Advanced LIGO Engineering Change Request (ECR)

ECR Title: Low Voltage ESD System Component Value Changes

DCC No: E1500341-v1

Date: 11 August 2015

Requesters: Richard Abbott **Impacted Subsystem(s): ISC**
SUS

Description of Proposed Change(s): D1500129 is the chassis used to provide low noise drive to the ETM ESD elements. Two changes are desired, one in the normal quadrant drive path to increase the dynamic range at higher frequencies, and one to increase the pole frequency on the monitoring amplifier circuitry. These changes are not essential for operation of the LV ESD system, but have been implemented on LLO ETM-Y as a test case.

Reason for Change(s):
Additional dynamic range for the ESD quadrant drive paths could be beneficial to operation, but at the very least won't impact the noise performance. Until further running establishes a need, this change renders the design better, but may not be needed. The monitor circuit pole was set at 10Hz due to an error. The revised monitor pole frequency will be 1kHz; arguably, this won't give great visibility to the PI path signal, but it's not clear how this channel will be used at the present.

Estimated Cost: There is essentially no hardware cost associated with this change. The parts to be installed are commonly available in the LIGO inventory.

Schedule Impact Estimate: It will take several hours to physically make the changes and retest the associated functions. This can be done on a rotating basis utilizing the spares as a pivot point.

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: S1500066-S1500074**

☐ **Scrap & Replace. List part & SNs:_____**

☐ **Installed units? List IFO, part & SNs: _____**

☐ **Future units to be built**

1. **Impacted Documentation** D1500016, the LV Driver Main Circuit Board. E1500208, ETM LV Driver Test Procedure

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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