GE Energy

RCS* Actuators

Versatile Automation Solutions

imagination at work

Electric Actuators

CONTROLS

RCS Actuators from GE Energy: Exceptional Automation Solutions

RCS actuator products from GE Energy offer exceptional automation solutions for valve and equipment manufacturers and end users in the commercial, industrial, marine and power industries.

Applicable to a myriad of automation solutions, from simple on/off control to heavy modulating, RCS actuators have been used in a variety of challenging, dirty and hazardous environments. GE specializes in offering engineered actuator solutions for your unique or unusual applications.

Versatile, Advanced Technology Electric Rotary Actuators

Our electric rotary line offers a broad range of highly versatile actuator products. Targeted to 1/4 turn and multi-turn valves and dampers, RCS electric rotary actuators are also well suited for use in the automation of other types of rotating equipment.

These rotary models span a torque range of 120 to 48,000 inch pounds with stroke speeds for 1/4 turn valves ranging from 0.5 seconds to 3 minutes and for multi-turn actuators from 7.5 to 30 rpm.

Cost-effective, Low-maintenance Spring Return Actuators

Our spring return electric rotary actuators employ torsion power springs that provide a reliable mechanical actuation solution for emergency shutoff or shutdown situations. This approach offers a cost-effective, low-maintenance and superior alternative to pneumatic, hydraulic, electrohydraulic or battery backup systems.

The spring return electric rotary actuators have spring-ending torque to 1,800 inch pounds and are also available with speed options for simple on/off or modulating applications. Clockwise and counter-clockwise spring return options are available to drive any 1/4 turn device to a fail position upon loss of power.

An Extensive Array of the Latest Control Solutions

GE offers an extensive line of electrical and electronic accessories for RCS actuators, including the latest solutions to industry demands for analog control plus communication bus capabilities, including the protocols supported are Profibus* DP, DeviceNet*, and Modbus*.

Features & Benefits

Application Flexibility. RCS actuators from GE Energy offers a broad and diverse range of speeds and available voltages. Coupled with an extensive line of control and communication accessories, these actuators offer both standard and unique solutions to a host of automation requirements. Standard operation for MAR and DCR models is part turn, reversible with unidirectional and multi-turn options available.

Electric Motors. All RCS electric actuators are powered by an extended duty, high-torque, reversible motor. These motors are suitable for both on/off and modulating applications, with many models rated for extended duty. Each motor is Class "B" insulated and has an internal thermal overload protective device. This device protects the motor if a "stall" condition occurs thus preventing the motor from overheating which results in premature motor failure.

Precision Gearing. All gears used in RCS actuators are manufactured from high alloy steel. Each gear is precision machined, then heat-treated, giving the gears exceptional strength. Each gear assembly is designed and tested to withstand the stall torque generated by the motor.

Permanent Lubrication. Each gear and spring assembly is permanently lubricated with a high quality lubricant selected to meet a wide range of operational and environmental conditions. Periodic lubrication is not required.

Versatile Installation. All RCS actuators can be installed and operated in any position. This allows flexibility for installation in confined locations or in retrofit applications.

Manual Override. MAR/DCR10, 50 and 90 models feature a declutchable manual override. The actuator gearing is disengaged from the motor thus the actuator cannot be operated electrically while in manual operation. MAR100 through 4000 feature a manual override with an automatic electrical safety lockout switch. When the handwheel is engaged, the electrical switch isolates the motor from the supply voltage to prevent electrical operation.

Environmental. With electroless nickel plated output shafts and stainless steel external bolting, RCS actuators will stand up to a broad range of environmental conditions. Optional marine epoxy paint systems or electroless nickel plated enclosures are also available to meet most onshore or offshore conditions.
Standard Coating System. Electrostatically applied powder coating

Optional Coating System. Ameron 2 part, water based epoxy, Sherwin Williams KEM Aqua °280 Water Reducible Enamel, or Electroless Nickel Plating

Position Indication. Mechanical position indicators are standard on every model. These devices provide an external position reference for the actuator or driven equipment.

Simple and Easy Wiring. Every actuator has a clearly marked and accessible terminal strip to provide for quick termination of field wiring.

Accessories.

- Integral potentiometer
- Auxiliary limit switches
- Interposing relays
- Motor brakes
- D.C. analog position transmitter with integral power supply
- D.C. analog position (loop powered)
- D.C. analog position controller
- Digi-Tork bi-directional torque control
- Digi-Speed variable speed control
- Communication bus interface:
  - Profibus DP
  - DeviceNet™
  - Modbus

Part-Turn Electric | Multi-Turn Electric

Optional 7” Handwheel Available

NEMA 4 Enclosure

Approvals

MAR Models Only
(Canadian Standard Association)

CSA NRTL/C – Enclosure

NEMA 7 Enclosure

Approvals

MAR Models Only
(Canadian Standard Association)

CSA NRTL/C	Class I, Divisions 1 & 2, Groups C & D
CSA NRTL/C	Class II, Divisions 1 & 2, Groups E, F, & G
CSA NRTL/C	Approved to UL Standard No. 429, Electrically Operated Values
CSA NRTL/C	Approved to UL Standard No. 1203, Electrical Equipment for use in Explosion - proof And Dust - Ignition - proof Hazardous (Classified) Locations

Models

MAR10, 50, 90 – A.C. Supply
DCR10, 50, 90 – D.C. Supply

Typical Application

For on/off and modulating control of:

- Part turn ball, butterfly or plug valves
- Rotary dampers
- Rotating equipment
- Multi-turn valve types

Temperature Range

Standard: -40°F to +150°F
-40°C to +66°C

Optional: -60°F to +120°F
-51°C to +49°C

(Note: With Heaters Installed)

Optional: Compliance to NFPA 130, capable of operation after exposure to ambient temperature of 482°F (250°C) for a minimum of 1 hour

Voltage

115 VAC, 1 Phase, 50/60 Hz.
230 VAC, 1 Phase, 50/60 Hz.
24 VAC, 1 Phase, 50/60 Hz.
12 VDC / 24 VDC

Torque Range

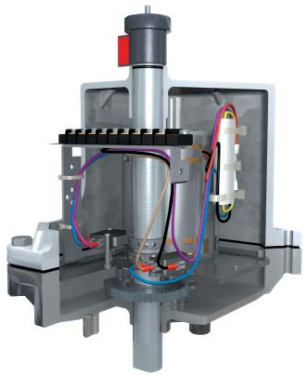
30 to 1,000 inch pounds
(3.4 to 113.0 newton meters)

Speed Range

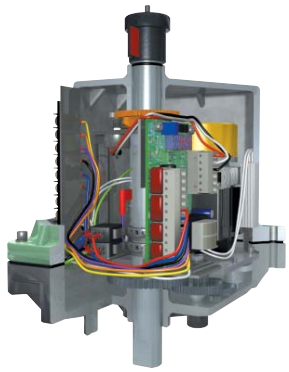
For 60 Hz. operation:
.6 to 60 seconds for 90° revolution
.3 and 30 RPM for multi-turns

Standard Features

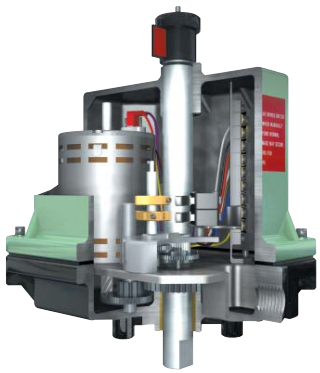
AC Voltages
2 – SPDT Switches, PTC Heater
DC Voltages
2 – SPDT (High Current) Switches



Open/Close



Modulating

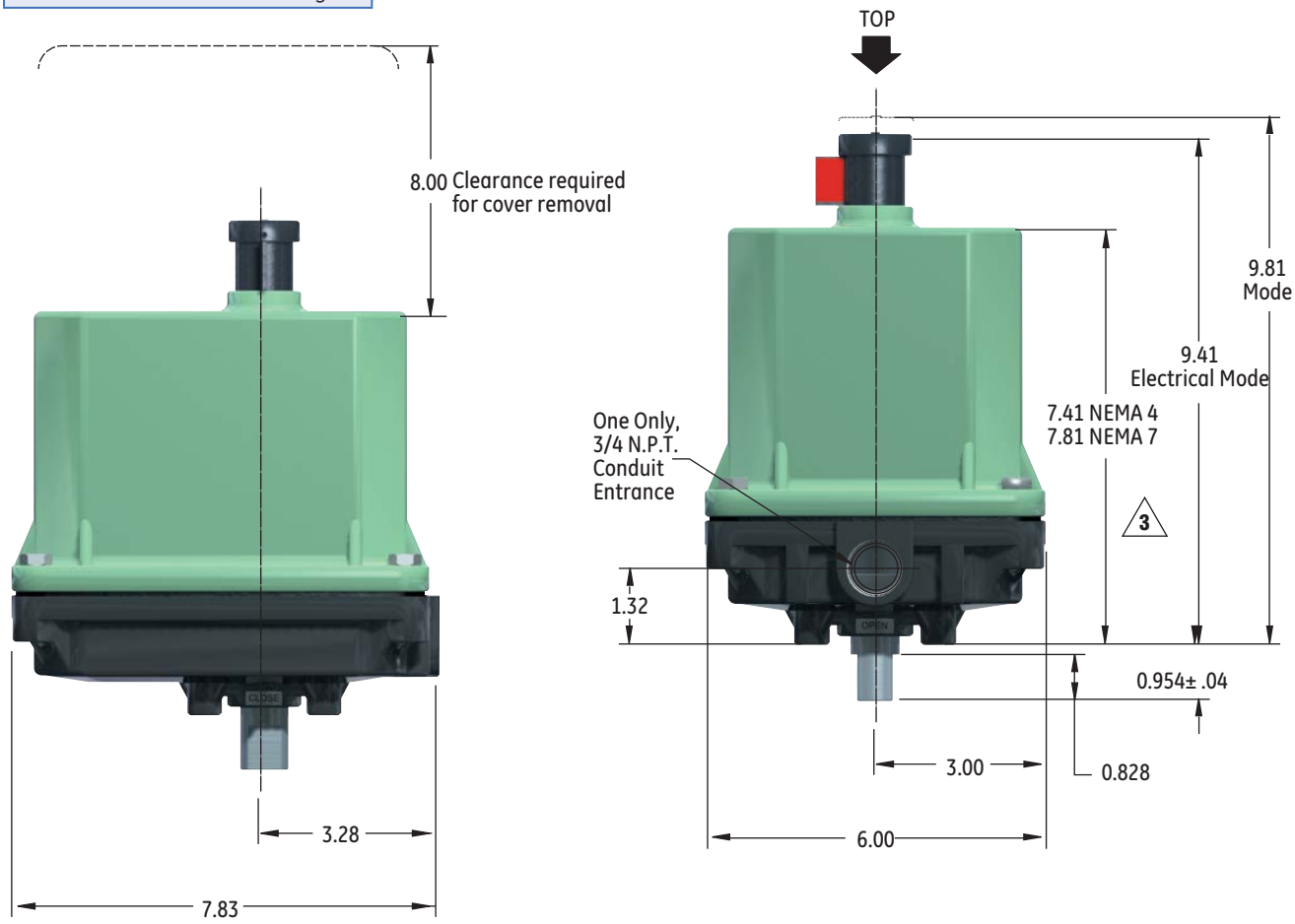


Multi-Turn

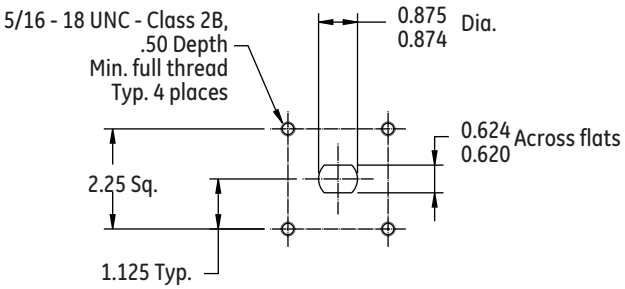
Part-Turn Electric | Multi-Turn Electric

Outline Dimensions (Inches) – MAR & DCR 10, 50, & 90

Weight
NEMA 4 Enclosure: 12 lbs./5.4 kg
NEMA 7 Enclosure: 16 lbs./7.3 kg



Mounting Geometry - Bottom View



Notes

1. Direction of rotation is based on viewing actuator from top.
2. Drawing shows output shaft in a fully clockwise (closed) position.
3. Actuator shown with indicator in electrical mode.
4. A NEMA 4 control enclosure is shown. Dimensions given are accurate for NEMA 7.

Part-Turn Electric | Multi-Turn Electric

115 & 230 VAC, 1 Phase, 50/60 Hz.

Model	Output Torque Inch Pounds (N.m)	Type	Speed of Operation 60 Hz. (50 Hz.)	Duty Cycle Rating 115 Vac, 1Ph., 50/60 Hz.	Duty Cycle Rating 230 Vac, 1Ph., 50/60 Hz.	Current Ratings 115 VAC		Current Ratings 230 VAC	
						NLA*	LRA*	NLA*	LRA*
MAR 10-.5MT	30 (3.4)	Multi-Turn	30 RPM N/A	25% (2)	25% (2)	0.50	0.82	0.25	0.40
MAR 10-2	120 (13.6)	Part Turn	2 second/90° (2.5 seconds/90°)	50% (1)	50% (1)	0.40	0.60	0.30	0.40
MAR 10-2MT	120 (13.6)	Multi-Turn	7.5 RPM (6.2 RPM)	50% (2)	50% (2)	0.40	0.60	0.20	0.25
MAR 10-10	350 (39.5)	Part Turn	10 seconds/90° (12 seconds/90°)	50% (1)	50% (1)	0.40	0.60	0.20	0.25
MAR 10-30	425 (48.0)	Part Turn	30 seconds/90° (35 seconds/90°)	50% (2)	50% (2)	0.30	0.50	0.20	0.25
MAR 10-60	400 (45.2)	Part Turn	60 seconds/90° (70 seconds/90°)	50% (2)	50% (2)	0.35	0.55	0.20	0.25
MAR 50-.5MT	200 (22.6)	Multi-Turn	30 RPM N/A	25% (2)	–	1.90	3.10	–	–
MAR 50-2	600 (67.8)	Part Turn	2 seconds/90° (2.5 seconds/90°)	40% (1)	50% (1)	1.60	2.20	0.50	0.95
MAR 50-2MT	600 (67.8)	Multi-Turn	7.5 RPM (6.2 RPM)	40% (2)	50% (2)	1.60	2.20	0.50	0.95
MAR 50-10	600 (67.8)	Part Turn	10 seconds/90° (12 seconds/90°)	50% (1)	50% (1)	0.50	0.80	0.30	0.50
MAR 50-30	700 (79.1)	Part Turn	30 seconds/90° (35 seconds/90°)	50% (2)	50% (2)	0.35	0.55	0.20	0.25
MAR 50-60	600 (67.8)	Part Turn	60 seconds/90° (70 seconds/90°)	50% (2)	50% (2)	0.30	1.50	0.20	0.25
MAR 90-5	1,000 (113.0)	Part Turn	5 seconds/90° (6 seconds/90°)	50% (1)	50% (1)	0.55	1.55	0.25	0.85
MAR 90-5MT	1,000 (113.0)	Multi-Turn	3 RPM (2.5 RPM)	50% (2)	50% (2)	0.55	1.55	0.25	0.85
MAR 90-15	1,000 (113.0)	Part Turn	15 seconds/90° (17.5 seconds/90°)	75% (2)	50% (2)	0.50	0.60	0.20	0.35

* (N.L.A.) — No Load Ampere (L.R.A.) — Locked Rotor Ampere (1) — Open/Close Service (2) — Open/Close or Modulating Service

Duty Cycle

The percentage of time the electric motor is energized vs. the time it is at rest, in reversing duty and with the actuator running at it's rated load maximum published torque.

Standard Modulating Duty Rating

- 12 motor starts (corrections) per minute
- At the rated duty cycle for that model
- With the speed of operation a minimum of 15 seconds for 90° or slower
- With positioning accuracy of (+/-) 1% of total span

Isolation Relays

To operate multiple actuators in parallel from a single signal requires isolating relays in the field wiring. Consult factory.

Note — Multi-turn models are available with the following number of turns:

1.4, 5, 8, 13, 18, 26 or 50. Must be specified when the order is placed.

Part-Turn Electric | Multi-Turn Electric

24 VAC

Model	Output Torque Inch Pounds (N.m)	Type	Speed of Operation 60 Hz. (50 Hz.)	Duty Cycle Rating 24 VAC	Current Ratings 24 VAC	
					NLA*	LRA*
MAR 10-2	120 (13.6)	Part Turn	2 seconds/90°	25% (1)	2.80	3.50
MAR 10-2MT	120 (13.6)	Multi-Turn	7.5 RPM	25% (1)	2.80	3.50
MAR 10-10	350 (39.5)	Part Turn	10 seconds/90°	25% (1)	1.90	2.70
MAR 10-30	425 (48.0)	Part Turn	30 seconds/90°	25% (1)	1.70	2.40
MAR 10-60	400 (45.2)	Part Turn	60 seconds/90°	25% (1)	1.80	2.50
MAR 50-10	600 (67.8)	Part Turn	10 seconds/90°	25% (1)	3.80	4.70
MAR 50-30	700 (79.1)	Part Turn	30 seconds/90°	25% (1)	1.90	2.70
MAR 90-15	1,000 (113.0)	Part Turn	15 seconds/90°	25% (1)	2.40	4.00

12 & 24 VDC

Model	Output Torque Inch Pounds (N.m)	Type	No Load Speed of Operation	Duty Cycle Rating 12 VDC	Duty Cycle Rating 24 VDC	Current Ratings 12 VAC		Current Ratings 24 VAC	
						NLA*	LRA*	NLA*	LRA*
DCR 10-2	250 (28.2)	Part Turn	.6 seconds/90°	50% (1)	50% (1)	1.00	12.5	0.75	6.80
DCR 10-2MT	250 (28.2)	Multi-Turn	25 RPM	50% (2)	50% (2)	1.00	12.5	0.75	6.80
DCR 10-10	400 (45.2)	Part Turn	6.4 seconds/90°	50% (1)	50% (1)	0.19	3.90	0.08	2.10
DCR 50-2	600 (67.8)	Part Turn	.7 seconds/90°	50% (1)	50% (1)	1.00	22.00	0.75	12.00
DCR 50-2MT	600 (67.8)	Multi-Turn	21 RPM	50% (2)	50% (2)	1.00	22.00	0.75	12.00
DCR 50-10	600 (67.8)	Part Turn	5.6 seconds/90°	50% (1)	50% (1)	0.90	5.80	0.5	2.40
DCR 50-30	700 (79.1)	Part Turn	21 seconds/90°	50% (2)	50% (2)	0.15	2.65	0.06	1.15
DCR 90-5	900 (101.7)	Part Turn	2.2 seconds/90°	50% (1)	50% (1)	1.00	12.50	0.75	6.80
DCR 90-5MT	900 (101.7)	Multi-Turn	7 RPM	50% (2)	50% (2)	1.00	12.50	0.75	6.80
DCR 90-15	900 (101.7)	Part Turn	5.6 seconds/90°	50% (2)	50% (2)	0.90	5.80	0.50	2.40

* (N.L.A.) — No Load Ampere (L.R.A.) — Locked Rotor Ampere (1) — Open/Close Service (2) — Open/Close or Modulating Service

Limit Switches (MAR Models)

Standard: Two-single pole, double throw type (SPDT) with an option for 2 or 4 additional.

Ratings: UL and CSA listed.
15 amp & 1/2 H.P. at 125 or 250 VAC;
1/2 amp at 125 VDC;
1/4 amp at 250 VDC; 5 amp at 120 VAC

Optional: All double pole, double throw type (DPDT).

Ratings: UL and CSA listed.
10 amp at 125/250 VAC (form ZZ);
1/2 H.P. at 125 VDC; 3/4 H.P. at 250 VAC

Limit Switches (DCR Models)

Ratings: Ratings: UL and CSA listed.
MIL-PRF-8805 Qualified Listing
25 amp at 277 VAC; 1 H.P. at 125 VAC;
2 H.P. at 250 VAC

Isolation Relays

To operate multiple actuators in parallel from a single signal requires isolating relays in the field wiring. Consult factory.

Note — Multi-turn models are available with the following number of turns: 1.4, 5, 8, 13, 18, 26 or 50. Must be specified when the order is placed.

Part-Turn Electric | Multi-Turn Electric

NEMA 4 Enclosure	
Approvals	
MAR Models Only (Canadian Standard Association)	
CSA NRTL/C	Type 4

NEMA 4/6/7 Enclosure	
Approvals	
MAR Models Only (Canadian Standard Association)	
CSA NRTL/C	Type 4 and 6
CSA NRTL/C	Class I, Divisions 1 & 2, Groups C & D
CSA NRTL/C	Class II, Divisions 1 & 2, Groups E, F & G
CSA NRTL/C	Approved to UL Standard No. 429, Electrically Operated Valves
CSA NRTL/C	Approved to UL Standard No. 1203, Electrical Equipment for use in Explosion - proof And Dust - Ignition - proof Hazardous (Classified) Locations

Models	
A.C. Voltage	D.C. Voltage
MAR100 MAR120 MAR160 MAR250 MAR800	DCR100 DCR160 DCR250 DCR800

Typical Application

For on/off and modulating control of:

- Part turn ball, butterfly or plug valves
- Multi-turn valve types
- Rotary dampers
- Rotating equipment

Temperature Range

Standard: -40°F to +150°F
-40°C to +66°C

Optional: -60°F to +120°F
-51°C to +49°C

(Note: With Heaters Installed)

Optional: Compliance to NFPA 130, capable of operation after exposure to ambient temperature of 482°F (250°C) for a minimum of 1 hour

Voltage

115 VAC, 1 Phase, 50/60 Hz.
230 VAC, 1 Phase, 50/60 Hz.
24 VAC, 1 Phase, 50/60 Hz.
220 VAC, 3 Phase, 60 Hz.
440 VAC, 3 Phase 60 Hz.
12 VDC
24 VDC

Torque Range

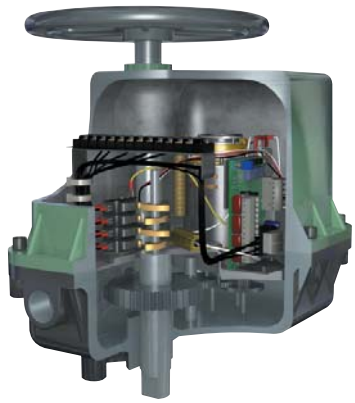
1,500 to 10,000 inch pounds
(169.5 to 1129.8 newton meters)

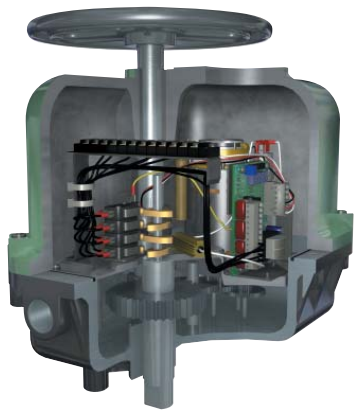
Speed Range

For 60 Hz. operation:
1.25 to 60 seconds for 90° revolution
5 and 12 RPM for multi-turns

Standard Features

AC (Single and Three Phase) Voltages
4 – SPDT Switches, PTC Heater
DC Voltages
4 – SPDT (High Current) Switches

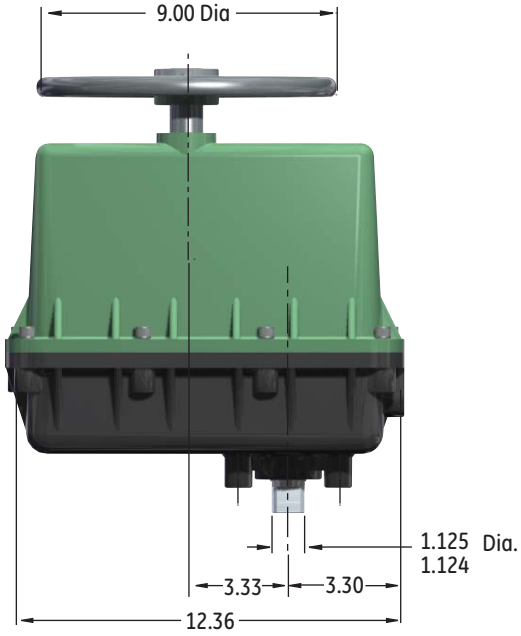


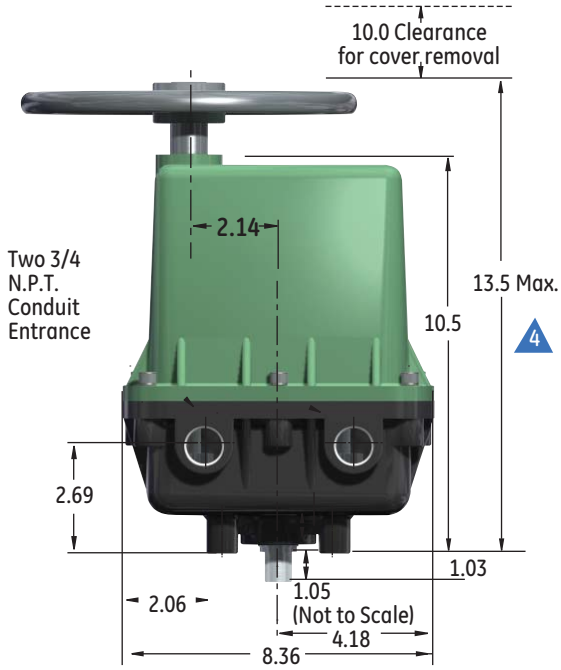


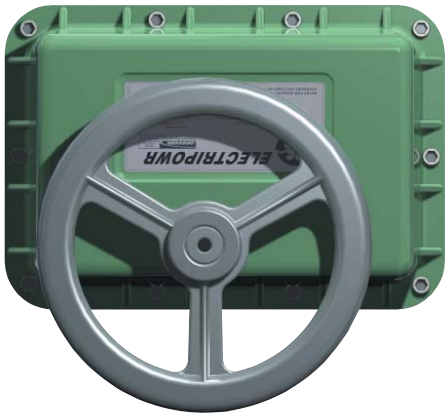
Part-Turn Electric | Multi-Turn Electric

Outline Dimensions (Inches) – MAR & DCR 100, 120, 160 & 250

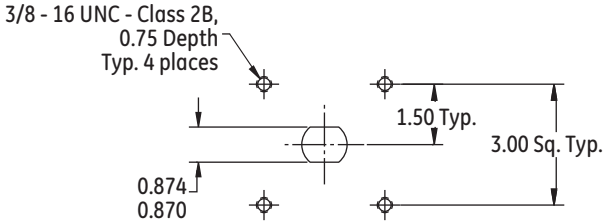
Weight
NEMA 4 Enclosure: 34 lbs/15.45 kg NEMA 4/6/7 Enclosure: 44 lbs/20 kg







Mounting Geometry



Notes

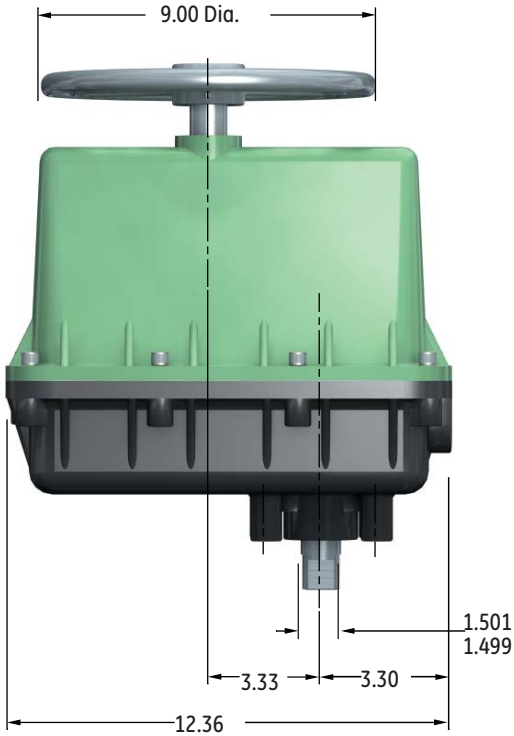
1. Drawing shows the actuator output shaft in a fully clockwise (closed) position.
2. Direction of actuator rotation is based on the top view from the handwheel.
3. A NEMA 4 control cover is shown. Dimensions given are accurate for NEMA 4/6/7.

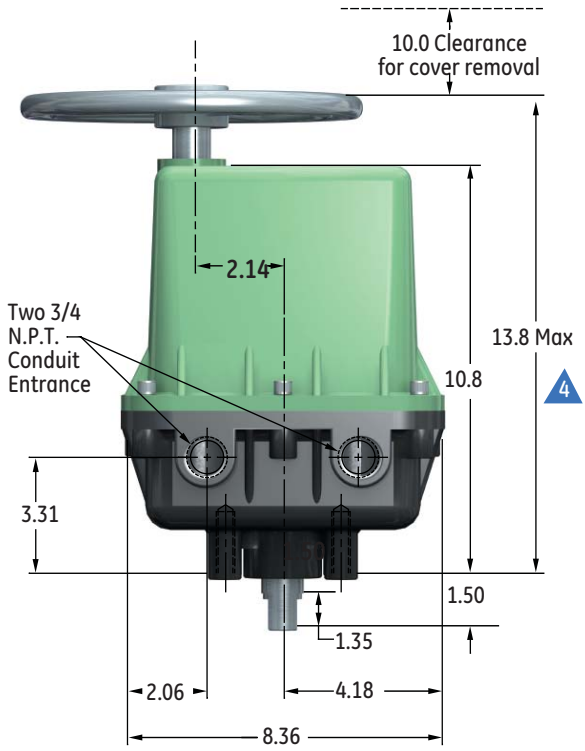
4. Actuator is shown with handwheel in auto position. Height is 13.0" when manual override is used.

Part-Turn Electric | Multi-Turn Electric

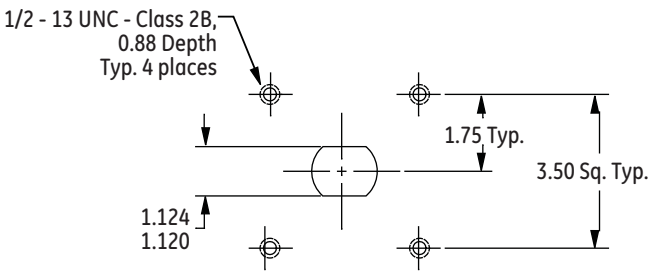
Outline Dimensions (Inches) – MAR & DCR 800

Weight
NEMA 4 Enclosure: 34 lbs/15.4 kg NEMA 4/6/7 Enclosure: 44 lbs/20 kg





Mounting Geometry



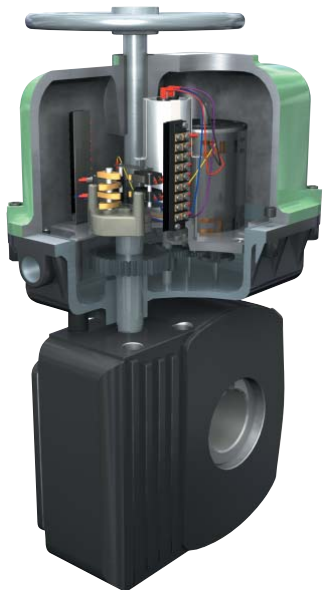
Notes

1. Drawing shows the actuator output shaft in a fully clockwise (closed) position.
2. Direction of actuator rotation is based on the top view from the handwheel.
3. A NEMA 4 control cover is shown. Dimensions given are accurate for NEMA 4/6/7.

4. Actuator is shown with handwheel in auto position. Height is 13.3" when manual override is used.

Part-Turn Electric

Models
MAR 1600, MAR 4000
Typical Application
For on/off and modulating control of: ■ Part turn ball, butterfly or plug valves ■ Multi-turn valve types ■ Rotary dampers ■ Rotating equipment
Temperature Range
Standard: -40°F +150°F -40°C to +65°C Optional: -60°F to+150°F -50°C to +65°C Optional: Compliance to NFPA 130, capable of operation after exposure to ambient temperature of 482°F (250°C) for a minimum of 1 hour or a maximum of 3 hours.
Voltage
115 VAC, 1 Phase, 50/60 Hz. 230 VAC, 1 Phase, 50/60 Hz. 220 VAC, 3 Phase, 60 Hz. 440 VAC, 3 Phase 60 Hz.
Torque Range
21,000 to 48,000 inch pounds (2,373 to 5,424 newton meters)
Speed Range
70 & 170 seconds for 90° revolution
Standard Features
AC (Single or Three Phase) Voltages 4 – SPDT Switches, PTC Heater

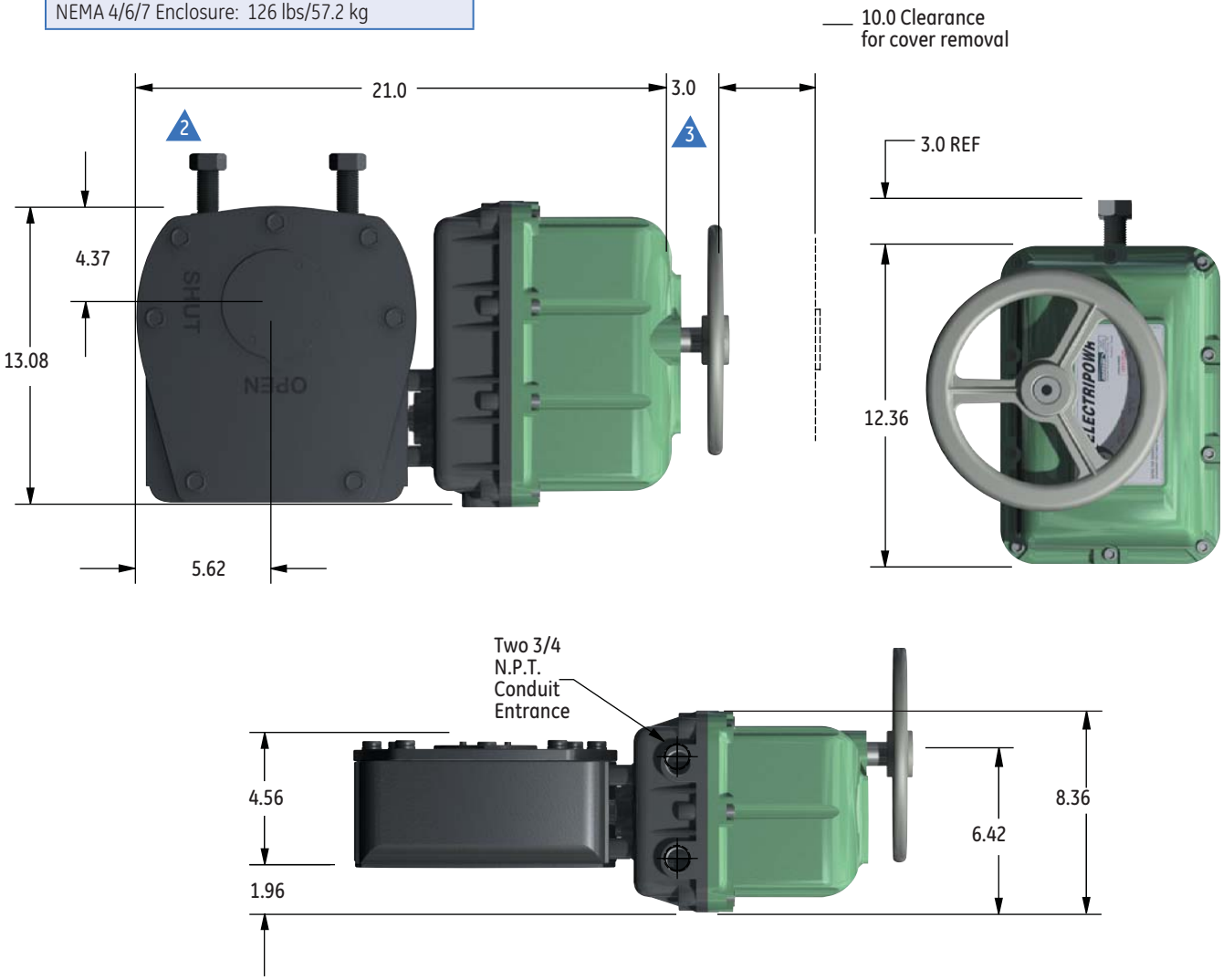


NEMA 4/6/7 Enclosure	
Approvals	
A.C. Models Only (Canadian Standard Association)	
CSA NRTL/C	Type 4 and 6
CSA NRTL/C	Class I, Divisions 1 & 2, Groups C & D
CSA NRTL/C	Class II, Divisions 1 & 2, Groups E, F & G
CSA NRTL/C	Approved to UL Standard No. 429, Electrically Operated Valves
CSA NRTL/C	Approved to UL Standard No. 1203, Electrical Equipment for use in Explosion - proof And Dust - Ignition - proof Hazardous (Classified) Locations

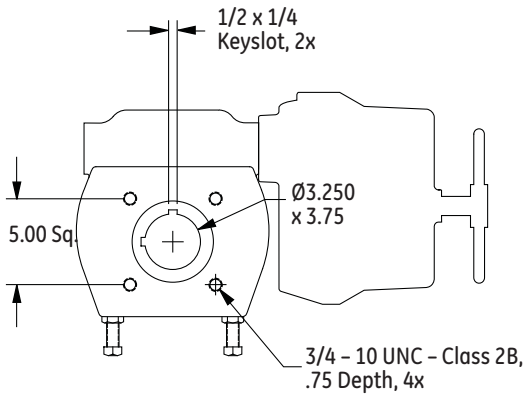
Part-Turn Electric

Outline Dimensions (Inches) – MAR 1600-70 and 4000-170

Weight
NEMA 4/6/7 Enclosure: 126 lbs/57.2 kg



Mounting Geometry



Notes

1. Drawing shows the actuator output shaft in a fully clockwise (closed) position.
2. Direction of actuator rotation is based on the top view of the eternal gearbox.
3. Actuator is shown with handwheel in auto position. Height is 2.4" when manual override is used.

Part-Turn Electric | Multi-Turn Electric

115 & 230 VAC, 1 Phase, 50/60 Hz.

Model	Output Torque Inch Pounds (N.m)	Type	Speed of Operation 60 Hz. (50 Hz.)	Duty Cycle Rating 115 Vac, 1Ph., 50/60 Hz.	Duty Cycle Rating 230 Vac, 1Ph., 50/60 Hz.	Current Ratings 115 VAC		Current Ratings 230 VAC	
						NLA*	LRA*	NLA*	LRA*
MAR 100-16	1,500 (169)	Part Turn	16 seconds/90° (19 seconds/90°)	100% (2)	50% (2)	0.55	1.55	0.25	0.85
MAR 100-30	1,800 (203)	Part Turn	30 seconds/90° (35 seconds/90°)	100% (2)	50% (2)	0.50	0.60	0.30	0.35
MAR 100-60	2500 (282)	Part Turn	60 seconds/90° (70 seconds/90°)	100% (2)	50% (2)	0.35	0.55	0.20	0.35
MAR 120-1.25	1,500 (169)	Part Turn	1.25 seconds/90° (2 seconds/90°)	25% (1)	25% (1)	3.30	7.40	1.30	3.60
MAR 120-1.25 MT	1,500 (169)	Multi-Turn	12 RPM (10 RPM)	25% (2)	25% (2)	3.30	7.40	1.30	3.60
MAR 160-8	1,920 (217)	Part Turn	8 seconds/90° (9 seconds/90°)	50% (1)	50% (1)	0.75	1.65	0.70	1.05
MAR 160-16	2,000 (226)	Part Turn	16 seconds/90° (19 seconds/90°)	75% (2)	50% (2)	0.60	1.60	0.35	0.90
MAR 160-30	2,500 (282)	Part Turn	30 seconds/90° (35 seconds/90°)	75% (2)	50% (2)	0.65	0.70	0.45	0.50
MAR 160-60	2,800 (316)	Part Turn	60 seconds/90° (70 seconds/90°)	100% (2)	50% (2)	0.50	0.60	0.30	0.35
MAR 250-3	3,500 (395)	Part Turn	3 seconds/90° (4 seconds/90°)	25% (1)	50% (1)	3.30	7.40	0.90	3.40
MAR 250-3MT	3,500 (395)	Multi-Turn	5 RPM (4 RPM)	25% (2)	50% (2)	3.30	7.40	0.90	3.40
MAR 250-8	3,000 (339)	Part Turn	8 seconds/90° (9 seconds/90°)	40% (1)	50% (1)	1.60	2.20	1.00	1.25
MAR 250-16	4,000 (452)	Part Turn	16 seconds/90° (19 seconds/90°)	50% (2)	50% (2)	1.10	1.80	0.70	1.05
MAR 250-30	5,000 (565)	Part Turn	30 seconds/90° (35 seconds/90°)	50% (2)	50% (2)	0.75	1.65	0.50	0.95
MAR 250-60	5,000 (565)	Part Turn	60 seconds/90° (70 seconds/90°	75% (2)	50% (2)	0.65	0.70	0.30	0.35
MAR 800-12	7,500 (847)	Part Turn	12 seconds/90° (14 seconds/90°)	25% (1)	25% (1)	3.30	7.40	0.90	3.40
MAR8 00-30	10,000 (1,130)	Part Turn	30 seconds/90° (35 seconds/90°)	40% (2)	50% (2)	1.60	2.20	1.00	1.20
MAR 800-60	10,000 (1,130)	Part Turn	60 seconds/90° (70 seconds/90°)	75% (2)	50% (2)	0.55	1.55	0.50	0.95
MAR 1600-70	21,000 (2,373)	Part Turn	70 seconds/90° (82 seconds/90°)	25% (2)	50% (2)	3.30	7.40	0.90	3.40
MAR 4000-170	48,000 (5,424)	Part Turn	170 seconds/90° (200 seconds/90°)	25% (2)	50% (2)	3.30	7.40	0.90	3.40

* (N.L.A.) — No Load Ampere (L.R.A.) — Locked Rotor Ampere (1) — Open/Close Service (2) — Open/Close or Modulating Service

Duty Cycle

The percentage of time the electric motor is energized vs. the time it is at rest, in reversing duty and with the actuator running at it's rated load maximum published torque.

Standard Modulating Duty Rating

- 12 motor starts (corrections) per minute.
- At the rated duty cycle for that model
- With the speed of operation a minimum of 15 seconds for 90° or slower
- With positioning accuracy of (+/-) 1% of total span

Isolation Relays

To operate multiple actuators in parallel from a single signal requires isolating relays in the field wiring. Consult factory.

Note — Multi-turn models are available with the following number of turns: 1.4, 5, 8, 13, 18, 26 or 50. Must be specified when the order is placed.

Part-Turn Electric | Multi-Turn Electric

12 & 24 VDC

Model	Output Torque Inch Pounds (N.m)	Type	No Load Speed of Operation	Duty Cycle Rating 12 VDC	Duty Cycle Rating 24 VDC	Current Ratings 12 VAC		Current Ratings 24 VAC	
						NLA*	LRA*	NLA*	LRA*
DCR 100-30	2,000 (225)	Part Turn	11.5 seconds/90°	50% (2)	50% (2)	0.90	5.80	0.50	6.80
DCR 160-16	2,200 (248)	Part Turn	5.5 seconds/90°	50% (1)	50% (1)	1.00	12.50	0.75	6.80
DCR 160-60	3,600 (406)	Part Turn	22 seconds/90°	50% (2)	50% (2)	0.90	5.80	0.50	2.10
DCR 250-8	3,000 (339)	Part Turn	3.2 seconds/90°	50% (1)	50% (1)	1.00	22.00	0.75	12.00
DCR 250-16	4,000 (452)	Part Turn	5.7 seconds/90°	50% (1)	50% (1)	1.00	22.00	0.75	12.00
DCR 250-30	5,000 (565)	Part Turn	11.2 seconds/90°	50% (2)	50% (2)	1.00	12.50	0.75	2.40
DCR 800-30	10,000 (1,130)	Part Turn	13.3 seconds/90°	50% (2)	50% (2)	1.00	22.00	0.75	1.15
DCR 800-60	10,000 (1,130)	Part Turn	23 seconds/90°	50% (2)	50% (2)	1.00	12.50	0.75	1.15

24 VAC

Model	Output Torque Inch Pounds (N.m)	Type	Speed of Operation 60 Hz. (50 Hz.)	Duty Cycle Rating 24 VAC	Current Ratings 24 VAC	
					NLA*	LRA*
MAR 100-16	1,500 (169)	Part Turn	16 seconds/90° (19 seconds/90°)	50% (2)	5.60	6.00
MAR 100-30	1,800 (203)	Part Turn	30 seconds/90° (35 seconds/90°)	75% (2)	2.40	4.50
MAR 100-60	2,500 (282)	Part Turn	60 seconds/90° (70 seconds/90°)	100% (2)	1.80	3.80
MAR 160-30	2,500 (282)	Part Turn	30 seconds/90° (35 seconds/90°)	75% (2)	4.50	5.00
MAR 160-60	2,800 (316)	Part-Turn	60 seconds/90° (70 seconds/90°)	75% (2)	2.40	4.50
MAR 250-60	5,000 (565)	Part Turn	60 seconds/90° (70 seconds/90°)	50% (2)	4.50	5.00

* (N.L.A.) — No Load Ampere (L.R.A.) — Locked Rotor Ampere (1) — Open/Close Service (2) — Open/Close or Modulating Service

Limit Switches (MAR Models)

Standard: Four-single pole, double throw type (SPDT) with an option for 2 additional.

Ratings: UL and CSA listed.
15 amp & 1/2 H.P. at 125 or 250 VAC
1/2 amp at 125 VDC;
1/4 amp at 250 VDC
Lamp Load: 5 amp at 120 VAC

Optional: All double pole, double throw type (DPDT).

Ratings: UL and CSA listed.
10 amp at 125/250 VAC (form ZZ);
1/2 H.P. at 125 VDC; 3/4 H.P. at 250 VAC

Limit Switches (DCR Models)

Ratings: Ratings: UL and CSA listed.
MIL-PRF-8805 Qualified Listing
25 amp at 277 VAC; 1 H.P. at 125 VAC;
2 H.P. at 250 VAC

Isolation Relays

To operate multiple actuators in parallel from a single signal requires isolating relays in the field wiring. Consult factory.

Heater

PTC (Positive Temperature Coefficient)
Heater standard in an AC Voltage Models

Part-Turn Electric | Multi-Turn Electric

220 & 440 VAC, 3 Phase, 60 Hz.

Model	Output Torque Inch Pounds (N.m)	Type	Speed of Operation 60 Hz. (50 Hz.)	Duty Cycle Rating 220 Vac, 3Ph., 60 Hz.	Duty Cycle Rating 440 Vac, 3Ph., 60 Hz.	Current Ratings 220 VAC		Current Ratings 440 VAC	
						NLA*	LRA*	NLA*	LRA*
MAR 100-16	1,500 (169)	Part Turn	16 seconds/90° (19 seconds/90°)	25%	25%	0.34	1.20	0.15	0.75
MAR 120-1.25	1,500 (169)	Part Turn	1.25 seconds/90° (2 seconds/90°)	25%	25%	1.60	3.50	0.82	1.80
MAR 120-1.25 MT	1,500 (169)	Multi-Turn	12 RPM (10 RPM)	25%	25%	1.60	3.50	0.82	1.80
MAR 160-8	1,920 (217)	Part Turn	8 seconds/90° (9 seconds/90°)	25%	25%	0.34	1.20	0.15	0.75
MAR 160-16	2,000 (226)	Part Turn	16 seconds/90° (19 seconds/90°)	25%	25%	0.34	1.20	0.15	0.75
MAR 250-3	3,500 (316)	Part Turn	3 seconds/90° (4 seconds/90°)	25%	25%	1.60	3.50	0.82	1.80
MAR 250-3MT	3,500 (316)	Multi-Turn	5 RPM (4 RPM)	25%	25%	1.60	3.50	0.82	1.80
MAR 250-16	4,000 (452)	Part Turn	16 seconds/90° (19 seconds/90°)	25%	25%	0.34	1.20	0.15	0.75
MAR 250-30	5,000 (565)	Part Turn	30 seconds/90° (35 seconds/90°)	25%	25%	0.34	1.20	0.15	0.75
MAR 250-60	5,000 (565)	Part Turn	60 seconds/90° (70 seconds/90°)	25%	25%	0.34	1.20	0.15	0.75
MAR 800-12	7,500 (847)	Part Turn	12 seconds/90° (14 seconds/90°)	25%	25%	1.60	3.50	0.82	1.80
MAR 800-30	10,000 (1,130)	Part Turn	30 seconds/90° (35 seconds/90°)	25%	25%	0.34	1.20	0.15	0.75
MAR 800-60	10,000 (1,130)	Part Turn	60 seconds/90° (70 seconds/90°)	25%	25%	0.34	1.20	0.15	0.75
MAR 1600-70	21,000 (2,373)	Part Turn	70 seconds/90° (80 seconds/90°)	25%	25%	1.60	3.50	0.82	1.80
MAR 4000-170	48,000 (5,424)	Part Turn	170 seconds/90° (200 seconds/90°)	25%	25%	1.60	3.50	0.82	1.80

NOTE — Multi-turn models are available with the following number of turns: 1.4, 5, 8, 13, 18, 26 or 50. Must be specified when the order is placed.

* (N.L.A.) — No Load Ampere (L.R.A.) — Locked Rotor Ampere (1) — Open/Close Service (2) — Open/Close or Modulating Service

Duty Cycle

The percentage of time the electric motor is energized vs. the time it is at rest, in reversing duty and with the actuator running at it's rated load maximum published torque.

Standard Modulating Duty Rating

- 12 motor starts (corrections) per minute
- At the rated duty cycle for that model
- With the speed of operation a minimum of 15 seconds for 90° or slower
- With positioning accuracy of (+/-) 1% of total span

Isolation Relays

To operate multiple actuators in parallel from a single signal requires isolating relays in the field wiring. Consult factory.

Note — Multi-turn models are available with the following number of turns: 1.4, 5, 8, 13, 18, 26 or 50. Must be specified when the order is placed.

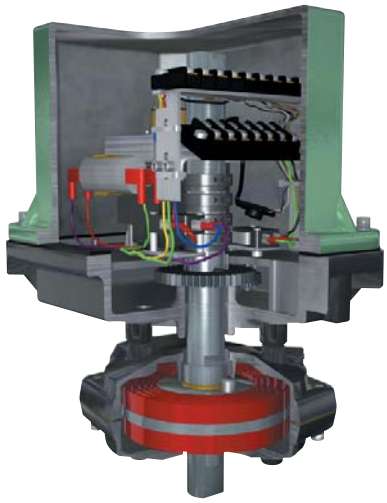
Spring Return Electric

Optional Manual Override Available

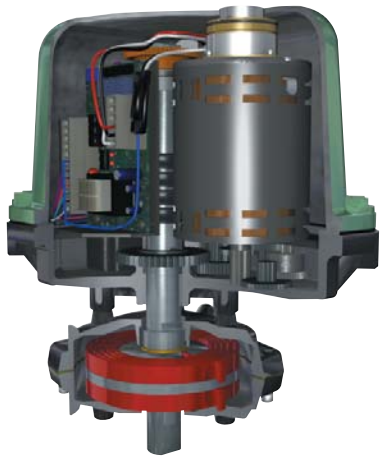
NEMA 4 Enclosure	
A.C. Models Only (Canadian Standard Association)	
CSA NRTL/C	Type 4

NEMA 7 Enclosure	
A.C. Models Only (Canadian Standard Association)	
CSA NRTL/C	Class I, Divisions 1 & 2, Groups C & D
CSA NRTL/C	Class II, Divisions 1 & 2, Groups E, F, & G
CSA NRTL/C	Approved to UL Standard No. 429, Electrically Operated Values
CSA NRTL/C	Approved to UL Standard No. 1203, Electrical Equipment for use in Explosion - proof And Dust - Ignition - proof Hazardous (Classified) Locations

Models
SURE 24, SURE 25
Typical Application
For on/off and modulating control of: ■ Part turn ball, butterfly, plug valves or rotary dampers when emergency shutdown or shutoff capability is required in the event of a loss of power.
Temperature Range
Standard: -40°F to +150°F -40°C to +65°C Optional: -60°F to +150°F -50°C to +65°C Optional: Compliance to NFPA 130, capable of operation after exposure to ambient temperature of 482°F (250°C) for a minimum of 1 hour
Voltage
115 VAC, 1 Phase, 50/60 Hz. 230 VAC, 1 Phase, 50/60 Hz.
Torque Range
300 pound inches spring end (34 newton meters)
Speed Range
5 & 10 seconds for 90° revolution, motor operation 2 to 5 seconds spring operation
Spring
Flat, spring steel torsion spring, XYLAN® coated
Standard Features
AC Voltages 2 – SPDT Switches, PTC Heater, Motor Break



SURE 24

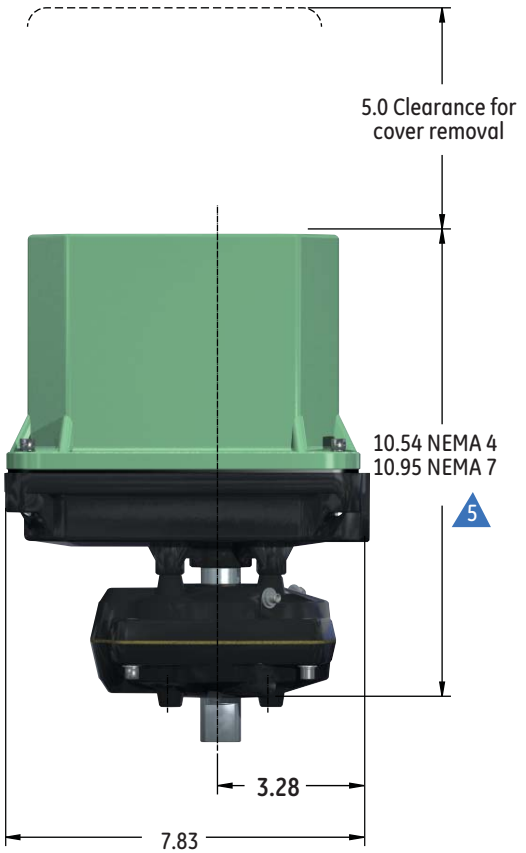


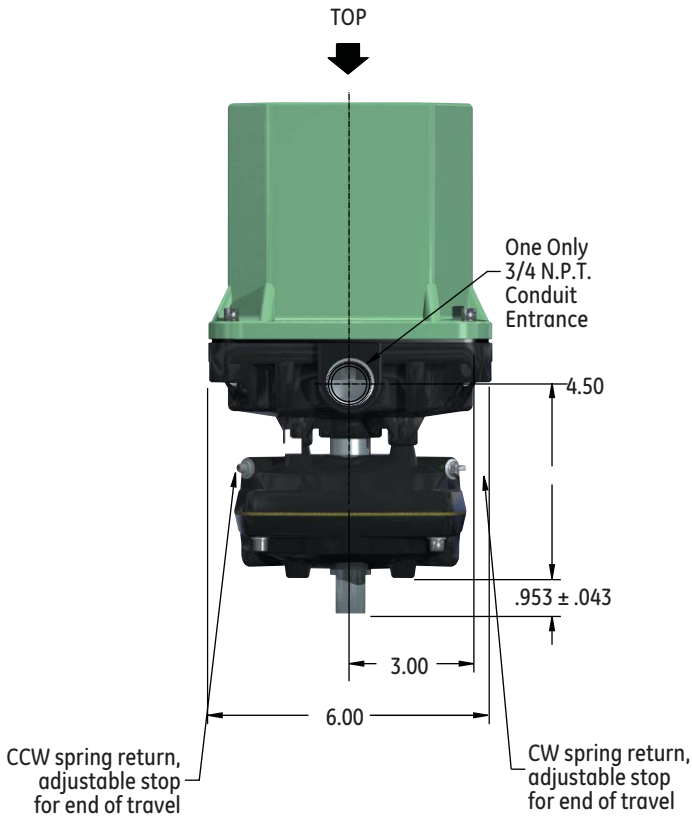
SURE 25

Spring Return Electric

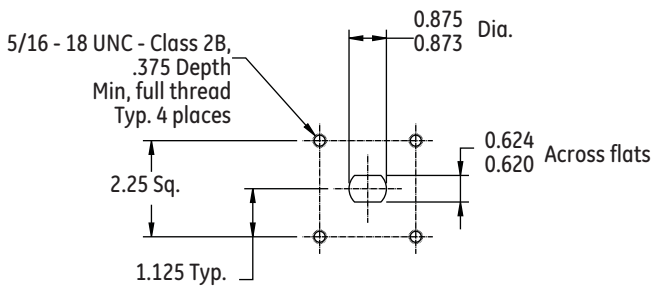
Outline Dimensions (Inches) – SURE 24/25

Weight
23 lbs/10.4 kg





Mounting Geometry - Bottom View



Notes

1. Direction of rotation is based on viewing actuator from top.
2. Drawing shows actuator output shaft in power fail clockwise position.
3. Standard unit fails clockwise (closed).
4. Optional unit fails counter-clockwise (open).
5. NEMA 4 cover shown. Dimensions given are accurate for NEMA 7.

Spring Return Electric

Not Available with Manual Override

NEMA 4/6/7 Enclosure	
Approvals	
A.C. Models Only (Canadian Standard Association)	
CSA NRTL/C	Type 4 and 6
CSA NRTL/C	Class I, Divisions 1 & 2, Groups C & D
CSA NRTL/C	Class II, Divisions 1 & 2, Groups E, F & G
CSA NRTL/C	Approved to UL Standard No. 429, Electrically Operated Valves
CSA NRTL/C	Approved to UL Standard No. 1203, Electrical Equipment for use in Explosion - proof And Dust - Ignition - proof Hazardous (Classified) Locations

Models

SURE 49

Typical Application

For on/off and modulating control of:

- Part turn ball, butterfly, plug valves or rotary dampers when emergency shutdown or shutoff capability is required in the event of a loss of power

Temperature Range

Standard: -40°F to +150°F
-40°C to +65°C

Optional: -60°F to +150°F
-50°C to +65°C

Optional: Compliance to NFPA 130, capable of operation after exposure to ambient temperature of 482°F (250°C) for a minimum of 1 hour

Voltage

115 VAC, 1 Phase, 50/60 Hz.
230 VAC, 1 Phase, 50/60 Hz.
24 VAC, 1 Phase, 50/60 Hz.
12 VDC, 24 VDC

Torque Range

600 pound inches spring end (68 newton meters)

Speed Range

5 , 15 & 30 seconds for 90° revolution, motor operation
2 to 5 seconds spring operation

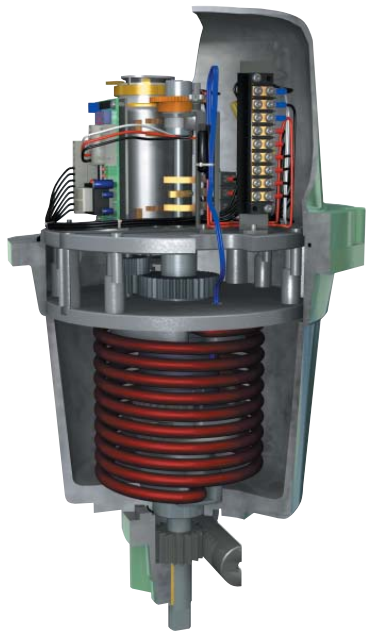
Spring

Helical torsion spring, spring steel XYLAN® coated

Standard Features

AC Voltages
4 – SPDT Switches, PTC Heater, Motor Break

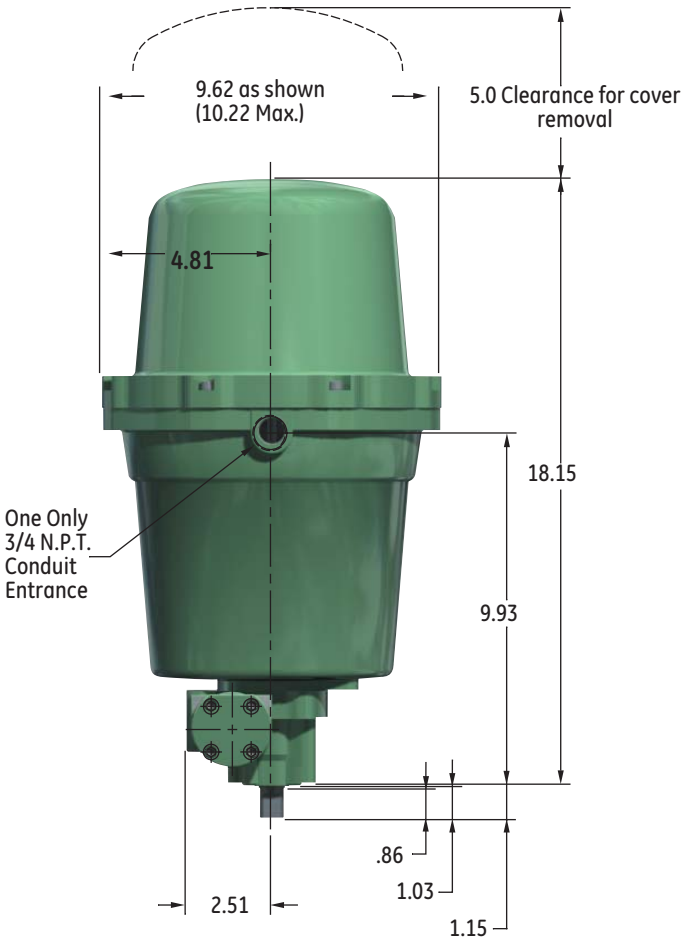
DC Voltages
2 – SPDT (High Current) Switches, PTC Heater, Motor Break

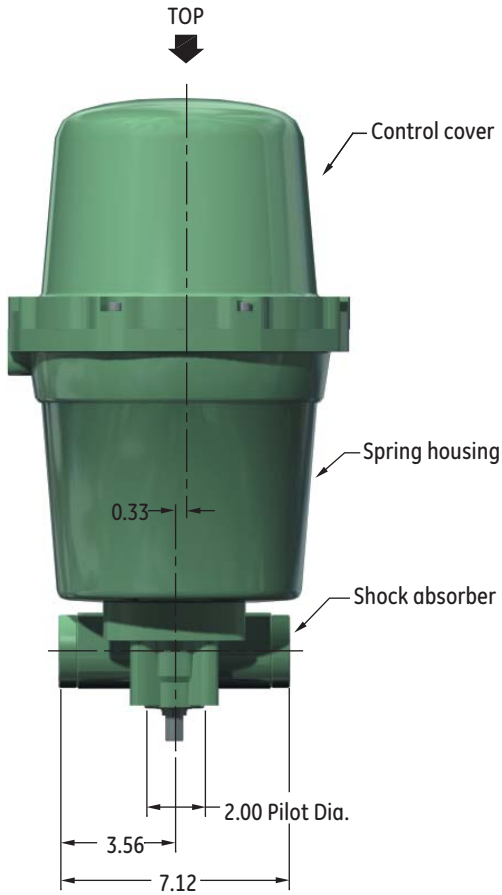


Spring Return Electric

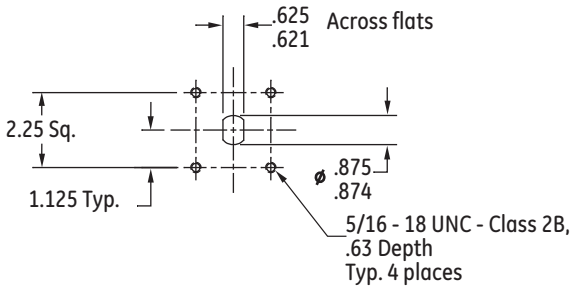
Outline Dimensions (Inches) – SURE 49

Weight
NEMA 4/6/7 Enclosure: 49 lbs/22.2 kg





Mounting Geometry - Bottom View



Notes

1. Direction of rotation is based on viewing actuator from top.
2. Actuator shown in energized position.
3. It is recommended that the actuator be driven electrically in both directions for normal operartion and prolonged life.

Spring Return Electric

Optional Manual Override Available

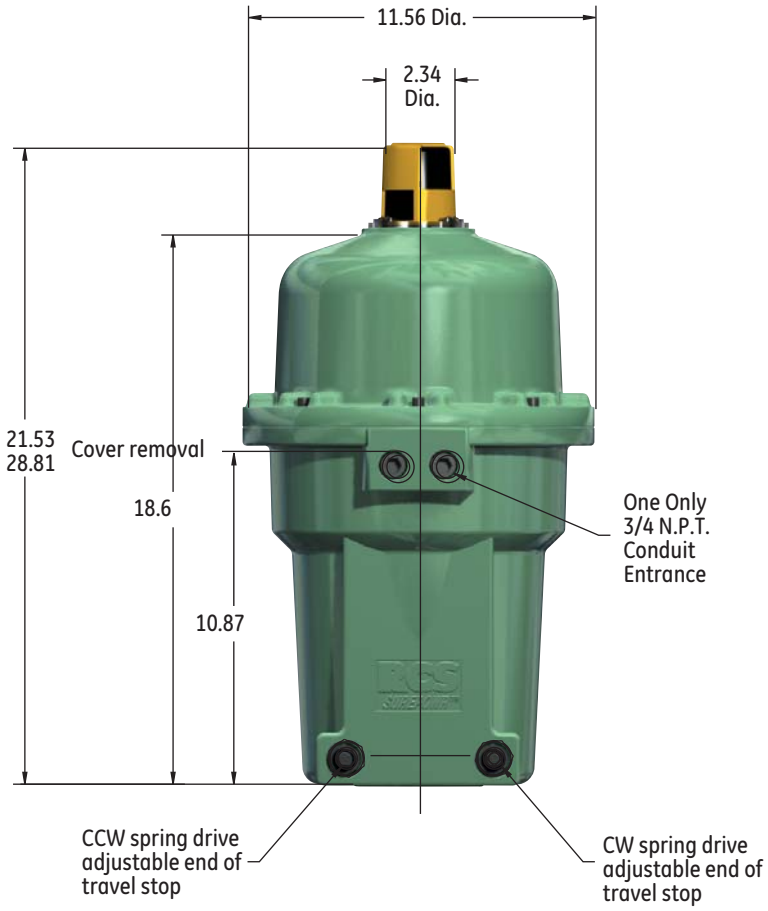
NEMA 4/6/7 Enclosure	
Approvals	
A.C. Models Only (Canadian Standard Association)	
CSA NRTL/C	Type 4
CSA NRTL/C	Class I, Divisions 1 & 2, Groups C & D
CSA NRTL/C	Class II, Divisions 1 & 2, Groups E, F & G
CSA NRTL/C	Approved to UL Standard No. 429, Electrically Operated Valves
CSA NRTL/C	Approved to UL Standard No. 1203, Electrical Equipment for use in Explosion - proof And Dust - Ignition - proof Hazardous (Classified) Locations

Models
SURE 100
Typical Application
For on/off and modulating control of: ■ Part turn ball, butterfly, plug valves or rotary dampers when emergency shutdown or shutoff capability is required in the event of a loss of power
Temperature Range
Standard: -40°F to +150°F -40°C to +65°C Optional: -60°F to +150°F -50°C to +65°C Optional: Compliance to NFPA 130, capable of operation after exposure to ambient temperature of 482°F (250°C) for a minimum of 1 hour
Voltage
115 VAC, 1 Phase, 50/60 Hz. 230 VAC, 1 Phase, 50/60 Hz.
Torque Range
1200 pound inches spring end (136 newton meters)
Speed Range
10 & 30 seconds for 90° revolution, motor operation 5 to 7 seconds spring operation
Spring
Helical torsion spring, spring steel, XYLAN® coated
Standard Features
AC Voltages 4 – SPDT Switches, PTC Heater, Motor Break

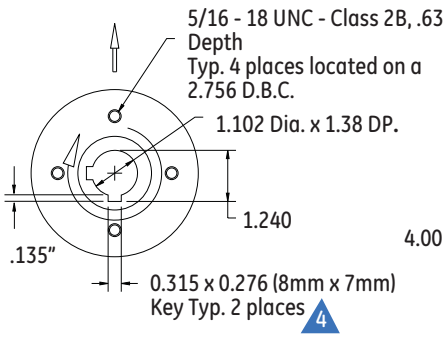
Spring Return Electric

Outline Dimensions (Inches) – SURE 100

Weight
NEMA 4/6/7 Enclosure: 70 lbs/31.8 kg

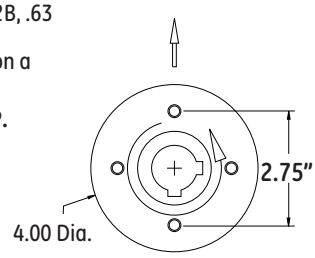


Conduit Entries



CCW Spring Return

Conduit Entries



CW Spring Return

Notes

1. Direction of rotation is based on viewing actuator from top.
2. Actuator shown in a power fail position.
3. Mounting circle complies with ISO 5211 flange type F07 (except bolt thread). Bolt circle is on center line, not straddling center line.
4. Two keys are recommended for driving device.
5. It is recommended that the actuator be driven electrically in both directions for normal operartion and prolonged life.

Spring Return Electric

Optional Manual Override Available

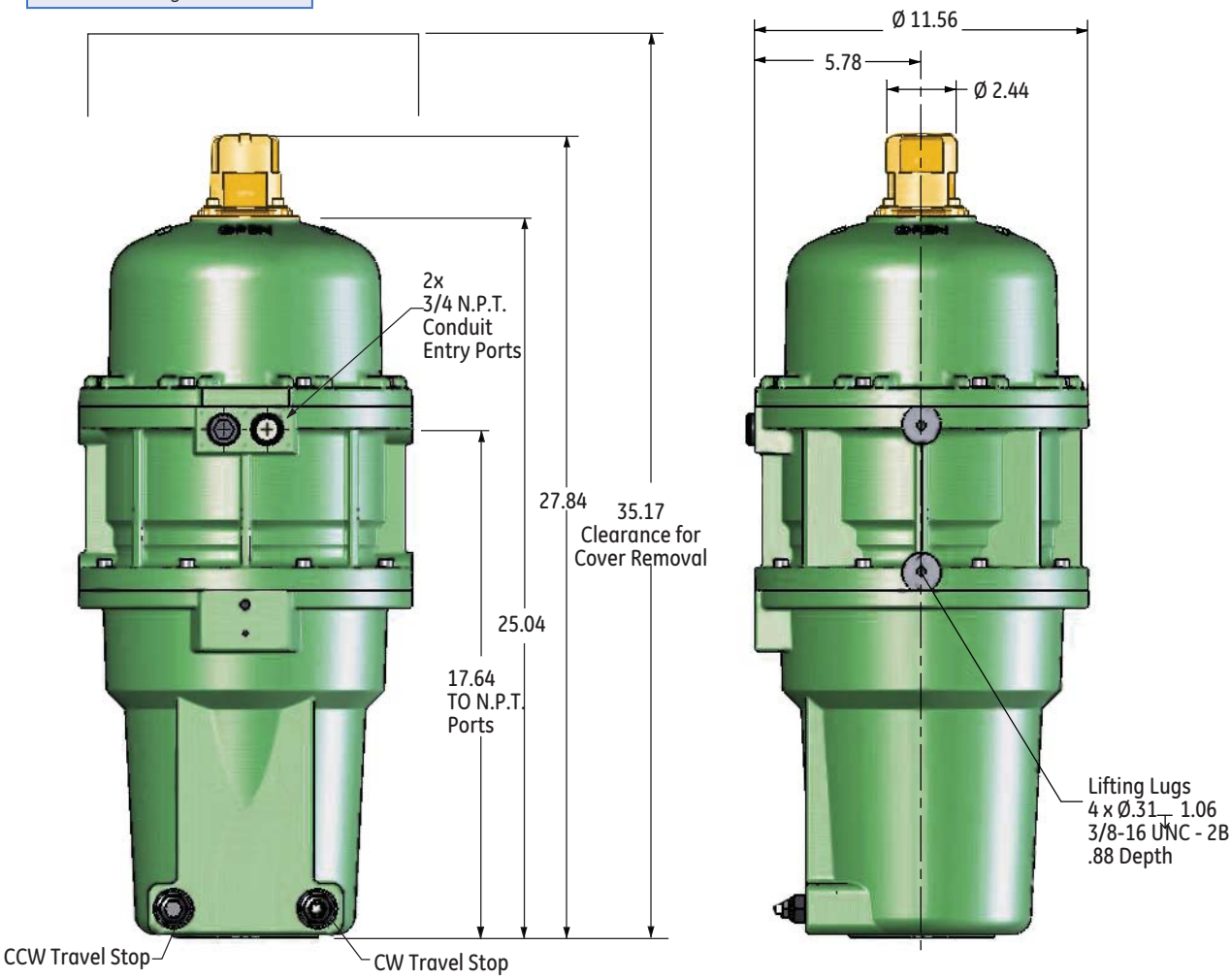
NEMA 4/6/7 Enclosure	
Approvals	
A.C. Models Only (Canadian Standard Association) - pending	
CSA NRTL/C	Type
CSA NRTL/C	Class I, Divisions 1 & 2, Groups C & D
CSA NRTL/C	Class II, Divisions 1 & 2, Groups E, F & G
CSA NRTL/C	Approved to UL Standard No. 429, Electrically Operated Valves
CSA NRTL/C	Approved to UL Standard No. 1203, Electrical Equipment for use in Explosion - proof And Dust - Ignition - proof Hazardous (Classified) Locations

Models
SURE 150
Typical Application
For on/off and modulating control of: ■ Part turn ball, butterfly, plug valves or rotary dampers when emergency shutdown or shutoff capability is required in the event of a loss of power
Temperature Range
Standard: -40°F to +150°F -40°C to +65°C Optional: -60°F to +150°F -50°C to +65°C Optional: Compliance to NFPA 130, capable of operation after exposure to ambient temperature of 482°F (250°C) for a minimum of 1 hour
Voltage
115 VAC, 1 Phase, 50/60 Hz. 230 VAC, 1 Phase, 50/60 Hz.
Torque Range
1800 pound inches spring end (204 newton meters)
Speed Range
15 seconds for 90° revolution, motor operation 5 seconds spring operation
Spring
Helical torsion spring, spring steel, XYLAN® coated
Standard Features
AC Voltages 4 – SPDT Switches, PTC Heater, Motor Break

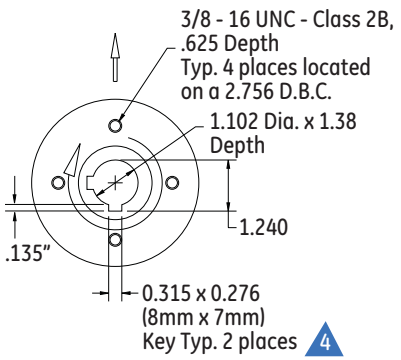
Spring Return Electric

Outline Dimensions (Inches) – SURE 150

Weight
120 lbs/54.5.8 kg

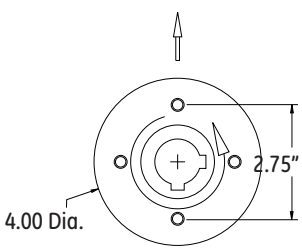


Conduit Entries



CCW Spring Return

Conduit Entries



CW Spring Return

Notes

1. Direction of rotation is based on viewing actuator from top.
2. Actuator shown in a power fail position.
3. Mounting circle complies with ISO 5211 flange type F07 (except bolt thread). Bolt circle is on center line, not straddling center line.
4. Two keys are recommended for driving device.
5. It is recommended that the actuator be driven electrically in both directions for normal operartion and prolonged life.

Spring Return Electric

115 & 230 VAC, 1 Phase, 50/60 Hz.

Model	Output Torque Inch Pounds (N.m)	Electrical Speed of Operation 60 Hz. (50 Hz.)	Speed of Operation 60 Hz. (50 Hz.)	Duty Cycle Rating 115 VAC	Duty Cycle Rating 220 VAC	Current Ratings 115 VAC		Current Ratings 220 VAC	
						NLA*	LRA*	NLA*	LRA*
Sure 25-5	300 (34)	5 seconds/90° (6 seconds/90°)	2 seconds/90°	50% (1)	50% (1)	1.40	2.15	CF**	CF**
Sure 25-10	300 (34)	10 seconds/90° (12 seconds/90°)	2 seconds/90°	50% (2)	50% (2)	1.00	1.55	CF**	CF**
Sure 24-10	300 (34)	10 seconds/90° (12 seconds/90°)	2 seconds/90°	25% (1)	25% (1)	0.70	1.05	0.45	65%
Sure 49-5	600 (68)	5 seconds/90° (6 seconds/90°)	2 seconds/90°	25% (1)	25% (1)	1.10	1.80	1.00	1.20
Sure 49-15	600 (68)	15 seconds/90° (18 seconds/90°)	2 seconds/90°	25% (1)	25% (1)	0.55	1.55	0.35	0.90
Sure 49-30	600 (68)	30 seconds/90° (35 seconds/90°)	2 seconds/90°	50% (2)	50% (2)	0.65	0.70	0.30	0.35
Sure 100-10	1,200 (136)	10 seconds/90° (12 seconds/90°)	5 seconds/90° (max) +	25% (1)	25% (1)	1.90	2.90	0.90	1.35
Sure 100-30	1,200 (136)	30 seconds/90° (35 seconds/90°)	7 seconds/90° (max) +	50% (2)	50% (2)	0.65	0.95	0.35	0.45
Sure 150-15	1,800 (136)	15 seconds/90° (18 seconds/90°)	5 seconds/90° (max) +	25% (1), (2)	25% (1), (2)	1.90	2.90	0.90	1.35

24 VAC

Model	Output Torque Inch Pounds (N.m)	Electrical Speed of Operation 60 Hz. (50 Hz.)	Speed of Operation 60 Hz. (50 Hz.)	Duty Cycle Rating 115 VAC	Current Ratings 115 VAC	
					NLA*	LRA*
Sure 49-30	600 (68)	30 seconds/90° (35 seconds/90°)	2 seconds/90°	25% (2)	4.50	5.00

12 & 24 VDC

Model	Output Torque Inch Pounds (N.m)	Electrical Speed of Operation	Speed of Operation	Duty Cycle Rating 12 VDC	Duty Cycle Rating 24 VDC	Current Ratings 12 VDC		Current Ratings 24 VDC	
						NLA*	LRA*	NLA*	LRA*
Sure 49-5	600 (68)	5 seconds/90°	2 seconds/90° (1)	50% (1)	50%	1.00	22.00	1.00	12.30

* (N.L.A.) — No Load Ampere
** (CF) — Consult Factory
(L.R.A.) — Locked Rotor Ampere
+ — Approximate, Based on Load
(1) — Open/Close Service
(2) — Open/Close or Modulating Service

Limit Switches (Sure 24 & 25)

Standard: Two-single pole, double throw type (SPDT) with an option for 2 or 4 additional.

Ratings: UL and CSA listed.
MIL-PRF-8805 Qualified Listing
25 amp at 277 VAC; 1 H.P. at 125 VAC; 2 H.P. at 250 VAC

Isolation Relays

To operate multiple actuators in parallel from a single signal requires isolating relays in the field wiring.
Consult factory.

Limit Switches (Sure 49, 100 7 150)

Standard: Four-single pole, double throw type (SPDT) with an option for 2 additional.

Ratings: Ratings: UL and CSA listed.
15 amp & 1/2 H.P. at 125 or 250 VAC
1/2 amp at 125 VDC; 1/4 amp at 250 VDC
Lamp Load: 5 amp at 120 VAC

Optional: All double pole, double throw type (DPDT).

Ratings: Ratings: UL and CSA listed.
10 amp at 125 or 250 VAC (form ZZ)
1/2 H.P. at 125 VDC; 3/4 H.P. at 250 VDC

Heater

PTC (Positive Temperature Coefficient) Heater standard in an AC Voltage Models

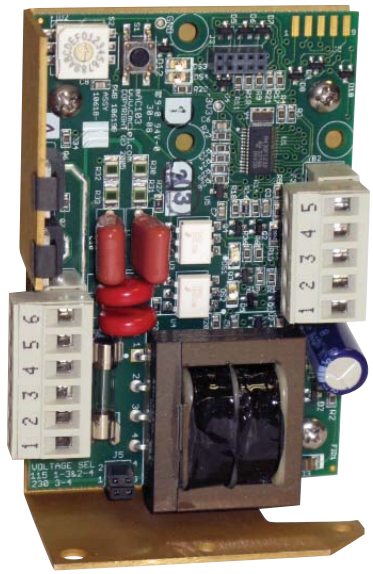
Duty Cycle

The percentage of time the electric motor is energized vs. the time it is at rest, in reversing duty and with the actuator running at it's rated load - maximum published torque.

Standard Modulating Duty Rating

- 12 motor starts (corrections) per minute.
- At the rated duty cycle for that model.
- With the speed of operation a minimum of 15 seconds for 90° or slower.
- With positioning accuracy of (+/-) 1% of total span.

D.C. Analog - EASC SCC-05



Application

The SCC-05 EASC (Electric Actuator Smart Controller) card is a cost-effective means for accurate and precise positioning control of RCS actuators utilizing an analog input signal. The EASC "One-Switch" setup system eliminates the need for external meters, dip switches, trimming potentiometers, or a display screen on the module. Simply set the full open and full closed positions, and the microprocessor technology does the rest. For control applications requiring an input-only control requirement, the SCC-05 provides excellent performance and a variety of standard features suitable for today's challenging automation and control requirements.

Features

Mounts internally in RCS actuator models: MAR-10, MAR-50, MAR-90, MAR-100, MAR-160, MAR-250, MAR-800 & all SurePowr models.

- Simple single switch setup allows complete control of controller configuration
- One step selection of input/output ranges including 4-20 mAdc, 1-5 Vdc, 2-10 Vdc and 0-10 Vdc, or virtually any custom range required
- "Learns while it runs" tuning makes configuration simple
- Selectable fail options
- Intelligent positioning reduces motor cycling, increases motor life and extends the actuator duty
- Optional Modbus RTU remote control over a RS-485 network. Complete access to all controller functions from your factory automation system
- Quick disconnect terminal strips facilitate fast and easy actuator maintenance and troubleshooting
- Always wires the same; no need to determine rotation direction during installation; rotation is selected at setup
- Robust power switching components, designed specifically for actuator motors, virtually eliminate field failures

Specifications

Power Requirements
Model SCC05-115/230 A:
Single phase, 115 or 230 VAC 50/60 Hz. (Jumper selectable)

Input Command Signal
Menu selectable factory defaults:

— 4-20 mADC
— 1 -5 VDC
— 2-10 VDC
— 0-10 VDC

Infinite adjustment during System

Signal Impedance
Input: 250Ω current, 200KΩ voltage

Power Output
Solid state, isolated from the input command signal and rated at:

— 5 amps continuous at 115 VAC
— 5 amps continuous at 230 VAC

All ratings assume the EASC is mounted on the actuator base plate

Sensitivity
Full scale sensitivity adjustable from 0% to 9%

Dead Band
Automatic deadband system with manual override.

Zero Span Adjustment
Simple setup, just set the fully closed position and fully open positions and input calibration is automatically adjusted.

Split Range
Settable within the span range using at least 1.5VDC or 3mA of input.

Remote Control
Optional Modus RTU control of all controller functions over a RS-485 multi-drop network

Ambient Temperature
-40°F (with heater) to +150°F (-40°C to +65°C)

Action on Loss of Command Signal
Factory default:

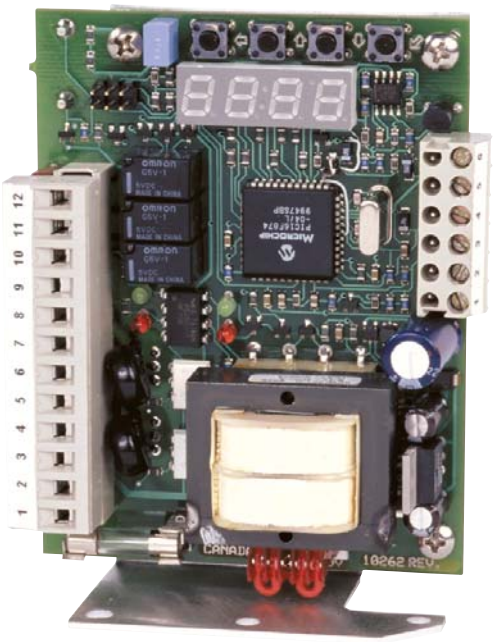
— Fail in last position (no movement)
— For a setting of ZERO input signal, the system fails to minimum signal position

Additional settings available at setup:

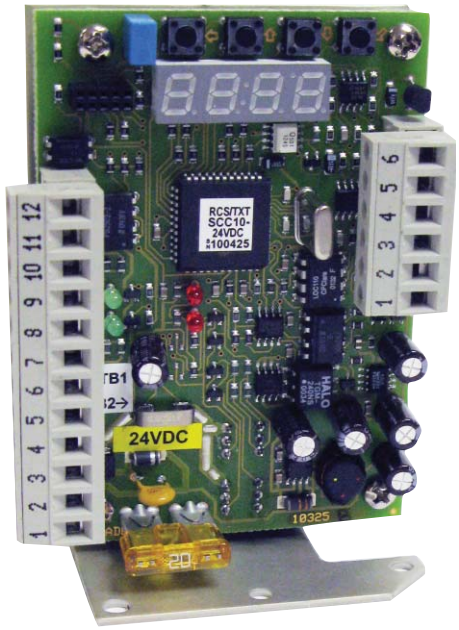
— Fail open (maximum signal value)
— Fail closed (minimum signal value)
— Fail to a preset position

Size
3.5 x 1.63 x 4 in.

D.C. Analog - EASC SCC-10



Models
SCC10-15/230V 115 or 230 Volt A.C. Actuators
SCC10-24 VAC 24 Volt A.C. Actuators

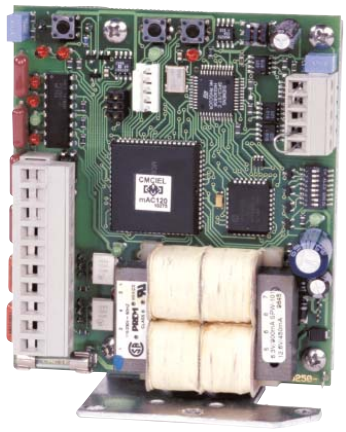


Model
SCC10-24 VDC 12 or 24 Volt D.C. Actuators

EASC (Micro-Processor Based Analog Controller)

The Electric Actuator Smart Controller (EASC SCC-10) card provides accurate positioning control of electric motor actuators using an analog input signal. Setup and calibration is greatly simplified using microprocessor based technology. There are no dip switches to set or trim pots to adjust. Setup is quick and easy using the EASC menu viewed on an LED display. No external meters are required, even for potentiometer setup. Once the initial menu settings are chosen, the EASC performs a self-calibration routine, applying the menu selections to actual actuator performance. Calibration values are then stored in permanent non-volatile memory.

Profibus D.P.



Model
DPC-100 12 or 24 Volt D.C. Actuators

Model
DPC-120 115 Volt A.C. Actuators

Features

- Two wire control reduces installation and start up time compared to multi-cable wiring
- Automatic calibration cuts down on start up time
- No deadband eliminates need for field adjustment.
- On line configuration of 36 operational parameters using generic Profibus software
- Low power consumption; does not require ventilation
- Electronic overload protection with built-in current monitoring
- LED indicators for input, outputs and communication channel
- Automatic calibration with local pushbutton or remote command
- Dynamic breaking eliminates overshooting
- Robust power switching components, designed specifically for actuator motors, virtually eliminates field failures

Specifications

Power Supply
DPC-100: 24/12 VDC
DPC-120: 120 VAC

Communication Interface
Profibus Standard

Protocol
Profibus DP (Distributed Process)

Feedback
Potentiometer 1000 Ohms/Optical Encoder

Position Input Accuracy
1.0% full scale standard, Maximum 0.1%

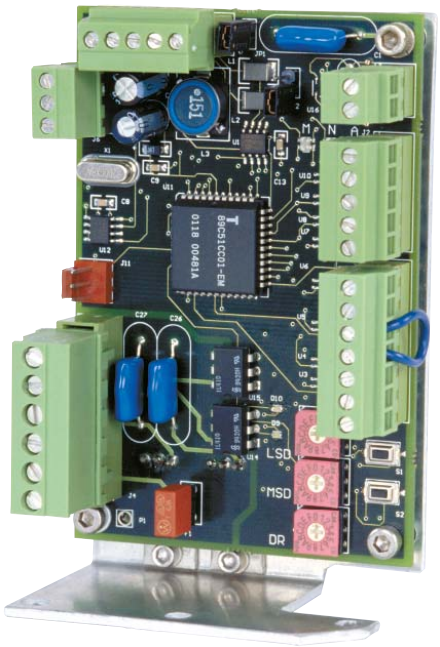
Temperature
-40°C to +70°C (-40°F to +158°F)

Relative Humidity
0 to 90% non-condensing

Dimensions
DPC-100: 4.0 x 1.5 x 2.5 in.
DPC-120: 4.25 x 1.75 x 3.75 in..

The DPC-100 & DPC-120 provide the following status and fault signals:
Valve full closed
Valve full open
Percentage of open
Valve seeking position
Motor running
Valve closing
Valve opening
Motor thermostat tripped
Incomplete travel
Valve opening or closing manually
Valve jammed/current limiting
Motor still energized after stop or end of travel
Controller self-test (detects problems)
Communication failure
Average running current load
Peak running current load
Idle current load

Devicenet™



Models
DNET115 115 Volt A.C. Actuators

Application

For on/off or positioning control of motorized valves. DeviceNet™ is a type of communication network that allows up to 63 field devices to be linked together with a singe five-conductor cable. DeviceNet™ is a product of Allen-Bradley and is an open, non-proprietary, bus network. Typically, a DeviceNet™ system is used with the Allen-Bradley PLC5 and SLC series of programmable logic controllers. A standard DeviceNet™ Scanner interface is available for both types. Devices in the field are connected via a drop line to a 5 conductor trunk-line that is then routed to the scanner card.

Features

- Provides open/stop/close or positioning control with limit switch status feedback
- Provides instantaneous motor reversal protection
- Command and end-of-travel verification alarm
- Conforms to ODVA standard
- Easy-to-see LED indicators for all control outputs, status inputs and diagnostic alarm
- ESD functions for 'go open', 'stay put', or 'go closed'

Specifications

Hardware Specifications
Supply Power: 2W @ 24VDC
Operating Temperature: -20°C – 70°C
Storage Temperature: -40°C – 80°C
Humidity: 90% Non Condensing
Solid State Outputs: (2) Isolated 600VAC 15A
Digital Inputs: (8) Dry Contacts
Analog Inputs: (2) Channels (see below)
Processor: Temic 89C51CC01
RAM: 1K
Flash: 32K
EEPROM: 32K

Serious Interfaces
One CAN 2.0 port.

Network Communication Protocols
Module Supports DeviceNet™ Group 2 Slave.

Analog Inputs Specification
Resolution: 10bit
Accuracy: 1% of FS.
Linearity: 1% of FS.
Temperature Drift: 2% of FS.
Range: 0 to 5V or 0-20mA input for AI1
1-5K Potentiometer for the Position Feedback.

Technical Summary of DeviceNet™
Network Size: Up to 64 nodes (including scanner)

Network Length: Up to 1,640 ft. at 125 Kbps.

Data Packets: 0-8 bytes

Bus Topology: Trunkline/Dropline

Cable: 5-Conductor cable (2 for power, 2 for communication, and 1 for ground).

Thick Trunk Lines: Belden 3082A or 3083A

Thin Drop Lines: Belden 3084A or 3085A

Drop Lines: Max. drop length is 20 ft. with cumulative drop length of 512 ft.

Repeaters: Not currently, but expected in future revisions of specifications.

Input/Output Listing

Digital Input Status:

Bit 0	Communication Loss
Bit 1	Reserved
Bit 2	Loss of Position Signal
Bit 3	Motor Stall
Bit 4	Limit Calibration Incorrect
Bit 5	Thermostat Trip
Bit 6	Manual Operation
Bit 7-15	Reserved

Digital Output Command:

Bit 0	Open Command
Bit 1	Close Command
Bit 2	Stop Command
Bit 3	ESD Command
Bit 4-7	Future

Environmental
Temperature Range:
Storage: -40°C to +90°C
Operating: -20°C to +80°C

Humidity Range:
5% to 95% at 25°C non-condensing

Vibration:
IEC 6B-2-6 1G @ 40-50 Hz., 0.012p-p @ 10-40 Hz.

Modbus

Application

The Modbus is an application specific controller, designed for positioning electric actuators using rotary feedback. Typical devices include rotary and linear actuators. Feedback may be via a potentiometer or a quadrature optical encoder. Controller outputs can drive small electric motors or motor starters directly.

A Modbus-485 communication network allows up to 100 devices on a single channel. The Modbus is powered by 24VDC and provides four supervisory inputs, configurable as limit switches or force open/close signals.

Automatic calibration is provided which requires no loop tuning. All operating parameters can be set as registers in the Modbus communications map.

Features

- High resolution position input for up to 0.1% accuracy
- 4-120/240VAC inputs for open and closed limit switches and 2 general purpose inputs
- Simple 4-wire Modbus-485 communication network includes supervisory power
- Robust communication, up to 500m cable length
- Plugable terminal strips for easy field installation
- Direct mounting within the actuator
- Low power consumption; does not require ventilation
- Electronic overload protection with built-in current monitoring optional
- High power outputs can directly drive small motors
- LED indicators on inputs, outputs and communication channel
- Automatic calibration using local push button or remote command
- Multi-vendor PLC support through the standard Modbus communication module

Typical Applications

- Blending of bulk materials
- Petroleum products and other liquids flow control
- Level control for maintaining process supply

Specifications

Actuator

Voltage	120/240VAC 1Ø
Current	4A (2 minute 25% duty-cycle)
Fuse	GMA 4 replaceable

Supervisory

Voltage	10 to 25VDC
Current	30mA @ 24VDC

Auxiliary Inputs

Voltage	120/240VAC
Current	min 10mA / max 20mA

Communication

Standard	Modbus-RS485 differential
Distance	500m (1,640ft.)
Input Load	12K ohm, standard
Termination	120Ω balanced line

Position

Resolution	12 bit (1 part in 4096)
Accuracy	0.1% full scale
Potentiometer	1000Ω typical (500 to 10kΩ)
	Quadrature
Optical Encoder	1000 to 4096 pulses

Environment

Temperature	-40°C to +70°C (-40°F to +158°F)
Relative Humidity	0 to 95% non-condensing

Dimensions

Length	96mm (3.75 in)
Width	70mm (2.75 in)
Height	36mm (1.40 in)

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