

# Advanced LIGO Engineering Change Request (ECR)

**ECR Title: ITM ESD Driver Compensation Modification**

**DCC No: E1600260-v1**

**Date: 15 August 2016**

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

**Added to **FRS 6055****

**Description of Proposed Change(s):** Add a 4.7pF capacitor into C25 of the ITM ESD Driver Main Board in the high-voltage bias section of the circuit.

Capacitor Manufacturer: American Technical Ceramics  
Manufacturer's Part Number: 800B4R7BT500XT  
DigiKey Part Number: 1284-1299-1-ND

**Reason for Change(s):** This capacitor is there to ensure stability of the HV stage, and to preclude a ~175kHz oscillation that has been seen on some units.

**Estimated Cost:** About \$5 per chassis in parts.

**Schedule Impact Estimate:** It will take about 0.5 hours or less to do each chassis plus the time to fetch them and put the chassis back in place. There is no appreciable change in any transfer function or noise parameter, so this modification should just be done and the unit returned to operation. The oscillation can be seen barely by looking at the voltage monitor circuit output on an oscilloscope.

**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: See Page 2  
\_\_\_\_\_
- Scrap & Replace. List part & SNs: \_\_\_\_\_
- Installed units? List IFO, part & SNs: \_\_\_\_\_

1. **Impacted Documentation** D1600122 (ITM LV Driver Circuit Board) will need a drawing revision detailing the changes.

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Future units to be built

## 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

Chassis Location and Status:

D1600259 – CIT – Needs Modification  
D1600260 – LLO – Modified Already  
D1600261 – CIT – Modified Already  
D1600262 – CIT – Modified Already  
D1600263 – CIT – Modified Already  
D1600264 – LLO – Modified Already  
D1600265 – LLO – Modified Already  
D1600266 – LHO – Needs Modification  
D1600267 – LHO – Needs Modification  
D1600268 – LHO – Needs Modification