# Date created, 10/27/2017 - Subject to change. © Belimo Aircontrols (USA), Inc.

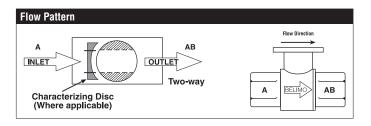
# **B250**, **2-Way**, **Characterized Control Valve** Stainless Steel Ball and Stem







Technical Data	
Service	chilled, hot water, up to 60% glycol
Flow Characteristic	equal percentage
Controllable Flow Range	75°
Size [mm]	2" [50]
End Fitting	NPT female ends
Body	forged brass, nickel plated
Ball	stainless steel
Stem	stainless steel
Stem Packing	EPDM (lubricated)
Seat	Teflon® PTFE
Seat O-ring	EPDM (lubricated)
Characterized Disc	No Disc (full flow)
Body Pressure Rating [psi]	400
Media Temperature Range (Water)	0°F to 250°F [-18°C to 120°C]
Max Differential Pressure (Water)	50 psi (345 kPa)
Close-Off Pressure	200 psi
Cv	57
Weight	2.9 lb [1.3 kg]
Leakage	0% for A to AB
Servicing	maintenance free

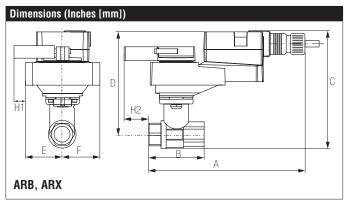


### **Application**

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.

**Suitable Actuators** 

	Non-Spring	Spring	
B250	ARB(X)	AFRB(X)	

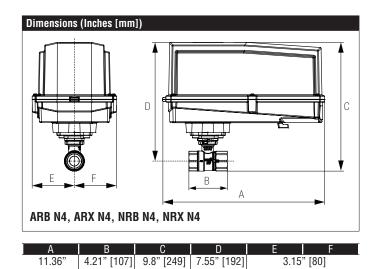


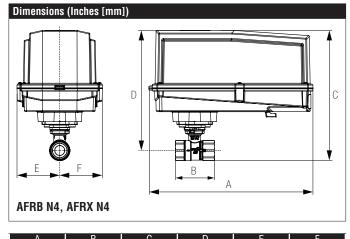
А	В	С	D	E F	H1	H2
10"	4.21"	6.84"	5.51"	1.73" [44]	1.18"	0.5" [15]
[254]	[107]	[174]	[140]		[30]	

[289]

# B250, 2-Way, Characterized Control Valve Stainless Steel Ball and Stem

3.39" [86]





10.29

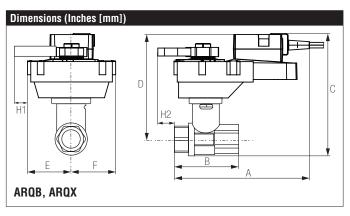
[261]

9.24" [235]

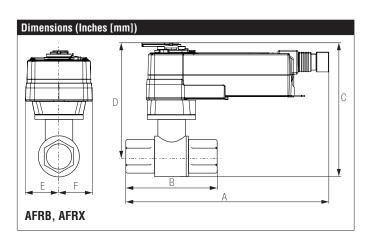
12.98'

[330]

4.93" [125]



Α	В	С	D	Е	F	H1	H2
9.9"	4.21"	7.45"	6.11"	2.28	" [58]	0.75"	0.5" [15]
[251]	[107]	[190]	[155]			[20]	



Α	В	С	D	E	F
10.82" [275]	4.21" [107]	9.47" [241]	8.14" [207]	2.02	" [51]

## ARX24-SR-T

### Modulating, Non-Spring Return, 24 V, for 2 to 10 VDC or 4 to 20 mA





Technical DataPower Supply24 VAC, $\pm 20\%$ , 50/60 Hz, 24 VDC, $\pm 10\%$ Power Consumption Running2.5 WPower Consumption Holding0.4 WTransformer Sizing5 VA (class 2 power source)Electrical Connectionterminal blockOverload Protectionelectronic thoughout 0° to 90° rotationOperating Range Y2 to 10 VDC, 4 to 20 mA w/ ZG-R01 (500 $\Omega$ , 1/4 W resistor)Input Impedance100 k $\Omega$ for 2 to 10 VDC (0.1 mA), 500 $\Omega$ for 4 to 20 mAFeedback Output U2 to 10 VDCAngle of Rotation90°Direction of Rotation (Motor)reversible with built-in switchPosition Indicationintegrated into handleManual Overrideexternal push buttonRunning Time (Motor)90 secAmbient Temperature Range-22°F to 122°F [-30°C to 50°C]Storage Temperature Range-40°F to 176°F [-40°C to 80°C]HousingNEMA 2, IP54Agency Listings†cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/ECNoise Level (Motor)<45 dB (A)Servicingmaintenance freeQuality StandardISO 9001		
Power Consumption Running         2.5 W           Power Consumption Holding         0.4 W           Transformer Sizing         5 VA (class 2 power source)           Electrical Connection         terminal block           Overload Protection         electronic thoughout 0° to 90° rotation           Operating Range Y         2 to 10 VDC, 4 to 20 mA w/ ZG-R01 (500 $\Omega$ , 1/4 W resistor)           Input Impedance         100 k $\Omega$ for 2 to 10 VDC (0.1 mA), 500 $\Omega$ for 4 to 20 mA           Feedback Output U         2 to 10 VDC           Angle of Rotation         90°           Direction of Rotation (Motor)         reversible with built-in switch           Position Indication         integrated into handle           Manual Override         external push button           Running Time (Motor)         90 sec           Ambient Temperature Range         -22°F to 122°F [-30°C to 50°C]           Storage Temperature Range         -40°F to 176°F [-40°C to 80°C]           Housing         NEMA 2, IP54           Agency Listings†         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	Technical Data	
$\begin{array}{llll} Power Consumption Holding & 0.4 \ W \\ Transformer Sizing & 5 \ VA \ (class 2 power source) \\ Electrical Connection & terminal block \\ Overload Protection & electronic thoughout 0° to 90° rotation \\ Operating Range Y & 2 to 10 \ VDC, 4 to 20 \ mA \ w/ \ ZG-R01 \ (500 \ \Omega, 1/4 \ W \ resistor) \\ Input Impedance & 100 \ k \ \Omega \ for 2 to 10 \ VDC \ (0.1 \ mA), 500 \ \Omega \ for 4 to 20 \ mA \\ Feedback Output U & 2 to 10 \ VDC \\ Angle of Rotation & 90° \\ Direction of Rotation \ (Motor) & reversible with built-in switch \\ Position Indication & integrated into handle \\ Manual Override & external push button \\ Running Time \ (Motor) & 90 \ sec \\ Ambient Temperature Range & -22°F \ to 122°F \ [-30°C \ to 50°C] \\ Storage Temperature Range & -40°F \ to 176°F \ [-40°C \ to 80°C] \\ Housing & NEMA 2, IP54 \\ Agency Listings† & CULus \ acc. \ to UL60730-1A/-2-14, CAN/CSA \ E60730-1:02, CE \ acc. \ to 2004/108/EC \\ Noise Level \ (Motor) & <45 \ dB \ (A) \\ Servicing & maintenance \ free \\ \end{array}$	Power Supply	24 VAC, ±20%, 50/60 Hz, 24 VDC, ±10%
Transformer Sizing       5 VA (class 2 power source)         Electrical Connection       terminal block         Overload Protection       electronic thoughout 0° to 90° rotation         Operating Range Y       2 to 10 VDC, 4 to 20 mA w/ ZG-R01 (500 $\Omega$ , 1/4 W resistor)         Input Impedance       100 k $\Omega$ for 2 to 10 VDC (0.1 mA), 500 $\Omega$ for 4 to 20 mA         Feedback Output U       2 to 10 VDC         Angle of Rotation       90°         Direction of Rotation (Motor)       reversible with built-in switch         Position Indication       integrated into handle         Manual Override       external push button         Running Time (Motor)       90 sec         Ambient Temperature Range       -22°F to 122°F [-30°C to 50°C]         Storage Temperature Range       -40°F to 176°F [-40°C to 80°C]         Housing       NEMA 2, IP54         Agency Listings†       cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC         Noise Level (Motor)       <45 dB (A)	Power Consumption Running	2.5 W
Electrical Connection       terminal block         Overload Protection       electronic thoughout 0° to 90° rotation         Operating Range Y       2 to 10 VDC, 4 to 20 mA w/ ZG-R01 (500 $\Omega$ , 1/4 W resistor)         Input Impedance       100 k $\Omega$ for 2 to 10 VDC (0.1 mA), 500 $\Omega$ for 4 to 20 mA         Feedback Output U       2 to 10 VDC         Angle of Rotation       90°         Direction of Rotation (Motor)       reversible with built-in switch         Position Indication       integrated into handle         Manual Override       external push button         Running Time (Motor)       90 sec         Ambient Temperature Range       -22°F to 122°F [-30°C to 50°C]         Storage Temperature Range       -40°F to 176°F [-40°C to 80°C]         Housing       NEMA 2, IP54         Agency Listings†       cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC         Noise Level (Motor)       <45 dB (A)	Power Consumption Holding	0.4 W
$\begin{array}{lll} \hline \text{Overload Protection} & \text{electronic thoughout 0° to 90° rotation} \\ \hline \text{Operating Range Y} & 2 \text{ to 10 VDC, 4 to 20 mA w/ ZG-R01 (500 } \Omega, \\ & 1/4 \text{ W resistor)} \\ \hline \text{Input Impedance} & 100 \text{ k } \Omega \text{ for 2 to 10 VDC (0.1 mA), 500 } \Omega \text{ for 4} \\ \hline \text{to 20 mA} \\ \hline \text{Feedback Output U} & 2 \text{ to 10 VDC} \\ \hline \text{Angle of Rotation} & 90^{\circ} \\ \hline \text{Direction of Rotation (Motor)} & \text{reversible with built-in switch} \\ \hline \text{Position Indication} & \text{integrated into handle} \\ \hline \text{Manual Override} & \text{external push button} \\ \hline \text{Running Time (Motor)} & 90 \text{ sec} \\ \hline \text{Ambient Temperature Range} & -22^{\circ}\text{F to 122^{\circ}\text{F} [-30^{\circ}\text{C to 50^{\circ}\text{C}}]} \\ \hline \text{Storage Temperature Range} & -40^{\circ}\text{F to 176^{\circ}\text{F} [-40^{\circ}\text{C to 80^{\circ}\text{C}}]} \\ \hline \text{Housing} & \text{NEMA 2, IP54} \\ \hline \text{Agency Listings}^{\dagger} & \text{CULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC} \\ \hline \text{Noise Level (Motor)} & <45 \text{ dB (A)} \\ \hline \text{Servicing} & \text{maintenance free} \\ \hline \end{array}$	Transformer Sizing	5 VA (class 2 power source)
Operating Range Y $ \begin{array}{c} 2 \text{ to } 10 \text{ VDC, 4 to } 20 \text{ mA w/ } \text{ZG-R01 (} 500  \Omega, \\ 1/4 \text{ W resistor)} \\ \\ \text{Input Impedance} \\ 100 \text{ k } \Omega \text{ for 2 to } 10 \text{ VDC (} 0.1 \text{ mA), } 500  \Omega \text{ for 4} \\ \\ \text{to } 20 \text{ mA} \\ \\ \text{Feedback Output U} \\ 2 \text{ to } 10 \text{ VDC} \\ \\ \text{Angle of Rotation} \\ \text{Direction of Rotation (Motor)} \\ \text{Position Indication} \\ \text{Integrated into handle} \\ \text{Manual Override} \\ \text{Running Time (Motor)} \\ \text{Surpage Temperature Range} \\ \text{-22°F to } 122°F [-30°C \text{ to } 50°C] \\ \text{Storage Temperature Range} \\ \text{-40°F to } 176°F [-40°C \text{ to } 80°C] \\ \text{Housing} \\ \text{Agency Listings}^{\dagger} \\ \text{CULus acc. to } \text{UL60730-1A/-2-14, CAN/CSA} \\ \text{E60730-1:02, CE acc. to } 2004/108/EC} \\ \text{Noise Level (Motor)} \\ \text{Servicing} \\ \text{maintenance free} \\ \end{array}$	Electrical Connection	terminal block
$ \begin{array}{c} 1/4 \text{ W resistor}) \\ \\ \text{Input Impedance} \\ Input $	Overload Protection	electronic thoughout 0° to 90° rotation
Input Impedance $100 \text{ k } \Omega$ for 2 to 10 VDC (0.1 mA), $500 \Omega$ for 4 to 20 mA         Feedback Output U $2 \text{ to } 10 \text{ VDC}$ Angle of Rotation $90^{\circ}$ Direction of Rotation (Motor)       reversible with built-in switch         Position Indication       integrated into handle         Manual Override       external push button         Running Time (Motor) $90 \text{ sec}$ Ambient Temperature Range $-22^{\circ}\text{F to } 122^{\circ}\text{F } [-30^{\circ}\text{C to } 50^{\circ}\text{C}]$ Storage Temperature Range $-40^{\circ}\text{F to } 176^{\circ}\text{F } [-40^{\circ}\text{C to } 80^{\circ}\text{C}]$ Housing       NEMA 2, IP54         Agency Listings†       cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC         Noise Level (Motor) $<45 \text{ dB (A)}$ Servicing       maintenance free	Operating Range Y	2 to 10 VDC, 4 to 20 mA w/ ZG-R01 (500 Ω,
to 20 mA  Feedback Output U 2 to 10 VDC  Angle of Rotation 90°  Direction of Rotation (Motor) reversible with built-in switch  Position Indication integrated into handle  Manual Override external push button  Running Time (Motor) 90 sec  Ambient Temperature Range -22°F to 122°F [-30°C to 50°C]  Storage Temperature Range -40°F to 176°F [-40°C to 80°C]  Housing NEMA 2, IP54  Agency Listings† 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		1/4 W resistor)
Feedback Output U 2 to 10 VDC  Angle of Rotation 90°  Direction of Rotation (Motor) reversible with built-in switch Position Indication integrated into handle  Manual Override external push button  Running Time (Motor) 90 sec  Ambient Temperature Range -22°F to 122°F [-30°C to 50°C]  Storage Temperature Range -40°F to 176°F [-40°C to 80°C]  Housing NEMA 2, IP54  Agency Listings† 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	Input Impedance	100 k $\Omega$ for 2 to 10 VDC (0.1 mA), 500 $\Omega$ for 4
Angle of Rotation 90°  Direction of Rotation (Motor) reversible with built-in switch Position Indication integrated into handle  Manual Override external push button  Running Time (Motor) 90 sec  Ambient Temperature Range -22°F to 122°F [-30°C to 50°C]  Storage Temperature Range -40°F to 176°F [-40°C to 80°C]  Housing NEMA 2, IP54  Agency Listings† 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		to 20 mA
Direction of Rotation (Motor) reversible with built-in switch Position Indication integrated into handle Manual Override external push button Running Time (Motor) 90 sec Ambient Temperature Range -22°F to 122°F [-30°C to 50°C] Storage Temperature Range -40°F to 176°F [-40°C to 80°C] Housing NEMA 2, IP54 Agency Listings† 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	Feedback Output U	2 to 10 VDC
Position Indication integrated into handle  Manual Override external push button  Running Time (Motor) 90 sec  Ambient Temperature Range -22°F to 122°F [-30°C to 50°C]  Storage Temperature Range -40°F to 176°F [-40°C to 80°C]  Housing NEMA 2, IP54  Agency Listings† 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	Angle of Rotation	90°
Manual Override external push button  Running Time (Motor) 90 sec  Ambient Temperature Range -22°F to 122°F [-30°C to 50°C]  Storage Temperature Range -40°F to 176°F [-40°C to 80°C]  Housing NEMA 2, IP54  Agency Listings† 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	Direction of Rotation (Motor)	reversible with built-in switch
Running Time (Motor)  Ambient Temperature Range -22°F to 122°F [-30°C to 50°C]  Storage Temperature Range -40°F to 176°F [-40°C to 80°C]  Housing  NEMA 2, IP54  Agency Listings†  CULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC  Noise Level (Motor)  Servicing  maintenance free	Position Indication	integrated into handle
Ambient Temperature Range -22°F to 122°F [-30°C to 50°C]  Storage Temperature Range -40°F to 176°F [-40°C to 80°C]  Housing NEMA 2, IP54  Agency Listings† 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	Manual Override	external push button
Storage Temperature Range -40°F to 176°F [-40°C to 80°C] Housing NEMA 2, IP54 Agency Listings† 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	Running Time (Motor)	90 sec
Housing NEMA 2, IP54  Agency Listings† 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	Ambient Temperature Range	-22°F to 122°F [-30°C to 50°C]
Agency Listings† 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	Storage Temperature Range	-40°F to 176°F [-40°C to 80°C]
E60730-1:02, CE acc. to 2004/108/EC  Noise Level (Motor) <45 dB (A)  Servicing maintenance free	Housing	NEMA 2, IP54
Noise Level (Motor) <45 dB (A) Servicing maintenance free	Agency Listings†	cULus acc. to UL60730-1A/-2-14, CAN/CSA
Servicing maintenance free		E60730-1:02, CE acc. to 2004/108/EC
	Noise Level (Motor)	<45 dB (A)
Quality Standard ISO 9001	Servicing	maintenance free
	Quality Standard	ISO 9001

†Rated Impulse Voltage 800V, Type of Action 1, Control Pollution Degree 2.



### Wiring Diagrams

### X 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  $\Omega$  resistor (ZG-R01) converts the 4 to 20 mA control signal to 2



to 10 VDC. Actuators are provided with a numbered screw terminal strip instead of



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.

