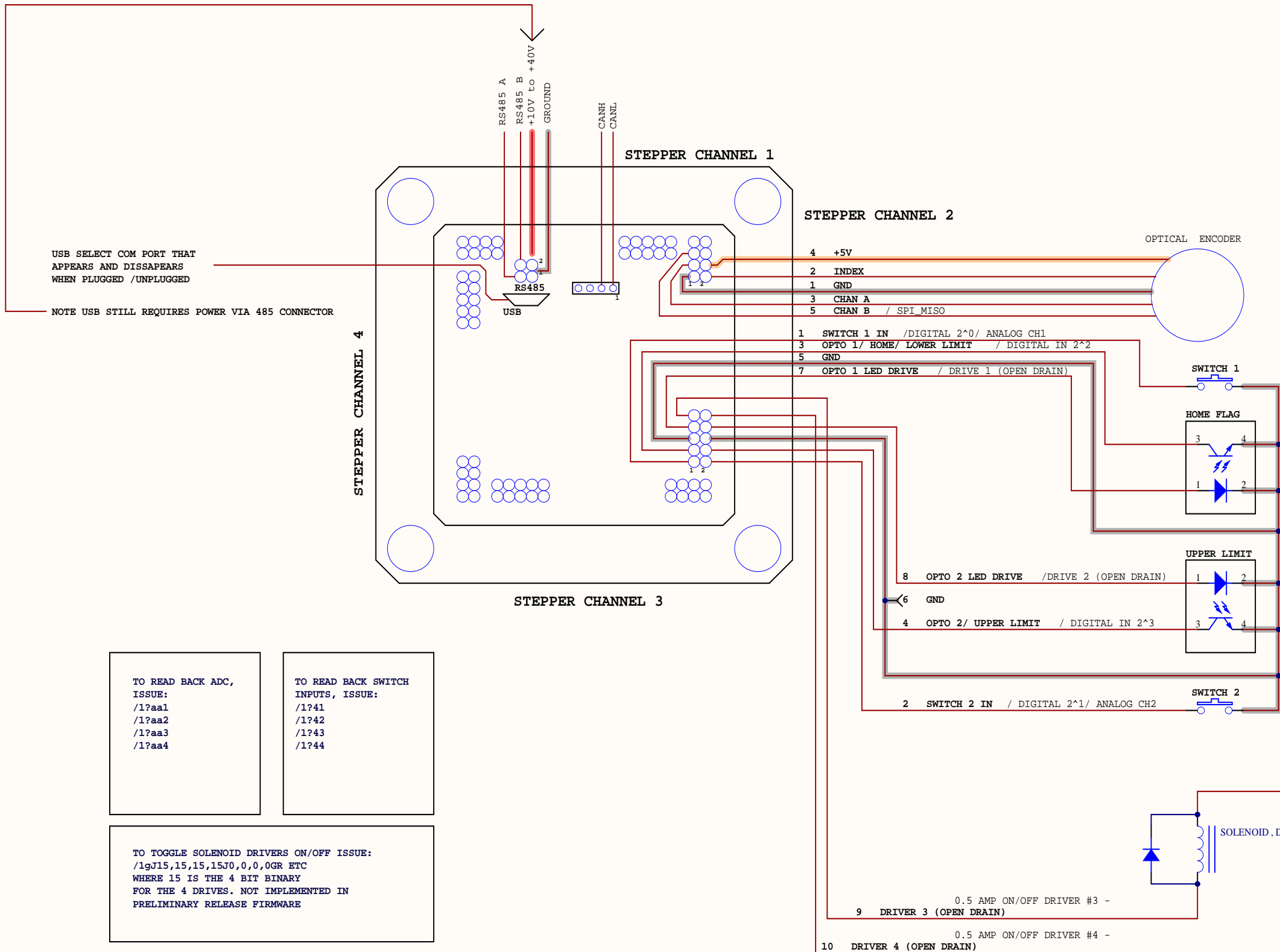


DO NOT UNPLUG LOADS WHILE POWER IS ON. BREAKING OF CURRENT IN THE INDUCTANCE OF THE MOTOR GENERATES A HIGH VOLTAGE ARC, WHICH DAMAGES THE DRIVE.

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MOTOR POWER AND WIRING		A04	
EZQuadHRStepper			
Wiring Diagram		Sheet 1 of 5	
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USB SELECT COM PORT THAT APPEARS AND DISSAPERS WHEN PLUGGED /UNPLUGGED

NOTE USB STILL REQUIRES POWER VIA 485 CONNECTOR

ENCODER CONNECTOR PINOUT

- 1 GND
- 2 INDEX
- 3 CHAN A
- 4 +5V
- 5 CHAN B / SPI_MISO
- 6 SPI_MOSI
- 7 SPI_CLK
- 8 SPI_CS2

I/O CONNECTOR PINOUT

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

TO READ BACK ADC, ISSUE:
 /1?aa1
 /1?aa2
 /1?aa3
 /1?aa4

TO READ BACK SWITCH INPUTS, ISSUE:
 /1?41
 /1?42
 /1?43
 /1?44

TO TOGGLE SOLENOID DRIVERS ON/OFF ISSUE:
 /1gJ15,15,15,15J0,0,0,0GR ETC
 WHERE 15 IS THE 4 BIT BINARY FOR THE 4 DRIVES. NOT IMPLEMENTED IN PRELIMINARY RELEASE FIRMWARE

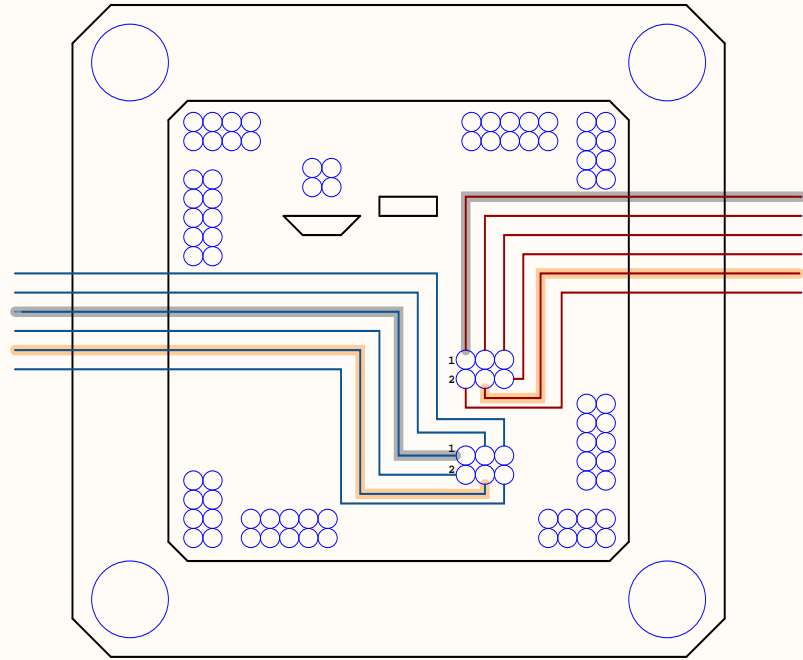
0.5 AMP ON/OFF DRIVER #3 -
 9 DRIVER 3 (OPEN DRAIN)
 0.5 AMP ON/OFF DRIVER #4 -
 10 DRIVER 4 (OPEN DRAIN)

AUXILIARY ENCODER CONNECTOR PINOUT

- 1 GND
- 2 INDEX
- 3 CHAN A
- 4 +5V
- 5 CHAN B
- 6 STROBE

AUXILIARY ENCODER 1

- CHANNEL B 5
- CHANNEL A 3
- GND 1
- INDEX 2
- +5V 4
- STROBE 6



AUXILIARY ENCODER 2

- 1 GND
- 3 CANNEL A
- 5 CANNEL B
- 6 STROBE
- 4 +5V
- 2 INDEX

MATING CONNECTORS:

POWER CONNECTIONS AMP MTA 100 SERIES

8PIN 22 GA DIGIKEY P/N A31111-ND (NEMA23 MOTOR)

8PIN 24 GA DIGIKEY P/N A31023-ND (NEMA17 MOTOR)

8PIN 26 GA DIGIKEY P/N A31030-ND

T HANDLE CRIMP TOOL DIGIKEY P/N A9982-ND

PISTOL GRIP TOOL DIGIKEY P/N A2031-ND WITH A1998-ND

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

CAN BUS CONNECTION HIROSE DF13 SERIES

4PIN DF13-4S-1.25C

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-ND

DIGIKEY P/N H21A1-ND

HONEYWELL HOA1887-012 (IS PREWIRED)

HONEYWELL HOA1870-033 (IS PREWIRED)

OPTEK OPB830W11 (IS PREWIRED)

5) THE OPTO COUPLER LED PIN HAS 200 Ω TO 5V IN SERIES ON THE BOARD. THE 200 Ω CAN BE REMOVED IF DESIRED FOR RUNNING SENSORS THAT REQUIRE DIRECT ACCESS TO 5V. (OR USE ENCODER 5V POWER). ON DRIVERS 3 AND 4 OF EACH AXIS, THE COLLECTORS OF THE DRIVER TRANSISTORS HAVE 100 k Ω PULL-UPS TO 5V. THE TOTAL CURRENT DRAWN FROM THE 5V SUPPLY (INCLUDING OPTOS) MUST BE LESS THAN 600 mA.

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)

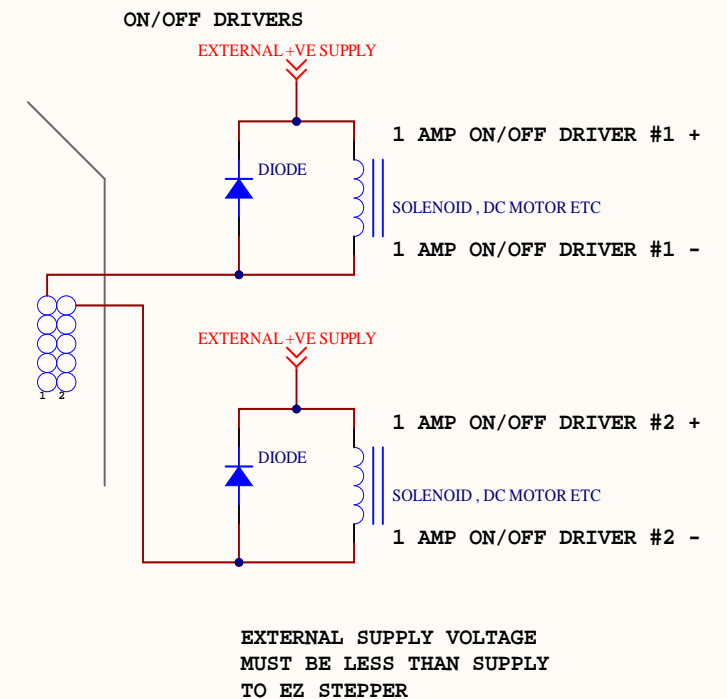
4) FOR MOTORS WITH 8 WIRES THE PHASES CAN BE COMBINED IN PARALLEL OR SERIES TO YIELD 4 WIRES. SEE MANUFACTURERS DATA ON HOW TO DO THIS.

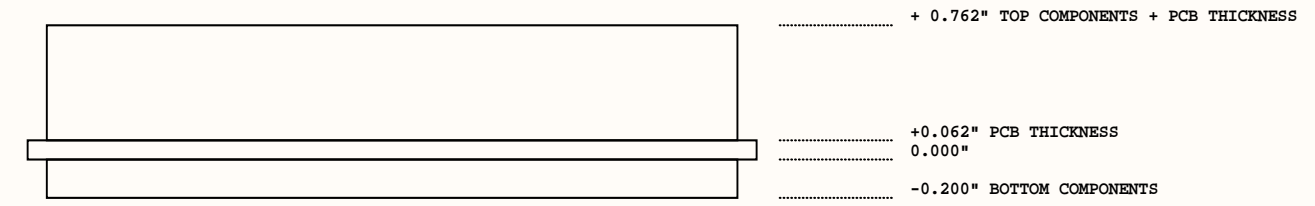
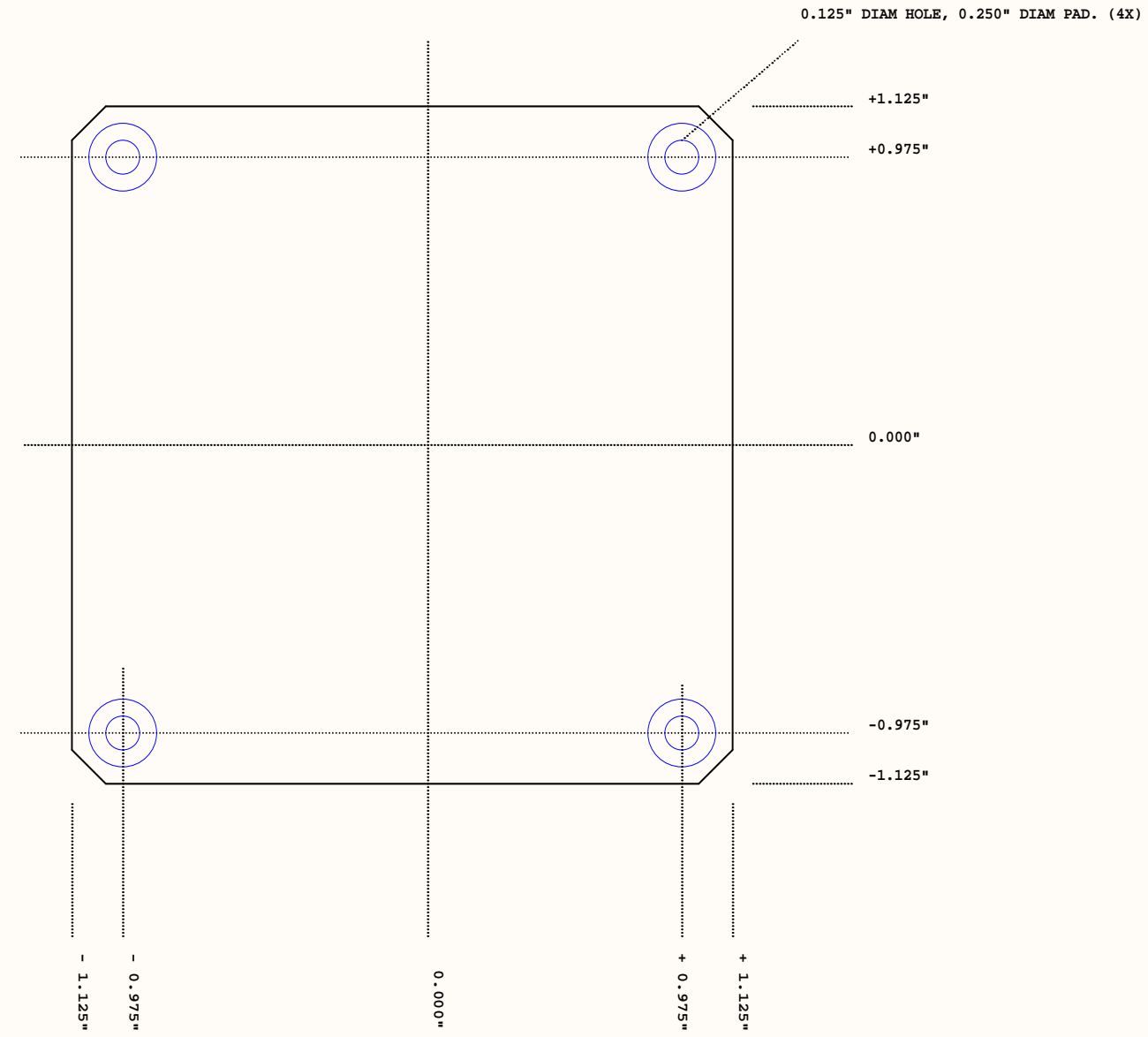
ON/OFF DRIVERS ALTERNATE WIRING DIAGRAM:

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.





<i>DIMENSIONS</i>		A04	
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