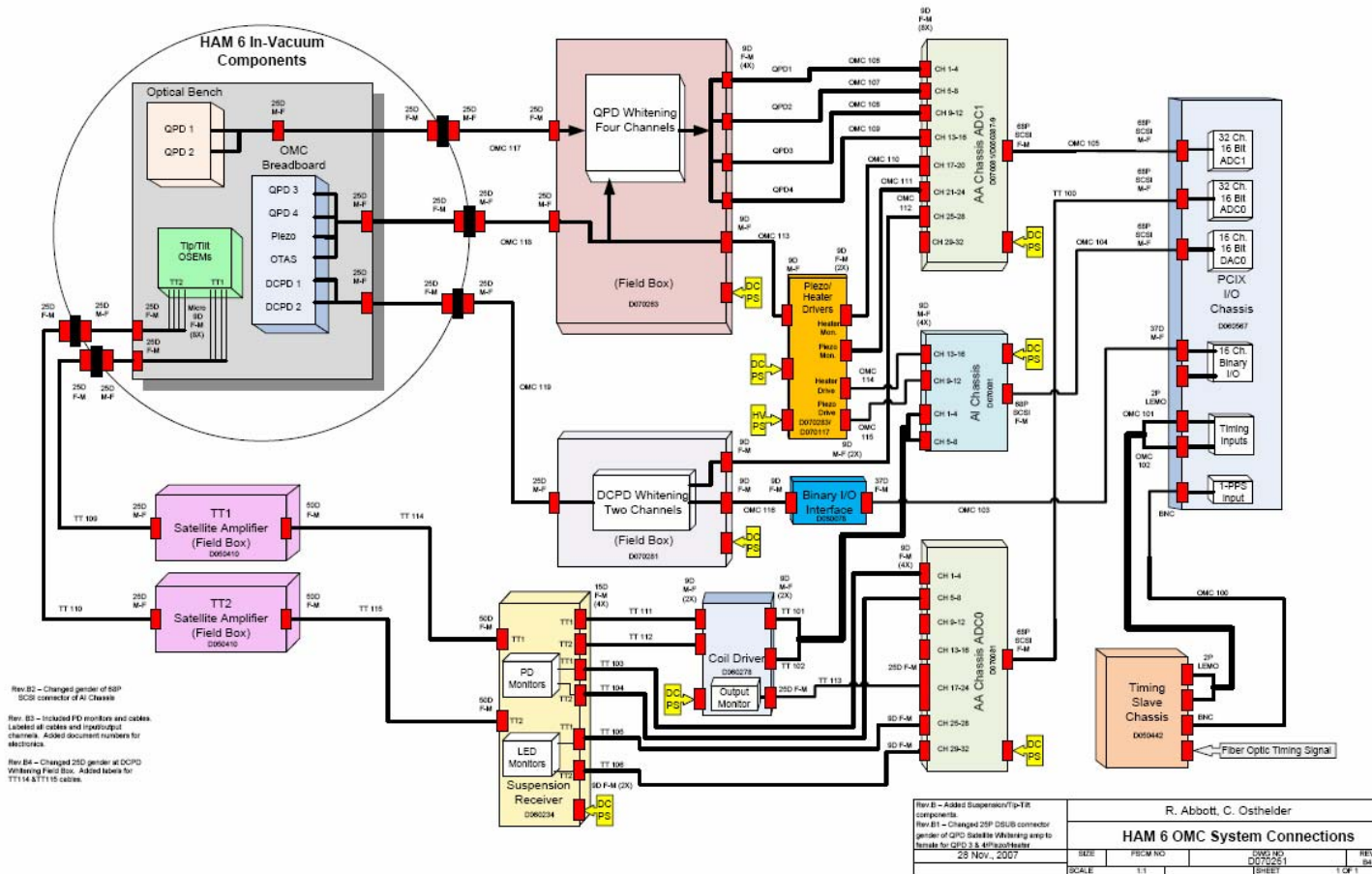# Overview of ELIGO Output Mode-cleaner ISC Controls

Weekly CDS Meeting
15 January 2008

Rich Abbott, Charles Osthelder
CIT

Very Busy Diagram
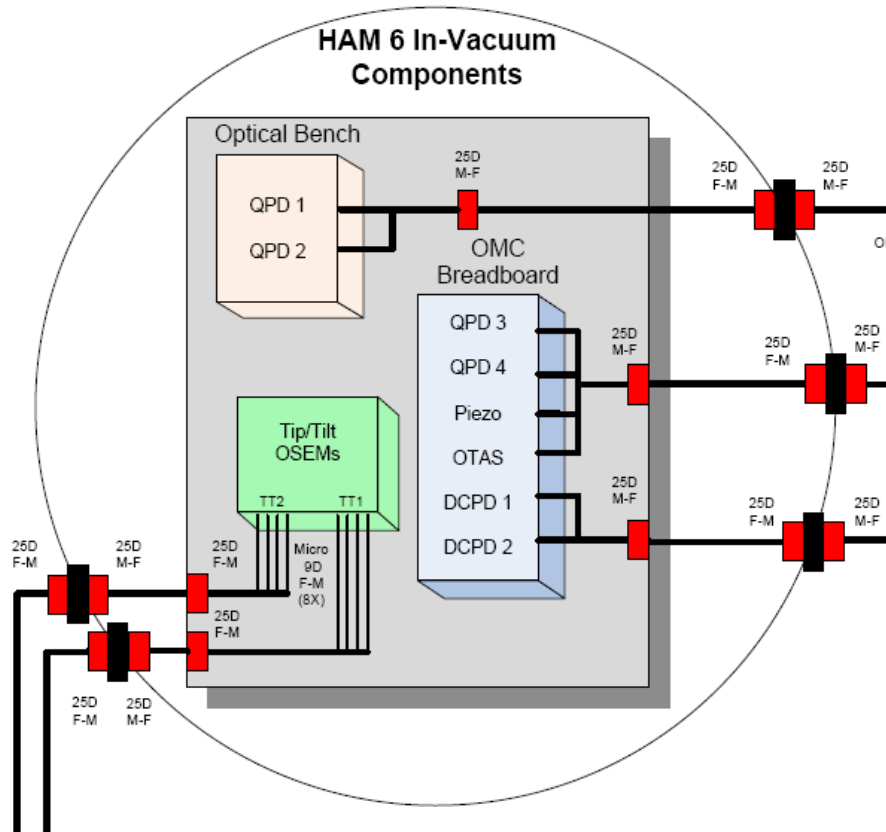
Not So Busy Part

» **Components in HAM6**

- **Opted for two racks to have room for growth**
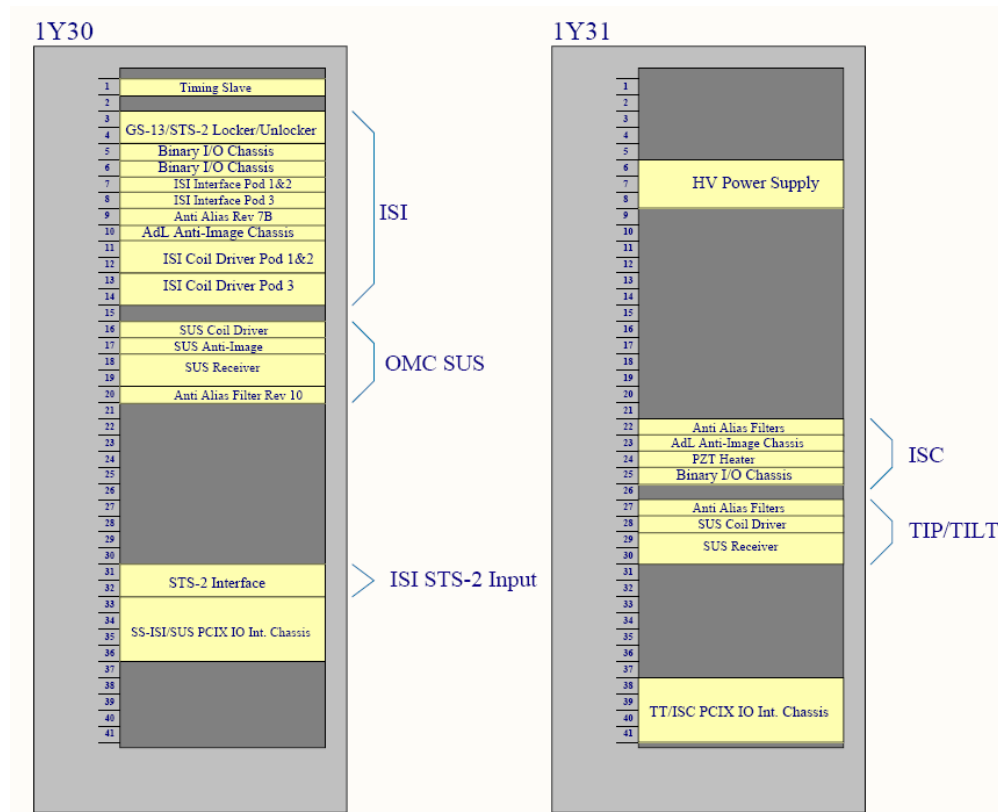
» **The "Breadboard" used to mount the OMC cavity parts**
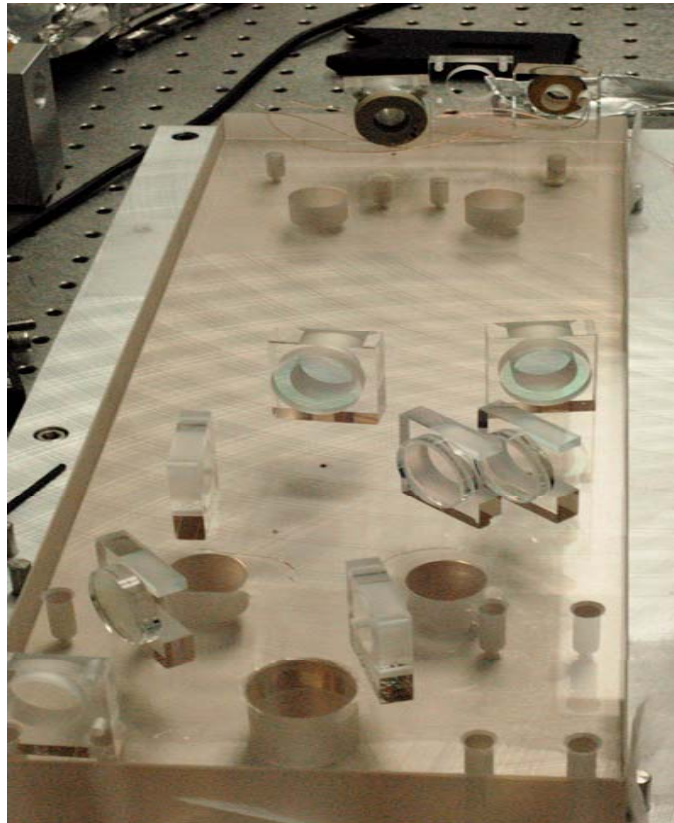
OMC, ISC Components

- **The main ISC components of the Eligo OMC are:**
  - » **Two in-vacuum DC Photodetectors**
    - – **Used to detect the transmitted light through the OMC optical cavity as part of the DC readout technique.**
   - – **All parts are designed to be cooled solely by radiation cooling**

49.00mm

19.00mm

Right Side View

40.00nm

48.00mm

Front View
(no coating)
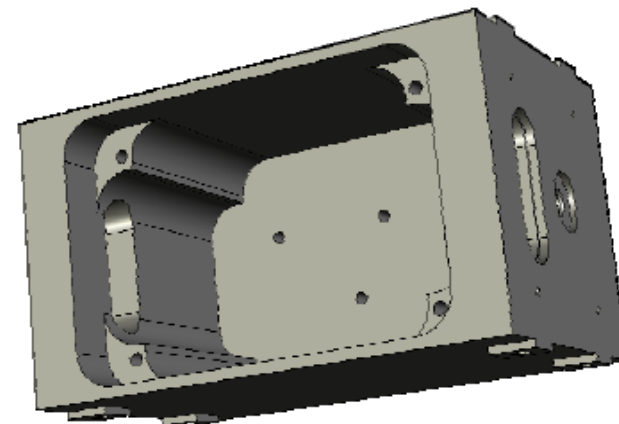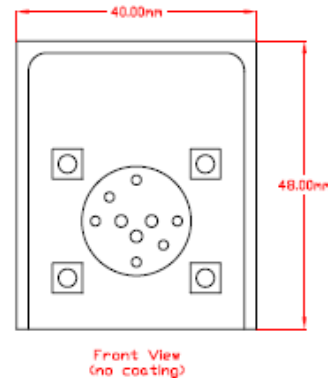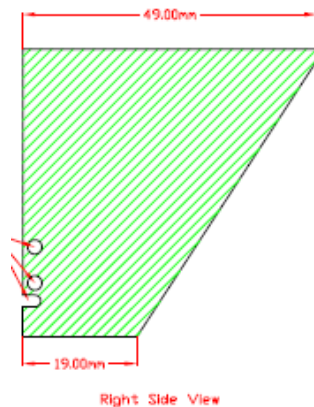
» **OMC Thermal Actuation System (OTAS)**

– **Consists of an aluminum cylinder heated at one end**

– **Provides the means for slow, quiet adjustment of the OMC optical cavity length for coarse frequency control**

– **A few degrees C is all that's needed**
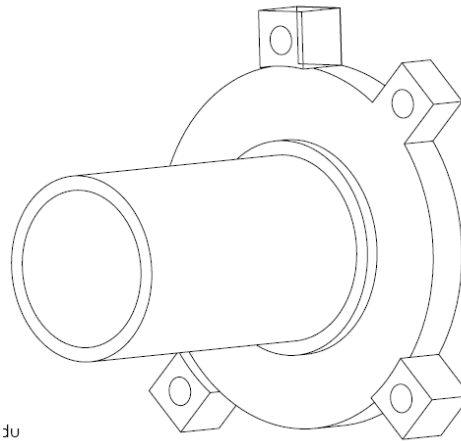
» **Piezo Actuator**

   – **Provides the means for fast adjustment of the OMC optical cavity length for fine frequency control.**

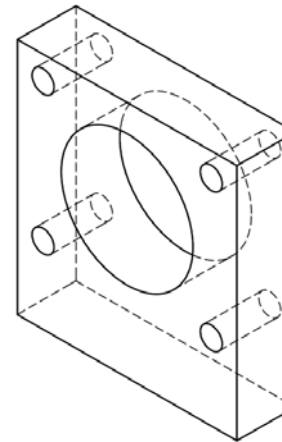   – **Piezo is driven from 0 to ~300 volts by a newly designed HV driver**
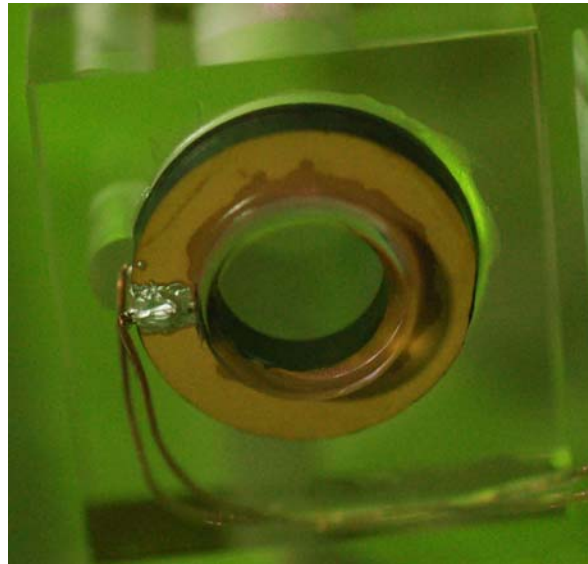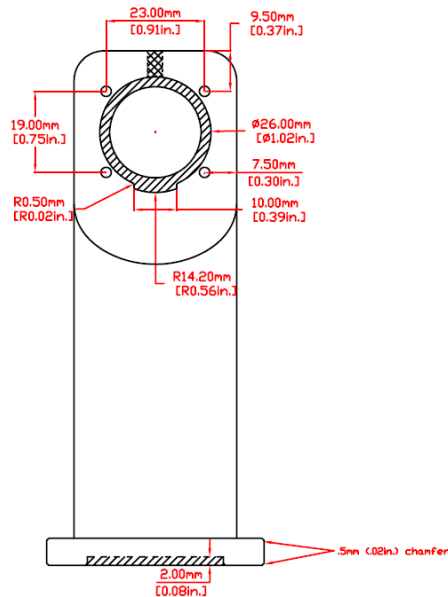
» **4 Quadrant Photodetector (QPD)**

- **Two QPDs are located on the glass breadboard for the OMC, an additional pair are located on the main optical table**

- **Signals transmitted out of the vacuum system on shielded cable**

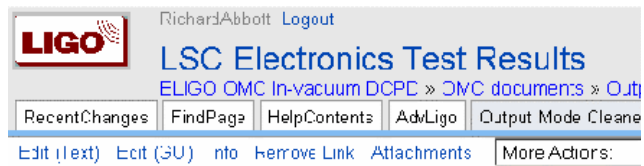- **A "sense-wire" for each QPD's wiring to pickup ambient noise**

» **Tip Tilt Steering Stages (Developed at ANU)**

– **Two Tip/Tilt stages are located on the optical table in HAM6. They provide angle and position adjustment to steer into the OMC cavity**

Documentation
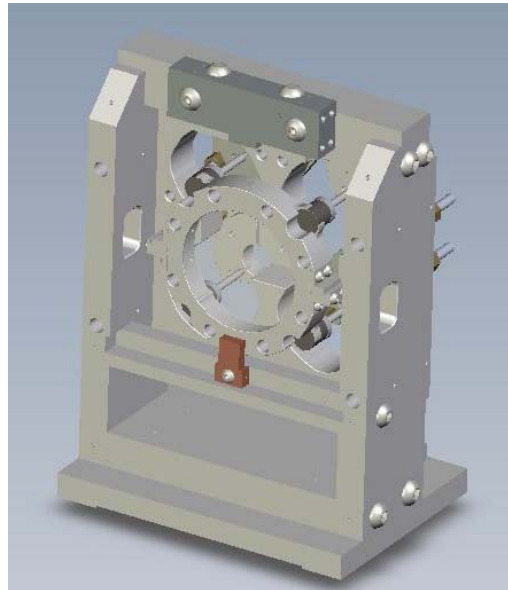
- ## DCC and Wiki http://lhocds.ligo-wa.caltech.edu:8000/advligo/LSC_Electronics_Test_Results

  - » **Baseline Data Examples**

LIGO-G080011-00