

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. Signal Levels: <0.8V Vlow; >2V Vhigh (TTL compatible) 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 ¹
2	ON/OFF 1	24 mA TTL-level driver ¹
3	PWM OUT 2	24 mA TTL-level driver ¹
4	PWM OUT 1	24 mA TTL-level driver ¹
5	Ground	Ground for encoder
6	Ground	Ground for encoder
7	Motor -	500mA continuous
8	Motor +	500mA continuous

¹ 200 Ω series internal resistor may be removed if desired.

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 ¹
4	Encoder +5V input	Power to encoder
5	Encoder Channel B	Input from encoder ¹
6	Encoder Channel A	Input from encoder ¹

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

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

I/O CONNECTOR

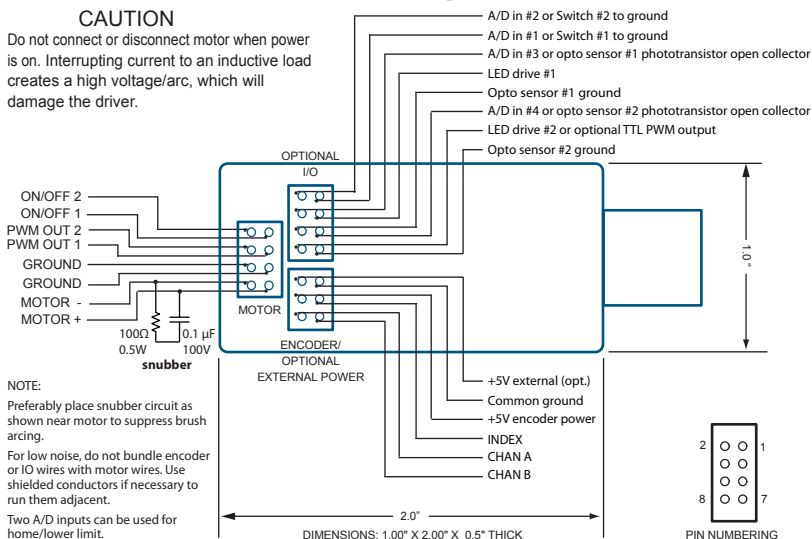
Mating connector: HIROSE DF11 Series 8 pin, 24 GA, part DF11-8DS-2C Digikey part H2022-ND

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.

Mechanical/Connection Specifications

CAUTION

Do not connect or disconnect motor when power is on. Interrupting current to an inductive load creates a high voltage/arc, which will damage the driver.



NOTE:
Preferably place snubber circuit as shown near motor to suppress brush arcing.
For low noise, do not bundle encoder or IO wires with motor wires. Use shielded conductors if necessary to run them adjacent.
Two A/D inputs can be used for home/lower limit.

Ordering Information

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