

3 x APV Backplane Issue and Fix

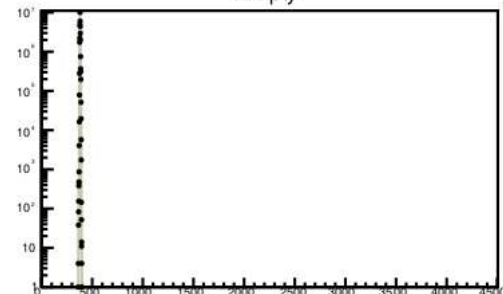
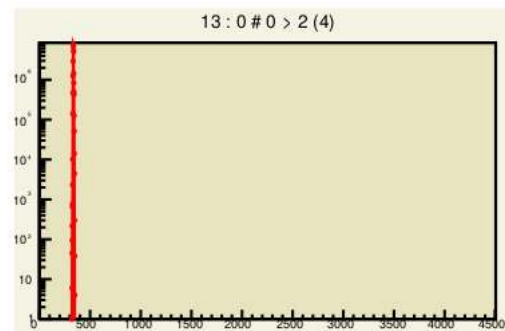
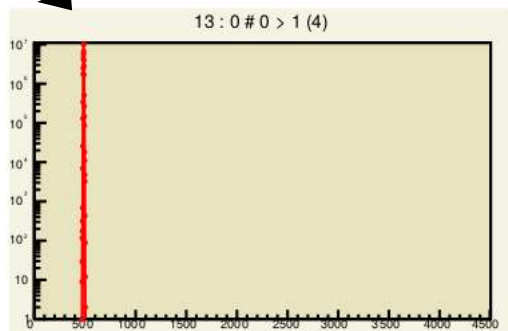
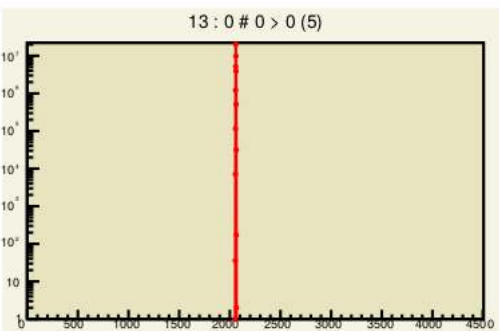
21/July/2021
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The symptoms

No card connected

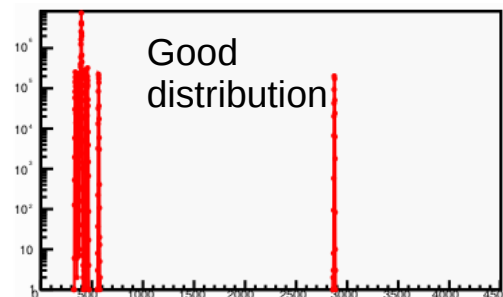
Bad histograms

Empty



Sean did the “histo low-level” test and observed that:

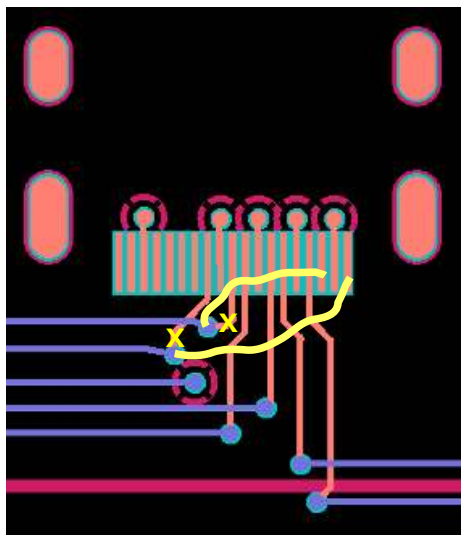
- 1) all cards show bad distributions of their APV dataframe
- 2) the first channel is not connected, the last is bad



Issue 2 is related to the connections of the analog HDMI cable: does not compromise the APVs functionality but is a limitation combined to the 15 channels MPDs.

Can be fixed in different ways:

- ← dirty: connect the two lines from ch3 to ch0 (yellow lines)
- a) firmware: either restore the last channel in the MPD or **allow to select the channel to disable**
- b) hardware: reroute by a male-female adapter



The diagnosis of issue 1



Trigger and Clock lines are not terminated

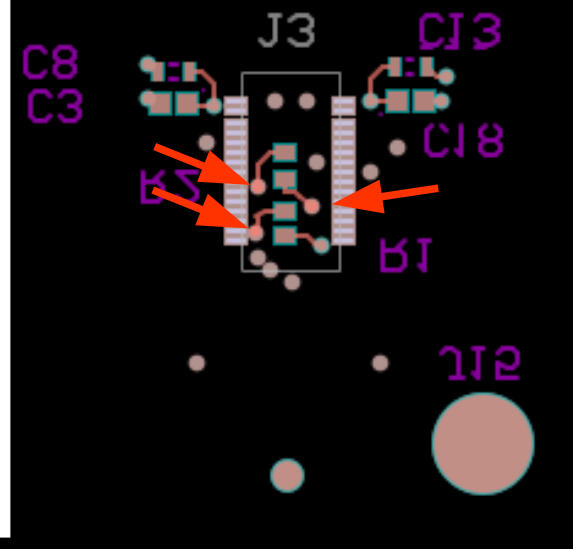
3 through-holes near the termination resistors of the lines:

- Trigger-positive
- Trigger-negative
- Clock-positive

are not connected on both sides as should be (red arrows) [the Clock-negative is fine]

Reason:

the original 4APV-backplane have through-holes (not used and not connected, except the Clock-n) on all cards except the last one where they are connected; we removed the last card to shorten the backplane; we did not noticed the difference!



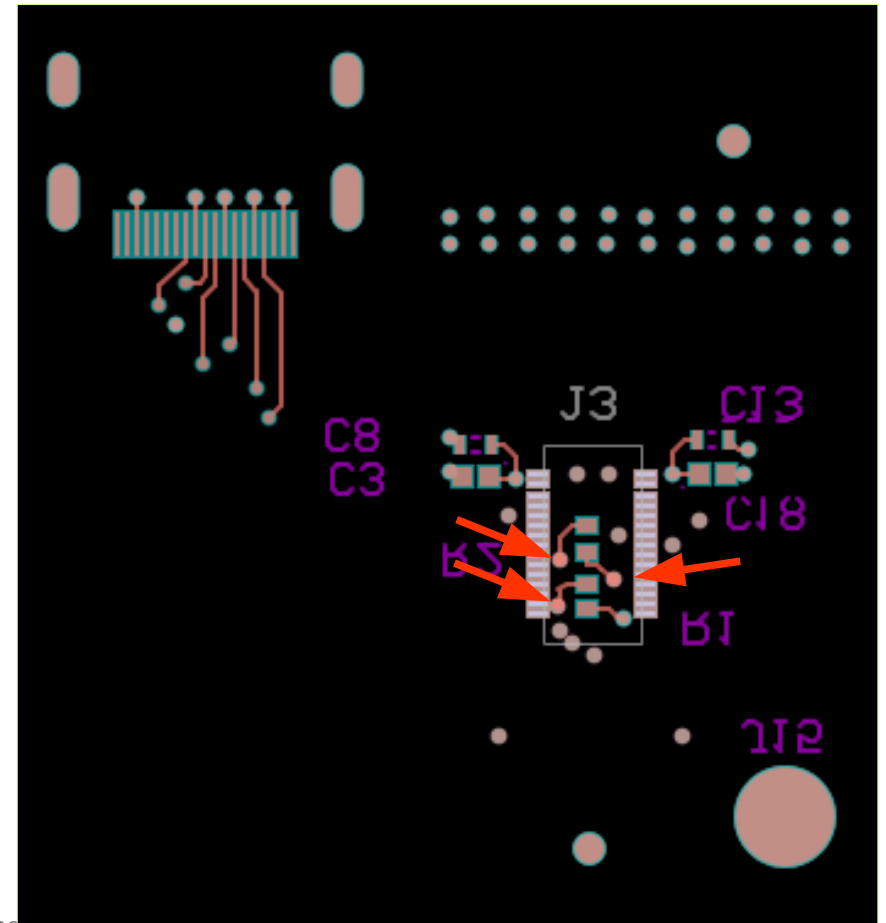
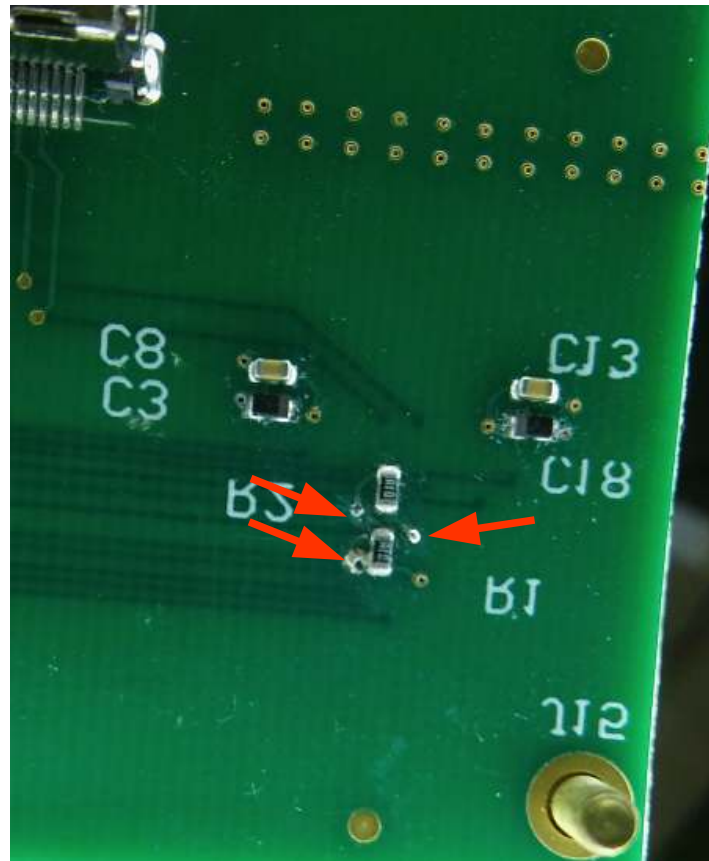
The quick cure of issue 1

- 1) unsolder the J3 connector (right →)
- 2) drill the three through-holes (0.4 mm bit)
- 3) fill the holes with conductive glue or similar to make contacts between the two sides
- 4) solder back the J3 connector

the through-hole are behind the connector



[dirty solution: connect the resistors and connector terminals by tiny wires, passing from one side of the backplane to the other]



Tests after fixing look fine

