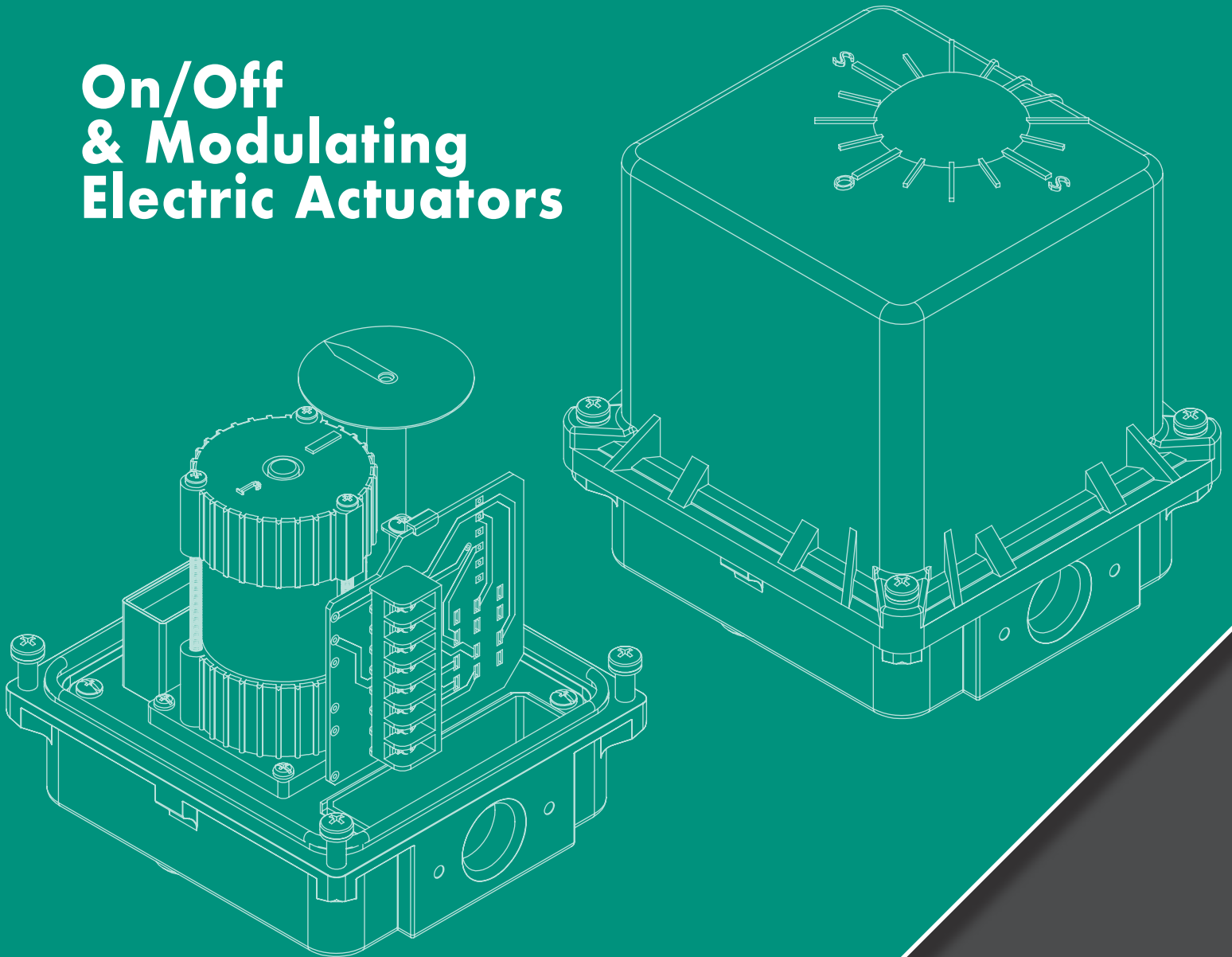




The Best Way To Automate Your Process

On/Off & Modulating Electric Actuators



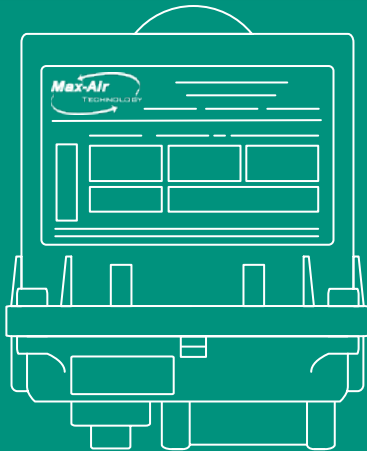
AE Series Technical Brochure

Max-Air Technology Inc. | Rotary Actuators & Valve Automation Solutions

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Tel +1.636.272.4934 • Toll Free 888.842.9998 • Fax 636.272.4937 • www.maxairtech.com • info@maxairtech.com

AE Series Electric Actuators

Standard & extended duty on/off, fast-acting, and modulating actuators for light duty applications.



The AE Series electric actuators come standard with a polycarbonate semi-transparent lid, LED position indication, auxiliary limit switches, and space heater. AE Series on/off actuators are available in a wide range of voltages and can be specially equipped with dual voltage, fast acting, or extended duty motors. AE Series modulating actuators are designed for ultimate flexibility and convenience, with selectable 4-20mA or 0-10V input and outputs, sensitivity adjustment, and easy position stop adjustment.

AE Series Part Number Builder



A

B

C

D

E

C - MOD

(Omit) = None

A = Extended Duty

FA = Fast Acting

B - SIZE

01 = Size 01

02 = Size 02

03 = Size 03

E - VOLTAGE

120VAC = 120V AC Single Phase

220VAC = 220V AC Single Phase

24VAC/VDC = 24V AC/DC Dual Voltage

24VDC = 24V DC Single Voltage

12VDC = 12V DC Single Voltage

D - MOTOR*

(Omit) = Standard Motor

M1 = Motor #1, Synchronous Type (Higher Efficiency)

M2 = Motor #2, Inductive Type (Higher Torque & Speed)

*Note: Only modulating or fast acting units use the Motor designator.

Temperature Range:

Seals	Temperature Range
Standard	-14°F (-25°C) to 140°F (60°C)

A - SERIES

AE = On/Off (Polycarbonate Lid)

AEM = Modulating (Polycarbonate Lid)

AL = On/Off (Aluminum Lid, 01 & 02 Sizes Only)

ALM = Modulating (Aluminum Lid, 01 & 02 Sizes Only)



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STANDARD WARRANTY

Max-Air Technology Inc. | The Best Way to Automate Your Process

Max-Air Technology provides the following warranty regarding products manufactured by it. **THE WARRANTY STATED HEREIN IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES AND REPRESENTATIONS, EXPRESSED OR IMPLIED, OR STATUTORY, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.** Max-Air Technology warrants its products to be free from defects in materials and workmanship when these products are used for the purpose for which they were designed and manufactured. Max-Air Technology does not warrant its products against chemical or stress corrosion or against any other failure other than from defects in materials or workmanship. The warranty period is for twelve (12) months from installation date or eighteen (18) months from shipment date, whichever date comes first. Any claims regarding this warranty must be in writing and received by Max-Air Technology before the last effective date of the warranty period. Upon Max-Air Technology's receipt of a warranty claim, Max-Air Technology reserves the right to inspect the product(s) in question at either the field location or at the Max-Air Technology Manufacturing plant. If, after inspection of the product(s) in question, Max-Air Technology determines that the purchaser's claim is covered by this warranty, Max-Air Technology's sole liability and the purchaser's sole remedy under this warranty is limited to the refunding of the purchase price or repair or replacement thereof at Max-Air Technology option. Max-Air Technology will not be liable for any repairs, labor, material or other expenses that are not specifically authorized in writing by Max-Air Technology, and in no event shall Max-Air Technology be liable for any direct or consequential damages arising out of any defect from any cause whatsoever. If any Max-Air Technology product is modified or altered at any location other than Max-Air Technology – St. Louis (Missouri) UNITED STATES or Max-Air Technology – Agrate Brianza (MB) ITALY without the express written authorization of Max-Air Technology, said product is not covered by this warranty. The warranty for such products shall be subject only to the warranty relief, if any, provided by the suppliers and/or manufacturers of such products.

Features & Benefits

Standard on/off & modulating, electric rotary actuators for ordinary & industrial applications.

On/Off & Modulating Electric Actuators

AE Series electric actuators provide a highly reliable solution for your electric actuation requirements. With torque ranges from 80 in-lbs to over 1500 in-lbs, fast acting solutions, extra limit switches, LED position indication, internal space heaters, and modulation capability, the AE Series is designed to exceed your expectations.

Features:

- Compact design & direct ISO 5211 valve mounting
- Easy field wiring, setup and adjustment
- Multiple voltage options available (AC/DC)
- Standard manual override
- Standard auxiliary limit switches for open/close feedback
- Standard Open/Close LEDs for easy visual indication
- Standard internal space heater & thermal overload protection
- Selectable input/output signal on modulating models
- Optional 180° rotation for on/off models

Configurations:

- Standard On/Off Control (120VAC, 220VAC)
- Extended Duty On/Off Control (120VAC, 220VAC, 24VAC/DC Dual Voltage)
- Fast Acting On/Off Control (120VAC, 220VAC, 24VAC/DC Dual Voltage)
- Modulating Control (120VAC, 220VAC)

On/Off Control:

- Multiple voltages available
- Fast acting and extended duty models available
- Easy wiring and setup
- Manual override standard

Proportional Control:

- Selectable input/output signal (4-20mA, 0-10V, 0-5V)
- Available in 120VAC or 220VAC
- Easy Travel and sensitivity adjustment
- Manual override standard



Specifications:

Locations	Ordinary, NEMA 4/4x
Torque Range	80 to 1,500 in-lbs
Materials	Aluminum Base/Poly Lid, Aluminum Lid (Aluminum Lid Available on 01 & 02 Sizes)
Ambient Temp. Range	-14°F to 140°F Standard
Rotation	90 Degrees (180 Degrees Optional)
Power Supply	120 VAC, 24VAC/VDC, 12VDC, 220VAC
Signal Type	On/Off or Modulating (4-20mA, 2-10v)
Mounting	ISO 5211
Modulating Input & Output Signal (Selectable)	4-20mA, 0-10V, 0-5V
Gears	Heavy duty sintered metal
Back-Drive Resistance Method	High gearing ratio + back-drive resistant motor
Relative Humidity Range	30% to 95%
Enclosure Protection Rating	IP67 (Water and dust proof)
Switches	SPDT Mechanical Switches (2 Auxiliary)
Manual Override	Included

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ISO 51211
Mounting

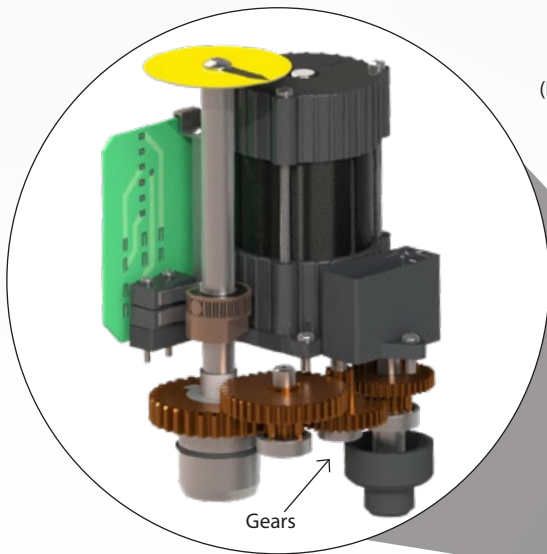
Lid Material Options

- Polycarbonate Lid standard on all Units
- Aluminum Lid available for AE01 & AE02



Aluminum Lid
Comes Standard w/
High Visibility Beacon

(Only Available on
01 & 02 Sizes)

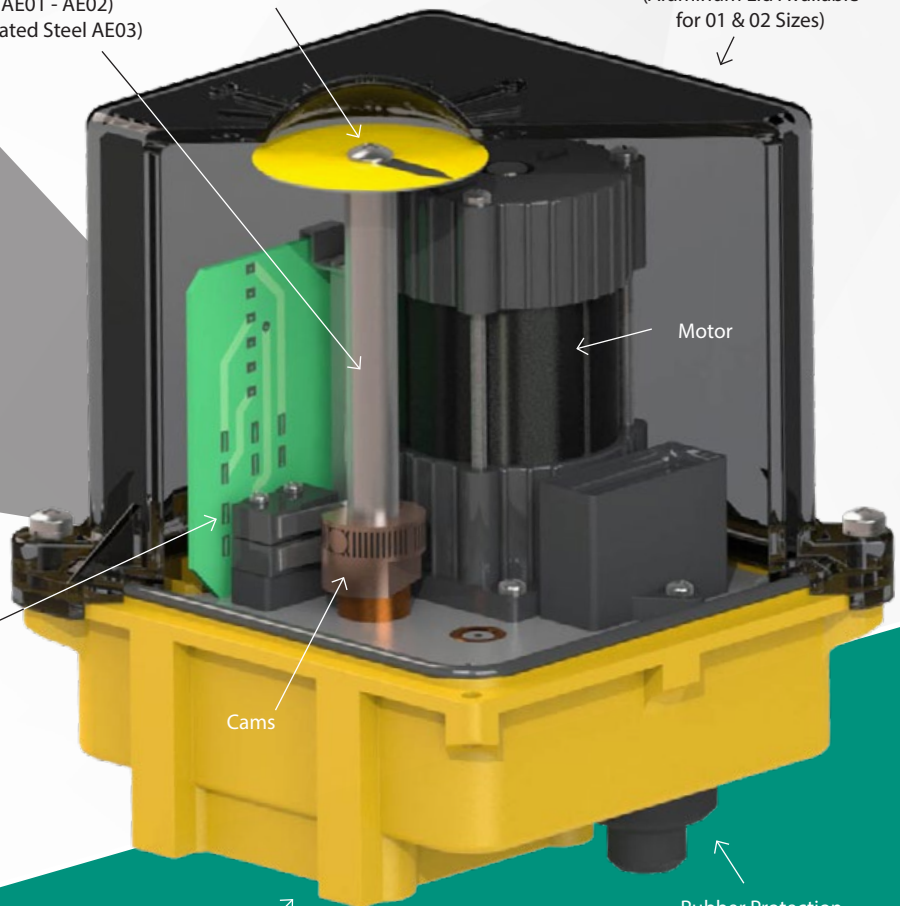


Shaft
(Stainless Steel
AE01 - AE02)
(Plated Steel AE03)

Indicator
(Aluminum)

Gears

Polycarbonate Lid
(Aluminum Lid Available
for 01 & 02 Sizes)



Motor

Circuit Board
w/ Limit Switch

Cams

Lower Body
(Aluminum)

Rubber Protection
for Manual Lever

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Exploded View & Bill of Materials

	Part	Material
1	Cover Screws	Stainless steel
2	Cover	Polycarbonate
3	Indicator	Aluminum
4	Circuit Board w/ Limit Switches	FR
5	Standoff	Stainless Steel (AE01 - AE02) Plated Steel (AE03)
6	Motor	
7	Cams	Metal
8	Gear	Sintered metal
9	Shaft	Stainless Steel (AE01 - AE02) Plated Steel (AE03)
10	Lower Box	Aluminum
11	Protection for Manual Lever	Rubber

AE Series & ME Series Compared

Start from the top of the chart and work down to select the correct Electric Actuator Series.

Service	Light Duty (Indoor or Covered)			Heavy Duty (Indoor/Outdoor)			
Electrical Classification	Ordinary			Ordinary			
Temperature	Standard			Standard			
Recommended Series/Options	AE Series			ME Series			
Power Supply	AC	DC	AC/DC	AC	DC	AC/DC	3-Phase
Available Options	180° On/Off			Handwheel Torque Limit Switches 3-Position Control 180° On/Off (On Select Models) Battery Backup Local Control			



AE Series

Compact, light duty actuator for shutoff or proportional control with standard auxiliary feedback switches, internal heater and LED position indication. Optional extended duty or fast acting models available.



ME Series

Industrial grade actuator with heavy duty NEMA 4/4X/ IP67 aluminum enclosure, standard auxiliary feedback switches, internal heater and 3D position indication. Handwheel override standard on most models, and optional torque limit switches available.



* NOTE: AE01/
AE02 shown.

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Technical Data

Standard On/Off Control Series, 120VAC & 220VAC

Model No.	Torque (in-lbs)	Torque (NM)	Weight (lbs)	Weight (Kg)	Duty	90 Degree Cycle Time	Amps 120VAC @ 60Hz	Amps 240VAC @ 60Hz
AE01-XXXVAC	310	35	3.7	1.7	25%	10s	0.7A	0.38A
AE02-XXXVAC	443	50	4.0	1.8	25%	10s	0.9A	0.5A
AE03-XXXVAC	1505	170	9.7	4.4	50%	8s	1.2A	0.72A

For "XXXVAC", choose either 120 or 220 for required voltage.

Extended Duty Cycle On/Off Control Series, 120VAC & 220VAC

Model No.	Torque (in-lbs)	Torque (NM)	Weight (lbs)	Weight (Kg)	Duty	90 Degree Cycle Time	Amps 120VAC @ 60Hz	Amps 240VAC @ 60Hz
AE01A-XXXVAC	283	32	3.7	1.7	75%	16s	0.2A	0.10A
AE02A-XXXVAC	443	50	4.0	1.8	75%	36s	0.2A	0.10A

For "XXX", choose either 120 or 220 for required voltage.

Extended Duty Cycle On/Off Control Series, DUAL VOLTAGE 24VAC/24VDC

Model No.	Torque (in-lbs)	Torque (NM)	Weight (lbs)	Weight (Kg)	Duty	90 Degree Cycle Time	24VAC @ 60 Hz	24VDC Direct
AE01A-24VAC/24VDC	310	35	4.2	1.9	75%	11s to 16s	1.2A	1.2A
AE02A-24VAC/24VDC	443	50	4.2	1.9	75%	12s to 18s	1.2A	1.2A
AE03A-24VAC/24VDC	1328	150	8.6	1.9	75%	8s to 18s	2.5A	2.5A

MODULATING Control Series, 120VAC & 220VAC

Model No.	Torque (in-lbs)	Torque (NM)	Weight (lbs)	Weight (Kg)	Duty	90 Deg. Cycle Time	Amps 120VAC @ 60Hz	Amps 240VAC @ 60Hz
AEM01A-XXXVAC	221	25	4.6	2.1	75%	16s	0.2A	0.10A
AEM02A-M1-XXXVAC	319	36	4.6	2.1	75%	16s	0.3A	0.15A
AEM02A-M2-XXXVAC	443	50	4.6	2.1	75%	36s	0.2A	0.10A
AEM03A-M1-XXXVAC	1505	170	10.6	4.8	75%	8s	1.2A	0.72A

For "XXX", choose either 120 or 220 for required voltage. M1 motors are synchronous type motors providing relatively high electrical efficiency, M2 motors are inductive type motors and provide higher torque and speed in the same motor size.

FAST ACTING On/Off Control Series, 120VAC & 220VAC

Model No.	Torque (in-lbs)	Torque (NM)	Weight (lbs)	Weight (Kg)	Duty	90 Degree Cycle Time	Amps 120VAC @ 60Hz	Amps 240VAC @ 60Hz
AE01FA-M1-XXXVAC	80	9	4.2	1.9	15%	1s	1.2A	0.38A
AE01FA-M2-XXXVAC	221	25	4.2	1.9	25%	3s	1.2A	0.60A
AE03FA-M2-XXXVAC	885	100	8.6	3.9	50%	5s	1.2A	0.72A

For "XXX", choose either 120 or 220 for required voltage.

M1 motors are synchronous type motors providing relatively high electrical efficiency,

M2 motors are inductive type motors and provide higher torque and speed in the same motor size.

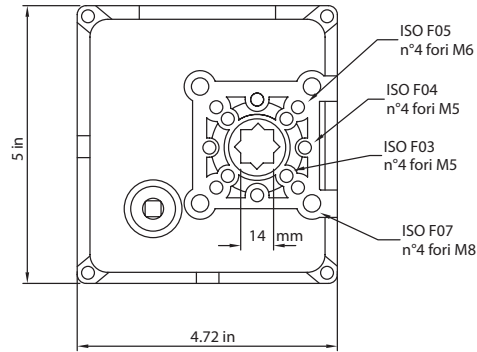
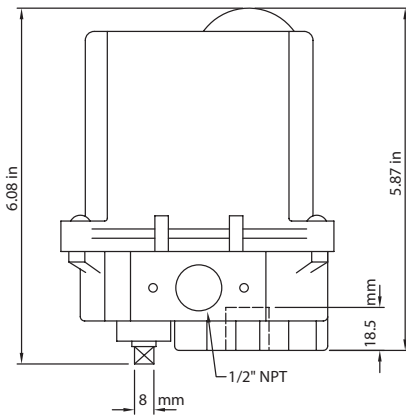
FAST ACTING On/Off Control Series, DUAL VOLTAGE 24VAC/24VDC

Model No. - Voltage	Torque (in-lbs)	Torque (NM)	Weight (lbs)	Weight (Kg)	Duty	Cycle Time	24VAC @ 60 Hz	24VDC Direct
AE01FA-M1-24VAC/24VDC	89	10	4.2	1.9	15%	1s to 2s	1.2A	1.2A
AE01FA-M2-24VAC/24VDC	221	25	4.2	1.9	25%	3s to 8s	1.2A	1.2A
AE03FA-24VAC/24VDC	443	50	8.6	3.9	50%	3s to 7s	2.5A	2.5A

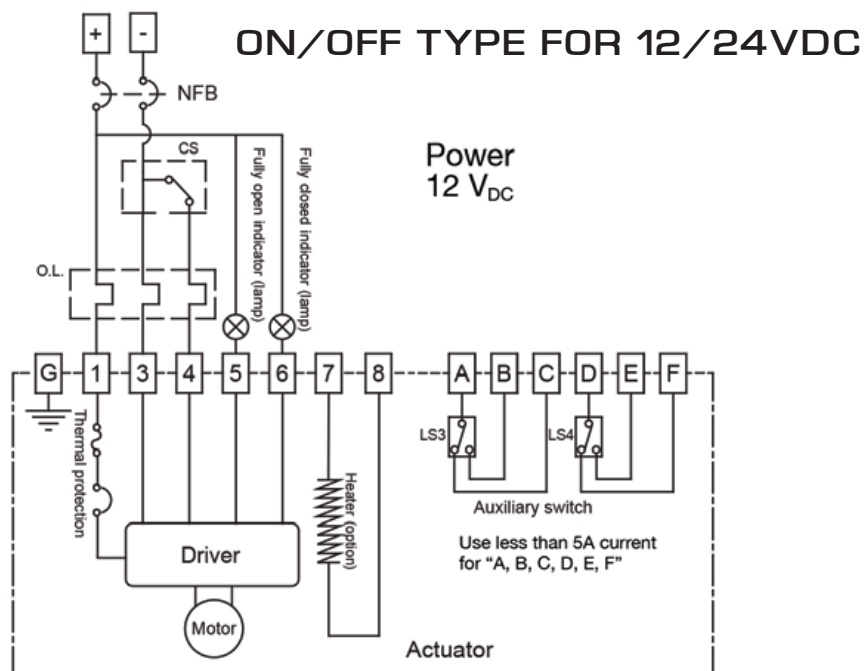
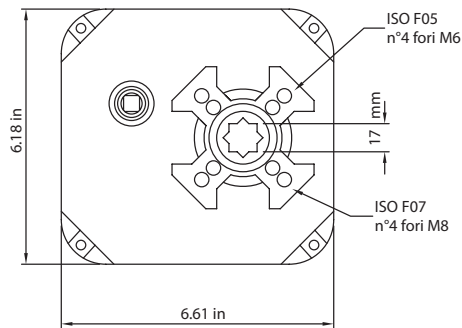
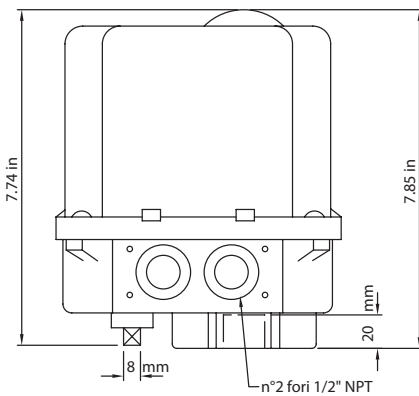
M1 motors are synchronous type motors providing relatively high electrical efficiency,

M2 motors are inductive type motors and provide higher torque and speed in the same motor size.

AE01 - AE02



AE03

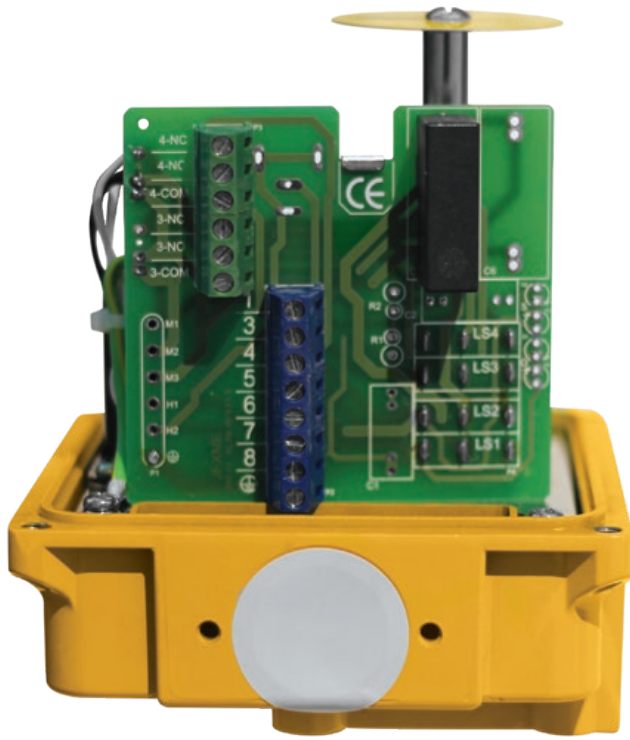


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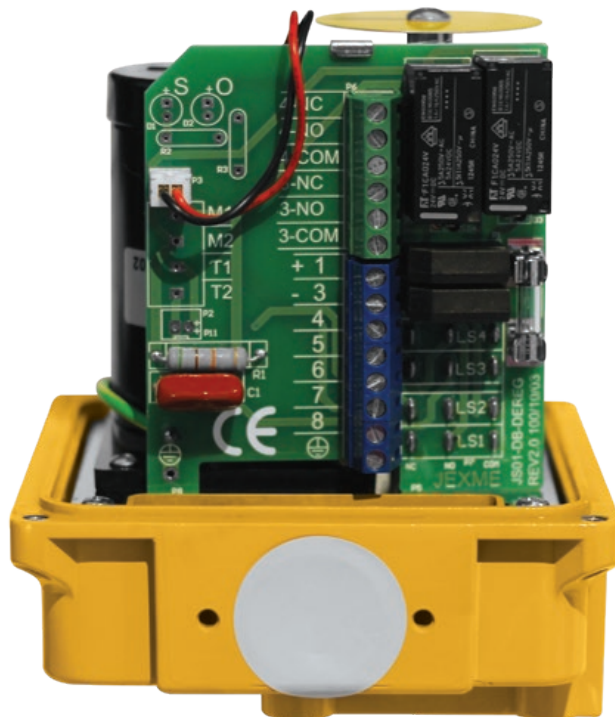
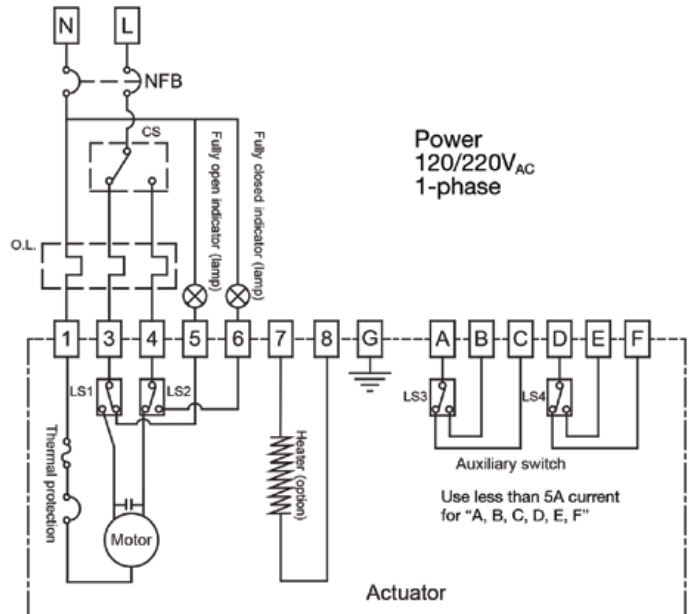


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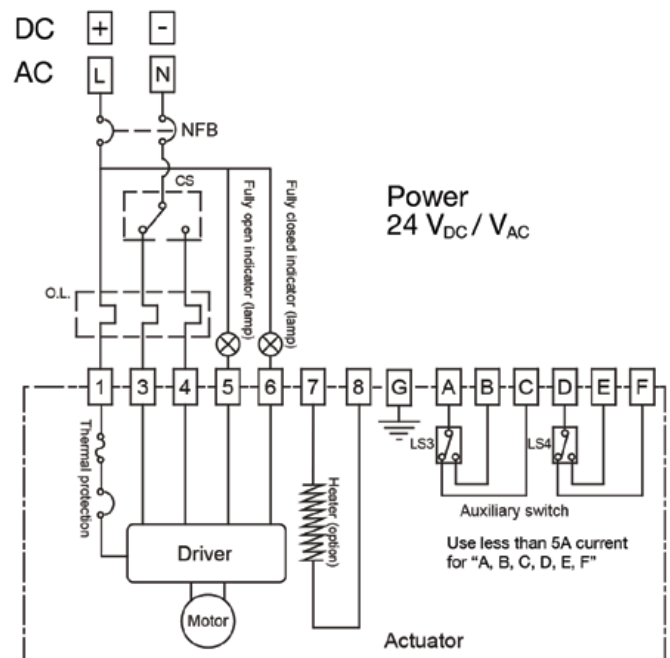


ON/OFF TYPE FOR 120/220 VAC

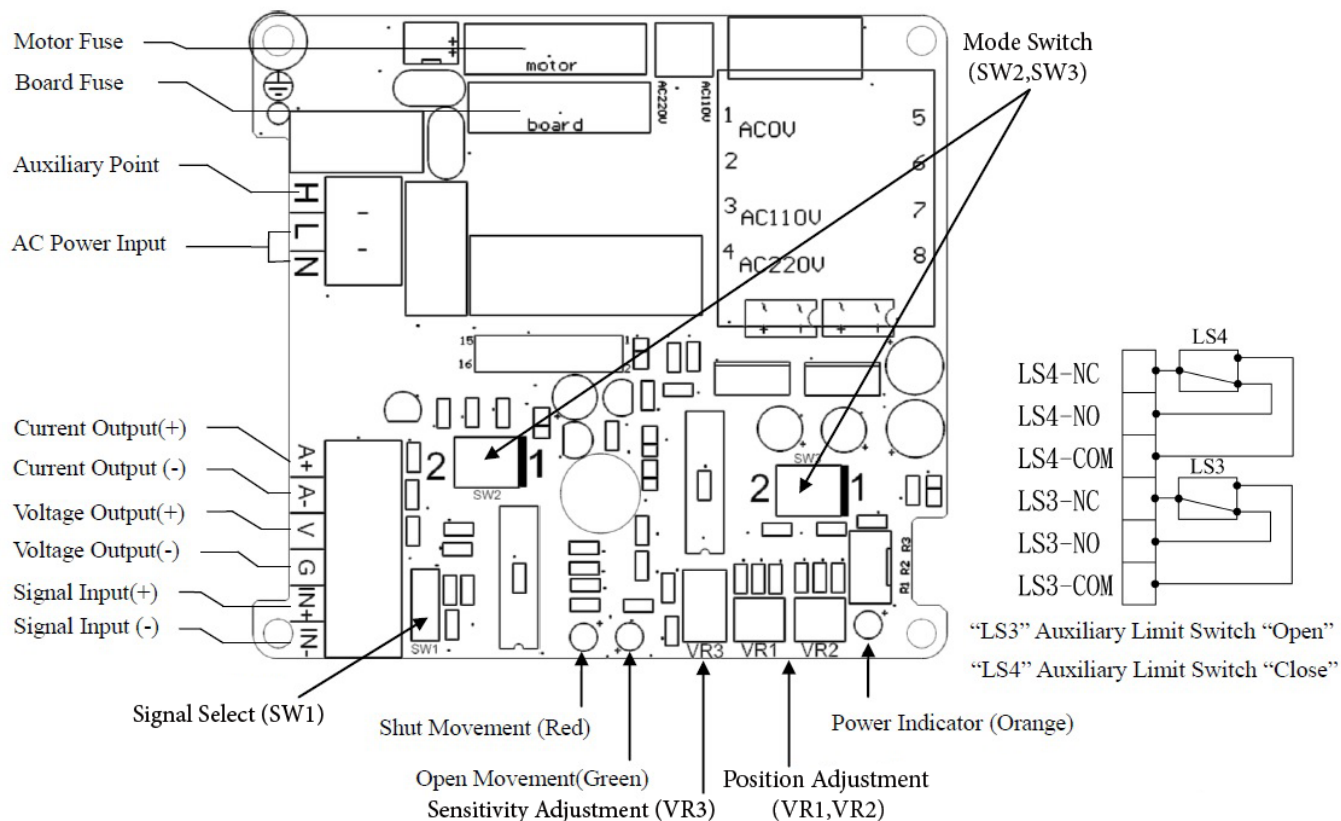
Single Phase



ON/OFF TYPE FOR 24VDC/VAC



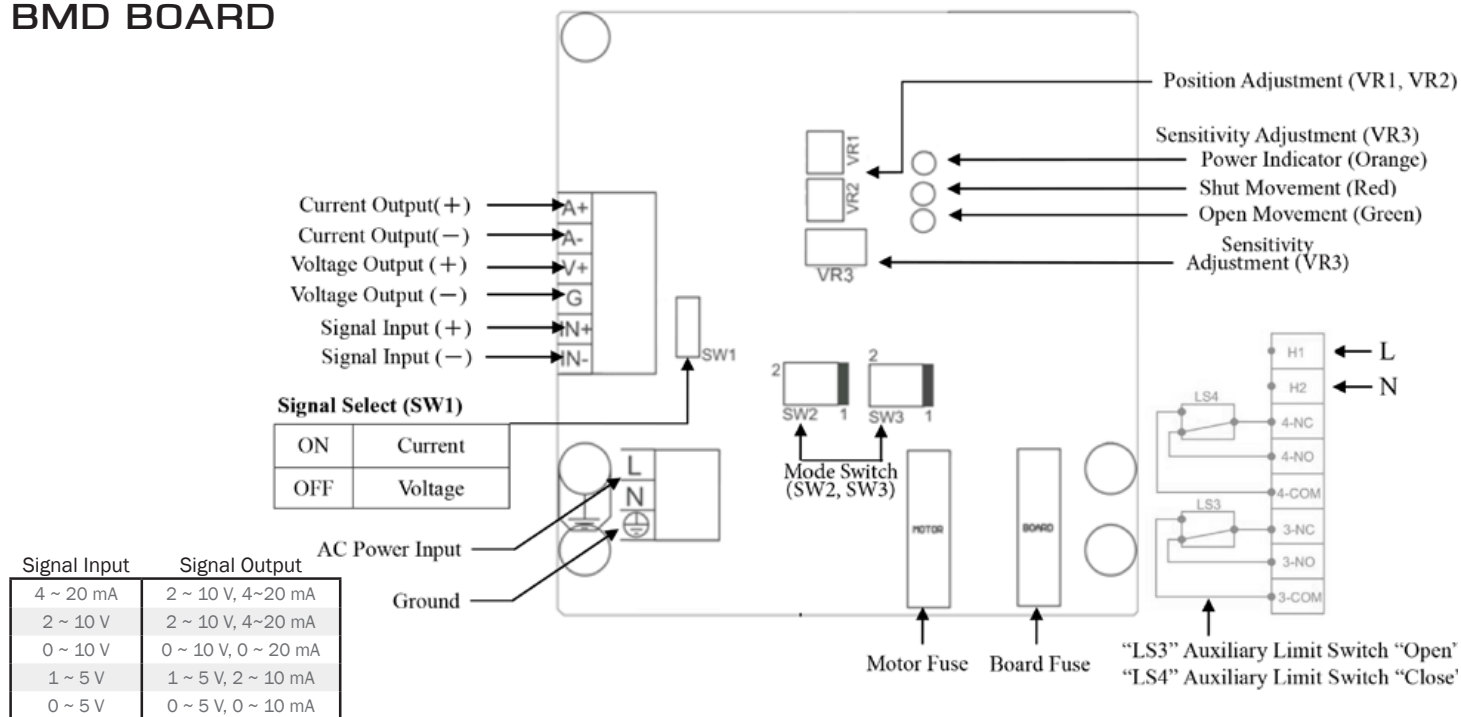
AMD BOARD



Differences between AMD and BMD:

BMD units should be used for higher torques and faster operating speeds. AMD units provide power usage efficiencies and should be used when power savings are a concern.

BMD BOARD



Note - When using current signal, external resistant is under 500 Ω .

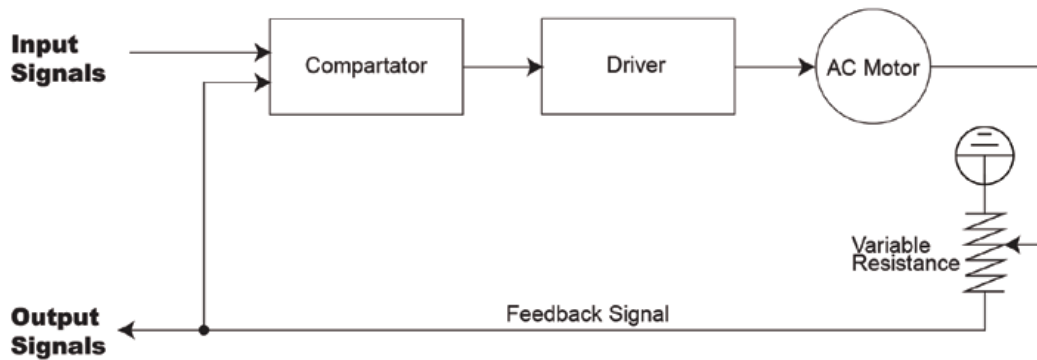
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SIGNAL FLOW OF MODULATION TYPE

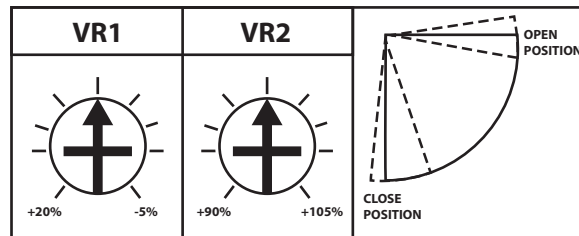


SWITCH & ADJUSTMENT SETTINGS

SW1 Input Signal Selection

	ON	OFF (1)
	Current Input Signal	Voltage Input Signal
SW1	4 ~ 20 mA	2~10 V 0~10 V 1~5 V 0~5 V

VR1 & VR2 Position Adjustment



SW2 & SW3 Operation Selection

		SW2	
		1	2
SW3	1	MODE A Valve is fully closed when the input signal is 4mA, 2V, 1V, or 0V	X
	2	X	MODE B Valve is fully opened when the input signal is 4mA, 2V, 1V, or 0V

VR3 Sensitivity Adjustment

Rotation	Result
Clockwise	 Increase sensitivity
Counter-clockwise	 Decrease sensitivity

Installation Notes

1. The indicator window shows the status of the valve [O=OPEN, S=SHUT]
2. When replacing the actuator cover, ensure that the O-ring is in the groove correctly before fastening to prevent ingress of water and dust.

Travel Stop Adjustment

1. Before adjusting the Open travel stop, turn the Open stop CCW to withdraw the screw about 1/8".
2. Signal the actuator to the open position (CAUTION: LIVE WIRES) and double-check to see if the valve is in the desired maximum open position. If not, adjust open travel stop accordingly, CCW for more open, CW for more closed.
3. Repeat steps 1 & 2 for the Shut travel stop.

Limit Switch Cam Operation

1. Both Open and Closed cams are affixed to the transmission shaft.
2. The shaft turns CCW to open until the Open cam triggers the Open switch.
3. The shaft turns CW to close until the Closed cam triggers the Shut switch.

Limit Switch Cam Adjustment

Use allen key to loosen cam set screw, and allow cam to turn freely. adjust cam to desired setpoint.

OPEN CAM

- Turn CCW to open LESS
- Turn CW to open MORE

Closed Cam

- Turn CCW to Close MORE
- Turn CW to Close LESS

Retighten cam set screw to hold new set position
Stroke actuator to test proper tripping at set position

Manual Operation

Shut off power to actuator before manual operation or maintenance. Do not remove cover unless power is shutoff, and ensure that the cover is securely back on before powering up.

In manual mode, if abnormal friction or resistance is felt while turning the valve, do not exert excessive force to avoid damaging internal parts.

Maintenance

1. Please contact Max-Air in case of malfunction.
2. If fuse replacement is necessary, use fuse specification as listed in the manual.
3. Do not dismount electric actuator & valve unless absolutely necessary, otherwise the limit switches will have to be recalibrated. Follow previous instructions for limit switch adjustment if necessary.
4. Three minutes rest is needed before restart.

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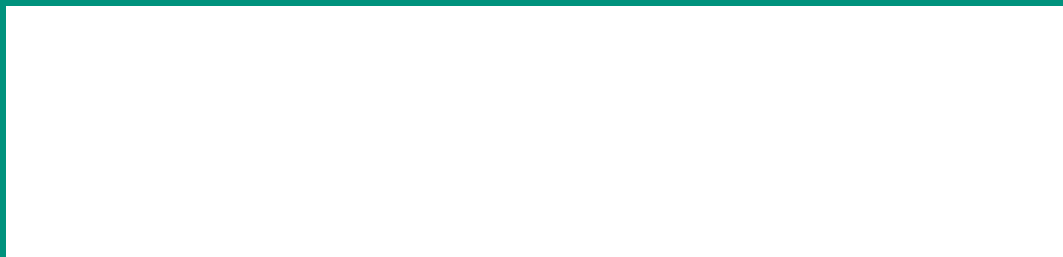
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R: 04/20/20