Remote Reset System of HMS Monitoring System

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The remote reset system (RRS), a sub-system of the HMS Monitoring System (HMS) in Hall B, was implemented to resolve HMS network problems. This note outlines how RRS works.

HMS [1-3] installed in Hall B occasionally requires network reset to correct network problems, which can be detected by monitoring the Virtual Instrument program accessible from the Expert Panel of the HMS LabVIEW program. Network reset is carried out by RRS that comprises the reset module and the relay module. Currently, the reset function is actuated by pressing a momentary switch on the front panel of the reset module.

Improvements in the Hall B Instrumentation web page and HMS system programs have facilitated all functions of HMS to be remotely viewed and controlled by system experts. An upgraded reset module has been produced to enable remote control of the reset module.

The upgraded reset module uses Microchip Technology Inc.'s programmable microcontroller, PICmicro 16F877 (PIC), and a LabVIEW GUI. The GUI, Fig. 1, has labeled virtual momentary switches. When one or more of the labeled switches are selected, and then the "reset" button is clicked, an eight-bit binary code is sent to the reset module's PIC microcontroller via the serial port, Fig. 2. This code is stored in the General Purpose Register and the PIC acknowledges to the LabVIEW GUI code reception.

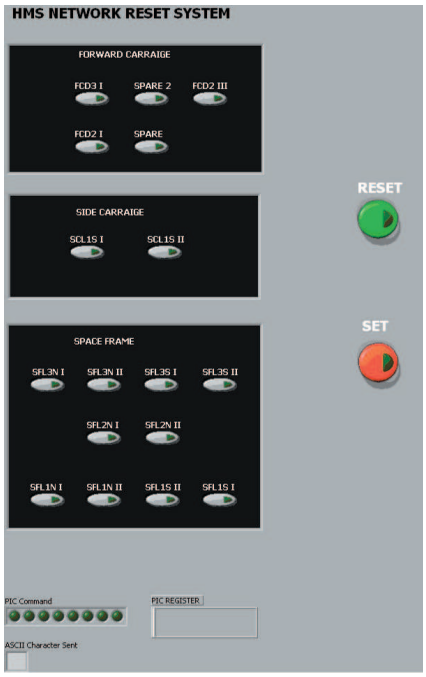

FIG. 1. LabVIEW GUI.

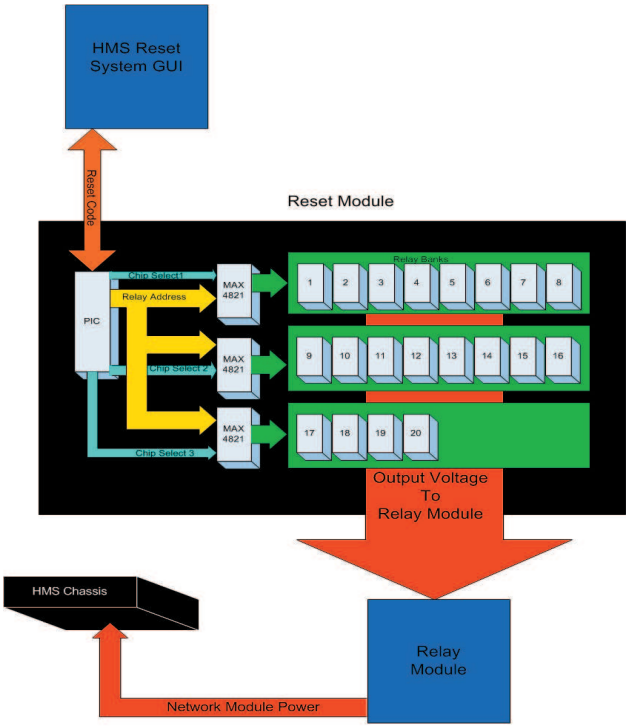

FIG. 2. Flowchart of RRS.

The code is then broken down into two parts. The last three digits of the code determine which of the three Maxim 4821 relay drivers (MRDs) are to be activated. The first five digits of the code are sent simultaneously to the three MRDs and select, by activating the appropriate outputs of the MRDs, one or more relays (depending on the front panel switches chosen). The activated outputs connect the corresponding relay coil to ground thereby supplying control voltage to the associated relay in the relay module, power cycling the National Instruments Fieldpoint Network device on the AC sensor and controller or the crate data recorder – resetting the network.

In conclusion, the system has been tested and works well.

[1] Antonioli *et.al* A Novel Monitoring System for Electronic Instrumentation. CLAS-Note 2003-018
[2] Eng *et.al* Software Design Elements of HMS. CLAS-Note 2004-001
[3] McMullen *et.al* Hardware Elements of the Electronic Instrumentation's Monitoring System. CLAS-Note 2004-011