

## DESCRIPTION

The MMS760xxx-48-C2 is part of a family of fully integrated smart motor solutions for servo motor applications. This 60mm motor integrates a permanent magnet synchronous motor (PMSM) and driver module inside.

The MMS760xxx-48-C2 supports seven commonly used motion control modes: profile position (PP), profile velocity (PV), profile torque (PT), homing (HM), cyclic synchronous position (CSP), cyclic synchronous velocity (CSV), and cyclic synchronous torque (CST). It also has six isolated I/Os for external signal input and output.

MotionLAB is an easy-to-use GUI software that allows users to flexibly optimize the design online via the USB or CAN control interface. The parameters are saved in the motor's non-volatile memory (NVM). The GUI and its user guide are available for download at [www.EZmotion.co](http://www.EZmotion.co).

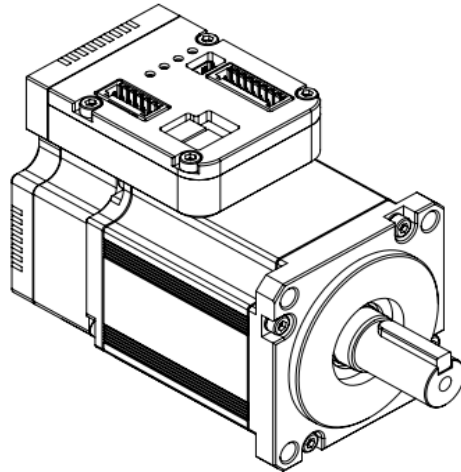
In addition to fully integrated smart motor solutions, the driver modules and accessories can be ordered separately for customization into different motor types.

## FEATURES

- CAN Interface with CANopen Protocol and Step/Direction Control Interface
- 12V to 75V Input Voltage ( $V_{IN}$ ) Range
- 200W to 400W Continuous Output Power ( $P_{OUT}$ )
- 0.1° Position Resolution
- Seven Different Control Modes: Profile Position (PP), Profile Velocity (PV), Profile Torque (PT), Homing (HM), Cyclic Synchronous Position (CSP), Cyclic Synchronous Velocity (CSV), and Cyclic Synchronous Torque (CST)
- Motor and Load Parameter Identification and Loop Parameter Auto-Tuning
- AccuFilter for Low Noise and Vibration
- Advanced Motion Controller Enables Smooth Transition between Different Operational Modes
- Two Separate Notch Filters for Elastic Load Optimization
- Rich Protection Functions
- Six I/Os with Selectable Functions and Polarity
- Driver Module Temperature Sensing

## PRODUCT INFORMATION

Part Number	Flange Dimension (mm)	Power (W)	Nominal Voltage (V)	Control Mode	Control Interface
MMS760200-48-C2-1	60	200	48	PP, PV, PT, HM, CSP, CSV, CST	CANopen, step/direction
MMS760400-48-C2-1	60	400	48	PP, PV, PT, HM, CSP, CSV, CST	CANopen, step/direction



## ACCESSORIES

There are an accessory package available for order that are used for servo motor evaluation. The MMA03-4001 includes the connectors matching with the servo motor.

Part Number	Component	Description	Quantity
MMA03-4001	KF12EKD-2.5-6P-1G	2.5mm pitch, 6-position connector	1
	KF12EKD-2.5-8P-1G	2.5mm pitch, 8-position connector	1
	ZER-04V-S	1.5mm pitch, 4-position connector	2
	SZE-002T-P0.3	Socket contact tin, 24-28 AWG crimp	8

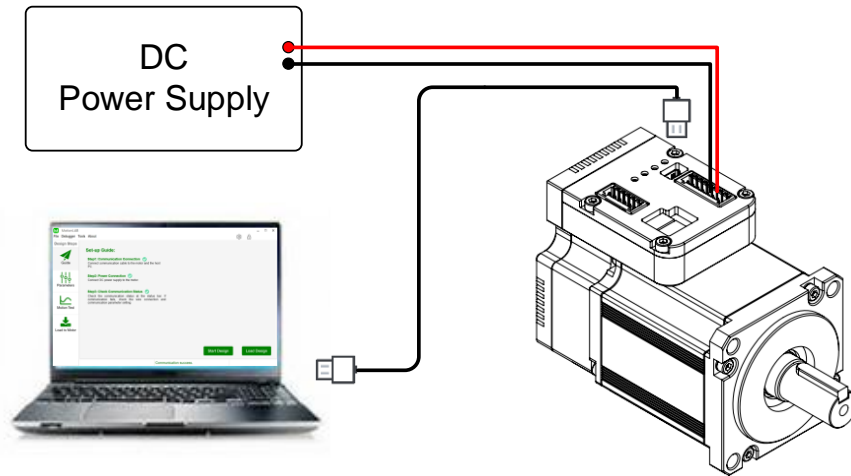
**PRODUCT SPECIFICATIONS**

Parameter	Condition	Value		Units
		200W	400W	
Rated DC input voltage ( $V_{IN}$ )		48		V
$V_{IN}$ range		18 to 75		V
Continuous output power ( $P_{OUT}$ )	0°C to 40°C	200	400	W
Nominal speed		3000		rpm
Continuous output torque	0°C to 40°C	0.64	1.27	Nm
Peak output torque	0°C to 40°C, <3.5s	1.92	3.81	Nm
Rotor inertia		260	480	g-cm <sup>2</sup>
Pole pairs		5		
Position resolution		0.1		deg
Weight		867	1230	g
<b>Interfaces</b>				
CAN baud rate	Configurable	Maximum 1Mbps		bps
USB 2.0		Mini USB Type-B, full speed		
Maximum digital output load current ( $I_{DO\_MAX}$ )		100		mA
Maximum digital output voltage ( $V_{DO\_MAX}$ )		36		V
Digital input logic high voltage ( $V_{DI}$ )		15 to 28		V
DI1+, DI2+ pulse frequency		<500		kHz
DI1+, DI2+ minimum pulse width		1		µs
DI3+, DI4+ pulse frequency		<10		kHz
DI3+, DI4+ minimum pulse width		20		µs
<b>Mechanical</b>				
Direction of rotation		Rotates counterclockwise (CCW) when viewed from the load side with a forward run command.		

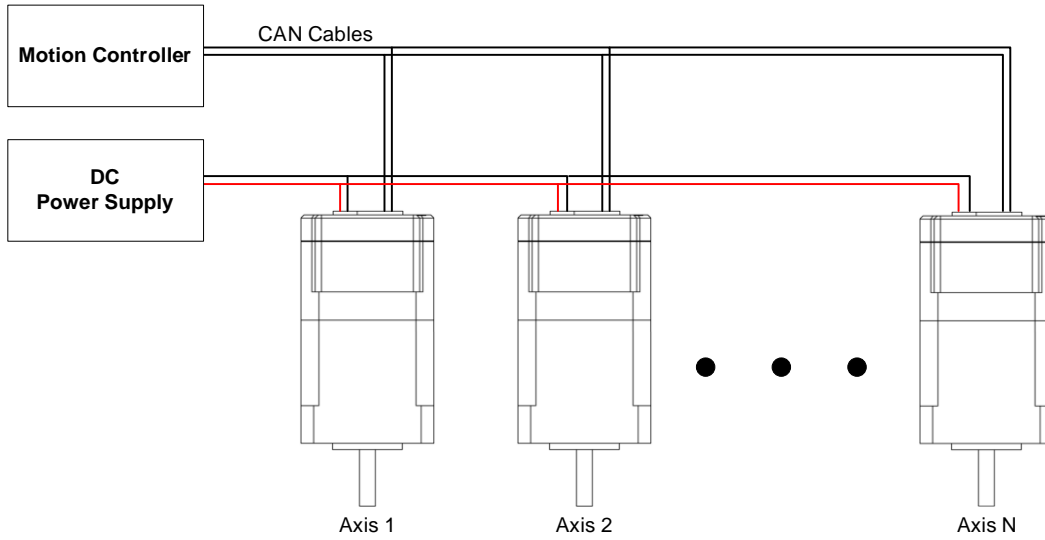
**RECOMMENDED OPERATING CONDITIONS**

Input voltage ( $V_{IN}$ ) ..... 18V to 75V  
 Max pulse frequency ..... 500kHz  
 CANH/CANL voltage ..... ±15V  
 CAN common-mode voltage ..... -7 to +12V  
 Operating temperature ..... 0°C to 70°C  
 Storage temperature ..... -20°C to +55°C

**HARDWARE CONNECTIONS**

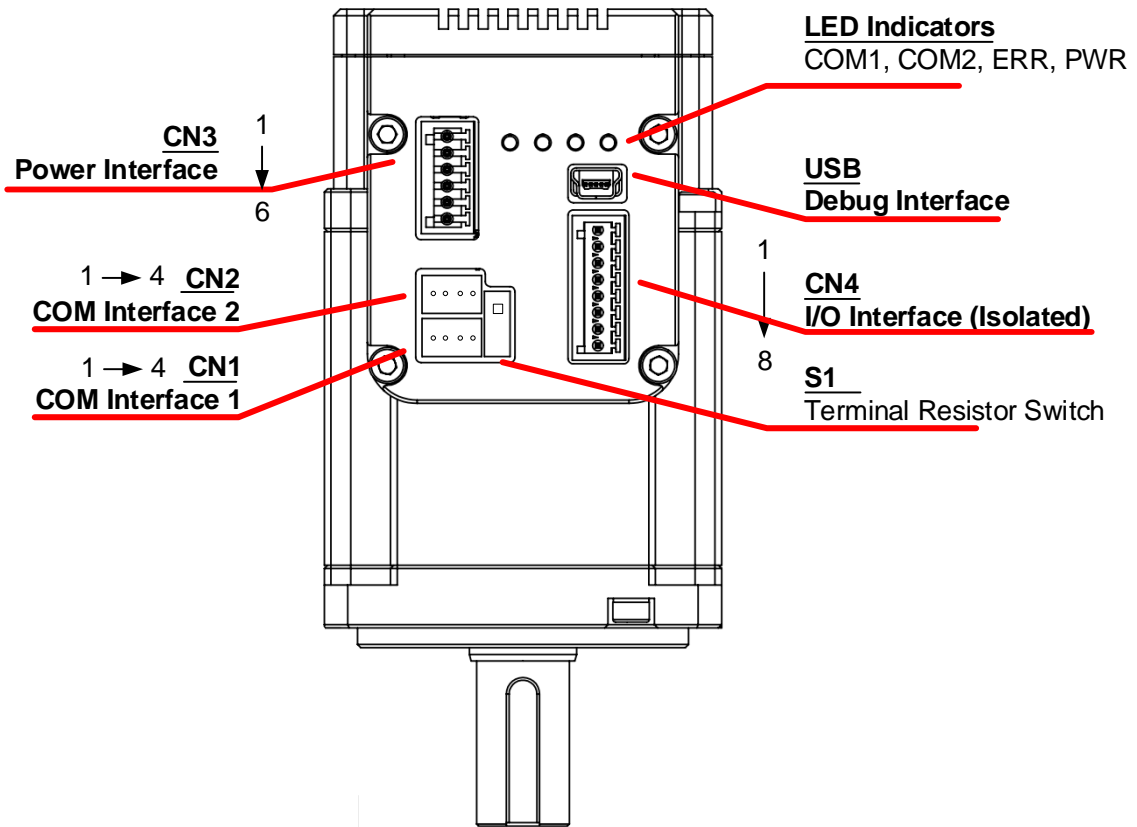


**Figure 1: Connect Servo Motor to MotionLAB GUI**



**Figure 2: Multi-Axis Application Connection**

# PIN CONFIGURATION



### MMS760xxx-48-C2 Pin Definitions

#### COM Interface (CN1, CN2)

Pin Number	Designation	Pin Description
1	SHIELD	Shield
2	CAN_L	CANL, low-level CAN bus line
3	GND	Ground
4	CAN_H	CANH, high-level CAN bus line

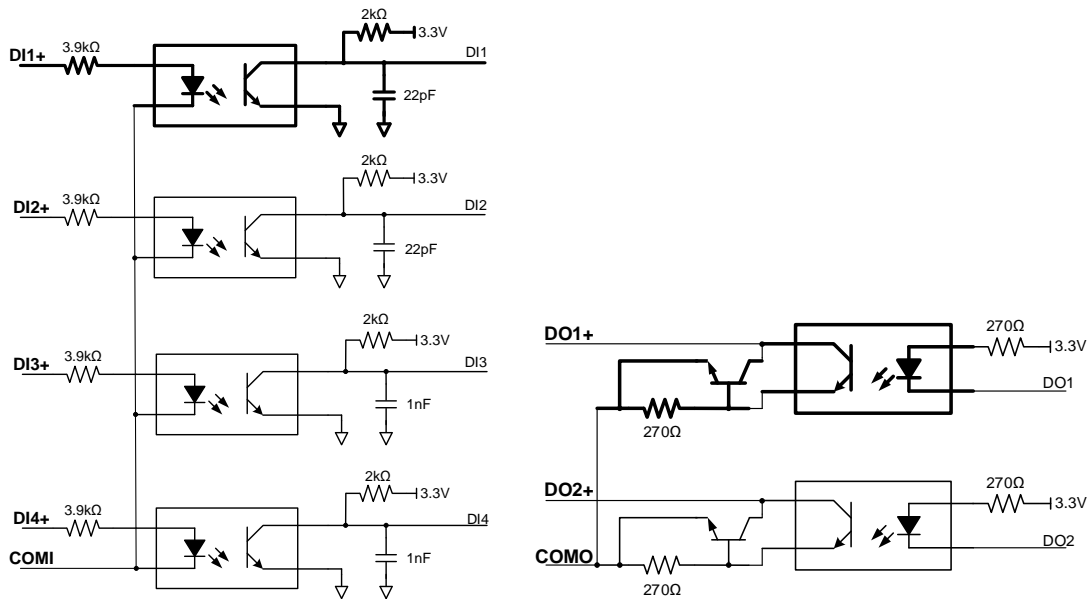
#### Power Interface (CN3)

Pin Number	Designation	Pin Description
1	VIN	Input power supply
2	VIN	Input power supply
3	GND	Power ground
4	GND	Power ground
5	R-	Brake resistor return node
6	PE	Earth ground

**I/O Interface (CN4)**

Pin Number	Designation	Pin Description
1	DI1+	IO1 input, default DIR
2	DI2+	IO2 input, default PUL
3	DI3+	IO3 input, default ENA
4	DI4+	IO4 input
5	COMI	Common input return
6	DO1+	IO1 output, default ALM
7	DO2+	IO2 output, default PEND
8	COMO	Common output return

Figure 3 shows the I/O interface internal circuit. The digital input signals have a common input terminal, and the digital output signals have a common output terminal.



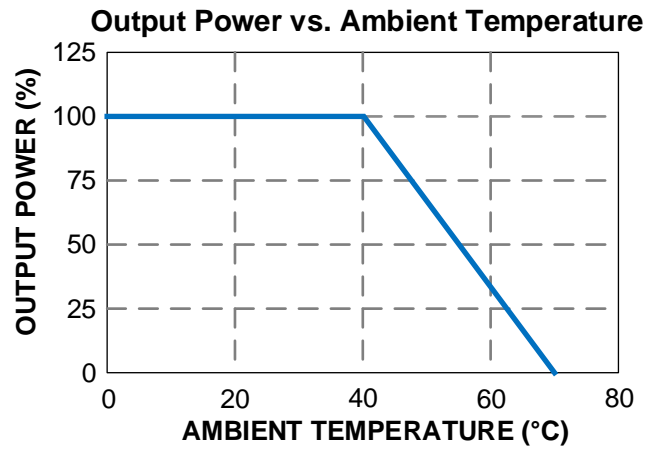
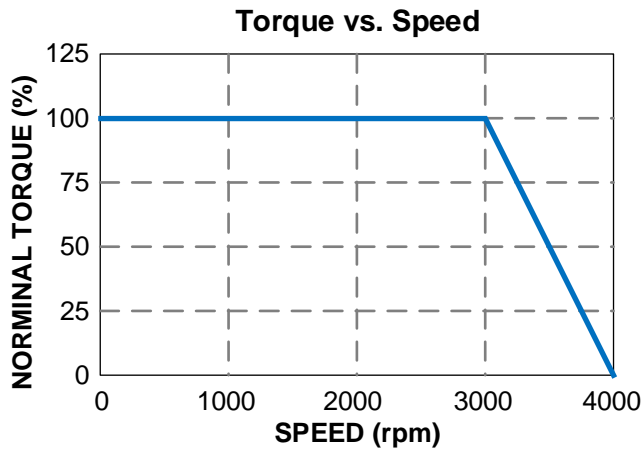
**Figure 3: I/O Interface Internal Circuit**

**LED Indicators**

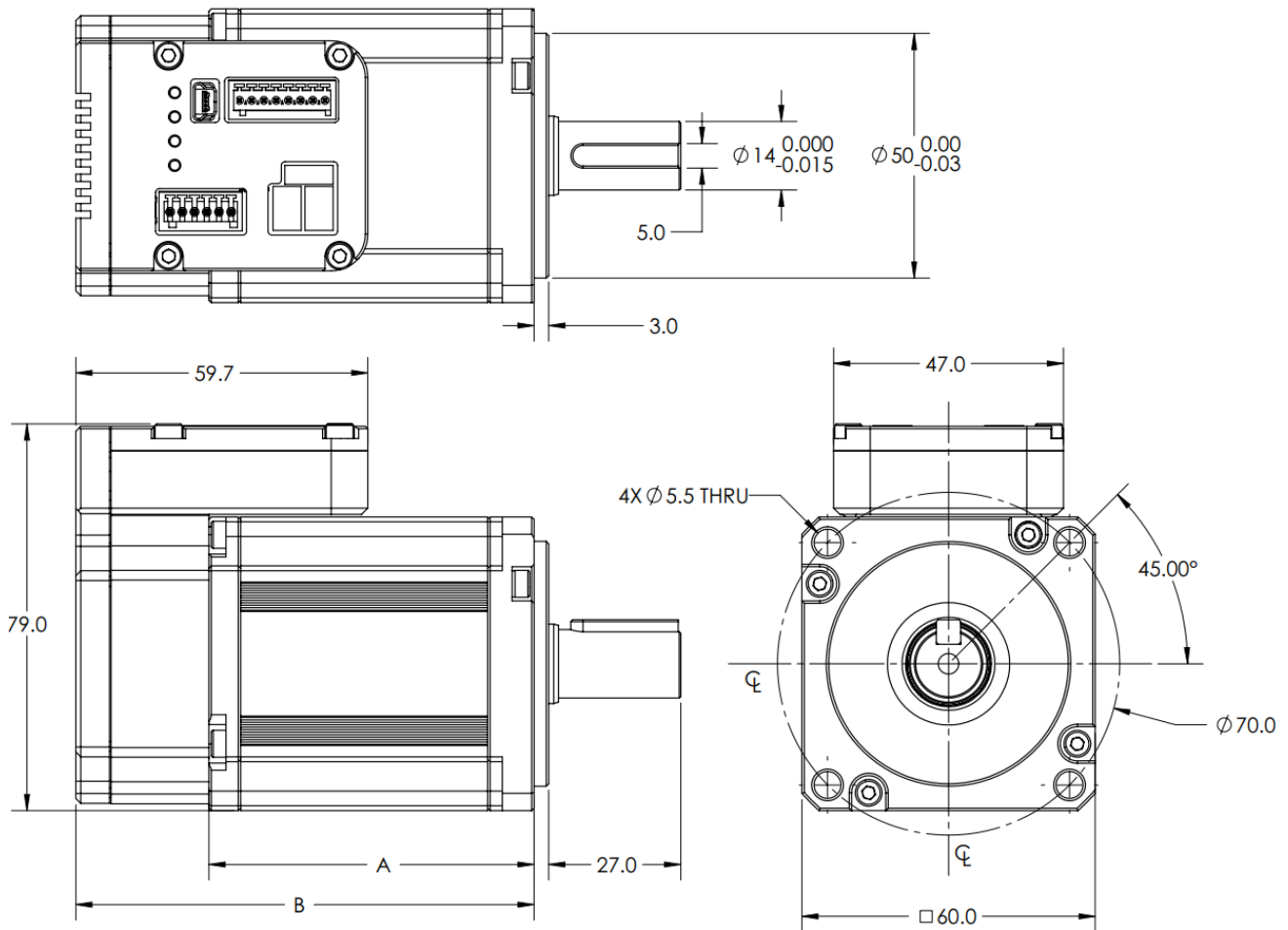
Pin Number	Designation	Pin Description
1	COM1	Communication status 1
2	COM2	Communication status 2
3	ERR	Error indicator
4	PWR	Power indicator

## TYPICAL PERFORMANCE CHARACTERISTICS

$V_{IN} = 48V$ , unless otherwise noted.



**MECHANICAL DRAWING (1)**



Part Number	A (mm)	B (mm)
MMS760200-48-C2-1	57	84.1
MMS760400-48-C2-1	79	106.1

**Note:**

1) Units are in mm.



## REVISION HISTORY

Revision #	Revision Date	Description	Pages Updated
1.0	2/3/2023	Initial Release	-

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