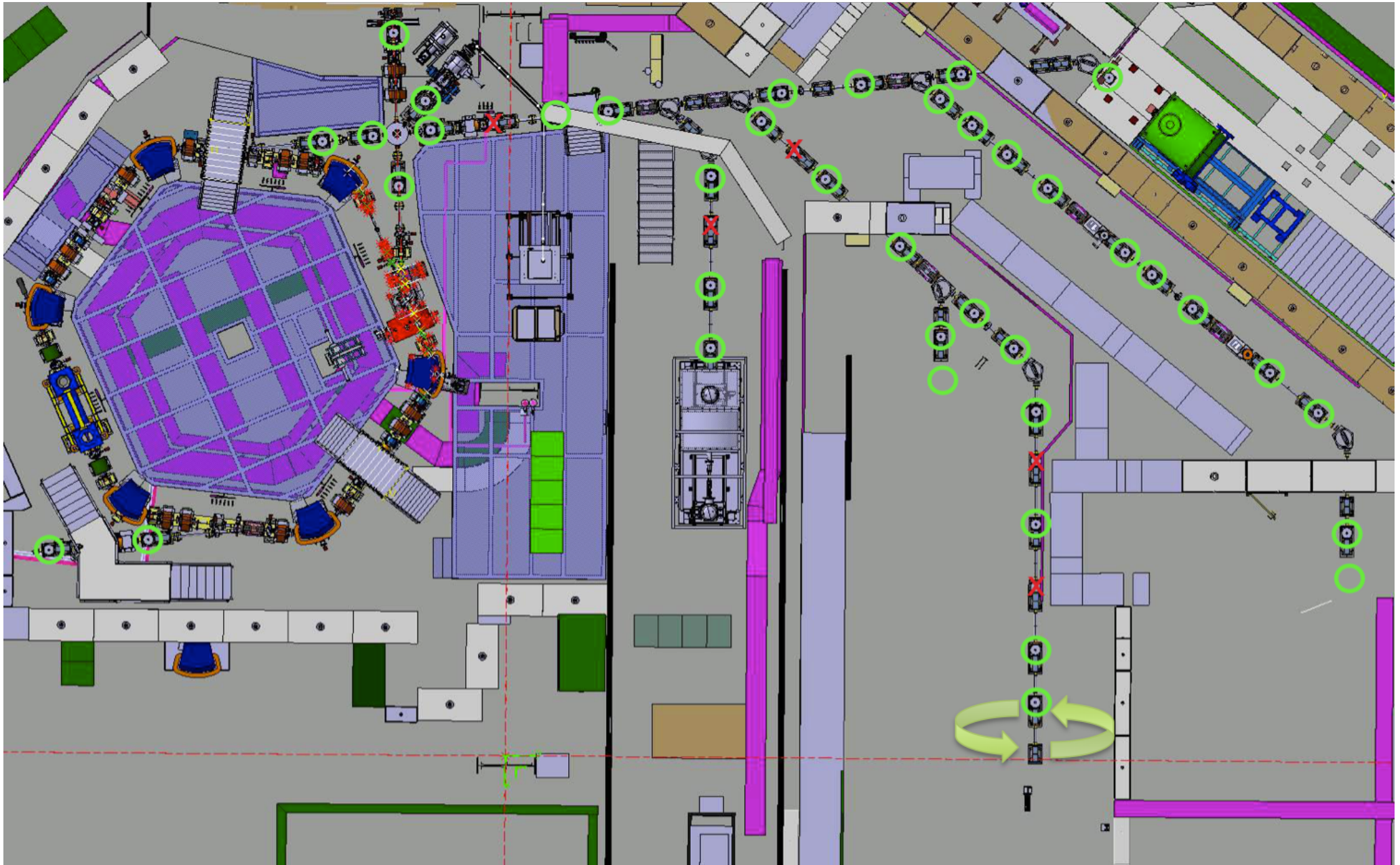


Beam profile monitors for ELENA





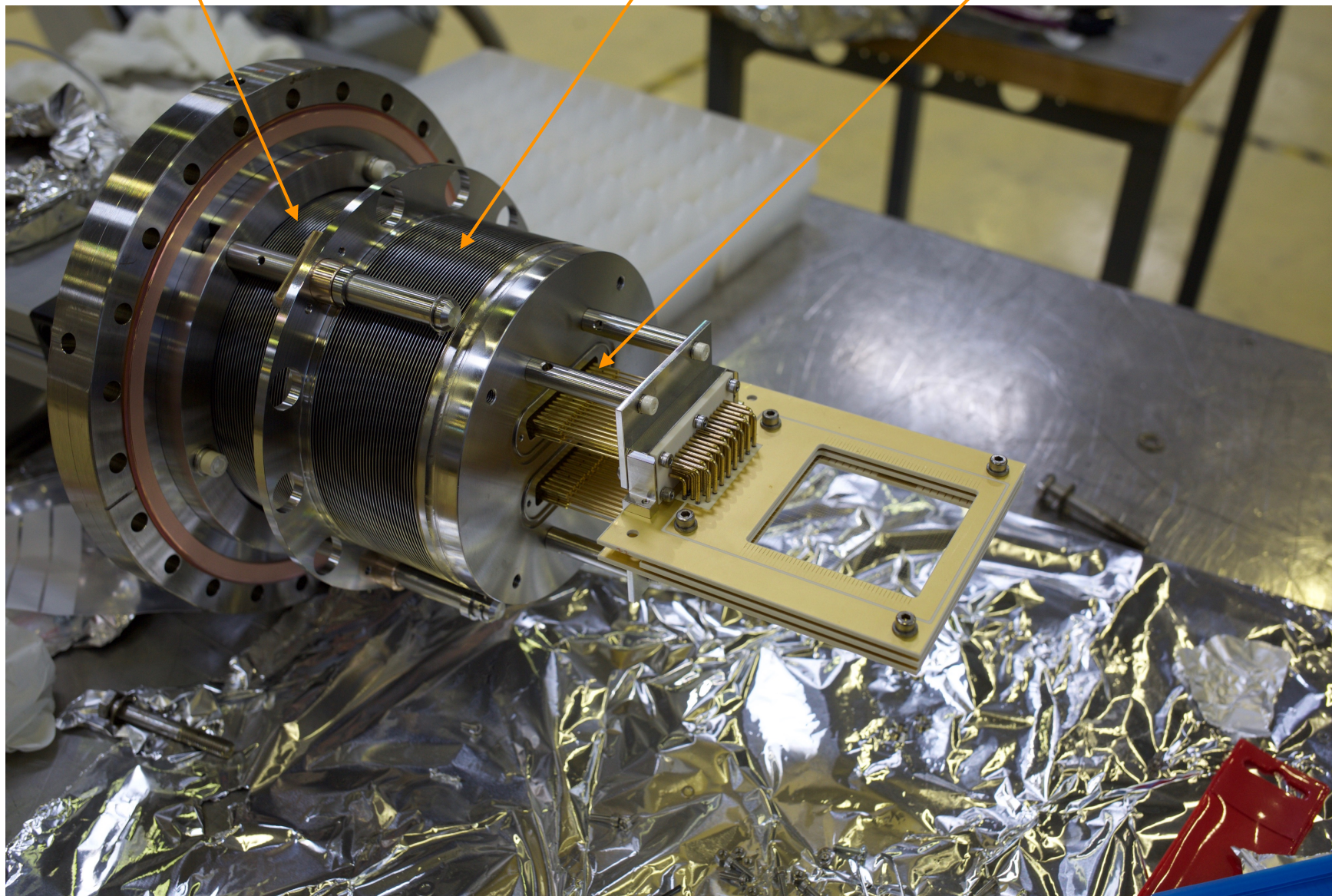
Beam profile monitor prototype



Bellow 1st stage

Bellow 2nd stage

100-pin feedthrough

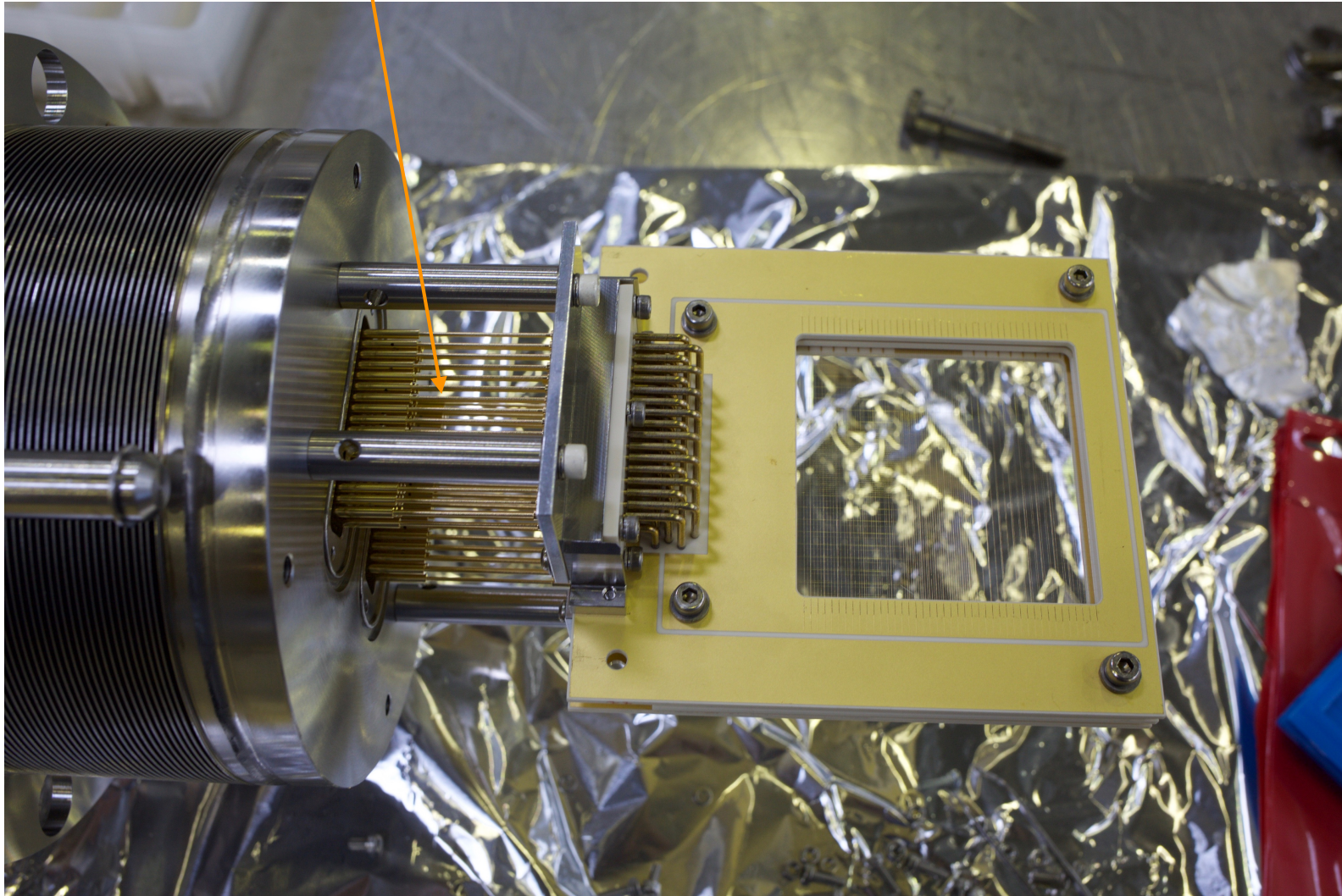




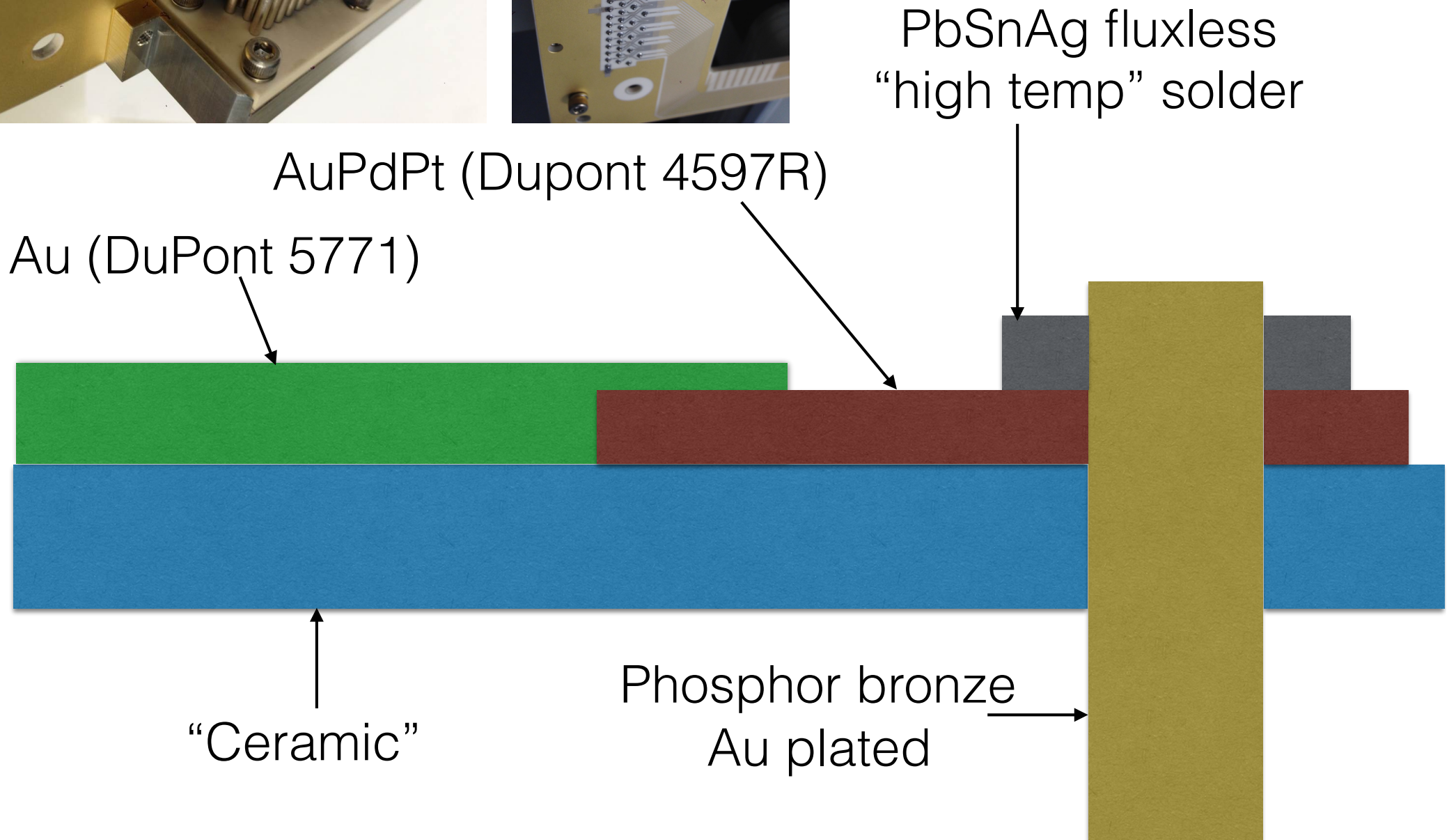
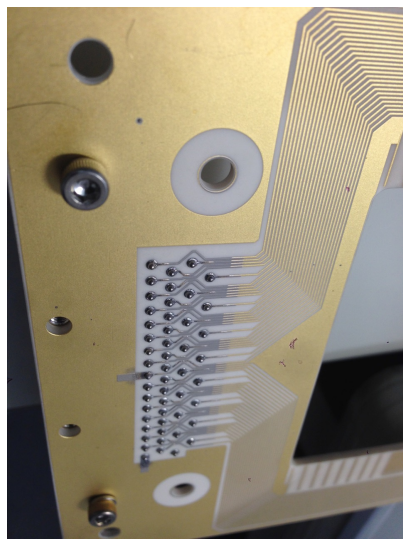
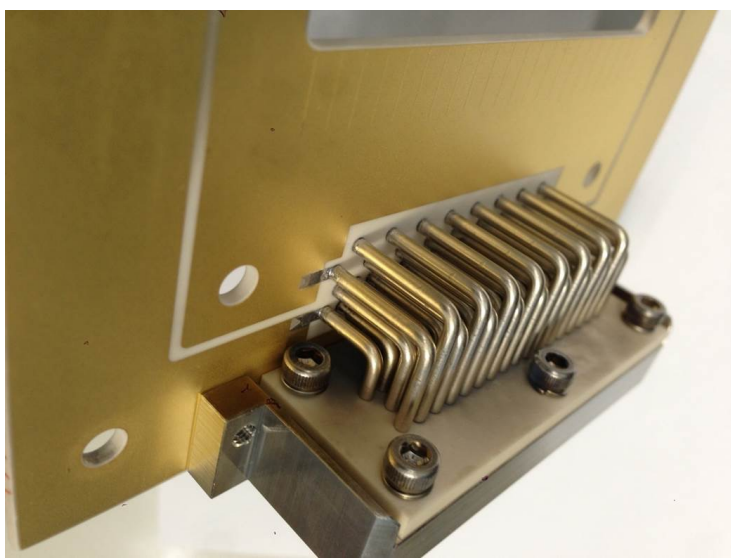
Thick-film printed electrode closeup



CuBe readout pins x 100 pc.



Eliminated Kapton from design

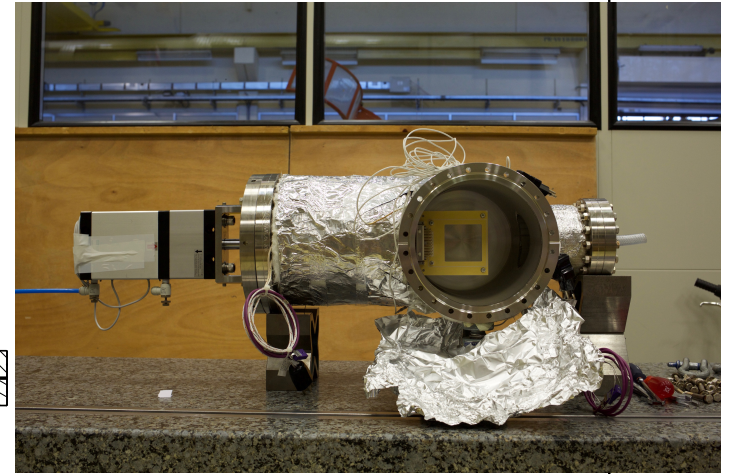
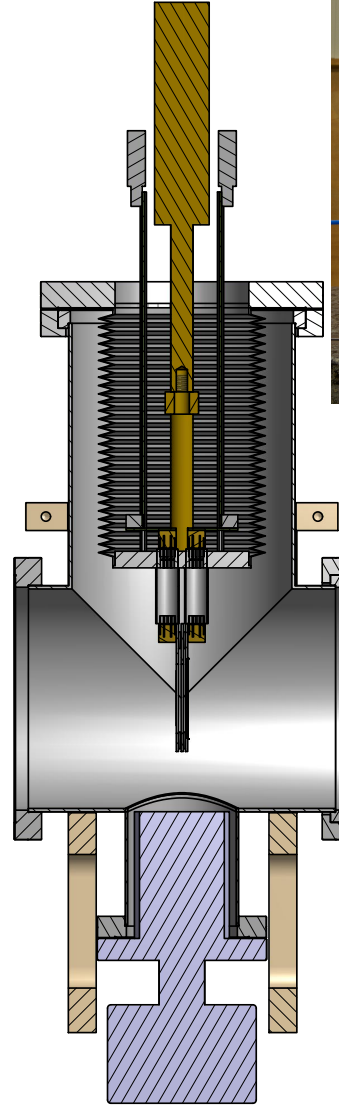
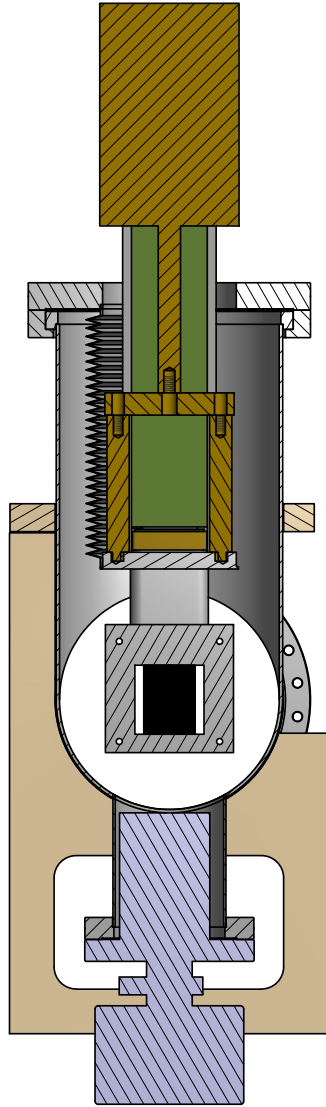




Beam profile monitor prototype



F
E
D
C
B
A



D
C
B
A

		Name	Date
Author		Yoshi Sasaki	16/03/2013
Checked			
Approved			
Elena BPM Assembly Section 1/1			
AZ			



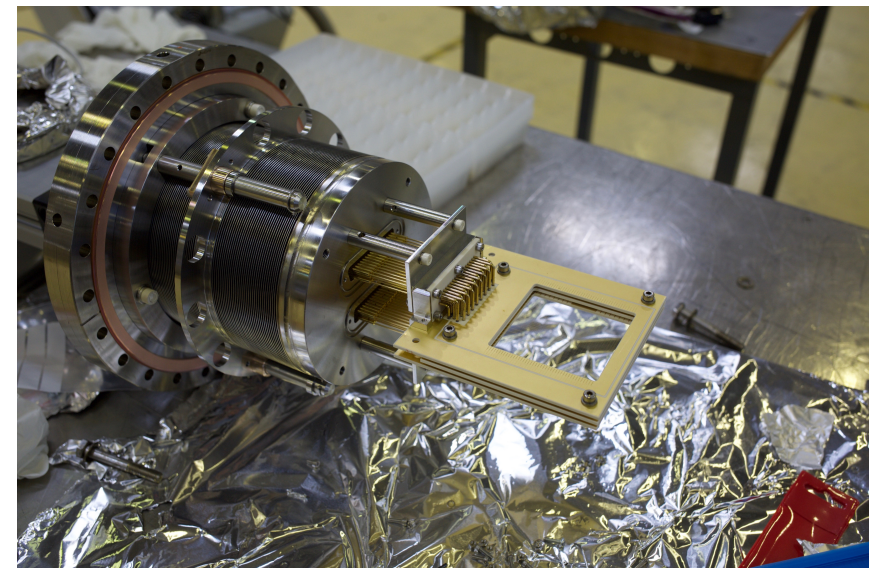
Delivery status

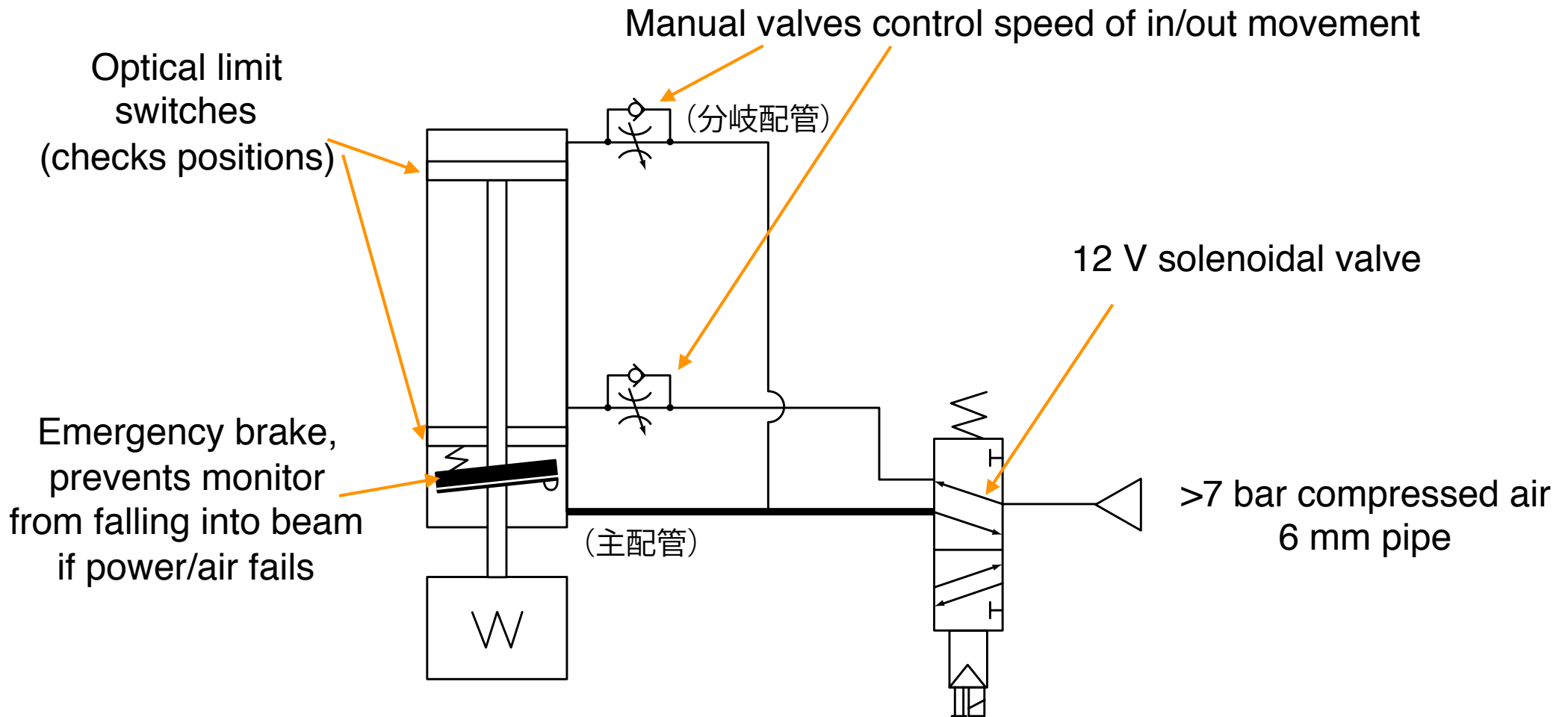


27 in/out bellow systems delivered to CERN
(16 under repair in Japan due to leaking feedthrough)

43 cable support frames delivered to CERN

12 electrode sets delivered to CERN
(5 more in 1 month, 30 remaining)

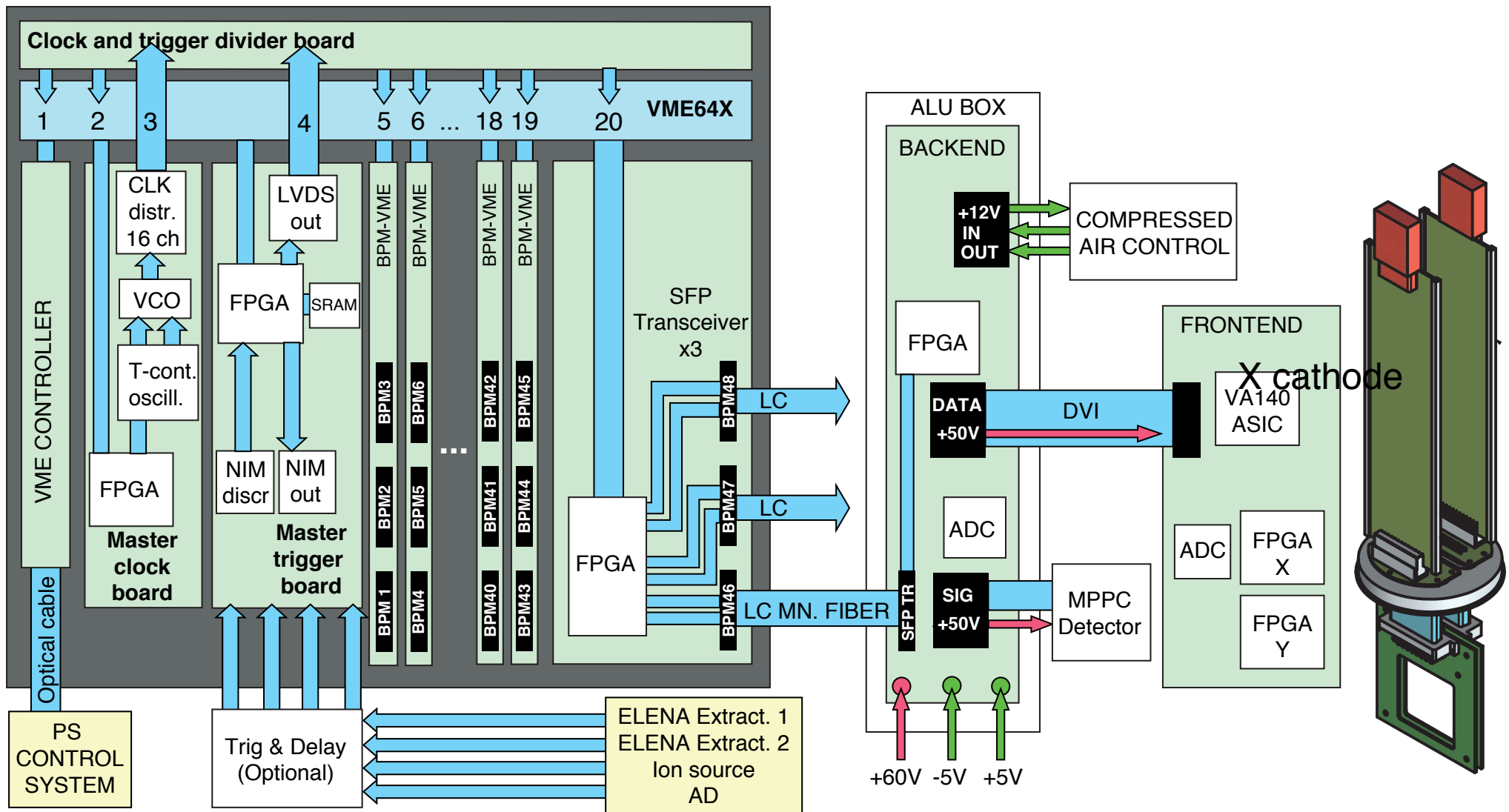




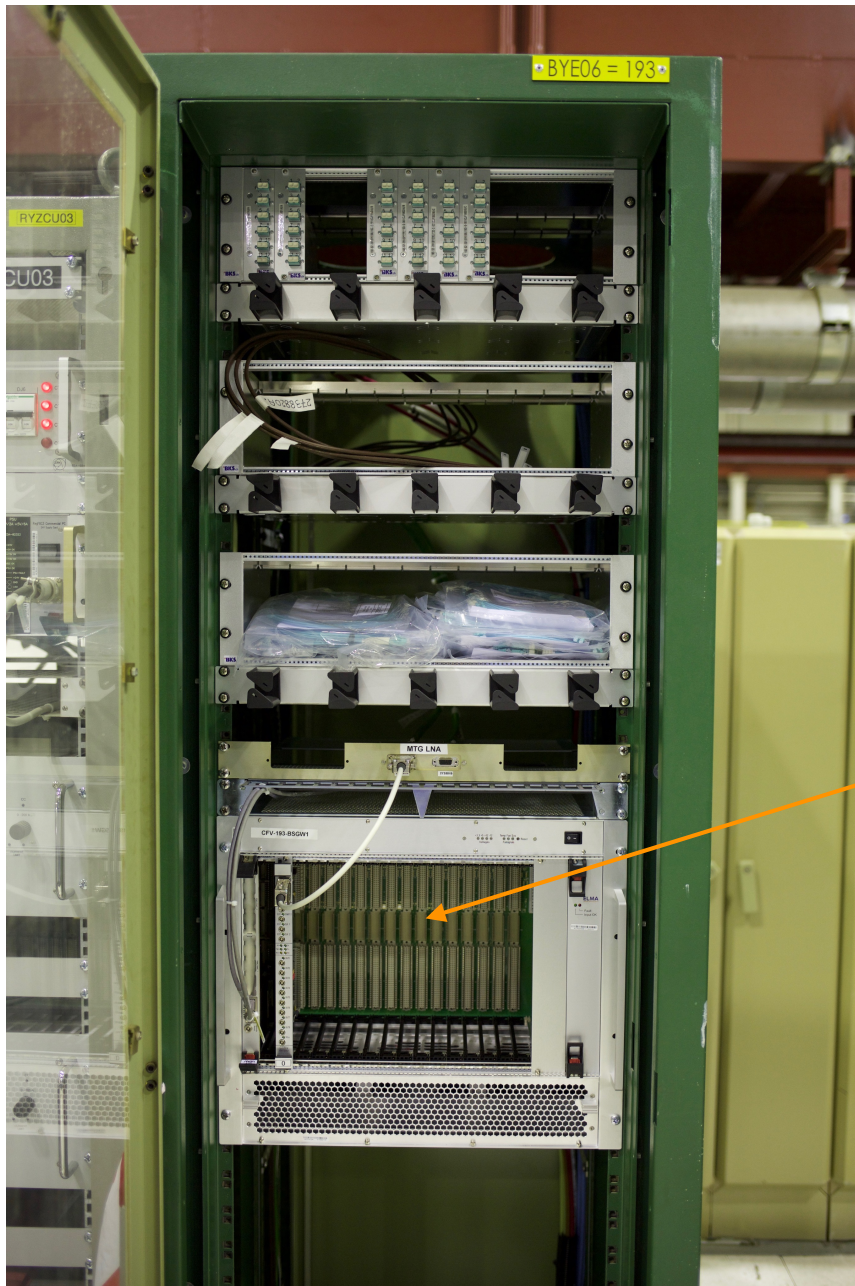
>100 kg of force needed to move monitor against atmospheric pressure on 120-mm-diameter bellows



Beam profile monitor electronics layout



4 types of triggers, controls 45 monitors



We need to install here:

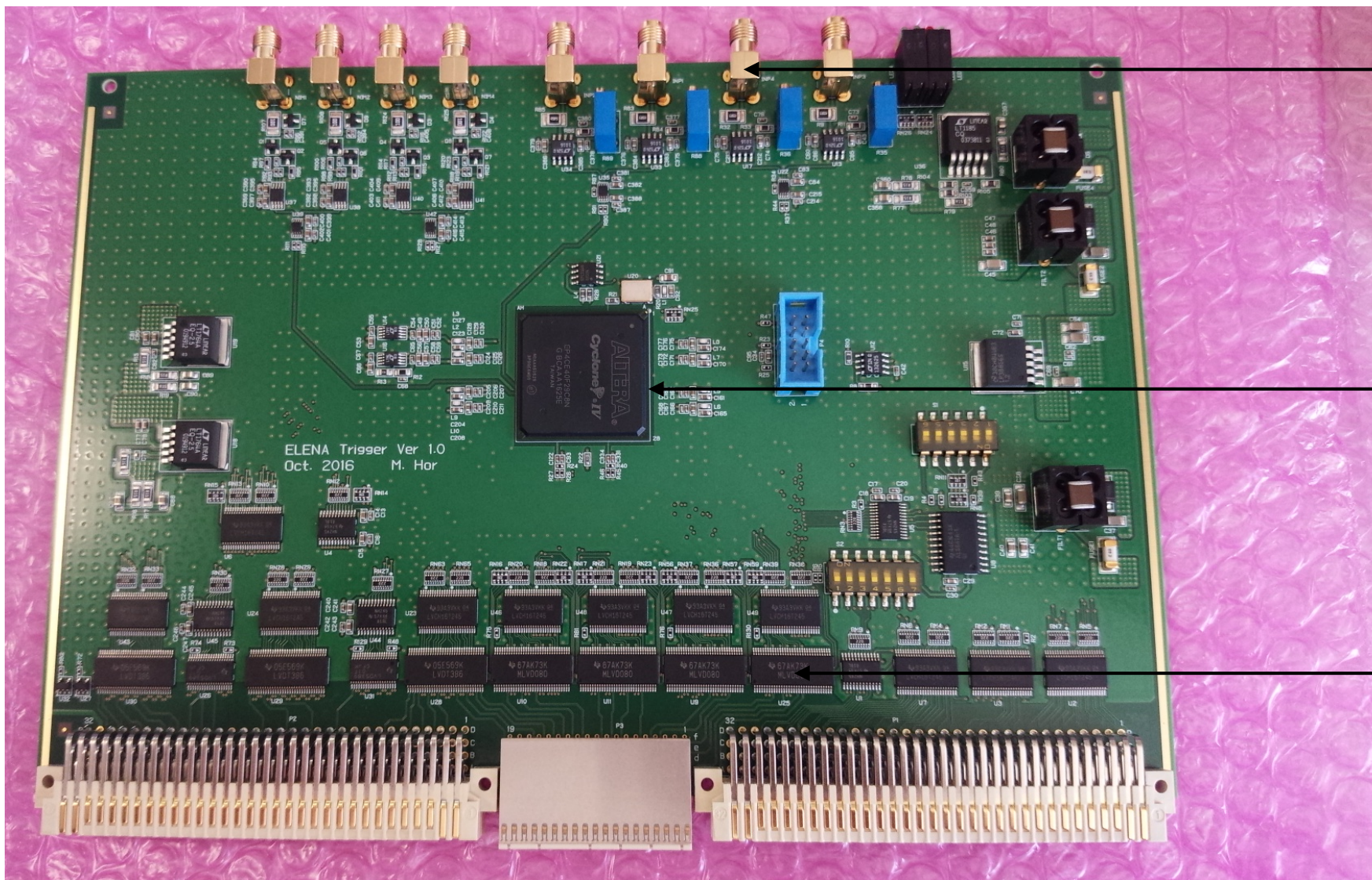
Main trigger board x 1 pc.

Clock distribution board x 1 pc.

BPM control board x 15 pc.



VME64x timing distribution board



4-channel
trigger input
TTL, NIM, etc.

Cyclone IV
75k-gate

LVDS
trigger
distribution

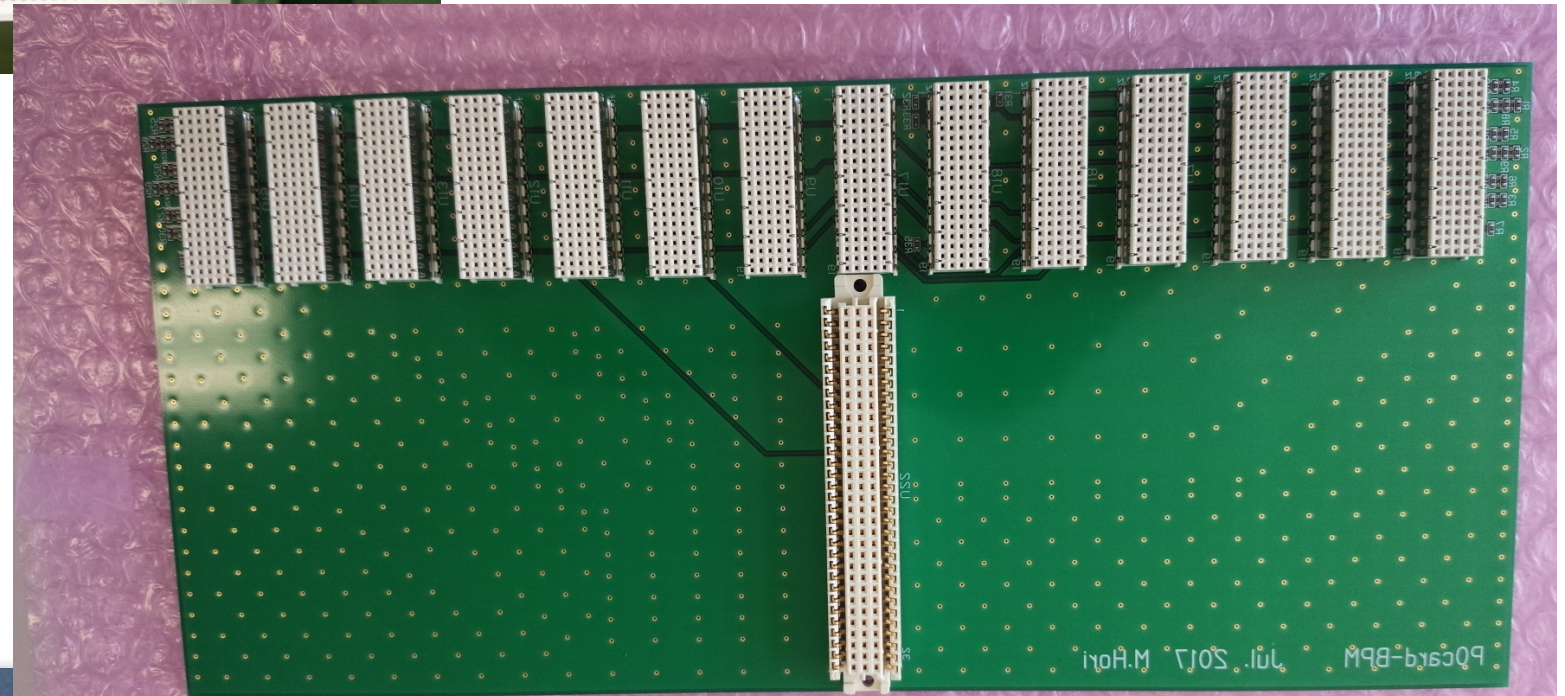


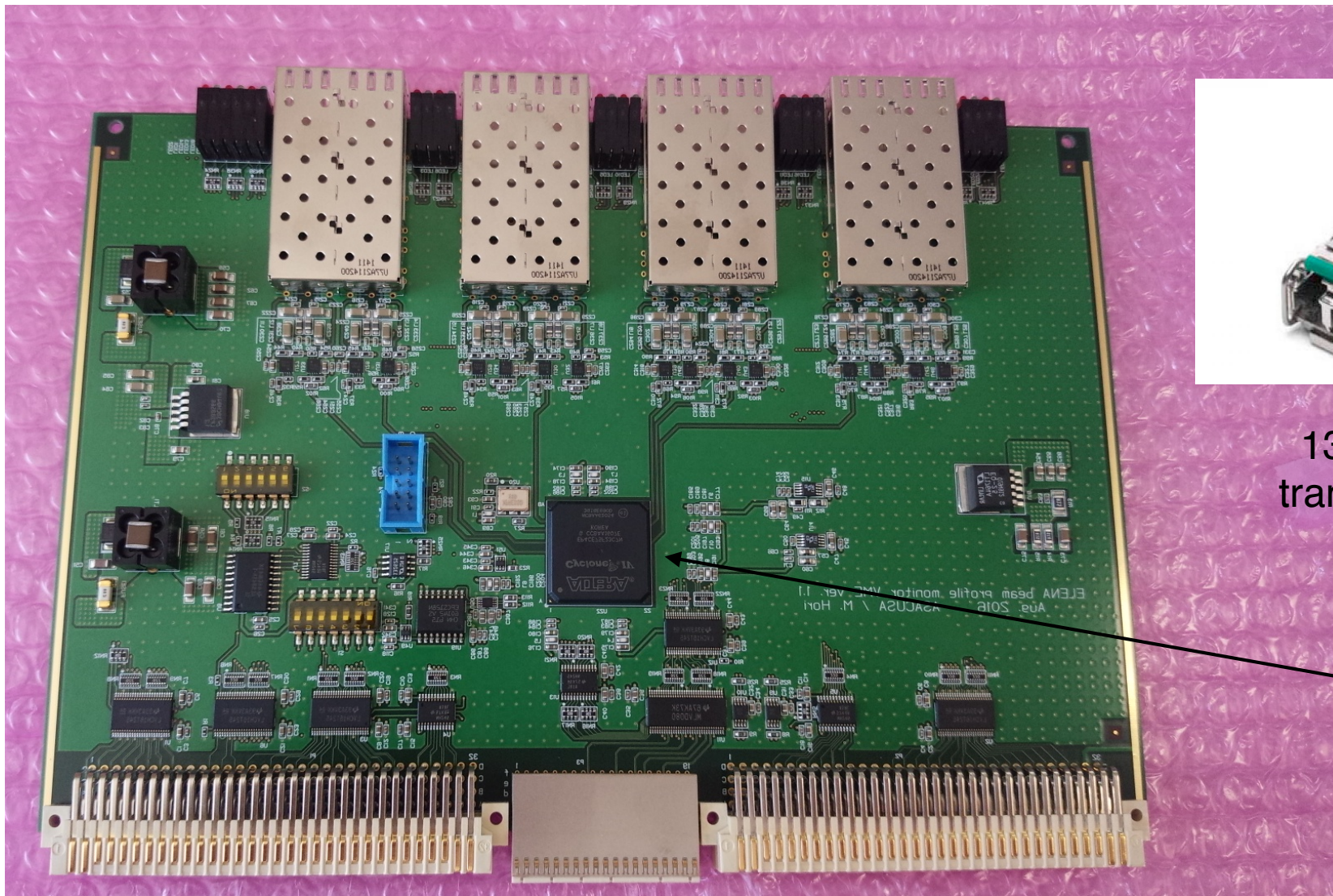
Timing LVDS distribution backplane



Plugs into VME64x backplane

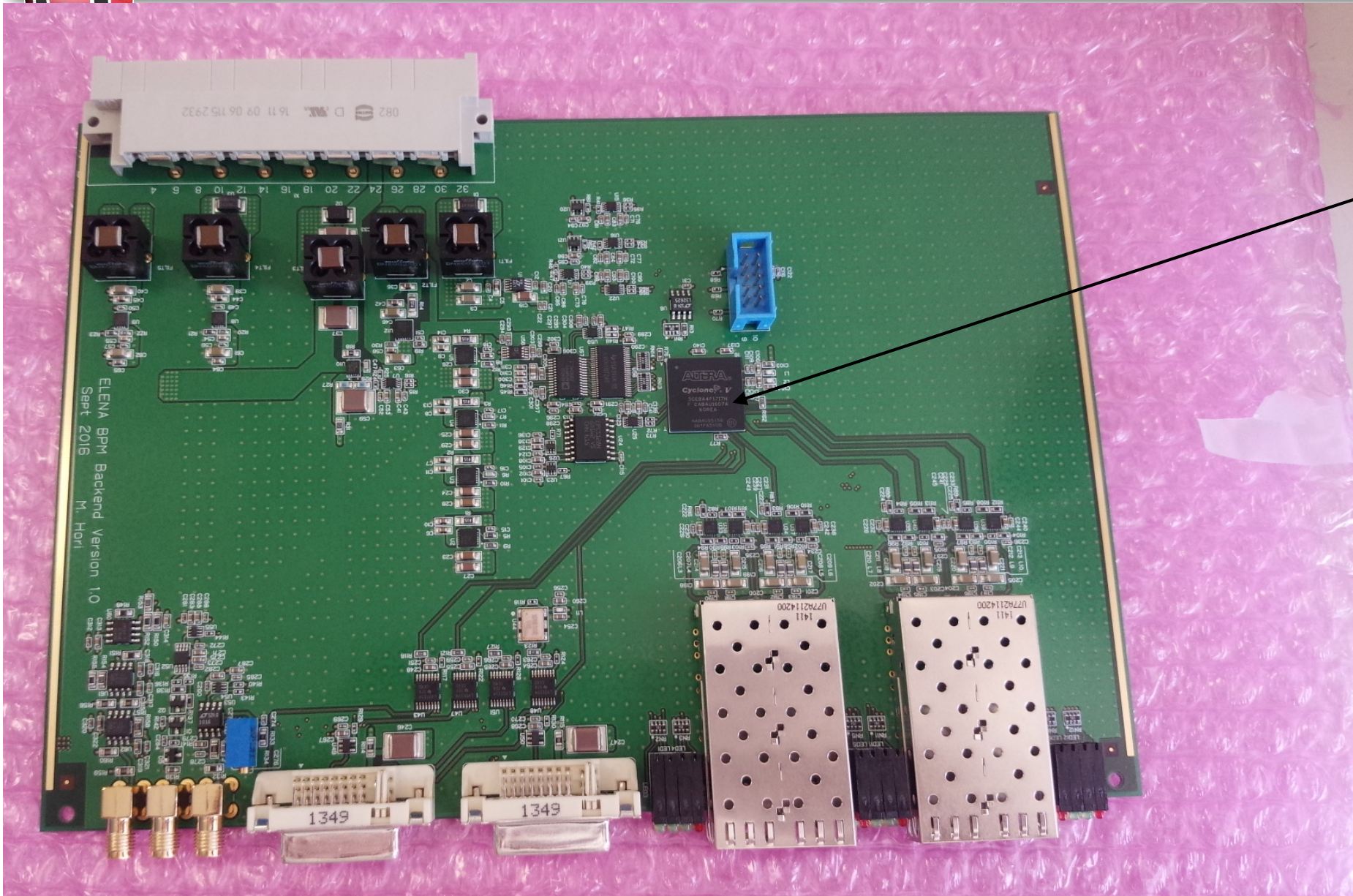
Distributes trigger timing to 12 interface boards.





1300 nm optical transceiver x 8 pc.

Cyclone IV 75k-gate



Cyclone V

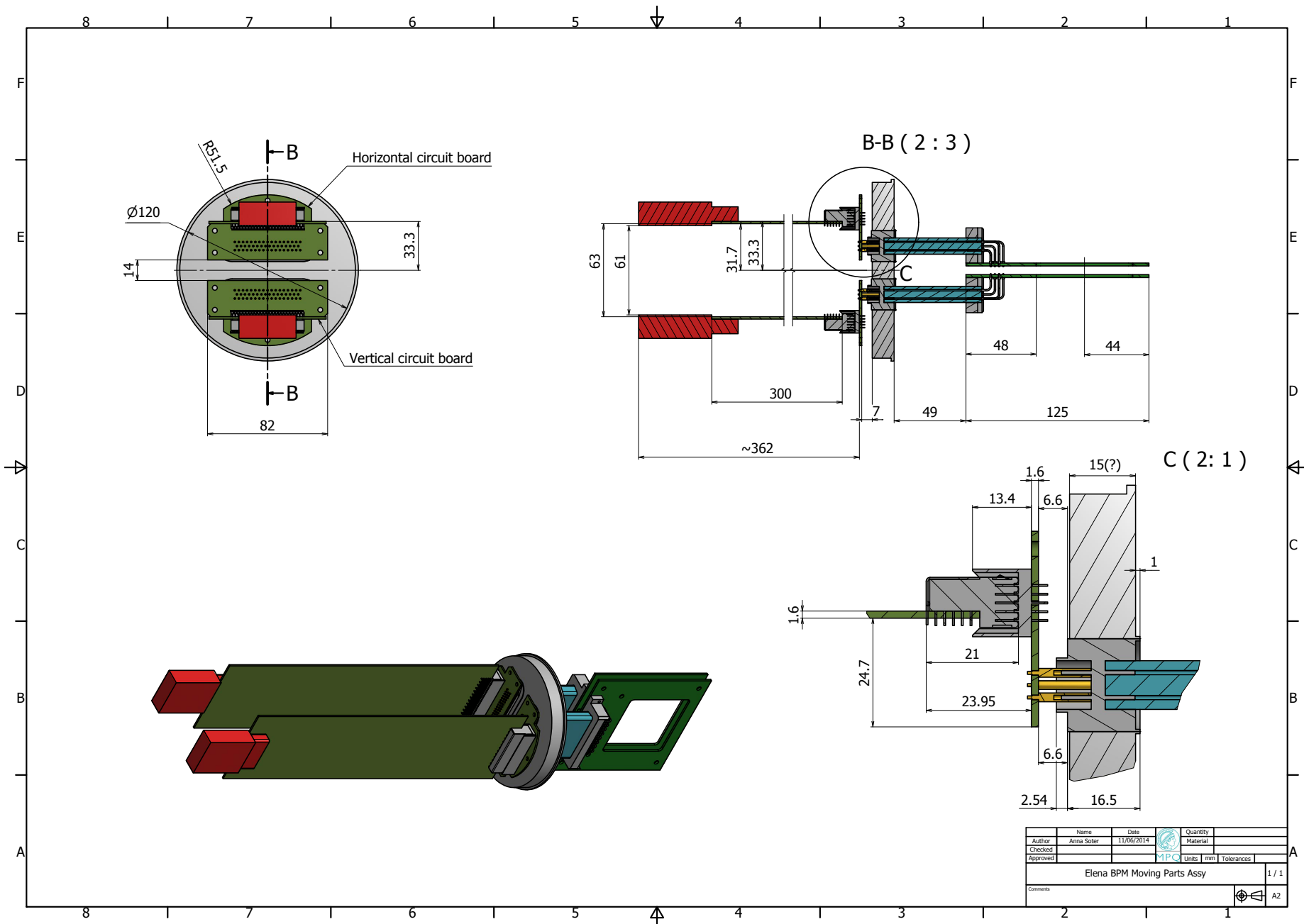
Test timing inputs

LVDS interface to preamplifiers x 2 ch.

Optical interfaces x 4 ch.

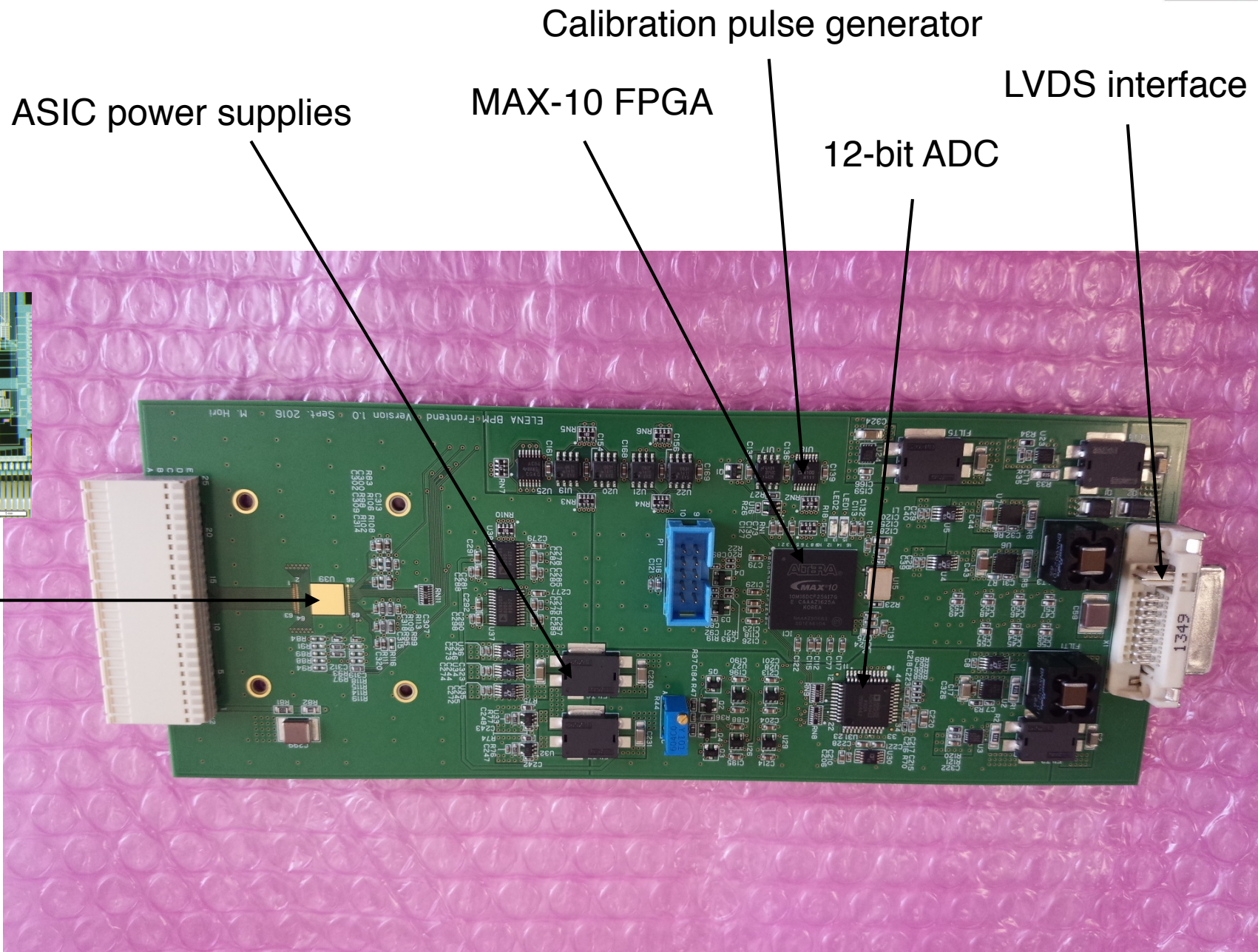


Readout head electronics configuration





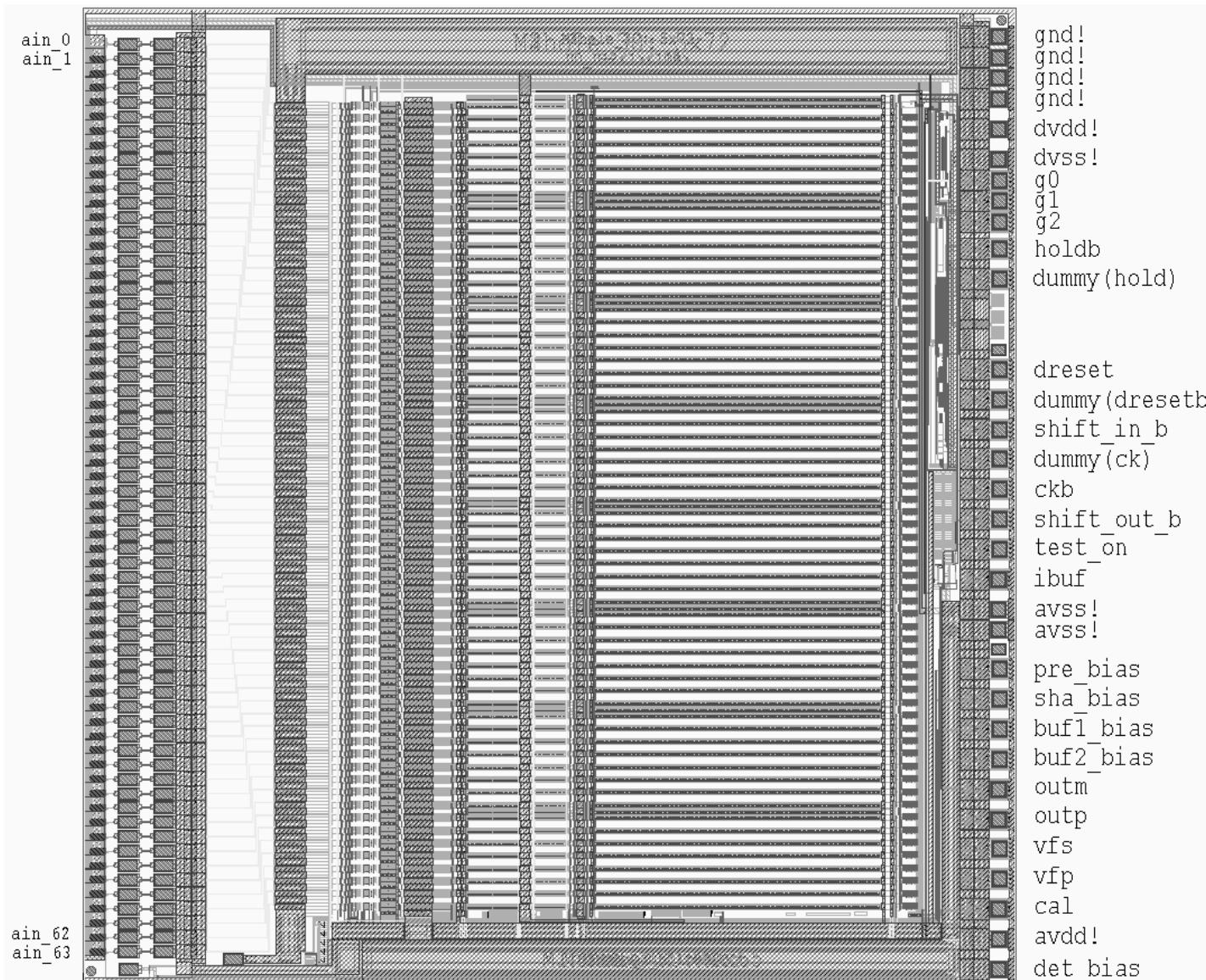
Beam profile monitor frontend board



VA140 charge-sensitive ASIC



VA140 ASIC



0.35 um CMOS process

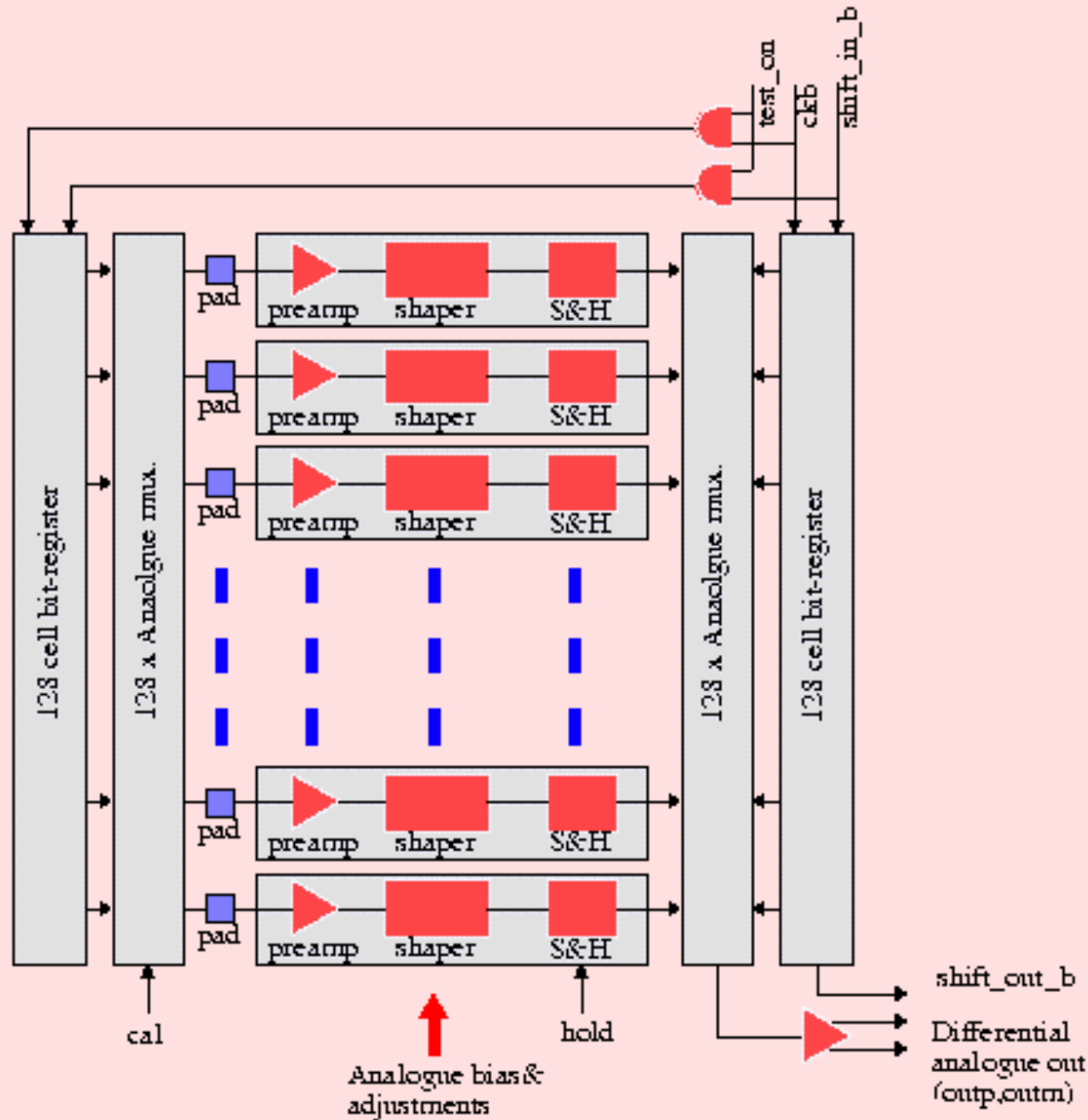
70 um x 120 um pads

64 readout channels

800 e- ENC @ 100 pF



VA140 architecture





Example Normal Readout Sequence of one chip

