

# TOTEM LV Power supplies and T1 & T2 main cabling

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# LV Power supplies

- Will use Wiener supplies: basic module (Maraton) near detector consists of 12 channels.
- For T1 and T2:
  - Racks equipped for water cooling
  - Need maximum B field protection
- For RP :
  - put in the racks QYC02 of alcoves of RR53 and RR57
  - Dose/year:  $<1\text{Gy}$ ,  $1\text{e}9\text{ n/cm}^2$ ,  $1\text{e}8\text{ h/cm}^2$
  - air cooling

## LV Power supplies T1 (per quarter)

- Per quarter
- 4 ch analog (max 55 A) + 2 bulk biases
- 1 ch digital
- 1 ch control
- Wiener can provide up to 15V, one crate per quarter
- Current consumption below for solution with CSC front end + VFAT back end (S. Minutoli)

	Channels	Bulk Bias		Analog Current(A) @ 5V		Digital Current(A) @ 2.5V
		+10V	-5V	Cathode	Anode	VFAT
BUCKEYE	16	< 10mA	< 10mA	0.092		
LCT-COMP	16			0.052		
CMP 16	16				0.09	
VFAT	128					0.06275
CSC max Anodes	256				1.44	
CSC - Cathodes	384	< 0.24A	< 0.24A	3.456		
CSC - Digital	1024					0.502
ROC = 2 CSC	2048	< 0.48A	< 0.48A	6.912	2.88	1.004
1/4 T1 = 9 ROC	15360	< 3.6A	< 3.6A	51.84	21.6	9.036
1/4 T1 Total Consumption					73.44	9.036
1/4 T1 Power Supply		5A	5A		150	12

This amount keep in account the devices current vs radiation

# Power supplies T2(per quarter)

- Will power 5 out of 10 half planes separately, control shared
- 2 ch analog (<10 A each)
- 2 ch digital (<10 A each)
- 1 ch control (~ 1 A)
- 1 power supply per side will be sufficient, share it for the two quarters on that side.

# Power supplies RP

- 2.5 V      4 A      1 channel/Pot      analog
- 2.5 V      3 A      1 channel/Pot      digital
- 2.5 V      <1 A      1 channel/Station      slow control
- 2.5 V      <1 A      1 channel/Station      repeater
- 3.3 V      <5 A      1 channel/Station      optocoupler
- 15 channels/Roman Pot station, or 30 per side
- 2.5 Maraton crates/side

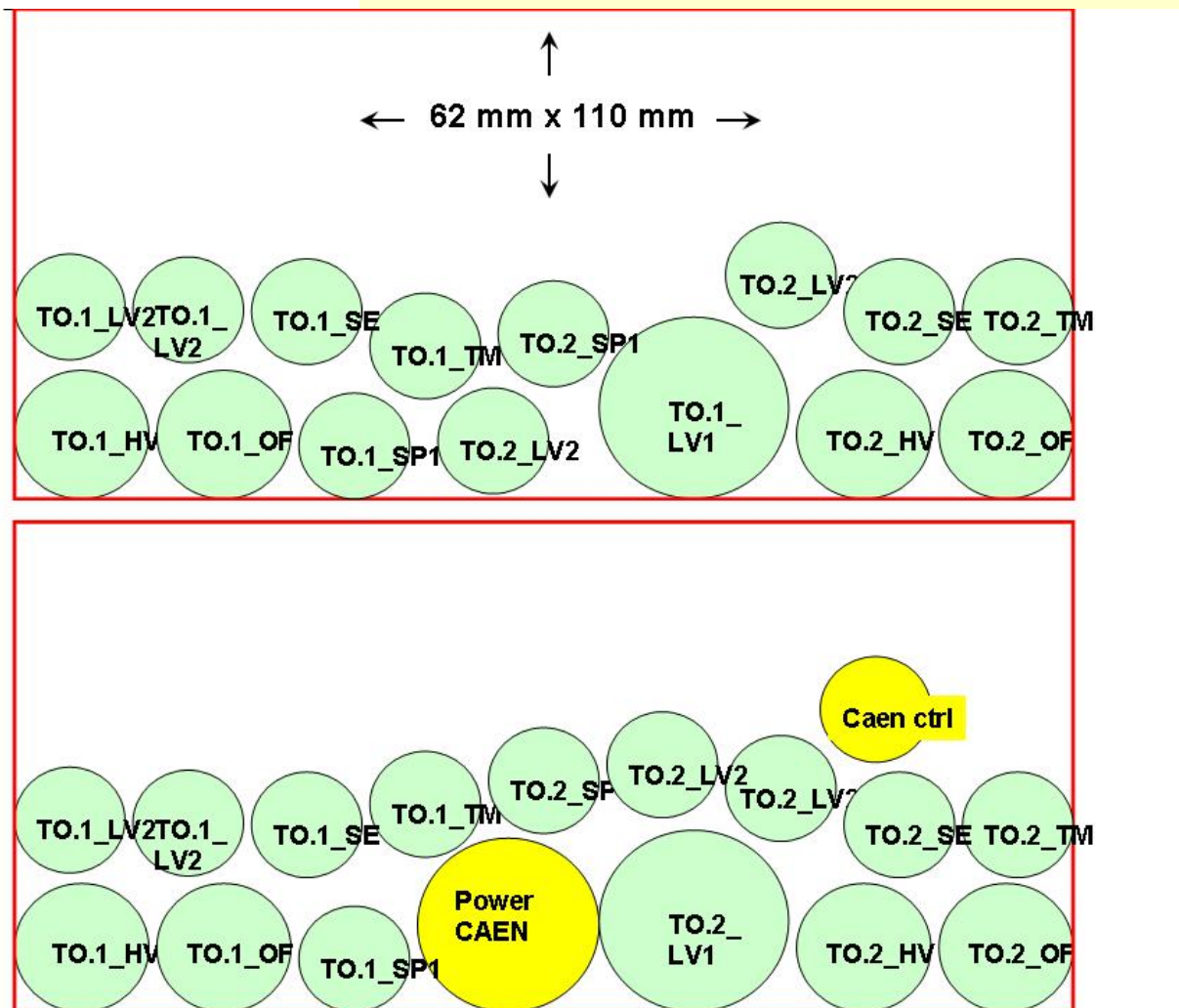
# Cable chain per side

		SCEM	OD	#cond	#	unit cost	place cost	tot cost kCHF	Comment
<b>CSC (T1)/side</b>									
LV	7x6.0CEM	04.08.80.072.6	23	7	1	11.76	3.00	1.48	TO.1_LV1
	MCA36P	04.21.48.336.5	12	36	4	3.90	3.00	2.76	TO.1_LV2
	power		25		1	for BCM, only 1 per side			
	control		12		1	for BCM, only 1 per side			
sense+ctrl	MCA36P	04.21.48.336.5	12	36	2	3.90	3.00	1.38	TO.1_SE
HV	multicoreHV	04.31.52.100.6	15	56	2	3.70	3.00	1.34	TO.1_HV
Tmonitor	MCA36P	04.21.48.336.5	12	36	2	3.90	3.00	1.38	TO.1_TM
Optical	Ericsson (8x12)		~15	96	2	10.00	3.00	2.60	TO.1_OF
Spare	MCA36P	04.21.48.336.5	12	36	2	3.90	3.00	1.38	TO.1.Spare_1
								<b>12.32</b>	
<b>GEM (T2)/side</b>									
LV	7x6.0CEM	04.08.80.072.6	23	7	1	11.76	3.00	1.48	TO.2_LV1
	MCA36P	04.21.48.336.5	12	36	4	3.90	3.00	2.76	TO.2_LV2
sense+ctrl	MCA36P	04.21.48.336.5	12	36	2	3.90	3.00	1.38	TO.2_SE
HV	multicoreHV	04.31.52.100.6	15	56	2	3.70	3.00	1.34	TO.2_HV
Tmonitor	MCA36P	04.21.48.336.5	12	36	2	3.90	3.00	1.38	TO.2_TM
Optical	Ericsson (8x12)		~15	96	2	10.00	3.00	2.60	TO.2_OF
Spare	MCA36P	04.21.48.336.5	12	36	2	3.90	3.00	1.38	TO.2.Spare_1
								<b>12.32</b>	
								<b>24.63</b>	

# Cable chain per side

Yellow: once per side for BCM

Green:ok



# T1&T2 wiring

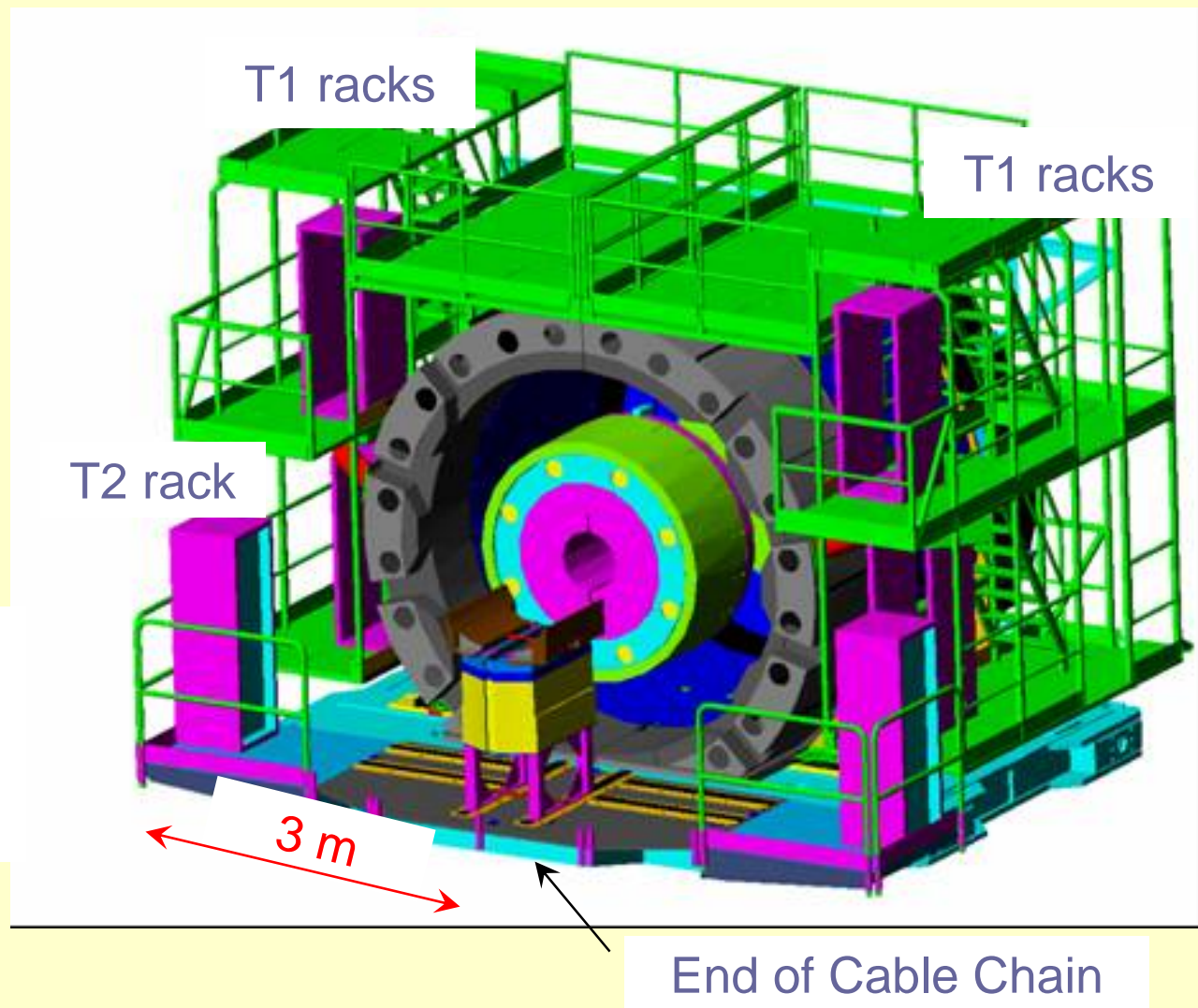
Proposal: wire first to T2 rack, and from there to T1 for some cables

Will give ~6-7 m extra but allows sharing of spares

Distances:

T2 rack-cable chain 3m

T2 rack-T2 6.5m



# Local cabling on HF

