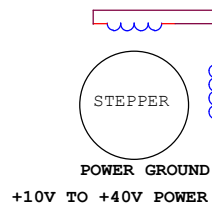
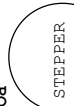


STEPPER CHANNEL 4



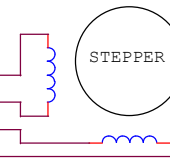
+10V TO +40V POWER
POWER GROUND



STEPPER CHANNEL1

STEPPER CHANNEL 2

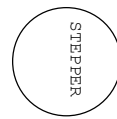
+10V TO +40V POWER
POWER GROUND



STEPPER MOTOR WINDING A
STEPPER MOTOR WINDING A
STEPPER MOTOR WINDING B
STEPPER MOTOR WINDING B

STEPPER CHANNEL 3

+10V TO +40V POWER
POWER GROUND



DO NOT UNPLUG LOADS WHILE
POWER IS ON. BREAKING OF
CURRENT IN THE INDUCTANCE OF
THE MOTOR GENERATES A HIGH
VOLTAGE ARC, WHICH DAMAGES
THE DRIVE.

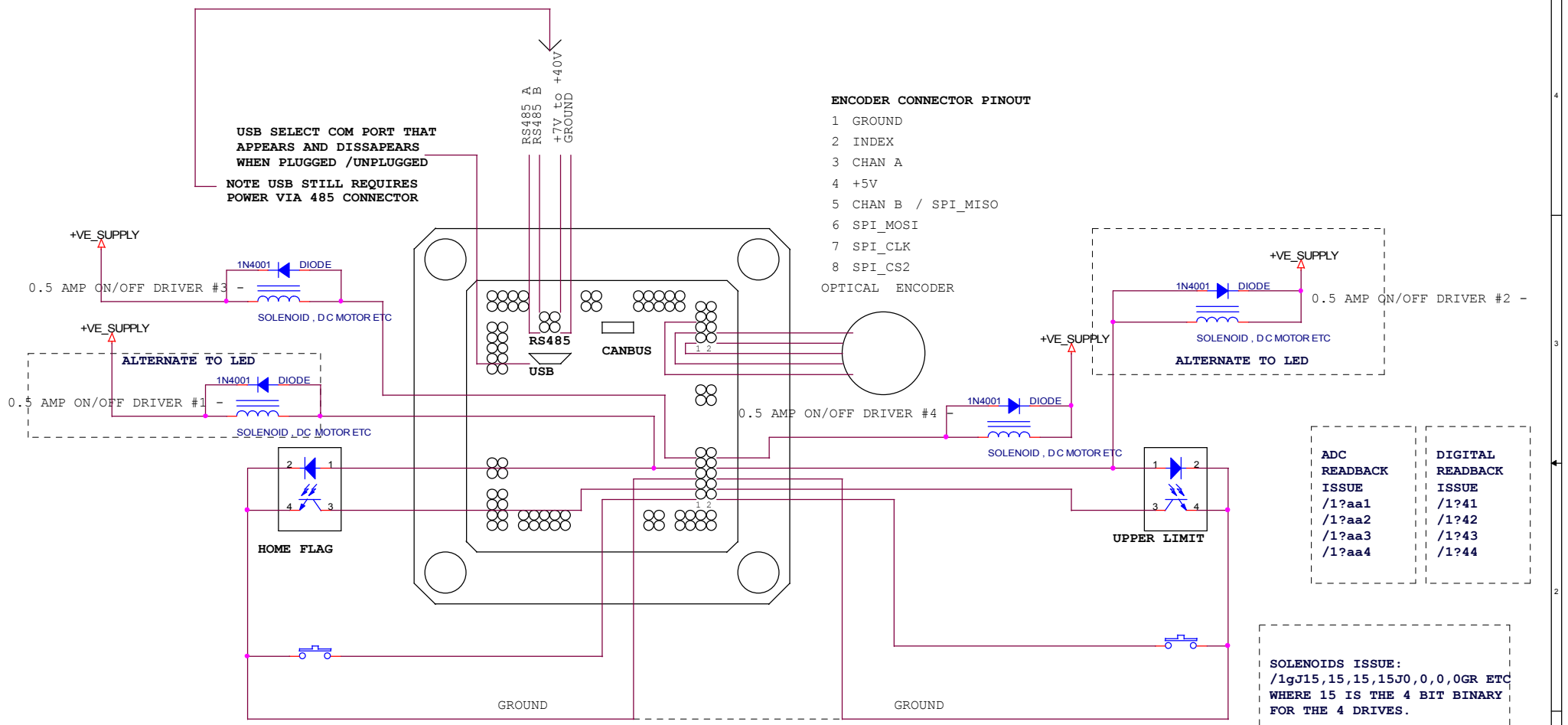
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EZQuadHRStepper POWER SECTION WIRING DIAGRAM

Title EZ QUAD SERVO WIRING DIAGRAM		
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USB SELECT COM PORT THAT APPEARS AND DISSAPEARS WHEN PLUGGED /UNPLUGGED
NOTE USB STILL REQUIRES POWER VIA 485 CONNECTOR

- ENCODER CONNECTOR PINOUT**
- 1 GROUND
 - 2 INDEX
 - 3 CHAN A
 - 4 +5V
 - 5 CHAN B / SPI_MISO
 - 6 SPI_MOSI
 - 7 SPI_CLK
 - 8 SPI_CS2
- OPTICAL ENCODER

ADC READBACK ISSUE	DIGITAL READBACK ISSUE
/1?aa1	/1?41
/1?aa2	/1?42
/1?aa3	/1?43
/1?aa4	/1?44

SOLENOIDS ISSUE:
/1gJ15,15,15,15J0,0,0,0GR ETC
WHERE 15 IS THE 4 BIT BINARY
FOR THE 4 DRIVES.

I/O CONNECTOR PINOUT

- | | |
|--|--|
| 9 DRIVER 3 (OPEN DRAIN) | 10 DRIVER 4 (OPEN DRAIN) |
| 7 OPTO 1 LED DRIVE/ DRIVE 1 (OPEN DRAIN) | 8 OPTO 2 LED DRIVE/ DRIVE 2 (OPEN DRAIN) |
| 5 GND | 6 GND |
| 3 OPTO 1/HOME/LOWER LIMIT/DIGITAL IN 2^2 | 4 OPTO 2/UPPER LIMIT/DIGITAL IN 2^3 |
| 1 SWITCH 1 IN/DIGITAL 2^0/ ANALOG CH1 | 2 SWITCH 2 IN/DIGITAL 2^1/ ANALOG CH2 |

NOTE JOYSTICK INPUTS ARE CHANNEL 1, PIN 1

ADC INPUTS ARE PIN 1,2

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PRELIMINARY RELEASE
EZ QUAD HR STEPPER
I/O SECTION WIRING DIAGRAM

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ACESSORIES AND OTHER ELECTRICAL NOTES

MATING CONNECTORS:

POWER CONNECTIONS AMP MTA 100 SERIES

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

T HANDLE CRIMP TOOL DIGIKEY P/N A9982

PISTOL GRIP TOOL DIGIKEY P/N A1998 + A2031

SIGNAL CONNECTIONS HIROSE DF11 SERIES

4PIN DF11-4DS-2C

8PIN DF11-8DS-2C

10PIN DF11-10DS-2C

PRECRIMPED DF11 WIRES: SEARCH H3BXT ON DIGIKEY

USB: USB MICRO

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. THE TOTAL CURRENT DRAWN FROM THE 5V SUPPLY (INCLUDING OPTOS) MUST BE LESS THAN 600mA.

6) ALL INPUTS ARE 0-3.3V ADC INPUTS, THE ONE/ZERO THRESHOLD IS FACTORY SET TO 1.23V, TO BE TTL COMPATIBLE, AND CAN BE CHANGED BY SOFTWARE COMMAND.

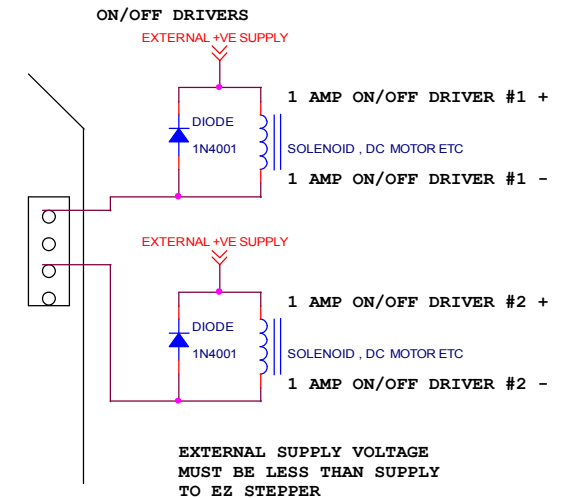
MOTORS:

- 1) THE EZ STEPPER WILL DRIVE MOST STEPPER MOTORS
- 2) FOR BEST PERFORMANCE SELECT A MOTOR RATED AT ABOUT 1/4 OF THE SUPPLY VOLTAGE. Eg USE A 6V MOTOR WITH A 24V SUPPLY).
- 3) FOR MOTORS WITH 6 WIRES DO NOT CONNECT THE CENTER TAPS (TO ANYTHING OR EACH OTHER)
- 4) FOR MOTORS WITH 8 WIRES THE PHASES CAN BE COMBINED IN PARALLEL OR SERIES TO YEILD 4 WIRES. SEE MANUFACTURERS DATA ON HOW TO DO THIS.

ON/OFF DRIVERS ALTERNATE WIRING DIAGRAM

- 1) EACH ON/OFF DRIVER IS RATED AT 2 AMPS PEAK, 1 AMP CONTINUOUS HOWEVER THE TOTAL GROUND RETURN FROM ALL 16 DRIVERS MUST BE KEPT TO LESS THAN 4A.
- 2) THE NEGATIVE PIN OF THESE DRIVERS IS ACTUALLY AN OPEN COLLECTOR TYPE OUTPUT THAT PULLS DOWN TO GROUND. IT IS POSSIBLE TO DRIVE LOADS THAT ARE OF A DIFFERENT VOLTAGE THAN THE SUPPLY VOLTAGE, BY CONNECTING THE POSITIVE SIDE OF THE LOAD TO AN EXTERNAL SUPPLY, AND THE NEGATIVE SIDE TO THE -VE OUTPUT PIN. HOWEVER, IN CASE THIS IS DONE IT IS NECESSARY TO PLACE AN EXTERNAL "FREE WHEELING" DIODE ACROSS ANY INDUCTIVE LOADS. EXTERNAL SUPPLY VOLTAGE MUST BE LESS THAN SUPPLY VOLTAGE BOARD

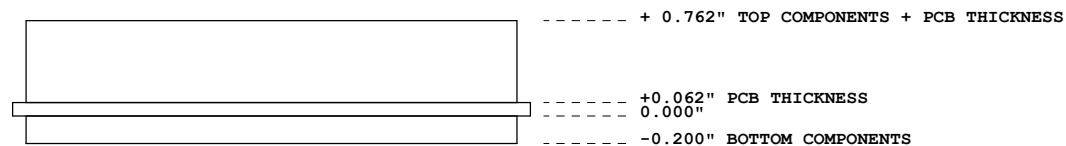
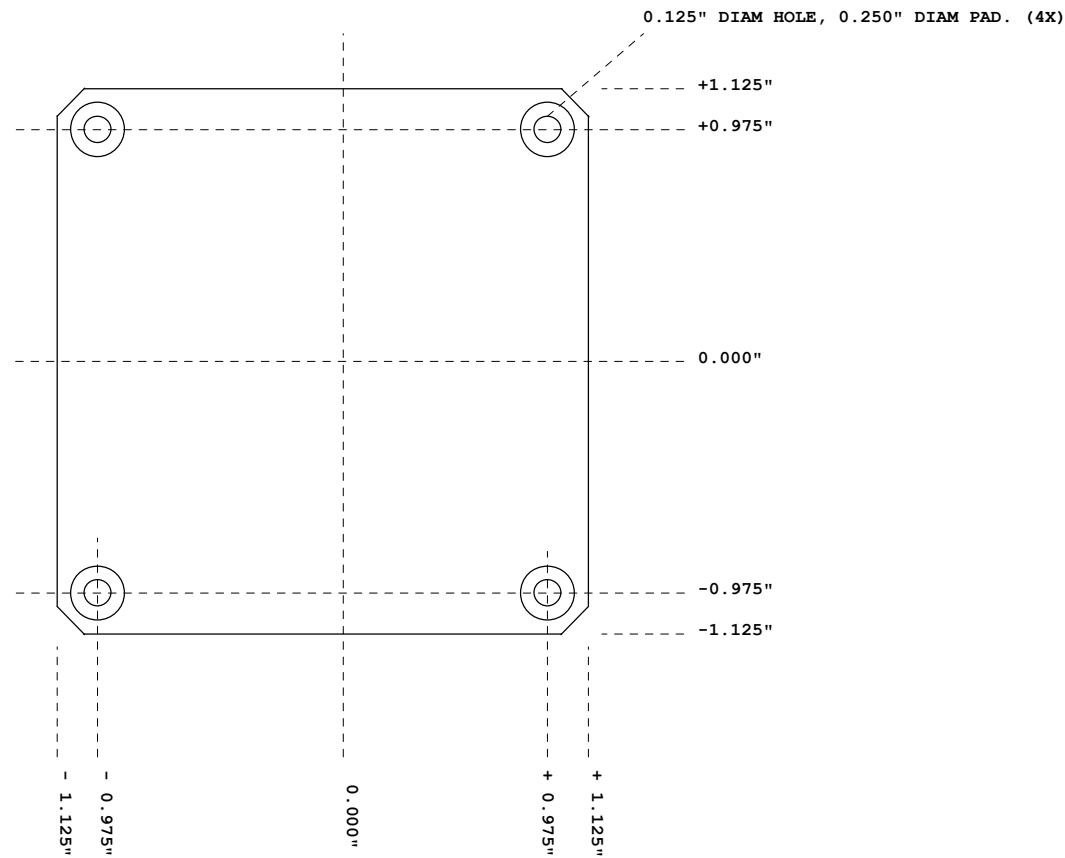
3) THE LED POWER PIN CAN BE CONFIGURED AS A DIRECT CONNECTION TO 5V TO SUPPLY 5V POWER ON THE I/O CONNECTOR. PLEASE CONTACT FACTORY.



SEE NEXT PAGE FOR DIMENSIONAL INFO

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EZ-QUAD-SERVO DIMENSIONAL INFORMATION

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