Balconies and Cables Meeting

Padova, October 16, 2002

Attendance

Marco Bellato
Massimo Benettoni
Lorenzo Castellani
Flavio Dal Corso
Marco Dallavalle
Gerard Faber
Cristina Fernández
Fabrizio Gasparini
Marco de Giorgi
Fabio Montecassiano
Matteo Pegoraro
Antonio Ranieri
Hans Reithler
Carlos Willmott
...

Agenda

- Distribution: HV, LV, TTC, Slow Control, Trigger, Readout
- Cable count: chambers-balconies-control room
- Cables integration
- Racks space allocation

Distribution and Cable Count

A summary of the distribution of the HV, LV, TTC, Slow Control, Trigger and Readout was presented. A table that resumed the total amount and type of cables for each system, from the detector to the balconies and from the balconies to the control room, was analysed. It was proposed that each person in charge must fill out the table with the section, type, length, connectors, cost, etc. of the cables needed in the detector to obtain a global view and an estimation of the total cost for cabling. An updated version of this table is appended.

Cables integration

Gerard Faber explained the actual distribution of the rack space and cables allocation. A shorter path (~100 m.) for fiber optic from the underground control room to the cavern was shown. Concerning the balconies, he pointed out that the access to the back side of the inner racks will not be possible and that the upper part of the racks of balcony 1, wheel 0, should be removable. The distribution of the cables paths was shown and he asked for a detailed information of the cables sections and lengths to the balconies for wheel 0 before December and of the rest of the detector for March 03. The high cost of cable installation was also remarked.

Racks space allocation

The distribution of the space into the racks was analysed. Every system exposed its necessities of vertical space, width, cooling, front-size connection, etc. An optimal fitting of every unit in 56U vertical space racks was studied, taking into account the established limitations. A preliminary distribution was proposed but its feasibility will depend on HV cooling necessities and the need for back access to LV and RPC crates.

Responsible people must provide the necessary information to reach a final layout: rack cooling, back access, etc.

An updated rack space list is appended.

DT rack space on balconies

Racks are 2.6m high, with 56U of usable vertical space each.

Balcony 2:
Inner
LV – 24 U
Heat Exch. – 4 U
Cool. Ctrl. – 4 U
Alignment – 3 U

Outer
HV – 2 x 6U
RPC PS – 2 x 6 U
RPC Patch Pannel – 2 x 4 U
RPC Heat Exch. – 2 x 2 U
RPC Cool. Ctrl. – 2 x 2 U

Total = 35 U Inner / 40 U Outer

Balcony 1:
Inner
TOP Section

BOTTOM Section
LV – 24 U
Heat Exch. – 4 U
Cool. Ctrl. – 4 U
Alignment – 3 U

Outer
TOP Section

BOTTOM Section
HV – 2 x 6U
RPC PS – 2 x 6 U
RPC Patch Pannel – 2 x 4 U
RPC Heat Exch. – 2 x 2 U
RPC Cool. Ctrl. – 2 x 2 U

Total = 35 U Inner / 40 U Outer

Balcony 3:
Inner
LV – 24 U
TR/RO sector collector – 11U
TTCoc – 1U
RO Patch Pannel – 4 U
Heat Exch. – 4 U
Cool. Ctrl. – 4 U
Alignment – 3 U

Outer
Slow Control opto patch panel – 2U
HV – 2 x 6U
RPC PS – 2 x 6 U
RPC Patch Pannel – 2 x 4 U
RPC Heat Exch. – 2 x 2 U
RPC Cool. Ctrl. – 2 x 2 U

Total = 51 U Inner / 42 U Outer

Balcony 4:
Inner
LV – 24 U
TR/RO sector collector – 11U
TTCoc – 1U
RO Patch Pannel – 4 U
Heat Exch. – 4 U
Cool. Ctrl. – 4 U
Alignment – 3 U

Outer
Slow Control opto patch panel – 2U
HV – 2 x 6U
RPC PS – 2 x 6 U
RPC Patch Pannel – 2 x 4 U
RPC Heat Exch. – 2 x 2 U
RPC Cool. Ctrl. – 2 x 2 U

Total = 51 U Inner / 42 U Outer

DT cables

Chambers to/from Balconies

Type	Name	Length (m)	Qty lines	Qty cables	Outer diam.	Cost mat. (€)	Cost ass. (€)	Cost inst. (€)	Total (k€)	to / from	Comment	Resp.
HV	HV	?~20	680		15					PS to Junct. Box	56 wires scr.	MDG
LV	3.3V Dig	20	250	250	~22	4.21 /m			21	PS to MC	{2x25}	LC & CW
LV	5V Dig	20	250	250	5.7	0.55 /m			2.8	PS to MC	{2x0.5}	LC & CW
	Sense Dig.	20	500	500						PS to MC	{2x0.5}+{2x0.5}	
LV	LV Analog	20	500+500	250						PS to Chamber	{2x4+2x2+ {2x0.5+2x0.5}}	MP
TTC	TTC-wheel	20	250		6	50			12.5	Opt. coup. to MC	opt. fiber (1300nm)	CW
Slow Control	SC-OF	20	250		6					Patch panel - MC	opt. fiber	MB
Slow Control	SC-CU	20	10		6					Patch panel - MC	RS-485	MB
Trigger	TR copper-link	20	500		5.9	0.44			4.4	MC to Sector Coll.	FTP Cat 5	MD
Readout	RO copper-link	20	500		5.9	0.44			4.4	MC to ROS	FTP Cat 5	CW

DT cables

Balconies to/from Control Room

Type	Name	Length (m)	Qty lines	Qty cables	Outer diam.	Cost mat. (€)	Cost ass. (€)	Cost inst. (€)	Total (k€)	Balcony to/from	Comment	Respons.
HV	SHV	150	500							HV controller	+4kV & -2kV	MDG
HV	HV-LV	150	250							HV controller	10-w flat	MDG
HV	HV-control	150	70							HV controller	16-w flat	MDG
Power	LV-power	150	5							CMS “mains”	48V or 200V@400Hz	CW
TTC	TTC	100	20	10?		150	-		3	TTCex to TTCoc	2 +2 spares/ wheel	CW
Slow Control		100	270	5?							Fiber	MB
Trigger	TR opt-link	100	300	10?						Sect. Coll. to T.F.	Opt. Fiber (850 nm)	MD
Readout	RO opt-link	100	60	10?						ROS to DDU	Opt. Fiber (850 nm)	CW