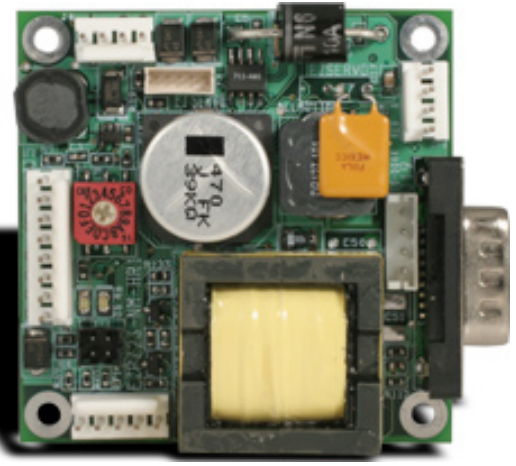


General Specifications

Supply Input.....	11-13V 2A <i>Examples:</i> Digikey part 102-1929 or 285-1884
Dimensions.....	2.25" X 2.25" (57mm X 57mm) square, .962" (24.44mm) thick
Operating Modes.....	PC controlled or standalone.
PC Control.....	Can control up to 16 drives daisy-chained together.
Communications Protocol.....	RS485. Can convert to RS232/USB with appropriate converter.
Control Protocol.....	Compatible with devices that use the Cavro DT or OEM protocol. Can use EZCommander™ Windows application or serial terminal program such as HyperTerminal to issue commands. Commands are intuitive and simple.
Motor Compatibility.....	Compatible with Nanomotion HR1, HR2, HR4, -ST1, or similar piezoelectric motors.
Mating Connectors.....	AMP MTA 100 series. Recommended tools: Digikey A9982; or (better) A1998 + A2031. (See Application Note 131021 for non-standard connector options.)
I/O Interface.....	Accepts 2 opto-electronic and two mechanical switch inputs, or 4 mechanical switch inputs. Also ADC inputs. ADC inputs accurate to 7 bits; can be modified to 10 bit (contact factory).
	Signal Levels: <0.8V Vlow; >2V Vhigh (TTL compatible). Threshold set at 1.23V; can be changed via programming.
	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).
Encoder Interface.....	Max. freq. 4 MHz
Operating Temperature.....	-20 to 85 °C PCB copper temperature
Relative Humidity.....	10% to 90% non condensing (operating and storage)

Intelligent Piezo Motor Controller + High-Voltage Driver with Encoder Feedback



Model EZZ23-HR actual size

For rapid implementation of position control using Nanomotion HR1, HR2, HR4 -1 -S3, -ST1, or similar piezo-electric motors.

WARNING
High voltage present on PC board.

PIEZO-ELECTRIC MOTOR CONNECTOR

9-pin DSUB connector matches connector on motors. See motor mfg. for pin assignments.

POWER AND 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) 11-13V
2	GROUND
3	RS485 B
4	RS485 A

Key Features

- Single 4-wire bus links up to 16 drives.
- Motor plugs directly into controller/driver.
- 11V to 13V 2A operation.
- Pre-wired for opto-switch inputs.
- RS232, RS485, or USB-based communications.
- Standalone operation with no connection to a PC.
- Industry standard communications protocol.
- Two 1A On/Off drivers included.
- On-board EEPROM for user program storage.
- 4-quadrant operation.
- Switch-selectable device address.
- Software-selectable max. currents.
- Position, velocity, and torque modes.
- Quadrature encoder-based feedback for position mode.
- Accepts linear or rotary encoder.
- Optional Step and Direction mode, 4MHz frequency.
- Execution Halt/branch pending switch closure.
- 4 ADC inputs. Halt/branch on ADC value.
- Homes to opto or encoder index with one command.
- Fully programmable ramps and speeds.

INPUT 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, Dir input	Includes 10k Ω pullup to 3.3V.
2	Switch input #1 A/D input #1, Step input	Includes 10k Ω pullup to 3.3V.
3	Opto sensor #2 LED	Includes series 200 Ω resistor to 5V. Resistor can be removed for sensors needing direct access to 5V. Max current draw is <200mA.
4	Opto sensor #2 input, A/D input #4, Upper limit	Includes 10k Ω pullup to 3.3V.
5	Opto Sensor #2 ground	Common input ground
6	Opto Sensor #1 LED	See notes for pin 3.
7	Opto Sensor #1 input, A/D Input #3, Home/ lower limit	Includes 10k Ω pullup to 3.3V.
8	Opto sensor #1 ground	Common input ground

ENCODER CONNECTOR

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.

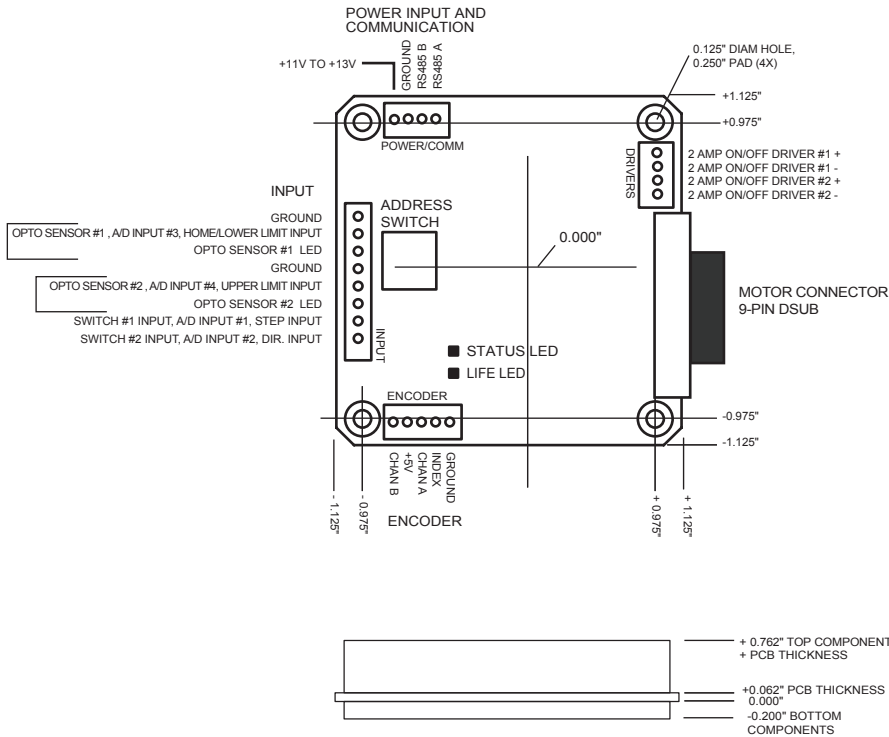
DRIVER CONNECTOR

Mating connector: AMP MTA 100 Series 4 pin, 22GA, part 3-644540-4 Digikey part A31122-ND

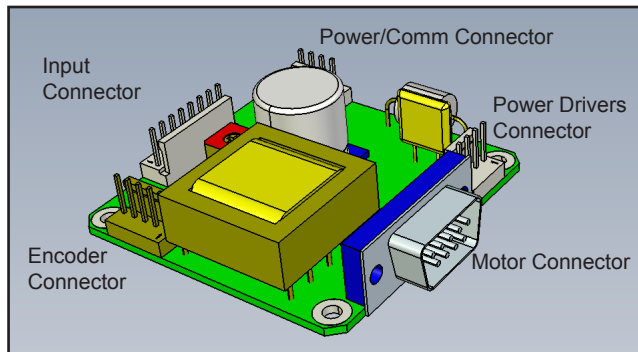
Pin	Function	Notes
1	ON/OFF Driver #1 (V-)	Open collector
2	ON/OFF Driver #1 (V+)	2A peak; 1A continuous
3	ON/OFF Driver #2 (V-)	Open collector
4	ON/OFF Driver #2 (V+)	2A peak; 1A continuous

For connector locations, see reverse side.

Mechanical Specifications



WARNING
High voltage present on PC board.



Ordering Information

Name	Order Number
EZPZ23 for HR1 motor.....	EZPZ23-HR1
EZPZ23 for HR2 motor.....	EZPZ23-HR2
EZPZ23 for HR4 motor.....	EZPZ23-HR4
EZPZ23 for ST1 motor.....	EZPZ23-ST1
RS232 to 485 Converter (option).....	RS485
USB to 485 Converter (option).....	USB485