CMS Mtg @ CERN
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Kaori Maeshima (FNAL)

Results from the ISR alignment test for the EMU System

Purpose

1. Setup a complete hardware prototype of one Transfer Line with a connection to SLM Line.
2. Demonstrate readout and analysis of all system components.
3. Study the EMU performance (resolutions, short/long term stabilities, etc.)
4. Demonstrate EMU performance with Link and Barrel alignment systems.

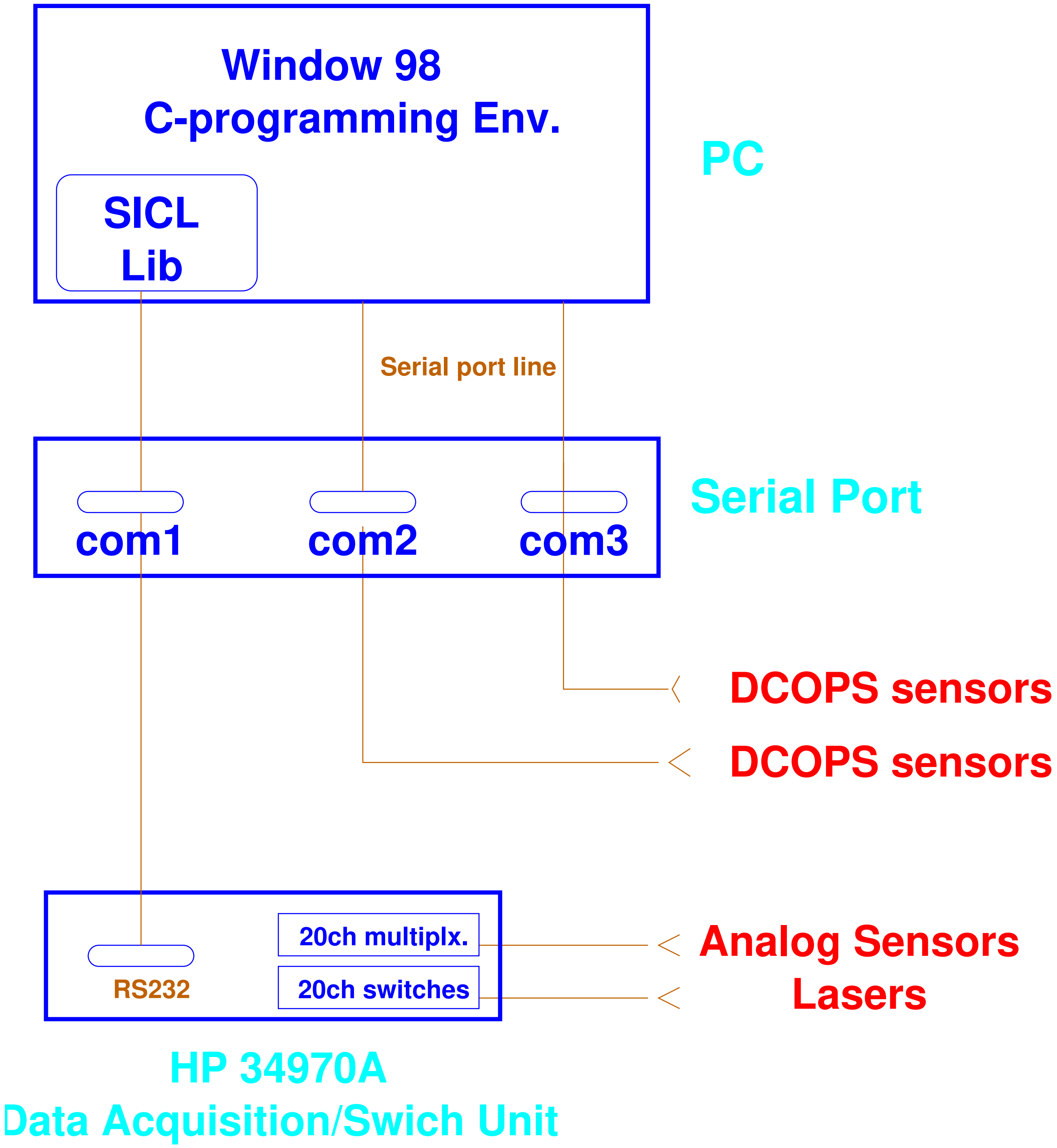
Test Schedule

1. June 2000: Test of EMU system only
2. July/Aug 2000: Initial joint tests with Link/Barrel
3. Sept. 2000: Joint tests with Link/Barrel

Outline of rest of this talk

1. A Brief Description of the ISR Test Setup
2. Findings (work in progress)

DAQ Configuration



Offline Analysis Steps

1. Perform signal + background fit to each ccd readout and obtain centroid of the laser beam.(First Level Analysis Program)
   $\longrightarrow$ DONE
2. Study the short/long term stabilities and intrinsic ccd resolutions.
   $\longrightarrow$ nearly complete
3. Using the photogrametry information of each sensor, survey positions of es10, et2, and et3, and COPS card calibration numbers, together with the pixel laser centroid positions, find the location of the sensors in the CMS coordinate system. (et1 and es1 is mechanically fixed.) (Second Level Analysis Program)
   $\longrightarrow$ work in progress
4. Do the global alignment study with the Link and Barrel system information (COCOA)
   $\longrightarrow$ work in progress

Comments

1) We had a data format problem. This has slowed down the analysis significantly. This must be fixed in the DSP.

2) The “temporary” filter solution (colored electric tapes) has caused various problems. The filter must be fixed properly. (work in progress).

Findings:

1. For most of the CCD's, the intrinsic short term resolution (rms) is better than 1 pixel ($< 14\ \mu$ m).
2. The laser 301 and 303 centroinds were generally stable to better than a few pixel width over a few days (intermediate) period ($< 30\ \mu$ m).
3. We are still looking into the long term stability by comparing June and July data. The first look shows relatively large shifts in the centroid positions. We are currently looking into more in details.
4. Laser 302 (both vertical and horizontal) had a problem with grounding. The angles of the laser beams were jumping to cause more than 1mm shift at the far sensors.