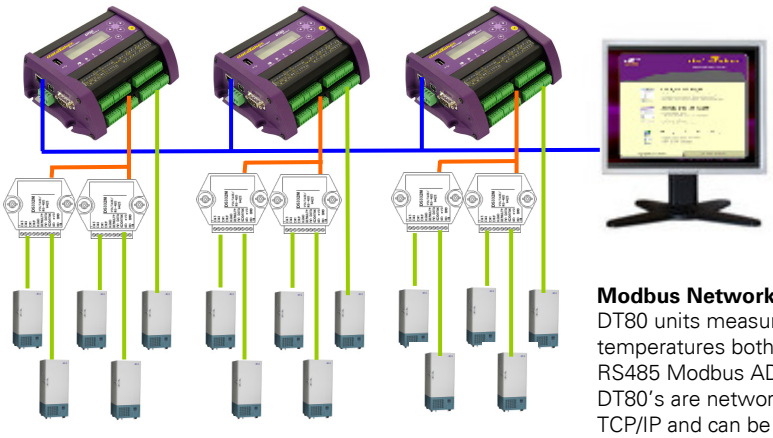
dataTaker

Application Note

Modbus Networking

Customer Requirements

A hospital requires an automated logging solution in order to monitor and record the temperature of 50 freezers which contain temperature sensitive treatment products. The freezers are located throughout the facility on three different floors, but all data must be centralised. It is also a key requirement that all data can be monitored through a single interface, therefore a network is required. Alarms must be able to be generated when the temperature of any of the freezers falls outside given set points.



Modbus Network: Three *dataTaker* DT80 units measure freezer temperatures both directly and via RS485 Modbus ADC devices. The DT80's are networked via Modbus TCP/IP and can be monitored through a web browser.

dataTaker DT80

1. A cost effective data logger expandable to 100 channels, 200 isolated or 300 single-ended analog inputs
2. Built-in web and FTP server allows for remote access to logged data, configuration and diagnostics
3. Modbus slave and master functionality allows connection to Modbus sensors and devices and to SCADA systems
4. Smart serial sensor channels capable of interfacing to RS232, RS485, RS422 and SDI-12 sensors
5. Rugged design and construction provides reliable operation under extreme conditions
6. Includes USB memory stick support for easy data and program transfer

dataTaker Solution

Equipment

dataTaker DT80 data logger x 3
DGH D5332M Modbus Expansion Module x 9

Sensors

T-Type Thermocouples x 50

Implementation Notes

There will be one DT80 located on each of the three floors of the building. Each DT80 will be used to monitor the temperature in several freezers located nearby. Two DGH Modbus ADC modules are also connected to each DT80 over a half duplex RS-485 connection. These modules allow connection of up to four additional thermocouples and make it possible to monitor the freezers located elsewhere on the same floor, minimizing the length of thermocouple wire hence reducing cost and signal interference.

The *dataTaker* units will be connected to the hospitals existing computer network via Ethernet cables. This provides the physical connection for a Modbus TCP/IP network. One of the three DT80 loggers will act as a Modbus master, requesting and collecting data from the other two loggers and storing this data it in its large internal memory. Even though the loggers are using Ethernet for Modbus, they are capable of using this same connection to simultaneously deliver real-time data and alarm information to users via the internal web server. To access this web server, a user only needs to enter the IP address of the logger into their web browser.

Using this network topology it is also possible to save each data point to all of the data loggers for backup purposes. If offsite backup is required then the DT80 data loggers can be configured to automatically transfer data to a remote FTP server.