



LIGO Laboratory / LIGO Scientific Collaboration

LIGO-E040464-00-C

LIGO

9 November 2004

LIGO Electronics Hardware Transfer Checklist

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Distribution of this document:

This is an internal working note
of the LIGO Project.

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1. Purpose and Scope
 - 1.1. This document presents the minimum requirements for transferring a new or existing design from the point of manufacture or design to the point of use.
 - 1.1.1. Examples of design transfer are: Observatory to observatory, remote design facility to observatory etc.
 - 1.2. Upon meeting these requirements, one can have confidence that the new design will be easily integrated into LIGO, and avoid simple but persistent shortfalls that contribute to wasted time and effort.
2. Applicability
 - 2.1. Any electronics design intended for permanent installation into an observatory.
 - 2.2. Temporary designs that are of an exploratory nature still fall under these guidelines.
 - 2.2.1. Examples of this are temporary daughter cards designed to explore the suitability of an upgrade.
 - 2.3. All technical documentation must be issued by a DCN (Document Change Notice) signed by the LIGO Chief Engineer and submitted to the DCC prior to shipment. Blank DCN forms and Travelers (see below section 3.2.2) are available on the bulletin board portion of the LIGO website (www.ligo.caltech.edu)
3. Details of Checklist for electronics hardware Transfer
 - 3.1. Designated recipient**
 - 3.1.1. Before shipping a design, ensure the recipient is aware of the shipment. Include such details as: Delivery date, packing list, number of boxes and any special handling precautions.
 - 3.2. Relevant documentation
 - 3.2.1. **Schematic diagram** - in accordance with 3.2.1 above - in PDF format
 - 3.2.2. **Electronics traveler**. A traveler establishes a history for an electronics module. It will tie a specific serial number unit to any changes or exceptions noted during its service.
 - 3.2.3. **Electrical test results** must accompany each system.
 - 3.2.4. **A block diagram** needs to be available to give perspective to the design.
 - 3.2.5. Details explaining **interfaces to existing observatory facilities** are essential. Nominally this is in the form of a system-wiring diagram showing the origin and destination of every interface. The diagram should also include such items as required connectors, cable types and pin-outs, grounding scheme, physical location, power requirements etc. Descriptions such as “to DAQ” are insufficient, DAQ channel and physical location is needed. Software databases frequently need modification. Ensure the details of database modifications are clear to the designated recipient
 - 3.2.6. Due to possible delay in availability, **documentation should be made available on the web separately**. The designated recipient should know the location of the documentation prior to shipment.

Checklist for transfer of an electronics design

Designated Recipient informed of pending transfer

Schematic diagram complete

Traveler filled out and included with item to transfer

Electrical test results included with item to transfer

Block diagram available to Designated Recipient

Interface details made available to Designated Recipient

All schematics, DCNs and wiring diagrams submitted to DCC and made available by alternate means (web, email etc.) for Designated Recipient