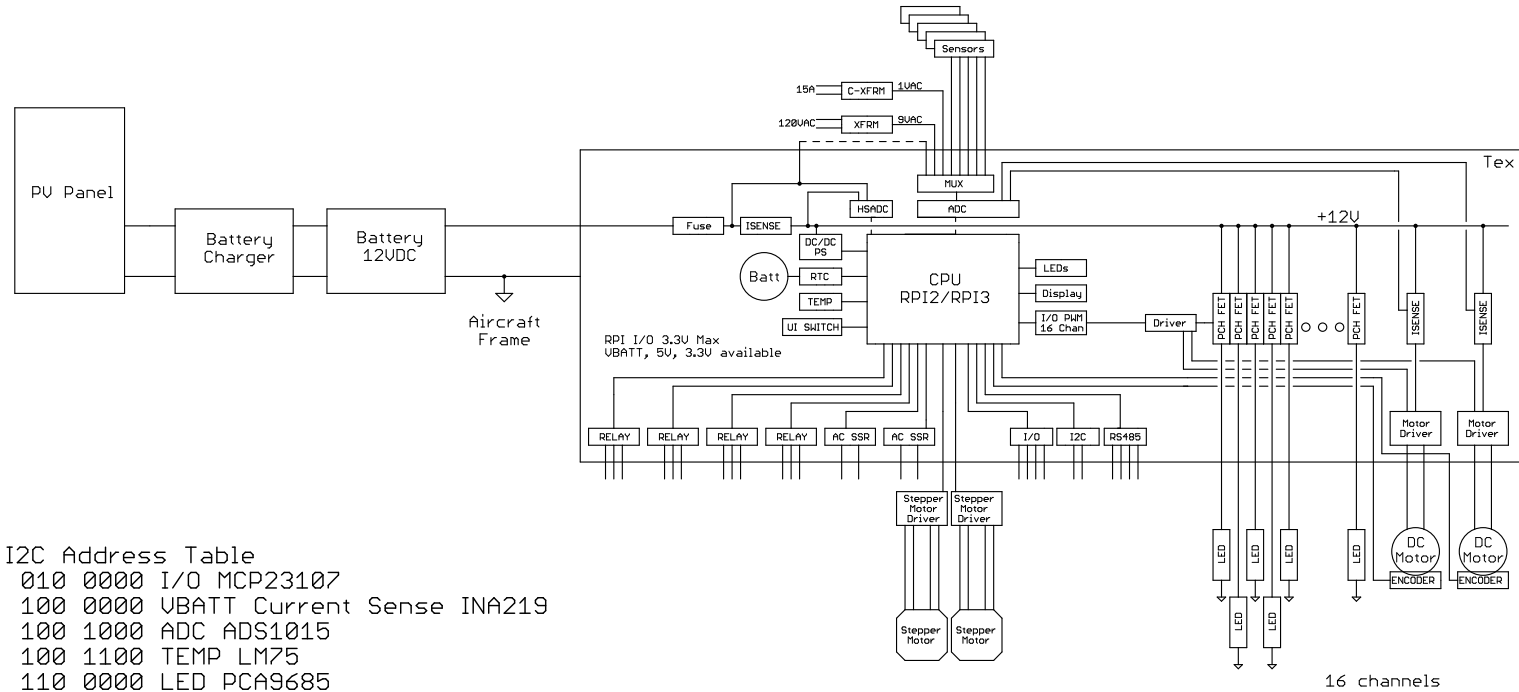


Description
The Tex Hat is a multi-purpose expansion board. This page is overall block diagram. Each page contains brief descriptions outlining individual functionality. The board does not require full component population to function. System designers can pick and choose what capabilities required.

Also, see "use cases.ods" for additional functionality descriptions.



I2C Address Table

010	0000	I/O MCP23107
100	0000	VBATT Current Sense INA219
100	1000	ADC ADS1015
100	1100	TEMP LM75
110	0000	LED PCA9685
110	1111	RTC MCP7940
111	1000	Display SSD1306 Banggood

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Overview

TITLE: tex

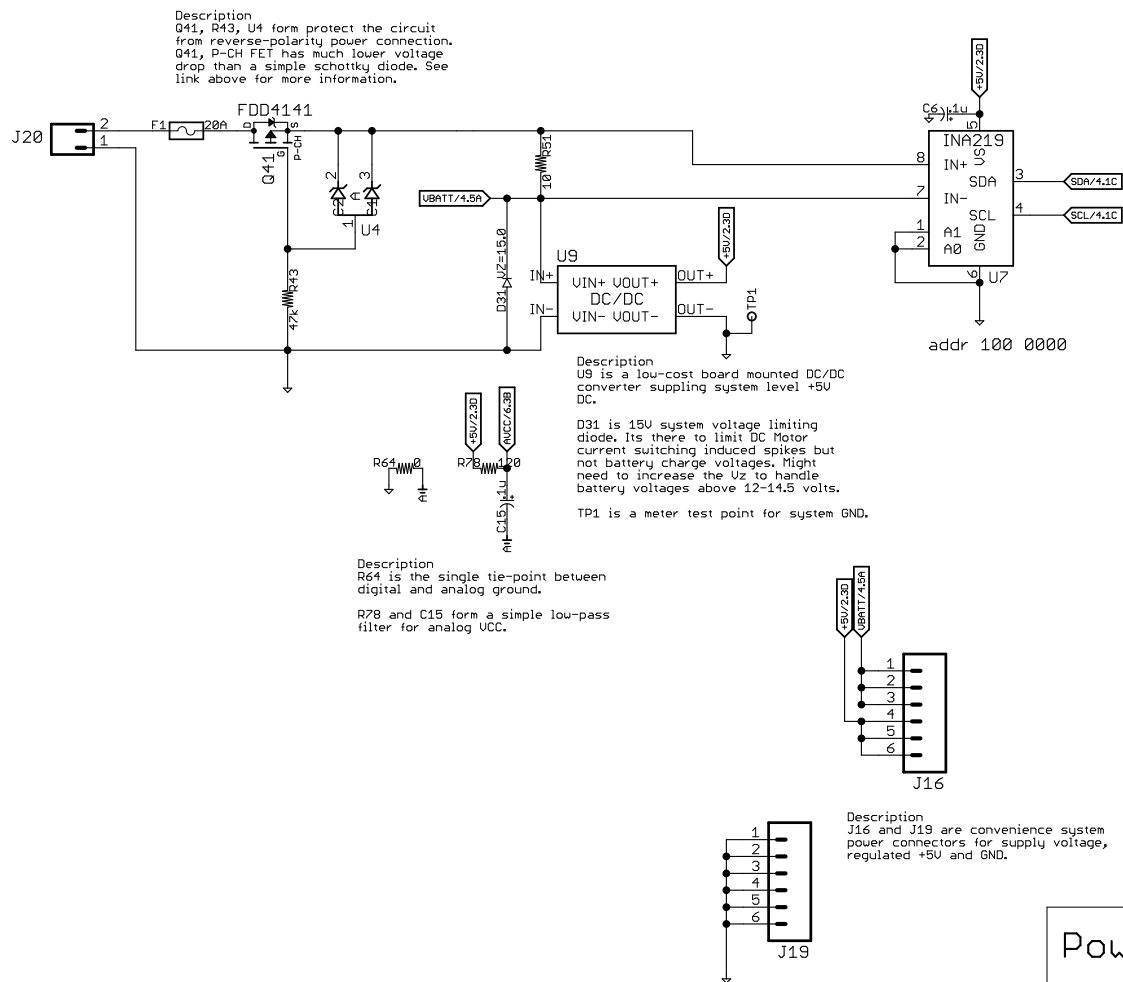
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Sheet: 1/7

<http://hackaday.com/2011/12/06/reverse-voltage-protection-with-a-p-fet/>
Reverse Protection



Power

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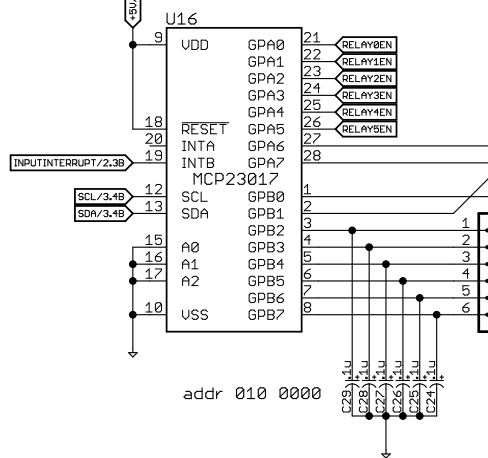
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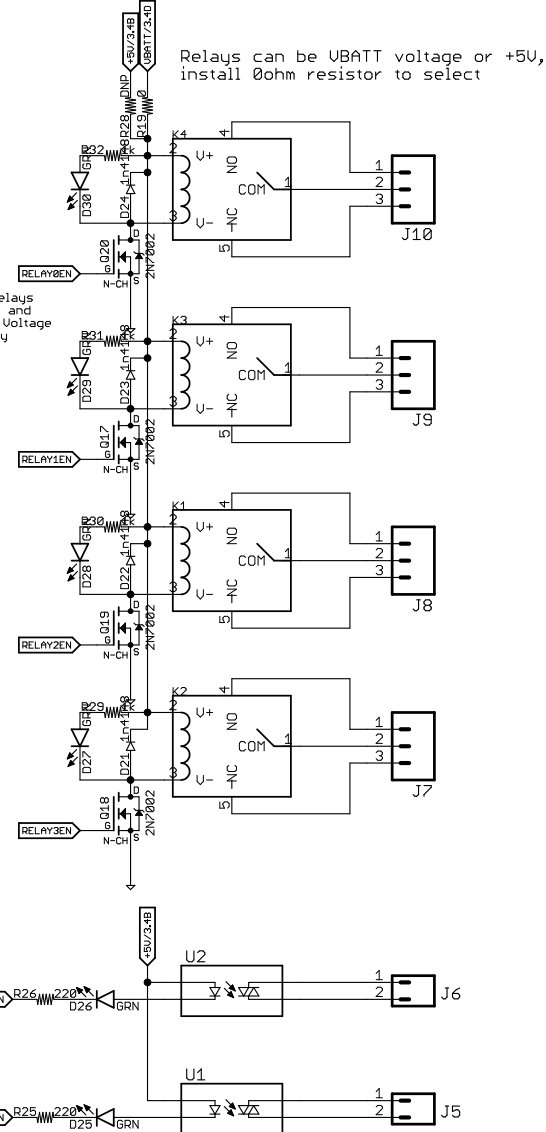
Description
U16 is a 16-bit I2C port expander. Port A0-5 outputs enables for relay drivers for U1, U2, and K1-K4.
U16 can be configured to send interrupt single to RPi on input pin change. See datasheet for more information.



Description
J30 is a convenience connector supplying +5V, 4 I/O pins and GND. Pins configured for input can have interrupt on change if configured. See U16 datasheet.

Description
J29 is a convenience connector for external switches. Connect switch to J29 and GND, requires U16 input pin pull-up resistor configuration. See datasheet.

Description
K1-K4 are general purpose relays permitting both normally-open and normally-closed connections. Voltage and current maximum are relay dependent.



I/O

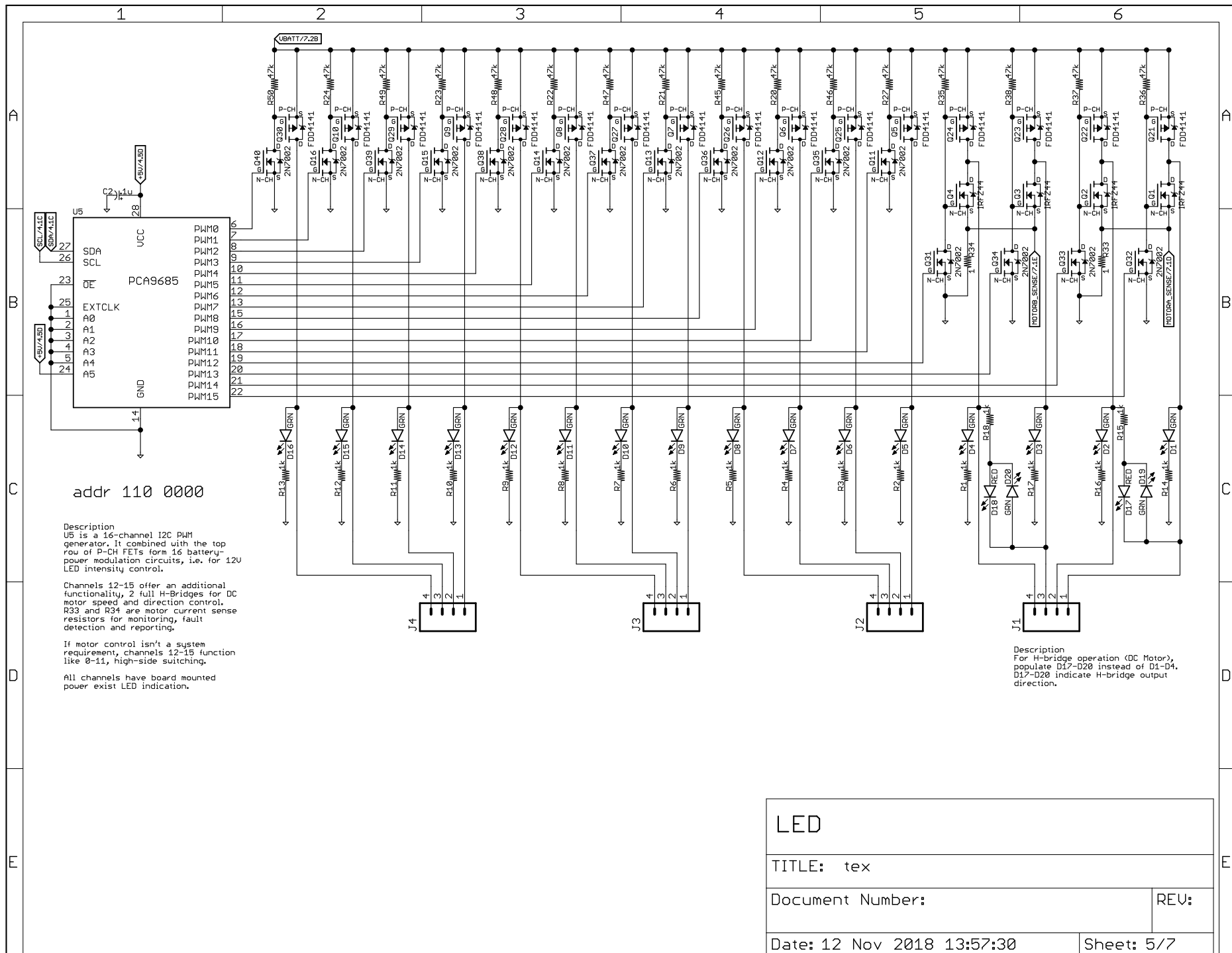
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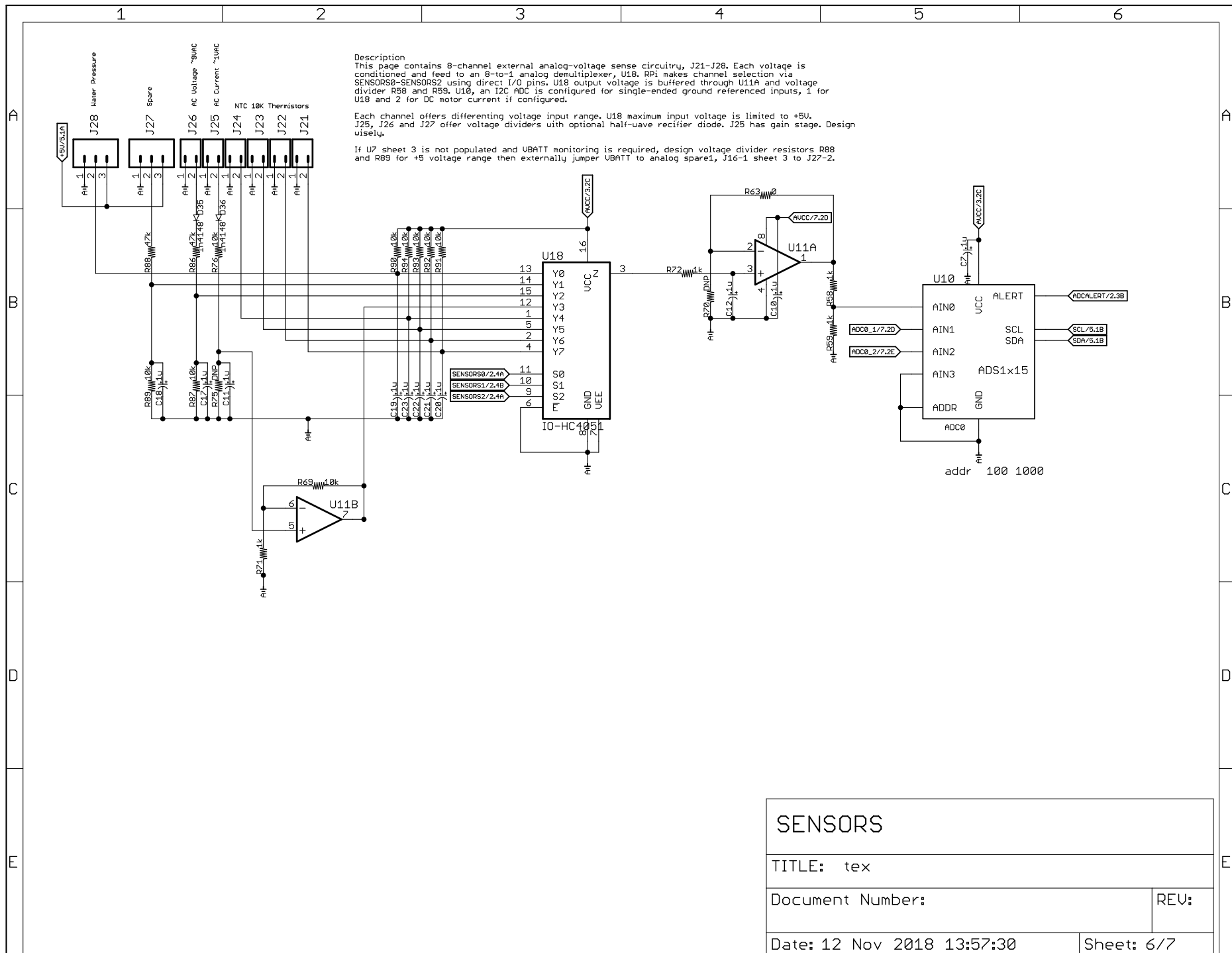
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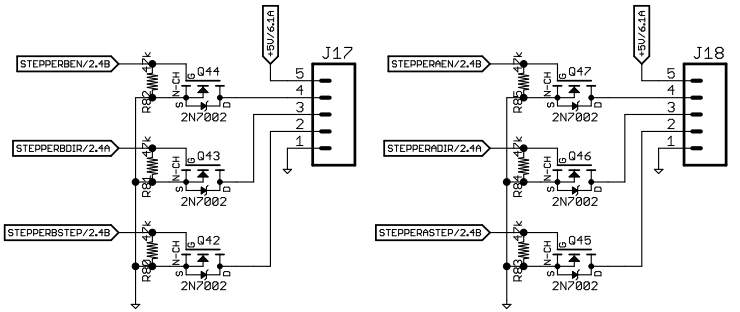
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Date: 12 Nov 2018 13:57:30

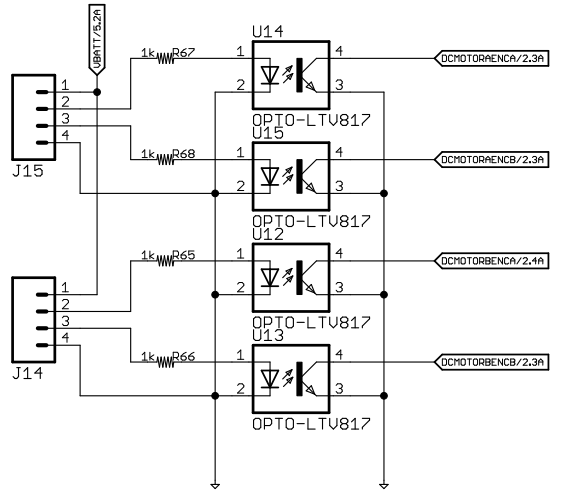
Sheet: 4/7



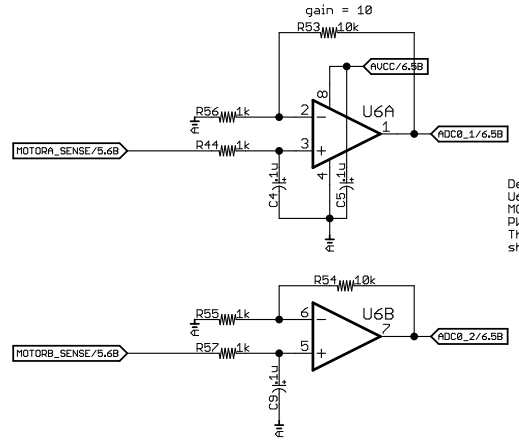




Description
J17 and J18 are labeled for external stepper-motor driver operation. However, J17 and J18 circuitry each offers direct RPi output pin controlled 3 channel general purpose open-drain signals. The output current is limited by device selected for Q42-Q47.



Description
J14, J15, U12-U14 provide 4 channels of optically isolated inputs connected directly to RPi input pins. These are labeled and DC motor encoder A-B inputs but they are general purpose inputs. R65-R68 need to current-limit opto input to less than 30mA if LTV817 is used.



Description
U6A-B are gain/filter stages for DC MOTORA and MOTORB powered by PWM-enabled H-Bridges on sheet 5. Their output is feed into U10 ADC on sheet 6.

MOTOR	
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