

## Revision History

- 0.1 - Initial pre-release
- 0.2 - Added reverse power monitor, local LED display.
- 0.3 - Checked by DAB, JG. Flipped the +/- pins on the reverse power monitor comparator.
- 0.4 - Finalized values of various resistors and pots in feedback loops
- 1.0 - Board rev 2. Added Digkey P/Ns for all parts, generated BOM
- 1.1 - Added Tuning Procedure, Build Variants
- 1.2 - Changed op-amp title  
Added Errata  
Q1 is now a VN10LF  
Updated values for R52, R35

## Build Variants

### Current Sensor type

LT6100 - Use LT6100 sensor

U4, U5 are LT6100 sensor  
R15, R22 are no-pop  
R16, R23 are 0 ohm (gain = 20)

MAX4080 - Use MAX4080 sensor

U4, U5 are MAX4080  
R15, R16, R22, R23 are no-pop

The default configuration is LT6100

## Tuning Procedure

R29, R31, R34, R58 are selected to ensure no-load voltage is about 20V. Depopulate D9 during this procedure.

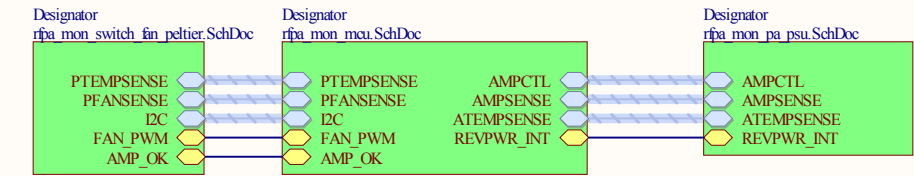
Add a load. Now, with D9 in place, but R40 depopulated, adjust R35 for a load current of 2.5A.

Replace R40, program MCU to generate a high at the PWM pin. Select a resistor for R40 such that the output current is very low (< 100 mA).

Program the MCU to generate PWM signals of various duty cycles. The output current should be inversely proportional to the duty cycle, with the min and max as set above.

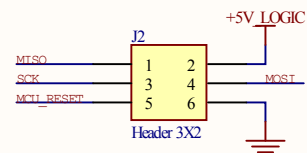
## Errata

Internal MAX6651 pullups are not strong enough for the fan speed monitoring. Added additional pullups of ~4.7k to the supply voltage. Added similar pullup to the Peltier fan tachometer output.  
Added 0.1uF capacitors to the +12V rail to reduce noise introduced by the fans.  
Added an 18V transorb to the output of the fan power supply, to prevent overvoltage conditions from destroying the fans.  
The Modbus A and B lines are flipped.  
J6 now uses a Tyco MTA100 connector instead of a Phoenix miniature terminal block  
The current sensors should have been before the switch. Without a +48V bias, they tend to show junk readings. Current fix is in software.

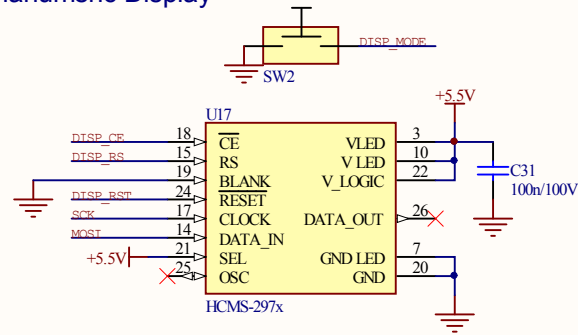


Title <b>Transmit Monitor</b>			CSU-CHILL 30750 Weld County Rd 45 Greeley, CO 80631	Engineer: JG
Size: 11x17	Number: wibex_xm	Revision: 1.2	Colorado State University	Drawn By: JG
Date: 3/15/2009	Time: 12:42:30 PM	Sheet 1 of 4		
File: C:\Documents and Settings\jgeorge\My Documents\pcb\rfa_monitor2\rfa_mon_top.SchDoc				

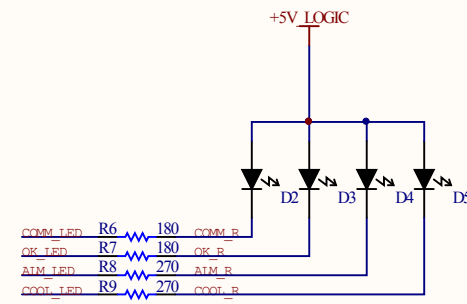
### Programming Connector



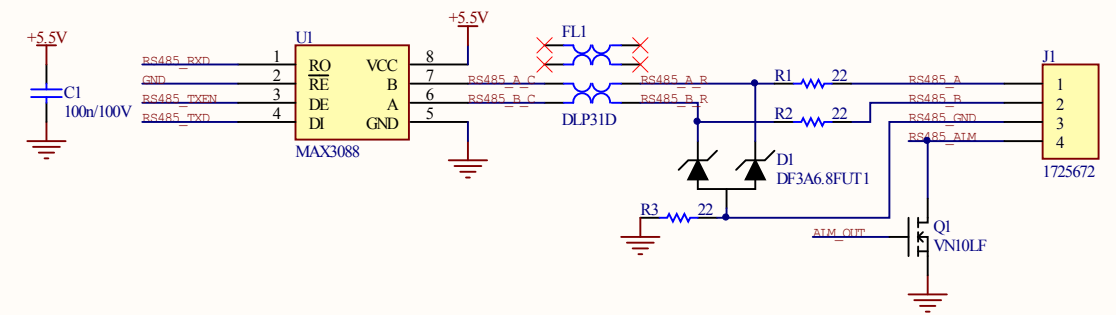
### Alphanumeric Display



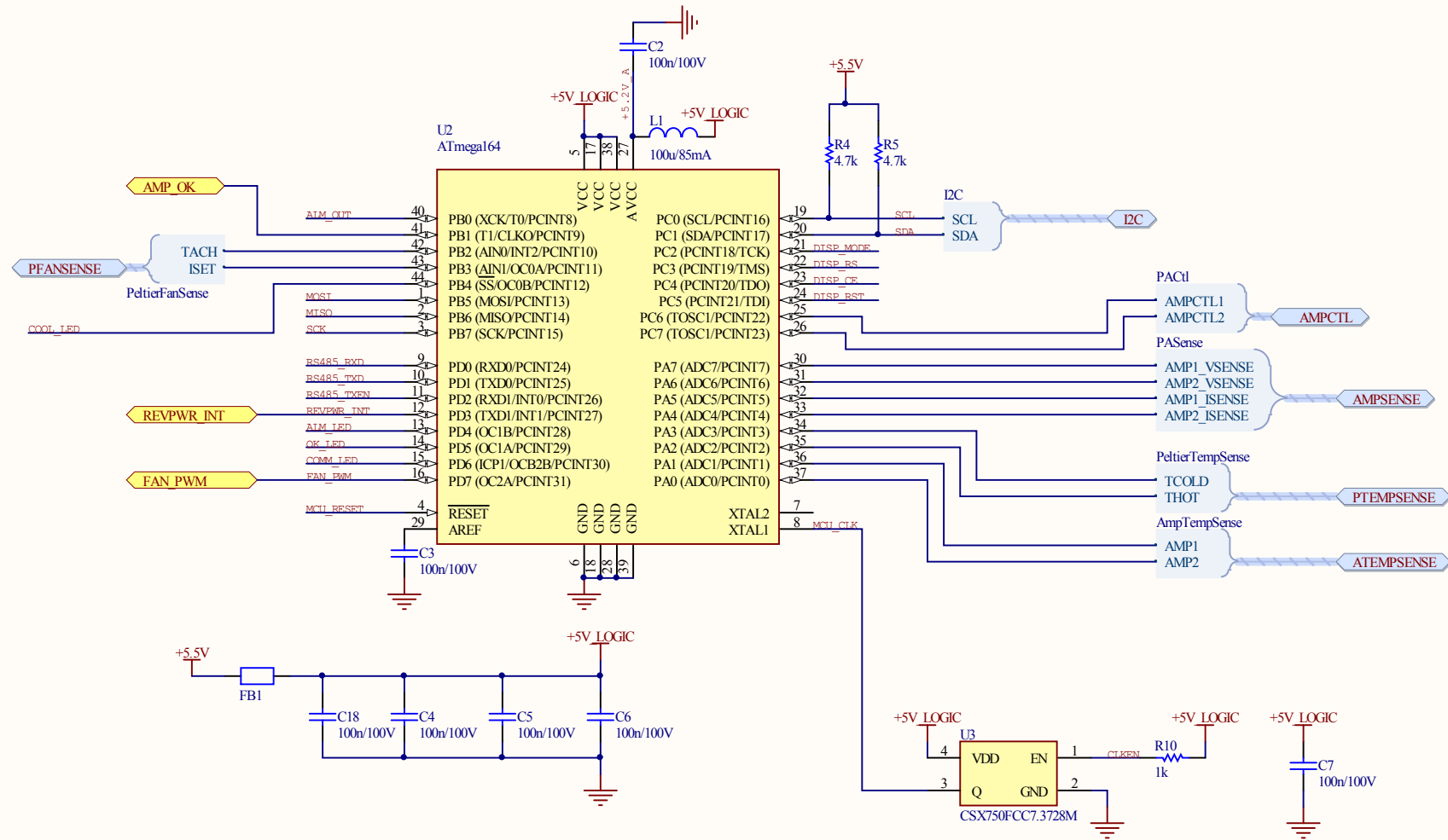
### Status Indicators



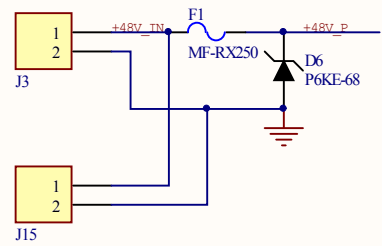
### RS485 transceiver, connector, line conditioner



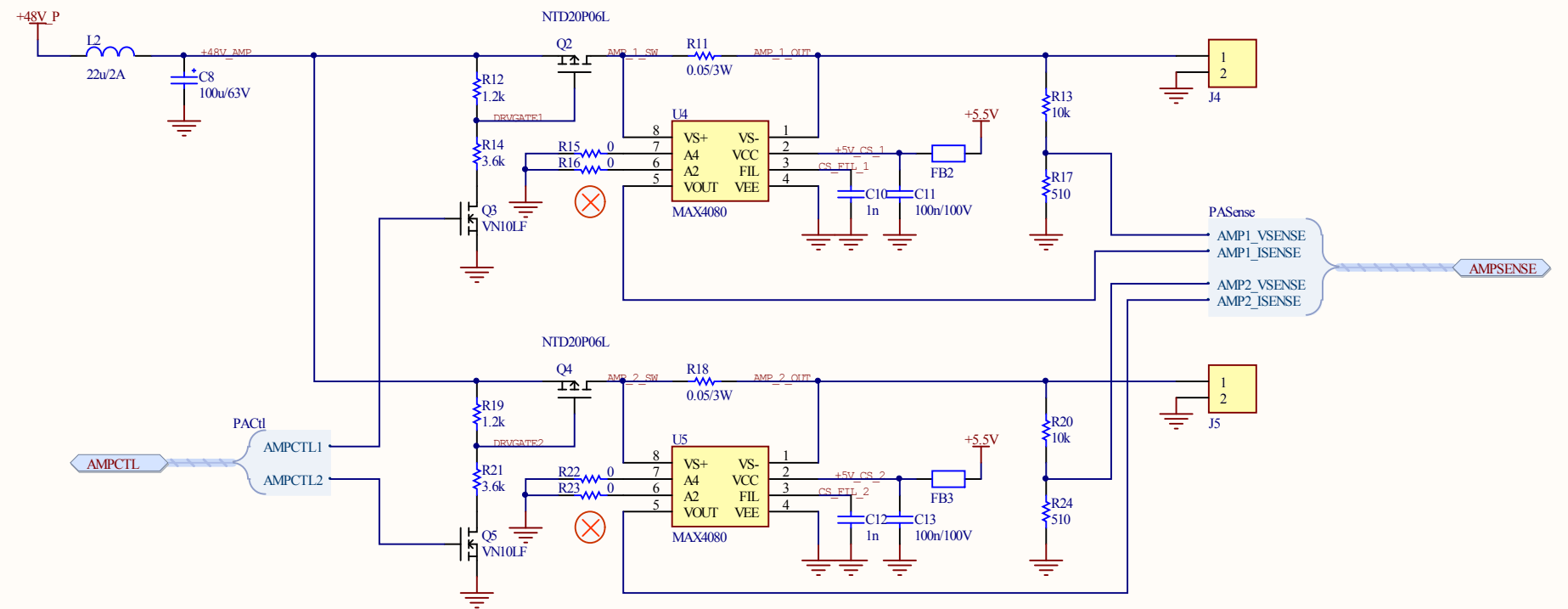
### Controller



### Power Entry, Fuse

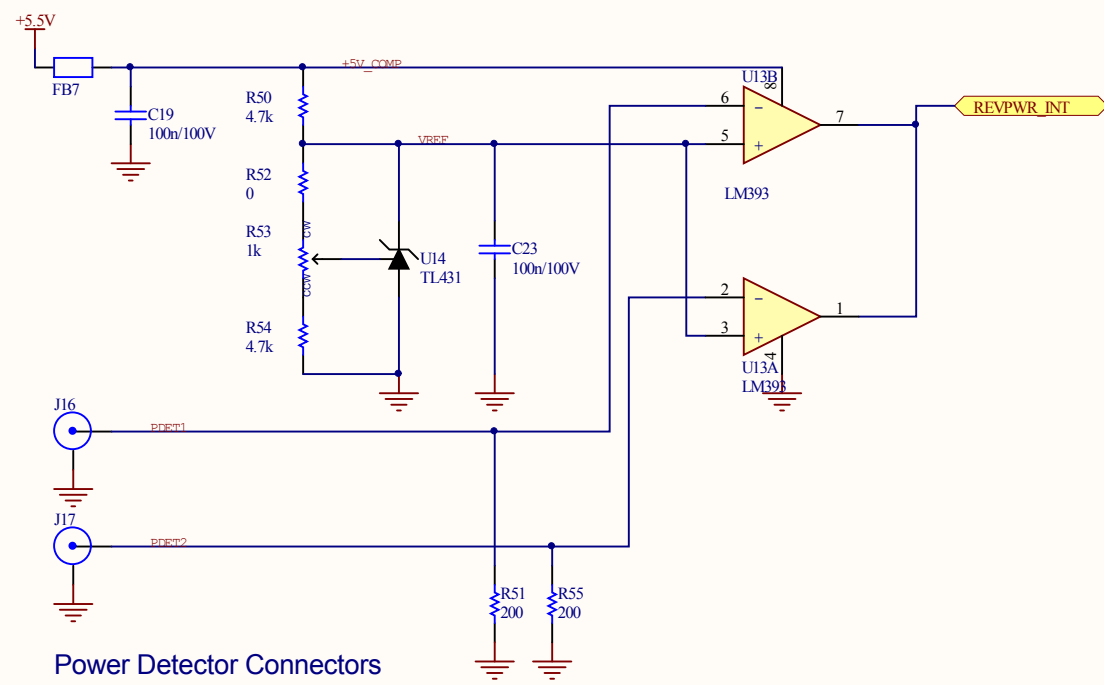


### Power Amplifier Supply Switching, current and voltage monitoring



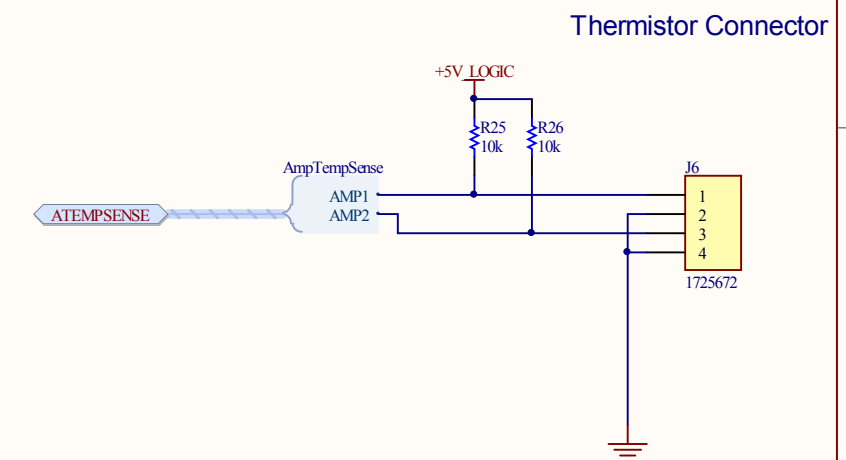
### Power Amplifier Connectors

### Reverse Power Detector



### Power Detector Connectors

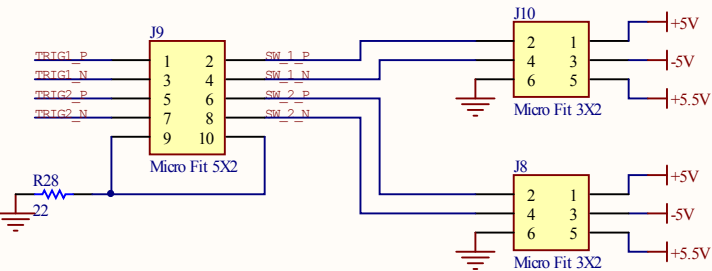
### Power Amplifier Temperature Sense



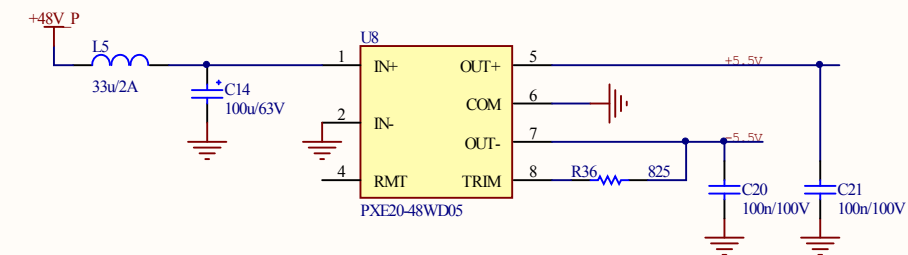
### Thermistor Connector

Title <b>Transmit Monitor - Power Supply</b>			CSU-CHILL 30750 Weld County Rd 45 Greeley, CO 80631	Engineer: JG
Size 11x17	Number wibex_xm	Revision: 1.2	Colorado State University	Drawn By: JG
Date 3/15/2009	Time 12:42:30 PM	Sheet 3 of 4	File: C:\Documents and Settings\jgeorge\My Documents\pcb\rfpa_monitor2\rfpa_mon_pa_psu.SchDoc	

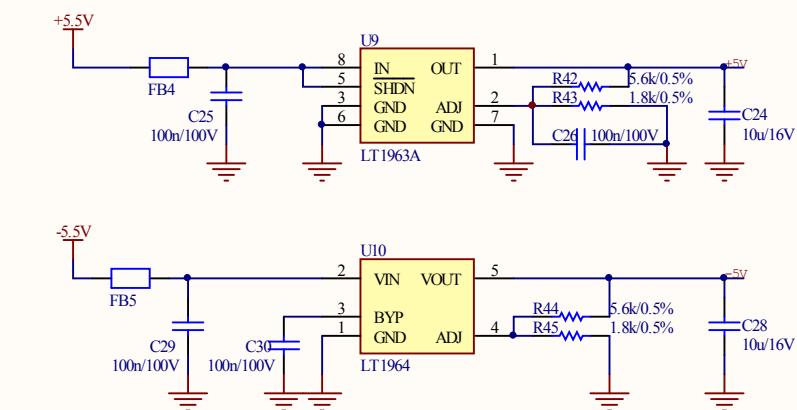
Switch Control Input      Switch Assembly Connectors



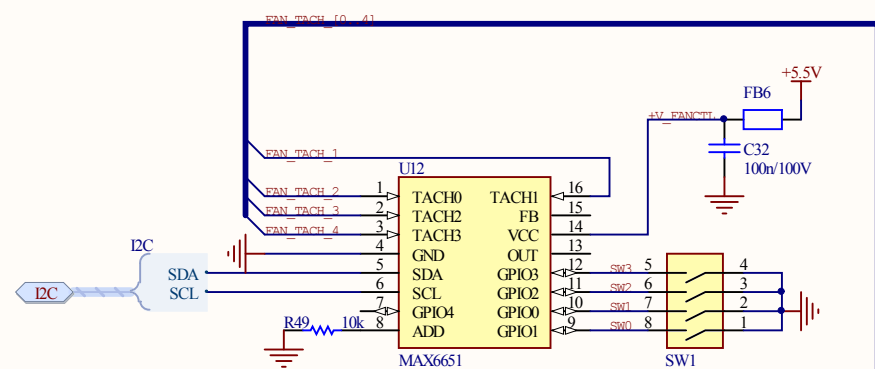
DC/DC converter



Microwave Switch Power Supplies

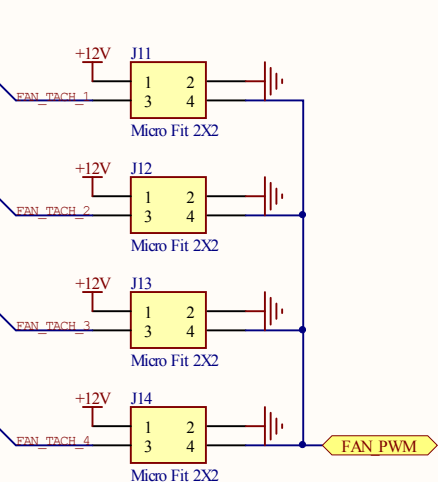


PA Fan Monitor

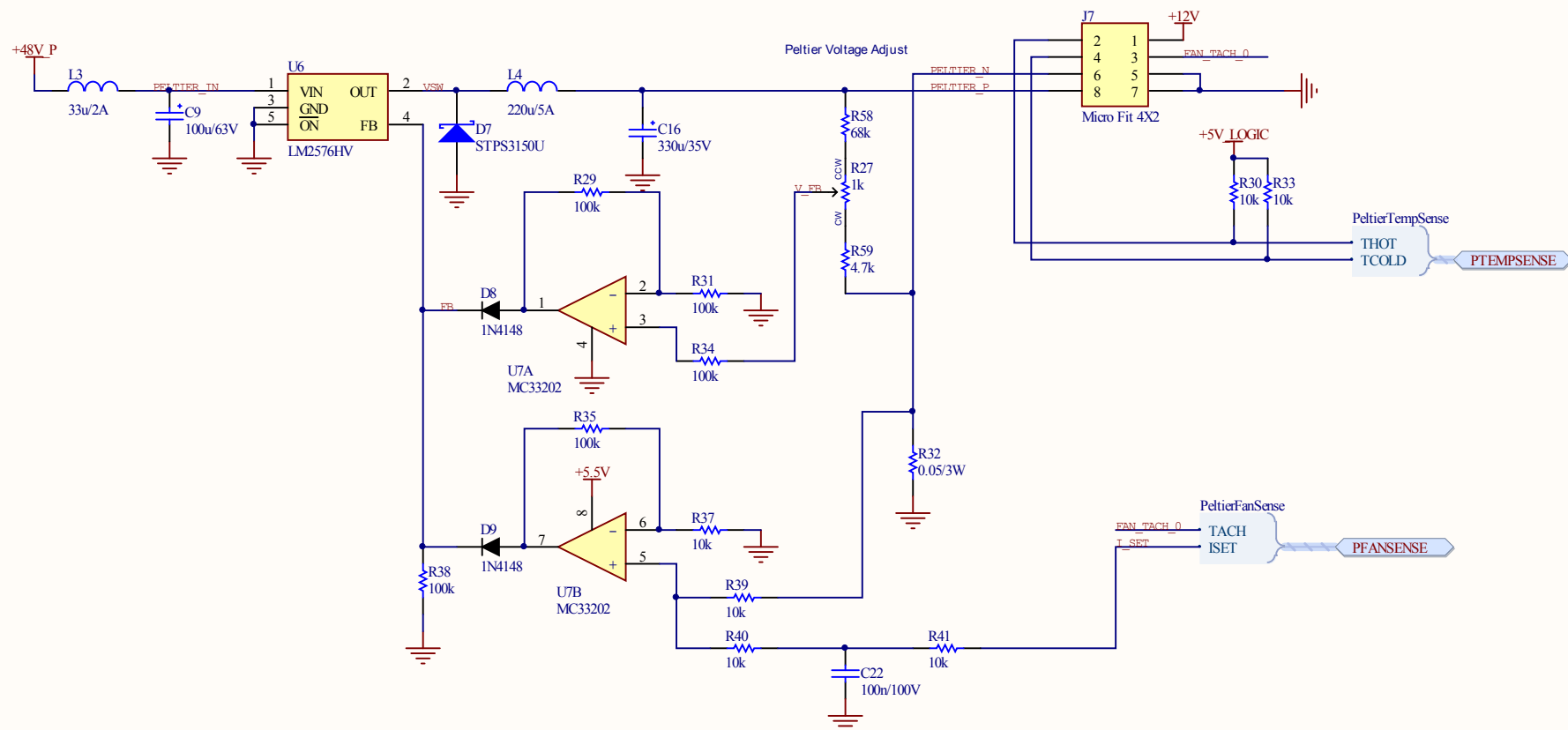


Tying ADD to ground sets address to 0x48  
Use 10k resistor for address 0x1F  
Leave open for address 0x1B  
Tie to VCC for address 0x4B

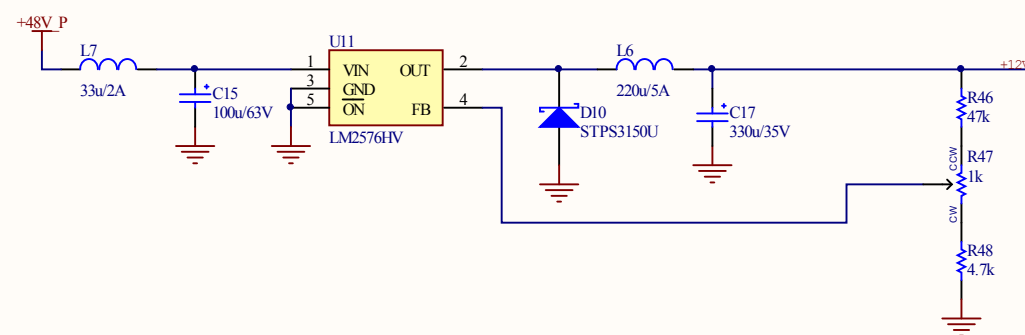
PA Fan Connector



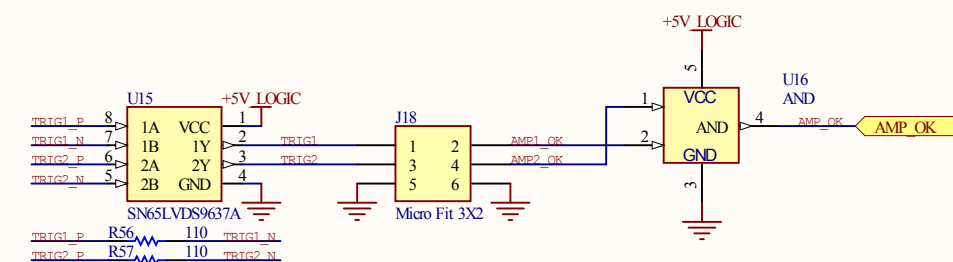
Peltier Cooler Supply



Fan Power Supply



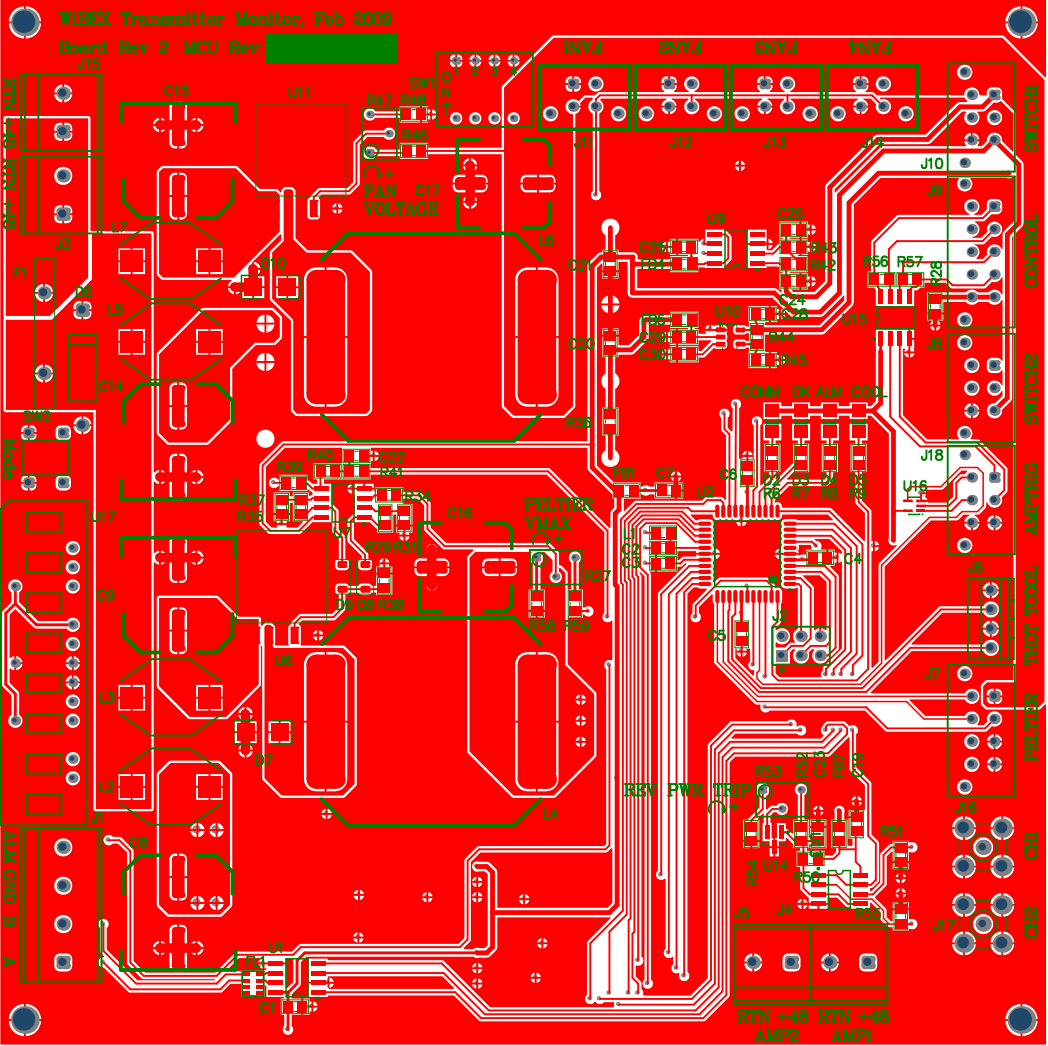
Amplifier Trigger Receiver, Amplifier Fault Detector



Power Amplifier Status/Trigger Connector

# WIEX Transmitter Monitor, Feb 2009

Board Rev 2 MCU Rev: XXXXXXXXXX



RTN +48 RTN +48  
AMP2 AMP2  
AMP1

