

INTERFACING MODBUS PLUS TO EPICS FOR KEKB ACCELERATOR CONTROL SYSTEM

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The KEKB accelerator control system is based on Experimental Physics and Industrial Control System (EPICS) and uses many PLCs for monitoring interlock status of magnets and the radiation safety system. Modbus Plus is adopted as the protocol to interface the PLCs to the EPICS which is running on an Input/Output Controller (IOC). For this purpose, a new device support and a driver support modules for Modbus Plus have been developed. The device/driver support modules allow an IOC to communicate with PLCs by asynchronous I/O transactions in such a manner that the GPIB devices in EPICS do it. With the software modules, an IOC always works as a master device in a Modbus Plus network to read the status of controlled devices from the PLC memory. While the main use of the software is to read the interlock status, it is also used to reset an interlock by setting or clearing the power bit of a coil in the PLC. The details of the software structure are reported. The performance and some experiences on the software during the first operation of the KEKB are also presented.