

# Advanced LIGO Engineering Change Request (ECR)

**ECR Title: IO Extender Inline On-Off Switch**

**DCC No: E1300855-V1**

**Date: 11/07/2013**

**Requester: David Kinzel**

**Impacted Subsystem(s): ALL at LHO that are participants of the nature of owning one or more IO Extenders.**

**Description of Proposed Change(s):**

Insert into the DC path of every IO extender (D1001715) an inline on-off switch. This is done at LLO.

**Reason for Change(s):**

Sometimes the IO extenders need to be truly turned off.  
In addition, the DC pigtails need some sort of strain relief.

**Estimated Cost:**

## Bill of Material

IO Extender Inline On-Off Switch								Approximate	Quantity	30	
Item	Part Type	Description	Manufacturer	Supplier	Supplier Part Number	Quantity	Unit	Unit Cost	Extended	Total count	Total cost
1	Cord	Power Cord, Feedthru Switch, 8', SJT, 10A	Power First	Grainger	1TNA8	1	@	30.00	30.00	30	900.00
2	Connector Shell	Conec 3 Pin Socket (2 Female, Center Male) Solder pin, straight 20 A, D= .077" 1.95 mm 4-40 UNC threaded insert	Conec	Digi-Key	303W3CSXX48A30X	1	@	4.00	4.00	30	120.00
3	Connector Shell	3W3C Male Combo Shell - No Power	Conec	Digi-Key	303W3CPXX99A10X	1	@	1.50	1.50	30	45.00
4	Connector Contact	20 AMP Female Power Contact	Conec	Digi-Key	132C11029X	3	@	1.00	3.00	90	90.00
5	Connector Contact	20 AMP Male Power Contact	Conec	Digi-Key	131C11029X	3	@	1.00	3.00	90	90.00
6	Backshell	Hood, DB15 Metal	LCOM	LCOM	5bC15A6	2	@	3.00	6.00	60	180.00
7	Heat Shrink	Yellow Heat Shrink	-	-		6	in	0.05	0.30	180	9.00
8	Barrel Nut	STANDOFF .232"	LCOM	LCOM	5BH	2	@	0.25	0.50	60	15.00
	Total Material								48.30		1449.00
	Labor					1	@	0.00	0.00	30	0.00
	Total Cost								48.30	30	1449.00

**Schedule Impact Estimate:**

None. This is not part of aLIGO, so "schedule" is not an applicable roadmap. However there is an impact on operations. It will take approximately 5 minutes per IO chassis to install this hardware. Whatever the cost is to the rebooting of the front ends will be a multiple of the multiple of IO extenders shut down at any given event.

**Nature of Change (check all that apply):**

- Safety
- Correct Hardware
- Correct Documentation

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

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## 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: 1/1/2014
- Essential by date/event: \_\_\_\_\_
- Immediately (ASAP)

## 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.):

Since there is no documentation for how to hook up an IO extender, there is probably no impact on it.

## 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 of the following personnel:

- Systems Scientist
- Systems Engineer
- Deputy Systems Engineer