

LOW TEMPERATURE RANGE SMARTMOTOR™ (SM17205M-LTR)

Engineered for robust and reliable operation in harsh environments and high altitudes



The Moog Animatics Low Temperature Range (LTR) SmartMotor™ is available in a standard NEMA 17 frame size, model SM17205M-LTR (the “LTR-17”). This motor has been engineered for robust and reliable operation in extremely frigid environments and at high altitudes.^[1]

To achieve this, onboard internal heaters ensure that the motors can start up in temperatures below -40 degrees C. Along with this, other design changes allow these motors to withstand random vibrations up to 6 G RMS, 10 - 2000 Hz, and standard IP sealing protects the motors from condensation.^[2]

The LTR-17 motor allows you to have SmartMotor™ capability in a fully integrated, IP sealed package specifically designed for extremely low temperature and high altitude applications.

Features:

- NEMA 17 size
- Designed for operation with extreme temperatures, vibrations and high altitude
- IP62 high altitude operation
- Low temp startup with onboard heater to raise circuit temperature from -65 to -40 °C
- Magnetic, single turn absolute encoder
- Four 5 V TTL sourcing inputs
- RS-422 differential communication
- FAA approved, click-fit connector
- Non-RoHS

^[1]For RoHS exempt applications only – the LTR motors contain lead-based solder on some internal components to achieve increased reliability over greater thermal ranges.

^[2]IP sealed only when mounted to an equivalently sealed mating component.

ADVANTAGES

- Extreme low temperature startup through onboard heater
- Protection against condensation through standard IP sealing
- High altitude operation ensured through proprietary design and testing
- Ease of programming through powerful AniBasic (BASIC-like) language with over 200 commands
- Minimal cabling and space requirements due to fully integrated design
- Ability to solve difficult application problems through field-proven Class 5 features

APPLICATIONS

- Aerospace motion actuation where high altitude and low temperature are factors
- Motion requirements in arctic regions
- Pan and tilt solar collectors
- High altitude surveillance cameras
- Refrigerated food and pharmaceutical processing
- Wind tunnel testing in extreme temperatures
- Cryogenic containment handling
- Cold thermal test chambers
- Nozzle/valve flow for coolers
- Ice handling systems

SPECIFICATIONS

TECHNICAL DATA

| | | |
|------------------------------------------------|-------|---------------------------------------------|
| Continuous torque (up to 4500 rpm) | 36 | oz-in |
| | 0.25 | N-m |
| Peak torque at stall | 66 | oz-in |
| | .47 | N-m |
| Nominal continuous power (@ 5500 rpm) | 135 | watts |
| No load speed | 7,200 | rpm |
| Motor constant | 7.3 | oz-in/(watts) ⁵ |
| Rotor inertia | 21.7 | (oz-in-sec ²) x10 ⁻⁴ |
| Weight | 0.6 | lb |
| | 0.27 | kg |
| Shaft diameter | 0.20 | in |
| | 5.08 | mm |
| Shaft, radial load | 7 | lb |
| | 3.17 | kg |
| Shaft, axial thrust load | 3 | lb |
| | 1.36 | kg |
| Maximum continuous current (@ 6000 rpm) | 3.6 | amps |
| Peak power (@ 5100 rpm) | 155 | watts |
| Torque sensitivity (K_t) | 8.8 | oz-in/amp |
| Voltage constant (K_e) | 6.51 | volts/krpm |
| Terminal resistance (R_T) | 1.44 | Ohms |
| Terminal inductance (L_T) | 1.4 | mH |

Storage temperature -65 to +85 °C.

Normal operating temperature -55 to +70 °C.

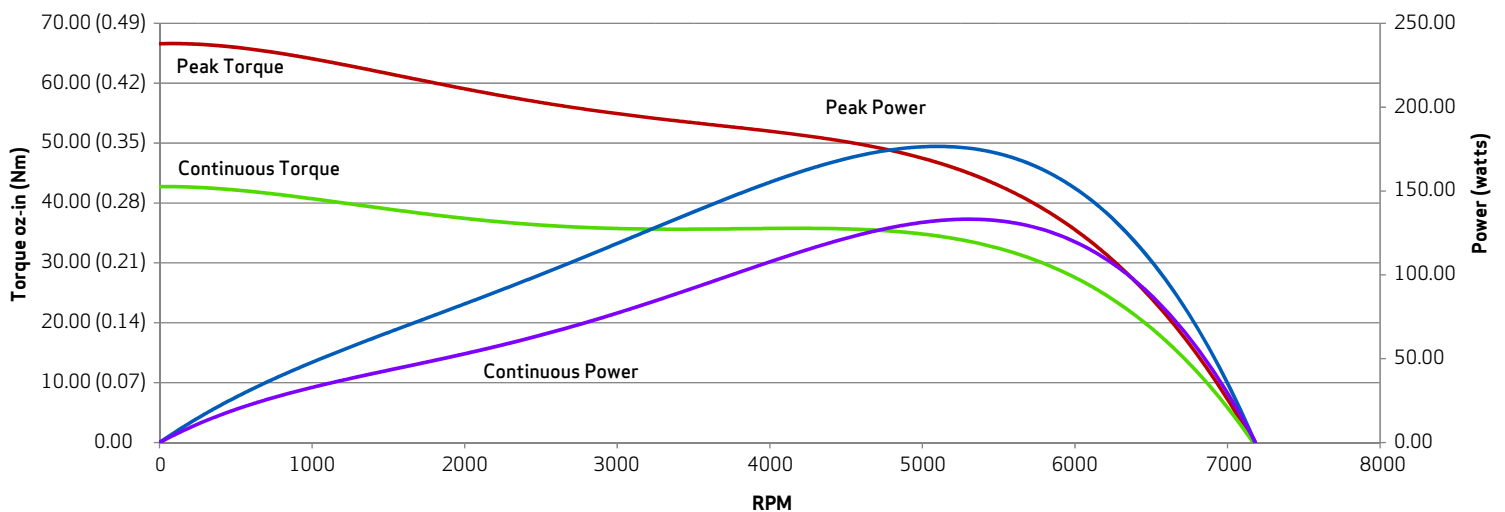
External power or heater must bring temperature up to at least -40 °C for startup from cold.*

*Consult manual found on the website for more details.

⚠ Warning: This product contains lead-based solder on some internal components.

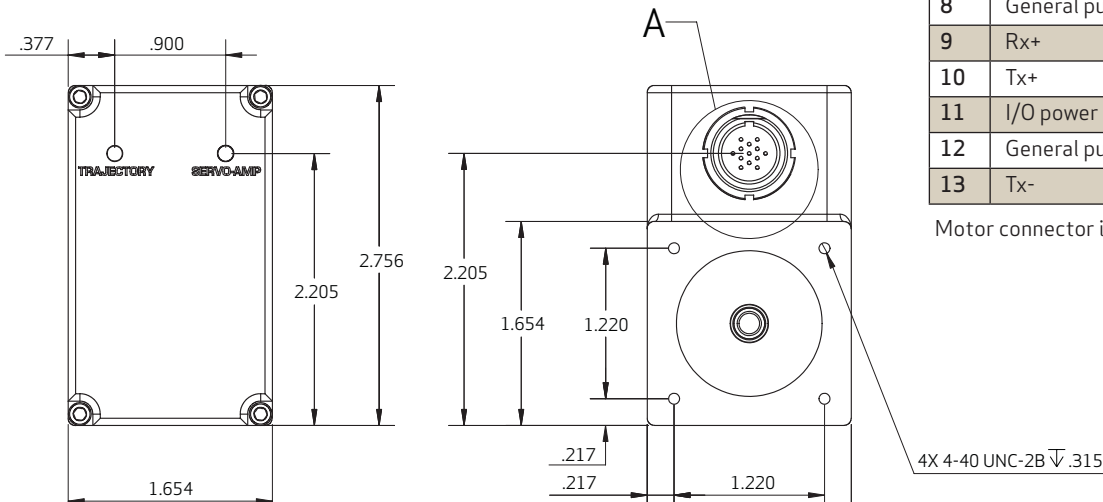
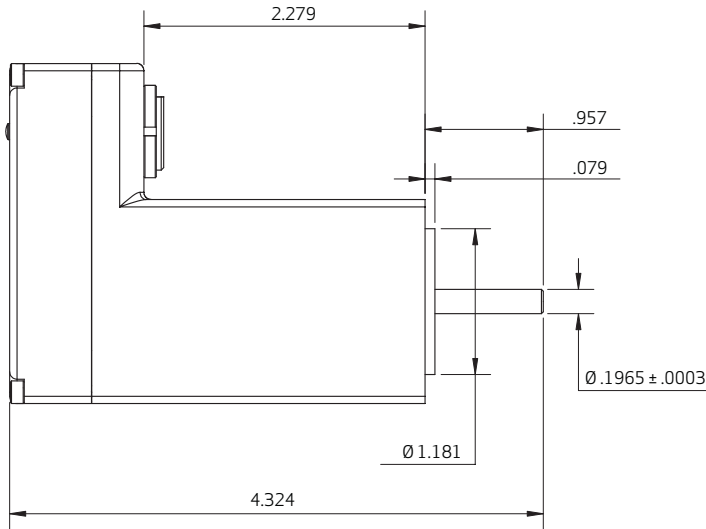
PERFORMANCE TORQUE AND POWER CURVE

SM17205M-LTR motor torque versus speed, 48 volts, MDT commutation, 25 °C ambient (curves are derated at higher ambient).



SPECIFICATIONS

OUTLINE DRAWING



Dimensions are in inches

CONNECTORS

| Pin | Signal |
|-----|-----------------------------|
| 1 | +48V motor power in |
| 2 | Motor power return (common) |
| 3 | Rx- |
| 4 | Heater power return |
| 5 | +48V heater power in |
| 6 | General purpose I/O 2 |
| 7 | General purpose I/O 1 |
| 8 | General purpose I/O 0 |
| 9 | Rx+ |
| 10 | Tx+ |
| 11 | I/O power return (common) |
| 12 | General purpose I/O 3 |
| 13 | Tx- |

Detail A: Connector pin layout diagram showing 13 pins numbered 1 through 13.

Motor connector is Glenair® model 804-005-07M8-13PA.

Moog has offices around the world. For more information or the office nearest you, contact us online.
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SM17205M-LTR SmartMotor™ Technical Data Sheet
 MA1026 09/18

For product information, visit
www.animatics.com

This technical data is based on current available information and is subject to change at any time. Specifications for specific systems or applications may vary.

