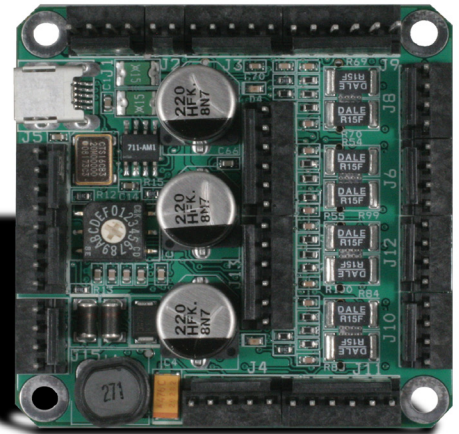


## General Specifications

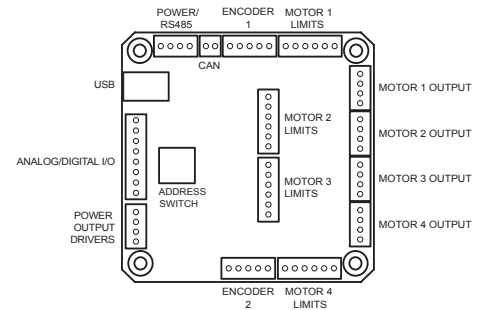
|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supply Input.....              | 9–32V 4A Examples: Digikey part 102-1337-ND or 62-1047-ND (enclosed)                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Dimensions.....                | 2.25" X 2.25" (57mm X 57mm) square, .6" (15mm) thick                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Step Resolution/speed .....    | 1/16 microstep; 59000 microsteps/second                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Operating Modes.....           | PC controlled or standalone                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| PC Control.....                | Up to 16 controllers can be daisy-chained together.                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Communications Protocol.....   | USB and RS485. Direct USB and RS485 connections built in. Provision built in for future addition of CAN protocol.                                                                                                                                                                                                                                                                                                                                                                                               |
| Control Protocol.....          | Compatible with devices that use the Cervo DT or OEM protocol. Can use EZCommander™ Windows application or serial terminal program such as HyperTerminal to issue ASCII text-based commands.                                                                                                                                                                                                                                                                                                                    |
| Motor Compatibility.....       | Typically compatible with any stepper motor that is 3" or smaller (size 23 or smaller). Outputs can regulate to any motor voltage via software commands.                                                                                                                                                                                                                                                                                                                                                        |
| Mating Connectors .....        | AMP MTA 100 series. Recommended tools: Digikey A9982; or (better) A1998 + A2031. (See Application Note 131021 for non-standard connector options.)                                                                                                                                                                                                                                                                                                                                                              |
| Digital/Analog Interface ..... | Accepts 10 opto-electronic or 12 mechanical switch inputs, or 4 mechanical switch inputs. Also 12 ADC inputs. ADC inputs accurate to 7 bits; can be modified to 10 bit (contact factory)<br>Signal Levels: <0.8V Vlow; >2V Vhigh (TTL compatible). Threshold set at 1.23V; can be changed via programming<br>Optical switch specifications: Transistor optical switch with IC> 1 mA @ IF=20mA. Examples: Digikey QVA11134 or H21A1; Honeywell HOA1887-012 or HOA1870-33 (prewired); OPTEK OPB830W11 (prewired). |
| 5V Output Current .....        | <200mA (power available for encoders and sensors)                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Encoder Interface .....        | Max. freq. 4 MHz, 5V signals (3.3V upon special request)                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Operating Temperature.....     | -20 to 85 °C PCB copper temperature                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Relative Humidity.....         | 10% to 90% non condensing (operating and storage)                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## Intelligent 4-axis Controller/Driver with Dual Encoder Feedback



Model EZ4AXIS23WV actual size

For rapid implementation of multi-axis stepper motor solutions in products requiring automation. Controls four fully independent stepper motors.



### ANALOG/DIGITAL I/O CONNECTOR

Mating connector: AMP MTA 100 Series 8 pin, 26 GA, part 3-643815-8 Digikey part A31030-ND

| Pin | Function                                   | Notes                                                     |
|-----|--------------------------------------------|-----------------------------------------------------------|
| 1   | Switch input #2, A/D input #2              | 10k $\Omega$ pullup to 3.3V. Switch closure is to ground. |
| 2   | Switch input #1, A/D input #1              | 10k $\Omega$ pullup to 3.3V. Switch closure is to ground. |
| 3   | Opto sensor #2 LED                         | See Note 1.                                               |
| 4   | Opto sensor #2 input, A/D input #4, switch | 10k $\Omega$ pullup to 3.3V. Switch closure is to ground. |
| 5   | Opto sensor #2 ground                      | Common input ground                                       |
| 6   | Opto Sensor #1 LED                         | See Note 1.                                               |
| 7   | Opto Sensor #1 input, A/D Input #3, switch | 10k $\Omega$ pullup to 3.3V. Switch closure is to ground. |
| 8   | Opto sensor #1 ground                      | Common input ground                                       |

### ENCODER CONNECTORS (2)

Mating connector: AMP MTA 100 Series 5 pin, 26 GA, part 3-643815-5 Digikey part A31027-ND

| Pin | Function | Notes                                                                            |
|-----|----------|----------------------------------------------------------------------------------|
| 1   | Ground   | Ground for encoder                                                               |
| 2   | Index    | Input from encoder. High level must be >4.5V (external pullups may be required). |
| 3   | Chan A   | Input from encoder. See comment for Pin 2.                                       |
| 4   | +5V (V+) | Power to encoder                                                                 |
| 5   | Chan B   | Input from encoder. See comment for Pin 2.                                       |

### POWER OUTPUT DRIVERS CONNECTOR (FOR SOLENOIDS, ETC.)

Mating connector: AMP MTA 100 Series 4 pin, 22GA, part 3-643813-4 Digikey part A31108-ND

| Pin | Function              | Notes                  |
|-----|-----------------------|------------------------|
| 1   | ON/OFF Driver #1 (V-) | Open collector         |
| 2   | ON/OFF Driver #1 (V+) | 2A peak; 1A continuous |
| 3   | ON/OFF Driver #2 (V-) | Open collector         |
| 4   | ON/OFF Driver #2 (V+) | 2A peak; 1A continuous |

**Note 1:** Each LED sensor input includes a series 200  $\Omega$  resistor to 5V. Resistor can be removed for sensors needing direct access to 5V. Max current draw is <200mA.

### POWER AND RS485 COMMUNICATION

Mating connector: AMP MTA 100 Series 4 pin, 22 GA, part 3-643813-4 Digikey part A31108-ND

| Pin | Function                    |
|-----|-----------------------------|
| 1   | V+ (external supply) +9–32V |
| 2   | GROUND                      |
| 3   | RS485 B                     |
| 4   | RS485 A                     |

### MOTOR OUTPUT CONNECTORS (4)

Mating connector: AMP MTA 100 Series 4 pin, 22 GA, part 3-643813-4 Digikey part A31108-ND

| Pin | Function |
|-----|----------|
| 1   | Motor A+ |
| 2   | Motor A- |
| 3   | Motor B+ |
| 4   | Motor B- |

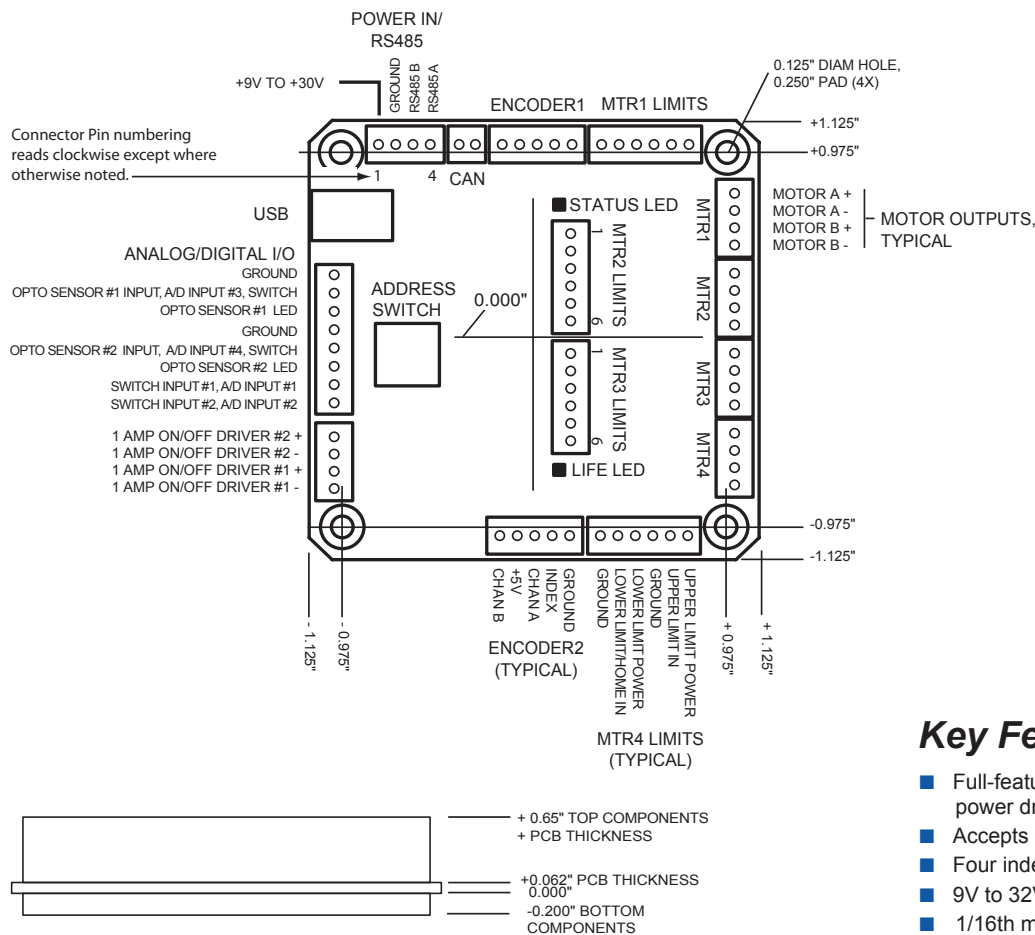
### MOTOR LIMIT/HOME CONNECTORS (4)

Mating connector: AMP MTA 100 Series 6 pin, 26 GA, part 3-643815-6 Digikey part A31028-ND

| Pin | Function            | Notes                                     |
|-----|---------------------|-------------------------------------------|
| 1   | Upper Limit Power   | Typically optical sensor LED. See Note 1. |
| 2   | Upper Limit In      | Optical sensor/switch to ground           |
| 3   | GROUND              | Ground                                    |
| 4   | Lower Limit Power   | Typically optical sensor LED. See Note 1. |
| 5   | Lower Limit/Home In | Optical sensor/switch to ground           |
| 6   | GROUND              | Ground                                    |

## Intelligent 4-axis Controller/Driver with Dual Encoder Feedback

## Mechanical Specifications



## Key Features

- Full-featured 4-axis position controller with power drivers
- Accepts dual encoders
- Four independent 2A chopper (PWM) drives
- 9V to 32V 4A operation
- 1/16th microstep resolution
- Up to 59000 microsteps/second
- Pre-wired for opto-switch and Limit inputs
- 12 ADC inputs. Halt/branch on ADC value
- RS232, RS485, or USB-based communications
- Direct USB and RS485 connection built in
- Industry standard communications protocol
- Single 4-wire bus links up to 16 AllMotion products.
- Standalone operation with no connection to a PC
- 12 digital in and two 1A power on/off drivers
- Switch-selectable device address
- Software-selectable max. currents
- On-board EEPROM for user program storage
- Hold current automatically selected upon move completion
- Homes to opto or switch closure with one command
- Independent parameters for all axes (acceleration, velocity, currents, etc.)
- Fully programmable acceleration ramps and speeds

## Ordering Information

| Name                                        | Order Number |
|---------------------------------------------|--------------|
| EZ4AXIS23WV Stepper Controller/Driver ..... | EZ4AXIS23WV  |
| RS232 to RS485 Converter (option).....      | RS485        |
| Heatsink (option) .....                     | EZ4AXIS SINK |
| RoHs-compliant                              |              |

See EZ4AXIS23WV wiring diagram (on website) and/or user guide for application details.