

Advanced LIGO Engineering Change Request (ECR)

ECR Title: High Voltage ESD E3704, add LP filter to reduce bias noise due to DAC noise

DCC No: E1900071-v1

Date: 12 March 2019

Requesters: Carl Adams

Impacted Subsystem(s): SUS

Description of Proposed Change(s): (Per FRS 12243).

for channel 1 (the Bias channel)

1. Replace C25 with 10uF Poly film capacitor.
2. Replace R7 and R8 with 10Kohms

Reason for Change(s): Excess ESD bias noise was found to be due to input DAC noise. A LP filter mitigates the noise:

<https://alog.ligo-la.caltech.edu/aLOG/index.php?callRep=42963>

<https://alog.ligo-la.caltech.edu/aLOG/index.php?callRep=43010>

<https://alog.ligo-la.caltech.edu/aLOG/index.php?callRep=43080>

<https://alog.ligo-la.caltech.edu/aLOG/index.php?callRep=43081>

Estimated Cost: Negligible

Schedule Impact Estimate: It will take about 1 hour or less to do each chassis.

Nature of Change (check all that apply):

- Safety
- Correct Hardware
- Correct Documentation

- Improve Hardware
- Improve/Clarify Documentation
- Change Interface
- Change Requirement

Importance:

- Desirable for ease of use, maintenance, safety
- Desirable for improved performance, reliability
- Essential for performance, reliability
- Essential for function
- Essential for safety

Urgency:

- No urgency
- Desirable by date/event: before final acceptance
- Essential by date/event: _____
- Immediately (ASAP)

Impacted Hardware (select all that apply):

Repair/Modify. List part & SNs: LHO – S1101627, S1101603. LLO Unknown at time of writing.

Scrap & Replace. List part & SNs: _____

Installed units? List IFO, part & SNs: _____

Future units to be built

1. Impacted Documentation-

T1100231 ESD_User_Guide_E3074_rev8

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Disposition of the proposed change(s):

The disposition of this proposed engineering change request is to be completed by Systems Engineering and indicated in the “Notes and Changes” metadata field in the DCC entry for this ECR. The typical dispositions are as follows:

- **Additional Information Required:** in which case the additional information requested is defined. The ECR requester then re-submits the ECR with the new information using the same DCC number for the ECR but with the next version number.
- **Rejected:** in which case the reason(s) for the rejection are to be given
- **Approved**
- **Approved with Caveat(s):** in which case the caveat(s) are listed
- **TRB:** the ECR is referred to an ad-hoc Technical Review Board for further evaluation and recommendation. It is the System Engineer’s (or designee’s) responsibility to organize the TRB. The System Engineer (or designee) then makes a technical decision based on the TRB’s recommendation. Links to the TRB’s documentation (charge, memos, final report, etc.) are to be added to the “Related Documents” field for this ECR.
- **CCB:** a change request for approval of additional funds or schedule impact is to be submitted to the Configuration Control Board. Links to the CCB’s documentation (CR, etc.) are to be added to the “Related Documents” field for this ECR.

Concurrence by Project Management:

Acknowledgement/acceptance/approval of the disposition is to be indicated by the electronic “signature” feature in the DCC entry for this ECR, by one the following personnel:

- Systems Scientist
- Systems Engineer
- Deputy Systems Engineer