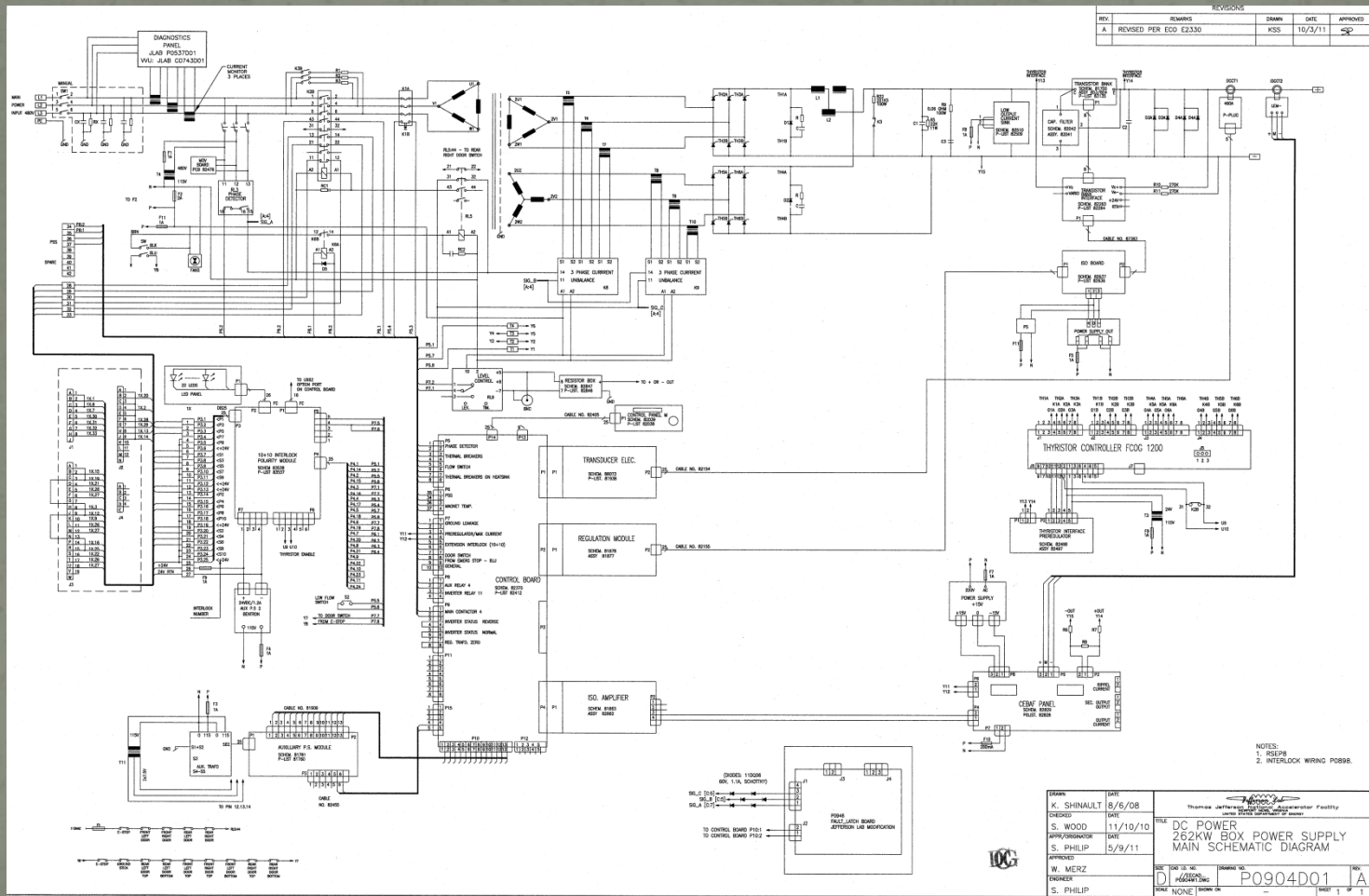


DC Power Supplies

JLab Danfysik DC supplies

- Danfysik Model 853 for high current, high power
- Typically 10 ppm regulation requirement of Full Scale Current
 - ** Not 10 ppm regulation on magnetic field!
- Accelerator power supplies range from 13.5kW to 266kW for 6GeV operations
- For supplies above 100 volts SCR, transistor bank, series pass configuration
- 6 pulse, 12 pulse configuration for SCR rectifiers

Typical Schematic



Main Components

- Analog
 - Rectifier, Firing board, Pre-regulator
 - Regulation Module, Isolation modules
 - Control voltages: 12V, 15V, 9V
 - Transducer Electronics
- Digital
 - Control board
 - Interlock Board
- Safety
 - Interlocks
 - Grounding
 - Protection for power section and load
- Reversing Switches etc.

Basic Operation

- Local/Remote reference to the Control Board
 - Local Reference via encoder
 - Remote reference via serial communications port
- High precision temperature stabilized DAC
- Dual Loop regulator
 - Slow Current Loop
 - Fast Voltage Loop
 - Have to be careful about stability with large time constants, low current settings

Interlocks

- Phase Imbalance
- Thermal switches
- Water Flow switches
- Ground Fault
- Door Switches
- PSS
- Special interlocks for superconducting loads

- Usually optical isolated inputs that relay information locally and to any remote interface