 0-5V (DC 0-10V)	4	●	●	●	●	●	●	●	●	●		5.5" [140 mm]
22DTH-53M	Active	4-20 mA	4-20 mA	4	●	●	●	●	●	●	●	●	●		5.5" [140 mm]
22DTH-51MB	Passive	PT1000	DC 0-5V (DC 0-10V)		●					●	●	●	●		5.5" [140 mm]
22DTH-51ME	Passive	Ni1000	DC 0-5V (DC 0-10V)		●					●	●	●	●		5.5" [140 mm]
22DTH-51ML	Passive	NTC10k2	DC 0-5V (DC 0-10V)		●					●	●	●	●		5.5" [140 mm]
22DTH-51MM	Passive	NTC10k3	DC 0-5V (DC 0-10V)		●					●	●	●	●		5.5" [140 mm]
22DTH-51MQ	Passive	NTC20k	DC 0-5V (DC 0-10V)		●					●	●	●	●		5.5" [140 mm]
22DTH-53MB	Passive	PT1000	4-20 mA		●					●	●	●	●		5.5" [140 mm]
22DTH-53ME	Passive	Ni1000	4-20 mA		●					●	●	●	●		5.5" [140 mm]
22DTH-53ML	Passive	NTC10k2	4-20 mA		●					●	●	●	●		5.5" [140 mm]
22DTH-53MM	Passive	NTC10k3	4-20 mA		●					●	●	●	●		5.5" [140 mm]
22DTH-53MQ	Passive	NTC20k	4-20 mA		●					●	●	●	●		5.5" [140 mm]
22DTH-55M	Active	DC 0-5V (DC 0-10V)	DC 0-5V (DC 0-10V)		●					●	●	●	●	Modbus RTU	5.5" [140 mm]
22DTH-56M	Active	DC 0-5V (DC 0-10V)	DC 0-5V (DC 0-10V)		●					●	●	●	●	BACnet MS/TP	5.5" [140 mm]

• Factory setting (setting ranges are configurable on the sensor).

Please note: For temperature and humidity sensors, the °F and °C are not direct conversions. °F is the standard range for the United States, and °C is the standard range for Canada and Latin America.

Duct Sensor Product Range

Air Quality

Duct mounted air quality sensors for detection of CO_2, VOC, temperature, and humidity are packaged together for building applications that require sensors with multi-functional capabilities and installation convenience. The CO_2 output indicates building occupancy level and is used to control the amount of outside air supplied by the air handling equipment to ensure air quality and maximize energy savings over the life-cycle of the building.

Accuracy	
Temperature	±1% of measuring range @ 70°F [21°C]
Humidity	±2% between 10 to 90% RH @ 70°F [21°C]
CO_2	± 50 ppm and 3% of reading
Power Supply	DC 15...24 V (± 10%), AC 24 V (± 10%) DC 15...24 V (± 10%) (4-20 mA)
Cable Entry	cable gland PG11 Ø6 to 10 mm, with strain relief Ø6 to 8 mm, ½" conduit adapter included
Degree of Protection	NEMA 4X, IP65

22DC
Air Quality Duct

BACnet c UL us 5 YEAR WARRANTY

Measuring Values		Measuring Ranges				Additional Features		
		Temperature	Relative Humidity	CO_2	VOC			
CO2	Output Signals	32°F to 120°F [0°C to 50°C]	0 to 100% RH	0 to 2000 ppm	0 to 100%	Communication	Probe Length [mm]	Display
22DC-51	DC 0-5V, DC 0-10V			●			7" [180]	
22DC-53	4-20 mA			●			7" [180]	
CO2 / Temperature								
22DTC-51	DC 0-5 V, DC 0-10 V	●		●			7" [180]	
22DTC-53	4-20 mA	●		●			7" [180]	
CO2 / Humidity / Temperature								
22DTM-51	DC 0-5 V, DC 0-10 V	●	●	●			7" [180]	
22DTM-5106	DC 0-5 V, DC 0-10 V	●	●	●			7" [180]	LCD
22DTM-56	DC 0-5/10 V	●	●	●		BACnet MS/TP	7" [180]	
CO2 / VOC								
22DCV-51	DC 0-5 V, DC 0-10 V			●	●		7" [180]	
CO2 / VOC / Mix CO2 + VC / Temperature								
22DCK-51	DC 0-5 V, DC 0-10 V	●		●	●		7" [180]	
CO2 / VOC / Temperature								
22DCM-51	DC 0-5 V, DC 0-10 V	●		●	●		7" [180]	

Duct Sensor Product Range

Pressure

Duct mounted pressure sensors monitor overpressure, vacuum and differential pressure of air or other noncombustible, non-aggressive gases. The differential pressure switches with automatic reset and field adjustable differential setpoint are used in air handling applications to monitor air filter cleanliness and fan status. The differential pressure sensors with optional LCD, Modbus and manual and auto-zero calibration are used to control air handler supply and return fan speed, maintain a differential pressure between spaces such as hospital isolation rooms or building entrances.

Accuracy	
01APS	±15% (tolerance for upper and lower switching)
22ADP	±0.004 inch WC (±1 Pa) to ±0.1 inch WC (±25 Pa) depending upon model
Power Supply	DC 15...24 V (± 10%), AC 24 V (± 10%)
Cable Entry	
01APS	cable gland M20 x 1.5 mm with strain relief Ø6 to 8 mm, ½" conduit adapter included
22ADP	cable gland PG11 Ø6 to 10 mm, with strain relief Ø6 to 8 mm, ½" conduit adapter included
Degree of Protection	
01APS	NEMA 13, IP54
22ADP	NEMA 4X, IP65

22ADP
Differential Pressure
Sensor

01APS
Differential
Pressure Switch

Modbus

c UL us

5 YEAR WARRANTY

Measuring Values				Measuring Ranges																			Additional Features		
				Pressure																					
Differential Pressure Switch		Output Signals (default)	Multirange	-0.1 to 0.1 inch WC [-25 to 25 Pa]	-0.2 to 0.2 inch WC [-50 to 50 Pa]	-0.4 to 0.4 inch WC [-100 to 100 Pa]	-0.6 to 0.6 inch WC [-150 to 150 Pa]	0 to 0.1 inch WC [0 to 25 Pa]	0 to 0.2 inch WC [0 to 50 Pa]	0 to 0.4 inch WC [0 to 100 Pa]	0 to 1 inch WC [0 to 250 Pa]	0 to 2 inch WC [0 to 500 Pa]	0 to 4 inch WC [0 to 1000 Pa]	0 to 6 inch WC [0 to 1500 Pa]	0 to 8 inch WC [0 to 2000 Pa]	0 to 10 inch WC [0 to 2500 Pa]	0 to 12 inch WC [0 to 3000 Pa]	0 to 16 inch WC [0 to 4000 Pa]	0 to 20 inch WC [0 to 5000 Pa]	0 to 28 inch WC [0 to 7000 Pa]	Auto Zero - Calibration	Communication	Display
01APS-501*	Switch	SPDT								0.80 to 4.00 inch WC [200...1000 Pa]														
01APS-504*	Switch	SPDT										2.00 to 10.00 inch WC [500...2500 Pa]												
01APS-50R*	Switch	SPDT						0.08 to 1.20 inch WC [20...300 Pa]																
01APS-50U*	Switch	SPDT							0.20 to 2.00 inch WC [50...500 Pa]															
Differential Pressure Sensor																								
22ADP-58Q	Active	DC 0-5 V (DC 0-10 V, 4-20 mA)	8	•	•	•	•	•	•	•	•													
22ADP-58QA	Active	DC 0-5 V (DC 0-10 V, 4-20 mA)	8	•	•	•	•	•	•	•	•											•		
22ADP-58QB	Active	DC 0-5 V (DC 0-10 V, 4-20 mA)	8	•	•	•	•	•	•	•	•											•		LCD
22ADP-58QL	Active	DC 0-5 V (DC 0-10 V, 4-20 mA)	8	•	•	•	•	•	•	•	•													LCD
22ADP-55Q	Active	DC 0-5 V (DC 0-10 V)	8	•	•	•	•	•	•	•	•												Modbus RTU	
22ADP-55QA	Active	DC 0-5 V (DC 0-10 V)	8	•	•	•	•	•	•	•	•											•	Modbus RTU	
22ADP-55QB	Active	DC 0-5 V (DC 0-10 V)	8	•	•	•	•	•	•	•	•											•	Modbus RTU	LCD
22ADP-55QL	Active	DC 0-5 V (DC 0-10 V)	8	•	•	•	•	•	•	•	•												Modbus RTU	LCD
22ADP-584	Active	DC 0-5 V (DC 0-10 V, 4-20 mA)	8			•				•	•	•	•	•	•	•								
22ADP-584L	Active	DC 0-5 V (DC 0-10 V, 4-20 mA)	8			•				•	•	•	•	•	•	•								LCD
22ADP-554	Active	DC 0-5 V (DC 0-10 V)	8			•				•	•	•	•	•	•	•							Modbus RTU	
22ADP-554L	Active	DC 0-5 V (DC 0-10 V)	8			•				•	•	•	•	•	•	•							Modbus RTU	LCD
22ADP-556	Active	DC 0-5 V (DC 0-10 V)	8										•	•	•	•	•	•	•	•			Modbus RTU	
22ADP-556L	Active	DC 0-5 V (DC 0-10 V)	8										•	•	•	•	•	•	•	•			Modbus RTU	LCD
22ADP-586	Active	DC 0-5 V (DC 0-10 V, 4-20 mA)	8										•	•	•	•	•	•	•	•				
22ADP-586L	Active	DC 0-5 V (DC 0-10 V, 4-20 mA)	8										•	•	•	•	•	•	•	•				LCD

• Factory setting (setting ranges are configurable on the sensor).

*Product available in 45 piece packs.

Pipe Sensor Product Range

Temperature / Condensation

Surface mounted strap-on temperature sensor incorporates spring loaded brass contact to ensure fast response and accurate hydronic temperature readings. Condensation sensor with LED indication has a SPDT switched contact to prevent condensation on chilled beams or other cold surfaces.

Accuracy	
01ST, 01HT	PT.. = ±0.5°F @ 32°F [±0.3°C @ 0°C] Ni.. = ±0.7°F @ 32°F [±0.4°C @ 0°C] NTC.. = ±0.3°F @ 77°F [±0.2°C @ 25°C]
22HT	±1% of measuring range @ 70°F [21°C]
Power Supply	DC 15...24 V (± 10%), AC 24 V (± 10%) DC 15...24 V (± 10%) (4-20 mA)
Cable Entry	cable gland PG11 Ø6 to 10 mm, with strain relief Ø6 to 8 mm, ½" conduit adapter included
Degree of Protection	
01ST	NEMA 4, IP65
01HT, 22HH	NEMA 4X, IP65

01HT & 22HT
Surface Mount

22HH
Condensation Sensor
Switch

01ST
Surface Mount

Measuring Values			Measuring Ranges											Additional Features	
				Temperature											
Temperature		Output Signals (default)	Multirange	-30°F to 210°F [35°C to 100°C]	-30°F to +130°F [-50°C to 50°C]	-30°F to +195°F [-35°C to +90°C]	-5°F to +140°F [-20°C to +60°C]	0°F to 100°F [-15°C to 35°C]	40°F to 90°F [-20°C to 80°C]	40°F to 140°F [0°C to 50°C]	0°F to 150°F [0°C to 160°C]	40°F to 240°F [0°C to 100°C]	30°F to 480°F [0°C to 250°C]	Cable Length [m]	Remote Probe
01ST-5A3	Passive	PT100		•										6.5 ft. [2]	
01ST-5B3		PT1000		•										6.5 ft. [2]	
01ST-5E3		Ni1000		•										6.5 ft. [2]	
01ST-5L3		NTC10k2		•										6.5 ft. [2]	
01ST-5M3		NTC10K3		•										6.5 ft. [2]	
01ST-5Q3		NTC20K		•										6.5 ft. [2]	
01HT-5A		PT100				•									
01HT-5B		PT1000				•									
01HT-5E		Ni1000				•									
01HT-5L		NTC10k2				•									
01HT-5M		NTC10K3				•									
01HT-5Q		NTC20K				•									
22HT-52	Active	DC 0-5V (DC 0-10V)	8		•			•	•	•	•	◦	•		
22HT-54		4-20 mA	8		•			•	•	•	•	◦	•		
Condensation															
22HH-50	Switch	SPDT					•								
22HH-500X		SPDT					•							6.5 ft. [2]	•

◦ Factory setting (setting ranges are configurable on the sensor).

Please note: For temperature and humidity sensors, the °F and °C are not direct conversions. °F is the standard range for the United States, and °C is the standard range for Canada and Latin America.

Pipe Sensor Product Range

Pressure / Flow

Pressure sensors incorporate strain gauge with stainless steel or ceramic media contact material technology to measure liquids and provide gauge pressure readings for a wide variety of applications in industrial process and HVAC controls.

Differential pressure sensors measure water and or non-aggressive gases are used with the building management system (BMS) to maintain adequate air or water pressure to critical zones.

Flow meters utilizes ultrasonic technology with glycol and temperature compensation to accurately measure water flow for HVAC plant applications and sub-metering of hot or chilled water flow.

Accuracy	
22WP	±0.5% FS @ 77°F [25°C]
22WDP	<±1% of measuring range @ 23°F to 167 °F [-5°C to 75°C]
FM	±2% @ 68°F-77°F (20°C-25°C)
Power Supply	DC 15...24 V (± 10%), AC 24 V (± 10%)
	DC 15...24 V (± 10%) (4-20 mA)
FM	AC/DC 24 V
Cable Entry	
22WP	mvs plug according to DIN EN175301-803 / type A
22WDP	angle plug according to DIN 43650, construction A
FM	1/2" NPT conduit connection with 3ft [1m], 18 GA appliance cable
Degree of Protection	
22WP, 22WDP	NEMA 4, IP65
FM	NEMA 2, IP54

22WP
Liquid Pressure

22WDP
Liquid Differential

FM
Flow Meter

5 YEAR WARRANTY

Measuring Values			Measuring Range												
			Pressure					Flow (GPM)						Valve	
Gauge Pressure		Output Signals	0 to 15 psi	0 to 30 psi	0 to 50 psi	0 to 100 psi	0 to 200 psi	0.07 - 6.6	0.13 - 12.4	0.23 - 21.8	0.36 - 34.2	0.49 - 47.5	1.09 - 91.2	Size [mm]
22WP-511	Active	DC 0-10V	●											
22WP-514		DC 0-10V			●									
22WP-516		DC 0-10V				●								
22WP-517		DC 0-10V					●							
22WP-531		4-20 mA	●											
22WP-534		4-20 mA			●									
22WP-536		4-20 mA				●								
22WP-537		4-20 mA					●							
Differential Pressure														
22WDP-511	Active	DC 0-10V	●											
22WDP-512		DC 0-10V		●										
22WDP-514		DC 0-10V			●									
22WDP-515		DC 0-10V				●								
22WDP-531		4-20 mA	●											
22WDP-532		4-20 mA		●										
22WDP-534		4-20 mA			●									
22WDP-535		4-20 mA				●								
Flow Meters														
FM050	Active	DC 0-10V						●						½" [15]
FM075		DC 0-10V							●					¾" [20]
FM100		DC 0-10V								●				1" [25]
FM125		DC 0-10V									●			1¼" [32]
FM150		DC 0-10V										●		1½" [40]
FM200		DC 0-10V											●	2" [50]

Sensor Accessories

Air

	Model Number	Sensor Type										
		01DT	22DT	22DTH	22DTC	22DTM	22DC	22DCV	22DCK	22DCM	01APS	22ADP
	**A-22AP-A01** Metal duct connectors, L = 1.5” (40 mm)										•	•
	A-22AP-A03 Metal duct connectors, L = 4” (100 mm)										•	•
	A-22AP-A05.1 6 ft. (2 m) PVC tube and 2 plastic duct probes for 01APS pressure switch (multipack - 50 pcs)										•	
	**A-22D-A03** Mounting flange for duct temperature sensors Ø 0.25” (6 mm)	•	•									
	**A-22D-A34** Mounting flange for duct humidity and air quality sensors			•	•	•	•	•	•	•		

Sensor Accessories

Water

Model Number		Sensor Type					
		01DT	22DT	01ST	01HT	22WP	22WDP
	**A-22P-A05** Thermowell (2 part) stainless steel 2” (50 mm) ½” NPT	•	•				
	A-22P-A07 Thermowell (2 part) stainless steel 4” (100 mm) ½” NPT	•	•				
	A-22P-A09 Thermowell (2 part) stainless steel 6” (150 mm) ½” NPT	•	•				
	A-22P-A11 Thermowell (2 part) stainless steel 8” (200 mm) ½” NPT	•	•				
	A-22P-A13 Thermowell (2 part) stainless steel 12” (300 mm) ½” NPT	•	•				
	A-22P-A15 Thermowell (2 part) stainless steel 18” (450 mm) ½” NPT	•	•				
	A-22P-A17 Thermowell (2 part) brass 2” (50 mm) ½” NPT	•	•				
	A-22P-A19 Thermowell (2 part) brass 4” (100 mm) ½” NPT	•	•				
	A-22P-A21 Thermowell (2 part) brass 6” (150 mm) ½” NPT	•	•				
	A-22P-A23 Thermowell (2 part) brass 8” (200 mm) ½” NPT	•	•				
	A-22P-A25 Thermowell (2 part) brass) 12” (300 mm) ½” NPT	•	•				
	A-22P-A27 Thermowell (2 part) brass 18” (450 mm) ½” NPT	•	•				
	A-22P-A36 Thermowell (machined) stainless steel 2” (50 mm) ½” NPT	•	•				
	**A-22P-A37** Thermowell (machined) stainless steel 4” (100 mm) ½” NPT	•	•				
	A-22P-A38 Thermowell (machined) stainless steel 6” (150 mm) ½” NPT	•	•				
	A-22P-A39 Thermowell (machined) stainless steel 8” (200 mm) ½” NPT	•	•				
	A-22P-A40 Tightening strap 2” (50 mm) for pipe sensor with contact fluid			•	•		
	A-22P-A42 Tightening strap 2-35” (900 mm) for pipe sensor with contact fluid			•	•		
	A-22P-A44 Thermal contact fluid 0.04 oz (1.2 ml)	•	•	•	•		
	**A-22WP-A01** Adapter ¼” NPT to ½” NPT					•	
	A-22WP-A03 Adapter connection set 6 mm ¼” NPT brass (2x)						•
	**A-22WP-A05** Adapter connection set 6 mm ¼” NPT stainless steel (2x)						•
	A-22WP-A07 Adapter connection set 8 mm ¼” NPT brass (2x)						•
	A-22WP-A09 Adapter connection set 8 mm ¼” NPT stainless steel (2x)						•

Selection Guide

ZIP Economizer

Economizer Base

ECON-ZIP-BASE

AND

ECON-ZIP-10K
(Supply Air Sensor)

Select Actuator

TFB24-SR
up to 7.5 Tons

LF24-SR US
7.5-12 Tons

NFB24-SR
12-15 Tons

AFB24-SR
15-30 Tons

Select High Limit
Changeover Sensors

SINGLE DRY BULB

DIFFERENTIAL DRY BULB

OR

SINGLE ENTHALPY

DIFFERENTIAL ENTHALPY

ECON-ZIP-10K

ECON-ZIP-TH

Optional Add-On
Modules

- Demand Control Ventilation (DCV)* - ECON-ZIP-EM + CO2 sensor of your choice (0-2000 PPM, 0-10 VDC).
- Preoccupancy Purge* - ECON-ZIP-EM
  Requires thermostat with purge setting and contacts.
- Remote Damper Override - ECON-ZIP-EM + SGA24
- Exhaust Fan - ECON-ZIP-EM
- 2 Speed fan control or remote diagnostic alarm notification - ECON-ZIP-EM

- Remote Diagnostic Alarm Notification* - ECON-ZIP-COM
  - Required for BACnet MS/TP communication

* May be required by local codes

ZIP Packs - Packaged Solutions for Quick Drop-in Economizer Replacement

ECON-ZIP	-SE	TF
ZIP Economizer Solution with Energy Module	**High Limit Changeover Strategy (Temperature)**	**Actuator**
	SD = Single Dry Bulb	TF** = 22 in-lbs, 7.5 Tons***
	DD = Differential Dry Bulb	LF** = 35 in-lbs, 12 Tons***
	SE = Single Enthalpy	**With corresponding retrofit kit ***Recommended max RTU tonnage
	DE = Differential Enthalpy	

Pack Components may include:

ECON-ZIP-10K: 10K Sensor for Outside Temperature or Return Air
ECON-ZIP-LF1 or ECON-ZIP-TF1: Retrofit Kit for Actuator Replacement
ECON-ZIP-TH: Temperature and Humidity Sensor, Outside Air or Return Air
See product flyer for more details.

Pipe Package Product Range

	Valve Nominal Size		Hoses	Union	Isolation Valve	Manual Balancing Valve	Strainer
Valve Series	**Inches**	**DN [mm]**	**Lengths**	**Body End/ Tailpiece End**	**Body End/ Tailpiece End**	**Body End/ Tailpiece End**	**Body End/ Tailpiece End**
2-Way PICCV	½	15	12", 18", 24"	F-NPT, Sweat, Press Fit/ M-NPT	F-NPT, Sweat, Press Fit/ M-NPT		F-NPT, Sweat, Press Fit/F-NPT, M-NPT
	¾	20	12", 18", 24"				
	1	25	12", 18", 24"				
	1¼	32	18", 24", 36"				
	1½	40	18", 24", 36"				
	2	50	24", 36"				
2-Way CCV	½	15	12", 18", 24"			F-NPT, Sweat, Press Fit/M-NPT	
	¾	20	12", 18", 24"				
	1	25	12", 18", 24"				
	1¼	32	18", 24", 36"				
	1½	40	18", 24", 36"				
	2	50	24", 36"				
3-Way CCV	½	15	12", 18", 24"				
	¾	20	12", 18", 24"				
	1	25	12", 18", 24"				
	1¼	32	18", 24", 36"				
	1½	40	18", 24", 36"				
	2	50	24", 36"				
2-Way Zone Valve	½	15	12", 18", 24"				
	¾	20	12", 18", 24"				
	1	25	12", 18", 24"				

Hose Technical Specifications

Materials	
External braiding	stainless steel AISI 304
Crimping ferrules	stainless steel AISI 304
Connectors	machined brass
Fiber gasket	BA-U fiber washer
Core	formulated EPDM
Operating & burst pressure rating	
½"	375 psi operating 1500 psi burst pressure
¾"	300 psi operating 1200 psi burst pressure
1"	225 psi operating 900 psi burst pressure
1¼"	200 psi operating 800 psi burst pressure
1½"	175 psi operating 600 psi burst pressure
2"	150 psi operating 500 burst pressure
Component temperature	5°F to 230°F [-15°C to +110°C] less than 41°F with use of glycol additive.

Note: Media temperature may be limited by the hose rating

Union Technical Specifications

Service	chilled or hot water, 60% glycol
Sizes	½", ¾", 1", 1¼", 1½", 2"
Materials	
Body	forged brass
Union nut	forged brass
Tailpiece	forged brass
Gasket	EPDM
Insulator	glass reinforced nylon (dielectric)
Readout port body & cap	extruded brass
Readout port seal	Nordel
Pressure/temperature ratings	
½" to 2"	400 psi
Component temperature	250°F maximum
Media temperature range	0°F to 212°F [-18°C to +100°C]

Manual Balance Valve Technical Specifications

Service	chilled or hot water, 60% glycol
Sizes	½", ¾", 1", 1¼", 1½", 2"
Materials	
Body	forged brass
Ball	chrome plated/forged brass
Stem	extruded brass
Union	forged brass
Tailpiece	forged brass
Gland nut	extruded brass
Seats & packing	virgin PTFE
O-rings	Viton
Venturi	extruded brass
Readout port body & cap	extruded brass
Readout port seal	Nordel
Memory stop	forged brass
Pressure/temperature ratings	
½" to 2"	400 psi
Component temperature	300°F maximum
Media temperature range	0°F to 212°F [-18°C to +100°C]
Leakage	0%

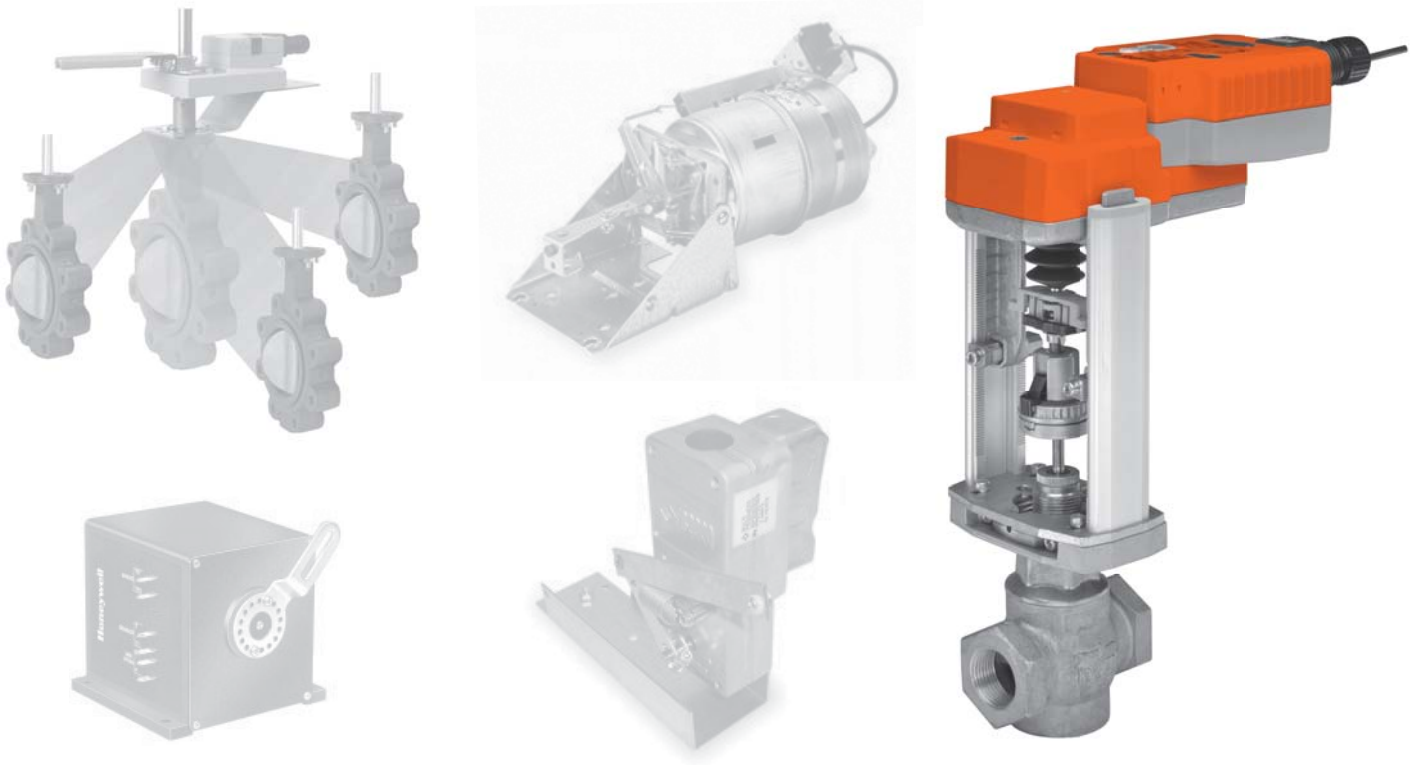
Strainer Technical Specifications

Service	chilled or hot water, 60% glycol
Sizes	½", ¾", 1", 1¼", 1½", 2"
Materials	
Body	forged brass
Union nut	forged brass
Ball	chrome plated/forged brass
Stem & gland nut	forged brass
Tailpiece	forged brass
Seals & packing	PTFE
Stem o-rings	Viton
Strainer screen	304 stainless steel / 20 mesh standard
Readout port body & cap	extruded brass
Readout port seal	Nordel
Pressure/temperature ratings	
½" to 2"	600 psi
Component temperature	325°F maximum
Media temperature range	0°F to 212°F [-18°C to +100°C]
Leakage	0%

Isolation Valve Technical Specifications

Service	chilled or hot water, 60% glycol
Sizes	½", ¾", 1", 1¼", 1½", 2"
Materials	
Body	forged brass
Gland nut	extruded brass
Ball	chrome plated/ hot forged brass
Stem	extruded brass
Union nut	forged brass
Tailpiece	forged brass
Seats	virgin PTFE
Packing	virgin PTFE
Stem o-rings	Viton
Readout port body & cap	extruded brass
Readout port seal	Nordel
Pressure/temperature ratings	
½" to ¾"	600 psi
1" to 2"	500 psi
Component temperature	300°F maximum
Media temperature range	0°F to 212°F [-18°C to +100°C]
Leakage	0%

Retrofit Solutions for valve and damper actuators increase the quality and reliability of your entire system.



The Source for HVAC and Valve Retrofit Solutions

Belimo has a dedicated retrofit team of professionals to provide you the guidance and resources for getting the most from your HVAC system. If you are experiencing broken or outdated actuators, valves that are not performing or are causing unnecessary energy consumption; Belimo's dedicated retrofit team can help.

Belimo has a state-of-the-art in house CNC machine shop with the ability to fabricate custom linkages for valve automation. Product mediums include stainless steel, cold rolled steel, or brass. With our machining capabilities and our retrofit team we can design and create custom retrofit linkage solutions for your existing valves, regardless of the manufacturer.

Belimo actuators and valves lead the industry in cutting-edge technology and value. Whether electronic or pneumatic, there is a simple way to retrofit.

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Replacement solutions are available for Siemens®, Johnson Controls®, Honeywell®, Invensys®, Robertshaw®, Siebe, Barber Colman®, Landis®, Powers®, Warren®, Apollo®, Bray®, Centerline®, Challenger®, Chemtrol®, Dezurik®, Flowseal®, FNW®, Gruvlok®, Hammond®, Keystone®, K-LOK®, Metraflex®, Milwaukee®, Mueller®, Nibco®, PDC®, Quartermaster®, Victaulic®, Watts® and many more.

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- And more

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ACR Supply Company Inc.
4040 S. Alston Avenue
Durham, NC 27713
Phone: 919-765-8081
With branch in NC

Aireco Supply
9120 Washington Boulevard
Savage, MD 20763-0414
Phone: 301-953-8800
With branches in MD, VA

Amcon Controls, Inc.
11906 Warfield Street
San Antonio,TX 78216
Phone: 210-349-6161
Houston, TX branch 713-464-7002
Mandeville, LA branch 985-624-3303

Relevant Solutions
(was Applied Automation)
3186 South Washington Street, #230
Salt Lake City, UT 84115
Phone: 801-486-6454
With branches in CA, CO, TX

Boston Aircontrols, Inc.
8 Blanchard Road
Burlington, MA 01803
Phone: 781-272-5800

Charles D. Jones Co.
445 Bryant Street, Unit #1
Denver, CO 80204-4800
Phone: 800-777-0910
With branches in CO, MO, KS

Cochrane Supply and Engineering, Inc.
30303 Stephenson Highway
Madison Heights, MI 48071-1633
Phone: 800-482-4894
With branches in MI and Maumee, OH

Columbus Temperature Control
1053 E. 5th Avenue
Columbus, OH 43201
Phone: 800-837-1837

Controlco
985 3rd Street
Oakland, CA 94607
Phone: 510-636-7900
With branches in CA, NV, TN

Control Consultants, Inc. (CCI)
242 Libbey Industrial Parkway
Weymouth, MA 02189
Phone: 781-335-8353

Control Products
9101 Jameel, Suite 130
Houston, TX 77447
Phone: 713-849-7200
With a branch in San Antonio, TX

Control Stop (Corporate)
1000 N Pine Street, Suite 6
Spartanburg, SC 29303
(864) 586-3818
With branch in NC

Engineered Control Systems
5627 NW 74th Avenue
Miami, FL 33166
Phone: 305-885-8804
With branch in FL

G & O Thermal Supply
5435 N. Northwest Highway
Chicago, IL 60630
Phone: 773-763-1300
With branch in IL

Industrial Controls Distributors, LLC
(was Climatic Control)
5061 W. State Street
Milwaukee, WI 53208
Phone: 800-242-1656
With branch in WI

Industrial Controls Distributors, LLC
17 Christopher Way
Eatontown, NJ 07724
Phone:800-543-8200
With branches in GA, KY, IN, MA, ME, NC, NY, OH, PA, TN

Interstate HVAC Controls
30 Vineland Street
Brighton, MA 02135
Phone: 617-782-9000

Jackson Controls
1708 E. 10th Street
Indianapolis, IN 46201
Phone: 317-231-2200

M & M Controls
9E West Aylesbury Road
Timonium, MD 21093
Phone: 410-252-1221
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MICONTROLS, Inc.
6516 5th Place South
Seattle, WA 98124
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With branches in WA, OR

Meier Supply
123 Brown Street
Johnson City, NY 13790
Phone: 607-797-7700
With branches in NY, PA

Minvalco, Inc.
3340 Gorham Avenue
Minneapolis, MN 55426-4267
Phone: 952-920-0131
With branch in MN

Relevant Solutions
12610 West Airport Blvd, Suite 100
Sugarland, TX 77478
Phone: 281-295-8850

RSD / Refrigeration Supplies Distributor
26021 Atlantic Ocean Drive
Lake Forest, CA 92630
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With branches in CA, NV, OR, AK, AZ, ID, UT, WA, MT

Saint Louis Boiler Supply, Co.
617 Hanley Industrial Court
St. Louis, MO 63144
Phone: 314-962-9242

South Side Control Supply, Co.
488 N. Milwaukee Avenue
Chicago, IL 60610-3923
Phone: 312-226-4900
With branches in IL, IN

Stromquist and Company
4620 Atlanta Road
Smyrna, GA 30080
Phone: 404-794-3440
With a branch in Orlando, FL

Temperature Control Systems
10315 Brockwood Road
Dallas, TX 75238
Phone: 214-343-1444
With branches in OK, TX

T.F. Campbell Company
1203 Edgebrook Avenue
Pittsburgh, PA 15226
Phone: 412-881-8006

Tower Equipment Co., Inc.
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