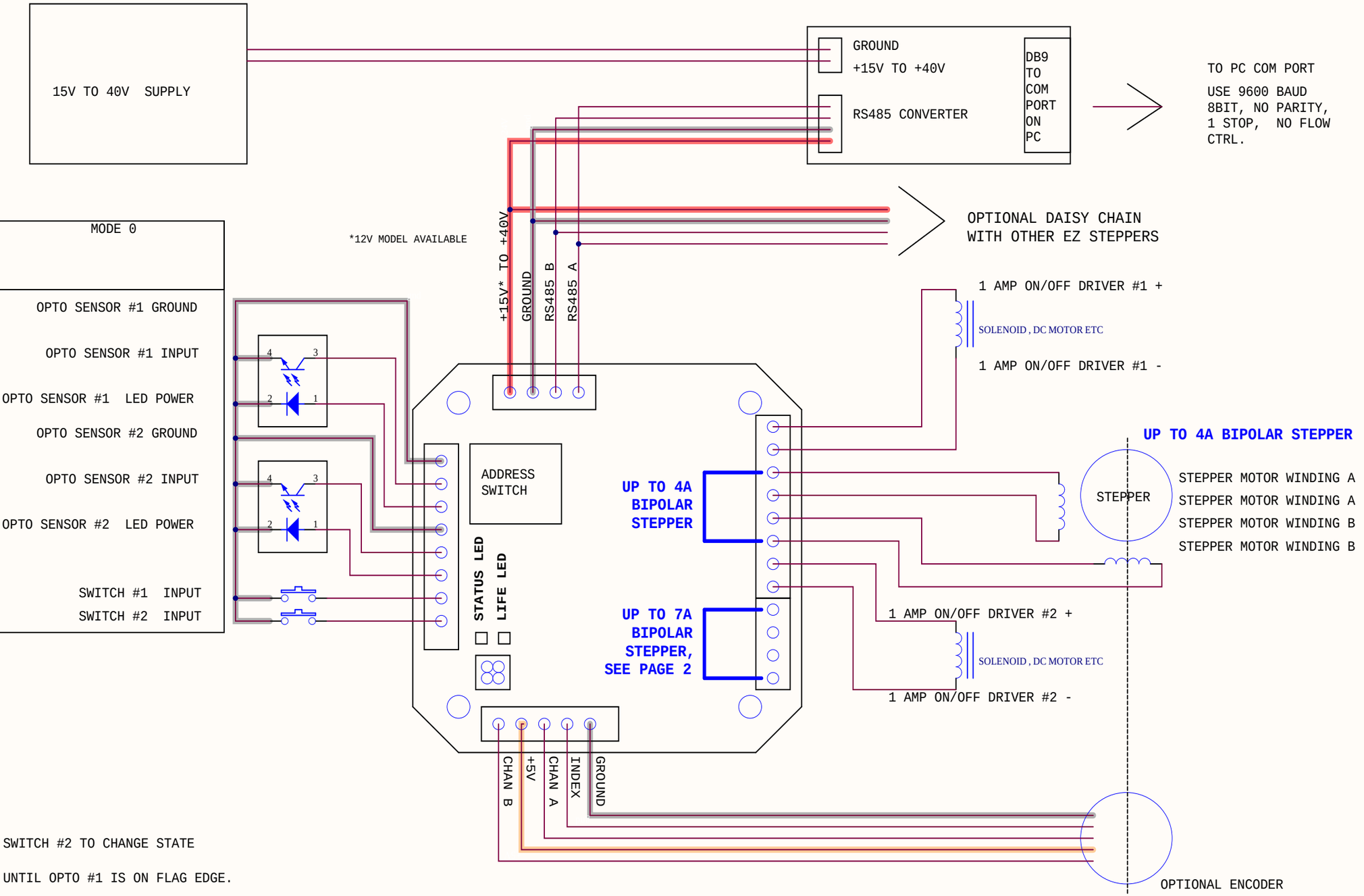

MODE 2 STEP AND DIR IN	MODE 1 DUAL ENCODERS	JOG LIMIT MODE	MODE 0
			OPTO SENSOR #1 GROUND
		LOWER LIMIT	OPTO SENSOR #1 INPUT
			OPTO SENSOR #1 LED POWER
			OPTO SENSOR #2 GROUND
	INDEX 2	UPPER LIMIT	OPTO SENSOR #2 INPUT
			OPTO SENSOR #2 LED POWER
STEP IN	CHAN A2	JOG UP	SWITCH #1 INPUT
DIR IN	CHAN B2	JOG DN	SWITCH #2 INPUT

NOTES:

"H" OR HALT COMMAND WAITS FOR SWITCH #2 TO CHANGE STATE

"Z" OR HOME COMMAND RUNS MOTOR UNTIL OPTO #1 IS ON FLAG EDGE.

A SWITCH CAN REPLACE THE OPTO FOR HOMING, CONNECT SWITCH FROM PHOTO TRANSISTOR INPUT TO GROUND.

TOTAL CURRENT DRAW FROM ENCODERS + LEDS MUST BE < 200mA

DO NOT UNPLUG LOADS WHILE POWER IS ON

WIRING DIAGRAM		
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MODE 2	MODE 1	JOG LIMIT MODE	MODE 0
			DIGITAL I/O CONNECTOR
		LOWER LIMIT	OPTO SENSOR #1 GROUND OPTO SENSOR #1 INPUT OPTO SENSOR #1 LED POWER
	INDEX 2	UPPER LIMIT	OPTO SENSOR #2 GROUND OPTO SENSOR #2 INPUT OPTO SENSOR #2 LED POWER
STEP IN	CHAN A2	JOG UP	SWITCH #1 INPUT
DIR IN	CHAN B2	JOG DN	SWITCH #2 INPUT

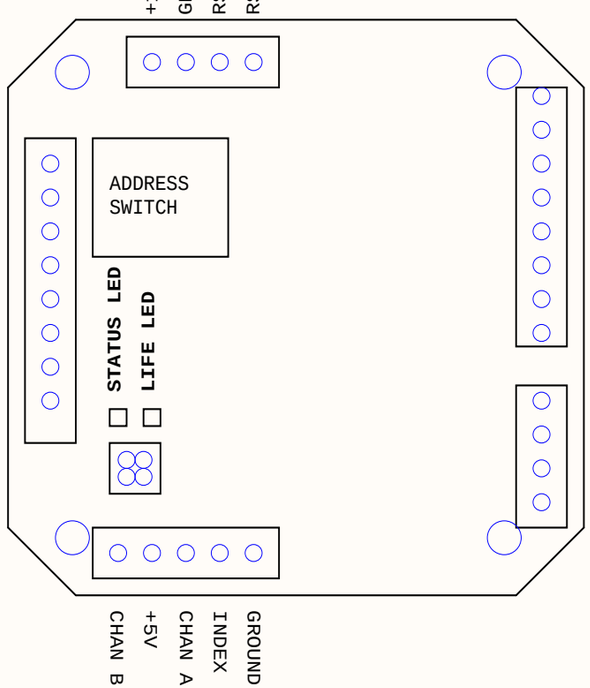
4 SWITCH CLOSURE INPUTS

OR

2 OPTO INPUTS AND 2 SWITCH CLOSURE INPUTS

EZBUS:
POWER INPUT AND COMMUNICATION

+12V TO +40V
GROUND
RS485 B
RS485 A



POWER OUTPUT DRIVERS

1 AMP ON/OFF DRIVER #1 +
1 AMP ON/OFF DRIVER #1 -

2 AMP; 1A CONTINOUS

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

UP TO 4A BIPOLAR STEPPER

1 AMP ON/OFF DRIVER #2 +
1 AMP ON/OFF DRIVER #2 -

2 AMP; 1A CONTINOUS

HIGH CURRENT SCREW TERMINAL FOR STEPPER WINDING A
HIGH CURRENT SCREW TERMINAL FOR STEPPER WINDING A
HIGH CURRENT SCREW TERMINAL FOR STEPPER WINDING B
HIGH CURRENT SCREW TERMINAL FOR STEPPER WINDING B

UP TO 7A BIPOLAR STEPPER

USE HIGH CURRENT SCREW TERMINAL FOR CURRENTS ABOVE 4A

PIN DESCRIPTIONS

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Wiring Diagram

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MATING CONNECTORS:

AMP MTA 100 SERIES

4PIN 22 GA DIGIKEY P/N A31122-ND (EZBUS CONNECTOR)

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 (OPTO SWTICH CONNECTOR)

T HANDLE CRIMP TOOL DIGIKEY P/N A9982-ND

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

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 VOLTAGRE. Eg USE A 6V MOTOR WITH A 24V SUPPLY).

3) FOR (UNIPOLAR) STEPPER MOTORS WITH CENTER TAPPED WINDINGS , TYPICALLY LEAVE THE CENTER TAP UNCONNECTED, OR WIRE PER MANUFACTURERS RECOMMENDATIONS.

SUITABLE POWER SUPPLIES:

1) FOR FIRST TIME USERS, TO GUARD AGAINST A POSSIBLE MISWIRE, A CURRENT LIMITED LAB SUPPLY SET TO 12V AND 0.5A IS RECOMMENDED.

2) A SUPPLY OF 24V AND 2A CAPABILITY IS GOOD FOR MOST PURPOSES. POSSIBLE CHOICES ARE:

DIGIKEY P/N 271-1112-ND

DIGIKEY P/N Z1158-ND (ENCLOSED)

3) INPUT CURRENT IS MUCH LESS THAN MOTOR CURRENT DUE TO THE SWITCHING (PWM). IT CAN BE CALULATED BY CONSIDERING CONSERVATION OF POWER. HOWEVER IT IS IMPORTANT TO MAKE SURE THAT THE SUPPLY WILL NOT FOLD BACK AS IT IS COMING UP SINCE THE EZ STEPPER WILL DRAW MORE CURRENT AT LOWER VOLTAGES.

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 Ic > 1mA @ IF = 20mA.

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.ON ON/OFF DRIVERS, THE COLLECTORS OF THE DRIVER TRANSISTORS HAVE 10 kΩ PULL-UPS TO 5V.

6) ALL INPUTS WORK ON TTL LEVEL SIGNALS

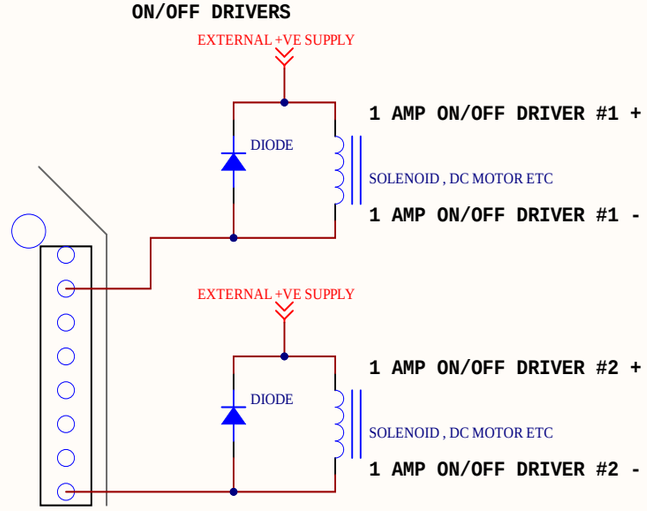
ON/OFF DRIVERS ALTERNATE WIRING DIAGRAM:

1) EACH ON/OFF DRIVER IS RATED AT 2 AMPS PEAK, 1 AMP CONTINUOUS

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) EXTERNAL DIODE IS NOT NECESSARY IF BOTH SIDES OF LOAD ARE WIRED BACK TO THE EZ STEPPER.

ON/OFF DRIVERS



EXTERNAL SUPPLY VOLTAGE MUST BE LESS THAN SUPPLY TO EZ STEPPER

ACCESSORIES AND OTHER ELECTRAL NOTES		
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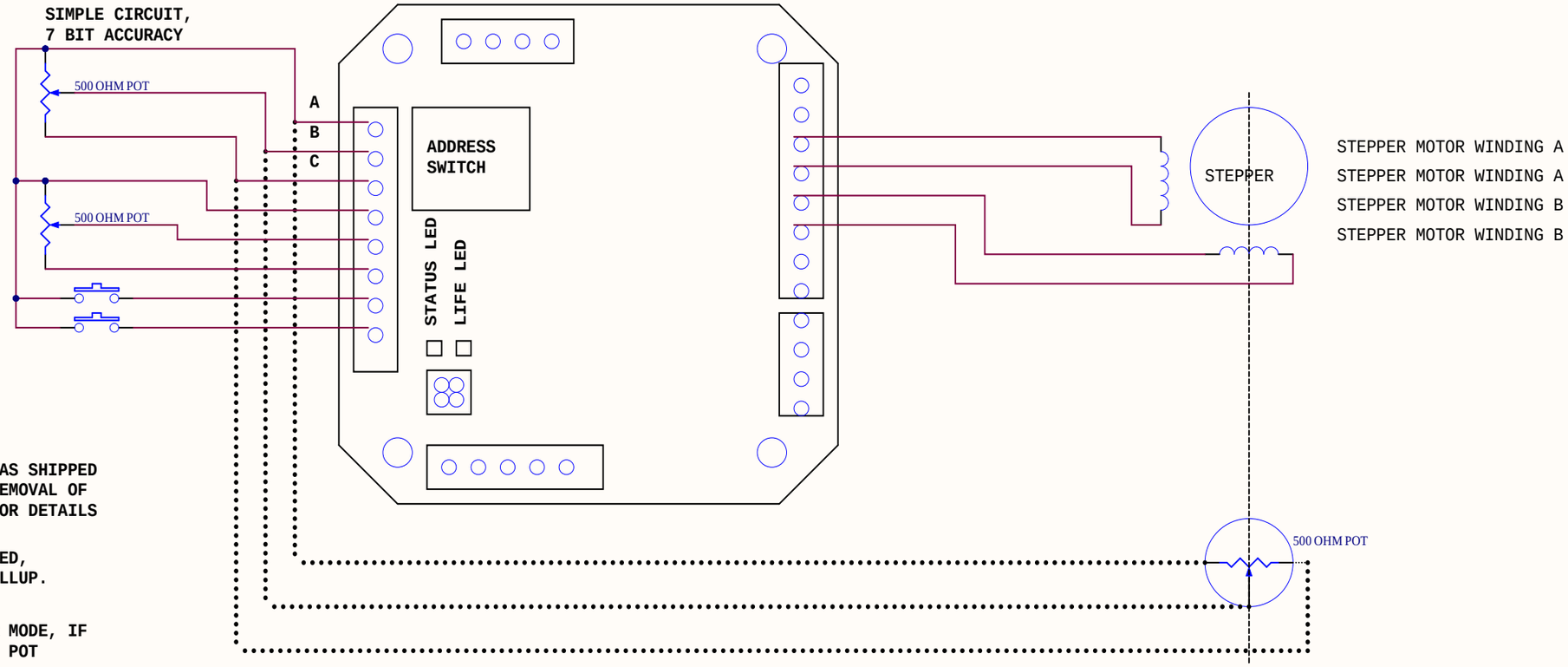
SIMPLE CIRCUIT,
7 BIT ACCURACY

FEEDBACK POT1 GROUND
FEEDBACK POT1 WIPER
FEEDBACK POT1 POWER

POSITION COMMAND POT2 GROUND
POSITION COMMAND POT2 WIPER
POSITION COMMAND POT2 POWER

SWITCH #1 CLOSURE TO GROUND INPUT
SWITCH #2 CLOSURE TO GROUND INPUT



NOTES:

1) ALL 4 INPUTS ARE ANALOG INPUTS

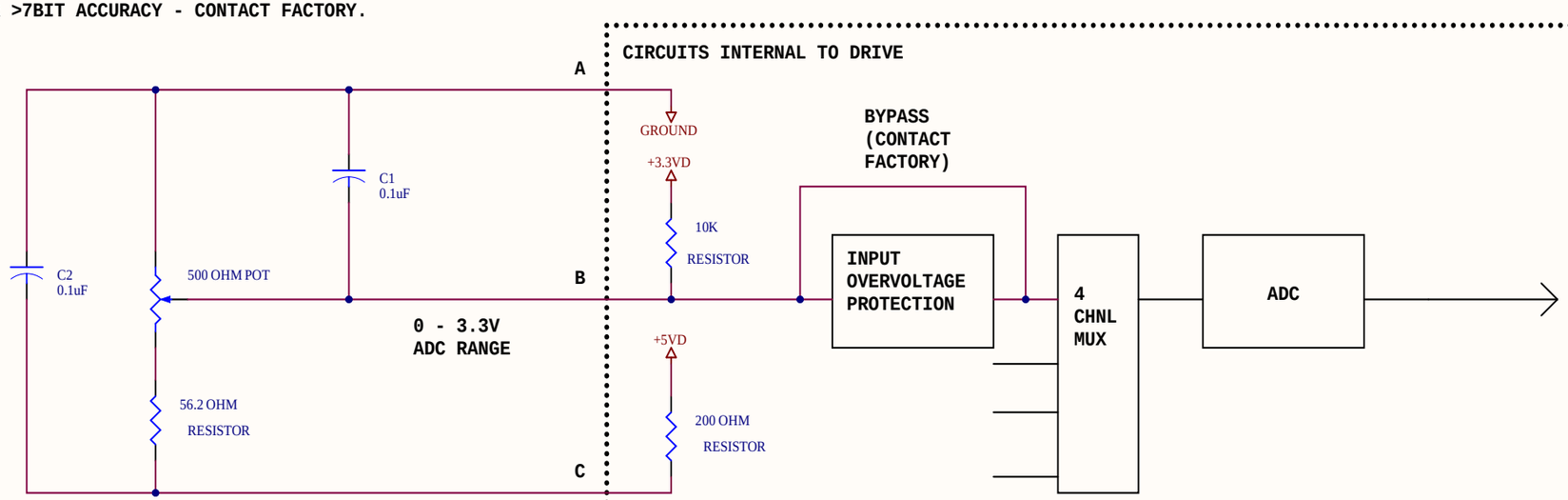
2) ADC's VALUES RANGE FROM 0-16368. THE ACCURACY AS SHIPPED IS 7 BIT BUT CAN BE IMPROVED TO >10BIT WITH THE REMOVAL OF THE INPUT PROTECTION CIRCUITRY, CONTACT FACTORY FOR DETAILS

3) POTS IN THE RANGE OF 500 OHM - 10K ARE SUGGESTED, LOWER VALUES ARE LESS AFFECTED BY INTERNAL 10K PULLUP. 500 OHM RECOMMENDED.

4) IF USING POT FOR POSITION FEED BACK WITH /1N3R MODE, IF MOTOR EXHIBITS POSITIVE FEEDBACK, SWITCH ENDS OF POT

5) 10K INTERNAL PULLUP WILL INTERFERE WITH LINEARITY OF POT VOLTAGE, AND MAY NEED TO BE REMOVED - CONTACT FACTORY.

6) INPUT OVERVOLTAGE PROTECTION CIRCUITRY MAY NEED TO BE REMOVED FOR >7BIT ACCURACY - CONTACT FACTORY.



ENHANCED EXTERNAL CIRCUIT FOR > 10BIT ACCURACY

ANALOG INPUT OR POTENTIOMETER FEEDBACK

EZHR23ENHC

Wiring Diagram

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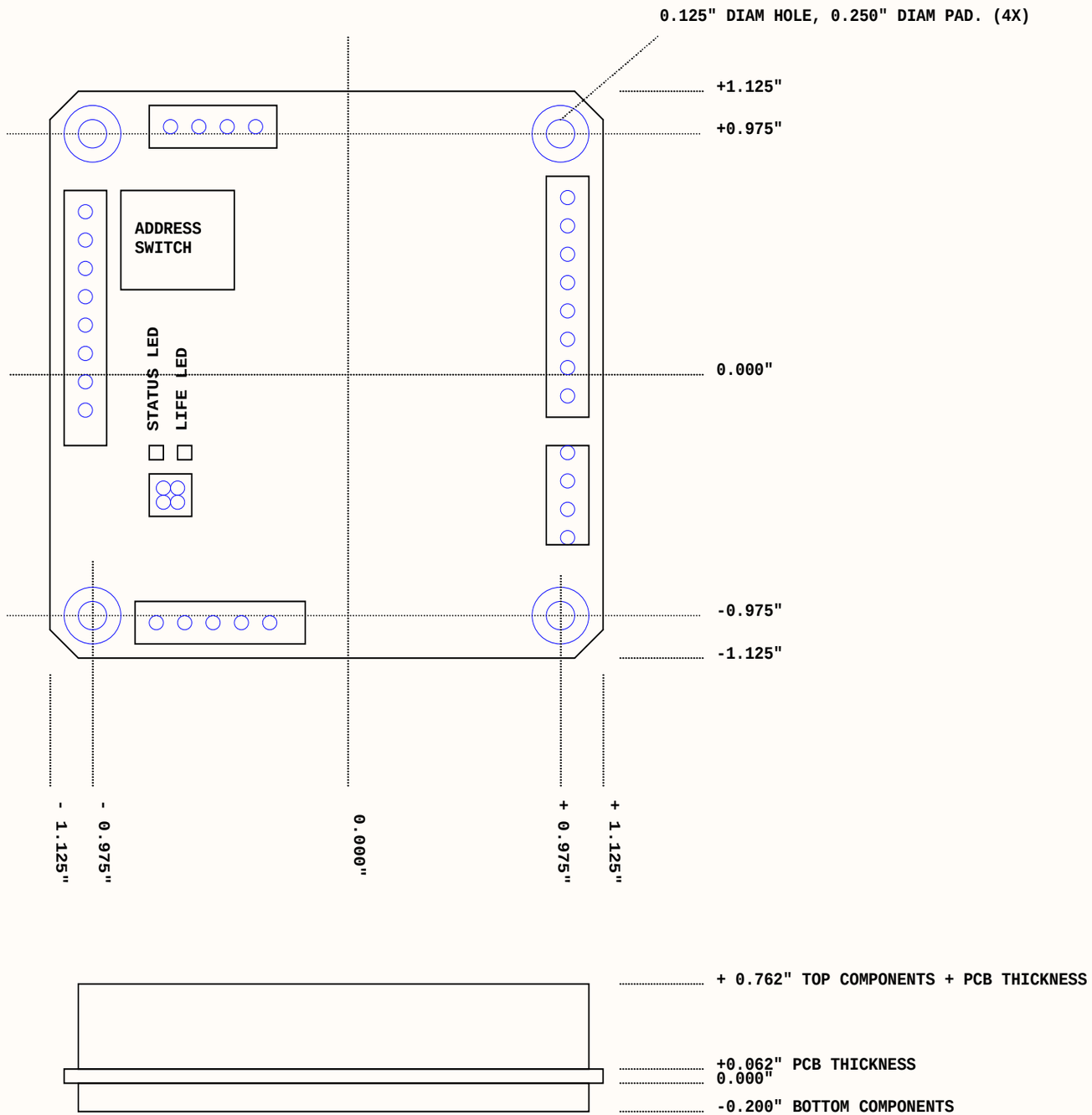

DIMENSIONS

EZHR23ENHC

Wiring Diagram

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