LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY
- LIGO -
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Naming Convention and Interface Definition for Optical Lever

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Detector Group

This is an internal working note
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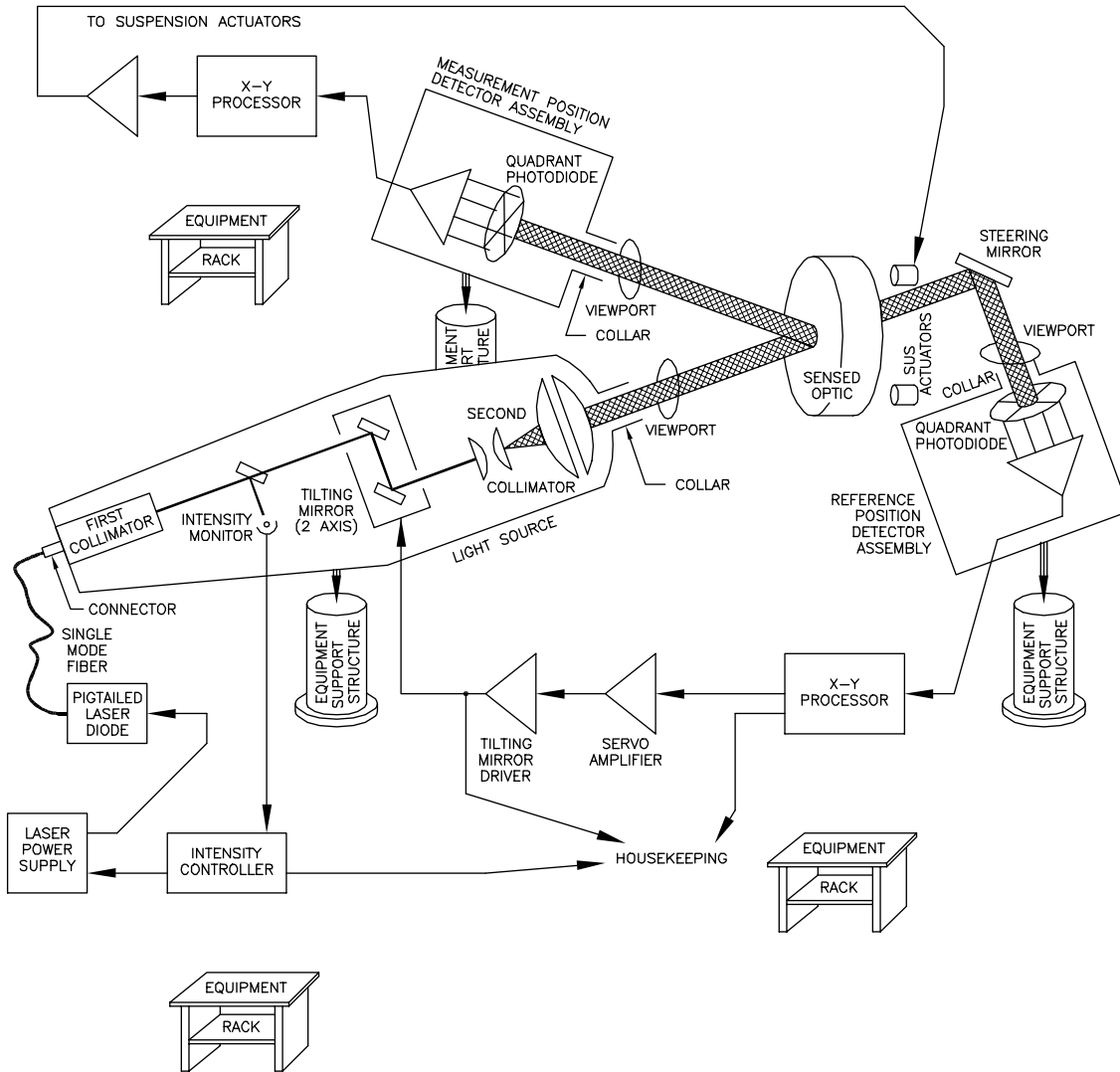
1 NAMING CONVENTION

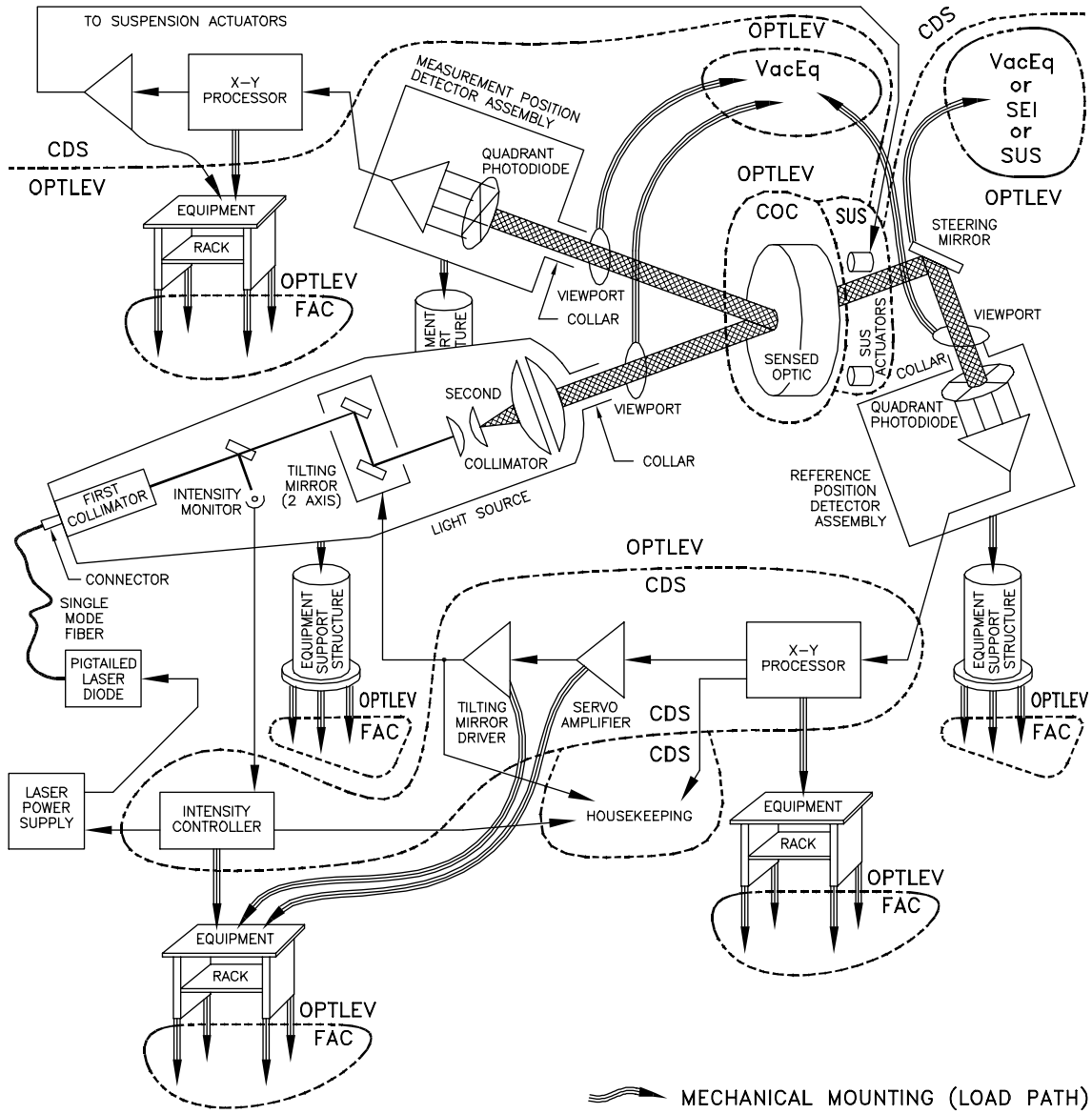**Figure 1: Naming Convention for the Optical Lever components.**

2 MECHANICAL INTERFACES

Figure 2: Mechanical Interfaces between OptLev and other Detector Subsystems.

Mechanical Mounting Interfaces			Drawing/ Doc #
OPTLEV Mounting Surface	*Other Subsys Mounting Surface*	*Interface and its Characteristics*	
Base of Equipment Rack	Floor (FAC)	Table legs that are not bolted to the floor	
Shelves on or slots in Equipment Rack	CDS components • Intensity Cont. • Tilt Mirror Drive • Servo Amp (2) • X-Y Proc. (2)	TBD	
Base of Equipment Support Structures	Floor (FAC)	Kinematic Base w/ clamp	
Viewports	VacEq surface to depend on Sensed Optic location	High Vacuum Flange, Style, Bolt Circle or Clamps, and Seal TBD	
Steering Mirror Support	VacEq, SEI, or SUS depending on Sensed Optic location	TBD	
Cables (CDS)	On Floor? (FAC) or in cable trays (FAC or OptlLev?)	TBD	
Critical Dimension/Size			*Drawing/ Doc #*
• Placement of Light Source with respect to its Viewport. • Placement of Steering Mirror(s) with respect to Light Source Viewport and Reference Position Detector Viewport • Placement of Reference Position Detector w.r.t. its Viewport. • Placement of Measurement Position Detector Viewport w.r.t. OptLev reflected beam. • Placement of Measurement Position Detector w.r.t. its Viewport.			

Table 1: Mechanical Interfaces between OptLev and other Detector Subsystems
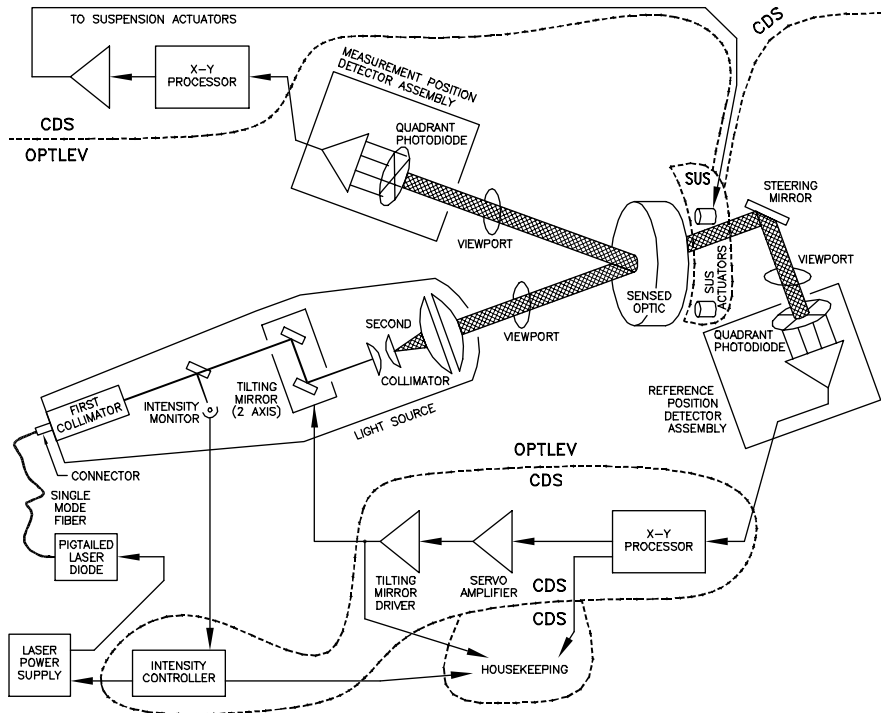
3   SIGNAL INTERFACES

Figure 3: Signal Interfaces between OptLev and other Detector Subsystems.

OPTLEV Control Signals

Inputs
  • Laser Diode Intensity Control (CDS)
  • Tilting Mirror Drive (CDS)
 	
Outputs
  • Laser Diode Intensity Monitor (CDS)
  • Reference Position (CDS)
  • Measurement Position (CDS)

OPTLEV Monitor Signals

Outputs
  • Reference Position (CDS)
  • Tilting Mirror Drive (CDS)
  • Laser Diode Intensity (CDS)

Table 2: Signal Interfaces between Optlev and other Detector Subsystems
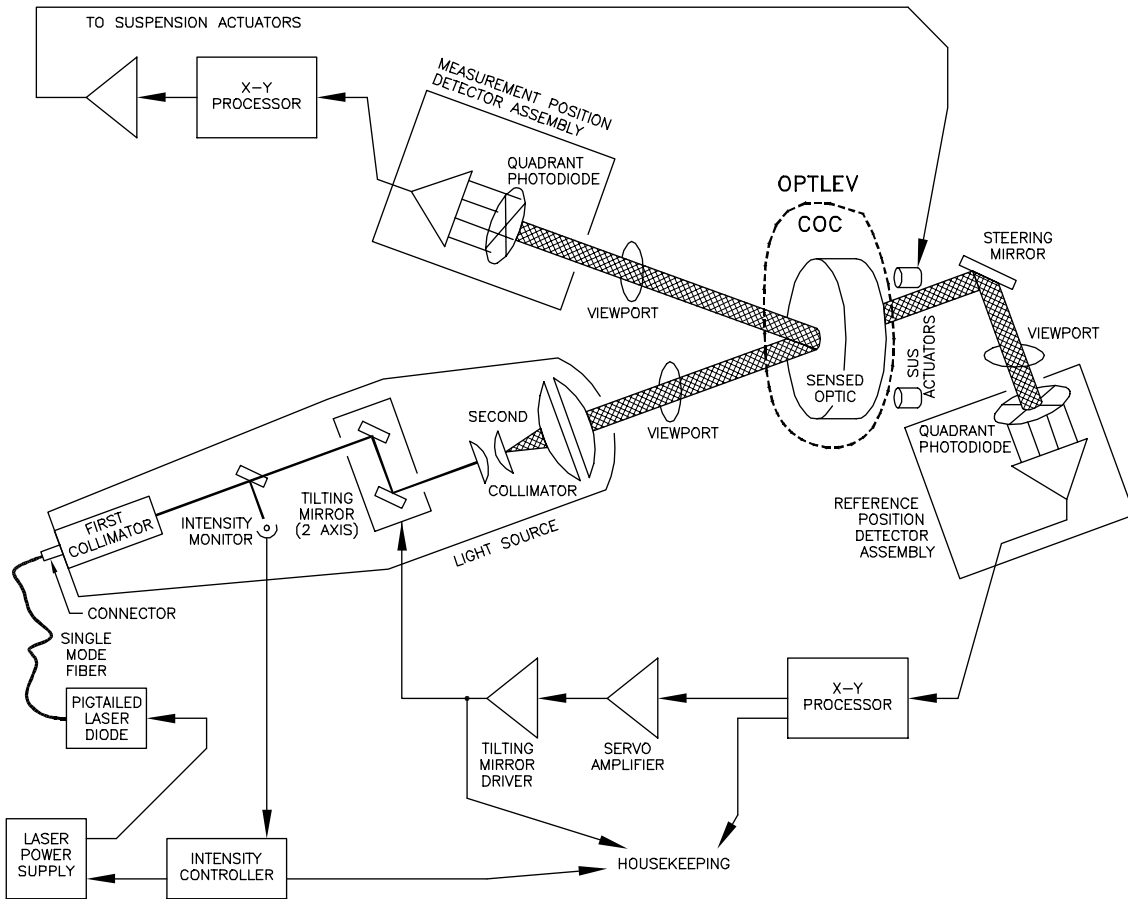
4   OPTICAL INTERFACES

Figure 4: Optical Interfaces between OptLev and other Detector Subsystems.

OptLev Interface	*Other Subsys Interface*	*Interface and Its Characteristics*	*Drawing/ Doc #*
Optlev Beam	Sensed Optic (COC)	• wavelength • beam size • power • optic reflectance and transmittance at the Laser Diode wavelength	

Table 3: Optical Interfaces between OptLev and other Detector Subsystems

5 INTERFACES EXTERNAL TO THE DETECTOR

These fall naturally into the description of interfaces above, and therefore no separate accounting of them has been made.