HVB Assembly

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2/7/15

Automated Test of High Voltage Assemblies

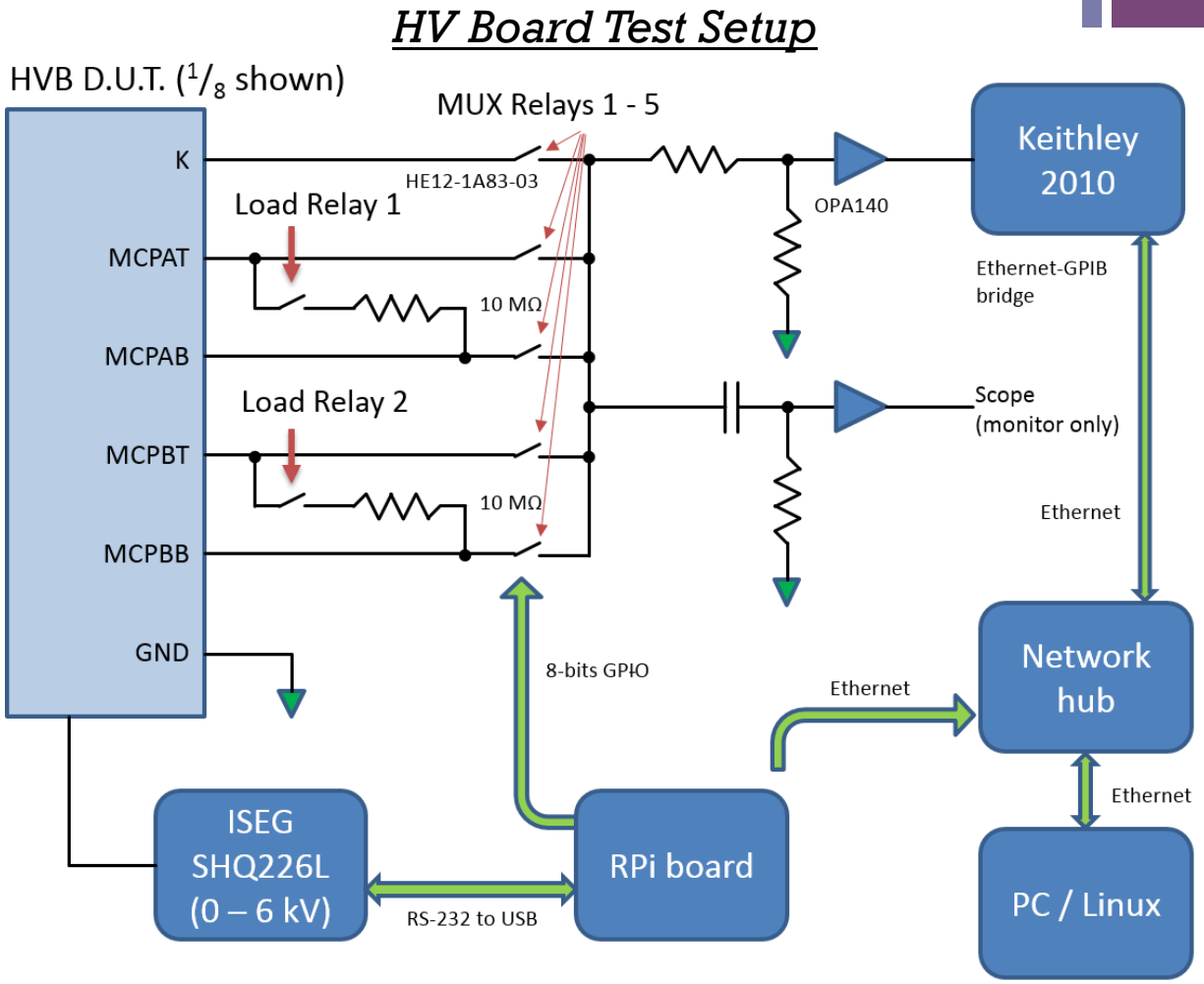
Team
Introduction and Motivation

- University of Hawaii at Manoa
  - Software
    - Bronson Edralin (me)
    - Languages: PYTHON
  - Hardware
    - James Bynes
    - PCB Design Suite: PADS Logic and Layout
  - Advisor
    - Dr. Gary S. Varner
- University of Indiana
  - Advisor
    - Gerard Visser
- To automate the test of high voltage assemblies for the iTOP High Voltage and Carrier/board stacks

Test Board Fabricated to test High Voltage Assemblies

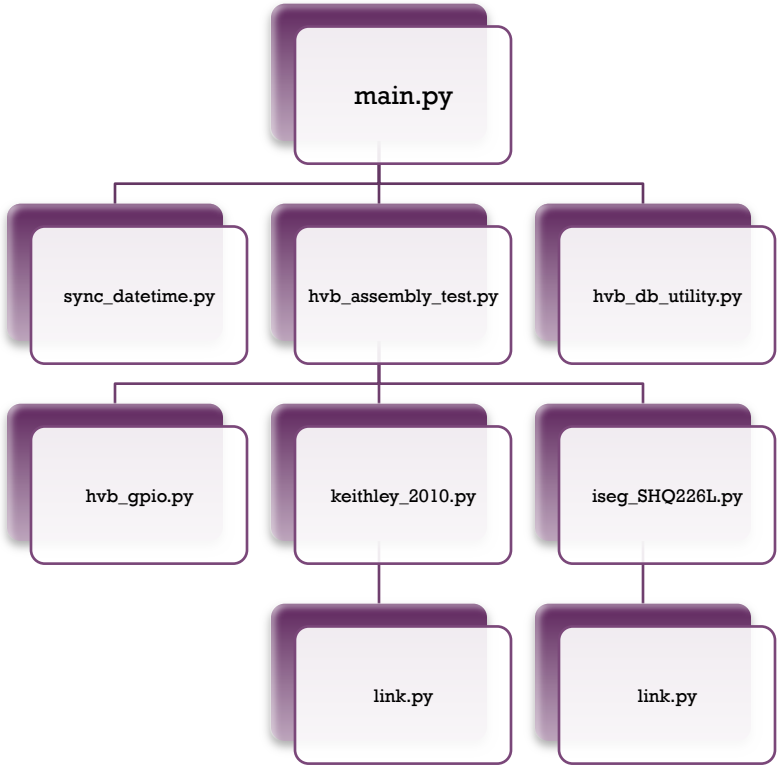
Automated Test of High Voltage Assemblies

1. Remotely set ISEG output voltage: 1kV or 4.4kV
2. Cycle through all 40 MUX Relays with following conditions:
   a. Load resistors @ (0/0)
   b. Load resistors @ (1/0)
   c. Load resistors @ (0/1)
   d. Load resistors @ (1/1)
3. Remotely request measurements from Keithley Multimeter and log the data.



Automated Test of High Voltage Assemblies

1. main.py
   a. User Interface
2. link.py
   a. Ethernet class allows communication over Ethernet
   b. RS232 class allows serial communication
3. keithley_2010.py
   a. Library built using Standard Commands for Programmable Instruments (SCPI)
4. iseg_SHQ226L.py
   a. Library built using special commands from datasheet
5. hvb_gpio.py
   a. board_select, mux_relays, and load_relays functions written and used
6. hvb_db_utility.py
   a. Responsible for uploading test data to PostgreSQL database
7. hvb_assembly_test.py
   a. Automated high voltage board test written here
8. sync_datetime.py
   1. Synchronize time with remote server



Automated Test of iTOP High Voltage Assemblies

Up to 100 High Voltage Assemblies need testing.

- Results from Testing First Six Units: 5 Passed, 1 Fail