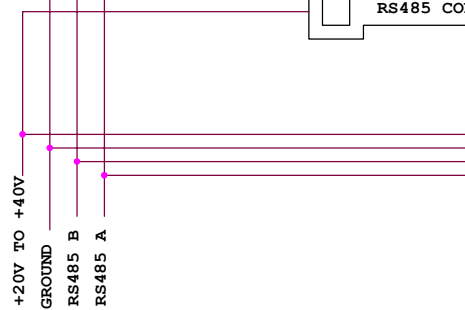


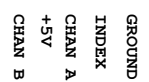
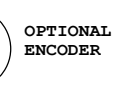
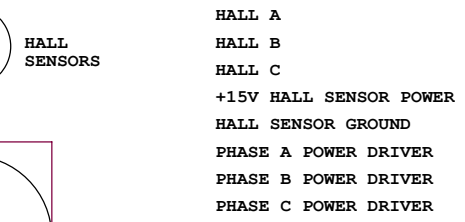
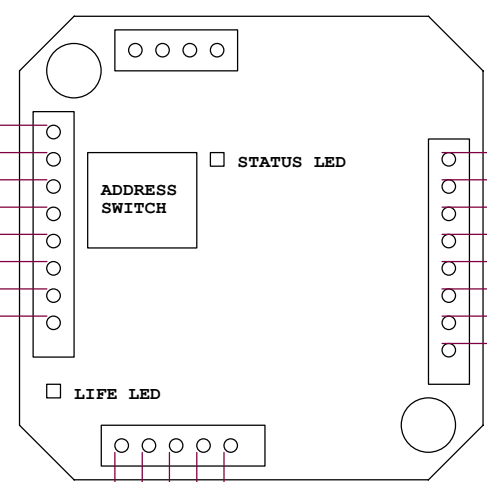
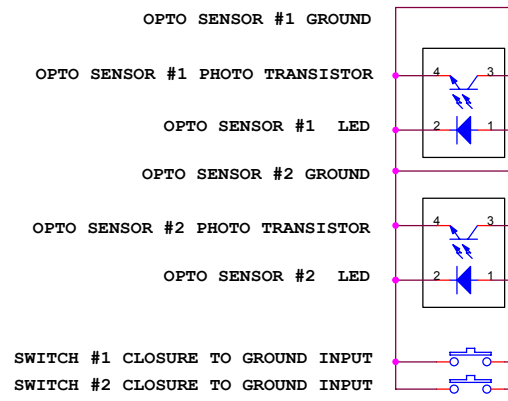
TO PC COM PORT

USE 9600 BAUD
8BIT, NO PARITY,
1 STOP, NO FLOW
CTRL.



TO OTHER EZ SERVOS
OR EZ STEPPERS

DO NOT UNPLUG LOADS WHILE POWER IS ON



NOTE: ENCODER SIGNALS MUST BE >4.5V HIGH LEVEL.
THIS MAY REQUIRE EXTERNAL PULLUPS.

EZ SERVO EZSV17 WIRING DIAGRAM FOR BLDC MOTOR

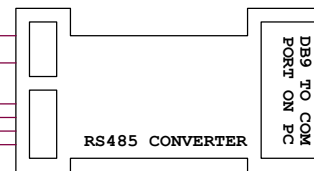
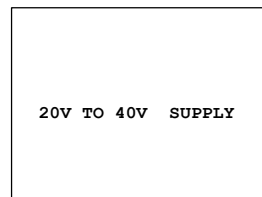
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- NOTES:
- 1) IF HALL SENSORS REQUIRE 5V POWER , USE ENCODER POWER.
 - 2) IF MOTOR EXHIBITS POSITIVE FEEDBACK, SWITCH ENCODER A,B WIRES
 - 3) KEEP ENCODER / INPUTS AWAY FROM NOISEY MOTOR POWER WIRES.

SEE PAGE 2 FOR BRUSH MOTOR WIRING

SEE PAGE 3 FOR MANUFACTURER
SPECIFIC BLDC MOTOR WIRING
EXAMPLES



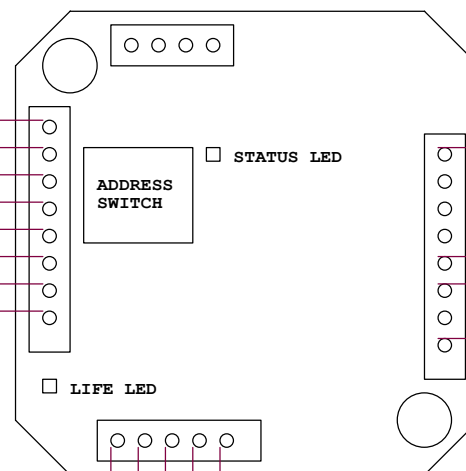
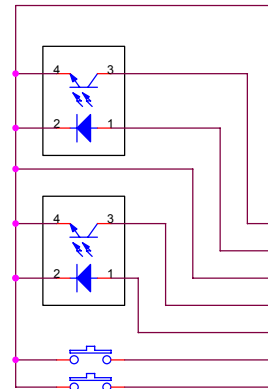
TO PC COM PORT

USE 9600 BAUD
8BIT, NO PARITY,
1 STOP, NO FLOW
CTRL.

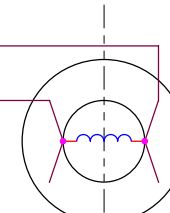
TO OTHER EZ SERVOS
OR EZ STEPPERS

DO NOT UNPLUG LOADS WHILE POWER IS ON

OPTO SENSOR #1 GROUND
OPTO SENSOR #1 PHOTO TRANSISTOR
OPTO SENSOR #1 LED
OPTO SENSOR #2 GROUND
OPTO SENSOR #2 PHOTO TRANSISTOR
OPTO SENSOR #2 LED
SWITCH #1 CLOSURE TO GROUND INPUT
SWITCH #2 CLOSURE TO GROUND INPUT



MOTOR-
NC
MOTOR+



DC
BRUSH
MOTOR

HALL A
HALL B
HALL C
HALL SENSOR POWER
HALL SENSOR GROUND
PHASE A POWER DRIVER
PHASE B POWER DRIVER
PHASE C POWER DRIVER

ENCODER

NOTES:

1) IF MOTOR EXHIBITS POSITIVE FEEDBACK, SWITCH MOTOR POWER LEADS.
OR SWITCH ENCODER A,B WIRES

2) KEEP ENCODER / INPUTS AWAY FROM NOISEY MOTOR POWER WIRES.

SEE PAGE 1 FOR BRUSHLESS MOTOR WIRING

SEE PAGE 3 FOR MANUFACTURER SPECIFIC
BLDC MOTOR WIRING EXAMPLES

GROUND
INDEX
CHAN A
+5V
CHAN B

NOTE: ENCODER SIGNALS MUST BE >4.5V HIGH LEVEL.
THIS MAY REQUIRE EXTERNAL PULLUPS.

EZ SERVO WIRING DIAGRAM FOR BRUSH MOTOR

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POWER INPUT AND COMMUNICATION

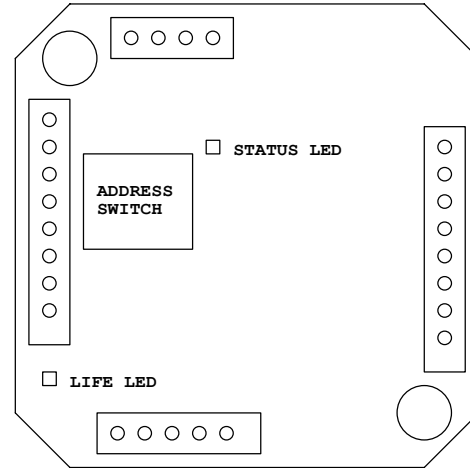
SIZE: 1.6" X 1.6" x 0.6" THICK

+20V TO +40V POWER SUPPLY
GROUND
RS485 B
RS485 A

DIGITAL I/O CONNECTOR

OPTO SENSOR #1 GROUND / SW CLOSURE GND
OPTO SENSOR #1 PHOTO TRANSISTOR
OPTO SENSOR #1 LED
OPTO SENSOR #2 GROUND / SW CLOSURE GND
OPTO SENSOR #2 PHOTO TRANSISTOR
OPTO SENSOR #2 LED
SWITCH CLOSURE TO GROUND INPUT
SWITCH CLOSURE TO GROUND INPUT

4 SWITCH CLOSURE,
OR 2 OPTO AND 2
SWITCH CLOSURE
INPUTS



LIFE LED

ENCODER CONNECTION

NOTE: ENCODER SIGNALS MUST BE >4.5V HIGH LEVEL.
THIS MAY REQUIRE EXTERNAL PULLUPS.

MOTOR CONNECTION

POPULAR MANUFACTURER WIRE COLORS

	PITTMAN	MAXON	EAD OPTICAL HALL	EAD MAGNETIC HALL	FAULHARBER
HALL A	WHITE	BLUE		YELLOW	GREEN
HALL B	GREY	GREY		GREEN	BLUE
HALL C	BLUE	VIOLET		GREY	GREY
+15V HALL SENSOR POWER	PURPLE	YELLOW	NC	ORANGE	RED
HALL SENSOR GROUND	BLACK	GREEN	NC	BLACK	BLACK
PHASE A POWER DRIVER	BROWN	ORANGE	BROWN	BROWN	BROWN
PHASE B POWER DRIVER	RED	RED	WHITE	WHITE	ORANGE
PHASE C POWER DRIVER	ORANGE	BROWN	BLUE	BLUE	YELLOW

GROUND BLACK
INDEX ORANGE
CHAN A YELLOW
+5V RED
CHAN B BLUE

PLEASE NOTE: FOR OTHER MOTORS,
ALLMOTION WILL BE PLEASED TO WORK
OUT THE WIRING FOR NO CHARGE.

EZ SERVO WIRING DIAGRAM

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EZSV17 ACESSORIES AND OTHER ELECTRICAL NOTES

MATING CONNECTORS:

AMP MTA 100 SERIES
4PIN 22 GA DIGIKEY P/N A31108 (INPUT CONNECTOR)
8PIN 22 GA DIGIKEY P/N A31111 (NEMA23 MOTOR)
8PIN 24 GA DIGIKEY P/N A31023 (NEMA17 MOTOR)
8PIN 26 GA DIGIKEY P/N A31030 (FOR OPTOS)
5PIN 26 GA DIGIKEY P/N A31027 (FOR ENCODER)
T HANDLE CRIMP TOOL DIGIKEY P/N A9982
PISTOL GRIP TOOL DIGIKEY P/N A1998 + A2031

MOTORS:

- 1) THE EZ SERVO WILL DRIVE MOST SERVO MOTORS
- 2) FOR BEST PERFORMANCE SELECT A MOTOR THAT HAS A BACK EMF OF ABOUT 1/2 OF THE SUPPLY VOLTAGE, AT THE MAX SPEED DESIRED TO RUN AT. (Eg USE A 12V MOTOR WITH A 24V SUPPLY) .
- 3) TYPICALLY A MOTOR THAT HAS AN INDUCTANCE OF AROUND 1mH AND A RESISTANCE OF AROUND 1 OHM WORKS WELL. BUT OTHER VALUES ARE ALSO OK. (0.5mH MINIMUM)

ENCODERLESS OPERATION:

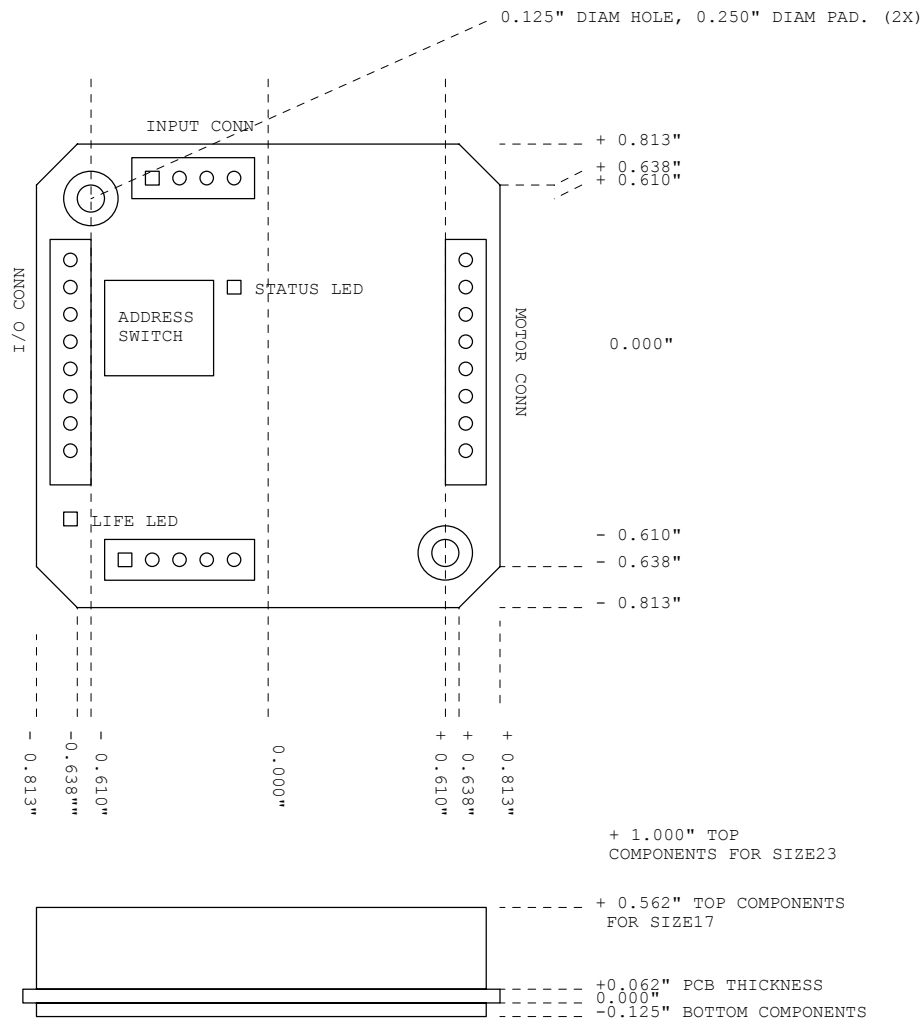
- 1) THE EZSERVO CAN PERFORM VELOCITY MODE CONTROL OF A MOTOR THAT DOES NOT HAVE AN ENCODER BY USING THE HALL SENSORS AS A GAGE OF SPEED. (N=0 MODE)
- 2) IT IS POSSIBLE TO USE THE N=1 POSITION CONTROL MODE BY WIRING TWO OF THE HALL SENSOR LINES TO THE ENCODER A AND B INPUTS IN ADDITION. THIS ALLOWS A CRUDE POSITION CONTROL MODE. IN THIS MODE THE VELOCITY CONTROL IS SUPERIOR TO THE N=0 MODE. USE SMALL ACCELEARTIONS AND VELOCITIES IN THIS MODE. Eg TRY /1L1V10000P0R
- 3) IF WIRING HALL SENSORS AS ENCODERS , USE THE ENCODER 5 V TO POWER THE HALL SENSORS.

OPTO HOME SWITCH:

- 1) "Z" OR HOME COMMAND RUNS MOTOR UNTIL OPTO #1 IS ON FLAG EDGE .
- 2) AN OPTO SWITCH PROVIDED WITH EACH STARTER KIT
- 3) USE TRANSISTOR OPTO THAT HAS $I_c > 1\text{mA}$ @ $I_F = 20\text{mA}$.
- 4) EXAMPLES OF ACCEPTABLE OPTOS ARE:
DIGIKEY P/N QVA11134
DIGIKEY P/N H21A1
HONEYWELL HOA1887-012 (IS PREWIRED)
HONEYWELL HOA1870-33 (IS PREWIRED)
OPTEK OPB830W11 (IS PREWIRED)
- 5) THE OPTO COUPLER LED PIN HAS 200 OHM TO 5V IN SERIES ON THE BOARD. THE 200 OHM CAN BE REMOVED IF DESIRED FOR RUNNING SENSORS THAT REQUIRE DIRECT ACCESS TO 5V. (OR USE ENCODER 5V POWER) THE COLLECTOR OF THE TRANSISTOR HAS A 10K PULLUP TO 5V.
- 6) ALL INPUTS WORK ON TTL LEVEL SIGNALS

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DESIGN USES THE NEMA 17 SIZE
STANDARD 1.22" SQUARE BOLT PATTERN

EZSV17 DIMENSIONAL INFORMATION

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