# AFB24-MFT Technical Data Sheet



Modulating, Spring Return, 24 V, Multi-Function Technology®





| Power Supply     24 VAC, ±20%, 50/60 Hz, 24 VDC, -10% /<br>±20%       Power consumption in operation     7.5 W       Power consumption in rest     3 W       position     10 VA (class 2 power source)       Shaft Diameter     1/2105" round, centers on 1/2" and 3/4"<br>with insert, 1.05" without insert       Electrical Connection     18 GA appliance cable, 3 ft [1 m], with 1/2"<br>conduit connector       Overload Protection     electronic throughout 095" rotation       Electrical Protection     actuators are double insulated       Operating Range     210 V (default), 420 mA w/ ZG-R01 (500<br>Ω, 1/4 W resistor), variable (VDC, on/off,<br>floating point)       Operating range Y variable     Start point 0.530 V<br>End point 2.532 V       Input Impedance     100 KΩ for 210 V (0.1 mA), 500 Ω for<br>420 mA, 1500 Ω for PWM, On/Off and<br>Floating point       Position Feedback     210 V, Max. 0.5 mA, VDC variable       Angle of rotation     95°, adjustable with mechanical end stop,<br>3595°       Torque motor     180 in-lb [20 Nm]       Direction of motion motor     selectable with switch 0/1       Direction of motion fail-safe     reversible with cw/ccw mounting       Position indication     Mechanical       Manual override     5 mm hex crank (3/16" Allen), supplie   | Technical Data                        |  |
|---|---------------------------------------|--|
| +20%     Power consumption in operation   7.5 W     Power consumption in rest<br>position   3 W     Transformer sizing   10 VA (class 2 power source)     Shaft Diameter   1/21.05" round, centers on 1/2" and 3/4"<br>with insert, 1.05" without insert     Electrical Connection   18 GA appliance cable, 3 ft [1 m], with 1/2"<br>conduit connector     Overload Protection   electronic throughout 095" rotation     Electrical Protection   actuators are double insulated     Operating Range   210 V (default), 420 mA w/ ZG-R01 (500<br>Ω, 1/4 W resistor), variable (VDC, on/off,<br>floating point)     Operating range Y variable   Start point 0.530 V     End point 2.532 V   Input Impedance     100 kC2 for 210 V (0.1 mA), 500 Ω for<br>420 mA, 1500 Ω for PWM, 0n/Off and<br>Floating point     Position Feedback   210 V, Max. 0.5 mA, VDC variable     Angle of rotation   95°, adjustable with mechanical end stop,<br>3595°     Torque motor   180 in-lb [20 Nm]     Direction of motion motor   selectable with switch 0/1     Direction of motion fail-safe   reversible with cw/ccw mounting     Position indication   Mechanical     Manual override   5 mm hex crank (3/16" Allen), supplied     Running time fail-safe   |                                       | 24 VAC, ±20%, 50/60 Hz, 24 VDC, -10% / |
| Power consumption in rest<br>position     3 W       Transformer sizing     10 VA (class 2 power source)       Shaft Diameter     1/21.05" round, centers on 1/2" and 3/4"<br>with insert, 1.05" without insert       Electrical Connection     18 GA appliance cable, 3 ft [1 m], with 1/2"<br>conduit connector       Overload Protection     electronic throughout 095° rotation       Electrical Protection     actuators are double insulated       Operating Range     210 V (default), 420 mA w/ ZG-R01 (500<br>Ω, 1/4 W resistor), variable (VDC, on/off,<br>floating point)       Operating range Y variable     Start point 0.530 V<br>End point 2.532 V       Input Impedance     100 kΩ for 210 V (0.1 mA), 500 Ω for<br>420 mA, 1500 Ω for PWM, On/Off and<br>Floating point       Position Feedback     210 V, Max. 0.5 mA, VDC variable       Angle of rotation     95°, adjustable with mechanical end stop,<br>3595°       Torque motor     180 in-lb [20 Nm]       Direction of motion fail-safe     reversible with cw/ccw mounting       Position indication     Mechanical       Manual override     5 mm hex crank (3/16" Allen), supplied       Running Time (Motor)     default 150 s, variable 70220 s       Running Time (Motor)     default 150 s, variable 70206       Angle of rotation adaptation <td></td> <td></td>  |                                       |  |
| position     Image: mail of the state of the s | Power consumption in operation        | 7.5 W                                  |
| Transformer sizing   10 VA (class 2 power source)     Shaft Diameter   1/21.05" round, centers on 1/2" and 3/4" with insert, 1.05" without insert     Electrical Connection   18 GA appliance cable, 3 ft [1 m], with 1/2" conduit connector     Overload Protection   electronic throughout 095° rotation     Electrical Protection   actuators are double insulated     Operating Range   210 V (default), 420 mA w/ ZG-R01 (500 Ω 1/4 W resistor), variable (VDC, on/off, floating point)     Operating range Y variable   Start point 0.530 V End point 2.532 V     Input Impedance   100 kΩ for 210 V (0.1 mA), 500 Ω for 420 mA, 1500 Ω for 7420 mA, 1500 Ω for PWM, 0n/Off and Floating point     Position Feedback   210 V, Max. 0.5 mA, VDC variable     Angle of rotation   95°, adjustable with mechanical end stop, 3595°     Torque motor   180 in-lb [20 Nm]     Direction of motion motor   selectable with switch 0/1     Direction of motion fail-safe   reversible with cw/ccw mounting     Position indication   Mechanical     Manual override   5 mm hex crank (3/16" Allen), supplied     Running time (Motor)   default 150 s, variable 70220 s     Running time fail-safe   -22° F [-30°C]     Angle of rotation adaptation   off (default)   |                                       | 3 W                                    |
| Shaft Diameter   1/21.05" round, centers on 1/2" and 3/4" with insert, 1.05" without insert     Electrical Connection   18 GA appliance cable, 3 ft [1 m], with 1/2" conduit connector     Overload Protection   electronic throughout 095° rotation     Electrical Protection   actuators are double insulated     Operating Range   210 V (default), 420 mA w/ ZG-R01 (500 Ω, 1/4 W resistor), variable (VDC, on/off, floating point)     Operating range Y variable   Start point 0.530 V End point 2.532 V     Input Impedance   100 kQ for 210 V (0.1 mA), 500 Ω for 420 mA, 1500 Ω for 9WM, 0n/Off and Floating point     Position Feedback   210 V, Max. 0.5 mA, VDC variable     Angle of rotation   95°, adjustable with mechanical end stop, 3595°     Torque motor   180 in-Ib [20 Nm]     Direction of motion motor   selectable with switch 0/1     Direction of motion fail-safe   reversible with with working     Position indication   Mechanical     Manual override   5 mm hex crank (3/16" Allen), supplied     Running time fail-safe   -22°F [-30°C]     Angle of rotation adaptation   off (default)     Override control   MIN (minimum position) = 0%     MID (intermediate position) = 100%   MAX (maximum position) = 50%     M  |                                       | 10 VA (class 2 power source)           |
| Electrical Connection     18 GA appliance cable, 3 ft [1 m], with 1/2" conduit connector       Overload Protection     electronic throughout 095° rotation       Electrical Protection     actuators are double insulated       Operating Range     210 V (default), 420 mA w/ ZG-R01 (500 Ω, 1/4 W resistor), variable (VDC, on/off, floating point)       Operating range Y variable     Start point 0.530 V       End point 2.532 V     Input Impedance       100 kΩ for 210 V (0.1 mA), 500 Ω for 420 mA, 1500 Ω for 720 mA, 1500 Ω for PWM, On/Off and Floating point       Position Feedback     210 V, Max. 0.5 mA, VDC variable       Angle of rotation     95°, adjustable with mechanical end stop, 3595°       Torque motor     180 in-lb [20 Nm]       Direction of motion motor     selectable with switch 0/1       Direction of motion fail-safe     reversible with cw/ccw mounting       Position indication     Mechanical       Manual override     5 mm hex crank (3/16" Allen), supplied       Running time fail-safe     <20 s @ -4122°F [-2050°C], <60 s @ -22°F [-30°C]   | Shaft Diameter                        |  |
| conduit connector       Overload Protection     electronic throughout 095° rotation       Electrical Protection     actuators are double insulated       Operating Range     210 V (default), 420 mA w/ ZG-R01 (500<br>Ω, 1/4 W resistor), variable (VDC, on/off,<br>floating point)       Operating range Y variable     Start point 0.530 V<br>End point 2.532 V       Input Impedance     100 kΩ for 210 V (0.1 mA), 500 Ω for<br>420 mA, 1500 Ω for PWM, 0n/Off and<br>Floating point       Position Feedback     210 V, Max. 0.5 mA, VDC variable       Angle of rotation     95°, adjustable with mechanical end stop,<br>3595°       Torque motor     180 in-lb [20 Nm]       Direction of motion motor     selectable with switch 0/1       Direction of motion fail-safe     reversible with cw/ccw mounting       Position indication     Mechanical       Manual override     5 mm hex crank (3/16" Allen), supplied       Running time fail-safe     <20 s @ -4122°F [-2050°C], <60 s @<br>-22°F [-30°C]       Angle of rotation adaptation     off (default)       Override control     MIN (minimum position) = 0%<br>MID (intermediate position) = 50%<br>MAX (maximum position) = 100%       Ambient humidity     max95% r.H., non-condensing       Ambient tumperature     -22122°F [-3060°C]  |                                       | with insert, 1.05" without insert      |
| Overload Protectionelectronic throughout 095° rotationElectrical Protectionactuators are double insulatedOperating Range210 V (default), 420 mA w/ ZG-R01 (500<br>Ω, 1/4 W resistor), variable (VDC, on/off,<br>floating point)Operating range Y variableStart point 0.530 V<br>End point 2.532 VInput Impedance100 kΩ for 210 V (0.1 mA), 500 Ω for<br>420 mA, 1500 Ω for PWM, On/Off and<br>Floating pointPosition Feedback210 V, Max. 0.5 mA, VDC variableAngle of rotation95°, adjustable with mechanical end stop,<br>3595°Torque motor180 in-lb [20 Nm]Direction of motion motorselectable with switch 0/1Direction of motion fail-safereversible with cw/ccw mountingPosition indicationMechanicalManual override5 mm hex crank (3/16" Allen), suppliedRunning Time (Motor)default 150 s, variable 70220 sRunning time fail-safe<20 s @ -4122°F [-2050°C], <60 s @<br>-22°F [-30°C]Angle of rotation adaptationoff (default)Override controlMIN (minimum position) = 0%<br>MID (intermediate position) = 50%<br>MAX (maximum position) = 100%Ambient humiditymax. 95% r.H., non-condensingAmbient humidityrax. 95% r.H., son°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingCULus acc. to UL60730-1A/-2-14, CAN/CSA<br>E60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMC </td <td>Electrical Connection</td> <td></td>   | Electrical Connection                 |  |
| Electrical Protectionactuators are double insulatedOperating Range210 V (default), 420 mA w/ ZG-R01 (500<br>Ω, 1/4 W resistor), variable (VDC, on/off,<br>floating point)Operating range Y variableStart point 0.530 V<br>End point 2.532 VInput Impedance100 kΩ for 210 V (0.1 mA), 500 Ω for<br>420 mA, 1500 Ω for PWM, On/Off and<br>Floating pointPosition Feedback210 V, Max. 0.5 mA, VDC variableAngle of rotation95°, adjustable with mechanical end stop,<br>3595°Torque motor180 in-Ib [20 Nm]Direction of motion motorselectable with switch 0/1Direction of motion fail-safereversible with cw/ccw mountingPosition indicationMechanicalManual override5 mm hex crank (3/16" Allen), suppliedRunning Time (Motor)default 150 s, variable 70220 sAngle of rotation adaptationoff (default1)Override controlMIN (minimum position) = 0%<br>MID (intermediate position) = 100%Ambient humiditymax. 95% r.H., non-condensingAmbient humiditymax. 95% r.H., non-condensingAmbient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSA<br>E60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise  |                                       |  |
| Operating Range   210 V (default), 420 mA w/ ZG-R01 (500<br>Ω, 1/4 W resistor), variable (VDC, on/off,<br>floating point)     Operating range Y variable   Start point 0.530 V<br>End point 2.532 V     Input Impedance   100 kΩ for 210 V (0.1 mA), 500 Ω for<br>420 mA, 1500 Ω for PWM, On/Off and<br>Floating point     Position Feedback   210 V, Max. 0.5 mA, VDC variable     Angle of rotation   95°, adjustable with mechanical end stop,<br>3595°     Torque motor   180 in-lb [20 Nm]     Direction of motion motor   selectable with switch 0/1     Direction of motion fail-safe   reversible with cw/ccw mounting     Position indication   Mechanical     Manual override   5 mm hex crank (3/16" Allen), supplied     Running Time (Motor)   default 150 s, variable 70220 s     Running time fail-safe   <20 s @ -4122°F [-3050°C], <60 s @<br>-22°F [-30°C]     Angle of rotation adaptation   off (default)     Override control   MIN (minimum position) = 0%<br>MAX (maximum position) = 50%<br>MAX (maximum position) = 100%     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     Hous  |                                       |  |
| Ω, 1/4 W resistor), variable (VDC, on/off, floating point)     Operating range Y variable   Start point 0.530 V<br>End point 2.532 V     Input Impedance   100 kΩ for 210 V (0.1 mA), 500 Ω for 420 mA, 1500 Ω for PWM, On/Off and Floating point     Position Feedback   210 V, Max. 0.5 mA, VDC variable     Angle of rotation   95°, adjustable with mechanical end stop, 3595°     Torque motor   180 in-lb [20 Nm]     Direction of motion motor   selectable with switch 0/1     Direction of motion fail-safe   reversible with cw/ccw mounting     Position indication   Mechanical     Manual override   5 mm hex crank (3/16" Allen), supplied     Running Time (Motor)   default 150 s, variable 70220 s     Running time fail-safe   <20 s @ -4122°F [-3050°C], <60 s @ -22°F [-30°C]   |                                       |  |
| floating point)Operating range Y variableStart point 0.530 V<br>End point 2.532 VInput Impedance100 kΩ for 210 V (0.1 mA), 500 Ω for<br>420 mA, 1500 Ω for PWM, On/Off and<br>Floating pointPosition Feedback210 V, Max. 0.5 mA, VDC variableAngle of rotation95°, adjustable with mechanical end stop,<br>3595°Torque motor180 in-Ib [20 Nm]Direction of motion motorselectable with switch 0/1Direction of motion fail-safereversible with cw/ccw mountingPosition indicationMechanicalManual override5 mm hex crank (3/16" Allen), suppliedRunning Time (Motor)default 150 s, variable 70220 sRunning time fail-safe<20 s @ -4122°F [-2050°C], <60 s @<br>-22°F [-30°C]Angle of rotation adaptationoff (default)Override controlMIN (minimum position) = 0%<br>MID (intermediate position) = 50%<br>MAX (maximum position) = 100%Ambient humiditymax. 95% r.H., non-condensingAmbient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSA<br>E60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free   | Operating Range                       |  |
| Operating range Y variableStart point 0.530 V<br>End point 2.532 VInput Impedance100 kΩ for 210 V (0.1 mA), 500 Ω for<br>420 mA, 1500 Ω for PWM, On/Off and<br>Floating pointPosition Feedback210 V, Max. 0.5 mA, VDC variableAngle of rotation95°, adjustable with mechanical end stop,<br>3595°Torque motor180 in-lb [20 Nm]Direction of motion motorselectable with switch 0/1Direction of motion fail-safereversible with cw/ccw mountingPosition indicationMechanicalManual override5 mm hex crank (3/16" Allen), suppliedRunning Time (Motor)default 150 s, variable 70220 sRunning time fail-safe<20 s @ -4122°F [-2050°C], <60 s @<br>-22°F [-30°C]Angle of rotation adaptationoff (default)Override controlMIN (minimum position) = 0%<br>MIX (maximum position) = 100%Ambient humiditymax. 95% r.H., non-condensingAmbient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSA<br>E60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free   |                                       |  |
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| Input Impedance100 kΩ for 210 V (0.1 mA), 500 Ω for<br>420 mA, 1500 Ω for PWM, On/Off and<br>Floating pointPosition Feedback210 V, Max. 0.5 mA, VDC variableAngle of rotation95°, adjustable with mechanical end stop,<br>3595°Torque motor180 in-lb [20 Nm]Direction of motion motorselectable with switch 0/1Direction of motion fail-safereversible with cw/ccw mountingPosition indicationMechanicalManual override5 mm hex crank (3/16" Allen), suppliedRunning Time (Motor)default 150 s, variable 70220 sRunning time fail-safe<20 s @ -4122°F [-2050°C], <60 s @<br>-22°F [-30°C]Angle of rotation adaptationoff (default)Override controlMIN (minimum position) = 0%<br>MIX (maximum position) = 50%<br>MAX (maximum position) = 100%Ambient humiditymax. 95% r.H., non-condensingAmbient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSA<br>E60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free   | Operating range i variable            |  |
| 420 mA, 1500 Ω for PWM, On/Off and<br>Floating pointPosition Feedback210 V, Max. 0.5 mA, VDC variableAngle of rotation95°, adjustable with mechanical end stop,<br>3595°Torque motor180 in-lb [20 Nm]Direction of motion motorselectable with switch 0/1Direction of motion fail-safereversible with cw/ccw mountingPosition indicationMechanicalManual override5 mm hex crank (3/16" Allen), suppliedRunning Time (Motor)default 150 s, variable 70220 sRunning time fail-safe<20 s @ -4122°F [-2050°C], <60 s @<br>-22°F [-30°C]Angle of rotation adaptationoff (default)Override controlMIN (minimum position) = 0%<br>MID (intermediate position) = 50%<br>MAX (maximum position) = 100%Ambient humiditymax. 95% r.H., non-condensingAmbient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingCULus acc. to UL60730-1A/-2-14, CAN/CSA<br>E60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)<br>Noise level, fail-safeServicingmaintenance-free   | Input Impedance                       |  |
| Position Feedback210 V, Max. 0.5 mA, VDC variableAngle of rotation95°, adjustable with mechanical end stop,<br>3595°Torque motor180 in-lb [20 Nm]Direction of motion motorselectable with switch 0/1Direction of motion fail-safereversible with cw/ccw mountingPosition indicationMechanicalManual override5 mm hex crank (3/16" Allen), suppliedRunning Time (Motor)default 150 s, variable 70220 sRunning time fail-safe<20 s @ -4122°F [-2050°C], <60 s @   |                                       |  |
| Angle of rotation95°, adjustable with mechanical end stop,<br>3595°Torque motor180 in-lb [20 Nm]Direction of motion motorselectable with switch 0/1Direction of motion fail-safereversible with cw/ccw mountingPosition indicationMechanicalManual override5 mm hex crank (3/16" Allen), suppliedRunning Time (Motor)default 150 s, variable 70220 sRunning time fail-safe<20 s @ -4122°F [-2050°C], <60 s @<br>-22°F [-30°C]Angle of rotation adaptationoff (default)Override controlMIN (minimum position) = 0%<br>MID (intermediate position) = 50%<br>MAX (maximum position) = 100%Ambient humiditymax. 95% r.H., non-condensingAmbient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSA<br>E60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)<br>Noise level, fail-safeServicingmaintenance-free  |                                       |  |
| 3595°Torque motor180 in-lb [20 Nm]Direction of motion motorselectable with switch 0/1Direction of motion fail-safereversible with cw/ccw mountingPosition indicationMechanicalManual override5 mm hex crank (3/16" Allen), suppliedRunning Time (Motor)default 150 s, variable 70220 sRunning time fail-safe<20 s @ -4122°F [-2050°C], <60 s @  | Position Feedback                     |  |
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| Direction of motion fail-safereversible with cw/ccw mountingPosition indicationMechanicalManual override5 mm hex crank (3/16" Allen), suppliedRunning Time (Motor)default 150 s, variable 70220 sRunning time fail-safe<20 s @ -4122°F [-2050°C], <60 s @<br>-22°F [-30°C]Angle of rotation adaptationoff (default)Override controlMIN (minimum position) = 0%<br>MAX (maximum position) = 50%<br>MAX (maximum position) = 100%Ambient humiditymax. 95% r.H., non-condensing<br>Ambient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSA<br>E60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)<br>Noise level, fail-safeServicingmaintenance-free  | Torque motor                          | 180 in-lb [20 Nm]                      |
| Position indicationMechanicalManual override5 mm hex crank (3/16" Allen), suppliedRunning Time (Motor)default 150 s, variable 70220 sRunning time fail-safe<20 s @ -4122°F [-2050°C], <60 s @   | Direction of motion motor             | selectable with switch 0/1             |
| Manual override5 mm hex crank (3/16" Allen), suppliedRunning Time (Motor)default 150 s, variable 70220 sRunning time fail-safe<20 s @ -4122°F [-2050°C], <60 s @<br>-22°F [-30°C]Angle of rotation adaptationoff (default)Override controlMIN (minimum position) = 0%<br>MAX (maximum position) = 50%<br>MAX (maximum position) = 100%Ambient humiditymax. 95% r.H., non-condensingAmbient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSA<br>E60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)<br>Moise level, fail-safeServicingmaintenance-free   | Direction of motion fail-safe         | reversible with cw/ccw mounting        |
| Running Time (Motor)default 150 s, variable 70220 sRunning time fail-safe<20 s @ -4122°F [-2050°C], <60 s @<br>-22°F [-30°C]Angle of rotation adaptationoff (default)Override controlMIN (minimum position) = 0%<br>MID (intermediate position) = 50%<br>MAX (maximum position) = 100%Ambient humiditymax. 95% r.H., non-condensingAmbient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSA<br>E60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)<br>Moise level, fail-safeServicingmaintenance-free   | Position indication                   | Mechanical                             |
| Running time fail-safe<20 s @ -4122°F [-2050°C], <60 s @<br>-22°F [-30°C]Angle of rotation adaptationoff (default)Override controlMIN (minimum position) = 0%<br>MID (intermediate position) = 50%<br>MAX (maximum position) = 100%Ambient humiditymax. 95% r.H., non-condensingAmbient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSAE60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free  | Manual override                       | 5 mm hex crank (3/16" Allen), supplied |
| -22°F [-30°C]Angle of rotation adaptationoff (default)Override controlMIN (minimum position) = 0%<br>MID (intermediate position) = 50%<br>MAX (maximum position) = 100%Ambient humiditymax. 95% r.H., non-condensingAmbient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSA<br>E60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free  | Running Time (Motor)                  | default 150 s, variable 70220 s        |
| Override controlMIN (minimum position) = 0%<br>MID (intermediate position) = 50%<br>MAX (maximum position) = 100%Ambient humiditymax. 95% r.H., non-condensingAmbient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingCULus acc. to UL60730-1A/-2-14, CAN/CSAE60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free  | Running time fail-safe                |  |
| MID (intermediate position) = 50%<br>MAX (maximum position) = 100%Ambient humiditymax. 95% r.H., non-condensingAmbient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSA<br>E60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free   | Angle of rotation adaptation          | off (default)                          |
| MAX (maximum position) = 100%Ambient humiditymax. 95% r.H., non-condensingAmbient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSAE60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free  | Override control                      |  |
| Ambient humiditymax. 95% r.H., non-condensingAmbient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingCULus acc. to UL60730-1A/-2-14, CAN/CSAE60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free   |                                       |  |
| Ambient temperature-22122°F [-3050°C]Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingCULus acc. to UL60730-1A/-2-14, CAN/CSAE60730-1:02, CE acc. to 2014/30/EU and2014/35/EU; Listed to UL 2043 - suitable foruse in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free  | A set to set to set the               |  |
| Storage temperature-40176°F [-4080°C]Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSAE60730-1:02, CE acc. to 2014/30/EU and2014/35/EU; Listed to UL 2043 - suitable foruse in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free   |                                       |  |
| Degree of ProtectionIP54, NEMA 2, UL Enclosure Type 2Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSAE60730-1:02, CE acc. to 2014/30/EU and2014/35/EU; Listed to UL 2043 - suitable foruse in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free  | · · · · · · · · · · · · · · · · · · · |  |
| Housing materialGalvanized steel and plastic housingAgency ListingcULus acc. to UL60730-1A/-2-14, CAN/CSAE60730-1:02, CE acc. to 2014/30/EU and2014/35/EU; Listed to UL 2043 - suitable foruse in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free   |                                       |  |
| Agency ListingCULus acc. to UL60730-1A/-2-14, CAN/CSA<br>E60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free   |                                       |  |
| E60730-1:02, CE acc. to 2014/30/EU and<br>2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free  |                                       |  |
| 2014/35/EU; Listed to UL 2043 - suitable for<br>use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free  | Agency Listing                        |  |
| use in air plenums per Section 300.22(c) of<br>the NEC and Section 602.2 of the IMCNoise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free  |                                       |  |
| the NEC and Section 602.2 of the IMC   Noise level, motor 40 dB(A)   Noise level, fail-safe 62 dB(A)   Servicing maintenance-free   |                                       |  |
| Noise level, motor40 dB(A)Noise level, fail-safe62 dB(A)Servicingmaintenance-free   |                                       |  |
| Servicing maintenance-free  | Noise level, motor                    |  |
| Servicing maintenance-free  | Noise level, fail-safe                | 62 dB(A)                               |
| Quality Standard ISO 9001   | Servicing                             | maintenance-free                       |
|   | Quality Standard                      | ISO 9001                               |

Torque min. 180 in-lb, Control DC 2...10 V (DEFAULT), Feedback DC 2...10 V (DEFAULT).

## Application

For fail-safe, modulating control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications. A feedback signal is provided for position indication for master-slave applications. Two AF's can be piggybacked for torque loads to max. 360 in-lb. Minimum 3/4" diameter shaft. OR Maximum of three AF's can be piggybacked for torque loads to max. 432 in-lb. Minimum 3/4" diameter shaft. Master-Slave wiring for either configuration. Actuators must be mechanically linked.

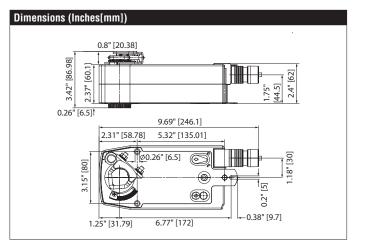
When not mechanically linked, actuators must be wired in parallel.

## **Default/Configuration**

Default parameters for 2 to 10 VDC applications of the AF..-MFT actuator are assigned during manufacturing. If required, custom versions of the actuator can be ordered. The parameters are variable and can be changed by three means: Factory pre-set or custom configuration, set by the customer using PC-Tool software or the handheld ZTH US.

## Operation

The AF..24-MFT actuator provides 95° of rotation and is provided with a graduated position indicator showing 0° to 95°. The actuator will synchronize the 0° mechanical stop or the physical damper or valve mechanical stop and use this point for its zero position during normal control operations. A unique manual override allows the setting of any actuator position within its 95° of rotation with no power applied. This mechanism can be released physically by the use of a crank supplied with the actuator. When power is applied the manual override is released and the actuator drives toward the fail-safe position. The actuator uses a brushless DC motor which is controlled by an Application Specific Integrated Circuit (ASIC) and a microprocessor. The microprocessor provides the intelligence to the ASIC to provide a constant rotation rate and to know the actuators's exact position. The ASIC monitors and controls the brushless DC motor's rotation and provides a Digital Rotation Sensing (DRS) function to prevent damage to the actuator in a stall condition. The position feedback signal is generated without the need for mechanical feedback potentiometers using DRS. The actuator may be stalled anywhere in its normal rotation without the need of mechanical end switches. The AF..24-MFT is mounted directly to control shafts up to 1.05" diameter by means of its universal clamp and anti-rotation bracket. A crank arm and several mounting brackets are available for damper applications where the actuator cannot be direct coupled to the damper shaft. The spring return system provides minimum specified torque to the application during a power interruption. The AF.24-MFT actuator is shipped at 5° (5° from full fail-safe) to provide automatic compression against damper gaskets for tight shut-off.



Date created, 04/22/2020 - Subject to change. © Belimo Aircontrols (USA), Inc



| Servicing        | maintenance-free |
|------------------|------------------|
| Quality Standard | ISO 9001         |
| Weight           | 4.1 lb [1.9 kg]  |

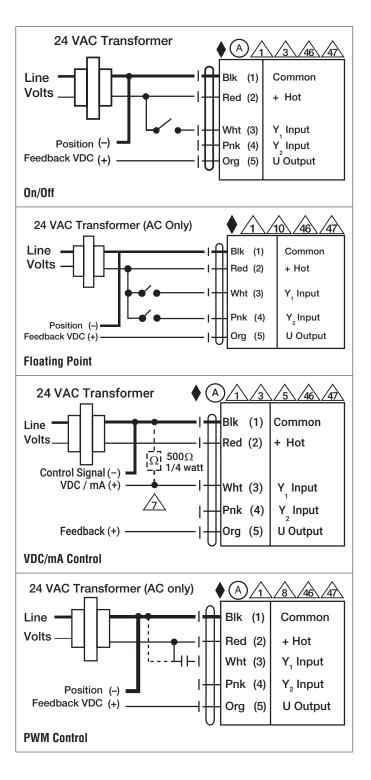
\*Variable when configured with MFT options. †Rated Impulse Voltage 800V, Type of action 1.AA, Control Pollution Degree 3

# AFB24-MFT Technical Data Sheet



# Modulating, Spring Return, 24 V, Multi-Function Technology®

| AF-P   Anti-rotation bracket AF/NF.     AV8-25   Shaft extension     IND-AFB   End stop indicator     K7-2   Shaft clamp reversible     KG10A   Ball joint     KG8   Ball joint     KH0   Damper crank arm     KH10   Damper crank arm     KH4   Damper crank arm     KH4   Push rod for KG10A ball joint (36" L, 3/8" diameter).     SH10   Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter).     ZG-100   Univ. right angle bracket 17"x11-1/8"x6" (HxWxbase).     ZG-101   Univ. right angle bracket 17"x11-77/16" (HxWxbase).     ZG-102   Dual actuator mounting bracket.     ZG-103   Right angle bracket for ZS-260.     ZG-104   Stand-off bracket for ZS-260.     ZG-105   Stand-off bracket for ZS-260.     ZG-120   Jackshaft mounting bracket.     ZG-24   Damper clip for damper blade, 3.5" width. <th>Accessories</th> <th></th>   | Accessories |   |
|--|-------------|---|
| IND-AFBEnd stop indicatorK7-2Shaft clamp reversibleKG10ABall jointKG8Ball jointKH8Damper crank armKH10Damper crank armKH4Push rod for KG10A ball joint (36" L, 3/8" diameter).SH10Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter).ZG-100Univ. right angle bracket 17"x11-1/8"x6" (HxWxbase).ZG-101Univ. right angle bracket 13x11x7-7/16" (HxWxbase).ZG-102Dual actuator mounting bracket.ZG-103Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-120Jackshaft mounting bracket.ZG-201Jackshaft mounting bracket.ZG-201Jackshaft mounting bracket.ZG-201Jackshaft mounting bracket.ZG-201Jackshaft mounting bracket.ZG-201Jackshaft mounting bracket.ZG-202Damper clip for damper blade, 3.5" width.ZG-D21Damper clip for damper blade, 6" width.ZG-32A-11.°5/16" diameter jackshaft adaptor (12" L).ZG-JSA-21.°5/16" diameter jackshaft adaptor (12" L).ZS-100Weather shield - gulvaneal 13x8x6" (LxWxD).ZS-300NEMA 4X, 304 stainless steel enclosure.Z-35FBase plate for ZS-100.ZS-300NEMA 4X, 304 stainless steel enclosure.Z-35FBase plate tor ZS-100.ZS-300NEMA 4X, 304 stainless steel enclosure.Z-35FBase plate for Cs-100P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1<   |             |   |
| K7-2Shaft clamp reversibleKG10ABall jointKG8Ball jointKH0Damper crank armKH4Damper crank armKH-AFBActuator armSH10Push rod for KG10A ball joint (36" L, 3/8" diameter).SG100Univ. right angle bracket 17"×11-1/8"x6" (HxWxbase).ZG-101Univ. right angle bracket 13x11x7-7/16" (HxWxbase).ZG-102Dual actuator mounting bracket.ZG-103Stand-off bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-120Jackshaft mounting bracket.ZG-2012Jackshaft mounting bracket.ZG-302Jackshaft mounting bracket.ZG-103Stand-off bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-120Jackshaft mounting bracket.ZG-602Jackshaft mounting bracket.ZG-613AFB(X)/NFB(X) U bracket 5-7/8x5-1/2x2-19/32" (HxWxD).ZG-120Jackshaft mounting bracket.ZG-6120Jackshaft mounting bracket.ZG-120Jackshaft mounting bracket.ZG-120Jackshaft mounting bracket.ZG-121Damper clip for damper blade, 3.5" width.ZG-122Damper clip for damper blade, 6" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-300-5NEMA 4X, 304 stainless steel enclosure.Z-S-56Base plate extension   | AV8-25      | Shaft extension   |
| KG10ABall jointKG8Ball jointKH10Damper crank armKH10Damper crank armKH3Damper crank armKH4FBActuator armSH10Push rod for KG10A ball joint (36" L, 3/8" diameter).ZG-100Univ. right angle bracket 17"x11-1/8"x6" (HxWxbase).ZG-101Univ. right angle bracket 13x11x7-7/16" (HxWxbase).ZG-102Dual actuator mounting bracket.ZG-103Stand-off bracket for ZS-260.ZG-114AFB(X)/NFB(X) U bracket 5-7/8x5-1/2x2-19/32" (HxWxD).ZG-120Jackshaft mounting bracket.ZG-64FBMounting kit for linkage operationZG-4FB118AFB(X)/NFB(X) crankarm adaptor kit.ZG-65C1Damper clip for damper blade, 3.5" width.ZG-3AF21-5/16" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-102Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300NEMA 4X, 304 stainless steel enclosure.Z-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts. <t< td=""><td>IND-AFB</td><td>End stop indicator</td></t<>                                    | IND-AFB     | End stop indicator  |
| KG8Ball jointKH10Damper crank armKH4Damper crank armKH4Damper crank armKH-AFBActuator armSH10Push rod for KG10A ball joint (36" L, 3/8" diameter).SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter).ZG-100Univ. right angle bracket 17"x11-1/8"K6" (HxWxbase).ZG-101Univ. right angle bracket 13x11x7-7/16" (HxWxbase).ZG-102Dual actuator mounting bracket.ZG-103Stand-off bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-118AFB(X)/NFB(X) U bracket 5-7/8x5-1/2x2-19/32" (HxWxD).ZG-120Jackshaft mounting bracket.ZG-AFBMounting kit for linkage operationZG-AFBMounting kit for linkage operationZG-AFB118AFB(X)/NFB(X) crankarm adaptor kit.ZG-DC1Damper clip for damper blade, 6" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-101Base plate for ZS-100.ZS-101Base plate for ZS-100.ZS-102Kehter AX, 304 stainless steel enclosure.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-100Veather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-300NEMA 4X, 316L stainless steel enclosure.ZS-300<  | K7-2        | Shaft clamp reversible                                      |
| KH10Damper crank armKH8Damper crank armKH-AFBActuator armSH10Push rod for KG10A ball joint (36" L, 3/8" diameter).SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter).ZG-100Univ. right angle bracket 17"x11-1/8"x6" (HxWxbase).ZG-101Univ. right angle bracket 13x11x7-7/16" (HxWxbase).ZG-102Dual actuator mounting bracket.ZG-103Stand-off bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-110Jackshaft mounting bracket.ZG-4FBMounting kit for linkage operationZG-4FBMounting kit for linkage operationZG-5DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-JSA-11" diameter jackshaft adaptor (12" L).ZG-JO0Weather shield - galvaneal 13x8x6" (LxWxD).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-260Explosion proof housing.ZS-300-5NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300NEMA 4X, 316L stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-100Low voltage and control signal simulator.MF1-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P5100Low voltage and control signal simulator.SGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  | KG10A       | Ball joint  |
| KH8Damper crank armKH-AFBActuator armSH10Push rod for KG10A ball joint (36" L, 3/8" diameter).SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter).ZG-100Univ. right angle bracket 17"x11-1/8"x6" (HxWxbase).ZG-101Univ. right angle bracket 13x11x7-7/16" (HxWxbase).ZG-102Dual actuator mounting bracket.ZG-103Stand-off bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-110Jackshaft mounting bracket.ZG-120Jackshaft mounting bracket.ZG-364Mounting kit for linkage operationZG-467Mounting kit for linkage operationZG-467Damper clip for damper blade, 3.5" width.ZG-022Damper clip for damper blade, 3.5" width.ZG-38A-11" diameter jackshaft adaptor (11" L).ZG-38A-21-5/16" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300NEMA 4X, 316L stainless steel enclosure.ZS-300NEMA 4X, 316L stainless steel enclosure.ZS-3100Low voltage and control signal simulator.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. sh           | KG8         | Ball joint  |
| KH-AFBActuator armSH10Push rod for KG10A ball joint (36" L, 3/8" diameter).SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter).ZG-100Univ. right angle bracket 17"x11-1/8"x6" (HxWxbase).ZG-101Univ. right angle bracket 13x11x7-7/16" (HxWxbase).ZG-102Dual actuator mounting bracket.ZG-103Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-111AFB(X)/NFB(X) U bracket 5-7/8x5-1/2x2-19/32" (HxWxD).ZG-120Jackshaft mounting bracket.ZG-AFBMounting kit for linkage operationZG-AFBMounting kit for linkage operationZG-AFB118AFB(X)/NFB(X) crankarm adaptor kit.ZG-DC1Damper clip for damper blade, 3.5" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-100Keather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300NEMA 4X, 316L stainless steel enclosure.ZS-300NEMA 4X, 316L stainless steel enclosure.ZS-300Low voltage and control signal simulator.P475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercur           | KH10        | Damper crank arm  |
| SH10Push rod for KG10A ball joint (36" L, 3/8" diameter).SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter).ZG-100Univ. right angle bracket 17"x11-1/8"x6" (HxWxbase).ZG-101Univ. right angle bracket 13x11x7-7/16" (HxWxbase).ZG-102Dual actuator mounting bracket.ZG-103Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-120Jackshaft mounting bracket.ZG-120Jackshaft mounting bracket.ZG-AFBMounting kit for linkage operationZG-AFBMounting kit for linkage operationZG-AFBAFB(X)/NFB(X) crankarm adaptor kit.ZG-DC1Damper clip for damper blade, 3.5" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300NEMA 4X, 316L stainless steel enclosure.Z-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1.2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1.2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1.2" dia. shafts. <trr>P475-1Shaft</trr> | KH8         | Damper crank arm  |
| SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter).ZG-100Univ. right angle bracket 17"x11-1/8"x6" (HxWxbase).ZG-101Univ. right angle bracket 13x11x7-7/16" (HxWxbase).ZG-102Dual actuator mounting bracket.ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-120Jackshaft mounting bracket.ZG-20Jackshaft mounting bracket.ZG-210Jackshaft mounting bracket.ZG-418AFB(X)/NFB(X) U bracket 5-7/8x5-1/2x2-19/32" (HxWxD).ZG-120Jackshaft mounting bracket.ZG-47BMounting kit for linkage operationZG-47B118AFB(X)/NFB(X) crankarm adaptor kit.ZG-0C1Damper clip for damper blade, 3.5" width.ZG-0D2Damper clip for damper blade, 6" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300NEMA 4X, 316L stainless steel enclosure.ZS-300NEMA 4X, 316L stainless steel enclosure.ZS-300NEMA 4X, 316L stainless steel enclosure.ZS-5FBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts. <td>KH-AFB</td> <td>Actuator arm</td>    | KH-AFB      | Actuator arm  |
| ZG-100Univ. right angle bracket 17"x11-1/8"x6" (HxWxbase).ZG-101Univ. right angle bracket 13x11x7-7/16" (HxWxbase).ZG-102Dual actuator mounting bracket.ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-118AFB(X)/NFB(X) U bracket 5-7/8x5-1/2x2-19/32" (HxWxD).ZG-120Jackshaft mounting bracket.ZG-AFBMounting kit for linkage operationZG-AFBMounting kit for linkage operationZG-CD1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300NEMA 4X, 316L stainless steel enclosure.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.PS-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR                        | SH10        | Push rod for KG10A ball joint (36" L, 3/8" diameter).       |
| ZG-100Univ. right angle bracket 17"x11-1/8"x6" (HxWxbase).ZG-101Univ. right angle bracket 13x11x7-7/16" (HxWxbase).ZG-102Dual actuator mounting bracket.ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-118AFB(X)/NFB(X) U bracket 5-7/8x5-1/2x2-19/32" (HxWxD).ZG-120Jackshaft mounting bracket.ZG-AFBMounting kit for linkage operationZG-AFBMounting kit for linkage operationZG-CD1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300NEMA 4X, 316L stainless steel enclosure.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.PS-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR                        | SH8         | Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter). |
| ZG-102Dual actuator mounting bracket.ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-118AFB(X)/NFB(X) U bracket 5-7/8x5-1/2x2-19/32" (HxWxD).ZG-120Jackshaft mounting bracket.ZG-AFBMounting kit for linkage operationZG-AFBDamper clip for damper blade, 3.5" width.ZG-DC1Damper clip for damper blade, 6" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-300NEMA 4X, 304 stainless steel enclosure.Z-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P5-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  | ZG-100      |   |
| ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-118AFB(X)/NFB(X) U bracket 5-7/8x5-1/2x2-19/32" (HxWxD).ZG-120Jackshaft mounting bracket.ZG-AFBMounting kit for linkage operationZG-AFB118AFB(X)/NFB(X) crankarm adaptor kit.ZG-DC1Damper clip for damper blade, 3.5" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-500Explosion proof housing.ZS-300-5NEMA 4X, 304 stainless steel enclosure.ZS-300NEMA 4X, 316L stainless steel enclosure.ZS-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.PS-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  | ZG-101      | Univ. right angle bracket 13x11x7-7/16" (HxWxbase).         |
| ZG-110Stand-off bracket for ZS-260.ZG-118AFB(X)/NFB(X) U bracket 5-7/8x5-1/2x2-19/32" (HxWxD).ZG-120Jackshaft mounting bracket.ZG-AFBMounting kit for linkage operationZG-AFB118AFB(X)/NFB(X) crankarm adaptor kit.ZG-DC1Damper clip for damper blade, 3.5" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300NEMA 4X, 316L stainless steel enclosure.Z-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P5-100Low voltage and control signal simulator.SGR24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR   | ZG-102      | Dual actuator mounting bracket.                             |
| ZG-118AFB(X)/NFB(X) U bracket 5-7/8x5-1/2x2-19/32" (HxWxD).ZG-120Jackshaft mounting bracket.ZG-AFBMounting kit for linkage operationZG-AFB118AFB(X)/NFB(X) crankarm adaptor kit.ZG-DC1Damper clip for damper blade, 3.5" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.PS-100Low voltage and control signal simulator.SGR24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR   | ZG-109      | Right angle bracket for ZS-260.                             |
| ZG-120Jackshaft mounting bracket.ZG-AFBMounting kit for linkage operationZG-AFB118AFB(X)/NFB(X) crankarm adaptor kit.ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.Z-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.PS-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR   | ZG-110      | Stand-off bracket for ZS-260.                               |
| ZG-AFBMounting kit for linkage operationZG-AFB118AFB(X)/NFB(X) crankarm adaptor kit.ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.Z-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-11Shaft mount, non-Mercury aux. switch for 1" dia. shafts.PS-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  | ZG-118      | AFB(X)/NFB(X) U bracket 5-7/8x5-1/2x2-19/32" (HxWxD).       |
| ZG-AFB118AFB(X)/NFB(X) crankarm adaptor kit.ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-FBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P5-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR   | ZG-120      | Jackshaft mounting bracket.                                 |
| ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.Z-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.PS-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  | ZG-AFB      | Mounting kit for linkage operation                          |
| ZG-DC2Damper clip for damper blade, 6" width.ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-FBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-10Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR   | ZG-AFB118   | AFB(X)/NFB(X) crankarm adaptor kit.                         |
| ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-FBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P5-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR   | ZG-DC1      | Damper clip for damper blade, 3.5" width.                   |
| ZG-JSA-11" diameter jackshaft adaptor (11" L).ZG-JSA-21-5/16" diameter jackshaft adaptor (12" L).ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-FBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P5-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR   | ZG-DC2      | Damper clip for damper blade, 6" width.                     |
| ZG-JSA-31.05" diameter jackshaft adaptor (12" L).ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.Z-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.PS-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  | ZG-JSA-1    |   |
| ZS-100Weather shield - galvaneal 13x8x6" (LxWxD).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-5FBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P5-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  | ZG-JSA-2    | 1-5/16" diameter jackshaft adaptor (12" L).                 |
| ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P5-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR   | ZG-JSA-3    | 1.05" diameter jackshaft adaptor (12" L).                   |
| ZS-150Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-FBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P5-10Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR   | ZS-100      | Weather shield - galvaneal 13x8x6" (LxWxD).                 |
| ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.Z-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.PS-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR   | ZS-101      | Base plate for ZS-100.                                      |
| ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.Z-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.PS-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR   | ZS-150      | Weather shield - PC w/ foam seal 16x8-3/8x4" (LxWxD).       |
| ZS-300-5NEMA 4X, 316L stainless steel enclosure.Z-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.PS-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  | ZS-260      | Explosion proof housing.                                    |
| Z-SFBase plate extensionIRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.PS-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  | ZS-300      | NEMA 4X, 304 stainless steel enclosure.                     |
| IRM-100Input rescaling module for modulating actuators.MFT-PBelimo PC-ToolP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.PS-100Low voltage and control signal simulator.SGA24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  | ZS-300-5    | NEMA 4X, 316L stainless steel enclosure.                    |
| MFT-P     Belimo PC-Tool       P475     Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.       P475-1     Shaft mount, non-Mercury aux. switch for 1" dia. shafts.       PS-100     Low voltage and control signal simulator.       SGA24     Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR       SGF24     Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  | Z-SF        | Base plate extension  |
| P475     Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.       P475-1     Shaft mount, non-Mercury aux. switch for 1" dia. shafts.       PS-100     Low voltage and control signal simulator.       SGA24     Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR       SGF24     Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR       SGF24     Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR   | IRM-100     | Input rescaling module for modulating actuators.            |
| P475-1   Shaft mount, non-Mercury aux. switch for 1" dia. shafts.     PS-100   Low voltage and control signal simulator.     SGA24   Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR     SGF24   Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR     SGF24   Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR   | MFT-P       | Belimo PC-Tool  |
| PS-100     Low voltage and control signal simulator.       SGA24     Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR       SGF24     Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR   | P475        | Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.  |
| SGA24     Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR       SGF24     Positioners suitable for use with the modulating damper<br>actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  | P475-1      | Shaft mount, non-Mercury aux. switch for 1" dia. shafts.    |
| actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR       SGF24     Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  | PS-100      | Low voltage and control signal simulator.                   |
| SGF24 Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  | SGA24       |   |
| actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR  |             |   |
| TF-CC US Cable conduit connector, 1/2".  |             | actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR                 |
|  | TF-CC US    |   |
| UK24BAC Gateway MP to BACnet MS/TP   |             | -   |
| UK24LON Gateway MP to LonWorks   | UK24LON     |   |
| UK24MOD Gateway MP to Modbus RTU   | UK24MOD     |   |
| ZG-R01 4 to 20 mA adaptor, $500\Omega$ , 1/4 W resistor w 6" pigtail wires.  | ZG-R01      |   |
| ZG-X40 120 to 24 VAC, 40 VA transformer.   | ZG-X40      | 120 to 24 VAC, 40 VA transformer.                           |
| ZK2-GEN Connection cable   | ZK2-GEN     | Connection cable  |
| ZTH US Handheld programming tool w/ ZK1-GEN, ZK2-GEN, ZK6-GEN.   | ZTH US      | Handheld programming tool w/ ZK1-GEN, ZK2-GEN, ZK6-GEN.     |





# AFB24-MFT Technical Data Sheet

Modulating, Spring Return, 24 V, Multi-Function Technology®

#### Typical Specification

Spring return control damper actuators shall be direct coupled type which require no crank arm and linkage and be capable of direct mounting to a jackshaft up to a 1.05" diameter. The actuator must provide modulating damper control in response to a 2 to 10 VDC or, with the addition of a  $500\Omega$  resistor, a 4 to 20 mA control input from an electronic controller or positioner. The actuators must be designed so that they may be used for either clockwise or counter clockwise fail-safe operation. Actuators shall use a brushless DC motor controlled by a microprocessor and be protected from overload at all angles of rotation. Run time shall be constant, and independent of torque. A 2 to 10 VDC feedback signal shall be provided for position feedback or master slave applications. Actuators with auxiliary switches must be constructed to meet the requirements for Double Insulation so an electrical ground is not required to meet agency listings. Actuators shall be cJL us listed and have a 5 year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

#### Wiring Diagrams

# ∧ 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.

Meets cULus requirements without the need of an electrical ground connection.

Actuators with appliance cables are numbered.

Provide overload protection and disconnect as required.

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.

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 may be controlled in parallel when not mechanically linked. Current draw and input impedance must be observed.



Master-Slave wiring required for piggy-back applications when mechanically linked. Feedback from Master to control input(s) of Slave(s).

