

- Network Solutions Application Note -

Darwin and Multiple Modbus Masters

Summary:

A coal fired power plant needed to monitor and record 120 bearing temperatures on their coal pulverizer gearbox and bottom ash pump. The plant required connectivity with their plant historian and operator interface.

A Yokogawa DC-100 was the perfect choice for recording and displaying the bearing temperatures. Connectivity to the higher-level systems was accomplished via the Modbus serial communication feature of the DC-100. Device servers provided the means for connecting multiple Modbus masters to the DC-100, acting as a Modbus slave.



Keywords: Modbus, Device Server, Alarm Annunciator

Application Requirements:

The plant required a system that could collect, display, and record 120 channels of thermocouple inputs. The real-time data must be available to the plant historian. The Operations group required real-time access to the data from an operator interface panel. The operator interface panel, acting as an alarm annunciator, displays high bearing temperature alarms. During a high temperature event, the operator must have access to the real-time and historical data for the bearing in question.

Yokogawa Solution:

A Yokogawa DC-100 was the perfect choice for recording the bearing temperatures. The DC100 utilized the Modbus/RTU serial communication feature to communicate with the plant historian and operator interface panel. Since Modbus/RTU (serial link) does not allow multiple masters, device servers were used to bridge Modbus/TCP to Modbus/RTU. Modbus/TCP is a peer-to-peer communication protocol that handles simultaneous requests to a single device. Therefore, two Modbus/TCP devices can simultaneously poll the DC-100. An additional hurdle was encountered when the operator interface required usage of Modbus/RTU rather than Modbus/TCP. Adding another device server to bridge Modbus/RTU to Modbus/TCP cleared the hurdle.

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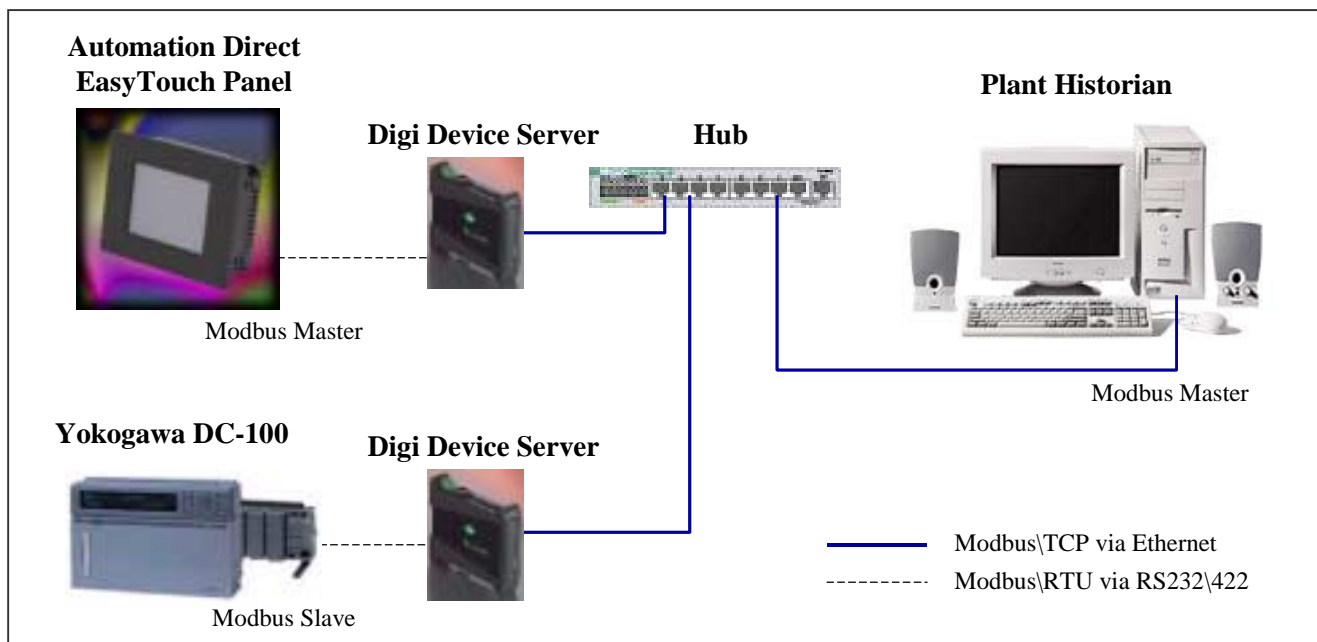
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Yokogawa Solution: (continued)

Hardware:

- Yokogawa DC-100 Expandable with Modbus/RTU
- Digi One IA RealPort™ (Industrial Automation protocol)
- Automation Direct EZTouch™ Panel with Modbus/RTU
- Plant historian with Modbus/TCP

Configure the Digi device server connected to the DC-100 as “Slave connected”. Configure the Digi device server connected to the EZTouch panel as “Master connected” and polling the device configured as “Slave connected”. See the diagram below. Also, configure the historian to poll the “Slave connected” Digi device.



Related Online Links:

Application note:

<http://www.us.yokogawa.com/service/technicalinformation/applicationnotes/default.asp>

Technical note:

<http://www.us.yokogawa.com/service/technicalinformation/technicalnotes/default.asp>

Yokogawa DC-100 Systems Manuals:

<http://www.us.yokogawa.com/service/technicalinformation/manuals/default.asp>

Digi International:

<http://www.digi.com>

Automation Direct:

<http://www.automationdirect.com>

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