



Dune-ND: ArgonCube 2x2

Linda Bagby

Light Readout Meeting

VME crate and Power Supplies

February 17, 2022



ADC VME 64x crate

- Wiener VME6023x610 (9U)
- Options
 - S-Bin
 - Temperature sensors?
 - Dust Filter
 - Easy Lever
- No P0
- Delivery: 8-12 weeks
- Arranged a loaner
- Requisition submitted today.



Crate Version	Backplane	+5V	+12V	-12v	+3.3V	+48V	PS Height
VME 6023x610	VME64x	115A	23A	23A	115A	-	3U

VME 64

- CAEN VME8011 (7U)
- In house
- +5V/60A
- -12V/6A
- +12V/8.9A



Noise and ripple

+5V < 50mV
+12V < 90mV
-12V < 90mV
(measured at 90% of full load)

Rohde & Schwarz HMP4040 Multiple Output Power Supply, 4 Channel, 32Vx4, 10A, 384W, HMP Series

- 4 each 0 to 32 V, 0 to 10 A (not to exceed 160 W per output)
- 384 W Output Power realized by intelligent Power Management
- Linear Post Regulators for low ripple
- High Setting- and Read-Back Resolution of 1mV up to 0.2mA
- Keypad for direct Parameter Entry
- Galvanically isolated, earth-free and short circuit protected Outputs
- Advanced Parallel- and Serial Operation via V/I Tracking
- EasyArb Function for free definable V/I Characteristics
- FuseLink: Individual Channel Combination of Electronic Fuses
- Free adjustable Overvoltage Protection (OVP) for all Outputs
- All Parameters clearly displayed via LCD/Illuminated Buttons
- Rear Connectors for all Channels including Sense
- Optional USB/LAN Interface (HO732), RS-232/USB (HO720) or GPIB (HO740)
- CSA Safety Certified for USA (UL) and Canada (CSA)
- Three-year warranty



Keysight E3648A DC Power Supply, Dual Output, 2 x 8V/5A or 2 x 20V/2.5A, 100W, E3640 Series

- Dual Output
- Dual Output Ranges, Two 0 to 8 V / 5 A or 0 to 20 V / 2.5 A
- 100 Watts Output Power
- Constant Voltage, Constant Current
- Front and Rear Output Terminals
- Overvoltage Protection
- Remote Sense
- GPIB and RS-232 Included



AIM-TTi PLH120-P DC Power Supply

- 90 Watts; 0V to 120V, 0.01mA to 0.75A
- Linear regulation for the best performance
- S-Lock digitally locks voltage and current settings
- True analog controls make adjustment quick and simple
- V-Span enables the full 300° rotation of the voltage control
- Ultra-compact design - requires less space
- DC output switches and "view limits" button
- Selectable remote sense terminals
- Three-year warranty
- Full digital remote control and readback
- RS-232, USB and LAN (Ethernet), GPIB optional
- LAN Interface conforms with LXI standard
- IVI Driver supplied
- Interfaces are opto-isolated from outputs
- Isolated Analog remote control of V and I
- Front and rear terminals



Summary

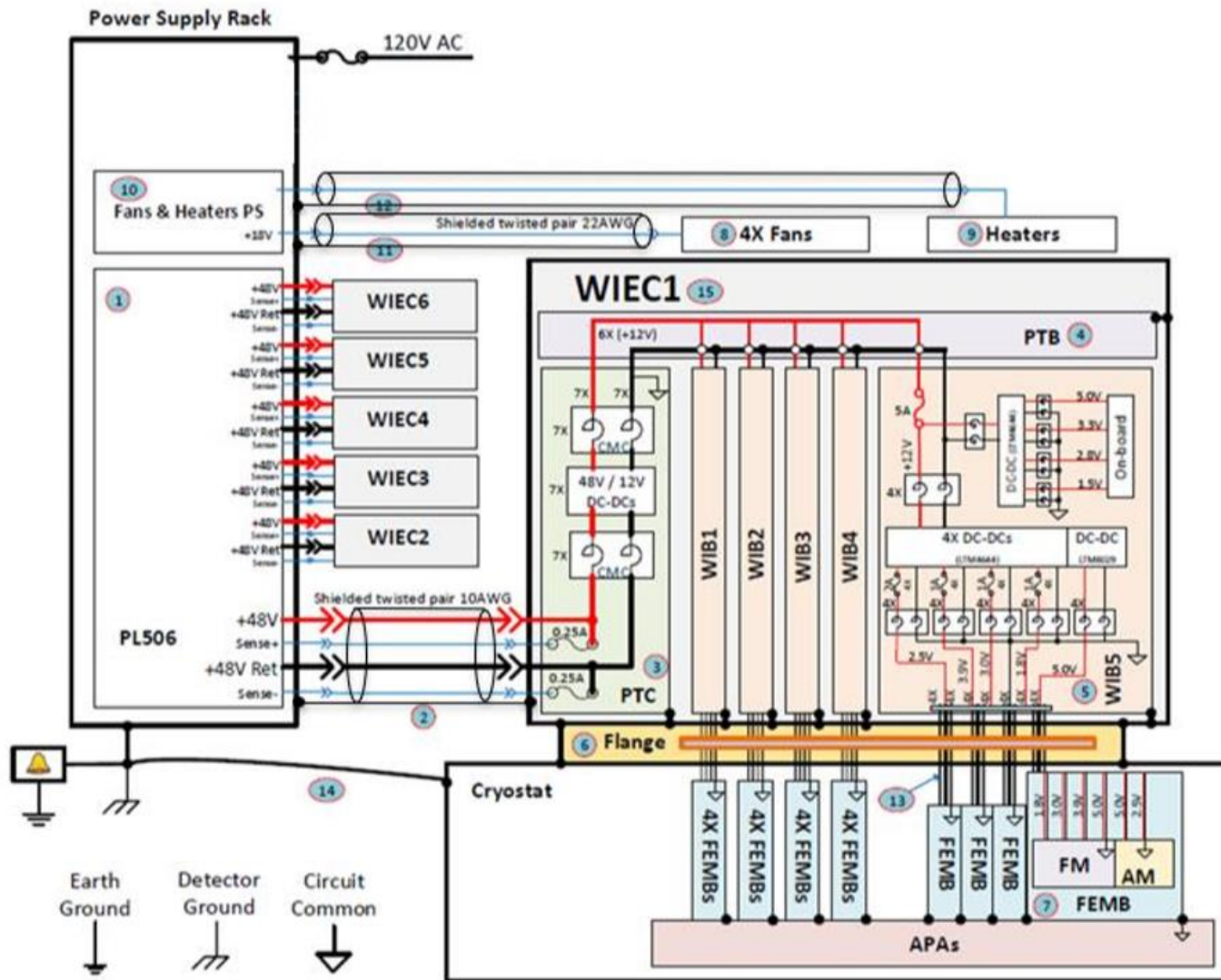
- Equipment must operate at voltages/frequency readily available on the US power grid.
- R&S HMP4040 in house
- E3648A in house
- AIM Tti PLH120-P on order
- Generate block diagrams of all systems for Module 1-3.
 - Similar to DUNE DocDB 23759

208V/ single phase

- EMS 20-50
- Spellman



System distribution example



- 1: Weiner PL506 Power Supply
- 2: 48V power cable
- 3: PTC (Power and Timing Card)
0.25A Fuse P/N: 3404.0006.11
Choke P/N: PLT10HH501100PNL
- 4: PTB (Power and Timing Backplane)
- 5: WIB (Warm Interface Board)
5A Fuse P/N: 3404.0017.11
2A Fuse P/N: 0468002.NR
1A Fuse P/N: 0468001.NR
Choke P/N: PLT5BPH5013R1SNL
- 6: Flange Board
- 7: FEMB (Front End Motherboard)
FM: FPGA Mezzanine
AM: Analog Motherboard
- 8: Fans box
Fans are electrical isolated from WIEC
- 9: Heater
Heater is electrical isolated from WIEC
- 10: Fans & Heater power supply
- 11: Fans power cable (shielded)
- 12: Heater power cable
- 13: 7m cold power cable
- 14: Grounding cable
- 15: Warm Interface Electronics Crate (WIEC)

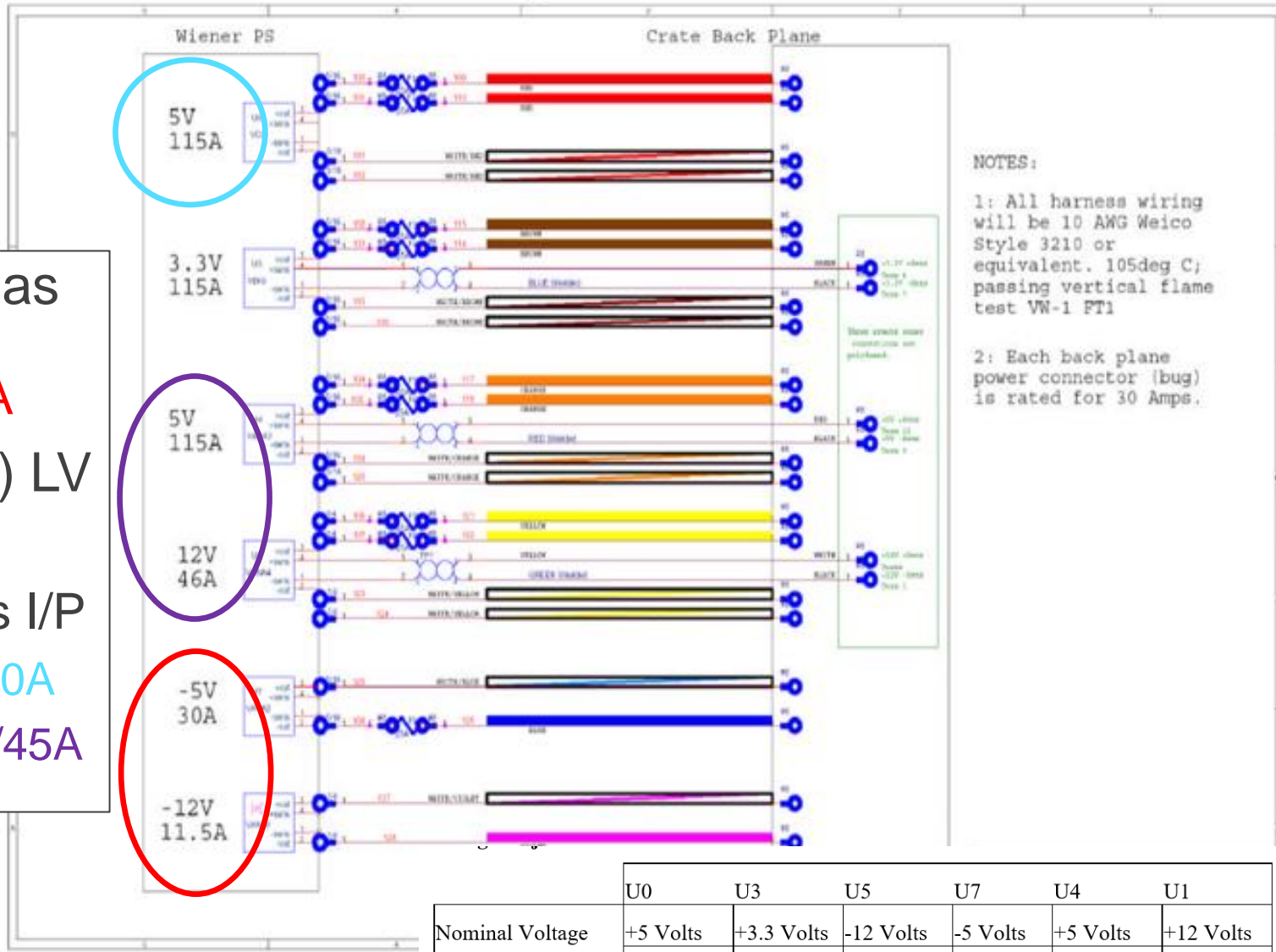
Notes

- (1) Fans and heaters are isolated from WIEC
- (2) PTB is mounted with the brass standoffs as a grounding connection
- (3) The grounding connection between WIBs and WIEC is through front panels and side bars
- (4) The grounding connection between PTB and WIEC is through front panels and side bars
- (5) Flange (and flange board) is the place that the FEMB circuit common is referenced to the cryostat (detector ground)

S. Gao

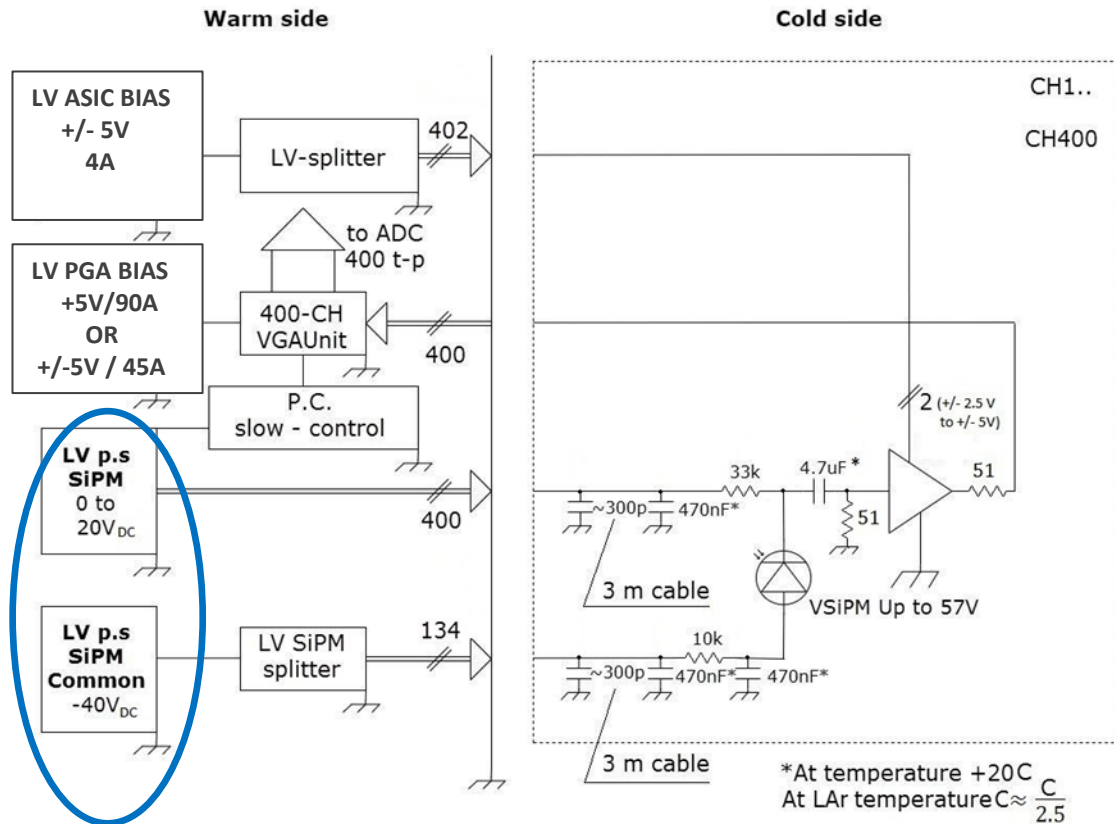
MINOS Minder

- LV ASIC Bias (LMH6624)
 - +/-5V, 4A
- PGA (VGA) LV PS
 - 2 options I/P
 - +5V/90A
 - +/-5V/45A



	U0	U3	U5	U7	U4	U1
Nominal Voltage	+5 Volts	+3.3 Volts	-12 Volts	-5 Volts	+5 Volts	+12 Volts
Adjustable Range	2V to 7V	2V to 7V	7V to 16V	2V to 7V	2V to 7V	7V to 16V
Maximum Output	115A or 550W	115A or 550W	11.5A or 150W	115A or 550W	30A or 150W	46A or 550W

Light Readout Concept Requirements



- LV ASIC Bias (LMH6624)
 - +/-5V, 4A
 - or +5 to +12V, ?A
- LV ASIC Bias Splitter
 - passive (1 → 402 ch)
- PGA (VGA) LV PS
 - 2 options I/P
 - +5V/90A
 - +/-5V/45A
- LV SiPM Bias
 - 20V/?A
- SiPM Common Bias
 - -40 to 57V/?A
- SiPM Com Bias Splitter
 - Passive (1 → 134 ch)

Need PS

Is this for all 4 modules or each module?

MINOS Master

- LV ASIC Bias (LMH6624)
 - +/-5V, 4A
- PGA (VGA) LV PS
 - 2 options I/P
 - +5V/90A
 - +/-5V/45A

