

# OMG Series User's Manual

Miniature motorized gimbal optic mounts



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Zaber's autodetect peripheral axes are designed to be used effortlessly with Zaber's line of autodetect controllers. The OMG includes onboard memory that allows Zaber's controllers to autodetect the model and set reasonable parameters. See the [Protocol Manual](#) for more information on how to modify the settings. Damage to the axis may result if the settings are not correct. To use your Zaber peripheral with a third-party controller, review the motor, sensor, and encoder specifications and pin-outs carefully.

- Fixed width type indicates communication to and from a device. The ¶ symbol indicates a carriage return, which can be achieved by pressing enter when using a terminal program.
- An **ASCII command** followed by (T:xx) indicates a legacy T-Series **Binary Protocol** command that achieves the same result. For example, `move abs 10000 (T:20:10000)` shows that a move abs ASCII command can also be achieved with Binary command number 20.

Not all ASCII commands have an equivalent Binary counterpart.

## AutoDetect

Your OMG peripheral is equipped with AutoDetect, a feature that allows a Zaber controller to automatically configure its settings for the peripheral when it is connected.

 **Important:** The controller should always be powered down before disconnecting or connecting your OMG peripheral.

To connect the peripheral to a controller:

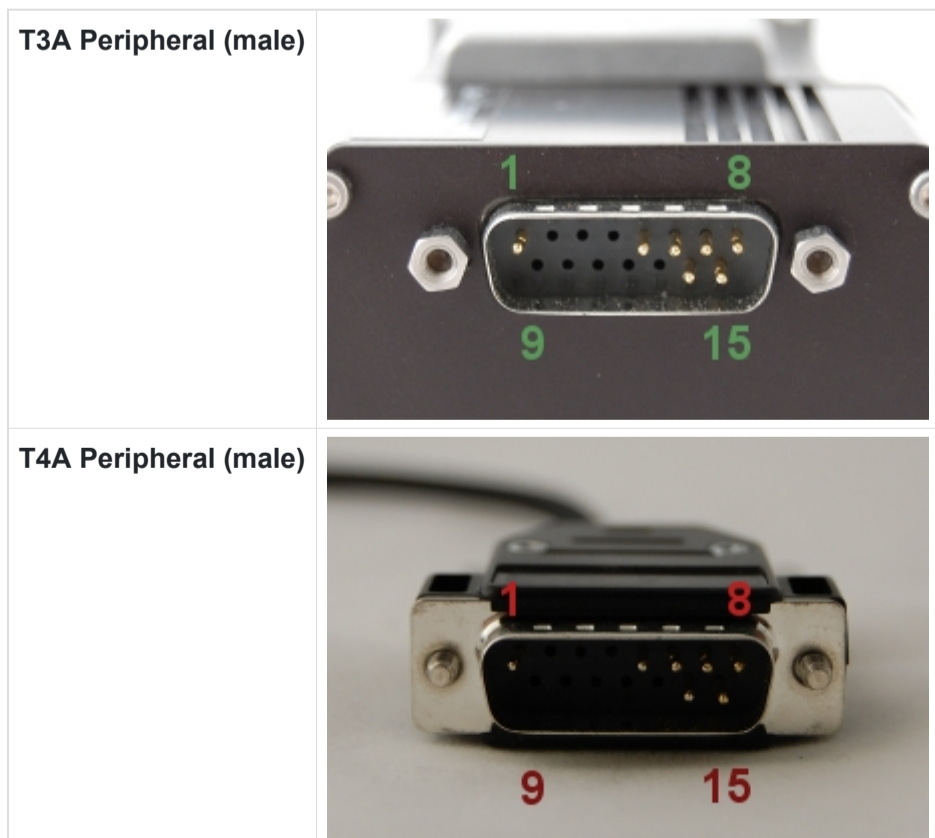
- Power off the controller.
- Connect the OMG peripheral.
- Power on the controller.
- The controller will activate the peripheral shortly after it is powered on.

## Connectors

Recommended controller(s) for your OMG peripheral are provided in the product specifications. Zaber's controllers and peripherals are designed for ease of use when used together. Optimal settings for each peripheral are automatically detected by Zaber's controllers when the device is connected.

For reference, the pinout for the peripheral cable connectors is shown below:

### Pinout for D-sub 15 Connectors (peripherals)



Pin #	Function
1	+5V for Limits & Encoder

2	AutoDetect Data
3	<i>reserved</i>
4	Away Sensor
5	Home Sensor
6	Ground
7	Motor B1
8	Motor A1
9	AutoDetect Clock
10	Encoder A
11	Encoder B
12	Encoder Index
13	Ground
14	Motor B2
15	Motor A2

*Not all pins are used for all models*

### Alternate Controllers

The OMG can be controlled by any 2-phase stepper motor controller with limit sensor input. **We do not recommend using your own controller unless you are familiar with how to control a stepper motor with hall sensor limit switches.** Damage to the stage due to incorrect wiring is not covered by warranty.

### Motors

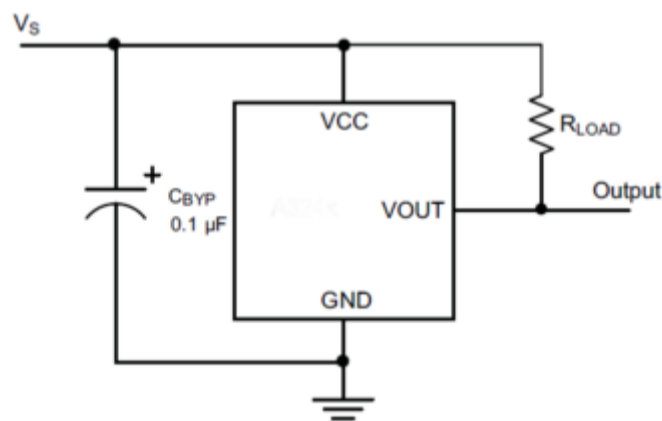
For motor information see the [OMG product page](#)

### Limit Sensors

Hall effect sensors are used in the OMG as home sensors. The Hall sensors used are part number A1120LLHLT-T made by Allegro. [Click here for data sheet.](#) Your controller should be configured so the stage stops immediately (quick deceleration) when the sensors are triggered.

- PCB wire colour code:
  - 5 Vdc input - red
  - Home signal - yellow
  - Away signal - white
  - Ground - black

The Hall sensor has an open-collector output. The default output is high impedance when the Hall sensor is not active. When the sensor detects a magnet, the Hall sensor pulls the output low to ground.



If you are not using a Zaber controller, ensure that your controller has a pull-up resistor on the output line of each Hall sensor as shown in the diagram. The bypass capacitor is optional, but may help to eliminate false triggering in noisy environments. The typical value for the pull-up resistor ( $R_{LOAD}$ ) is 10 k $\Omega$  and for the bypass capacitor is 0.1  $\mu$ F to 1  $\mu$ F. The larger the capacitance, the better the noise filtering but the slower the response time.

### Physical Installation

The OMG stage can be mounted to a standard M6 mounting post. A threaded M6 mounting hole, aligned with the center of the optic face, is provided in the base of the device.

For Zaber's policies on warranty and repair, please refer to the [Ordering Policies](#).

### Standard products

Standard products are any part numbers that do not contain the suffix ENG followed by a 4 digit number. Most, but not all, standard products are listed for sale on our website. All standard Zaber products are backed by a one-month satisfaction guarantee. If you are not satisfied with your purchase, we will refund your payment minus any shipping charges. Goods must be in brand new saleable condition with no marks. Zaber products are guaranteed for one year. During this period Zaber will repair any products with faults due to manufacturing defects, free of charge.

## Custom products

Custom products are any part numbers containing the suffix ENG followed by a 4 digit number. Each of these products has been designed for a custom application for a particular customer. Custom products are guaranteed for one year, unless explicitly stated otherwise. During this period Zaber will repair any products with faults due to manufacturing defects, free of charge.

## How to return products

Customers with devices in need of return or repair should contact Zaber to obtain an RMA form which must be filled out and sent back to us to receive an RMA number. The RMA form contains instructions for packing and returning the device. The specified RMA number must be included on the shipment to ensure timely processing.

If you would like to receive our periodic email newsletter including product updates and promotions, please sign up online at [www.zaber.com](http://www.zaber.com) (news section). Newsletters typically include a promotional offer worth at least \$100.

Contact Zaber Technologies Inc by any of the following methods:

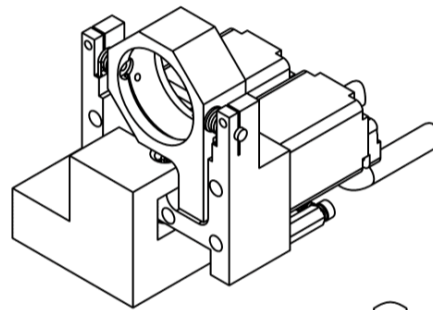
<b>Phone</b>	1-604-569-3780 (direct) 1-888-276-8033 (toll free in North America)
<b>Fax</b>	1-604-648-8033
<b>Mail</b>	#2 - 605 West Kent Ave. N., Vancouver, British Columbia, Canada, V6P 6T7
<b>Web</b>	<a href="http://www.zaber.com">www.zaber.com</a>
<b>Email</b>	Please visit our website for up to date email contact information.

The original instructions for this product are available at <https://www.zaber.com/manuals/OMG>.

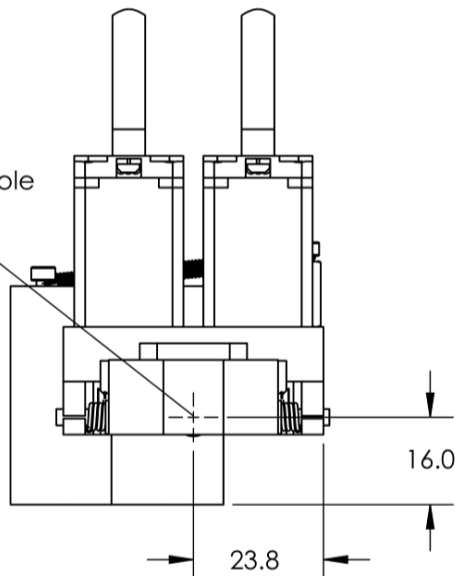
Please see the [Zaber Support Page](#) for default settings for this device.

# ZABER

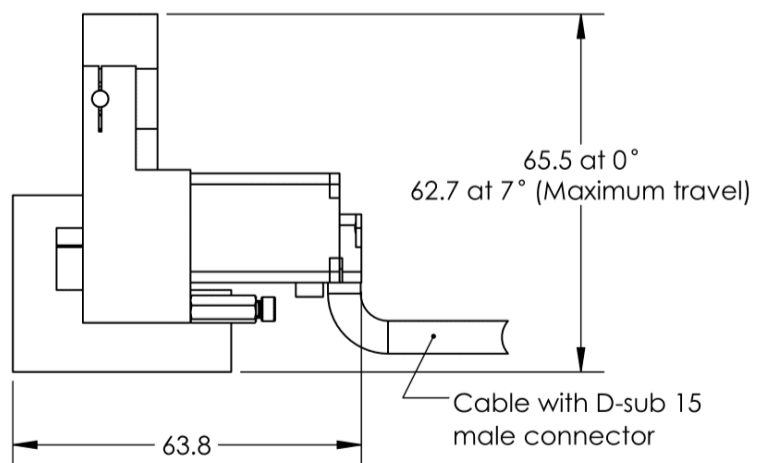
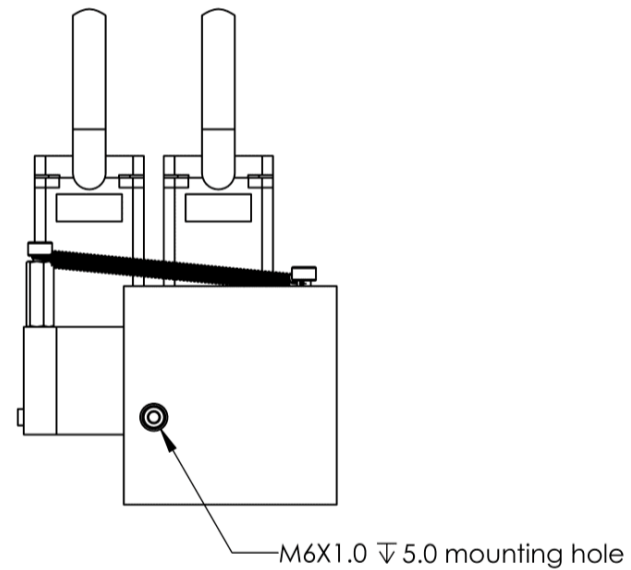
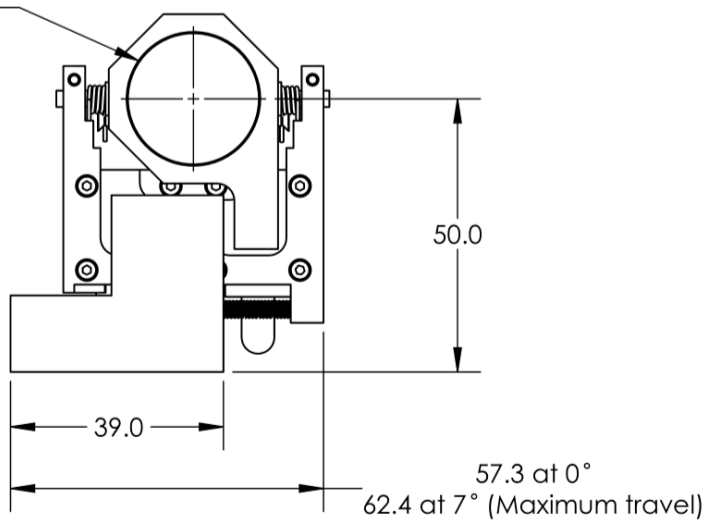
**OMG Motorized Gimbal Optic Mount**  
dimensions in mm



Centre of rotation  
M6X1.0  $\nabla$  5.0 mounting hole  
for optic post provided  
on bottom of stage



25 mm [1"] optic mount with threaded ring  
Holds optics up to 8.5 mm thick  
24 mm clear aperture



DWG 3893 R01

## Comparison

Part Number	Microstep Size (Default Resolution)	Built-in Controller	Recommended Controller	AutoDetect
OMG-T4A		No	X-MCC2 (48 V) Recommended	Yes

Part Number	Microstep Size (Default Resolution)	Built-in Controller	Recommended Controller	AutoDetect
OMG Azimuth Axis	0.000115378° (2.014 μrad)			
OMG Elevation Axis	0.000057689° (1.007 μrad)			

Part Number	Range	Accuracy (unidirectional)	Repeatability	Backlash
OMG-T4A	+/- 7°			
OMG Azimuth Axis		0.055° (0.959750 mrad)	< 0.007° (< 0.122 mrad)	< 0.005° (< 0.087 mrad)
OMG Elevation Axis		0.0275° (0.479875 mrad)	< 0.004° (< 0.070 mrad)	< 0.0025° (< 0.044 mrad)

Part Number	Maximum Speed	Minimum Speed	Speed Resolution	Encoder Type
OMG-T4A				
OMG Azimuth Axis	11°/s (2 rpm)	0.001082°/s (18.884 μrad/s)	0.001082°/s (18.884 μrad/s)	None
OMG Elevation Axis	7°/s (1 rpm)	0.000541°/s (9.442 μrad/s)	0.000541°/s (9.442 μrad/s)	None

Part Number	Aperture Diameter	Angular Motion Per Motor Rev	Motor Steps Per Rev	Motor Type
OMG-T4A	24 mm (0.945")		200	Stepper (2 phase)
OMG Azimuth Axis		1.4768384°		
OMG Elevation Axis		0.7384192°		

Part Number	Motor Rated Current	Motor Winding Resistance	Inductance	Motor Connection
OMG-T4A	240 mA/phase	20.4 ohms/phase	5 mH/phase	D-sub 15
OMG Azimuth Axis				
OMG Elevation Axis				

Part Number	Default Resolution	Motor Frame Size	Mechanical Drive System	Limit or Home Sensing
OMG-T4A	1/64 of a step	NEMA 08	Precision lead screw	Magnetic hall sensor
OMG Azimuth Axis				
OMG Elevation Axis				

Part Number	Axes of Motion	LED Indicators	Mounting Interface	Operating Temperature Range
OMG-T4A	2	No	M6 threaded hole for optic post	0 to 50 °C
OMG Azimuth Axis				
OMG Elevation Axis				

Part Number	Optic Mounting Interface	Vacuum Compatible	RoHS Compliant	CE Compliant
OMG-T4A	1" or 25 mm optics	No	Yes	Yes
OMG Azimuth Axis				
OMG Elevation Axis				

Part Number	Weight
OMG-T4A	0.33 kg (0.728 lb)
OMG Azimuth Axis	
OMG Elevation Axis	

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*This product uses the LZ4 compression library. LZ4 is © 2011–2016 Yann Collet and is governed by the following license:*

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