

## Spring Return Commercial Actuators - DS-70 Series



| Technical Specifications - DS-70 Series Actuator |                          |  |  |   |   |
|--|--------------------------|--|--|---|---|
| Type   | Actuator Models          | DS24-70-(A)  | DS24-70-T-(A)  | DMS24-70-(A)  | DS120-70-(A)  |
|  |                          |  | Spring Return On/Off with optional Auxillary Switches (-A)                 | Spring Return On/Off & Floating with optional Auxillary Switches (-A)   | Spring Return Modulating with optional Auxillary Switches (-A)  |
|  | Torque                   | 70 lb-in. (8 Nm)   |  |   |   |
| Electrical                                       | Operating Voltage        | 24 VAC (18 to 30 V) at 50/60 Hz<br>24 VDC (21.6 to 28.8 V)   | 24 VAC (19.2 to 28.8 V) at 50/60 Hz<br>24 VDC (21.6 to 28.8 V)             |   | AC 120 V (102 to 132 V) at 60 Hz  |
|  | Power Consumption        | VAC - 6.1 VA Running, 1.2 VA Holding<br>VDC - 3.5 W Running, 0.5 W Holding   | VAC - 7.9 VA Running, 5.5 VA Holding<br>VDC - 3.5 W Running, 1.9 W Holding |   | 0.05 A Running, 0.03 A Holding  |
|  | Input Signal             | N/A  | N/A  | 0(2) to 10 VDC<br>0(4) to 20 mA (with 500-ohm Resistor)   | N/A   |
|  | Min. Transformer Size    | 7 VA per Actuator  | 8 VA per Actuator  |   | N/A   |
|  | Control Input Impedance  | N/A  | 3000 Ohms  | 100k Ohms, Current Input: 500 Ohms with Field Furnished 500 Ohm Resistor                                      | N/A   |
|  | Feedback Signal          | N/A  |  | DC 0 (2) to 10 V for Desired Rotation Range up to 95°. Corresponds to Rotation Limits, 0.5 mA at 10 V Maximum | N/A   |
|  | Auxillary Switch Rating  | (-A) Models) Two Single-Pole, Double-Throw (SPDT), Double-Insulated Switches with Gold over Silver Contacts: AC 24 V, 50 VA Pilot Duty   |  |   | (-A) Models) Two Single-Pole, Double-Throw (SPDT), Double-Insulated Switches with Gold over Silver Contacts: AC 120 V, 5.8 A Resistive, 1/4 hp, 275 VA Pilot Duty |
|  | Equipment Rating         | Class 2 or Safety Extra-Low Voltage (SELV)   |  |   | N/A   |
|  | Electrical Connection    | 48 in. UL 758 Type AWM Halogen-Free Cable w/ 18 AWG (0.85 mm <sup>2</sup> ) Conductors & 0.25 in. (6 mm) Ferrule Ends  |  |   |   |
|  | Conduit Connections      | Integral Connectors for 3/8 in. (10 mm) Flexible Metal Conduit   |  |   |   |
| Operation  | Manual Override          | Manual Override Crank  |  |   |   |
|  | Spring Return            | Direction is Selectable with Mounting Position of Actuator:<br>Actuator Side A is away from damper or valve: CCW Spring Return<br>Actuator Side B is away from damper or valve: CW Spring Return |  |   |   |
|  | Rotation Range           | Maximum Full Stroke: 95° - (Adjustable Stop: 35 to 95° Maximum Position (Modulating Only))   |  |   |   |
|  | Electric Stall Detection | Protects from overload at all angles of rotation   |  |   |   |

## Spring Return Commercial Actuators - DS-70 Series Continued

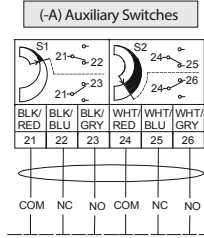


| Technical Specifications - DS-70 Series Actuator - Continued |                                     |  |  |   |   |
|--|-------------------------------------|--|--|---|---|
| Type   | Actuator Models                     | DS24-70-(A)  | DS24-70-T-(A)  | DMS24-70-(A)  | DS120-70-(A)  |
|  | Operation                           |  | Spring Return On/Off with optional Auxillary Switches (-A)   | Spring Return On/Off & Floating with optional Auxillary Switches (-A) | Spring Return Modulating with optional Auxillary Switches (-A)  |
| Runtime for 90° of Rotation                                  |                                     | Power On (Running) 55 to 71 Seconds for 0 to 70 lb-in (8 N-m) Load, at All Operating Conditions<br><br>60 Seconds Nominal at Full Rated Load (0.25 rpm)<br><br>Power Off (Spring Returning) 13 to 26 Seconds for 0 to 70 lb-in (8 N-m) Load, at Room Temperature<br><br>21 Seconds Nominal at Full Rated Load, 39 Seconds Maximum with 70 lb-in (8 N-m) Load at -4°F (-20°C)<br><br>108 Seconds Maximum with 53 lb-in (6 N-m) Load at -40°F (-40°C)  | Power On (Running) 150 Seconds Constant for 0 to 70 lb-in (8 N-m) Load, At All Operating Conditions<br><br>Power Off (Spring Running) 17 to 25 Seconds for 0 to 70 lb-in (8 N-m) Load, at Room Temperature<br><br>22 Seconds Nominal at Full Rated Load, 94 Seconds Maximum with 70 lb-in (8 N-m) Load, at -40°F (-40°C) |   | Power On (Running) 55 to 71 Seconds for 0 to 70 lb-in (8 N-m) Load, at All Operating Conditions<br><br>60 Seconds Nominal at Full Rated Load (0.25 rpm)<br><br>Power Off (Spring Returning) 13 to 26 Seconds for 0 to 70 lb-in (8 N-m) Load, at Room Temperature<br><br>21 Seconds Nominal at Full Rated Load, 39 Seconds Maximum with 70 lb-in (8 N-m) Load at -4°F (-20°C)<br><br>108 Seconds Maximum with 53 lb-in (6 N-m) Load at -40°F (-40°C) |
| Cycle Life   |                                     | 60,000 Full Stroke Cycles with 70 lb-in. (8 N-m) Load, 1,500,000 Repositions with 70 lb-in. (8 N-m) Load   |  |   |   |
| Mechanical Connections                                       |                                     | <b>Round Shafts</b> - 5/16 to 5/8 in. (8 to 16 mm)<br><b>Square Shafts</b> - 1/4 to 1/2 in. (6 to 12 mm)   |  |   |   |
| Enclosure  |                                     | NEMA 2 (IP54) for all mounting orientations  |  |   | N/A   |
| Environmental  | Ambient Conditions (Non-Condensing) | <b>Operating</b> — -40° to 140°F (-40° to 60°C); 90% RH Maximum, Non-condensing<br><b>Storage</b> — -40° to 185°F (-40° to 85°C); 95% RH Maximum, Non-condensing   |  |   |   |
|  | Audible Noise Rating                | <b>Running</b> — < 47 dBA at 70 lb-in (8 N-m) Load, at a Distance of 39-13/32 in. (1 m)<br><br><b>Holding</b> — < 20 dBA at a Distance of 39-13/32 in. (1 m)<br><br><b>Returning</b> — <52 dBA at 70 lb-in. (8 N-m) Load - (All at a Distance of 39-13/32 in. (1 m))   | <b>Running</b> — 35 dBA at 70 lb-in (8 N-m) Load, at a Distance of 39-13/32 in. (1 m)<br><br><b>Holding</b> — < 20 dBA at a Distance of 39-13/32 in. (1 m)<br><br><b>Returning</b> — <52 dBA at 70 lb-in. (8 N-m) Load - (All at a Distance of 39-13/32 in. (1 m))   |   | <b>Running</b> — < 47 dBA at 70 lb-in (8 N-m) Load, at a Distance of 39-13/32 in. (1 m)<br><br><b>Holding</b> — < 20 dBA at a Distance of 39-13/32 in. (1 m)<br><br><b>Returning</b> — <52 dBA at 70 lb-in. (8 N-m) Load - (All at a Distance of 39-13/32 in. (1 m))  |
|  | Dimensions                          | 6.33" (L) x 3.90" (W) x 2.26" (H)  |  |   |   |
|  | Weight                              | 3.5 lb. (3.9 lb w/ Aux. Switches)  |  |   | 4.2 lb.   |
| Conditions   | Agency Certifications               | UL Listed, CCN XAPX, File E27734; to UL 60730-1A: 2003-08, Ed. 3.1, Automatic Electrical Controls for Household and Similar Use; and UL 60730-2-14: Ed. 1, Part 2, Particular Requirements for Electric Actuators.<br><br>UL Listed, CCN XAPX7, File E27734; to UL 60730-1:02-CAN/CSA: July 2002, 3rd Ed., Automatic Electrical Controls for Household and Similar Use; and CSA C22.2 No. 24-93 Temperature Indicating and Regulating Equipment<br><br>CE Mark - This product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC.<br><br>RCM Mark, Australia/NZ Emissions Compliant. |  |   |   |
|  | Warranty                            | 5 Years limited from time of shipment.   |  |   |   |

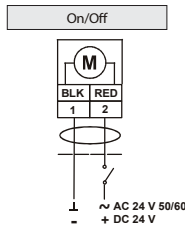
# Spring Return Commercial Actuators - DS-70 Series Wiring



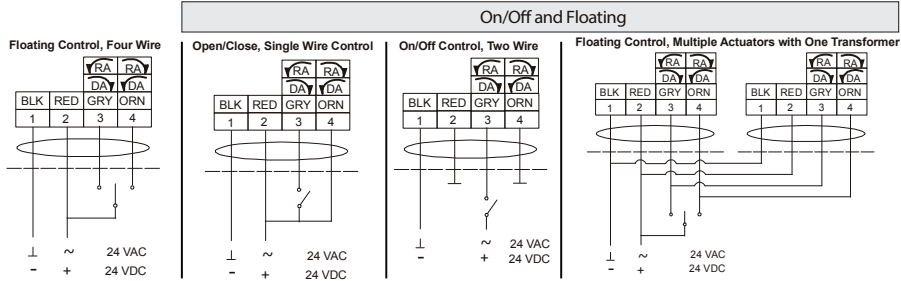
## (A) AUXILIARY SWITCH WIRING



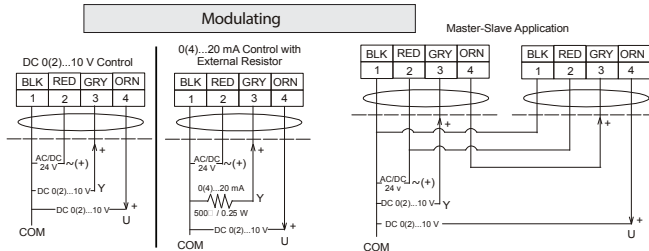
## DS24-70-(A) STANDARD CABLE



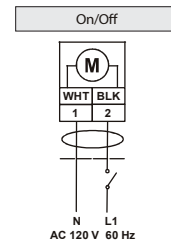
## DS24-70-T(A) STANDARD CABLE



## DMS24-70-(A) STANDARD CABLE



## DS120-70-(A) STANDARD CABLE



**IMPORTANT:** Do not install multiple DMS series actuators connected to the same mechanical load. Master-slave application of DMS or VAMS series actuators requires that each actuator be connected to independent loads.

**Warning -** These actuators are designed for use only in conjunction with operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add safety devices or alarm systems that protect against, and/or warn of, control failure.

To avoid excessive wear or drive time on the motor, use a controller and/or software that provides a time-out function to remove the signal at the end of rotation (stall).

**Disclaimer -** The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the nearest Bray office. Bray controls shall not be liable for damages resulting from misapplication or misuse of its products.