

Modulating Control Valves

with Magnetic Actuators, Positioning Control and Position Feedback for Domestic Water



MXG461B Series Modulating Control Valve.

Description

The MXG461B Modulating Control Valve is a control valve with magnetic actuator, for modulating control of domestic water, cold water and hot water systems.

Features

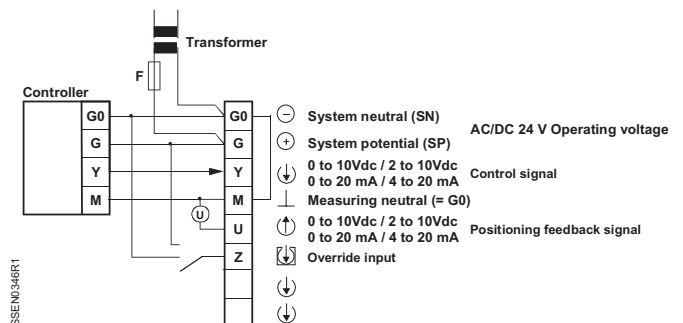
- Fast positioning time (< 2 seconds)
- Selectable valve characteristic: Equal percentage or linear
- Selectable control signal: 0/2 to 10 Vdc or 0/4 to 20 mA
- High resolution (>1000:1)
- High rangeability
- Wear-free inductive stroke measurement
- Spring return A → AB closed when de-energized
- Positioning control and position feedback signal
- Low-friction, heavy-duty and maintenance-free

Applications

The MXG461B... Modulating Control Valves are through-port or mixing valves with magnetic actuators. The actuator is equipped with an electronics module for positioning control and position feedback. If the power is off, the valve control path A → AB is closed.

The short positioning time, high resolution and high rangeability make these valves ideal for modulating control of domestic, hot and cold water systems.

Wiring Diagram



MXG461B Modulating Control Valve Specifications

Electrical

Low-voltage Use Only Class 2 (SELV, PELV)

24 Vac

Operating Voltage 24 Vac +20/-15%
 Frequency 45 to 65 Hz
 Typical Power Consumption See Table 1
 Standby <1 W (Valve Fully Closed)
 Nominal Apparent Power See Sizing Table
 Suitable Fuse Slow, See Table 1

24 Vdc

Operating Voltage 20 to 30 Vdc

Functional Data of Actuator

Input

Positioning Signal Y 0/2 to 10 Vdc or 0/4 to 20mA
 Impedance
 0/2 to 10Vdc 100 kΩ/5nF
 0/4 to 20 mA 240 Ω/5nF

Forced Control

Impedance 22 kΩ
 Closing the Valve (Z Connected to G0) <1 Vac; <0.8 Vdc
 Opening the Valve (Z Connected to G0) > 6 Vac; >5 Vdc
 No Function (Z Not Wired) Positioning Signal Y Active

Output

Position Feedback Signal Voltage 0/2 to 10 Vdc;
 Load Resistance > 500Ω
 Current 0/4 to 20 mA;
 Load Resistance < 500Ω
 Stroke Measurement Inductive
 Nonlinearity ±3% of End Value

Functional Data of Valve

Nominal Pressure ANSI 125 (PN 16)
 Operating Pressure $p_{e,max}^1$ 232 psi (16 bar)
 Pressure Differential $Dp_{v,max}$ See Sizing Table.
 Leakage A → AB Maximum 0.05% Cv
 B → AB Depends on Application Data
 (0.2% Cv)
 Water Temperature² -4 to 248°F (-20 to 120°C)
 Valve Characteristic³ Equal Percentage or Linear, Optimized
 Near the Closing Point

Resolution 1:1000

Type of Operation Modulating

Position De-energized A → AB Closed

Orientation Upright to Horizontal

Positioning Time < 2 Seconds

Materials

Body Red Bronze
 Cover Flange Red Bronze
 Seat/Inner Valve Stainless Steel

Packing

Normal Duty EPDM (O-ring)

Pipe Connections Screwed Fittings, Bronze/Brass

Electrical Connections

Cable Entries 3 x M20 x1.5 or PG13.5/G1/2
 Connection Terminals Screw Terminals for 12 AWG Wires
 Min. Cross-sectional Area⁴ 18 ga. AWG
 Max. Cable Length Refer to Sizing Table.

Ambient Conditions

Temperature
 Operation and Storage 23 to 113°F (-5 to 45°C)
 Transport -13 to 158°F (-25 to 70°C)
 Humidity 5 to 95% rh

Agency Approvals

IP31 to IEC 529
 Conforms to CE Requirements, UL 873,
 Certified to Canadian Standard C22.2 No. 24, C-Tick N-474,
 PED 97/23/EC: Pressure-carrying Parts,
 Par. 1, Section. 2.1.4 / Par. 3, Section 3, Fluid Group 2

Flow Characteristics Equal Percentage or Linear

Notes:

¹ Tested at 1.5 x PN (24 bar), similar to DIN 3230-3

² For medium temperatures <32°F (0°C), the Z366 stem heating element is required.

³ Can be selected via DIP switch.

⁴ In case of strong vibrations, use high-flex stranded wires.

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Valves

Sizing

Part No.	Valve Size (in.)	Cv	Max. Close-off Pressure (psi)	Power for Transformer Sizing (VA)	Power Consumption (W)	Slow Fuse	Wire Gauge (AWG)		
							16	14	12
MXG461B15-0.6	1/2	0.7	145	33	15	3.15	130	215	360
MXG461B15-1.5	1/2	1.8	145	33	15	3.15	130	215	360
MXG461B15-3	1/2	3.5	145	33	15	3.15	130	215	360
MXG461B20-5	3/4	5.8	116	33	15	3.15	130	215	360
MXG461B25-8	1	9.3	102	33	15	3.15	130	215	360
MXG461B32-12	1-1/4	14	87	43	20	4	100	165	260
MXG461B40-20	1-1/2	23	87	43	20	4	100	165	260
MXG461B50-30	2	35	87	65	22	6.3	65	100	185

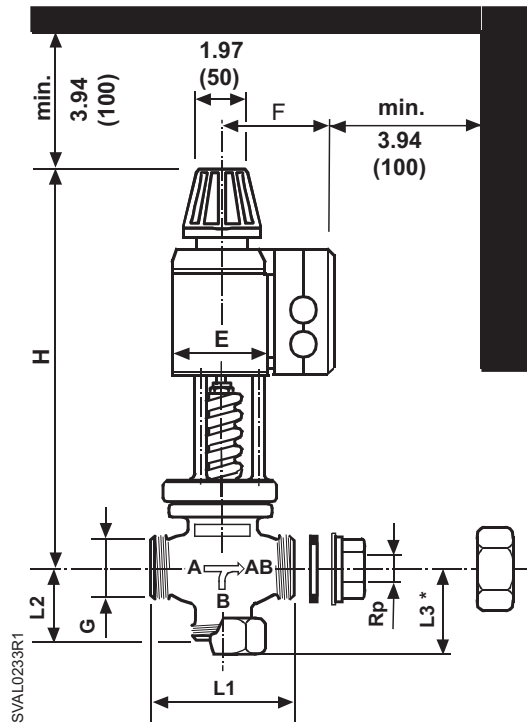
MXG461B Modulating Control Valve Product Ordering

Valve Size (in)	Cv	Part No.
1/2	0.7	MXG461B15-0.6
1/2	1.8	MXG461B15-1.5
1/2	3.5	MXG461B15-3
3/4	5.8	MXG461B20-5
1	9.3	MXG461B25-8
1-1/4	14	MXG461B32-12
1-1/2	23	MXG461B40-20
2	35	MXG461B50-30

Ordering Notes:

- When placing an order, specify the quantity, product number and description.
Example: 1 MXG461B15-0.6 valve and 1 Z366 stem heater
- The valve body and magnetic actuator assemblies cannot be separated.
- The screwed fittings and gaskets are supplied with these valves.

Dimensions and Weights



Dimensions shown in inches (mm).

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Valves

Part No.	Line Size In. (mm)	RP	G (in)	L1	L2	L3	H	E	F	Weight lb. (kg)
MXG461B15-0.6	1/2 (15)	1/2	G1B	3.15 (80)	1.67 (42.5)	1.97 (50)	13.4 (340)	3.15 (80)	4.53 (115)	15.65 (7.1)
MXG461B15-1.5	1/2 (15)	1/2	G1B	3.15 (80)	1.67 (42.5)	1.97 (50)	13.4 (340)	3.15 (80)	4.53 (115)	16.09 (7.3)
MXG461B15-3	1/2 (15)	1/2	G1B	3.15 (80)	1.67 (42.5)	1.97 (50)	13.4 (340)	3.15 (80)	4.53 (115)	16.09 (7.3)
MXG461B20-5	3/4 (20)	3/4	G1-1/4B	3.74 (95)	2.07 (52.5)	2.36 (60)	13.3 (339)	3.15 (80)	4.53 (115)	16.97 (7.7)
MXG461B25-8	1 (25)	1	G1-1/2B	4.33 (110)	2.22 (56.5)	2.52 (64)	13.6 (346)	3.15 (80)	4.53 (115)	18.73 (8.5)
MXG461B32-12	1-1/4 (32)	1-1/4	G2B	4.92 (125)	2.66 (67.5)	2.95 (75)	15.12 (384)	3.94 (100)	4.92 (125)	28.22 (12.8)
MXG461B40-20	1-1/2 (40)	1-1/2	G2-1/4B	5.51 (140)	3.17 (80.5)	3.66 (93)	15.79 (401)	3.94 (100)	4.92 (125)	32.19 (14.6)
MXG461B50-30	2 (50)	2	G2-3/4B	6.69 (170)	3.68 (93.5)	4.2 (108)	17.58 (449)	3.94 (100)	4.92 (125)	41.00 (18.6)

Table expressed in inches (mm).

Table Notes:

- A: External thread G...B to ISO228/1
- DN: Internal thread Rp to ISO7/1
- Fittings to ISO 49/DIN 2950 (supplied complete with flange gaskets)