

**PRELIMINARY SPECIFICATIONS SUBJECT TO CHANGE**

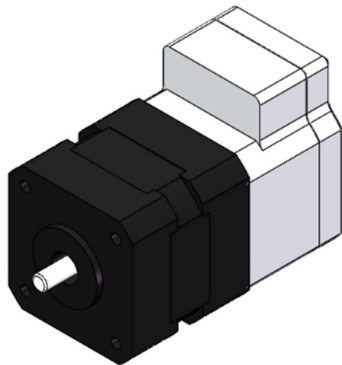
## FEATURES

The **MSM942038-24** is part of a family of fully integrated smart motor solutions for servo motor applications. This 42mm (NEMA 17), 38W 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 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](http://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 **MMP742038-24** is the driver module part number.

A datasheet for the MMP742038-24 is available for download at [www.monolithicpower.com](http://www.monolithicpower.com).



## DESCRIPTION

- 18V to 36V Input Voltage Range
- Max. 38W Continuous Power Output
- 0.12N-m Rated Torque (0.36N-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
MSM942038-24-S-R	42	38	24	Speed	RS485
MSM942038-24-P-R	42	38	24	Position	RS485
MSM942038-24-C-R	42	38	24	Speed /Position	RS485
MSM942038-24-P-D	42	38	24	Position	Pulse/Dir

To evaluate the smart motor, an evaluation kit can be ordered from [monolithicpower.com](http://monolithicpower.com)

### Evaluation Kit EVKT-942038-24

#	Part Number	Item	Quantity
1	MSM942038-24-X-X	Smart Motor	1
2	eMotion Control System Communication Kit	USB Dongle with cable	1

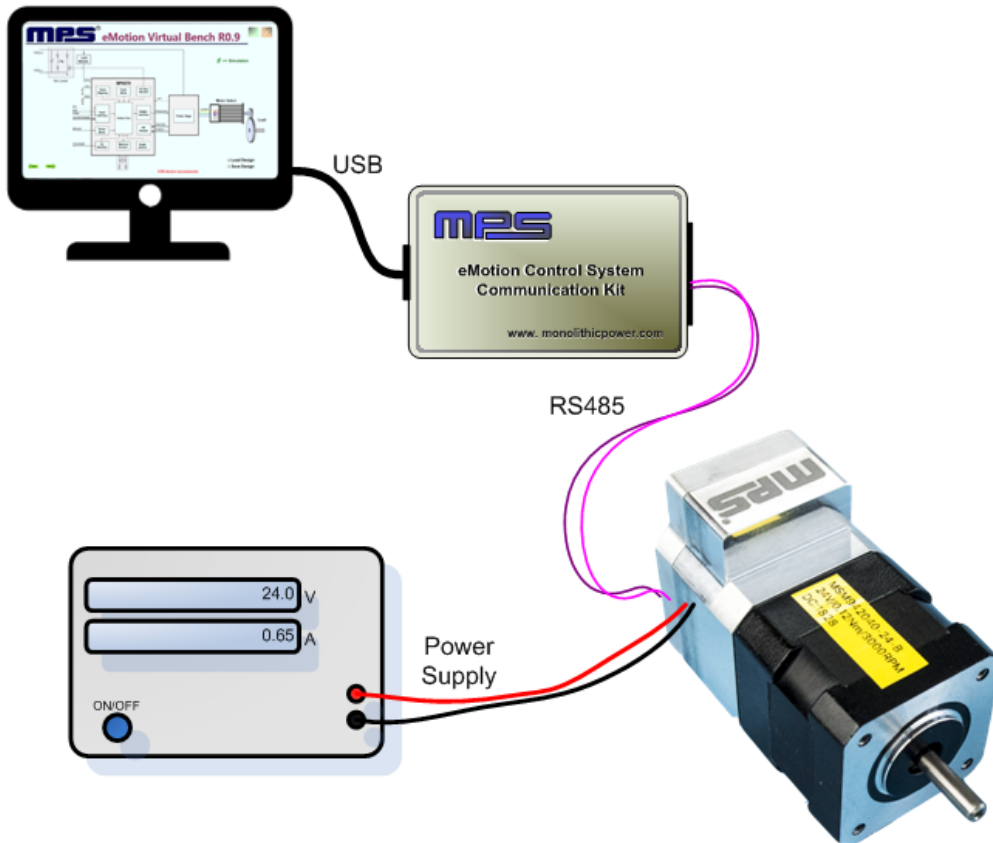
**SMART MOTOR SPECIFICATIONS**

Smart Motor			
Parameters	Condition	Value	Units
Input Voltage		24	V
Output Power	0°C - 40°C	38	W
Position Resolution		0.3	°
Nominal Speed		3000	RPM
Nominal Torque		0.12	N-m
Rotor Inertia		24	g-cm <sup>2</sup>
Diameter		42	mm
Shaft Diameter		5	mm
Length	Body Only	40	mm
Weight		300	g

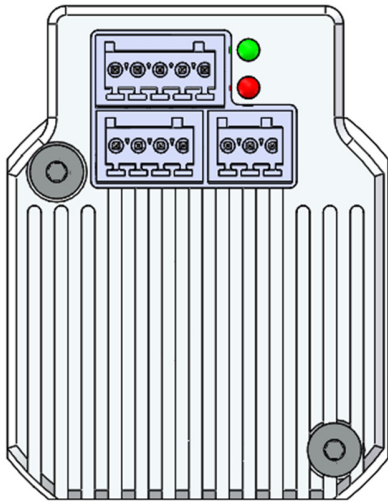
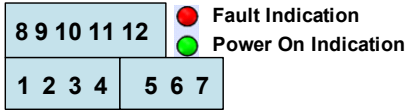
**RECOMMENDED OPERATION CONDITIONS**

Input voltage ..... 18V -36V  
 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**



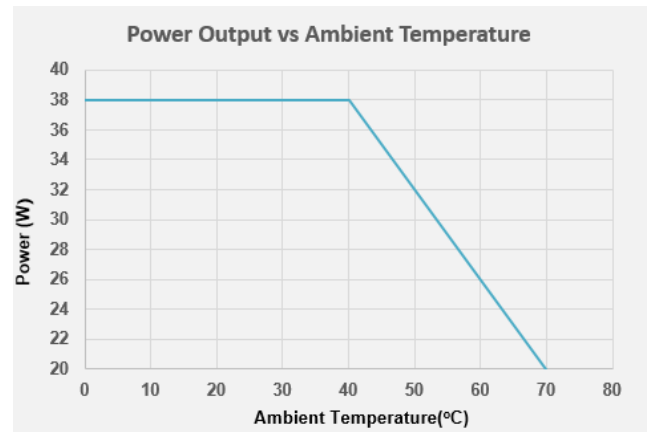
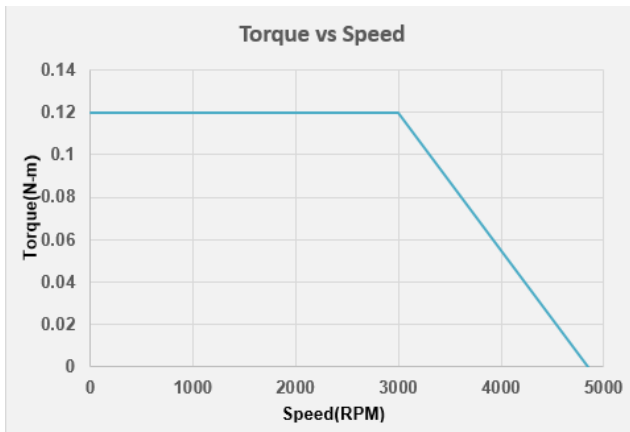
**PIN CONFIGURATION**



Pin Number	Designation	Pin Description
<b>RS485 Interface</b>		
1	EXT_5V	5V Input For Firmware Programming
2	B	RS485 Node B
3	AGND	RS485 Ground
4	A	RS485 Node A
<b>Power Interface</b>		
5	GND	Power Ground
6	R-	Shunt Resistor Return Node
7	VIN	Input Power Supply
<b>Control Interface</b>		
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<sub>A</sub>=25°C, V<sub>IN</sub>=24V, unless otherwise noted



**SMART MOTOR MECHANICAL DRAWING**

