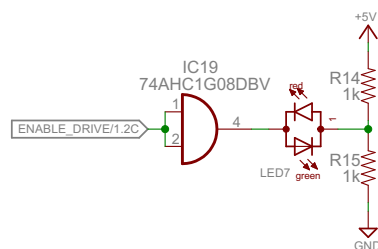
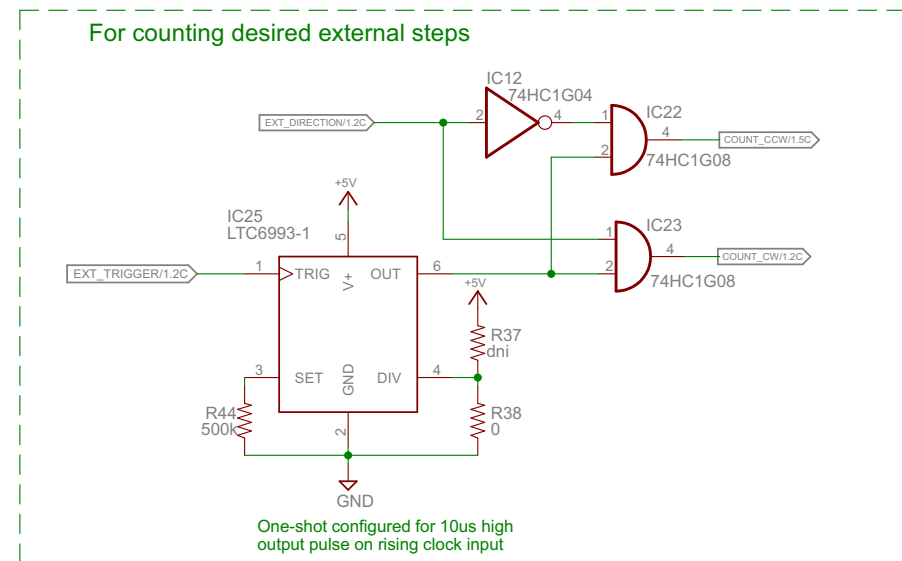


For "external" stepping mode, ensure that direction input is stable for a few microseconds on either side of the (rising edge) step trigger



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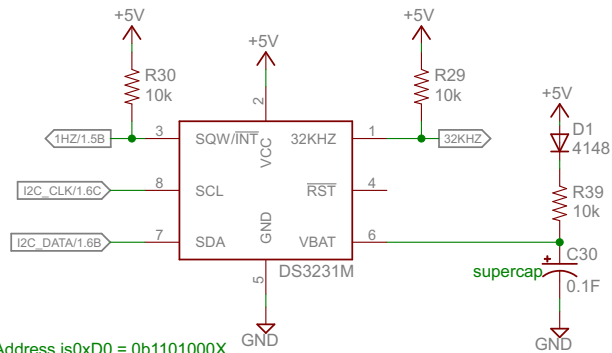
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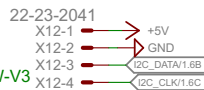
Real Time Clock



I2C Address is 0xD0 = 0b1101000X

To I2C LCD Screen
I2C address is 0x50
NHD-0420D3Z-NSW-BBW-V3

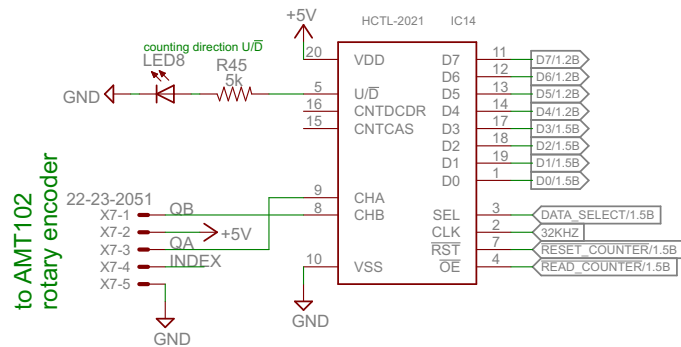
LCD



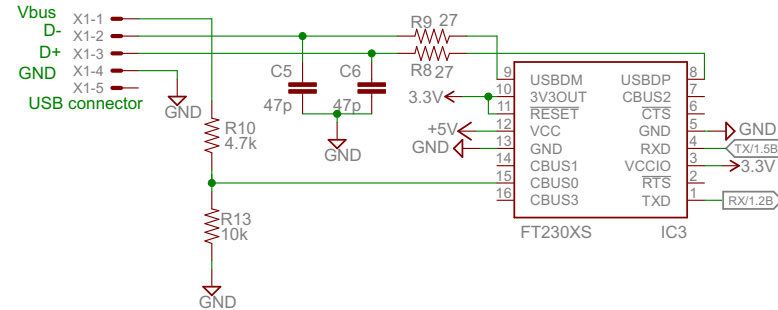
Feedback

HCTL-2021 count read sequence:

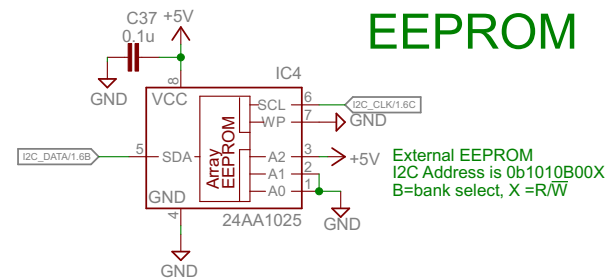
- 1) bring Read_Counter low
- 2) bring Data_Select low
- 3) read MSB
- 4) bring Data_Select high
- 5) read LSB
- 6) bring Read_Counter high



USB



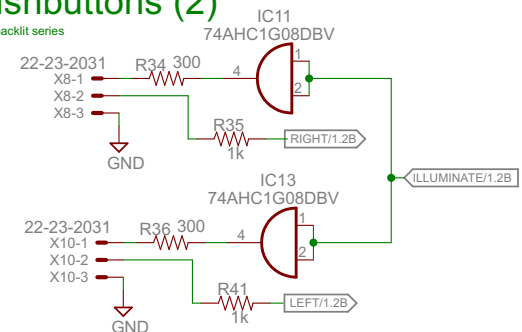
EEPROM



External EEPROM
I2C Address is 0b1010B00X
B=bank select, X=R/W

Pushbuttons (2)

AP2 backlit series



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1

2

3

4

5

6

A

A

B

B

C

C

D

D

E

E

CW output sequence for half-step mode:

```

ABCD
0101
0001
1001
1000
1010
0010
0110
0100
0101

```

CW output sequence for normal mode:

```

ABCD
0101
1001
1010
0110

```

CW output sequence for wave-drive mode:

```

ABCD
0001
1000
0010
0100

```

choose max current for chopper:

outputs switched off when $V_{sense} > V_{ref}$
 V_{sense} sourced from R_{sense} resistor (RXX, RYY, etc.)

 $I_{max} = V_{ref}/R_{sense}$:With $R_{sense} = 0.5 \text{ ohms}$, V_{sense} I_{max}

1V 2A

0.5V 1A

0.25V 0.5A

Basic configuration on powerup:

- 1) disable motor drive (clear ENABLE_DRIVE)
- 2) clear CNTRL (chopper not used for full steps anyway)
- 3) set HALF/FULL
- 4) reset motor drive (bring RESET_DRIVE low, then high)
- 5) select full step mode (clear HALF/FULL)
- 6) enable motor drive (set ENABLE_DRIVE)

chopping oscillator
 $f = 1/0.69 RC$

CNTRL Input:

0 = chopper works on inhibit signals (INH1 and INH2)
 1 = chopper works on ABCD outputs

In normal (two-stage-on) mode,
 no chopping is performed.

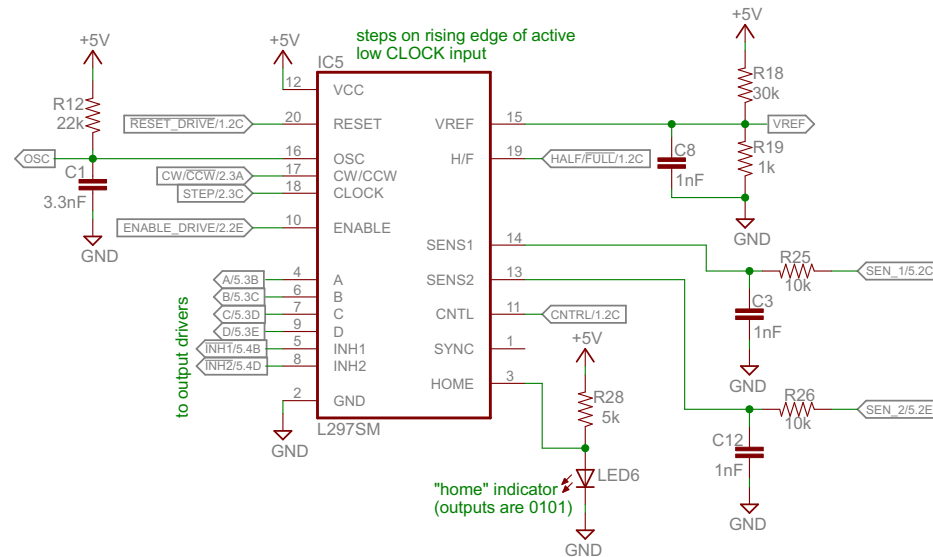
half/full input:

0 = full step operation

One-phase-on full step mode ("wave drive")
 is obtained by setting to 0 when the translator (outputs)
 are in an even-numbered state (XYZ0)
 Two-phase-on full step mode is obtained
 by setting to 0 when the translator (outputs)
 are in an odd-numbered state (XYZ1), i.e.
 the home position (ABCD = 0101).

1 = half step operation

In this mode the outputs alternate between
 one-phase-on and two-phase-on modes



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