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Input Optics

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1 Introduction

This is the top level document for the aLIGO Input Optics (IO) acceptance documentation. The IO is a complex system and the documentation starts at different top level documents. These fall in three categories:

Top Level:

1. General documents related to the requirements, final design, review, hazards, and testing are.

   a. [T020020](): Advanced LIGO Input Optics Design Requirements Document

   b. [T0900386](): Advanced LIGO Input Optics Final Design Document

   c. [L1000062](): Review Committee Report on the Input Optics FDR Document

   d. [L0900192](): AdvLIGO IO Hazard Analysis

   e. [E1300439](): aLIGO IO Testing and Commissioning Documentation

   Links to related documents are available under these DCC entries

2. Layouts and component lists for each of the four major IO areas (PSL, HAM2, HAM3, IOT tables).

   a. [T1300019](): IO Components on PSL Table, Acceptance Documentation

   b. [T1300021](): IO HAM 2

   c. [T1300022](): IO HAM 3

   d. [T1300023](): Inpot Optics Tables IOT

3. Documentation for each of the five major subsystems (EOM, Power Control, Mode Cleaner, Faraday Isolator, and HAMAux).

   a. [T1300084](): IO EOM

   b. [T1300089](): IO Power Control

   c. [T1300090](): IO Mode Cleaner

   d. [T1300091](): IO Faraday Isolator

   e. [T1300020](): IO Ham Auxiliary Suspensions

Below the top level documentation is a document tree leading to more and more detailed information including materials, assembly and installation instructions, parts and spares, test plans and results, user software descriptions and links to the software, user manuals, and troubleshooting documentation as needed.

2 Requirements documentation:

The top level IO design requirements document for the input optics is [T020020–04](). This document includes requirements for power throughput, higher

order mode content, mode matching, length stability for the mode cleaner, optical isolation, and requirements associated with the modulation. The requirements for the pointing of the laser beam are derived in T0900142.

3   Design overview and detailed design documentation:

The final design document T0900386 has been updated and includes several links to design documentation for the various IO components and areas as defined in section 1 of this document.

4   Materials and Fabrication specifications:

All materials and fabrication specifications are discussed at the component and area level as defined and linked in section 1 of this document.

5   Parts and spares

All in-vacuum parts are hopefully in ICS including the parts for the stored interferometer. Nearly all out-of vacuum parts are in ICS as well although they are not longer needed in ICS.

6   Assembly procedures:

The assembly procedure for each component or subsystem is linked to the IO main area or IO main component as listed in section one.

The installation procedures for the four distinct IO areas are all spelled out in the general IO installation plan. Specific instructions for components within each area are available under these links. In addition, specific instructions for the installation of each of the five major subsystems are available under the subsystem links listed above.

Area	Link
PSL table	T1300019
HAM 2	T1300021
HAM 3	T1300022
IOT 1 & 2	T1300023

7   Test documents

E1300439: aLIGO IO Testing and Commissioning Documentation includes links to the testing and commissioning of the IO Faraday Isolator, the PSL tables, the EOMs, the IMCs, and the IOT Table testing for both interferometer.

8   User interface software

The IO does not produce any user interface software.

9   User's manual:

User manuals and other instructional material is available at the main component/area level as defined in section one.

10   Troubleshooting:

Not applicable.

Acronyms