



# EVKT-MSM942105-24

## eMotion System™ Smart Motor Module

### Evaluation Kit

#### FEATURES

The **EVKT-MSM942105-24 evaluation kit** is part of a family of fully integrated smart motor solutions for servo motor applications. This 42mm (NEMA 17), 105W 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](http://www.monolithicpower.com).

The smart motor modules can be ordered separately for customization into different motor types. The **MMP742105-24** is the driver module part number used in the kit.

The datasheet for the **MMP742105-24** is available for download at [www.monolithicpower.com](http://www.monolithicpower.com).

#### DESCRIPTION

- 18V to 36V Input Voltage Range
- Max 105W Continuous Power Output
- 0.25N-m Rated Torque (0.75N-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-MSM942105-24
Diameter (mm)	42
Power (W)	105
Typical Voltage (V)	24
Interface	RS485

#### Evaluation Kit EVKT-MSM942105-24 Contents

#	Part Number	Item	Quantity
1	EVKT-MSM942105-24	BLDC motor with MMP742105-24 smart motor module installed	1
2	eMotion System™ communication kit	USB communication interface with cable	1



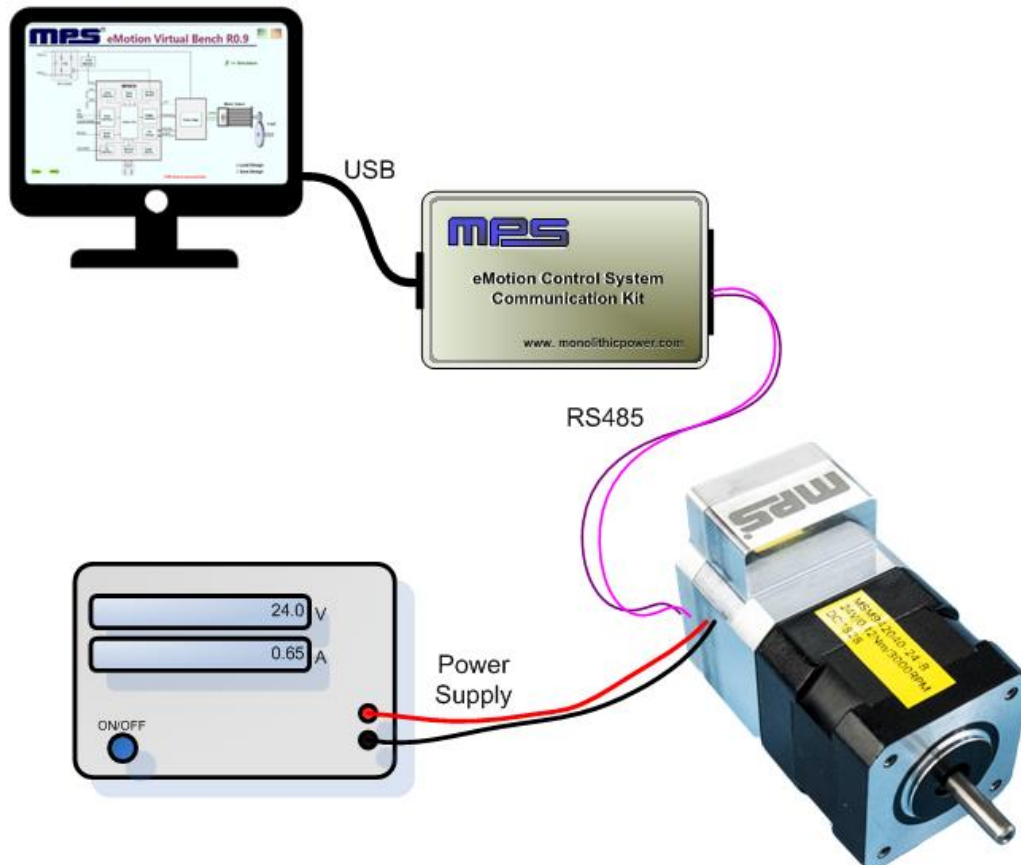
## EVALUATION KIT SPECIFICATIONS

Smart Motor Module Evaluation Kit			
Parameter	Condition	Value	Units
Input voltage		24	V
Output power	0°C to 40°C	105	W
Position resolution		0.3	°
Nominal speed		4000	rpm
Nominal torque		0.25	N-m
Rotor inertia		96	g-cm <sup>2</sup>
Diameter		42	mm
Shaft diameter		5	mm
Length	Body only	100	mm
Weight		850	g

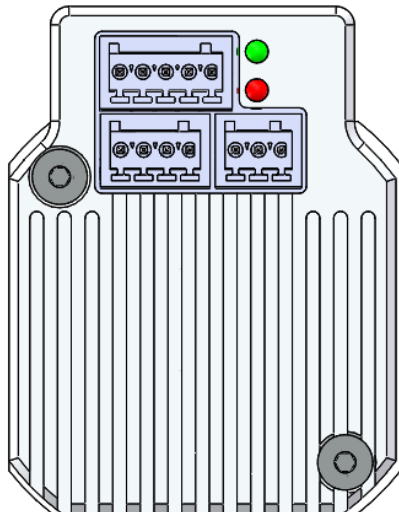
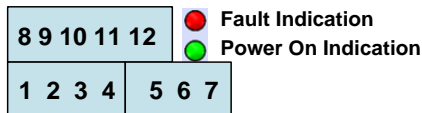
## RECOMMENDED OPERATING CONDITIONS

Input voltage..... 18V to 36V  
 Control interface voltage..... 0V to 5.5V  
 Max pulse frequency .....500kHz  
 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



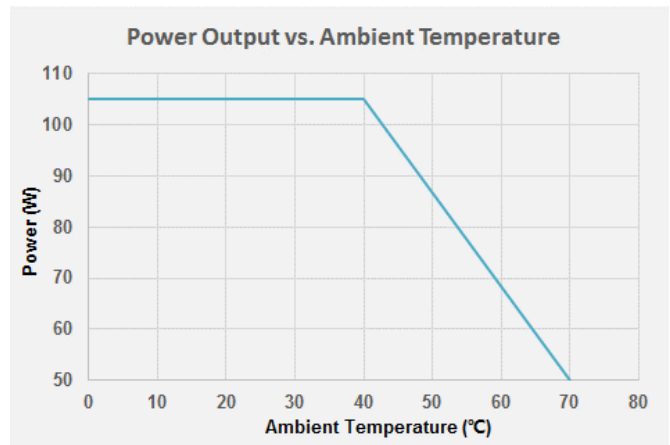
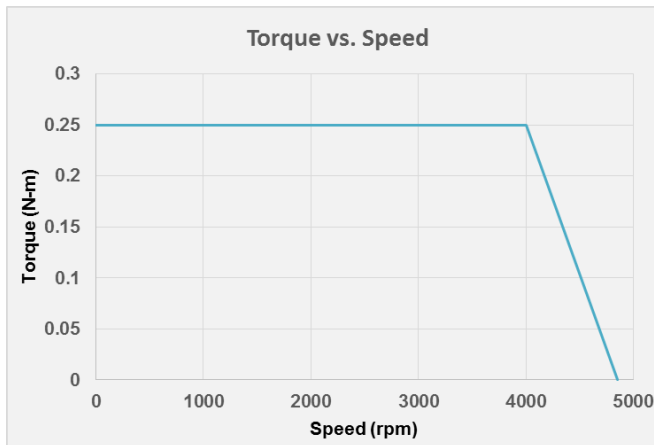
## PIN CONFIGURATION



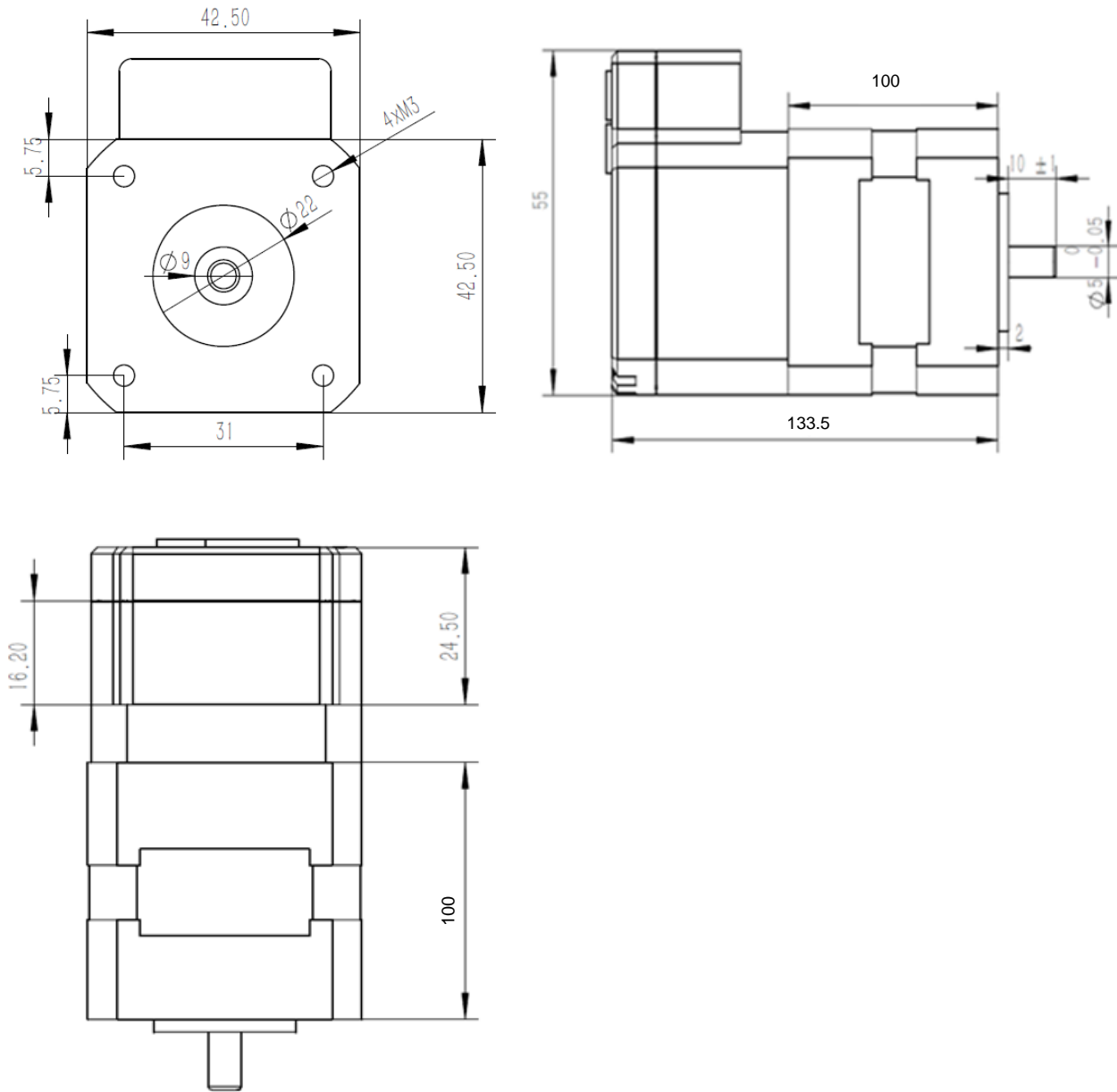
Pin Number	Designation	Pin Description
<b>RS485 Interface</b>		
1	EXT_5V	5V input for firmware programming
2	B	RS485 node B
3	AGND	RS485 ground
4	A	RS485 node A
<b>Power Interface</b>		
5	GND	Power ground
6	R-	Shunt resistor return node
7	VIN	Input power supply
<b>Control Interface</b>		
8	COM-	Common return
9	EN+	Enable input
10	PEND+	Position end output
11	PUL+	Pulse input
12	DIR+	Direction input

## TYPICAL PERFORMANCE CHARACTERISTICS

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



MECHANICAL DRAWING



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