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Approvals


UL Listed: UL 873 and CSA C22.2 No. 24-93

## Attention

 property.
Any adjustment and applicationspecific adjustment values must be made in accordance with the equipment manufacturers instructions

Please read the instruction before installing or operating. Keep the instruction in a safe place. You find the instruction also at www. dungs.com If these instructions are not heeded, the result may be personal injury or damage to
The installation and maintenance of this product must be done under the supervision of an experienced and trained specialist. Never perform work if gas pressure or power is applied, or in the presence of an open flame.


On completion of installation on the EMP, perform a function test.


This product is intended to be used in combination with a control valve to modulate the flow of gas or air.

Specification
EMP-2 These actuators integrate an AE 504 paralleling relay, which allows an input resistance signal to drive the motor or slave actuating for damper control or valve control applications where it is desirable to move the crank arm in either direction, or to stop it at any point.


Ratings for Actuator
Electrical Ratings
120 VAC (+10 \% / -15 \%); 60 Hz
Electrical Connection
1/2" NPT conduit knockout
Power Consumption
78 VA
Auxilary Switch Ratings
5.8 A Running; 34.8 A locked rotor


Cycling Rate:
EMP is rated for 100 \% duty cycling \& continous cycle. Cycle life rating is 100,000 cycles ( $0-90^{\circ}$ /cycle).

## Ambient Temperature

$-40^{\circ} \mathrm{F}$ to $+136^{\circ} \mathrm{F}\left(-40^{\circ} \mathrm{C}\right.$ to $\left.+58^{\circ} \mathrm{C}\right)$ Note: Surface temperature during normal operation can reach $40^{\circ} \mathrm{F}$ above ambient.

## Enviroment

NEMA Type 1

## Mounting Position

multipoised (best not to have shaft pointing downwards)

Ratings for AE-504
Power
24 VAC, $50 / 60 \mathrm{~Hz}, 5 \mathrm{VA}$, normally supplied from an actuator. Line voltage actuator must have built in transformer. Not suitable for high torque motors.

## Input Signal

100 to 135 ohm or $136-1000$ ohm potentiometer. For use with 100 ohm internal feedback resister.

## Slave Actuating

Up to 3 actuators, each with AE-504. NOTE: For 1000 ohm input applications, the AE 504 still needs AM 332 (100 ohm external slidewire) for 100 ohm feedback.

Impedance
50 ohms @ 0 VAC,
350 ohms @ 12 VAC

| Model No. | Order No. | Travel | Description | Timing (s) | Torque <br> (in.- lbs.) | Weight Lbs. <br> (actual/shipping) |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| EMP-423-2 | 267228 | $90^{\circ}$ | Fixed timing | 12 s | 60 | $9 / 10$ |
| EMP-424-2 | 267204 | $90^{\circ}$ | Adjustabletiming | $12 \mathrm{~s}^{*}$ | 60 | $9 / 10$ |
| EMP-453-2 | 267208 | $90^{\circ}$ | Fixed timing | 40 s | 220 | $9 / 10$ |
| EMP 454-2 | 267212 | $90^{\circ}$ | Adjustabletiming | $40 \mathrm{~s}^{*}$ | 220 | $9 / 10$ |

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## Adjustment

## Limit Switch

The counterclockwise limit switch is factory set to stop the actuator after $90^{\circ}$ of travel. This setting can be changed in the field. To adjust the limit switch, removing the top metal cover, and locate the small opening next to the terminal block and positioned between terminals 3 and 4. Insert a flathead screwdriver through this opening and turn the cam clockwise as seen from the shaft end of the actuator to increase the degree of actuator rotation up to a maximum of $320^{\circ}$. Each click of the cam represents about $3^{\circ}$ change in actuator rotation. Attempting to adjust for more than $320^{\circ}$ rotation will result in both limit switches opening in the clockwise end of the actuator rotation, and the unit will no longer operate. The clockwise limit switch is fixed and cannot be field adjusted.
Do not adjust the limit switch beyond $90^{\circ}$ unless the standard slidewire has been replaced with a $180^{\circ}$ slidewire.

## Auxiliary Switch

An adjustable cam operated SPDT switch is built into each actuator. The switch is factory set to operate at the clockwise end of the actuator rotation, making terminal 1 to terminal 6 . As the cam turns counterclockwise from this point, the cam follower drops, breaking 1 to 6 and making 1 to 5 . To adjust
the auxiliary switch, removing the top metal cover, and locate the small opening next to the terminal block and positioned next to terminal 1. Insert a flathead screwdriver through this opening and turning the disc clockwise as seen from shaft end of the actuator causes the switch to operate nearer the counterclockwise end of actuator rotation. Each click of the cam represents about $3^{\circ}$ change in operating point. NOTE: After turning the disc, remove back plate and reposition the wiper; it will need to be repositioned back to zero.

Speed Adjustment (EMP-424-1 \& EMP-454-1 only) Actuator timing is varied by a slotted adjustment screw on the lower left side of the shaft (Models 424 \& 454 only) housing. Turning the screw clockwise decreases the speed. If the adjustment screw is turned too far clockwise, the motor will stall but will not be damaged. If stalling occurs, turn the screw counterclockwise until the motor resumes operation. Total adjustment is normally $3-1 / 2$ turns.

Accessories \& Replacement


Wiring Schematic for Parallel Operation


As shown, two actuators are wired for parallel operation. Wiring to three for parallel operation is possible.

## Testing

Power the actuator with 120 VAC. Disconnect the field lead from terminal " $X$ ". Jumper actuator terminal " $X$ " to terminal 2; the actuator shaft should turn clockwise. When the connection between terminals " $X$ " and 2 is broken, the shaft should remain stationary.

We reserve the right to make modifications in the course of technical development.

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[^0]:    * up to ten times the set timing

