

VeLo High Voltage System*

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1 Introduction

This reports deals with the budget of the proposed high voltage system for the VeLo modules. At the moment its main point is the budget but it is hoped that this document will be expanded to describe the complete high voltage system. There are are number of points that have not been finalised. These are:

- The error free operation of Iseg modules.
- The designed of the patch panels.
- The design of the high voltage guard monitoring system.

The first point should be finalised as soon as the hardware and software is available and it is also the focus of a number of LHC detectors. The design of the patch panels is not so straight forward due to the lack of expertise. A prototype of a designed will be constructed to review the design and to test its operation.

There is no clear solution to implement in regards to the last point. It is expected that the high voltage guard will be thoroughly tested during the burn-in and from the results a strategy should evolve.

2 Budget

In this section the budget for the proposed High Voltage system is presented. There are a number of issues that have not been resolved so guesses have been provided instead. This affect the patch panel itself and the high voltage guard monitoring system. There are two tables. One for the system to be employed by the experiment and the other by the testbeam to be conducted by the VeLo group on June 2006. It is envisage that a

*This version is a draft.

number of items such as the patch panel, cables etc that are destined for the experiment will be first employed at the testbeam and at the lab for system test.

This should not be taken as final prices but it is much closer than ballpark figures and not tax is included nor shipping.

3 Description of some Items

A more thorough description of some of the items listed on the tables are presented in this section.

3.1 16/8 channel HV-PS EHQ F007n/EHQ 8007n

- Floating-HV-GND \pm 50V for each channel
- Current and voltage regulation, CANbus interface
- STANDARD: two control loops, high stability, ripple & noise \pm 20mV
- Voltage setting steps and measurement resolution: 14 mV
- Current measurement and software limitation resolution: 80 nA
- Ramp speed programmable: 0,28 to 70 V/s
- Connectors: HV type REDEL, Interlock Sub-D-9 (8+1 pin)

3.2 Crate ECH 238 M-UPS

- Eurocrate with power supply 700 W, floating
- 6U-19" built-in / 450 mm depth, module-depth 220 mm, for up to 8 pc. EHQ xxxx without additional fan
- Maximum voltage difference between PE and GND \pm 56 V
- Integrated CAN-controller
- Integrated UPS for 1min / battery lifetime 5 years incl. AC power line cable (Art.-nr.: 592069), CAN terminations (Art.-nr.: 510245 and 580591)

LHCB - HV Tentative Budget			
Equipment	Number	Cost:Unit	Cost:Total
High Voltage System			
6U 16 channel HV-PS EHQ F007n_405-F	5	4580.00	22900.00
6U 8 channel HV-PS EHQ 8007n_405-F	1	2270.00	2270.00
Eurocrate ECH 238M-UPS for upto 8 8 units with integrated UPS	1	3140.00	3140.00
Software control program with CAN interface	1	410.00	410.00
CAN cable + drivers	1	5.00	5.00
PCAN-USB Adapter	1	270.00	270.00
Patch Panel 0 (PP0) - Between HV Power supplies and long cables			
Patch Panel (Design and Parts)	2	4000.00	8000.00
A guess			
HV guard voltage monitoring 88 channel (A guess)	1	30000.00	30000.00
Radial female sockets, 55 pins CERN part 09.41.33.520.8	6	74.00CHF 47.9Euro	287.40
Lemo 3 pin back-panel socket Lemo part EHP.0S.303.CLL	88	8.25	726.00
Long Cables between PP0 and PP1			
High Voltage 56 conductor cable (60m) CERN part number 04.31.52.100.5	6+1	10CHF/m 6.46Euro/m	2713.20
Radial male plugs, 55 pins CERN part number 09.41.33.520.8	14	85.50CHF 55.30Euro	774.20
Patch Panel 1 (PP1) - Between Long Cables and repeater cards			
Patch Panel (Design and Parts)	2	4000.00	8000.00
Radial female sockets, 55 pins CERN part 09.41.33.520.8	6	74.00CHF 47.9Euro	287.40
Lemo 3 pin back-panel socket Lemo part EHP.0S.303.CLL	88	8.25	726.00
Cables between PP1 and repeater cards			
Four core conductor (15m) CERN part 04.21.51.754.4*	88	3CHF/m 1.94Euro	2560.00
Lemo 3 pin elbow plug Lemo part FLA.0S.303.CLAC17Z	176	11.25	1980.00
Final Total(Euro):			85049.20

Testbeam - June 2006			
Equipment	Number	Cost:Unit	Cost:Total
High Voltage 56 conductor cable (22m) CERN part number 04.31.52.100.5	6	10CHF/m 6.46Euro/m	852.72