

# Error Handling Development For NPS

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The high and low voltages, the thermal readback, and the chillers need to be monitored during the NPS run to provide guidance to users if there is a problem. In particular, the Keysight mainframe and the chillers will be in a shielded area in the hall and therefore will not be accessible during the run.

The plan is to use a third-party LabVIEW virtual instrument (VI), Fig. 1, developed specifically for the Keysight mainframe to continually monitor any and all error messages, which then can be sent to EPICS and displayed to the user via the thermal readback Phoebus screen.

- **Developing and implementing error handling for NPS**
- **Utilizing existing Keysight VIs to monitor errors for Keysight mainframe and terminal blocks**
- **Implementing a “reset chiller serial connections” button for both chillers**

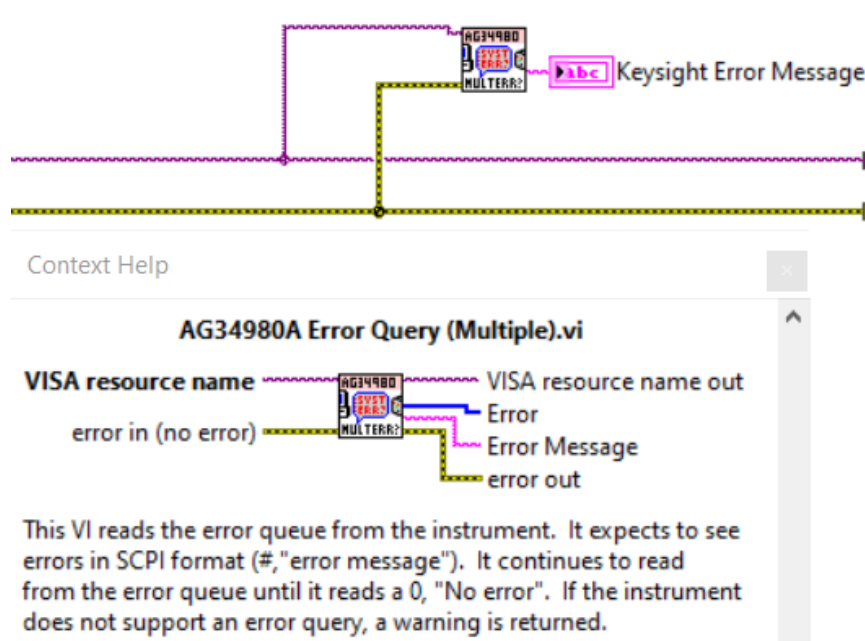


FIG. 1. Error query VI in LabVIEW block diagram

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To communicate with the two chillers a serial connection to the cRIO is established and commands are sent to the chiller to set the coolant temperature and read the coolant temperature and pressure. Since there exists the potential for a communication error as each command is sent and the response received from the chiller, a solution is to monitor the errors, Fig. 2, for both chillers and implement a “reset chiller serial connections” button in the LabVIEW program, Fig. 3. This button is bound to a shared network variable, which enables the button to be controlled via the Phoebus screen.

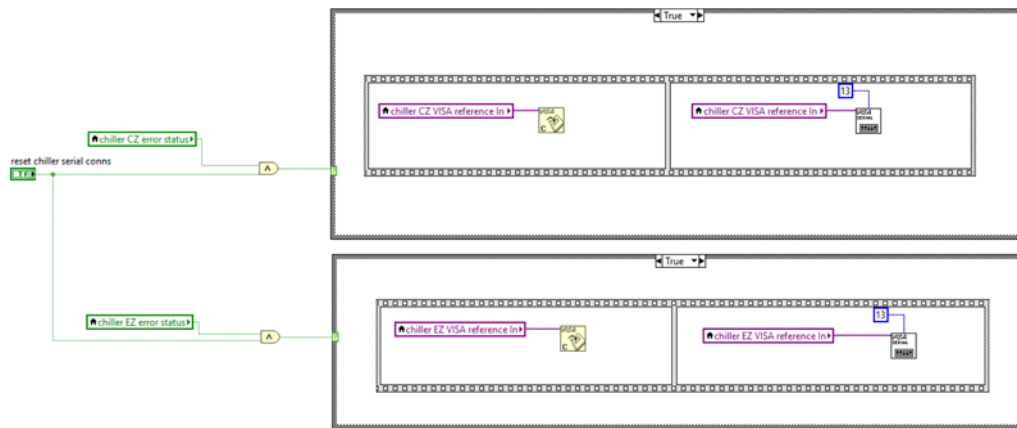


FIG. 3. LabVIEW code to create reset chiller serial connections

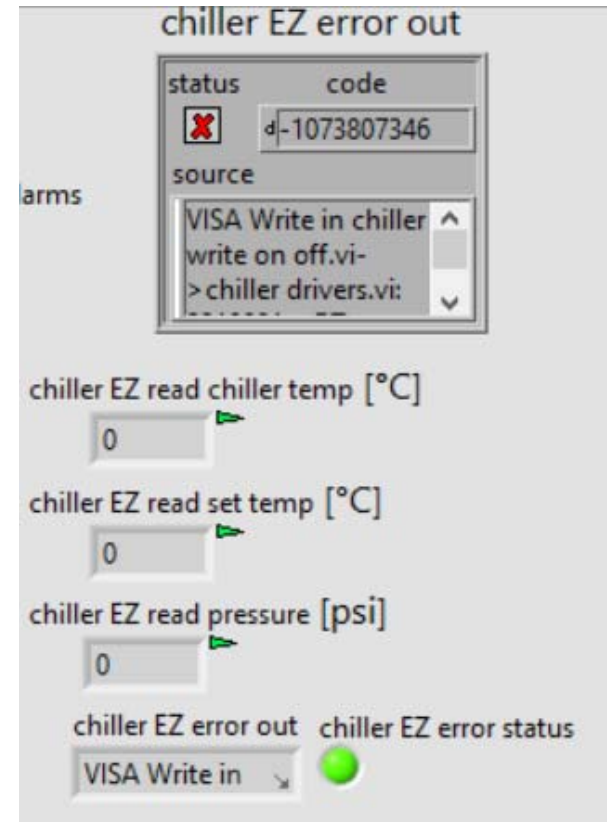


FIG.2. Electronic zone chiller error message