

Estimated costs for the production of Front-End Cards (FEC) for the LPTPC.

A) The 2000 channel scenario (EUDET)

1) Prototype FEC version 1 (board + mounting) (<i>received</i>)	2.440 Euro
Prototype FEC version 2 (board + mounting) (<i>estimated</i>)	2.440 Euro
2) Production of FEC's (20 boards) (<i>offer</i>)	1.800 Euro
3) Shaping amplifier (200 chips) ($38.3 \text{ \$/ch} = 28.3 \text{ Euro/ch} \times 2000 \text{ channels}$, <i>received</i>)	56.000 Euro
4) Packaging (<i>received</i>)	2.300 Euro
5) ALTRO-chip; existing	0 Euro
6) Mounting on 20 boards (cost including all passive components) (<i>offer</i>)	4.300 Euro
7) GTL (Gunning Transistor Logic) (1000 ; <i>received</i>)	1.400 Euro
8) FPGA (Field Programmable Gate Array) ($120 + 100 \text{ memory chip}$; <i>received</i>)	2.000 Euro
9) Connectors (2 male + 2 female / 32 channels x 4 /board x 16 boards) ($200 \text{ WR-40S-VF-N1} + 100 \text{ WR-40P-VF-N1} + 100 \text{ WR-40P-HFHD-A1L}$; <i>delivered 17.10</i>)	1.000 Euro
10) Capton cables (25 cm long) (100 cables ; <i>received</i>)	1.400 Euro
11) Mounting of connectors to cables (20 cables ; $355 \text{ SEK/cable} = 40 \text{ Euro/cable}$) (<i>estimated</i>)	800 Euro
12) Active electronics components (Voltage regulators) ($400 \text{ MIC39151-2.5WU} + 300 \text{ MIC29372WU}$; 10.155 SEK)	1.100 Euro
Sum:	76.980 Euro

B) The 10.000 channel scenario

		In add. to A)
1) Prototype FEC version 1 (board + mounting) (<i>received</i>)	2.440 Euro	0 Euro
Prototype FEC version 2 (board + mounting) (<i>estimated</i>)	2.440 Euro	0 Euro
2) Productions of FEC's (80 boards)	3.100 Euro	1.300 Euro
3) Shaping amplifier; production costs (1000 chips a 16 channels, 137.000 \$)	100.000 Euro	44.000 Euro
4) Packaging (rough estimate)	4.100 Euro	1.800 Euro
5) ALTRO-chips (existing)		0 Euro
6) Packaging (3.8 Euro/chip x 1000 chips)	(3.800 Euro)	
7) Mounting on boards (cost including all passive components) (<i>offer</i>)	15.000 Euro	10.700 Euro
8) GTL (Gunning Transistor Logic) (<i>1000; received</i>)	1.400 Euro	0 Euro
9) FPGA (Field Programmable Gate Array) (<i>120 + 100 memory chip; received</i>)	2.000 Euro	0 Euro
10) Connectors (2 male + 2 female / 32 channels x 4 /board x 80 boards) (<i>1000 WR-40S-VF-NI + 500 WR-40P-VF-NI + 500 WR-40P-HFHD-A1L</i>) (<i>delivered</i>)	3.500 Euro	2.500 Euro
11) Capton cables (25 cm long) (<i>800 Euro + 6.5 Euro x 320 cables</i>) (<i>estimated</i>)	2.900 Euro	2.900 Euro
12) Mounting of connectors to cables (<i>320 cables; 355 SEK/cable = 40 Euro/cable</i>) (<i>estimated</i>)	12.800 Euro	12.800 Euro
Sum2:	149.680 Euro	76.000 Euro

Contributions:*CERN:*

Items A3) (30.000 \$)	22.000 Euro
Item A4)	4.000 Euro
(De-soldering of the ALTRO-chips (5000 CHF)	3.000 Euro)

Lund:

Items A1), A2), A6), A7) ,A8), A9), A10), A11), A12)	18.680 Euro
Items A3)	10.000 Euro

Bonn:

Items A3), A4)	20.000 Euro
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DESY:

Items A3), A4)	10.000 Euro sum: 84.680
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Japan:

Items B3), B4)	20.000 Euro (KEK)
	20.000 Euro (Saga/Tohoku)

Canada:

Items B3), B4) (Application) (20.000???)	10.000 Euro sum: 50.000
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Total **134.680 Euro**

Missing total (149.680 – 134.680) **15.000 Euro**

Presently available within EUDET for items A2) + A3): **62.000 Euro**

Presently available outside EUDET: **50.000 Euro**

