Advanced LIGO Engineering Change Request (ECR)

ECR Title: ECR: **Add direct wire connection between RT and EtherCAT systems**	DCC No: E1300403-v1 Date: 5/8/2013

Requester: Daniel Sigg	**Impacted Subsystem(s):** ISC

Description of Proposed Change(s):

Proposed changes:

Add a direct wire connection between the real-time front end system and the EtherCAT slow controls system.

- End stations: Allocate 1 ADC/DAC & DAC/ADC pair
  Use ADC 2 DB9_5 and DAC 1 DB9_2
- Corner station: Allocate 2 ADC/DAC & DAC/ADC pair
  Use ADC 3 DB9_3 and DAC 1 DB9_3

Reason for Change(s):

This will allow the EtherCAT system to act as the state controller for the entire ALS locking sequence. This will also allow for a fast switch over between ALS and LSC.

Estimated Cost:

Requires E1300402
9 Dual DSUB Breakout Panel (D1201450) ($2000)
New wiring ($1200)

Schedule Impact Estimate:

None.

Nature of Change (check all that apply):
- [ ] **Safety**
- [ ] **Correct Hardware**
- [ ] **Correct Documentation**
- [x] **Improve Hardware**
- [ ] **Improve/clarify Documentation**
- [x] **Change Interface**
- [ ] **Change Requirement**

Importance:
- [x] **Desirable for ease of use, maintenance, safety**
- [ ] **Desirable for improved performance, reliability**
- [x] **Essential for performance, reliability**
- [ ] **Essential for function**
- [ ] **Essential for safety**

Urgency:
- [ ] **no urgency**
- [x] **desirable by date/event: __June 2013__**
- [x] **Essential by date/event: __HIFO_Y___**
- [ ] **Immediately (ASAP)**

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Impacted Hardware (select all that apply):

☐ **Repair/modify. List part & SNs:** _____

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

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

☐ **Future units to be built**

Impacted Documentation (list all dwgs, design reports, test reports, specifications, etc.):

D1100170, D1200666, E1200408, D1101904, D1100670, E1300151, D1002803, D1001459, T1100472

Disposition (to be completed by Systems Engineering):

☐ **TRB**
☐ **CCB**
☐ **Approved**

☐ **Additional information required. Define:**

[Requester re-submits with new information with the same DCC E-number for the ECR but the next version number.]

Concurrence by Project Management: (Acknowledged Electronically in DCC)

Project Systems Engineer: Dennis Coyne	**Project Systems Scientist**: Peter Fritschel