

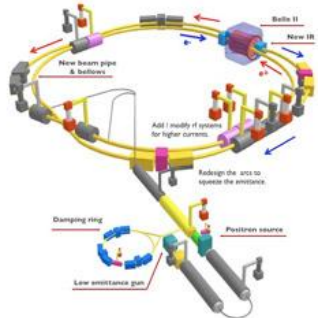
# **DESIGN REVIEW**

## **HV4CB & HV4CDB**

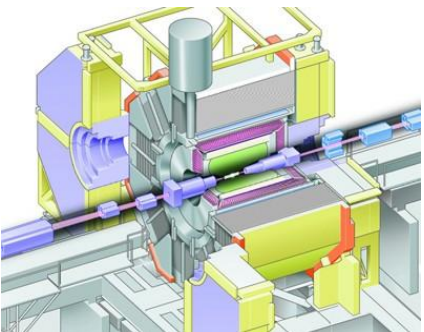
**Vihtori Virta**

# INTRO

- Variable 4-Channel high voltage power supply for powering sl10 photomultipliers in Belle2 detector

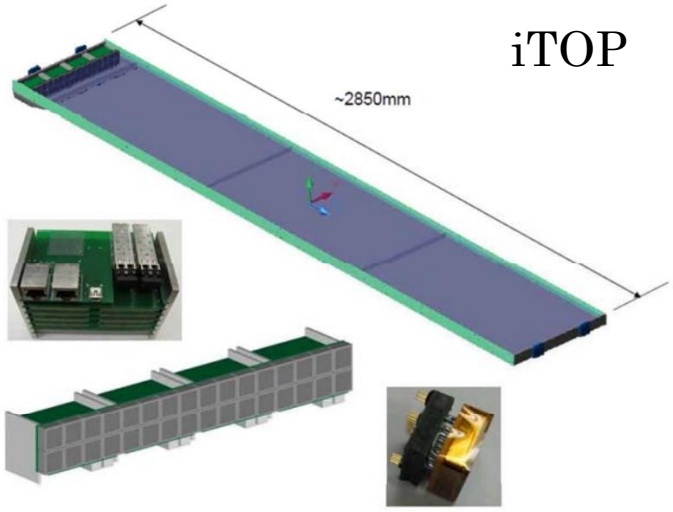
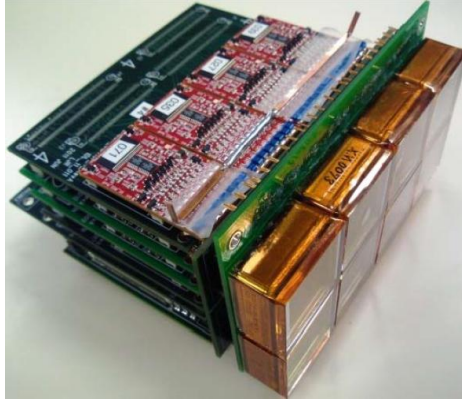


Super KEKB



Belle II Detector

Front end board with 8 SL10 photomultipliers

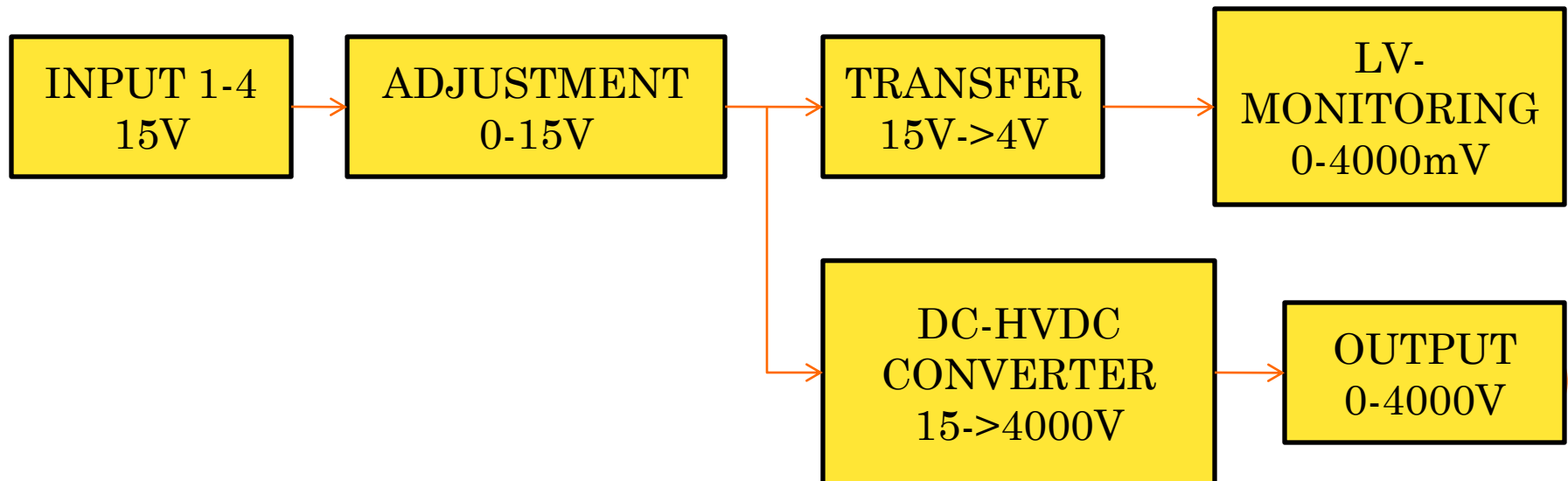


SL10

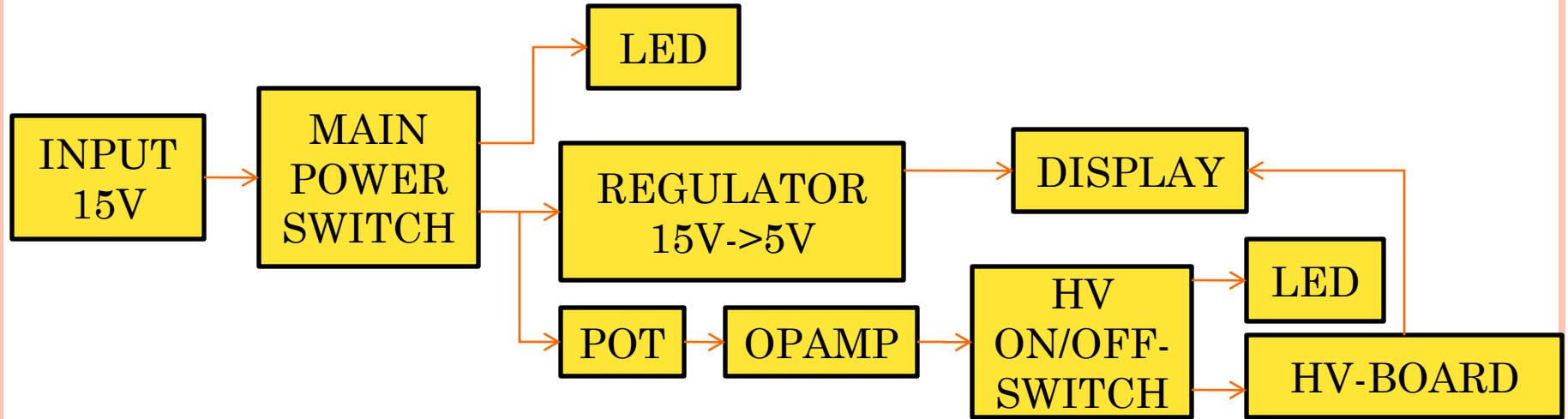


## BLOCK DIAGRAM AND SPECIFICATION

- 4- Channels
- Potentiometer adjustment
  - 0-4000V
- LV- Monitoring
  - $\pm 1V$  accuracy



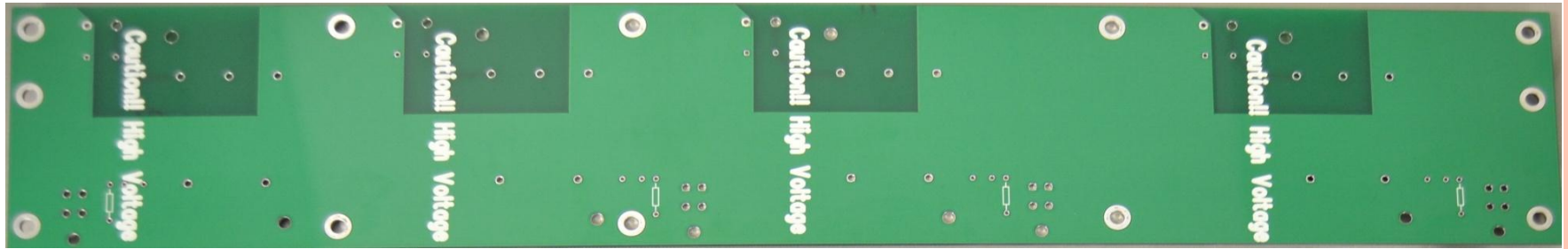
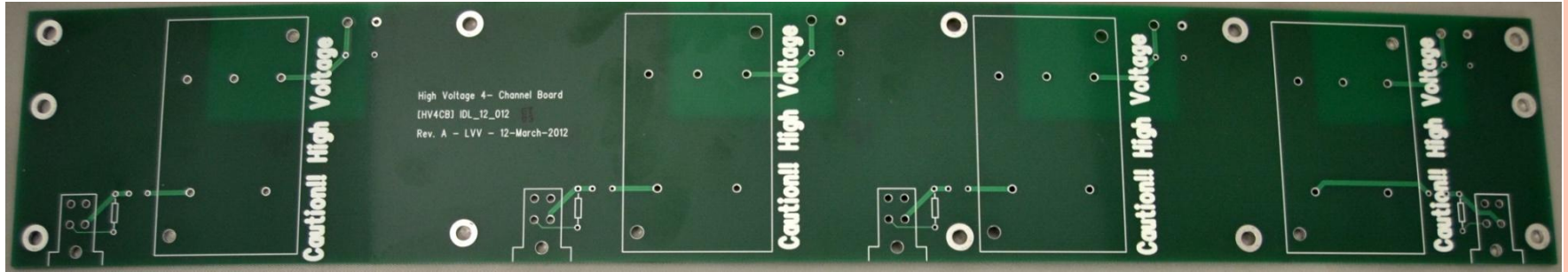
## DISPLAY-BOARD BLOCK DIAGRAM



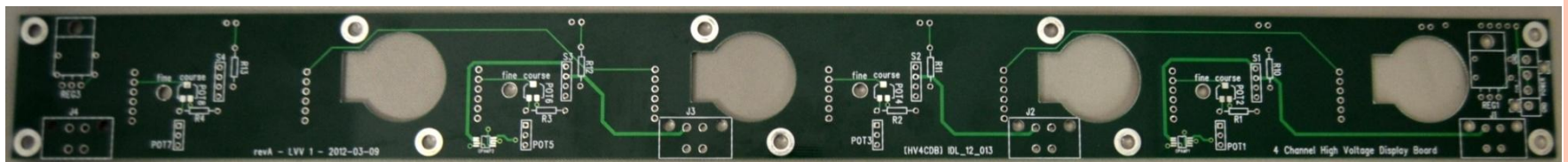
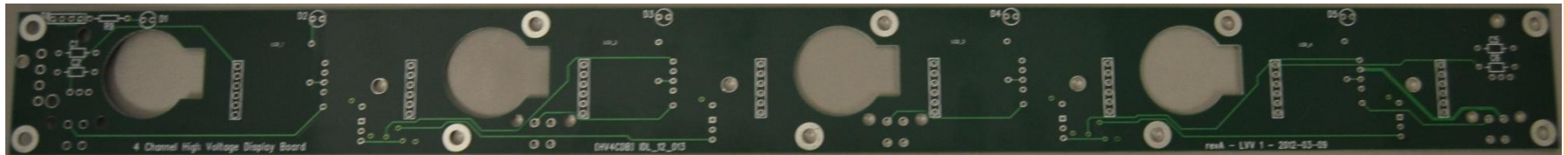
## HV-BOARD BLOCK DIAGRAM



# HV4CB



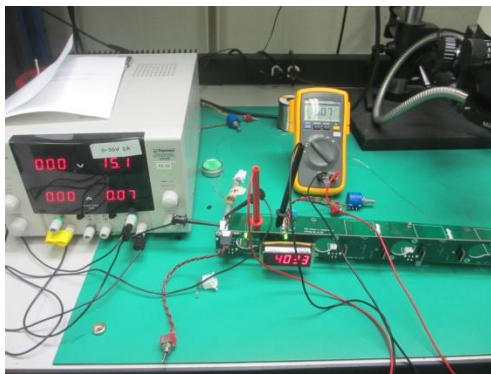
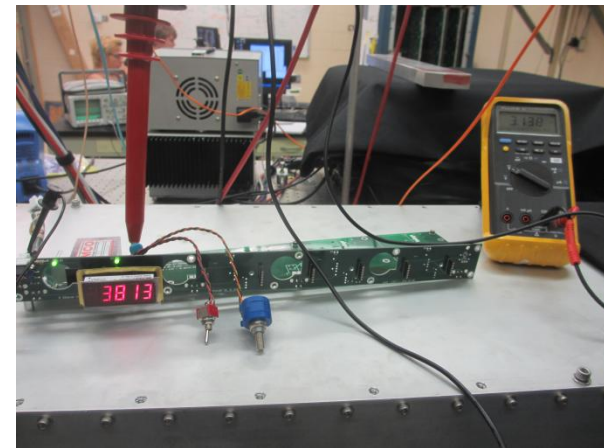
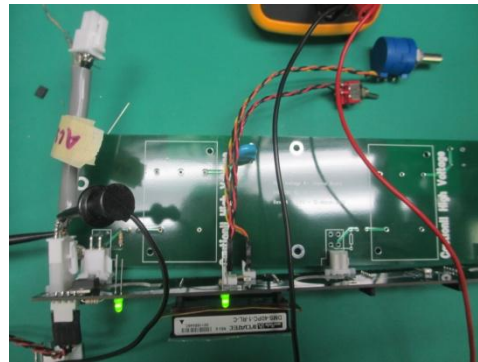
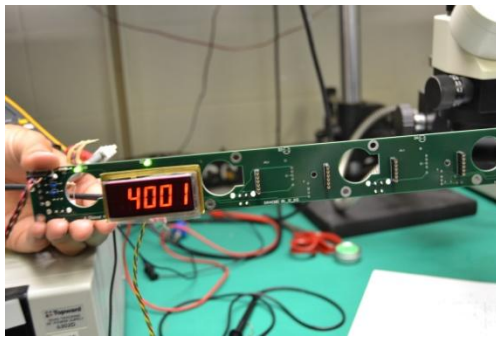
# HV4CDB





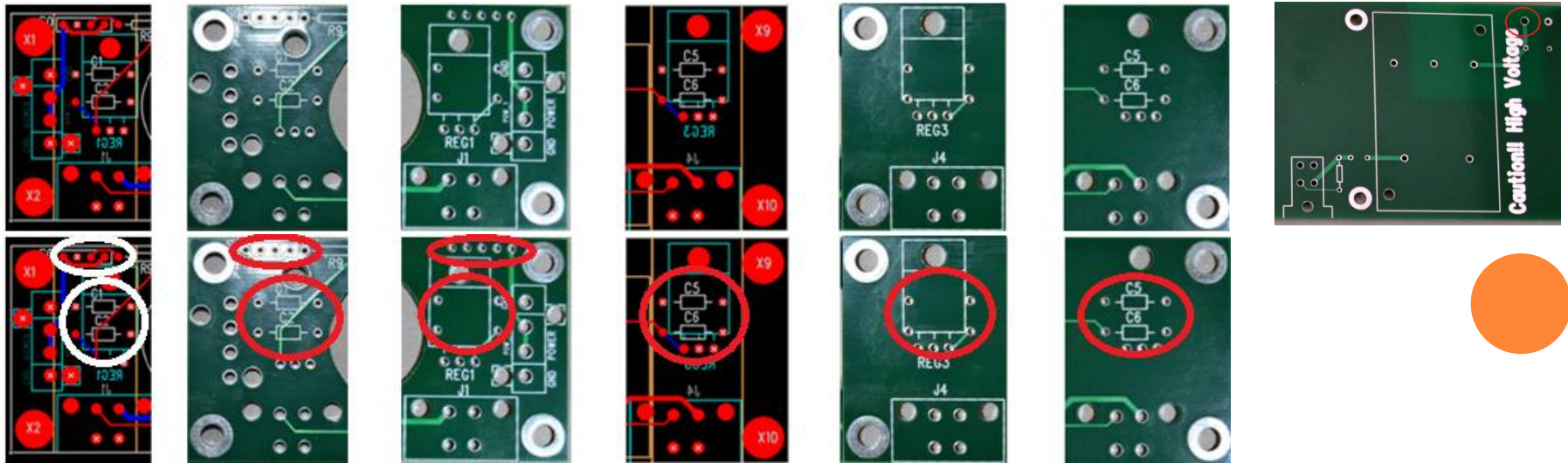
# TESTINGS

- First tested that display board works without HV-Board
- With HV-Board and without HV-module
- With EMCO E30 module
  - 3138V



## PROBLEMS AND SOLUTIONS

- Capacitors are through hole components
  - Can't fit under regulator
- Next version should have surface mount capacitors
- 15 V is too close to regulator
  - Move regulator or connector
- Small annular ring

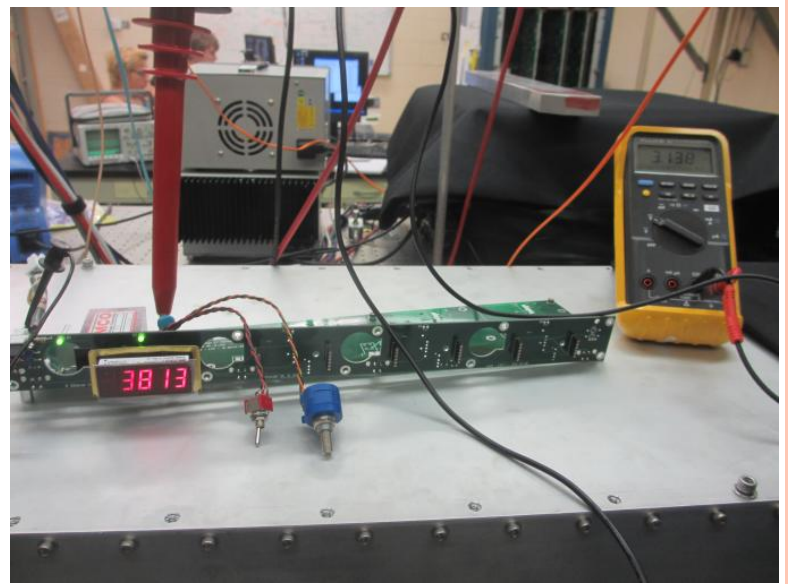


# PRICE

○ HV- Board:	53,18 \$	
○ Display Board:	47,34\$	
○ HV-Modules:	118\$ x4	= 472\$
○ Displays:	78\$ x4	= 312\$
○ Case:	216\$	
○ Precision pot	11,27\$ x4	= 45,08
○ Power supply	20,52\$	
○ Other Components:	~25\$	
• Opamps x2		
• Regulators x2		
• Resistors		
• Capacitors		
• Potentiometers x4		
• Connectors		
• Wires		
• Switches		
○ Total	~1191,12\$	







QUESTIONS?



COMMENTS?

THANK YOU FOR  
ATTENDING!

