Modbus-TCP is the Modbus RTU protocol with the TCP interface running on Ethernet. In our applications, an XPort device utilizing Modbus-TCP is used to control remote devices and communicates with the accelerator control system (EPICS). Modbus software provides a layer between the standard EPICS asyn support and EPICS asyn for TCP/IP or serial port driver. The EPICS application for each specific Modbus device is developed and it can be deployed on a soft IOC. The XPort and Modbus-TCP is easy to setup and suitable for applications that do not require high-speed communications. Additionally, the use of Ethernet makes it quicker to develop instrumentation for remote deployment. An eight-channel 24-bit Data Acquisition (DAQ) system is used to test the hardware and software capabilities.

Modbus Data Acquisition Board

Features:
• A Cyclone IV FPGA
• A 6-Channel 24-bit ADC
• Two DACs
• SDRAM Memory for Data Buffer
• A Serial Interface
• Digital I/O Connector
• USB Connector
• XPort

Conclusions

The Modbus data acquisition board, based on the XPort and Modbus TCP/IP protocol, has been prototyped. The board can be used in various applications that require remote communications. The Modbus driver support for Modbus protocol under EPICS is installed and applied for the cryomodule RF amplifier control system. The configuration of XPort, Modbus TCP/IP, and the EPICS Modbus package is easy to setup and suitable for applications that do not require high-speed communications.