

FireSignal Application Node for Subsystem Control

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Modern fusion experiments require the presence of several sub-systems, responsible for the different parameters involved in the operation of the machine. With the migration from the pre-programmed to the real-time control paradigm, their integration in Control, Data Acquisition, and Communication (CODAC) systems became an important issue, as this implies not only the connection to a main central coordination system, but also communications with related diagnostics and actuators. A sub-system for the control and operation of the vacuum, gas injection and baking was developed and installed in the COMPASS tokamak. These tasks are performed by dsPIC microcontrollers that receive commands from a computer and send information regarding the status of the operation. Communications are done in the serial protocol RS-232 through fibre optics at speeds up to 1 Mbaud. A Java software, with an intuitive graphical user interface, for controlling and monitoring of the sub-system was developed and installed in a hub computer. In order to allow operators to perform these tasks remotely besides locally, this was integrated in the FireSignal system. Taking advantage of FireSignal features, it was possible to provide the users with, not only the same functionalities of the local application but also a similar user interface. An independent FireSignal Java node bridges the central server and the control application. This design makes possible to easily reuse the node for other subsystems or integrate the vacuum slow control in the other CODAC systems.

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