DAQ Specifications

Ship to MAST	General	Power Requ.	Inputs	Outputs	Physical	Env.	Notes
Detectors (4)	ORTEC CU-014-050-100-S Silicon Surface Barrier Detector	(+)50 V bias voltage provided through SHV input on preamplifier		BNC female connector on bottom of detector can	fits inside of diagnostic	bakeable to 200°C	Does MAST have resources to connect the non-terminated end of our detector cable to the custom male connector for the MAST RP?[1]
Preamplifiers (4)	Model 2003BT Silicon Surface Barrier Detector Preamplifier	(+)24Vdc 10mA (−)24Vdc 4ma (+)12Vdc 30mA (−)12Vdc 6ma [2]	HV input-SHV male; signal input-BNC female; power input-Amphenol 17-20090 male [3]	Energy output-BNC female[4]	7.6x5.1x3.8cm 0.2kg Can we place these inside the linkbox?	operating temp-0°-50°C; operating humidity-0-80%	Is there a BNC connection to connect them to the end of the MAST RP?
Amplifiers (4)	Canberra 2111 Timing Filter Amplifier	(+)24Vdc 55mA (−)24Vdc 80ma (+)12Vdc 170mA (−)12Vdc 150ma [5]	signal input-BNC female; power input-Amphenol 17-10070 female	signal output-BNC female[6]	3.43x22.12cm[7] 0.9kg	operating temp-0°-50°C; operating humidity-0-80%	Can MAST provide a NIM-BIN?

1 We have a quote for a UHV shielded cable (bakeable to 250°C) with a BNC male connector and non-terminated end (one cable for each detector).
2 This connects to the rear panel of our amplifiers, or an appropriate connection on a NIM-BIN.
3 We currently have one 3m male-female Amphenol connector cable. We should shortly have four (I will verify this by August 14th).
4 To obtain an appropriate quote for shielded/ super screened cables, we will need to estimate the distance from our preamps to our amps.
5 The rear panel has a connection to draw its power from a standard NIM-BIN.
6 To obtain an appropriate quote for shielded/ super screened cables, we will need to estimate the distance from our amps to our digitizer/PCI extension box.
7 This is a standard single-width NIM module.

DAQ Specifications

Ship to MAST	General	Power Requ.	Inputs	Outputs	Physical	Env.	Notes
Digitizer (1)	National Instruments PCI-5105 8-Channels	installed inside Adnaco PCI Extension box	signal input- SMB male		fits inside Adnaco PCI extension box	signal initially stored in 512 MB onboard memory	Digitizer requires external trigger input- SMB male
PCI extension (1)	Adnaco S2 Fiber Optic PCI Bus Extender	SFX12V 3.0 complaint, active PFC, universal input [8]	signal input- digitizer through PCI	signal output- LC SFP connector[9]	13.6x37x 32.9cm 6.1kg	operating temp- 0°-55°C; operating humidity- 10-85%	
Computer (1)	SuperMicro 50161 MTF 1U Rackmount Server	280W AC power supply with PFC[10]	Keyboard, monitor and mouse input- 6 USB ports, 1 serial COM port, 1 VGA port, PS/2 ports	Data output[11]	4.3x43.7x 50.3cm 17.2kg	operating temp- 10°-35°C; operating humidity- 8-90%	Can MAST provide a mouse, keyboard, and monitor? The computer can be rack mounted.

8 We have the power cord and 50m fiber optic cable, I will verify the power cord length by August 14th.

9 The data is transferred to the computer through a 50m fiber optic cable (LC, multi-mode, duplex, 50/125μm, duplex 2.5 Gbps link).

10 We have the power cord, I will verify the length by August 14th.

11 4 out of 8 data channels will be used. Sample rates up to 60 MHz will be used to take up to 1 second of data per shot (will use 0.5s for typical MAST shot length). Data files are written to the disk; there are 150GB of storage on the computer. The maximum output for our amplifier is +/- 5V; similar to the MAST RP data acquisition system, the typical signal voltage inputs to the data acquisition system are within +/- 5 V.