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Distributed Control System
for the KSTAR ICRF

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The KSTAR ICRF control system consists of parallel DSP blocks having standardized analog interfaces. Each DSP modules have responsibility of real-time data acquisition, calculation and control for the target sub-systems such as transmitter, transmission line and antenna and so forth. One important example of the control action is antenna loading impedance calculation. The calculated impedance is used to actuate the liquid sub tuners to maintain minimum VSWR of the transmission line. Maintaining minimal reflected rf power is a key factor for the long-pulse, high power rf system. These DSP modules are supervised by VME controller running under EPICS software tools. All operational and physics data collected by the DSP modules are sent to the VME controller via optical Ethernet, and then, these data are managed or saved by the methods provided by EPICS. VME controller has responsibility of communication with central tokamak control system. The contents of the central communication include timing, interlock and operational data. By distributing DSP modules at each sub-systems and a light VME controller at local center, each sub-systems are independent of each other. Therefore, the sub-systems can be operated, maintained or upgraded more easily.