VM1000 Series

Modulating Zone Valves

Features

- Provides economical control of hot or chilled water for fan coil, baseboard radiator and VAV reheat applications
- Ball-type valve plug provides precise and quiet operation
- Field selection of DA or RA
- Field selection of 0-10 VDC or 4-20 mA proportional input
- 0-10 VDC feedback signal for proportional models
- High close-off pressure actuator satisfies demanding requirements of high-rise buildings and high-pressure pumping systems
- 300 PSI static pressure
- 1/2", 3/4" and 1" line size
- BSP tapered or NPT end connections

General

VM1000 Series modulating zone valves are excellent for fan coil units, VAV reheat, AHU and radiant applications using chilled or hot water.

VM1000 Series valves are available in 2-way and 3-way port configurations and in 1/2" (15 mm) through 1" (25 mm) sizes with threaded connections.

The valve body and actuator are of one-piece design and are not detachable.

Specifications

Valve body pressure rating	300 psig (2100 kPa) system pressure			
Fluid temperature limits	2 to 94 °C (36 to 200 °F)			
Ambient temperature limits	0 to 40 °C (32 to 104 °F)			
Shipping & storage temperature limits	-40 to 70 °C (-40 to 158 °F)			
Body sizes	See Fig. 1: Valve Code Number Selection Guide			
Service	Chilled and hot water, up to 50% Glycol solutions			
Power supply	See Fig. 1: Valve Code Number Selection Guide			
Wire leads	8" 22 AWG wires			
Power consumption	5 VA			
Feedback signal (proportional models only)	0-10 VDC			
Stroke speeds at 50 Hz	2-way: 65 seconds (1/2") 65 seconds (3/4") 70 seconds (1")		3-way: 75 seconds (1/2") 75 seconds (3/4") 80 seconds (1")	
	Flow Coefficients & Maximum Close-Off Pressures:			
	Cv (Kv)		Close-Off ΔP PSI (kPa)	
Valve size	2-way	3-way	2-way	3-way
1/2" only	2.3 (2.0)	NA	40 (280)	NA
1/2" & 3/4"	3.7 (3.2)	3.7 (3.2)	40 (280)	40 (280)
3/4" Only	5.3 (4.6)	5.3 (4.6)	40 (280)	40 (280)
1" Only	6.6 (5.7)	6.6 (5.7)	40 (280)	40 (280)
1" Only	7.9 (6.8)	7.9 (6.8)	40 (280)	40 (280)
Flow characteristic	Equal percentage			
Seat leakage	Zero leakage (100% bubble-tight shut-off)			
Body materials	Body	Forged brass		
	Stem	Stainless steel		
	Seat	Brass		
	Plug	NBR		
Actuator	Housing material	Fire-retardant PC/ABS		
	Motor	TUV		
Piping connections	BSP tapered or NPT			
Agency approval	CE Mark Compliant to EMC and LV Directives Pending			
Shipping Weight	1 kg (2.2 lb) Maximum			

The performance specifications above are nominal and subject to tolerances and application variables of generally acceptable industry standards. The manufacturer shall not be liable for damages resulting from misapplication or misuse of its products.

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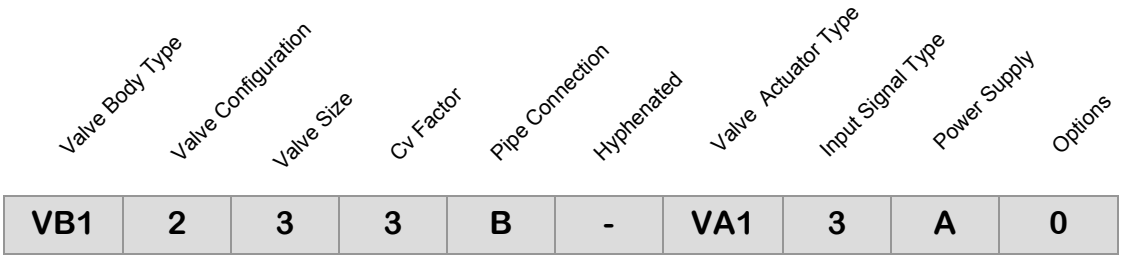
Figure 1: Valve Code Number Selection Guide



Valve Code Number Designations

Valve Body Type

VB1 = VM1000 Series modulating zone valve body

Valve Configuration

2 = 2-way
3 = 3-way

Valve Size

2 = 1/2”
3 = 3/4”
4 = 1”

Cv Factor

	Cv (Kv) 2-way	3-way
2* =	2.3(2.0)	NA
3ⁿ =	3.7(3.2)	3.7(3.2)
5** =	5.3(4.6)	5.3(4.6)
6*** =	6.6(5.7)	6.6(5.7)
7*** =	7.9(6.8)	7.9(6.8)

* For 1/2” size only
ⁿ For 1/2” or 3/4” size
** For 3/4” size only
*** For 1” size only

Pipe Connection

B = BSP tapered
N = NPT

Valve Actuator Type

VA1 = VM1000 Series modulating zone valve actuator

Input Signal Type

3 = 3-wire floating
4 = 0-10 VDC or 4-20 mA proportional input

Power Supply

A = 24 V 50/60 Hz*
B = 110/120 V 50/60 Hz
U = 220/230 V 50/60 Hz
* Proportional input actuator available with 24 VAC power supply only

Options

0 = No 0ption

Application Overview

The VM1000 Series modulating zone valves accurately control the flow of chilled water and hot water through coils and heat exchanges of all types, in a wide range of Heating, Ventilating and Air Conditioning (HVAC) applications.

Repair Parts

Available repair parts for 3-wire floating valves include replacement valve bodies and replacement actuators. 0-10 VDC/4-20 mA proportional valves must be replaced on a complete set basis. No other field repairs should be attempted.

To Order

Specify the code number from Figure 1: Valve Code Number Selection Guide.

For 0-10 VDC or 4-20 mA Proportional Valves Only

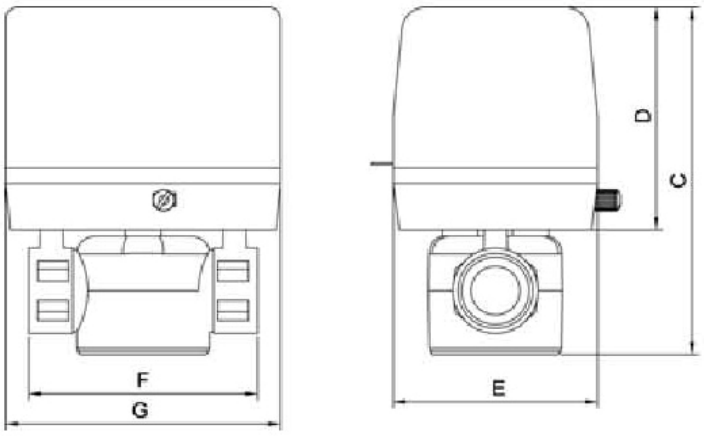
Selection of Direct Action (DA) or Reverse Action (RA)

The factory setting is for direct action. Can be changed in the field to reverse action by moving the jumper from DA position to RA position on the PC board. DA position is set for Port B closed at 0 VDC input. RA position is set for Port B closed at 10 VDC input.

Selection of 0-10 VDC or 4-20 mA Proportional Input

The factory setting is 0-10 VDC. Can be changed in the field to 4-20 mA by moving the jumper from “V” position to “A” position on the PC board.

Figure 2: Dimensions in mm



VALVE SIZE	C	D	E	F	G
1/2" (15 mm) 2-way	115	73	67	80	90
1/2" (15 mm) 3-way	125	73	67	80	90
3/4" (20 mm) 2-way	115	73	67	89	90
3/4" (20 mm) 3-way	127	73	67	89	90
1" (25 mm) 2-way	117	73	67	93	90
1" (25 mm) 3-way	139	73	67	93	90

Manual Operating Lever

All MV1000 Series modulating zone valves are equipped with a manual operating lever. This lever allows the valve to be opened when power supply is not available or for system flushing before it is put into operation by maintaining the valve in the mid-position. This lever is also used as a valve position indicator.

Press and hold the manual button on the plastic enclosure top and move the manual operating lever slowly to the right to open Port B and to the left to close Port B. When valves are placed in the mid-position with the manual operating lever, the seating ball is removed from all seats or ports.

Note: The manual lever cannot be used to close the bypass port on 3-way valves.

Mounting

The valves can be mounted in horizontal or vertical piping. When installed in horizontal piping, the actuator must be above the valve body and can be tilted left or Right but it must not be tilted below 85º from vertical.

Notes:

- Make certain there is no overhead water source that may drip onto valve actuator.
- In normal service, as some condensation may occur on or around the valve, the valve must be installed over a drip pan.

PIPING & INSTALLATION

The zone valves must be piped so that the seating ball always closes against the direction of flow, except in 3-way diverting configurations. Refer to Fig.3 and Fig.4. The valves are designed for application in closed hydronic heating and cooling systems and are not recommended for use in systems requiring high amounts of make-up water (open systems). High levels of dissolved oxygen and chlorine found in open systems may attack the valvematerials and result in premature failure.

Figure 3: 2-Way Valve

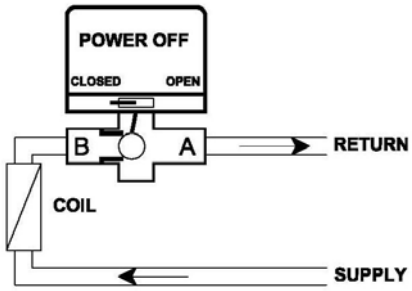


Figure 4: 3-Way Valve in Diverting Configuration

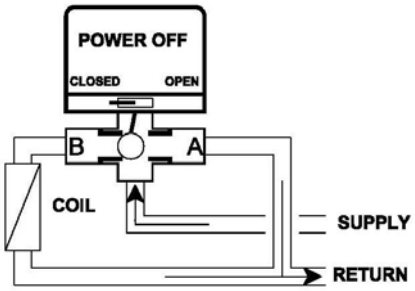
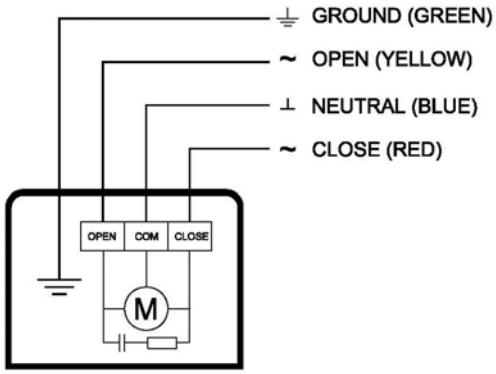
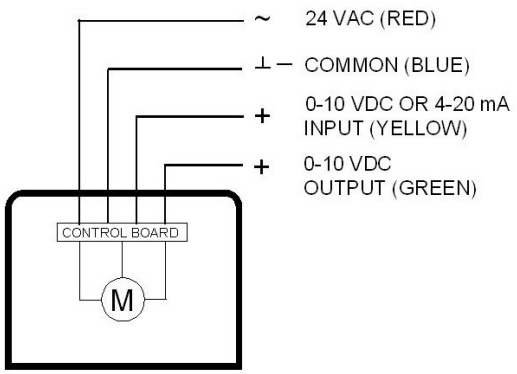


Figure 5: Actuator Wiring Diagrams

3-Wire Floating Input



0-10 VDC or 4-20 mA Proportional Input



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