Technical Data

**Fluid**
chilled or hot water, up to 60% glycol

**Flow characteristic**
modified equal percentage

**Controllable flow range**
90° rotation

**Valve Size [mm]**
2.5" [65]

**Pipe connection**
for use with ANSI class 125/150 flanges

**Housing**
Ductile cast iron ASTM A536

**Body finish**
epoxy powder coating (blue RAL 5002)

**Stem**
416 stainless steel

**Stem seal**
EPDM (lubricated)

**Seat**
EPDM

**Bearing**
RPTFE

**Disc**
304 stainless steel

**Body Pressure Rating**
ANSI Class Consistent with 125, 232 psi CWP

**ANSI Class**
Consistent with 125

**Number of Bolt Holes**
4

**Lug threads**
5/8-11 UNC

**Close-off pressure ∆ps**
200 psi

**Rangeability Sv**
10:1 (for 30° to 70° range)

**Maximum Velocity**
12 FPS

**Cv**
196

**Weight**
6.2 lb [2.8 kg]

**Fluid Temp Range (water)**
-22...250°F [-30...120°C]

**Leakage rate**
0%

**Servicing**
maintenance-free

**Application**
Valve is designed for use in ANSI flanged piping systems to meet the needs of bi-directional high flow HVAC hydronic applications with 0% leakage. Typical applications include cooling tower bypass, primary flow change-over systems, and large air-handler coil control. Valve face-to-face dimensions comply with API 609 & MSS-SP-67, Completely assembled and tested, ready for installation.

**Jobsite Note**
Valve assembly should be stored in a weather protected area prior to installation. Reference the butterfly valve installation instruction for additional information.

**Flow/Cv**

<table>
<thead>
<tr>
<th>Cv 10°</th>
<th>Cv 20°</th>
<th>Cv 30°</th>
<th>Cv 40°</th>
<th>Cv 50°</th>
<th>Cv 60°</th>
<th>Cv 70°</th>
<th>Cv 80°</th>
<th>Cv 90°</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1</td>
<td>6</td>
<td>12</td>
<td>25</td>
<td>45</td>
<td>75</td>
<td>119</td>
<td>178</td>
<td>196</td>
</tr>
</tbody>
</table>

**Suitable Actuators**

<table>
<thead>
<tr>
<th></th>
<th>Non-Spring</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>F665HD</td>
<td>ARB(X), GRB(X)</td>
<td>AFRB(X)</td>
</tr>
</tbody>
</table>

**Dimensions (Inches [mm])**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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</table>

**Flow/Mounting Details**

![Graph showing flow/mounting details](image)
## F665HD Technical Data Sheet

Resilient Seat, 304 Stainless Steel Disc

### Dimensions (Inches [mm])

<p>| | | | | |</p>
<table>
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<tr>
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F665HD Technical Data Sheet
Resilient Seat, 304 Stainless Steel Disc

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</table>

AF..N4
Technical Data

**Power Supply**
24 VAC, ±20%, 50/60 Hz, 24 VDC, ±10%

**Power consumption in operation**
3.5 W

**Power consumption in rest position**
1.3 W

**Transformer sizing**
6 VA (class 2 power source)

**Electrical Connection**
18 GA plenum cable with 1/2” conduit connector, degree of protection NEMA 2 / IP54, 3 ft [1 m], 10 ft [3 m] and 16ft [5 m]

**Overload Protection**
electronic throughout 0…90° rotation

**Operating Range**
2…10 V (default), 4…20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor), variable (VDC, on/off, floating point)

**Operating range Y variable**
Start point 0.5…30 V
End point 2.5…32 V

**Input Impedance**
100 kΩ for 2…10 V (0.1 mA), 500 Ω for 4…20 mA, 1500 Ω for PWM, On/Off and Floating point

**Position Feedback**
2…10 V, Max. 0.5 mA, VDC variable

**Angle of rotation**
90°

**Direction of motion motor**
selectable with switch 0/1

**Position indication**
Mechanically, pluggable

**Running Time (Motor)**
default 150 s, variable 90…150 s

**Ambient humidity**
max. 95% r.H., non-condensing

**Ambient temperature**
-22…122°F [-30…50°C]

**Storage temperature**
-40…176°F [-40…80°C]

**Degree of Protection**
IP54, NEMA 2, UL Enclosure Type 2

**Agency Listing**
cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC

**Noise level, motor**
45 dB(A)

**Servicing**
maintenance-free

**Quality Standard**
ISO 9001

**Weight**
2.6 lb [1.2 kg]

†Rated Impulse Voltage 800 V, Type action 1, Control Pollution Degree 3.
**INSTALLATION NOTES**

- Provide overload protection and disconnect as required.
- Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- Actuators may also be powered by 24 VDC.
- Only connect common to negative (-) leg of control circuits.
- A 500 Ω resistor (ZG-R01) converts the 4 to 20 mA control signal to 2 to 10 VDC.
- Control signal may be pulsed from either the Hot (Source) or Common (Sink) 24 VAC line.
- For triac sink the Common connection from the actuator must be connected to the Hot connection of the controller. Position feedback cannot be used with a triac sink controller; the actuator internal common reference is not compatible.
- IN4004 or IN4007 diode. (IN4007 supplied, Belimo part number 40155).
- Actuators with plenum cable do not have numbers; use color codes instead.
- Meets cULus requirements without the need of an electrical ground connection.

**WARNING! LIVE ELECTRICAL COMPONENTS!**

During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.
## ARX24-MFT Technical Data Sheet
**Modulating, Non-Spring Return, 24 V, Multi-Function Technology®**

### 24 VAC Transformer (AC Only)

<table>
<thead>
<tr>
<th>Line Volts</th>
<th>Control Signal VDC / mA</th>
<th>Override Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blk (1)</td>
<td>Red (2)</td>
<td>Wht (3) Y1 Input</td>
</tr>
<tr>
<td>Com (3)</td>
<td>Pink (4)</td>
<td>Y2 Input</td>
</tr>
<tr>
<td>Common</td>
<td>+ Hot</td>
<td>U Output</td>
</tr>
<tr>
<td>Line</td>
<td>+ Hot</td>
<td></td>
</tr>
</tbody>
</table>

### Control modes acc. to Y

<table>
<thead>
<tr>
<th>Mode</th>
<th>0%</th>
<th>50%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### Line Volts

- **A**: 24 VDC / mA Control Signal
- **B**: + Hot
- **C**: Y1 Input
- **D**: Y2 Input

### Function

<table>
<thead>
<tr>
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<th>a</th>
<th>b</th>
<th>c</th>
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<tr>
<td>Normal</td>
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</table>

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