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Development of the EPICS-based Monitoring and Control System for EAST Fast Control Power System

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For the 2014 EAST experimental campaign, the Fast Control Power System (FCPS) has been newly developed. FCPS is composed of the main circuit and the control and protect section. The main circuit of FCPS includes the high-voltage circuit breakers, the multi phase rectifier transformers, the AC/DC rectifier, and the DC/AC inverters. Because of the complexity of FCPS and the poor working environment, the remote monitoring and control system is considered as a very important part of FCPS. The developed monitoring and control system is based on EPICS framework, and includes the data acquisition module, FCPS status monitoring and control module. The above modules are developed as EPICS device support modules. The monitoring and control system communicates with the control and protect section through the serial RS-485 protocol and with the main circuit through the TCP/IP based MODBUS protocol. In addition, this system also includes a module that is developed with C. It is considered as the front end executable module of Plasma Control System, and communicates with PCS through the reflective memory cards. All the status and the acquired data from FCPS are demonstrated on the OPI developed by Control System Studio, and are archived by the MDSplus database. The new monitoring and control system has been test and showed the stable and robust performance.

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