LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY

LIGO Laboratory / LIGO Scientific Collaboration

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ISC Signal Conditioning Electronics: Acceptance Documentation

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This is an internal working note
of the LIGO Laboratory.

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1 Requirements documentation

SCOPE: ISC signal conditioning electronics consists of: Whitening/Variable-Gain Amplifiers (VGA); Quad Photodetector Transimpedance Amplifiers; Anti-alias (AA) and Anti-image (AI) amplifiers. The AA/AI amplifiers are a common design across aLIGO; their design was done within DAQ, and is not covered here. Only the production information for the ISC AA/AI units is included here.

Requirements documentation:

- Whitening/VGA. Req's found in section 2 of the design doc: LIGO-T1000321
- QPD Amp. Req's found in section 6.1/6.2 of the design doc: LIGO-T0900423

2 Design overview and detailed design documentation

a) Final Design Document (FDD):

Type	DCC
Whitening/VGA	LIGO-T1000321
QPD Transimpedance Amp	LIGO-T0900423

b) Review reports:

- FDR report relevant to Wh/VGA: LIGO-T1000334; see p10 – review comments were all acted on
- FDR report for QPD: LIGO-L1000094-v1 (no actions)

c) Supporting design documents: Everything is in the DCC tree:

aLIGO Document Tree > aLIGO, ISC > aLIGO, ISC, Electronics > aLIGO, ISC, Electronics, Analog:

- aLIGO, ISC In-vacuum, QPD: LIGO-E1200539
- aLIGO, ISC, Electronics, Whitening/VGA Module: LIGO-E1200425
- ISC AA chassis: LIGO-D0902783
- ISC AI chassis, included in: LIGO-D070081

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

e) Bill(s) of Materials (BOM): The assembly file card for each module type includes the bill of materials.

f) Interface control: none

g) Software: TwinCAT Library for ISC Whitening Chassis, LIGO-E1200424

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

3 Materials and fabrication specification

No special materials.

4 Parts and in-process spares inventoried

All modules are entered in ICS. Quantities:

Module	Qty in ICS	Needed for 3 IFO	Spares
Whitening/VGA: D1002559	88	81	7
QPD TransAmp, D1002481	35	30	5
ISC AA, D0902783	48	45	3
ISC AI, D070081	19	15	4

5 Assembly procedures

See assembly drawings for each chassis type (listed above).

6 Installation procedures

None.

7 Test documents

Test procedures:

Whitening/VGA: LIGO-T1100291

QPD TransAmp: LIGO-T1100160

Test reports:

Test reports are filed in the S-number file card for each serial number.

8 User interface software

Not applicable.

9 Operation Manual

Not applicable.

10 Safety

Not applicable.