Chassis to Test
NPS HV Supply Cable

Marc McMullen, Mindy Leffel and the Detector Support Group
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Chassis - NPS HV Supply Cable Test Chassis

- Designed to test NPS HV supply cables with 36 channels of 3-MΩ resistors
- Plastic chassis with no exposed components while connected to a HV supply cable
- Resistors and wiring rated for 20 KV and 6 KV respectively
Chassis - Enclosure and Front Panel

Acrylonitrile butadiene styrene (ABS) plastic, nonconductive, enclosure

7” depth

Machined front panel with rear-mounted test board

19.00”

5.25”

Nonconductive nylon mounting screws

8” x 0.7” slot
Schematics - Chassis HV Circuit Diagram

HV is supplied from CAEN 7030TN by Radiall-52-to-Samtec-3-connectors cable assembly
• Safety loop circuit prevents HV generation when circuit is not connected to HV return
• Safety loop connection path ensures all three connectors are secured before HV can be turned on
- Circuit has two Samtec 30-pin connectors and one 16-pin connector
- Safety loop circuit is connected to all connectors using two 0-Ω resistors
- Each connector has one HV return connection
- Samtec 1 has safety loop connection to HV return

Schematic drawn in Altium designer
R52 to Samtec Test PCB – 3D Rendering of Layout

Front view

9.8”

Samtec connector #1
Samtec connector #2
Samtec connector #3

Rear view
PCB designed for 24 resistors with through-hole pads to connect to 28-awg wire

Assembled by Mindy Leffel
Internal Wiring

8-position terminal block (x2)
24-channel 3-MΩ resistor PCB
12-channel 3-MΩ resistor PCB

R52 to Samtec test board (rear view)

Assembled by Mindy Leffel
Internal Components

Ohmite Slim-Mox HV Resistor
• 3 MΩ, 2.5 W 1%
• Rated to 20 KVDC

RS Pro hook-up wire
• 28 awg
• Rated to 6 KVDC
• Max current 1.4 A
Conclusion

- DSG has designed a 36-channel chassis to test the NPS HV supply cable
- The test voltage will be 2000 V with an expected current draw of 667 µA
- Tests will verify that cable assembly connections are correct
Thank You