

## OPTICS IN MOTION

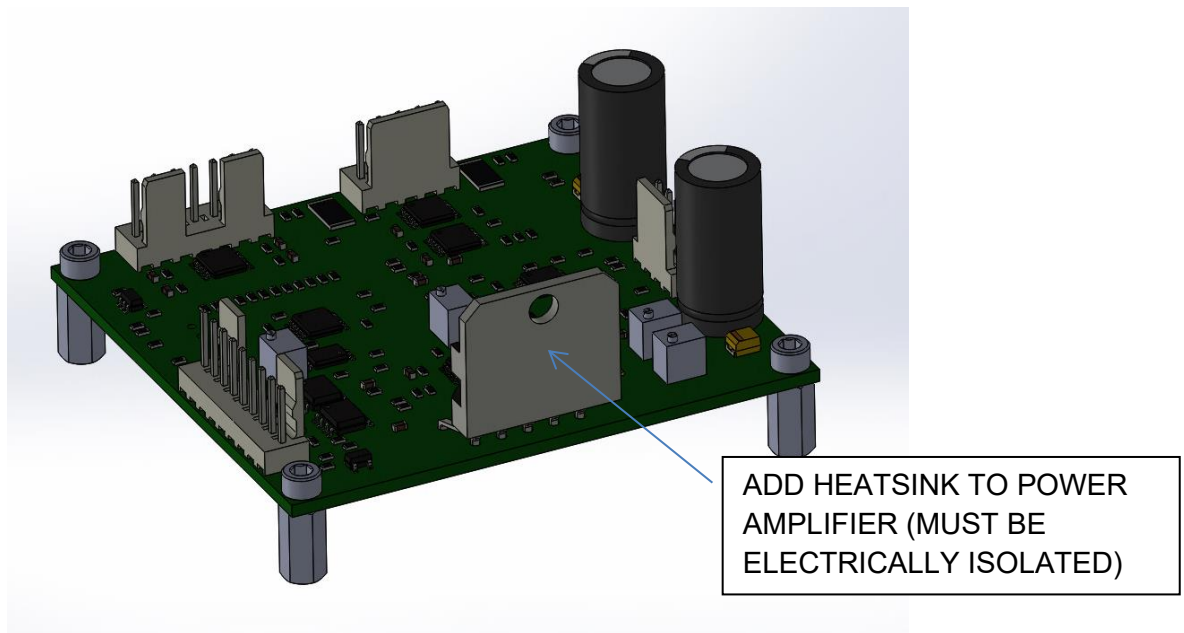
Small OEM Fast Steering Mirror Controller  
OIMC101A, Rev B

April 30, 2021

## Controller Description:

Optics In Motion LLC OEM controller is a compact version of our standard controller designed for OEM applications. The controller is powered by an external voltage source of  $\pm 15V$  @ 1.5 amps.

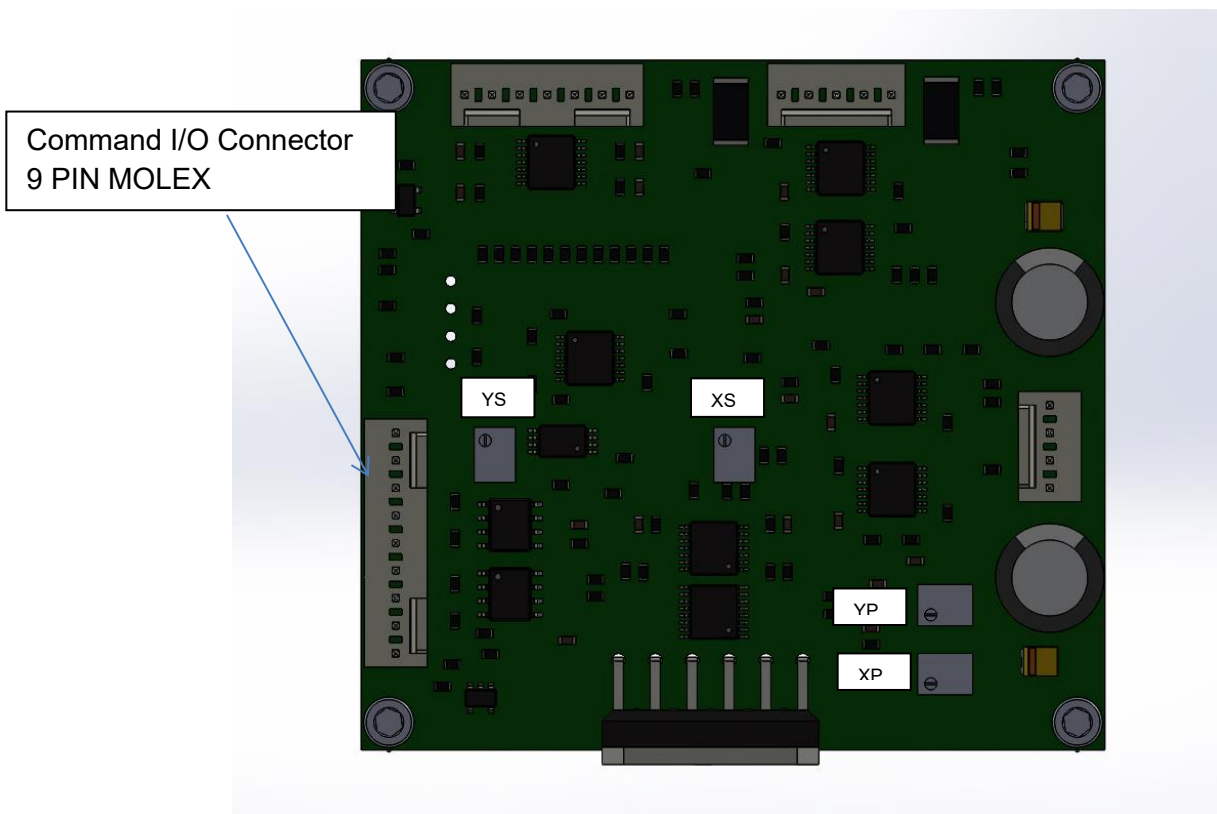
The motor drive amplifier needs to be heat sunk to prevent overheating. This can be accomplished via a finned heat sink attached to the power amp, or with a thermal strap to dissipate the heat to the user's enclosure. The case of the power amplifier (OPA2544T) is connected to the negative power voltage input so it must be isolate by using heat sink pads and isolated washers. Verify that the case of the op-amp is isolated from ground before turning it on.



**Figure 1:** OEM controller Power Amp

Mirror commands are input to the controller through a Molex 9 pin connector (DigiKey part number WM4207). The commands are differential signals representing the x and y mirror positions,

scaled to the +/- 10 volt range. For example, the X- command can be grounded and the X+ command can go from +10 volts to -10 volts. The input impedance of the command signals is 10K ohms. Monitor signals are provided for the actual mirror positions, error signals (feedback error between commanded position and actual position).



**Figure 2:** Controller Input Connector

On board Potentiometers:

XS - X scale, used to set scale factor in the x scan direction

YS - Y scale, used to set scale factor in the y scan direction

XP - X proportional gain, increase or decrease X 'P' gain

YP - Y proportional gain, increase or decrease Y 'P' gain

**Table 1: Command I/O Connector Wiring Table****9-Pin Molex Connector**

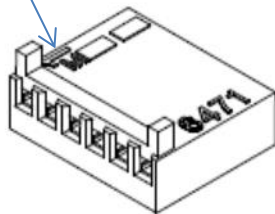
Pin Number	Signal Name	I/O Type	Description
1	Y+ COMMAND	Input	Y mirror command. High side of differential command input. Range +/-10 Volts.
2	Y- COMMAND	Input	Y mirror command. Low side of differential command input. Range +/-10 Volts.
3	GND	Output	Ground Reference
4	Y POSITION	Output	Y mirror angular position readout from local position sensor. (referenced to ground)
5	Y ERROR	Output	Y summing junction error voltage output, difference between commanded and actual position. (referenced to ground)
6	X POSITION	Output	X mirror angular position readout from local position sensor. (referenced to ground)
7	X+ COMMAND	Input	X mirror command. High side of differential command input. Range +/-10 Volts.
8	X- COMMAND	Input	X mirror command. Low side of differential command input. Range +/-10 Volts.
9	X ERROR	Output	X summing junction error voltage output, difference between commanded and actual position. (referenced to ground)

**Table 2: Power Input Connector Wiring Table**

Connector - Molex, 4 pin (DigiKey WM4202)

Pin Number	Signal Name	I/O Type	Description
1	-15 VDC	Input	Negative Supply min 1.5 amps
2	GND	Input	Positive and Negative Supply Return
3	+15 VDC	Input	Positive Supply min 1.5 amps
4	EARTH GND	Input	Earth Ground, may be tied to GND

PIN 1



Mating Molex Connector Digikey  
PN (WM2002)

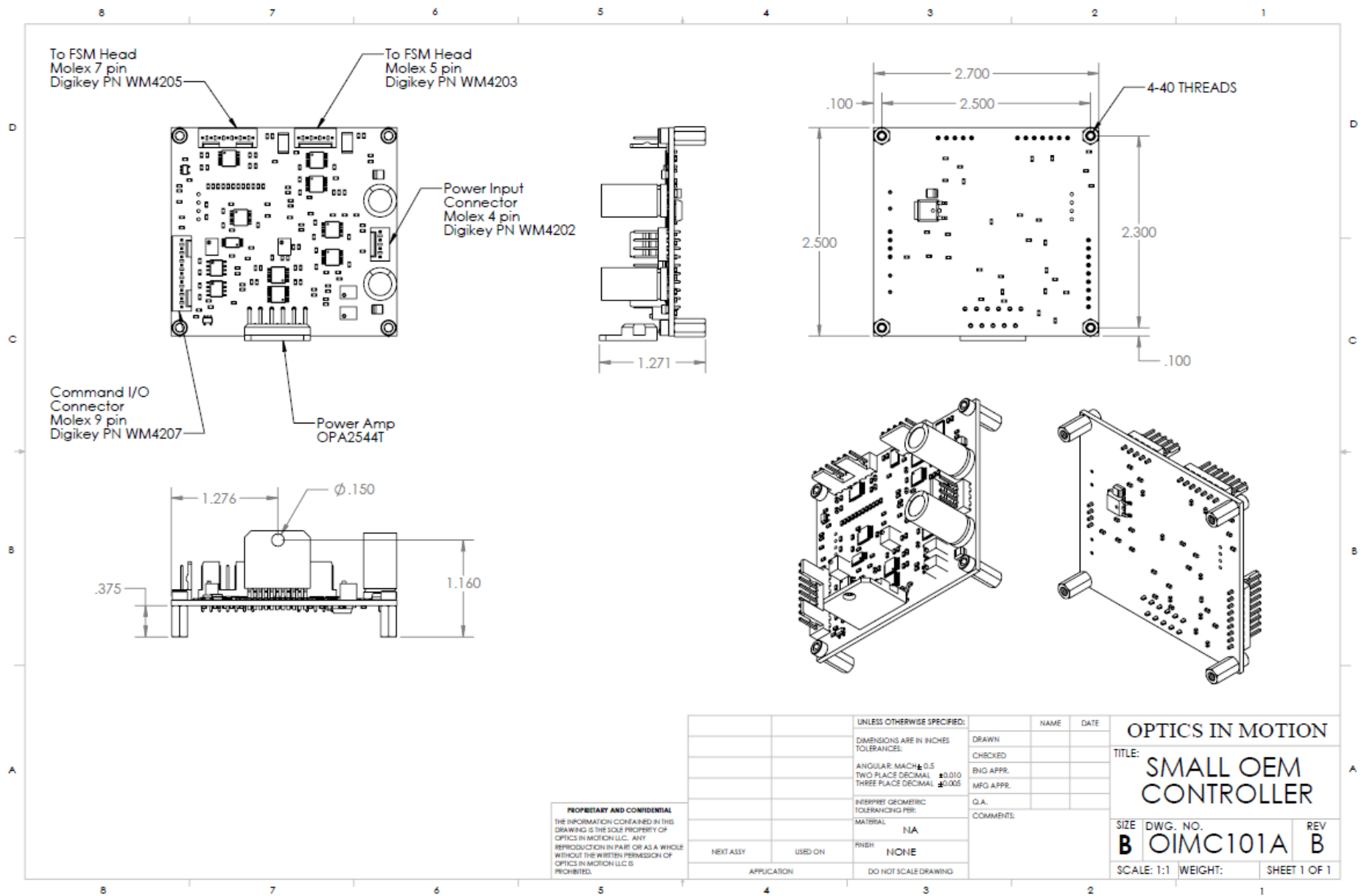


Figure 3: Small OEM Controller ICD