



MSM957141-36 Smart Motor Family Position/Speed/Torque

PRELIMINARY SPECIFICATIONS SUBJECT TO CHANGE

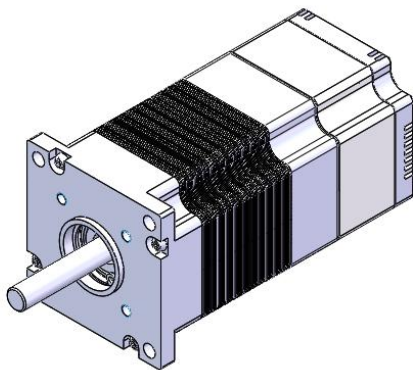
FEATURES

The **MSM957141-36** is part of a family of fully integrated smart motor solutions for servo motor applications. This 57mm (NEMA 23), 141W power motor integrates a brushless DC motor and driver module. The user can choose from one of three options: speed control mode, position control mode, or speed/position control mode. Two control interface options are available: an RS485 interface or a PULSE/DIR interface.

Easy-to-use GUI software provides flexibility as it allows users to flexibly optimize the design online through the RS485 control interface. The parameters are saved in the motor's non-volatile memory. A design guide for the GUI is available for download at www.monolithicpower.com

In addition to the fully integrated smart motor solutions, the driver modules can be ordered separately for customization into different motor types. The **MMP757141-36** is the driver module part number.

A datasheet for the MMP757141-36 is available for download at www.monolithicpower.com.



DESCRIPTION

- 18V to 70V Input Voltage Range
- Max. 141W Continuous Power Output
- 0.45N-m Rated Torque (1.35N-m Peak Torque)
- 0.3° Position Resolution
- RS485 Interface and PULSE/DIR Interface
- Position Control and Speed Control
- Operating Temperature: 0°C - 70°C (Power Derated > 40°C)
- Storage Temperature: -40°C - 125°C

ORDERING INFORMATION

| Part Number | Diameter (mm) | Power (W) | Typical Voltage (V) | Control Mode | Interface |
|------------------|---------------|-----------|---------------------|-----------------|-----------|
| MSM957141-36-S-R | 57 | 141 | 36 | Speed | RS485 |
| MSM957141-36-P-R | 57 | 141 | 36 | Position | RS485 |
| MSM957141-36-C-R | 57 | 141 | 36 | Speed /Position | RS485 |
| MSM957141-36-P-D | 57 | 141 | 36 | Position | Pulse/Dir |

To evaluate the smart motor, an evaluation kit can be ordered from monolithicpower.com

Evaluation Kit EVKT-957141-36

| # | Part Number | Item | Quantity |
|---|------------------------------------------|------------------------------------------------|----------|
| 1 | MSM957141-36-X-X | Smart Motor | 1 |
| 2 | eMotion Control System Communication Kit | USB Dongle with Cable | 1 |
| 3 | TDRIVE-957141 | USB Flash Drive with GUI Installation Document | 1 |

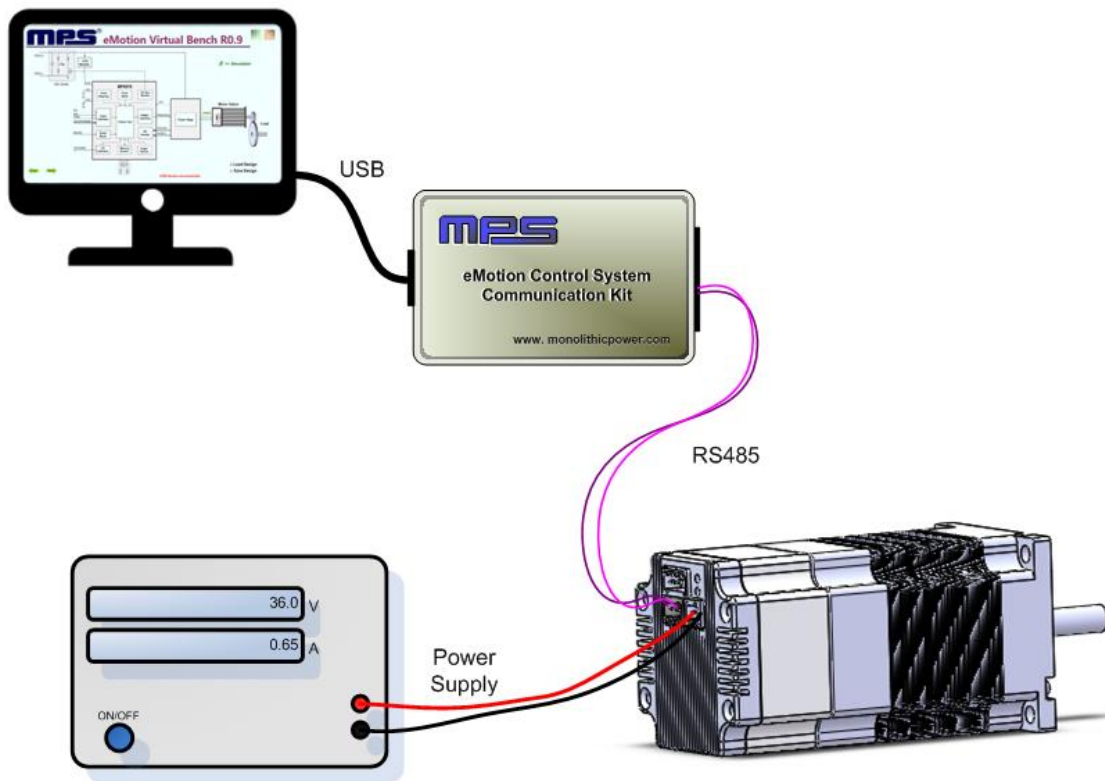
SMART MOTOR SPECIFICATIONS

| Smart Motor | | | |
|---------------------|------------|-------|-------------------|
| Parameters | Condition | Value | Units |
| Input Voltage | | 36 | V |
| Output Power | 0°C - 40°C | 141 | W |
| Position Resolution | | 0.3 | ° |
| Nominal Speed | | 3000 | RPM |
| Nominal Torque | | 0.45 | N-m |
| Rotor Inertia | | 320 | g-cm ² |
| Diameter | | 57 | mm |
| Shaft Diameter | | 8 | mm |
| Length | Body Only | 96 | mm |
| Weight | | 1200 | g |

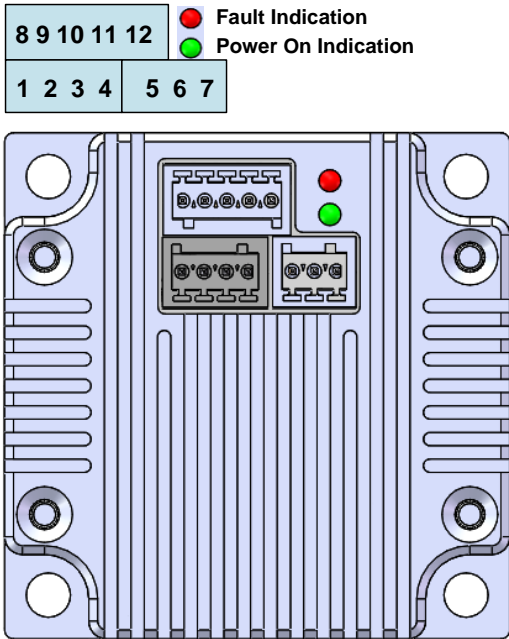
RECOMMENDED OPERATION CONDITIONS

Input voltage 18V -70V
 Control interface voltage 0V-5.5V
 Max. pulse frequency 500kHz
 RS485 A/B voltage 0V-5.5V
 RS485 common mode voltage +/-15V
 Operation temperature 0°C - 70°C
 Storage temperature -40°C - 125°C

HARDWARE CONNECTION FOR SMART MOTOR



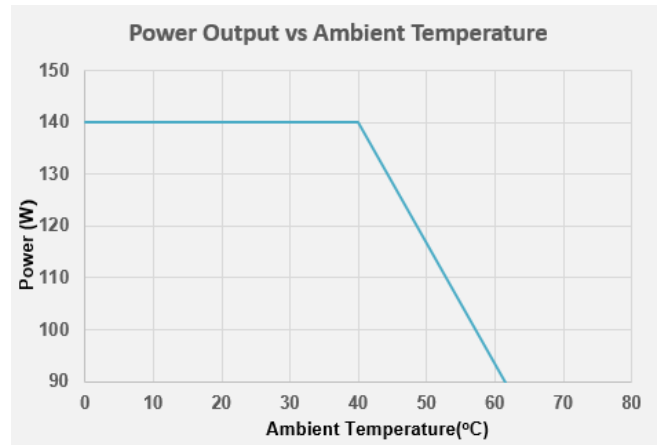
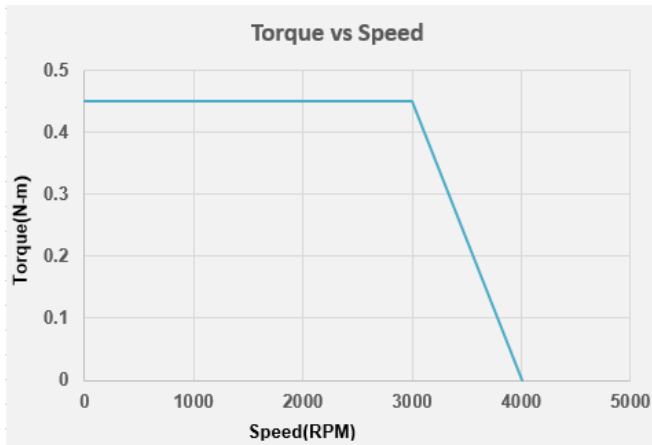
PIN CONFIGURATION



| Pin Number | Designation | Pin Description |
|--------------------------|-------------|-----------------------------------|
| RS485 Interface | | |
| 1 | EXT_5V | 5V Input For Firmware Programming |
| 2 | B | RS485 Node B |
| 3 | AGND | RS485 Ground |
| 4 | A | RS485 Node A |
| Power Interface | | |
| 5 | GND | Power Ground |
| 6 | R- | Shunt Resistor Return Node |
| 7 | VIN | Input Power Supply |
| Control Interface | | |
| 8 | COM- | Common Return |
| 9 | EN+ | Enable Input |
| 10 | PEND+ | Position End Output |
| 11 | PUL+ | Pulse Input |
| 12 | DIR+ | Direction Input |

TYPICAL PERFORMANCE CHARACTERISTICS

T_A=25°C, VIN=36V, unless otherwise noted



SMART MOTOR MECHANICAL DRAWING

