# © Bray commercial Damper Actuators <br> Non-Spring Return On/Off • Floating • Modulating 

## Application

Bray's wide variety of damper electric actuator choices increases flexibility when choosing peripheral products for Building Automation Systems.

We offer many different torque outputs and optional features to ensure you have the best actuator for the application. Jumper or DIP switch selectable features allow versatility in the field. The actuators are maintenancefree, which means fewer call backs after installation and start-up. In addition, our actuators are manufactured to ISO 9001 and Six Sigma Standards making them the highest quality on the market today.

All of our damper electric actuators are linkage free when applied to dampers ranging for small VAV box dampers all the way up to large outdoor air and return air dampers.

## Options include:

- Non spring return operation
- Auxiliary switches (optional)
- Weather Shields for outdoor use
- 24 V and line voltage models
- On/Off, Floating, or Modulating operation
- Analog feedback on all modulating models
- UL, CSA and CE listings
- 5-year warranty on selected models
- Flying lead or terminal strip electrical connections


| Technical Specifications - D24-35 Series Actuator |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\stackrel{\otimes}{\stackrel{0}{2}}$ | Actuator Models | D24-35-TP | D24-35-T-TS | DM24-35 | DM24-35-T-TS |
|  |  | Non-Spring Return - Floating \& On/Off (relay required) |  | Non-Spring Return - Modulating |  |
|  | Torque | $35 \mathrm{lb}-\mathrm{in} .(4 \mathrm{Nm}$ ) |  |  |  |
|  | Operating Voltage | $24 \mathrm{VAC}+25 \% /-20 \%$ at $50 / 60 \mathrm{~Hz}$ |  |  |  |
|  | Power Consumption | 2.1 VA |  | 2.9 VA |  |
|  | Input Signal | $24 \mathrm{VAC}+25 \% /-20 \%$ at 50/60 Hz |  | $O(2)$ to 10 VDC or $\mathrm{O}(4)$ to 20 mA with field-furnished 500 ohm resistor |  |
|  | Input Impedance | N/A |  | 200k Ohms |  |
|  | Equipment Rating | Class 2 or Safety Extra-Low Voltage (SELV) |  |  |  |
|  | Feedback Signal | N/A |  | 0 to 10 VDC or 2 to 10 VDC for $90^{\circ}$ ( 10 VDC at 1 mA ), Corresponds to input signal span selection |  |
|  | Electrical Connection | 36 in. ( 0.9 m) UL 444 Type CMP Plenum Rated cable with 19 AWG (0.75 $\mathrm{mm}^{2}$ ) conductors and $1 / 4$ in. ( 6 mm ) ferrule ends | Exposed Terminal Block M3 Terminal Screws | 36 in. ( 0.9 m) UL 444 Type CMP Plenum Rated cable with 19 AWG (0.75 $\mathrm{mm}^{2}$ ) conductors and $1 / 4$ in. ( 6 mm ) ferrule ends | Exposed Terminal Block M3 Terminal Screws |
|  | Manual Override | External Push Button |  |  |  |
| $\stackrel{\text { co }}{0}$ | Runtime for $90^{\circ}$ of Rotation | 60 Seconds at $60 \mathrm{~Hz} / 72$ Seconds at 50 Hz for $90^{\circ}$ rotation |  |  |  |
| $\frac{0}{0}$ | Rotation Range | $93^{\circ} \pm 3^{\circ}$, CW or CCW |  |  |  |
| $\stackrel{\circ}{0}$ | Cycle Life | 100,000 Full Stroke Cycles; 2,500,000 repositions at rated running torque |  |  |  |
|  | Mechanical Connections | Round Shafts - Up to $1 / 2 \mathrm{in}$. ( 13 mm ) <br> Square Shafts - Up to $3 / 8$ in. ( 10 mm ) |  |  |  |
|  | Enclosure | NEMA 2 (IP42) | NEMA 2 (IP40) | NEMA 2 (IP42) | NEMA 2 (IP4O) |
| ¢ <br> $\stackrel{0}{ \pm}$ <br> 1 | Ambient Conditions (Non-Condensing) | Operating --4 to $140^{\circ} \mathrm{F}\left(-20\right.$ to $60^{\circ} \mathrm{C}$ ); $90 \%$ RH Max. <br> Storage --20 to $150^{\circ} \mathrm{F}\left(-29\right.$ to $66^{\circ} \mathrm{C}$ ); $90 \%$ RH Max. |  |  |  |
| 은 | Audible Noise Rating | 35 dBA Nominal at 39-13/32 in. (1 meter) |  |  |  |
| 京 | Dimensions | $5.16 \times 2.81 \times 2.06 \mathrm{in}$. $(131 \times 71 \times 52 \mathrm{~mm})$ |  |  |  |
|  | Weight | 1.0 lb ( 0.5 kg ) |  |  |  |
| $n$ <br> 0 <br> 0 <br>  <br>  <br> 0 <br> 0 | Agency Certifications | United States/Canada - United States UL Listed, File E27734, CCN XAPX (United States) and XAPX7 (Canada) Actuator Housing is Plenum Rated per CSA C22.2 No. 236/UL 1995, Heating and Cooling Equipment |  |  |  |
|  |  | Europe - CE Mark - Product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC and the Low Voltage Directive 2006/95/EC |  |  |  |
|  |  | Australia/New Zealand - C-Tick Mark Australia/NZ Emissions Compliant |  |  |  |
|  | Warranty | 5 Years limited from time of shipment. |  |  |  |


| D24-35-TP |
| :---: |
| PLENUM CABLE |


| D24-35-T-TS |
| :---: |
| TERMINAL BLOCK |



| Floating Control |  |
| :---: | :---: | :---: |
| $\sqrt{\sim}$ $\perp$ $\sim \boldsymbol{r}$ <br> 3 1 2 |  |.



D-35 Actuators are factory set for Direct Acting (DA) mode and for a 0 to 10 VDC input control signal.

| DC 0(2)...10 V Control |  |  |  |
| :---: | :---: | :---: | :---: |
| AC 24 V |  | 0(2)...10 V |  |
| BLK | RED | GRY | ORN |
| 1 | 2 | 3 | 4 |
| $\longrightarrow$ |  |  |  |
| $\left.\begin{array}{c} \mathrm{AC} \\ -24 \mathrm{~V} \\ -\mathrm{DC} 0(2) \ldots 10 \mathrm{~V} \end{array}\right]_{\mathrm{Y}}{ }_{\sim}^{+}$ |  |  |  |
| - DC 0(2)...10 V |  |  |  |

## DM24-35-T-TS <br> TERMINAL BLOCK



D-35 Actuators are factory set for Direct Acting (DA) mode and for a 0 to 10 VDC input control signal.


| Technical Specifications - DC24-(44,88) Series Actuator |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\stackrel{\circ}{\circ} \stackrel{0}{2}$ | Actuator Models | DC24-(44,88)-TP | DC24-(44,88)-TAP | DCM24-(44,88)-P | DCM24-(44,88)-AP |
|  |  | Non-Spring Return Floating - Plenum Cable | Non-Spring Return Floating - Plenum Cable Auxillary Switches (-A) | Non-Spring Return <br> Modulating - Plenum Cable | Non-Spring Return <br> Modulating - Plenum Cable Auxillary Switches (-A) |
|  | Torque | (DC(M)24-44), $44 \mathrm{lb}-\mathrm{in} .(5 \mathrm{Nm})$ (DC(M)24-88), $88 \mathrm{lb}-\mathrm{in} .(10 \mathrm{Nm})$ |  |  |  |
|  | Operating Voltage | 24 VAC +20\%, -15\% at 50/60 Hz |  |  |  |
|  | Power Consumption | $2.3 \mathrm{VA}, 1 \mathrm{~W}$ |  | 3.3 VA, 2W |  |
|  | Control Signal | 0 to 10 VDC |  |  |  |
|  | Input Signal | Floating <br> 24 VAC at $50 / 60 \mathrm{~Hz}$ or 24 VDC |  | N/A |  |
|  | Input Signal Adjustments | Factory Setting - 0 to $10 \mathrm{VDC}, 0$ to $20 \mathrm{~mA}, \mathrm{CW}$ rotationwith signal increase |  | N/A |  |
|  |  | Jumper Selectable - 0 (2) to 10 VDC, 0 (4) to 20 VDC, or 0 (4) to 20 mA . Action is jumper selectable Direct (CW) or Reverse (CCW) with signal increase. |  | N/A |  |
|  | Input Impedance | N/A |  | 100k Ohms |  |
| $\frac{.0}{y}$ | Feedback Signal | N/A |  | 0 to 10 VDC (Maximum Output Current DC 1mA) |  |
| $\begin{aligned} & \stackrel{\rightharpoonup}{\mathbf{0}} \\ & \frac{\mathrm{O}}{\mathrm{I}} \end{aligned}$ | Auxillary Switch Rating | N/A | 4A Resistive, 2A Inductive | N/A | 4A Resistive, 2A Inductive |
|  | Switch Range (Switch A) | N/A | 0 to $90^{\circ}$ with $5^{\circ}$ Intervals (Recommended Range Usage 0 to $45^{\circ}$ ) Factory Setting $5^{\circ}$ | N/A | 0 to $90^{\circ}$ with $5^{\circ}$ Intervals (Recommended Range Usage 0 to $45^{\circ}$ ) Factory Setting $5^{\circ}$ |
|  | Switch Range (Switch B) | N/A | 0 to $90^{\circ}$ with $5^{\circ}$ Intervals (Recommended Rang Usage 45 to $90^{\circ}$ ) Factory Setting $85^{\circ}$ | N/A | 0 to $90^{\circ}$ with $5^{\circ}$ Intervals (Recommended Rang Usage 45 to $90^{\circ}$ ) Factory Setting $85^{\circ}$ |
|  | Switching Hysteresis | N/A | $2^{\circ}$ | N/A | $2^{\circ}$ |
|  | Equipment Rating | 24 VAC - Class 2 per UL/CSA |  |  |  |
|  | Electrical Connection | 3 ft . (0.9 m) Pre-cabled - AWG 18 - Plenum Rated Cable |  |  |  |
| $\begin{aligned} & \text { ㄷ } \\ & \frac{0}{U} \\ & \frac{0}{0} \\ & \frac{0}{0} \end{aligned}$ | Manual Override | External Push Button |  |  |  |
|  | Runtime for $90^{\circ}$ of Rotation | (DC(M)24-44), 90 sec . at 60 Hz ( 108 sec . at 50 Hz ) (DC(M)24-88), 125 sec . at 60 Hz ( 150 sec . at 50 Hz ) |  |  |  |
|  | Rotation Range | Nominal Angle of Rotation $90^{\circ}$, mechanically limited to $95^{\circ}$ |  |  |  |
|  | Cycle Life | 60,000 cycles at rated load |  | 50,000 cycles at rated load |  |
|  | Mechanical Connections | Round Shafts $-3 / 8$ to $5 / 8 \mathrm{in}$. ( 8 to 16 mm ) diameter Square Shafts $-1 / 4$ to $1 / 2$ in. ( 6 to 12.8 mm ) Minimum Shaft Length - 1-5/32 (30 mm) |  |  |  |
|  | Enclosure | NEMA 2, IP54 according to EN60529 |  |  |  |
|  | Ambient Conditions (Non-Condensing) | Operating --25 to $130^{\circ} \mathrm{F}\left(-32\right.$ to $\left.55^{\circ} \mathrm{C}\right)$; 0 to $95 \% \mathrm{RH}$, non-condensing Storage -40 to $158^{\circ} \mathrm{F}\left(-40\right.$ to $70^{\circ} \mathrm{C}$ ); 0 to $95 \%$ RH, non-condensing |  |  |  |
|  | Audible Noise Rating | 35 dBA at 1 m |  |  |  |
|  | Dimensions | (L) $5.4 \times(\mathrm{W}) 2.8 \times(\mathrm{H}) 2.4 \mathrm{in} .(137 \times 68 \times 60 \mathrm{~mm})$ |  |  |  |
|  | Weight | $1.06 \mathrm{lb}(.48 \mathrm{~kg})$ |  |  |  |
| $n$0000000 | Agency Certifications | UL listed to UL873-cUL certified to Canadian Standard C22.2 No. 24-93, CE In accordance with the directive set forth by the European Union for Electromagnetic Compatibility (EMC) 2004/108/EC - Emissions Standards EN61000-6-3 - Immunity Standards EN61000-6-2 |  |  |  |
|  | Warranty | 5 Years limited from time of shipment. |  |  |  |


| KEY |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Cable |  |  | Function |  |
| No. | Code | Color |  |  |
| 1 | G | Red (RD) | AC 24 V Supply (SP) |  |
| 2 | GO | Black (BK) | Neutral (SN) |  |
| 6 | Y1 | Violet (VT) | Control Signal Clockwise AC O V |  |
| 7 | Y2 | Orange (OG) | Control Signal AC 0 V Counterclockwise |  |
| 8 | Y | Gray (GY) | Control signal DC 0..10 V, 0..35 V |  |
| 9 | U | Pink (PK) | Position indication DC 0...10 V |  |


| Auxillary Switch - Factory Installed |  |  |  |
| :---: | :---: | :---: | :---: |
| S1 | Q11 | Gray/Red (GY RD) | Switch A Input |
| S2 | Q12 | Gray/Blue (GY BU) | Switch A - N.C. |
| S3 | Q14 | Gray/Pink (GY PK) | Switch A - N.O. |
| S4 | Q21 | Black/Red (BK RD) | Switch B Input |
| S5 | Q22 | Black/Blue (BK BU) | Switch B - N.C. |
| S6 | Q24 | Black/Pink (BK PK) | Switch B - N.O. |



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.

Mixed switch operation is not permitted. To the switching outputs of both auxiliary switches (A and B), only apply: UL/CSA: Class 2 voltage. CE: Separated Extra-Low Voltage (SELV) or Protective Extra Low Voltage (PELV), according to HD384-4-41.

| $\stackrel{\otimes}{\gtrless}$ | Actuator Models | D24-70-(A) | D24-140-(A) | D24-210-(A) | D24-280-(A) |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Non-Spring Return - On/Off or Floating with optional Auxillary Switches (-A) |  |  |  |
|  | Torque | $70 \mathrm{lb}-\mathrm{in} .(8 \mathrm{Nm})$ | $140 \mathrm{lb}-\mathrm{in} .(16 \mathrm{Nm}$ ) | 210 lb -in. (24 Nm) | $280 \mathrm{lb}-\mathrm{in} .(32 \mathrm{Nm}$ ) |
|  | Operating Voltage | $24 \mathrm{VAC}(20$ to 30 V ) at 50/60 Hz or VDC $24 \mathrm{~V} \pm 10 \%$; |  | $24 \mathrm{VAC}(20$ to 30 V ) at 50/60 Hz or VDC $24 \mathrm{~V} \pm 10 \%$; |  |
|  | Power Consumption | 6.5 VA supply minimum |  | 7.5 VA supply minimum |  |
|  | Input Signal | $24 \mathrm{VAC}+25 \% /-20 \%$ at $50 / 60 \mathrm{~Hz}$, or DC 24 V |  |  |  |
| 或 | Input Signal Adjustments | Factory Setting, Terminals 1 and 2, CW rotation; Terminals 1 and 3, CCW rotation |  |  |  |
| - | Auxillary Switch Rating | Auxillary Switches (-A) - Two Single-Pole, Double-Throw (SPDT) switches rated at 24 VAC 1.5 A inductive, 3.0 A resistive, 35 VA maximum per switch, Class 2 |  |  |  |
|  | Equipment Rating | Class 2 or Safety Extra-Low Voltage (SELV) |  |  |  |
|  | Electrical Connection | Screw terminals for 22 to 14 AWG; maximum of two 18,20 , or 22 AWG per terminal |  | 1/4 in. spade terminals with pluggable 3-terminal blocks |  |
|  | Manual Override | External Push Button |  |  |  |
|  | Time Out Feature | Electronic stall detection ensures higher reliability by deactivating the actuator motor when a stall condition is detected |  |  |  |
|  | Runtime for $90^{\circ}$ of Rotation | 30 seconds at 50\% rated load, 25 to 50 seconds for 0 to 70 lb -in ( 0 to 8 $\mathrm{N} \cdot \mathrm{m}$ ) | 80 seconds at $50 \%$ rated load, 70 to 115 seconds for 0 to 140 lb -in ( 0 to $16 \mathrm{~N} \cdot \mathrm{~m}$ ) | 130 seconds at $50 \%$ rated load, 115 to 175 seconds for 0 to $210 \mathrm{lb} \cdot \mathrm{in}$ ( 0 to $24 \mathrm{~N} \cdot \mathrm{~m}$ ) | 140 seconds at $50 \%$ rated load, 115 to 205 seconds for 0 to $280 \mathrm{lb} \cdot \mathrm{in}$ ( 0 to $32 \mathrm{~N} \cdot \mathrm{~m}$ ) |
|  | Rotation Range | 0 to $90^{\circ}$ in 5-degree increments, mechanically limited to $93^{\circ}$ Rotation range is adjusted by repositioning the output hub |  |  |  |
|  | Cycle Life | 60,000 cycles at rated load |  |  | 30,000 cycles at rated load |
|  | Mechanical Connections | Round Shafts $-3 / 8$ to $3 / 4 \mathrm{in}$. (10 to 20 mm ) diameter Square Shafts $-3 / 8$ to $5 / 8 \mathrm{in}$. (10 to 16 mm ), 1 in . ( 25.4 mm ) diameter jackshaft with M9000-154 coupler |  |  |  |
|  | Enclosure | NEMA 2 (IP42) |  |  |  |
|  | Ambient Conditions (Non-Condensing) | Operating --4 to $122^{\circ} \mathrm{F}$ ( -20 to $50^{\circ} \mathrm{C}$ ); $95 \%$ RH Max. <br> Storage --20 to $186^{\circ} \mathrm{F}$ ( -29 to $86^{\circ} \mathrm{C}$ ); $95 \%$ RH Max. |  |  |  |
|  | Audible Noise Rating | 45 dBA at 39-13/32 in. (1 meter) |  |  |  |
|  | Dimensions | $7.09 \times 3.94 \times 2.54 \mathrm{in}$. $(180 \times 100 \times 64.5 \mathrm{~mm})$ |  |  |  |
|  | Weight | $2.9 \mathrm{lb}(1.3 \mathrm{~kg})$ |  |  |  |
| $n$000000 | Agency Certifications | United States/Canada - UL 873 Listed, File E27734, CCN XAPX |  |  |  |
|  |  | Canada - CSA C22.2 No. 139 Certified, File LR85083, Class 322102 |  |  |  |
|  |  | Europe - CE Mark -Declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC. |  |  |  |
|  |  | Australia/New Zealand - C-Tick Mark Australia/NZ Emissions Compliant |  |  |  |
|  | Warranty | 5 Years limited from time of shipment. |  |  |  |



[^0]| $\begin{aligned} & \circ \\ & \stackrel{\circ}{2} \\ & \hline \end{aligned}$ | Actuator Models | DM24-70-(A) | DM24-140-(A) | DM24-210-(A) | DM24-280-(A) |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Non-Spring Return - Modulating with optional Auxillary Switches (-A) |  |  |  |
|  | Torque | $70 \mathrm{lb}-\mathrm{in} .(8 \mathrm{Nm})$ | $140 \mathrm{lb}-\mathrm{in}$. ( 16 Nm ) | $210 \mathrm{lb}-\mathrm{in} .(24 \mathrm{Nm})$ | $280 \mathrm{lb}-\mathrm{in} .(32 \mathrm{Nm})$ |
|  | Operating Voltage | $24 \mathrm{VAC}(20$ to 30 V ) at $50 / 60 \mathrm{~Hz}$ or VDC $24 \mathrm{~V} \pm 10 \%$; |  | $24 \mathrm{VAC}(20$ to 30 V ) at $50 / 60 \mathrm{~Hz}$ or VDC $24 \mathrm{~V} \pm 10 \%$; |  |
|  | Power Consumption | 6.5 VA supply minimum |  | 7.5 VA supply minimum |  |
|  | Input Signal | DC O (2) to $10 \mathrm{~V}, \mathrm{DCO}$ (4) to 20 V , or DC O (4) to 20 mA |  |  |  |
|  | Input Signal Adjustments | Factory Setting - 0 to $10 \mathrm{VDC}, 0$ to $20 \mathrm{~mA}, \mathrm{CW}$ rotation with signal increase |  |  |  |
|  |  | Jumper Selectable - O (2) to 10 VDC, 0 (4) to 20 VDC, or 0 (4) to 20 mA Action is jumper selectable Direct (CW) or Reverse (CCW) with signal increase. |  |  |  |
|  | Input Impedance | Voltage Input - 205,000 ohms for 0 (2) to 10 V and 410,000 ohms for 0 (4) to 20 V Current Input - 500 Ohms |  |  |  |
|  | Feedback Signal | 0 to 10 VDC or 2 to 10 VDC for $90^{\circ}$ ( 10 VDC at 1 mA ) Corresponds to input signal span selection. |  |  |  |
|  | Auxillary Switch Rating | Auxillary Switches (-A) - Two Single-Pole, Double-Throw (SPDT) switches rated at 24 VAC 1.5 A inductive, 3.0 A resistive, 35 VA maximum per switch, Class 2 |  |  |  |
|  | Equipment Rating | Class 2 or Safety Extra-Low Voltage (SELV) |  |  |  |
|  | Electrical Connection | Screw terminals for 22 to 14 AWG; maximum of two 18,20 , or 22 AWG per terminal |  | $1 / 4 \mathrm{in}$. spade terminals with pluggable 3-terminal blocks |  |
| $\begin{aligned} & \text { ᄃ } \\ & \frac{0}{\#} \\ & \frac{0}{0} \\ & \frac{0}{O} \\ & \hline \end{aligned}$ | Manual Override | External Push Button |  |  |  |
|  | Time Out Feature | Electronic stall detection ensures higher reliability by deactivating the actuator motor when a stall condition is detected |  |  |  |
|  | Runtime for $90^{\circ}$ of Rotation | 30 seconds at $50 \%$ rated load, 25 to 50 seconds for 0 to 70 lb -in ( 0 to 8 $\mathrm{N} \cdot \mathrm{m}$ ) | 80 seconds at $50 \%$ rated load, 70 to 115 seconds for 0 to 140 lb -in ( 0 to $16 \mathrm{~N} \cdot \mathrm{~m}$ ) | 130 seconds at $50 \%$ rated load, 115 to 175 seconds for 0 to $210 \mathrm{lb} \cdot$ in ( 0 to 24 N.m) | 140 seconds at $50 \%$ rated load, 115 to 205 seconds for 0 to 280 lb •in ( 0 to $32 \mathrm{~N} \cdot \mathrm{~m}$ ) |
|  | Rotation Range | 0 to $90^{\circ}$ in 5-degree increments, mechanically limited to $93^{\circ}$ Rotation range is adjusted by repositioning the output hub |  |  |  |
|  | Cycle Life | 60,000 cycles at rated load |  |  | 30,000 cycles at rated load |
|  | Mechanical Connections | Round Shafts $-3 / 8$ to $3 / 4 \mathrm{in}$. ( 10 to 20 mm ) diameter Square Shafts $-3 / 8$ to $5 / 8 \mathrm{in}$. ( 10 to 16 mm ), 1 in . ( 25.4 mm ) diameter jackshaft with M9000-154 coupler |  |  |  |
|  | Enclosure | NEMA 2 (IP42) |  |  |  |
|  | Ambient Conditions (Non-Condensing) | Operating --4 to $122^{\circ} \mathrm{F}\left(-20\right.$ to $50^{\circ} \mathrm{C}$ ); $95 \%$ RH Max. <br> Storage --20 to $186^{\circ} \mathrm{F}$ ( -29 to $86^{\circ} \mathrm{C}$ ); $95 \%$ RH Max. |  |  |  |
|  | Audible Noise Rating | 45 dBA at 39-13/32 in. (1 meter) |  |  |  |
|  | Dimensions | $7.09 \times 3.94 \times 2.54 \mathrm{in}$. $(180 \times 100 \times 64.5 \mathrm{~mm})$ |  |  |  |
|  | Weight | $2.9 \mathrm{lb}(1.3 \mathrm{~kg})$ |  |  |  |
|  | Agency Certifications | United States/Canada - UL 873 Listed, File E27734, CCN XAPX |  |  |  |
|  |  | Canada - CSA C22.2 No. 139 Certified, File LR85083, Class 322102 |  |  |  |
|  |  | Europe - CE Mark -Declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC. |  |  |  |
|  | Warranty | 5 Years limited from time of shipment. |  |  |  |

$\square$

$1=$ Common
2= Power
3= Not Used $4=$ Current Input $5=$ Voltage Input 6= Feedback Output

DM24-70, 140, 210, 280
TERMINAL BLOCK


Auxillary Switches

DM24-(70,140)-A
(Shown Factory Set)

DM24-(210,280)-A


C1 NC1 NO1 C2 NO2 NC2 (Shown Factory Set)

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 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.

## Non-Spring Return Damper Actuators - DC-310 Series

| Technical Specifications - DC24-310 Series Actuator |  |  |  |
| :---: | :---: | :---: | :---: |
| $\begin{aligned} & \circ \\ & \stackrel{\circ}{2} \\ & \hline \end{aligned}$ |  | DC24-310-T(-A) | DCM24-310-T(-A) |
|  | Actuator Models | Non-Spring Return - Floating, Time Out Features with optional Auxillary Switches (-A) | Non-Spring Return - Modulating with optional Auxillary Switches (-A) |
|  | Torque | $310 \mathrm{lb}-\mathrm{in} .(35 \mathrm{Nm})$ |  |
|  | Operating Voltage | $24 \mathrm{VAC} \pm 20 \%$ at $50 / 60 \mathrm{~Hz}$ |  |
|  | Power Consumption | $7 \mathrm{VA}, 7 \mathrm{~W}$ | $8 \mathrm{VA}, 8 \mathrm{~W}$ |
|  | Control Signal | N/A | 0 to 10 VDC |
|  | Control Impedance | N/A | 100k Ohm |
|  | Input Signal | N/A | Y (wires 8-2) DC $0 . . .10 \mathrm{~V}$ <br> (Max. permissible input voltage DC 35 V ) |
| \% | Feedback Potentiometer | O to 1,000 Ohms, <10 mA | N/A |
| 年 | Positioning Signal | N/A | DC 0... 35 V at Offset $\mathrm{Uo}=0 . . .5 \mathrm{~V}$ and Span $\Delta \mathrm{U}=2 \ldots . .30 \mathrm{~V}$ |
| $\stackrel{\text { ¢ }}{\square}$ | Feedback Signal | N/A | DC 0 (2) to 10 V |
|  | Dual Auxiliary Switch | Standard Cable - AC, 6 A Resistive, AC 2 A General Purpose |  |
|  | Voltage | Standard Cable - 24 to 250 VAC |  |
|  | Switch Range | Switch A - 0 to $90^{\circ}$ with $5^{\circ}$ Intervals (Recommended Range Usage 0 to $45^{\circ}$ ) Factory Setting $5^{\circ}$ |  |
|  |  | Switch B - 0 to $90^{\circ}$ with $5^{\circ}$ Intervals (Recommended Range Usage 45 to $90^{\circ}$ ) Factory Setting $85^{\circ}$ |  |
|  | Time Out | Auto shutoff feature to prevent excessive wear or drive time on the motor | N/A |
|  | Electrical Connection | 3 ft . (0.9 m) Pre-cabled - AWG 18 |  |
|  | Equipment Rating | Class 2 According to UL, CSA - Class III per EN60730 |  |
|  | Manual Override | External Push Button |  |
|  | Runtime for $90^{\circ}$ of Rotation | 90 seconds, constant for all operating conditions |  |
|  | Rotation Timing | 150 sec . at $50 \mathrm{~Hz}(125 \mathrm{sec}$. at 60 Hz |  |
|  | Rotation Range | Nominal Angle of Rotation $90^{\circ}$, mechanically limited to $95^{\circ} \pm 2^{\circ}$ |  |
|  | Cycle Life | Designed for 60,000 full stroke cycles |  |
|  | Mechanical Connections | Round Shafts $-3 / 8$ to 1 in . ( 9.5 to 25.4 mm ) diameter Square Shafts - $1 / 4$ to $5 / 8 \mathrm{in}$. ( 6 to 18 mm ) Minimum Shaft Length - 3/4 (20 mm) |  |
|  | Enclosure | IP54 as per EN 60529 |  |
|  | Ambient Conditions (Non-Condensing) | Operating --25 to $130^{\circ} \mathrm{F}\left(-32\right.$ to $55^{\circ} \mathrm{C}$ ); 0 to $95 \% \mathrm{RH}$, non-condensing Storage --40 to $158^{\circ} \mathrm{F}\left(-40\right.$ to $70^{\circ} \mathrm{C}$ ); 0 to $95 \% \mathrm{RH}$, non-condensing |  |
|  | Audible Noise Rating | $<45 \mathrm{dBA}$ at 1 m |  |
|  | Dimensions | (L) $11.8 \times(\mathrm{W}) 3.9 \times(\mathrm{H}) 2.9 \mathrm{in} .(300 \times 100 \times 67.5 \mathrm{~mm})$ |  |
|  | Weight | $4.4 \mathrm{lb}(2 \mathrm{~kg})$ |  |
| $n$ <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 <br> 0 | Agency Certifications | UL listed to UL873-cUL certified to Canadian Standard C22.2 No. 24-93 CE conformity: Electromagnetic compatibility 2004/108/EC-Low-voltage directive 2006/95/EC |  |
|  | Warranty | 5 Years limited from time of shipment. |  |



| KEY |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Cable |  |  | Function |  |
| No. | Code | Color |  |  |
| 1 | G | Red (RD) | AC 24 V Supply (SP) |  |
| 2 | GO | Black (BK) | Neutral (SN) |  |
| 6 | Y1 | Violet (VT) | Control Signal Clockwise AC O V |  |
| 7 | Y2 | Orange (OG) | Control Signal AC O V Counterclockwise |  |
| 8 | Y | Gray (GY) | Control signal DC $0 . .10 \mathrm{~V}, 0 . .35 \mathrm{~V}$ |  |
| 9 | U | Pink (PK) | Position indication DC $0 . . .10 \mathrm{~V}$ |  |
| Auxillary Switch - Factory Installed |  |  |  |  |
| S1 | Q11 | Gray/Red (GY RD) |  | Switch A Input |
| S2 | Q12 | Gray/Blue (GY BU) |  | Switch A - N.C. |
| S3 | Q14 | Gray/Pink (GY PK) |  | Switch A - N.O. |
| S4 | Q21 | Black/Red (BK RD) |  | Switch B Input |
| S5 | Q22 | Black/Blue (BK BU) |  | Switch B - N.C. |
| S6 | Q24 | Black/Pink (BK PK) |  | Switch B - N.O. |


| DC24-310-T(-A) |
| :--- |
| STANDARD CABLE |

Floating Control


| DCM24-310-T(-A) |
| :---: |
| STANDARD CABLE |



[^1]
# ס Bray commercial 

Bray Commercial provides automated Butterfly, Ball, Globe and Pressure Independent Control Valves to the commercial building HVAC market throughout the world Where ever valve performance is required to maintain climate controlled environments, Bray can provide the required automated valves to meet the demanding flow applications of chiller/boiler isolation, air handlers and terminal units for new construction, retrofit and/or LEED certification applications in buildings.

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 Bray International, Inc.13333 Westland East Blvd.
Houston, Texas 77041
1-281-894-5454

## DIVISION HEADQUARTERS Bray Commercial

13788 West Road, Suite 200A
Houston, Texas 77041
1-888-412-Bray (2729)


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[^0]:    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.
    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.

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    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.

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