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The Design of Data Acquisition System for EAST Technical Diagnostic System

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EAST (Experimental Advanced Superconducting Tokamak) Technical Diagnostic System (TDS) is used to monitor the outlet temperature of all superconducting coils, in case of temperature anomaly, it will trigger safety interlock system to meet EAST device safety. The data acquisition system of TDS (TDS_DAQ) is in charge of continue data acquisition of the nitrogen and helium temperature signals, TDS security alarm and long-term data storage. TDS_DAQ has several modules. (a) Data acquisition. TDS uses different thermometers to measure the nitrogen and helium temperature signals, led to different data acquisition methods. The data acquisition of the nitrogen temperature signals is based on the PXI technology while obtaining the helium temperature signals with VISA standard. (b) Data processing. The measured value of nitrogen signals should be converted with linear formulas, while the helium signals don't need any conversion due to the front end has done. After conversion, the data is stored in MySQL and MDSPlus, using for long-term storage. (c) Security alarm. After threshold evaluation of some key temperature signals, it outputs TDS fault signal and the status signal to trigger the safety interlock system to take actions. (d) Data transmission. TDS_DAQ keeps transferring the TDS data to the cryogenic system via TCP/IP and provides an information inquiry service which is convenient for the TDS administrator to get the alarm information and the TDS data. TDS_DAQ has been deployed and will be used in 2018 EAST campaign.

Description

DAQ for diagnostics

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