P2... Series Pressure Independent Characterized Control Valves™ (PICCV)
Chrome Plated Brass Ball and Brass Stem, NPT Female Ends

Application

The Pressure Independent Characterized Control Valve is typically used in air handling units on heating and cooling coils, and fan coil unit heating or cooling coils. Some other common applications include unit ventilators and VAV re-heat coils. This valve is suitable for use in a hydronic system with constant or variable flow.

This valve is designed with MFT functionality which facilitates the use of various control input.

Technical Data	
Service	chilled or hot water, 60% glycol
Flow characteristic	equal percentage
Size	½", ¾", 1"
Type of end fitting	female, NPT
Materials	
Body	forged brass, nickel plated
Ball	chrome plated brass
Stem	chrome plated brass
Seat O-rings	Viton
Seat	fiberglass reinforced Teflon® PTFE
Characterizing disc	½" & ¾" Brass 1" TEFZEL®
Packing	2 EPDM O-rings, lubricated
Diaphragm	½" & ¾" silicone and Nomex 1" polyester reinforced silicone
Regulator components	stainless steel/brass/Delrin 500 AF
Spring	stainless steel
Body pressure rating	600 PSI
Media temp. range	0°F to 212°F [-18°C to 100°C]
Close off pressure	200 PSI
Leakage	ANSI Class IV (0.01% of rated valve capacity at 50 psi differential)
Flow rate	
½"	0.5 GPM [.03 l/s], 1 GPM [.06 l/s], 1.50 GPM [0.09 l/s], 2 GPM [.13 l/s], 2.5 GPM (0.16 l/s) , 3 GPM [.19 l/s], 3.5 GPM(0.22 l/s), 4 GPM [.25 l/s], 4.5 GPM (0.28 l/s), 5 GPM [.32 l/s], 5.5 GPM (0.35 l/s)
¾"	6 GPM [0.37 l/s], 6.5 GPM (0.41 l/s), 7 GPM [0.44 l/s], 7.5 GPM (0.47 l/s) 8 GPM [0.50 l/s], 8.5 GPM (0.54 l/s), 9 GPM [0.57 l/s], 9.5 GPM (0.60 l/s) 10 GPM [0.63 l/s]
1"	11 GPM (0.69 l/s), 12 GPM [0.76 l/s], 13 GPM (0.82), 14 GPM [0.88 l/s], 15 GPM (0.95 l/s), 16 GPM [1.01 l/s], 17 GPM (1.07 l/s), 18 GPM [1.14 l/s] 19 GPM (1.20 l/s)
Rangeability	100 : 1
Differential pressure	5 to 50 PSI operating range
Valve accuracy	± 10% combination of manufacturing tolerances and pressure variations
Weight of valve body	½" = 2.52 lbs ¾" = 2.52 lbs 1" = 4.98 lbs

½" body has two different flow capacities (.50 GPM to 2.5 GPM) (3 GPM to 5.5 GPM)
1" body has two different flow capacities (11 GPM to 16 GPM) (17 GPM to 19 GPM)
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Valve Model	Flow Rate GPM	Flow Rate Liter/sec	Valve Nominal Size Inches	Valve Nominal Size DN mm	Close-off PSI	Suitable Actuators: Spring Return	Suitable Actuators: Non-Spring Return			
						TF24-MFT US	LF24-MFT US	LRB(X)24-3	LRX24-MFT	LRCB24-3 Heat Pump Only
P2050B005	0.5	0.03	½	15	200					
P2050B010	1	0.06	½	15	200					
P2050B015	1.5	0.09	½	15	200					
P2050B020	2	0.13	½	15	200					
P2050B025	2.5	0.16	½	15	200					
P2050B030	3	0.19	½	15	200					
P2050B035	3.5	0.22	½	15	200					
P2050B040	4	0.25	½	15	200					
P2050B045	4.5	0.28	½	15	200					
P2050B050	5	0.32	½	15	200					
P2050B055	5.5	0.35	½	15	200					
P2075B060	6	0.38	¾	20	200					
P2075B065	6.5	0.41	¾	20	200					
P2075B070	7	0.44	¾	20	200					
P2075B075	7.5	0.47	¾	20	200					
P2075B080	8	0.50	¾	20	200					
P2075B085	8.5	0.54	¾	20	200					
P2075B090	9	0.57	¾	20	200					
P2075B095	9.5	0.60	¾	20	200					
P2075B100	10	0.63	¾	20	200					
PICCV-25-011	11	0.69	1	25	200					
PICCV-25-012	12	0.76	1	25	200					
PICCV-25-013	13	0.82	1	25	200					
PICCV-25-014	14	0.88	1	25	200					
PICCV-25-015	15	0.95	1	25	200					
PICCV-25-016	16	1.01	1	25	200					
PICCV-25-017	17	1.07	1	25	200					
PICCV-25-018	18	1.14	1	25	200					
PICCV-25-019	19	1.20	1	25	200					

MFT 5 YEAR WARRANTY

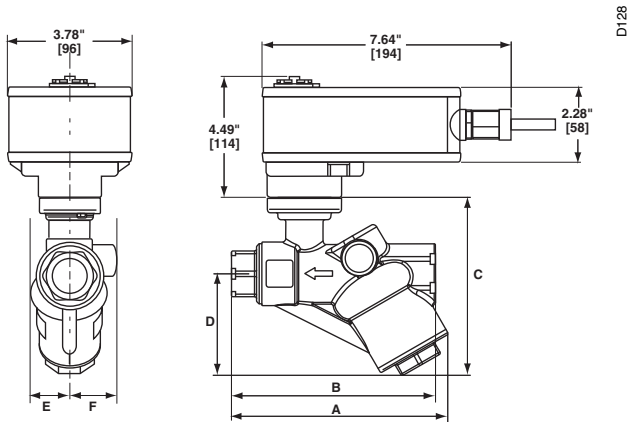
Models

LF24-MFT US
LF24-MFT-S US w/built-in Aux. Switch

Technical Data		
Control		MFT
Control signal		2 to 10 VDC
Power consumption	running	2.5 W
	holding	1 W
Transformer sizing		5 VA (class 2 power source)
Electrical connection		3 ft, 18 GA appliance cables (-S model has 2 cables) ½" conduit connector
Overload protection		electronic throughout 0° to 95° rotation
Input impedance		100k Ω for 2 to 10 VDC (0.1 mA) 500 Ω for 4 to 20mA 750 Ω for PWM 500 Ω for on/off and floating point
Feedback		2 to 10 VDC, 0.5 mA max
Angle of rotation		95°
Direction of rotation	spring	reversible with CW/CCW mounting
	motor	reversible with built-in ↷/↶ switch
Position indication		visual indicator
Running time		<40 to 75 sec. (on-off) 100 seconds
	spring	<25 sec. @-4°F to +122°F [-20°C to +50°C] <60 sec. @-22°F [-30°C]
Ambient temperature		-22° F to 122° F [-30° C to 50° C]
Housing		NEMA 2
Agency listings		UL 873, CSA C22.2 No. 24 certified, CE
Noise level		max. 62 dB(A)
Quality standard		ISO 9001

LF24-MFT-S US	
Auxiliary switch	1 x SPDT, 6A (1.5A) @ 250 VAC, UL Listed, adjustable 0° to 95° (double insulated)

Dimensions with PICCV



Valve Nominal Size		Dimensions (Inches [mm])					
In.	DN [mm]	A	B	C	D	E	F
½"	15	4.68 [119]	4.47 [114]	4.05 [103]	2.34 [60]	0.99 [25]	0.99 [25]
¾" after 8/2009	20	4.90 [125]	4.94 [126]	4.05 [103]	2.34 [60]	0.99 [25]	0.99 [25]
¾" until 8/2009	20	5.35 [133]	5.03 [128]	4.22[107]	2.38 [61]	1.04 [26]	1.30 [34]
1"	25	7.05 [179]	6.85 [174]	4.80 [122]	3.23 [82]	1.60 [41]	1.60 [41]

Wiring Diagrams

INSTALLATION NOTES

CAUTION *Equipment damage!*
Actuators may be connected in parallel if not mechanically mounted to the same shaft. Power consumption and input impedance must be observed.

3 Actuators may also be powered by 24 VDC.

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

5 Triac A and B can also be contact closures.

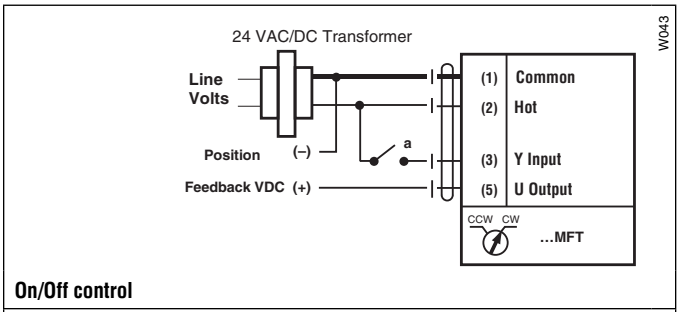
6 Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 VAC line.

7 Position feedback cannot be used with Triac sink controller. The actuators internal common reference is not compatible.

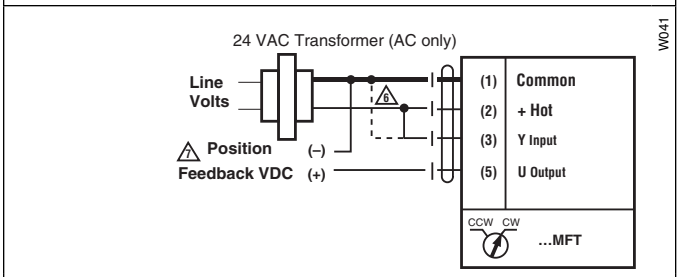
APPLICATION NOTES

The ZG-R01 500 Ω resistor converts the 4 to 20 mA control signal to 2 to 10 VDC, up to 2 actuators may be connected in parallel.

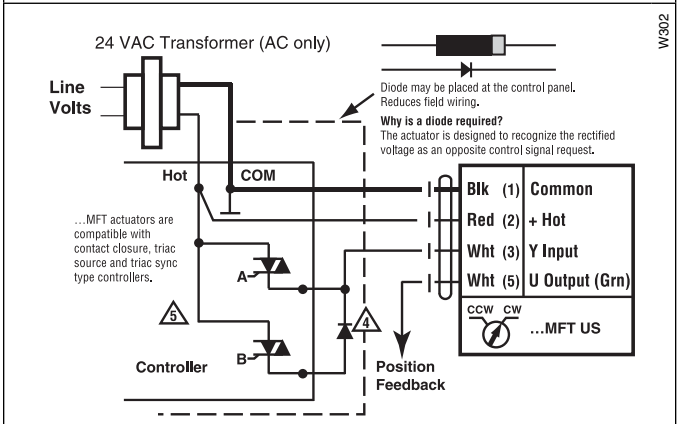
WARNING *Live Electrical Components!*
During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components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



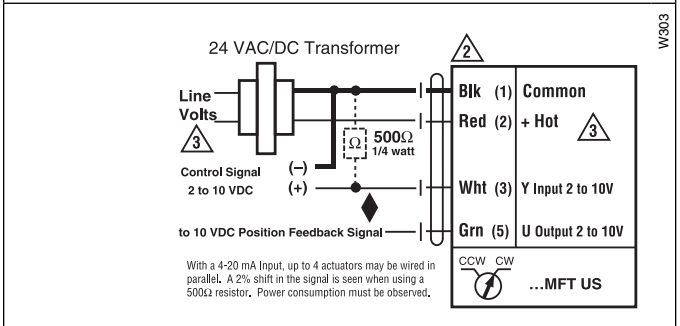
On/Off control



PWM, triac source and sink



Floating Point control



Proportional 2 to 10 or 4 to 20 mA control signal