*LIGO Laboratory / LIGO Scientific Collaboration*

LIGO-E1400194-v1 *LIGO* April 7, 2014

*ISC Common Mode Servo & Common Mode Summing Node:* Acceptance Documentation

P. Fritschel, D. Sigg

This is an internal working note

of the LIGO Laboratory.

|  |  |
| --- | --- |
| **California Institute of Technology****LIGO Project** | **Massachusetts Institute of Technology****LIGO Project** |
| **LIGO Hanford Observatory** | **LIGO Livingston Observatory** |

http://www.ligo.caltech.edu/

# Requirements documentation

This acceptance package includes the Common Mode Servo chassis and the Common Mode Summing Node chassis. The former is a new version of the initial LIGO CM servos, while the latter is a new module needed for aLIGO. Requirements are given in the specification documents:

* Common Mode servo: [LIGO-E1200177](https://dcc.ligo.org/LIGO-E1200177)
* CM Summing Node: [LIGO-E1200178](https://dcc.ligo.org/LIGO-E1200178)

# Design overview and detailed design documentation

1. *Final Design Document (FDD):*

The specification documents listed above, combined with the board schematics, make up the final design documentation. Both are in the DCC tree for each module:

* aLIGO, ISC, Electronics, Common Mode Servo: [LIGO-E1200175](https://dcc.ligo.org/LIGO-E1200175)
* aLIGO, ISC, Electronics, Common Mode Summing Node: [LIGO-E1200201](https://dcc.ligo.org/LIGO-E1200201)

*b) Review reports:*

* CM servo: no review report; history is a bit lost here – it seems a review was initiated in March 2010, but the trail runs cold at that point
* CM Summing Node: no formal review, just presented at an ISC group meeting
1. *Supporting design documents:*

Besides the above-mentioned specifications documents, the DCC tree includes:

* CM Servo: Technical note: [LIGO-T040148](https://dcc.ligo.org/LIGO-T040148); block diagram: [LIGO-D1002416](https://dcc.ligo.org/LIGO-D1002416)
* CM Summing Node: block diagram: [LIGO-D1300782](https://dcc.ligo.org/LIGO-D1300782)

*d) Drawings:* Schematics and assembly drawings are all linked in the DCC tree.

*e) Bill(s) of Materials (BOM):* The DCC entry for each board includes a zip file that contains the BOM for that board.

*f) Interface control:* none

*g) Software:* not relevant

*h) Design source data:* Altium project files are included in the zip file included in the DCC entry for each board.

# Materials and fabrication specification

No special materials.

# Parts and in-process spares inventoried

All modules are entered in ICS under the assembly D-number:

* CM servo: [LIGO-D0901781](https://dcc.ligo.org/LIGO-D0901781) (qty 28; usage: 6 per IFO, 18 total)
* CM summing node: [LIGO-D1200148](https://dcc.ligo.org/LIGO-D1200148) (qty 5; usage: 1 per IFO, 3 total)

The chassis accounting, including function, is also found in [LIGO-E1100274](https://dcc.ligo.org/LIGO-E1100274).

# Assembly procedures

There is an assembly drawing for each module; these include some minor assembly tips:

CM servo: [LIGO-D0901781](https://dcc.ligo.org/LIGO-D0901781)

CM summing node: [LIGO-D1200148](https://dcc.ligo.org/LIGO-D1200148)

# Installation procedures

None.

# Test documents

*Test procedures:*

CM servo: [LIGO-E1100429](https://dcc.ligo.org/LIGO-E1100429)

CM summing node: [LIGO-E1200086](https://dcc.ligo.org/LIGO-E1200086)

*Test reports:*

CM servo: [LIGO-E1200673](https://dcc.ligo.org/LIGO-E1200673); this contains links to all the CM servo S-numbers, wherein the test reports are found.

CM summing node: [LIGO-E1200179](https://dcc.ligo.org/LIGO-E1200179); this contains links to all the CM summing node S-numbers, wherein the test reports are found.

*Test rigs:*

CM servo: [LIGO-E1200143](https://dcc.ligo.org/LIGO-E1200143) & [LIGO-E1200144](https://dcc.ligo.org/LIGO-E1200144)

# User interface software

Not applicable.

# Operation Manual

None.

#  Safety

Not applicable*.*