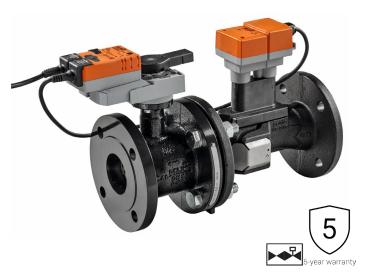
# P6500SU-495 Technical Data Sheet





| Technical Data                   |   |
|----------------------------------|---|
| Fluid                            | chilled or hot water, up to 60% glycol max          |
| Flow characteristic              | (open loop/steam not allowed)                       |
|                                  | equal percentage or linear                          |
| Valve Size [mm]                  | 5" [125]  |
| Pipe connector                   | pattern to mate with ANSI 125 flange                |
| Housing                          | Cast iron - GG 25                                   |
| Flow measuring pipe              | Ductile cast iron - GGG50                           |
| Ball                             | stainless steel                                     |
| Stem                             | stainless steel                                     |
| Stem seal                        | EPDM (lubricated)                                   |
| Seat                             | PTFE  |
| O-ring                           | Viton   |
| Characterized disc               | stainless steel                                     |
| Package                          | EPDM  |
| Body Pressure Rating             | ANSI Class 125, standard class B                    |
| ANSI Class                       | 125   |
| Number of Bolt Holes             | 8   |
| Differential Pressure Range      | 550 psi or 150 psi see flow reductions              |
|                                  | chart in tech doc                                   |
| Close-off pressure $\Delta ps$   | 175 psi   |
| Ambient temperature              | -22122°F [-3050°C]                                  |
| Inlet Length to Meet Specified   | 5X nominal pipe size (NPS)                          |
| Measurement Accuracy             | 05%   |
| Ambient humidity                 | max. 95% r.H., non-condensing                       |
| Measuring accuracy flow          | ±2%*  |
| Control accuracy                 | ±5%   |
| Flow Measurement Repeatability   | ±0.5%   |
| Sensor Technology                | ultrasonic with glycol and temperature compensation |
| Rangeability Sv                  | 100:1   |
| Power supply for the flow sensor | sensor is powered by the actuator                   |
| Weight                           | 138.9 lb [63 kg]                                    |
| GPM                              | 495   |
| Fluid Temp Range (water)         | 14250°F [-10120°C]                                  |
| Leakage rate                     | 0%  |

<sup>\*</sup>All flow tolerances are at 68°F (20°C) & water.

# **Application**

Water-side control of heating and cooling systems for AHUs and water coils. Equal Percentage/ Linear: heating and cooling applications.

# Operation

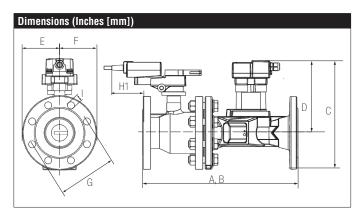
The Electronic Pressure Independent Control Valve is a two-way valve that maintains constant flow regardless of pressure variations in the system.

#### **Product Features**

Provides constant flow regardless of pressure variations in the system. Maximizes chiller Delta T, preventing energizing additional chillers due to low Delta T. Simplified valve sizing and selection, no Cv calculations required.

**Suitable Actuators** 

|             | Non-Spring | Electronic fail-safe |  |  |  |  |
|-------------|------------|----------------------|--|--|--|--|
| P6500SU-495 | GRB(X)     | GKRB(X)              |  |  |  |  |
|             |            |                      |  |  |  |  |



| A B         | C     | D     | E    | F     | G     | H1   |      |
|-------------|-------|-------|------|-------|-------|------|------|
| 22.8" [579] | 14.4" | 9.4"  | 5.0" | [127] | 8.5"  | 0.8" | 0.7" |
|             | [366] | [239] |      |       | [216] | [20] | [19] |

# **GRX24-EP2 Technical Data Sheet**







| Technical Data         Power Supply       24 VAC, ±20%, 50/60 Hz, 24 VDC, -10% / ±20%         Power consumption in operation       9.5 W         Transformer sizing       13 VA (class 2 power source)         Electrical Connection       18 GA plenum cable, 3 ft [1 m], with 1/2" conduit connector         Overload Protection       electronic thoughout 090° rotation         Operating Range       210 V (default), 420 mA w/ ZG-R01 (500 Ω, 1/4 W resistor), VDC variable         Input Impedance       100 kΩ (0.1 mA), 500 Ω         Position Feedback       default 210 V, VDC variable         Angle of rotation       90°         Torque motor       360 in-lb [40 Nm]         Direction of motion motor       reversible with pc tool         Position indication       Mechanically, pluggable         Manual override       external push button         Running Time (Motor)       90 s         Ambient humidity       max. 95% r.H., non-condensing         Ambient temperature       -22122°F [-3050°C]         Storage temperature       -40176°F [-4080°C]         Degree of Protection       IP54, NEMA 2, UL Enclosure Type 2         Housing material       UL94-5VA         Agency Listing       cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU     <  |                       | incorego(i)                             |
|--|-----------------------|---|
| +20%   | Technical Data        |   |
| Power consumption in operation       9.5 W         Transformer sizing       13 VA (class 2 power source)         Electrical Connection       18 GA plenum cable, 3 ft [1 m], with 1/2" conduit connector         Overload Protection       electronic thoughout 090° rotation         Operating Range       210 V (default), 420 mA w/ ZG-R01 (500 Ω, 1/4 W resistor), VDC variable         Input Impedance       100 kΩ (0.1 mA), 500 Ω         Position Feedback       default 210 V, VDC variable         Angle of rotation       90°         Torque motor       360 in-lb [40 Nm]         Direction of motion motor       reversible with pc tool         Position indication       Mechanically, pluggable         Manual override       external push button         Running Time (Motor)       90 s         Ambient humidity       max. 95% r.H., non-condensing         Ambient temperature       -22122°F [-3050°C]         Storage temperature       -40176°F [-4080°C]         Degree of Protection       IP54, NEMA 2, UL Enclosure Type 2         Housing material       UL94-5VA         Agency Listing       cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU         Noise level, motor       45 dB(A)         Servicing       maintenance-free   | Power Supply          |   |
| Transformer sizing       13 VA (class 2 power source)         Electrical Connection       18 GA plenum cable, 3 ft [1 m], with 1/2" conduit connector         Overload Protection       electronic thoughout 090° rotation         Operating Range       210 V (default), 420 mA w/ ZG-R01 (500 Ω, 1/4 W resistor), VDC variable         Input Impedance       100 kΩ (0.1 mA), 500 Ω         Position Feedback       default 210 V, VDC variable         Angle of rotation       90°         Torque motor       360 in-lb [40 Nm]         Direction of motion motor       reversible with pc tool         Position indication       Mechanically, pluggable         Manual override       external push button         Running Time (Motor)       90 s         Ambient humidity       max. 95% r.H., non-condensing         Ambient temperature       -22122°F [-3050°C]         Storage temperature       -40176°F [-4080°C]         Degree of Protection       IP54, NEMA 2, UL Enclosure Type 2         Housing material       UL94-5VA         Agency Listing       cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU         Noise level, motor       45 dB(A)         Servicing       maintenance-free         Quality Standard   |                       | 12212                                   |
| Electrical Connection       18 GA plenum cable, 3 ft [1 m], with 1/2" conduit connector         Overload Protection       electronic thoughout 090° rotation         Operating Range       210 V (default), 420 mA w/ ZG-R01 (500 Ω, 1/4 W resistor), VDC variable         Input Impedance       100 kΩ (0.1 mA), 500 Ω         Position Feedback       default 210 V, VDC variable         Angle of rotation       90°         Torque motor       360 in-lb [40 Nm]         Direction of motion motor       reversible with pc tool         Position indication       Mechanically, pluggable         Manual override       external push button         Running Time (Motor)       90 s         Ambient humidity       max. 95% r.H., non-condensing         Ambient temperature       -22122°F [-3050°C]         Storage temperature       -40176°F [-4080°C]         Degree of Protection       IP54, NEMA 2, UL Enclosure Type 2         Housing material       UL94-5VA         Agency Listing       cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU         Noise level, motor       45 dB(A)         Servicing       maintenance-free         Quality Standard       ISO 9001  |                       | *** **                                  |
| $\begin{array}{c} \text{conduit connector} \\ \text{Overload Protection} \\ \text{Operating Range} \\ \text{210 V (default), 420 mA w/ ZG-R01 (500 }\\ \Omega, 1/4 \text{ W resistor), VDC variable} \\ \text{Input Impedance} \\ \text{100 k}\Omega (0.1 \text{ mA}), 500 \Omega \\ \text{Position Feedback} \\ \text{Angle of rotation} \\ \text{90}^{\circ} \\ \text{Torque motor} \\ \text{360 in-lb [40 Nm]} \\ \text{Direction of motion motor} \\ \text{reversible with pc tool} \\ \text{Position indication} \\ \text{Manual override} \\ \text{Running Time (Motor)} \\ \text{Ambient humidity} \\ \text{Amb. external push button} \\ \text{Ambient temperature} \\ \text{-22122°F [-3050°C]} \\ \text{Storage temperature} \\ \text{-40176°F [-4080°C]} \\ \text{Degree of Protection} \\ \text{IP54, NEMA 2, UL Enclosure Type 2} \\ \text{Housing material} \\ \text{UL94-5VA} \\ \text{Agency Listing} \\ \text{CULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU} \\ \text{Noise level, motor} \\ \text{45 dB(A)} \\ \text{Servicing} \\ \text{maintenance-free} \\ \text{Quality Standard} \\ \text{ISO 9001} \\ \end{array}$   | Transformer sizing    | 13 VA (class 2 power source)            |
| $\begin{array}{c} \text{Overload Protection} & \text{electronic thoughout 090° rotation} \\ \text{Operating Range} & 210 \text{ V (default), 420 mA w/ ZG-R01 (500 }\\ \Omega, 1/4 \text{ W resistor), VDC variable} \\ \text{Input Impedance} & 100 \text{ k}\Omega (0.1 \text{ mA), 500 }\Omega \\ \text{Position Feedback} & \text{default 210 V, VDC variable} \\ \text{Angle of rotation} & 90^{\circ} \\ \text{Torque motor} & 360 \text{ in-lb [40 Nm]} \\ \text{Direction of motion motor} & \text{reversible with pc tool} \\ \text{Position indication} & \text{Mechanically, pluggable} \\ \text{Manual override} & \text{external push button} \\ \text{Running Time (Motor)} & 90 \text{ s} \\ \text{Ambient humidity} & \text{max. 95\% r.H., non-condensing} \\ \text{Ambient temperature} & -22122^{\circ}\text{F [-3050^{\circ}\text{C}]} \\ \text{Storage temperature} & -40176^{\circ}\text{F [-4080^{\circ}\text{C}]} \\ \text{Degree of Protection} & \text{IP54, NEMA 2, UL Enclosure Type 2} \\ \text{Housing material} & \text{UL94-5VA} \\ \text{Agency Listing} & \text{cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU} \\ \text{Noise level, motor} & 45 \text{ dB(A)} \\ \text{Servicing} & \text{maintenance-free} \\ \text{Quality Standard} & \text{ISO 9001} \\ \end{array}$  | Electrical Connection |   |
| $\begin{array}{c} \text{Operating Range} & 210 \text{ V (default), } 420 \text{ mA w/ ZG-R01 (500} \\ \Omega, 1/4 \text{ W resistor), } \text{ VDC variable} \\ \text{Input Impedance} & 100 \text{ k}\Omega \text{ (0.1 mA), } 500 \Omega \\ \text{Position Feedback} & \text{default 210 V, } \text{ VDC variable} \\ \text{Angle of rotation} & 90^{\circ} \\ \text{Torque motor} & 360 \text{ in-lb [40 Nm]} \\ \text{Direction of motion motor} & \text{reversible with pc tool} \\ \text{Position indication} & \text{Mechanically, pluggable} \\ \text{Manual override} & \text{external push button} \\ \text{Running Time (Motor)} & 90 \text{ s} \\ \text{Ambient humidity} & \text{max. } 95\% \text{ r.H., non-condensing} \\ \text{Ambient temperature} & -22122^{\circ}\text{F [-3050^{\circ}\text{C}]} \\ \text{Storage temperature} & -40176^{\circ}\text{F [-4080^{\circ}\text{C}]} \\ \text{Degree of Protection} & \text{IP54, NEMA 2, UL Enclosure Type 2} \\ \text{Housing material} & \text{UL94-5VA} \\ \text{Agency Listing} & \text{cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU} \\ \text{Noise level, motor} & 45 \text{ dB(A)} \\ \text{Servicing} & \text{maintenance-free} \\ \text{Quality Standard} & \text{ISO 9001} \\ \end{array}$   |                       |   |
| $\begin{array}{c} \Omega,1/4\text{W resistor}),\text{VDC variable} \\ \text{Input Impedance} & 100\text{k}\Omega(0.1\text{mA}),500\Omega \\ \\ \text{Position Feedback} & \text{default 210 V, VDC variable} \\ \\ \text{Angle of rotation} & 90^{\circ} \\ \\ \text{Torque motor} & 360\text{in-lb}[40\text{Nm}] \\ \\ \text{Direction of motion motor} & \text{reversible with pc tool} \\ \\ \text{Position indication} & \text{Mechanically, pluggable} \\ \\ \text{Manual override} & \text{external push button} \\ \\ \text{Running Time (Motor)} & 90\text{s} \\ \\ \text{Ambient humidity} & \text{max. 95\% r.H., non-condensing} \\ \\ \text{Ambient temperature} & -22122^{\circ}\text{F}[-3050^{\circ}\text{C}] \\ \\ \text{Storage temperature} & -40176^{\circ}\text{F}[-4080^{\circ}\text{C}] \\ \\ \text{Degree of Protection} & \text{IP54, NEMA 2, UL Enclosure Type 2} \\ \\ \text{Housing material} & \text{UL94-5VA} \\ \\ \text{Agency Listing} & \text{cULus acc. to UL60730-1A/-2-14, CAN/CSA} \\ \\ \text{E60730-1:02, CE acc. to 2014/30/EU and} \\ \\ \text{2014/35/EU} \\ \\ \text{Noise level, motor} & 45\text{dB(A)} \\ \\ \text{Servicing} & \text{maintenance-free} \\ \\ \text{Quality Standard} & \text{ISO 9001} \\ \\ \end{array}$   |                       |   |
| $ \begin{array}{llllllllllllllllllllllllllllllllllll$  | Operating Range       |   |
| Position Feedback  Angle of rotation  90°  Torque motor  Direction of motion motor  Position indication  Mechanically, pluggable  Manual override  Running Time (Motor)  Ambient humidity  Ambient temperature  522122°F [-3050°C]  Storage temperature  -40176°F [-4080°C]  Degree of Protection  Housing material  UL94-5VA  Agency Listing  CULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU  Noise level, motor  45 dB(A)  Servicing  Quality Standard  Georgian in Je V. VDC variable  default 210 V, VDC variable  40 Nm]  Poor  Running Time (Motor)  90 s  Amchanically, pluggable  external push button  max. 95% r.H., non-condensing  Ambient temperature  -22122°F [-3050°C]  Storage temperature  -40176°F [-4080°C]  UL94-5VA  CULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU  Noise level, motor  45 dB(A)  Servicing  maintenance-free  Quality Standard   | To the state of       |   |
| Angle of rotation  Forque motor  Forque motor  Fosition indication  Mechanically, pluggable  Manual override  Running Time (Motor)  Ambient humidity  Ambient temperature  Forage temperature  Forage of Protection  Housing material  Agency Listing  Noise level, motor  Forage temperature  Forage temperature  Culture acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU  Noise level, motor  Forage temperature  Forage temperature  Culture acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU  Revicing  Maintenance-free  Reversible with pc tool  Rechanically, pluggable  external push button  max. 95% r.H., non-condensing  max. 95% r.H., non-condensing  Ambient temperature  -22122°F [-3050°C]  Forage temperature  -40176°F [-4080°C]  Lus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU  Noise level, motor  Forage temperature  Forage te |                       | , , ,                                   |
| Torque motor  Direction of motion motor  Position indication  Mechanically, pluggable  Manual override  Running Time (Motor)  Ambient humidity  Ambient temperature  -22122°F [-3050°C]  Storage temperature  -40176°F [-4080°C]  Degree of Protection  IP54, NEMA 2, UL Enclosure Type 2  Housing material  UL94-5VA  Agency Listing  CULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU  Noise level, motor  45 dB(A)  Servicing  maintenance-free  Quality Standard  |                       | ·                                       |
| Direction of motion motor reversible with pc tool  Position indication Mechanically, pluggable  Manual override external push button  Running Time (Motor) 90 s  Ambient humidity max. 95% r.H., non-condensing  Ambient temperature -22122°F [-3050°C]  Storage temperature -40176°F [-4080°C]  Degree of Protection IP54, NEMA 2, UL Enclosure Type 2  Housing material UL94-5VA  Agency Listing cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU  Noise level, motor 45 dB(A)  Servicing maintenance-free  Quality Standard ISO 9001   |                       |   |
| Position indication  Mechanically, pluggable  Manual override  Running Time (Motor)  Ambient humidity  Ambient temperature  -22122°F [-3050°C]  Storage temperature  -40176°F [-4080°C]  Degree of Protection  IP54, NEMA 2, UL Enclosure Type 2  Housing material  UL94-5VA  Agency Listing  CULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU  Noise level, motor  45 dB(A)  Servicing  maintenance-free  Quality Standard   |                       |   |
| Manual override external push button  Running Time (Motor) 90 s  Ambient humidity max. 95% r.H., non-condensing  Ambient temperature -22122°F [-3050°C]  Storage temperature -40176°F [-4080°C]  Degree of Protection IP54, NEMA 2, UL Enclosure Type 2  Housing material UL94-5VA  Agency Listing cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU  Noise level, motor 45 dB(A)  Servicing maintenance-free  Quality Standard ISO 9001   |                       |   |
| Running Time (Motor)  Ambient humidity  Ambient temperature  -22122°F [-3050°C]  Storage temperature  -40176°F [-4080°C]  Degree of Protection  IP54, NEMA 2, UL Enclosure Type 2  Housing material  UL94-5VA  Agency Listing  CULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU  Noise level, motor  45 dB(A)  Servicing  maintenance-free  Quality Standard  | Position indication   | Mechanically, pluggable                 |
| Ambient humidity         max. 95% r.H., non-condensing           Ambient temperature         -22122°F [-3050°C]           Storage temperature         -40176°F [-4080°C]           Degree of Protection         IP54, NEMA 2, UL Enclosure Type 2           Housing material         UL94-5VA           Agency Listing         cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU           Noise level, motor         45 dB(A)           Servicing         maintenance-free           Quality Standard         ISO 9001  |                       | · · · · · · · · · · · · · · · · · · ·   |
| Ambient temperature         -22122°F [-3050°C]           Storage temperature         -40176°F [-4080°C]           Degree of Protection         IP54, NEMA 2, UL Enclosure Type 2           Housing material         UL94-5VA           Agency Listing         cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU           Noise level, motor         45 dB(A)           Servicing         maintenance-free           Quality Standard         ISO 9001   | Running Time (Motor)  | 90 s                                    |
| Storage temperature  | Ambient humidity      | max. 95% r.H., non-condensing           |
| Degree of Protection         IP54, NEMA 2, UL Enclosure Type 2           Housing material         UL94-5VA           Agency Listing         cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU           Noise level, motor         45 dB(A)           Servicing         maintenance-free           Quality Standard         ISO 9001   | Ambient temperature   | -22122°F [-3050°C]                      |
| Housing material  Agency Listing  CULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU  Noise level, motor  45 dB(A)  Servicing  maintenance-free  Quality Standard  UL94-5VA  CULus acc. to 2014/30-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU  ISO 9001  | Storage temperature   | -40176°F [-4080°C]                      |
| Agency Listing  CULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU  Noise level, motor  45 dB(A)  Servicing  maintenance-free  Quality Standard  ISO 9001   | Degree of Protection  | IP54, NEMA 2, UL Enclosure Type 2       |
| E60730-1:02, CE acc. to 2014/30/EU and 2014/35/EU  Noise level, motor 45 dB(A)  Servicing maintenance-free  Quality Standard ISO 9001  | Housing material      | UL94-5VA                                |
| 2014/35/EU  Noise level, motor 45 dB(A)  Servicing maintenance-free  Quality Standard ISO 9001   | Agency Listing        | cULus acc. to UL60730-1A/-2-14, CAN/CSA |
| Noise level, motor 45 dB(A) Servicing maintenance-free Quality Standard ISO 9001   |                       | 1                                       |
| Servicing maintenance-free Quality Standard ISO 9001   |                       |   |
| Quality Standard ISO 9001  |                       | ` '                                     |
| ,  |                       |   |
| Weight 4 85 lh [2 2 kg]  |                       |   |
| 7.00 to [2.2 kg]   | Weight                | 4.85 lb [2.2 kg]                        |

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



# **GRX24-EP2 Technical Data Sheet**

### 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.



Actuators are provided with color coded wires. Wire numbers are provided for reference.



Actuators are provided with a numbered screw terminal strip instead of a cable.



IN4004 or IN4007 diode required



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.

