



EVKT-MSM942052-24

eMotion System™ Smart Motor Module Evaluation Kit

FEATURES

The **EVKT-MSM942052-24 evaluation kit** is part of a family of fully integrated smart motor solutions for servo motor applications. This 42mm (NEMA 17), 52W motor integrates a brushless DC motor and a smart motor module. The user can program the system to operate in speed control mode, position control mode, or torque control mode. Two control interface options are available: an RS485 interface and a PULSE/DIR interface.

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

The smart motor modules can be ordered separately for customization into different motor types. The **MMP742052-24** is the driver module part number used in the kit.

The datasheet for the **MMP742052-24** is available for download at www.monolithicpower.com.

DESCRIPTION

- 18V to 36V Input Voltage Range
- Max 52W Continuous Power Output
- 0.125N-m Rated Torque (0.375N-m Peak Torque)
- 0.3° Position Resolution
- RS485 Interface and PULSE/DIR Interface
- Position, Speed, and Torque Control Modes
- Operating Temperature: 0°C to 70°C (Power Derated > 40°C)
- Storage Temperature: -40°C to +125°C

ORDERING INFORMATION

| | |
|---------------------|-------------------|
| Part Number | EVKT-MSM942052-24 |
| Diameter (mm) | 42 |
| Power (W) | 52 |
| Typical Voltage (V) | 24 |
| Interface | RS485 |

Evaluation Kit EVKT-MSM942052-24 Contents

| # | Part Number | Item | Quantity |
|---|-----------------------------------|---|----------|
| 1 | EVKT-MSM942052-24 | BLDC motor with MMP742052-24 smart motor module installed | 1 |
| 2 | eMotion System™ communication kit | USB communication interface with cable | 1 |



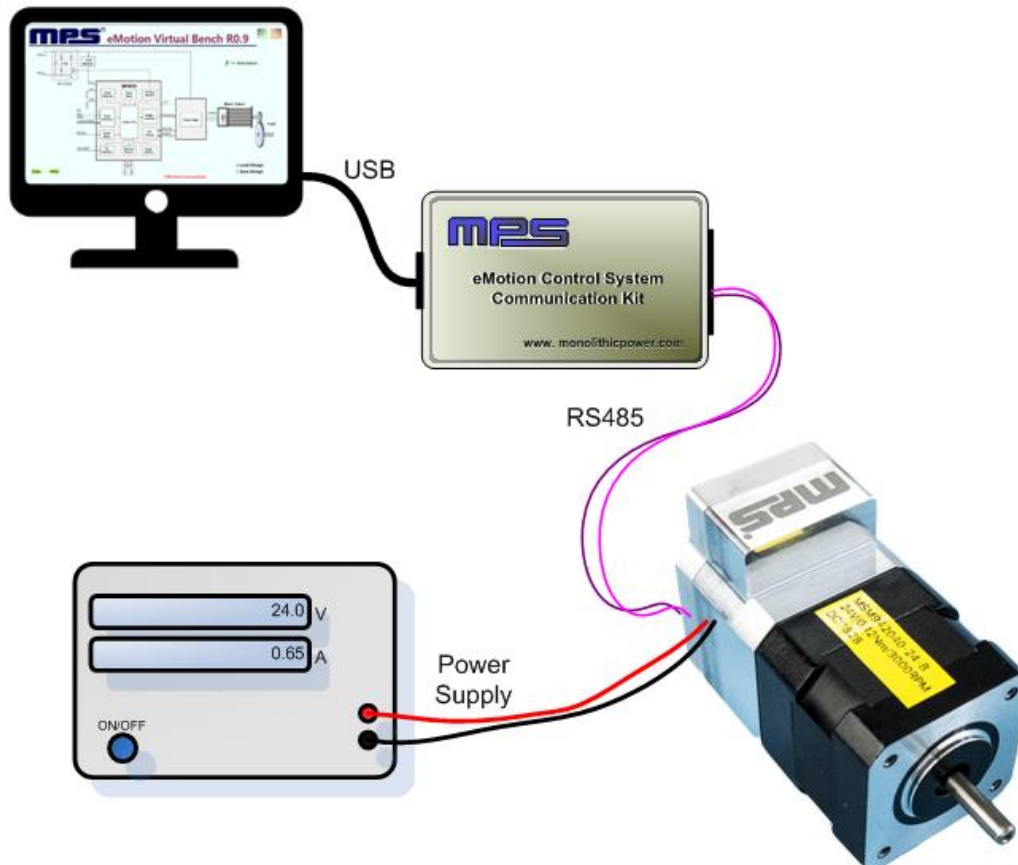
EVALUATION KIT SPECIFICATIONS

| Smart Motor Module Evaluation Kit | | | |
|-----------------------------------|-------------|-------|-------------------|
| Parameter | Condition | Value | Units |
| Input voltage | | 24 | V |
| Output power | 0°C to 40°C | 52 | W |
| Position resolution | | 0.3 | ° |
| Nominal speed | | 4000 | rpm |
| Nominal torque | | 0.125 | N-m |
| Rotor inertia | | 48 | g-cm ² |
| Diameter | | 42 | mm |
| Shaft diameter | | 5 | mm |
| Length | Body only | 60 | mm |
| Weight | | 500 | g |

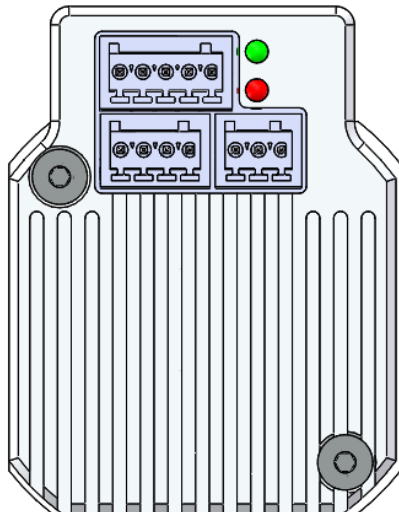
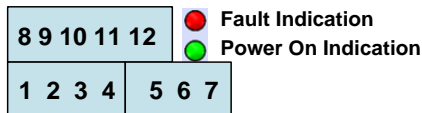
RECOMMENDED OPERATING CONDITIONS

Input voltage..... 18V to 36V
 Control interface voltage..... 0V to 5.5V
 Max pulse frequency500kHz
 RS485 A/B voltage 0V to 5.5V
 RS485 common mode voltage.....±15V
 Operation temperature..... 0°C to 70°C
 Storage temperature..... -40°C to +125°C

HARDWARE CONNECTIONS



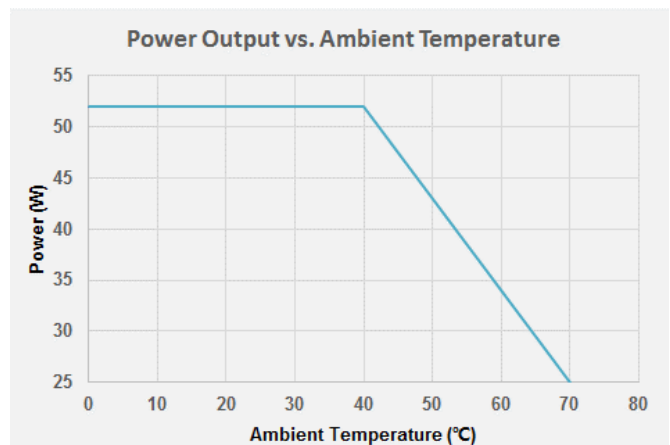
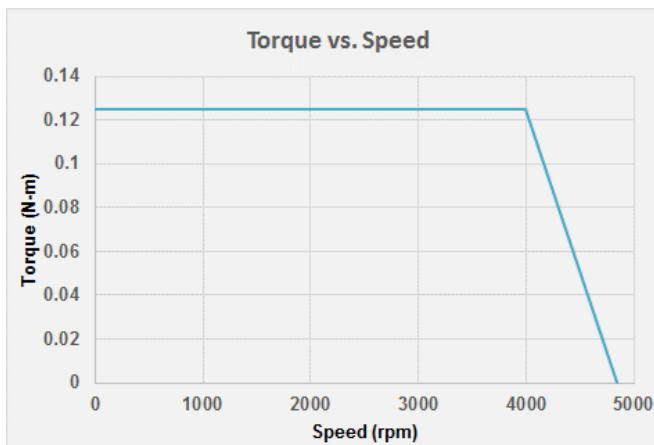
PIN CONFIGURATION



| 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

$T_A = 25^\circ\text{C}$, $V_{IN} = 24\text{V}$, unless otherwise noted.



MECHANICAL DRAWING

