

RCS Actuators

MAR 100, 250



NEMA 4 Enclosure

Approvals

MAR Models Only
Canadian Standards Association
CSA NRTL/C—Enclosure 4



NEMA 4/6/7 Enclosure

Approvals

MAR Models Only
Canadian Standards Association
CSA NRTL/C—Enclosure 4 and 6
CSA NRTL/C—Class I, Divisions 1 and 2, Groups C and D
CSA NRTL/C—Class II, Divisions 1 and 2, Groups E, F and GCSA 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. Voltages | D.C. Voltages |
|---------------|---------------|
| MAR100 | DCR100 |
| MAR120 | DCR160 |
| MAR160 | DCR250 |
| MAR250 | DCR800 |
| MAR800 | |

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

Typical Application

For on/off and modulating control of:

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

Torque Range

1,500 to 10,000 inch pounds
(13.5 to 112 newton meters)

Speed Range

1.25 to 60 seconds for 90° revolution
6.6 and 12 RPM for multi-turns

Temperature Range

Standard: -40°F to +150°F
 -40°C to +65°C
Optional: -60°F to +150°F
 -50°C to +65°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 or a maximum of 3 hours.

Standard Features

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



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

| Model | Output Torque Inch Pounds (N.m) | Type | Speed of Operation 60 Hz. (50 Hz.) | Duty Cycle | Duty Cycle | Current Ratings 115 VAC | | Current Ratings 230 VAC | |
|-------------------|---------------------------------------|------------|---------------------------------------|--|--|----------------------------|---------|----------------------------|---------|
| | | | | Rating 115 Vac, 1Ph., 50/60 Hz. | Rating 230 Vac, 1Ph., 50/60 Hz. | N.L.A.* | L.R.A.* | N.L.A.* | L.R.A.* |
| MAR100-16 | 1500 (169) | Part Turn | 16 seconds/90° (19 seconds/90°) | 100% (2) | 50% (2) | 0.55 | 1.55 | 0.25 | 0.85 |
| MAR100-30 | 1800 (203) | Part Turn | 30 seconds/90° (35 seconds/90°) | 100% (2) | 50% (2) | 0.50 | 0.60 | 0.30 | 0.35 |
| MAR100-60 | 2500 (282) | Part Turn | 60 seconds/90° (70 seconds/90°) | 100% (2) | 50% (2) | 0.35 | 0.55 | 0.20 | 0.35 |
| MAR120-1.25 | 1500 (169) | Part Turn | 1.25 seconds/90° (2 seconds/90°) | 25% (1) | 25% (1) | 3.30 | 7.40 | 1.30 | 3.60 |
| MAR120-1.25 MT | 1500 (169) | Multi-Turn | 12 RPM (10 RPM) | 25% (2) | 25% (2) | 3.30 | 7.40 | 1.30 | 3.60 |
| MAR160-8 | 1920 (217) | Part Turn | 8 seconds/90° (9 seconds/90°) | 50% (1) | 50% (1) | 0.75 | 1.65 | 0.70 | 1.05 |
| MAR160-16 | 2000 (226) | Part Turn | 16 seconds/90° (19 seconds/90°) | 75% (2) | 50% (2) | 0.60 | 1.60 | 0.35 | 0.90 |
| MAR160-30 | 2500 (282) | Part Turn | 30 seconds/90° (35 seconds/90°) | 75% (2) | 50% (2) | 0.65 | 0.70 | 0.45 | 0.50 |
| MAR160-60 | 2800 (316) | Part Turn | 60 seconds/90° (70 seconds/90°) | 100% (2) | 50% (2) | 0.50 | 0.60 | 0.30 | 0.35 |
| MAR250-3 | 3500 (395) | Part Turn | 3 seconds/90° (4 seconds/90°) | 25% (1) | 50% (1) | 3.30 | 7.40 | 0.90 | 3.40 |
| MAR250-3MT | 3500 (395) | Multi-Turn | 5 RPM (4 RPM) | 25% (2) | 50% (2) | 3.30 | 7.40 | 0.90 | 3.40 |
| MAR250-8 | 3000 (339) | Part Turn | 8 seconds/90° (9 seconds/90°) | 40% (1) | 50% (1) | 1.60 | 2.20 | 1.00 | 1.25 |
| MAR250-16 | 4000 (452) | Part Turn | 16 seconds/90° (19 seconds/90°) | 50% (2) | 50% (2) | 1.10 | 1.80 | 0.70 | 1.05 |
| MAR250-30 | 5000 (565) | Part Turn | 30 seconds/90° (35 seconds/90°) | 50% (2) | 50% (2) | 0.75 | 1.65 | 0.50 | 0.95 |
| MAR250-60 | 5000 (565) | Part Turn | 60 seconds/90° (70 seconds/90°) | 75% (2) | 50% (2) | 0.65 | 0.70 | 0.30 | 0.35 |
| MAR800-12 | 7500 (847) | Part Turn | 12 seconds/90° (14 seconds/90°) | 25% (1) | 25% (1) | 3.30 | 7.40 | 0.90 | 3.40 |
| MAR800-30 | 10000 (1130) | Part Turn | 30 seconds/90° (35 seconds/90°) | 40% (2) | 50% (2) | 1.60 | 2.20 | 1.00 | 1.20 |
| MAR800-60 | 10000 (1130) | Part Turn | 60 seconds/90° (70 seconds/90°) | 75% (2) | 50% (2) | 0.55 | 1.55 | 0.50 | 0.95 |
| MAR1600-70 | 21000 (2373) | Part Turn | 70 seconds/90° (82 seconds/90°) | 25% (2) | 50% (2) | 3.30 | 7.40 | 0.90 | 3.40 |
| MAR4000-170 | 48000 (5424) | 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 its 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.

12 AND 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 VDC | |
|-----------|---------------------------------------|-----------|-------------------------------|--------------------------------|--------------------------------|---------------------------|---------|---------------------------|---------|
| | | | | | | N.L.A.* | L.R.A.* | N.L.A.* | L.R.A.* |
| DCR100-30 | 2000 (225) | Part Turn | 11.5 seconds/90° | 50% (2) | 50% (2) | 0.90 | 5.80 | 0.50 | 2.40 |
| DCR160-16 | 2200 (248) | Part Turn | 5.5 seconds/90° | 50% (1) | 50% (1) | 1.00 | 12.50 | 0.75 | 6.80 |
| DCR160-60 | 3600 (406) | Part Turn | 22 seconds/90° | 50% (2) | 50% (2) | 0.90 | 5.80 | 0.50 | 2.40 |
| DCR250-8 | 3000 (339) | Part Turn | 3.2 seconds/90° | 50% (1) | 50% (1) | 1.00 | 22.00 | 0.75 | 12.30 |
| DCR250-16 | 4000 (452) | Part Turn | 5.7 seconds/90° | 50% (1) | 50% (1) | 1.00 | 22.00 | 0.75 | 12.30 |
| DCR250-30 | 5000 (565) | Part Turn | 11.2 seconds/90° | 50% (2) | 50% (2) | 1.00 | 12.50 | 0.75 | 6.80 |
| DCR800-30 | 10000 (1130) | Part Turn | 13.3 seconds/90° | 50% (2) | 50% (2) | 1.00 | 22.00 | 0.75 | 12.30 |
| DCR800-60 | 10000 (1130) | Part Turn | 23 seconds/90° | 50% (2) | 50% (2) | 1.00 | 12.50 | 0.75 | 6.80 |

24 VAC

| Model | Output Torque Inch Pounds (N.m) | Type | Speed of Operation 60 Hz. (50 Hz.) | Duty Cycle Rating 24 VDC | Current Ratings 24 VAC | |
|-----------|---------------------------------------|-----------|---------------------------------------|--------------------------------|---------------------------|---------|
| | | | | | N.L.A.* | L.R.A.* |
| MAR100-16 | 1500 (169) | Part Turn | 16 seconds/90° (19 seconds/90°) | 50% (2) | 5.60 | 6.00 |
| MAR100-30 | 1800 (203) | Part Turn | 30 seconds/90° (35 seconds/90°) | 75% (2) | 2.40 | 4.50 |
| MAR100-60 | 2500 (282) | Part Turn | 60 seconds/90° (70 seconds/90°) | 100% (2) | 1.80 | 3.80 |
| MAR160-30 | 2500 (282) | Part Turn | 30 seconds/90° (35 seconds/90°) | 75% (2) | 4.50 | 5.00 |
| MAR160-60 | 2800 (316) | Part Turn | 60 seconds/90° (70 seconds/90°) | 75% (2) | 2.40 | 4.50 |
| MAR250-60 | 5000 (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: 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

220 and 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 | |
|-------------------|---------------------------------------|------------|---------------------------------------|--|--|----------------------------|---------|----------------------------|---------|
| | | | | | | N.L.A.* | L.R.A.* | N.L.A.* | L.R.A.* |
| MAR100-16 | 1500 (169) | Part Turn | 16 seconds/90° (19 seconds/90°) | 25% | 25% | 0.34 | 1.20 | 0.15 | 0.75 |
| MAR120-1.25 | 1500 (169) | Part Turn | 1.25 seconds/90° (2 seconds/90°) | 25% | 25% | 1.60 | 3.50 | 0.82 | 1.80 |
| MAR120-1.25 MT | 1500 (169) | Multi-Turn | 12 RPM (10 RPM) | 25% | 25% | 1.60 | 3.50 | 0.82 | 1.80 |
| MAR160-8 | 1920 (217) | Part Turn | 8 seconds/90° (9 seconds/90°) | 25% | 25% | 0.34 | 1.20 | 0.15 | 0.75 |
| MAR160-16 | 2000 (226) | Part Turn | 16 seconds/90° (19 seconds/90°) | 25% | 25% | 0.34 | 1.20 | 0.15 | 0.75 |
| MAR250-3 | 3500 (316) | Part Turn | 3 seconds/90° (4 seconds/90°) | 25% | 25% | 1.60 | 3.50 | 0.82 | 1.80 |
| MAR250-3MT | 3500 (316) | Multi-Turn | 5 RPM 4RPM | 25% | 25% | 1.60 | 3.50 | 0.82 | 1.80 |
| MAR250-16 | 4000 (452) | Part Turn | 16 seconds/90° (19 seconds/90°) | 25% | 25% | 0.34 | 1.20 | 0.15 | 0.75 |
| MAR250-30 | 5000 (565) | Part Turn | 30 seconds/90° (60 seconds/90°) | 25% | 25% | 0.34 | 1.20 | 0.15 | 0.75 |
| MAR250-60 | 5000 (565) | Part Turn | 60 seconds/90° (70 seconds/90°) | 25% | 25% | 0.34 | 1.20 | 0.15 | 0.75 |
| MAR800-12 | 7500 (847) | Part Turn | 12 seconds/90° (14 seconds/90°) | 25% | 25% | 1.60 | 3.50 | 0.82 | 1.80 |
| MAR800-30 | 10000 (1130) | Part Turn | 30 seconds/90° (35 seconds/90°) | 25% | 25% | 0.34 | 1.20 | 0.15 | 0.75 |
| MAR800-60 | 10000 (1130) | Part Turn | 60 seconds/90° (70 seconds/90°) | 25% | 25% | 0.34 | 1.20 | 0.15 | 0.75 |
| MAR1600-70 | 21000 (2373) | Part Turn | 70 seconds/90° (80 seconds/90°) | 25% | 25% | 1.60 | 3.50 | 0.82 | 1.80 |
| MAR4000-170 | 48000 (5424) | 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.

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.

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.

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