

# CONTROL VALVES

## MODULATING POPTOP™ ZONE VALVES VM SERIES



### DESCRIPTION

The Schneider Electric VM Series Modulating PopTop™ Zone Valves offer a wide variety of Cv ranges and control signal options for hot and chilled water. The PopTop™ valves are designed with removable actuators with tri-state or proportional control and either non-spring or spring return action. The valves are available in two- and three-way body patterns, 1/2" to 1-1/4" sizes, and in NPT or sweat pipe connections. An optional motor timeout actuator is available for controllers that do not automatically turn off their signals after the full stroke of the valve.



AP23A000  
with VM2313



VM2211



AT33A000



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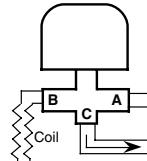
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CONTROL VALVES

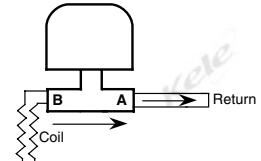
### FEATURES

- Two- or three-way mixing body patterns
- Removable and replaceable actuator
- NPT or sweat connections
- Manual override
- Time-out option (tri-state actuator)
- Non-spring or spring return actuators

### PIPING



Modulating Three-way Valve  
(mixing only)



Modulating Two-way Valve

Note: Piping is the same for N.O. or N.C. type valves.  
Normal (Open, Closed) position refers to flow through the coil.

### SPECIFICATIONS

|                                  |  |                               |  |
|----------------------------------|--|-------------------------------|--|
| <b>Size</b>                      | 1/2", 3/4", 1", 1-1/4"   | <b>Signal Input</b>           | AT actuators: tri-state (floating);<br>AP actuators: proportional (0-5,<br>0-10, 5-10 VDC or 4-20 mA) jumper<br>selectable |
| <b>Cv Range</b>                  | 1.0 to 8.0   | <b>Input Impedance</b>        | 200 kΩ (0-10 VDC); 300Ω (4-20 mA)  |
| <b>Connections</b>               | FNPT, Sweat, or 1/2" SAE flare valve body connections  | <b>Wiring</b>                 | Terminals  |
| <b>Flow Characteristic</b>       | Equal Percentage for Cv 1 to 4; linear for Cv 7.0 to 8.0   | <b>Action</b>                 | Two-way valves: N.O./N.C.<br>determined by choice of actuator;<br>three-way valves: use only N.C.<br>actuator              |
| <b>Leakage Rating</b>            | ANSI Class IV (0.01% of rated capacity)  | <b>Actuator Compatibility</b> | AT (tri-state) or AP (proportional 0-10 VDC, 4-20 mA) type actuators only  |
| <b>Maximum Closeoff Pressure</b> | Cv 1.0: 50 psid (344 kPa)<br>Cv 2.0: 50 psid (344 kPa),<br>20 psid (137 kPa) spring return<br>Cv 4.0: 35 psid (241 kPa),<br>20 psid (137 kPa) spring return<br>Cv 8.0: 35 psid (241 kPa),<br>15 psid (103 kPa) spring return | <b>Actuator Mounting</b>      | Poptop®  |
| <b>Maximum Pressure Rating</b>   | 300 psig (2067 kPa)  | <b>Drive Time</b>             | 150 seconds @ 60 Hz  |
| <b>Materials Of Construction</b> | Brass valve body and seat, chrome-plated stem, thermoplastic plug; high-temperature plastic actuator housing   | <b>Spring Return Time</b>     | 9 seconds maximum  |
| <b>Media Compatibility</b>       | Hot or chilled water; 50% or less ethylene glycol  | <b>Manual Override</b>        | Combination override lever and position indicator, all actuators   |
| <b>Media Temperature Range</b>   | 32° to 200°F (0° to 93°C)  | <b>Operating Temperature</b>  | Maximum ambient 125°F (52°C)   |
| <b>Supply Voltage</b>            | 24 VAC ±15% @ 10 VA (max),<br>50/60 Hz   | <b>Operating Humidity</b>     | 5 to 95% RH non-condensing   |
|                                  |  | <b>Enclosure Rating</b>       | NEMA 1   |
|                                  |  | <b>Weight</b>                 | Valve plus actuator assembly,<br><1.9 lb (0.86 Kg)   |
|                                  |  | <b>Approvals</b>              | UL File #E9429 CSA C22.2 No. 24;<br>CE, C-Tick   |
|                                  |  | <b>Warranty</b>               | 2 years  |



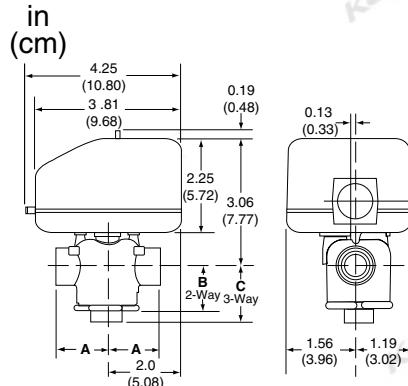
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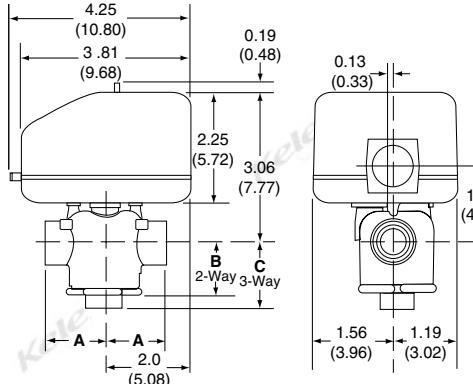
CONTROL VALVES

### DIMENSIONS



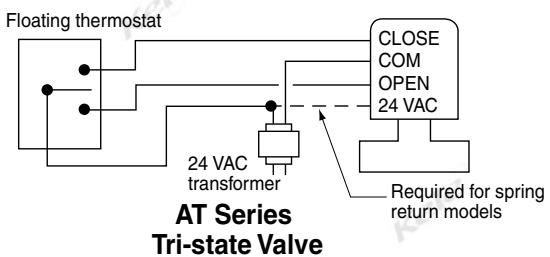
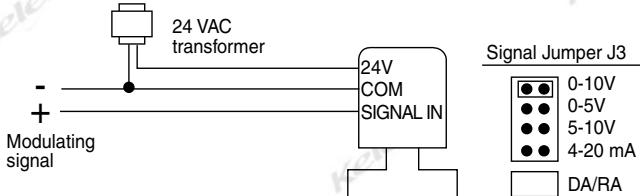
| VALVE BODY SIZE | DIMENSIONS     |              |                |
|-----------------|----------------|--------------|----------------|
|                 | A              | B            | C              |
| 1/2" sweat      | 1-5/16 (3.33)  | 15/16 (2.38) | 1-5/16 (3.33)  |
| 3/4" NPT        | 1-3/8 (3.49)   | 15/16 (2.38) | 1-11/16 (3.33) |
| 1" sweat        | 1-11/16 (4.29) | 15/16 (2.38) | 1-11/16 (3.33) |
| 1-1/4" sweat    | 1-7/8 (4.76)   | 1 (2.54)     | 1-13/16 (4.76) |
| 1/2" NPT/BSP    | 1-2/8 (3.49)   | 15/16 (2.38) | 1-5/16 (3.33)  |
| 3/4" NPT/BSP    | 1-11/16 (4.29) | 15/16 (2.38) | 1-7/16 (3.65)  |
| 1" NPT/BSP      | 1-7/8 (4.76)   | 1 (2.54)     | 1-11/16 (4.29) |
| 1/2" SAE flare  | 2-5/16 (11.59) | 15/16 (0.31) | 1-5/16 (5.72)  |

Spring Return



Non-Spring Return

### WIRING

AT Series  
Tri-state ValveAP Series  
Proportional Valve

### ORDERING INFORMATION

#### VALVE

| MODEL                | DESCRIPTION                      |
|----------------------|----------------------------------|
| VM                   | Modulating PopTop electric valve |
| <b>CONFIGURATION</b> |                                  |
| 2                    | Two-way                          |
| 3                    | Three-way                        |
| <b>VALVE SIZE</b>    |                                  |
| 2                    | 1/2"                             |
| 3                    | 3/4"                             |
| 4                    | 1"                               |
| 5                    | 1-1/4"                           |
| <b>CONNECTION</b>    |                                  |
| 1                    | Sweat - 1/2", 3/4", 1", 1-1/4"   |
| 2                    | Threaded NPT - 1/2", 3/4", 1"    |
| 5                    | 1/2" SAE flare                   |
| <b>CV</b>            |                                  |
| 1                    | 1.0                              |
| 2                    | 2.0                              |
| 3                    | 4.0                              |
| 7                    | 8.0                              |
| <b>SIZE</b>          |                                  |
| 1                    | 1/2"                             |
| 2                    | 1/2", 3/4"                       |
| 3                    | 1/2", 3/4", 1"                   |
| 7                    | 1", 1-1/4"                       |

Example: VM2221

#### ACTUATOR

| MODEL                        | DESCRIPTION                               |
|------------------------------|---|
| A                            | VM Series actuator                        |
| <b>CONTROL</b>               |   |
| T                            | Three-wire floating                       |
| P                            | Proportional, 0-10 VDC, 4-20 mA           |
| <b>ACTION</b>                |   |
| 1                            | Normally closed spring return*            |
| 2                            | Normally open spring return               |
| 3                            | Non-spring return                         |
| <b>TEMPERATURE RATINGS</b>   |   |
| 3                            | General temperature only                  |
| <b>VOLTAGE</b>               |   |
| A                            | 24 VAC only                               |
| <b>LEADS</b>                 |   |
| 00                           | No leads                                  |
| <b>TIMEOUT CONFIGURATION</b> |   |
| T                            | Time-out for AT models                    |
| 0                            | No timeout for AT models<br>All AP models |

Example: AT33A000

\* Three-way valves are compatible only with N.C. actuators.  
For N.O. simply turn the valve around.

#### BODY AND ACTUATOR REQUIREMENTS

##### Spring Return Action Configurations

###### Body Configuration

V X 3 X X X

2 = Two-way

3 = Three-way

If body configuration is 2, actuator action can be 1 or 2.

If body configuration is 3, actuator action must be 1.

###### Actuator Spring Return Mode

A X 1 X X X

1 = Normally Closed

2 = Normally Open

If actuator action is 1, body configuration can be 2 or 3.

If actuator action is 2, body configuration must be 2.