

## General Specifications

|                              |   |
|------------------------------|---|
| Supply Input.....            | USB or 5V external  |
| Dimensions.....              | 1.0" X 2.0" X 0.5" thick (25.4mm X 50.8 mm X 12.7mm)  |
| Operating Modes.....         | PC controlled or standalone. Position, velocity, and torque   |
| Communications protocol..... | USB   |
| 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.   |
| Motor compatibility.....     | 500 mA continuous DC brush motor driver   |
| Mating Connectors.....       | (Supplied) HIROSE DF11 series. Recommended tool: Digikey H9924-ND. Pins are HIROSE DF11-2428sc; Digikey H2139. (For pre-crimped wires, search H3BXT on www.digikey.com.)  |
| I/O Interface.....           | Accepts 2 opto-electronic and two mechanical switch inputs, or 4 mechanical switch inputs, or 4 A/D inputs.<br>Signal Levels: <0.8V Vlow; >2V Vhigh (TTL compatible)<br>Optical switch specifications: Transistor optical switch with IC> 1 mA @ IF=20mA. <i>Examples:</i> Digikey OPB830W55 or H21A1 or OPB830W11 or QVA11134; Honeywell HOA1887-012 or HOA1870-33 (prewired); |
| Encoder Interface.....       | Quadrature encoder, maximum frequency 4 MHz   |
| Operating Temperature.....   | -20 to 85 °C PCB Copper temperature   |
| MTBF.....                    | 5000 hr @ 85° C PCB copper temperature. Doubles each 10° C below 85° C copper temperature.  |
| Relative Humidity.....       | 10% to 90% non condensing (operating and storage)   |

## Fully intelligent servo motor controller + driver with encoder feedback



SERVOSTICK™ actual size

| MOTOR CONNECTOR  |           |                                     |
|--|-----------|-------------------------------------|
| Mating connector: HIROSE DF11 8 pin, 24 GA, part DF11-8DS-2C Digikey part H2022-ND |           |                                     |
| Pin  | Function  | Notes                               |
| 1  | ON/OFF 2  | 24 mA TTL-level driver <sup>1</sup> |
| 2  | ON/OFF 1  | 24 mA TTL-level driver <sup>1</sup> |
| 3  | PWM OUT 2 | 24 mA TTL-level driver <sup>1</sup> |
| 4  | PWM OUT 1 | 24 mA TTL-level driver <sup>1</sup> |
| 5  | Ground    | Ground for encoder                  |
| 6  | Ground    | Ground for encoder                  |
| 7  | Motor -   | 500mA continuous                    |
| 8  | Motor +   | 500mA continuous                    |

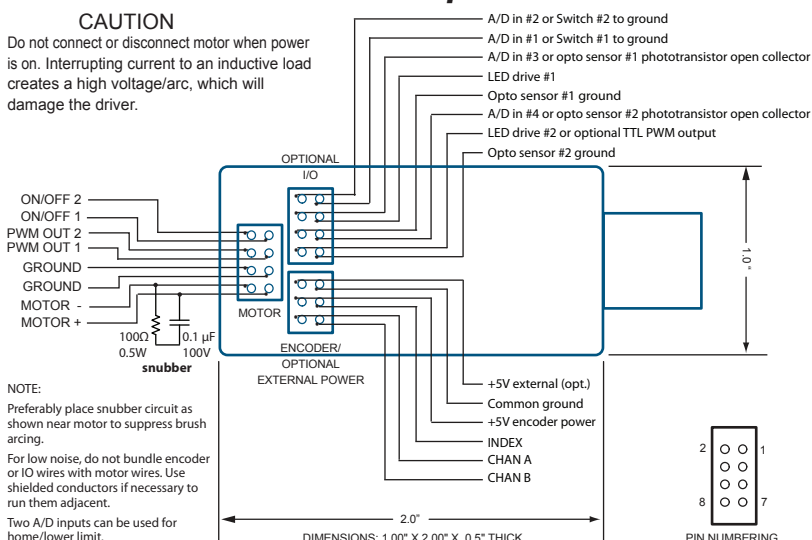
<sup>1</sup> 200 Ω series internal resistor may be removed if desired.

| I/O CONNECTOR   |  |  |
|---|--|--|
| Mating connector: HIROSE DF11 Series 8 pin, 24 GA, part DF11-8DS-2C Digikey part H2022-ND |  |  |
| Pin   | Function   | Notes  |
| 1   | A/D in #1 or Switch #1 to ground                           | Includes equivalent 6.8k Ω pullup to 3.3V.           |
| 2   | A/D in #2 or Switch #2 to ground                           | Includes equivalent 6.8k Ω pullup to 3.3V.           |
| 3   | A/D in #4 or opto sensor #2 phototransistor open collector | Includes equivalent 6.8k Ω pullup to 3.3V.           |
| 4   | LED drive #2 or optional TTL PWM output                    | Includes series 200 Ω current source resistor to 5V. |
| 5   | LED drive #1   | Includes series 200 Ω current source resistor to 5V. |
| 6   | Ground   | Common ground  |
| 7   | Ground   | Common ground  |
| 8   | A/D in #3 or opto sensor #1 phototransistor open collector | Includes equivalent 6.8k Ω pullup to 3.3V.           |

| ENCODER AND ALTERNATE POWER  |                       |                                 |
|--|-----------------------|---------------------------------|
| Mating connector: HIROSE DF11 6 pin, 24 GA, part DF11-6DS-2C Digikey part H2021-ND |                       |                                 |
| Pin  | Function              | Notes                           |
| 1  | Ground                | Power and encoder ground        |
| 2  | Optional external +5V | Standalone power input          |
| 3  | Index                 | Input from encoder <sup>1</sup> |
| 4  | Encoder +5V input     | Power to encoder                |
| 5  | Encoder Channel B     | Input from encoder <sup>1</sup> |
| 6  | Encoder Channel A     | Input from encoder <sup>1</sup> |

<sup>1</sup> Some encoders may require external pullups to 5V. Inputs from encoders must have min. 4V high level.

## Mechanical/Connection Specifications



## Key Features

- 500mA continuous DC brush motor driver
- Optional standalone operation unconnected to PC
- USB communications protocol
- Optional ADC inputs, halt/branch on ADC value
- Optional digital PWM output
- On-board EEPROM for user program storage
- 4-quadrant operation
- Position, velocity, and torque modes
- Homes to opto, switch closure, or encoder index with a single command
- Quadrature encoder-based feedback
- 4MHz max. encoder frequency
- Pre-wired for optoswitch inputs
- Cavro DT or OEM control protocol compatible
- Fully programmable ramps and speeds
- Software-settable maximum currents

## Ordering Information

Name  
ServoStick™ Controller/Driver..... Order Number  
SERVOSTICK