# Technical data sheet B209B

2-way, Characterized Control Valve, Chrome Plated Brass Ball and Nickel Plated Brass Stem



Picture may differ from product

5-year warranty

## Type overview

| Type | DN |
|---|---|
| B209B | 1/2" [15] |

## Technical data

| | | |
|---|---|---|
| **Functional data** | Valve size [mm] | 0.5" [15] |
| | Fluid | chilled or hot water, up to 60% glycol |
| | Fluid Temp Range (water) | 0...250°F [-18...120°C] |
| | Body Pressure Rating | 600 psi |
| | Close-off pressure Δps | 200 psi |
| | Flow characteristic | equal percentage |
| | Leakage rate | 0% for A–AB |
| | Pipe connection | Internal thread<br>NPT (female) |
| | Servicing | maintenance-free |
| | Flow Pattern | 2-way |
| | Controllable flow range | 75° |
| | Cv | 0.8 |
| **Materials** | Valve body | Nickel-plated brass body |
| | Stem | nickel-plated brass |
| | Stem seal | EPDM (lubricated) |
| | Seat | PTFE |
| | Characterized disc | TEFZEL® |
| | O-ring | EPDM (lubricated) |
| | Ball | chrome plated brass |
| **Suitable actuators** | Non Fail-Safe | TR<br>LRB(X) |
| | Spring | TFRB(X)<br>LF |

## Safety notes

- WARNING: This product can expose you to lead which is known to the State of California to cause cancer and reproductive harm. For more information go to www.p65warnings.ca.gov

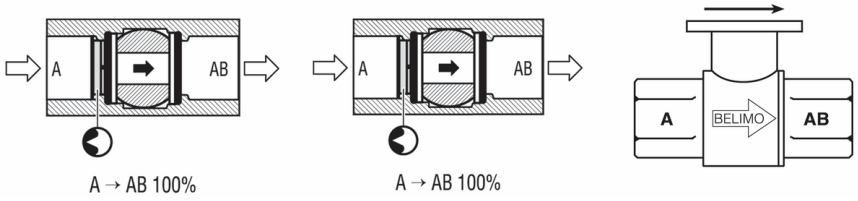
## Product features

**Application**

This valve is typically used in air handling units on heating or cooling coils, and fan coil unit heating or cooling coils. Some other common applications include Unit Ventilators, VAV box re-heat coils and bypass loops. This valve is suitable for use in a hydronic system with variable flow.

**Flow/Mounting details**

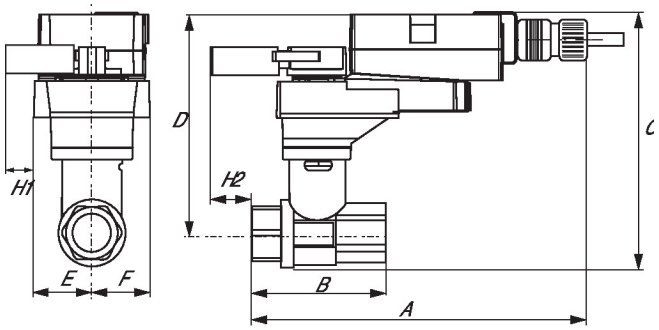
Two-way valves should be installed with the disc upstream.




## Dimensions

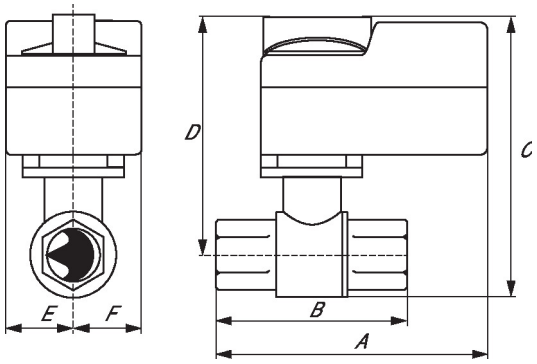
| Type | DN | Weight |
|---|---|---|
| B209B | 1/2" [15] | 0.51 lb [0.23 kg] |

LRB, LRX



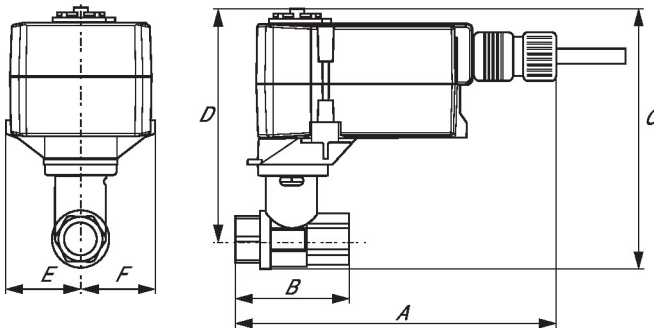

| A | B | C | D | E | F | H1 | H2 |
|---|---|---|---|---|---|---|---|
| 9.4" [239] | 2.4" [60] | 5.2" [132] | 4.6" [117] | 1.3" [33] | 1.3" [33] | 1.2" [30] | 1.1" [28] |

TR



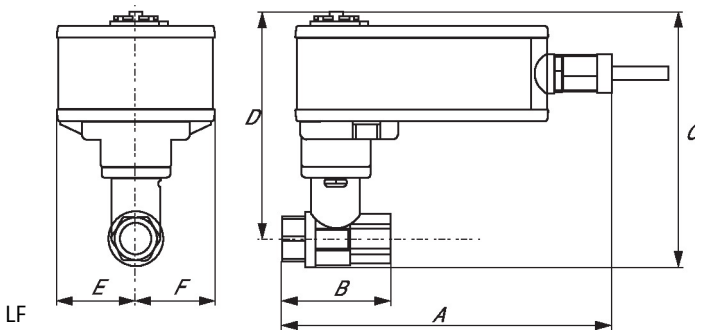

| A | B | C | D | E | F |
|---|---|---|---|---|---|
| 3.7" [95] | 2.4" [60] | 4.8" [122] | 4.2" [107] | 1.3" [33] | 1.3" [33] |

TFRB, TFRX




| A | B | C | D | E | F |
|---|---|---|---|---|---|
| 6.6" [167] | 2.4" [60] | 4.9" [124] | 4.3" [110] | 1.5" [39] | 1.5" [39] |

## Dimensions




| A | B | C | D | E | F |
|---|---|---|---|---|---|
| 7.91" [200] | 2.4" [60] | 5.7" [146] | 5.1" [129] | 1.8" [46] | 1.8" [46] |

Modulating, Non fail-safe, 24 V



Picture may differ from product

5-year warranty

## Technical data

| | | |
|---|---|---|
| **Electrical data** | Nominal voltage | AC/DC 24 V |
| | Nominal voltage frequency | 50/60 Hz |
| | Nominal voltage range | AC 19.2...28.8 V / DC 21.6...28.8 V |
| | Power consumption in operation | 1.5 W |
| | Power consumption in rest position | 0.4 W |
| | Transformer sizing | 3 VA |
| | Electrical Connection | 18 AWG plenum cable, 1 m, with 1/2" NPT conduit connector |
| | Overload Protection | electronic thoughout 0...90° rotation |
| | Electrical Protection | actuators are double insulated |
| **Functional data** | Operating range Y | 2...10 V |
| | Operating range Y note | 4...20 mA w/ ZG-R01 (500 Ω, 1/4 W resistor) |
| | Input impedance | 100 kΩ for 2...10 V (0.1 mA), 500 Ω for 4...20 mA |
| | Position feedback U | 2...10 V |
| | Position feedback U note | Max. 1 mA |
| | Direction of motion motor | selectable with switch 0/1 |
| | Manual override | external push button |
| | Angle of rotation | 90° |
| | Angle of rotation note | adjustable with mechanical stop |
| | Running Time (Motor) | 90 s / 90° |
| | Sound power level, motor | 35 dB(A) |
| | Position indication | Mechanical, pluggable |
| **Safety data** | Power source UL | Class 2 Supply |
| | Degree of protection NEMA/UL | NEMA 2 |
| | Housing | UL Enclosure Type 2 |
| | Agency Listing | cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU |
| | Quality Standard | ISO 9001 |
| | UL 2043 Compliant | Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC |
| | Ambient humidity | Max. 95% RH, non-condensing |
| | Ambient temperature | -22...122°F [-30...50°C] |
| | Storage temperature | -40...176°F [-40...80°C] |
| | Servicing | maintenance-free |

## Technical data

| | | |
|---|---|---|
| **Weight** | Weight | 1.4 lb [0.62 kg] |
| **Materials** | Housing material | Galvanized steel and plastic housing |

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

## Accessories

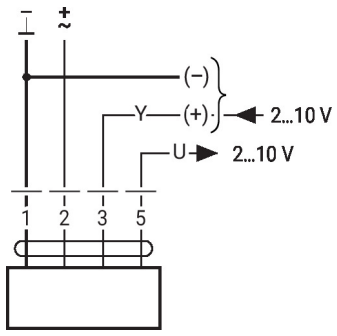
**Electrical accessories**

| Description | Type |
|---|---|
| Auxiliary switch 1x SPDT add-on | S1A |
| Auxiliary switch 2x SPDT add-on | S2A |
| Feedback potentiometer 140 Ω add-on, grey | P140A GR |
| Feedback potentiometer 1 kΩ add-on, grey | P1000A GR |
| Feedback potentiometer 10 kΩ add-on, grey | P10000A GR |
| Feedback potentiometer 2.8 kΩ add-on, grey | P2800A GR |
| Feedback potentiometer 500 Ω add-on, grey | P500A GR |
| Feedback potentiometer 5 kΩ add-on, grey | P5000A GR |

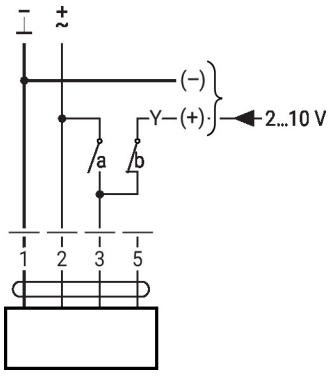
## Electrical installation

**Wire colors:**
1 = black
2 = red
3 = white
5 = orange

AC/DC 24 V, modulating




Override control (frost protection circuit)




| 1 | 2 | 3 (a) | 3 (b) | |
|---|---|---|---|---|
| | | | | A - AB = 100% |
| | | | | A - AB = 0% |
| | | | 2 V | A - AB = 0% |
| | | | 10 V | A - AB = 100% |