Radio Telescope Control System

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Revision & Notes:

* 11/9/2022: Initial Schematic, Zach Martin

Title: Title Page		
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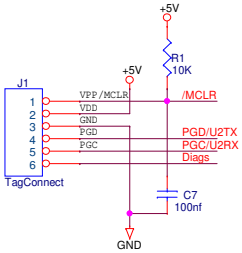
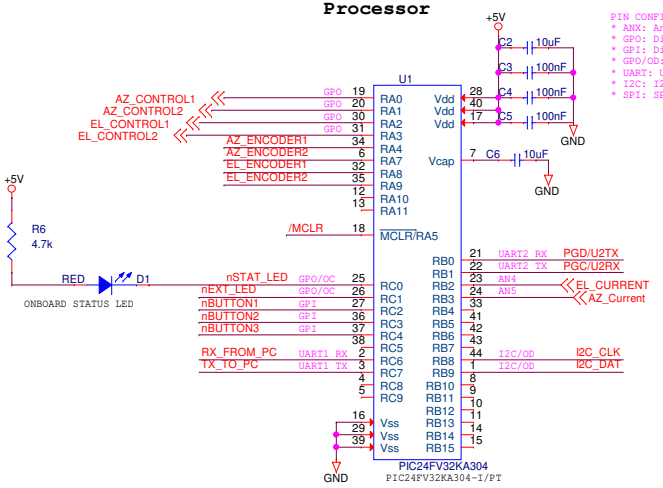
Program/Debug Port



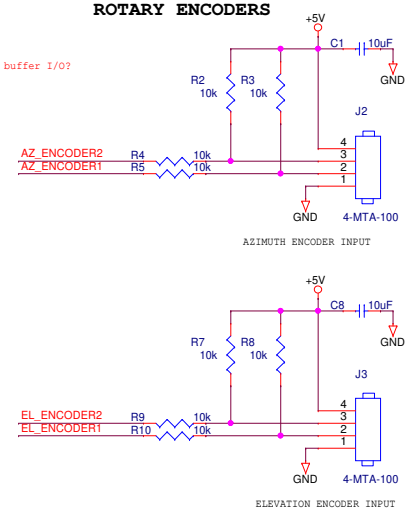
Processor



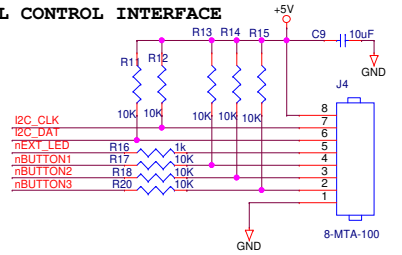
PIN CONFIGURATIONS:
* ANX: Analog Input/Channel X
* GPO: Digital Output
* GPI: Digital Input
* GPO/OD: Digital Output, Open Drain
* UART: UART Peripheral I/O
* I2C: I2C peripheral I/O
* SPI: SPI peripheral I/O

ROTARY ENCODERS

TODO:
* Should we buffer I/O?

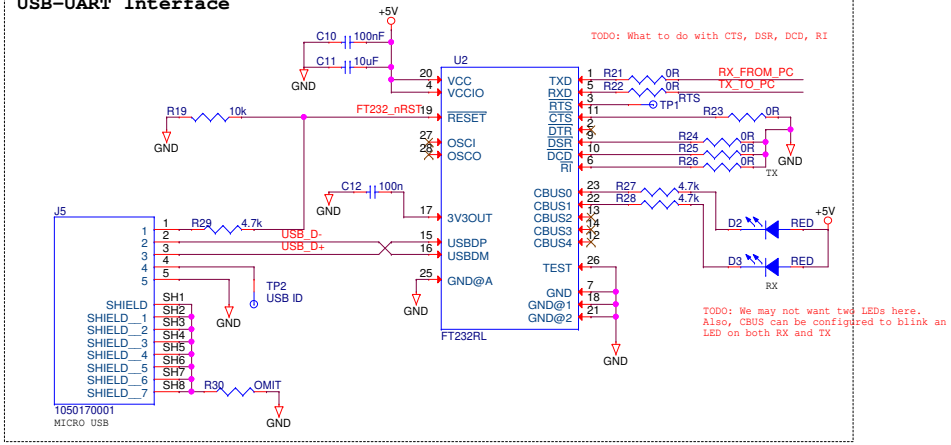


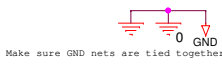
LOCAL CONTROL INTERFACE



USB-UART Interface

TODO: What to do with CTS, DSR, DCD, RI





Make sure GND nets are tied together

Title	Main Electronics		
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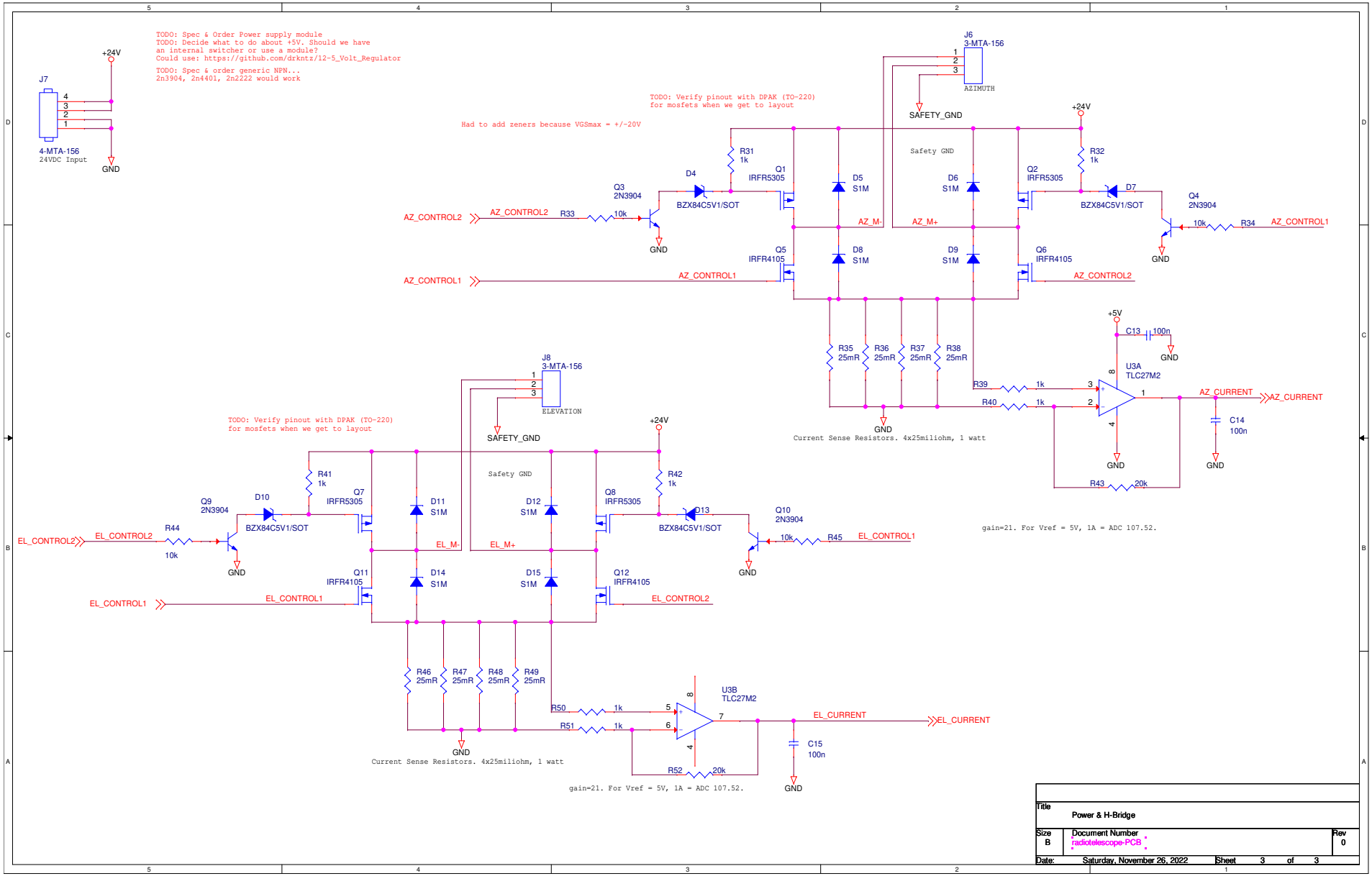
TODO: Spec & Order Power supply module
TODO: Decide what to do about +5V. Should we have an internal switcher or use a module?
Could use: https://github.com/drkntz/12-5_Volt_Regulator
TODO: Spec & order generic NPN...
2n3904, 2n4401, 2n2222 would work
J7
4-MTA-156
24VDC Input
+24V
GND
J6
3-MTA-156
AZIMUTH
SAFETY_GND
TODO: Verify pinout with DPAK (TO-220) for mosfets when we get to layout
Had to add zeners because VGSmax = +/-20V
Safety GND
R31 1k
R32 1k
Q1 IRFR5305
Q2 IRFR5305
Q3 2N3904
Q4 2N3904
D4
BZX84C5V1/SOT
D5 S1M
D6 S1M
D7
BZX84C5V1/SOT
D8 S1M
D9 S1M
Q5 IRFR4105
Q6 IRFR4105
AZ_CONTROL2
AZ_CONTROL1
R33 10k
R34 10k
AZ_M-
AZ_M+
R35 25mR
R36 25mR
R37 25mR
R38 25mR
Current Sense Resistors. 4x25miliohm, 1 watt
+5V
C13 100n
U3A TLC27M2
R39 1k
R40 1k
R43 20k
C14 100n
AZ_CURRENT
gain=21. For Vref = 5V, 1A = ADC 107.52.
J8
3-MTA-156
ELEVATION
TODO: Verify pinout with DPAK (TO-220) for mosfets when we get to layout
R41 1k
R42 1k
Q7 IRFR5305
Q8 IRFR5305
Q9 2N3904
Q10 2N3904
D10
BZX84C5V1/SOT
D11 S1M
D12 S1M
D13
BZX84C5V1/SOT
D14 S1M
D15 S1M
Q11 IRFR4105
Q12 IRFR4105
EL_CONTROL2
EL_CONTROL1
R44 10k
R45 10k
EL_M-
EL_M+
R46 25mR
R47 25mR
R48 25mR
R49 25mR
Current Sense Resistors. 4x25miliohm, 1 watt
U3B TLC27M2
R50 1k
R51 1k
R52 20k
C15 100n
EL_CURRENT
gain=21. For Vref = 5V, 1A = ADC 107.52.
Title
Power & H-Bridge
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