# Remote Terminal Units RTU Sitewatch™ 32-bit Maxi Series

OVERVIEW

Supervisory Control and Data Acquisition (SCADA) systems are designed to monitor and control geographically remote equipment from one or more control centres. There are three main parts to the system, the Master Station, the Communications Interface and the Remote Terminal Unit (RTU). Lee-Dickens can supply the SCADA Master Station, the RTUs or an integrated SCADA system on a ' turn-key ' basis.
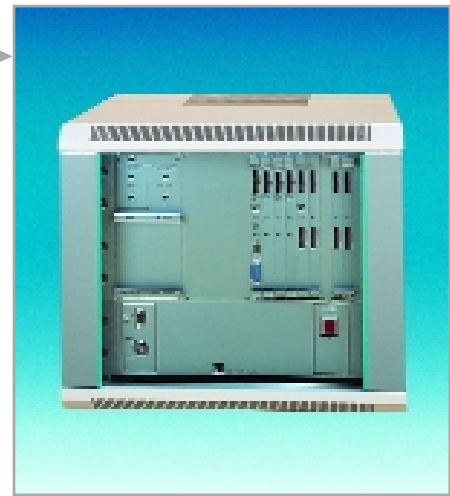
GENERAL

The 32-bit Maxi series RTU is a modular microprocessor based plant interface unit which forms an integral part of a SCADA or telemetry system. It is designed for use in data intensive applications where 32-bit power and TCP/IP interfaces are vital. The RTU is housed in a 19 inch wide 6U (10.5") high rack and can accommodate a maximum of sixteen physical Input/Output modules (256 points) with additional space for four communications modules to interface with other intelligent site equipment via serial data links. Multiple RTUs can be interconnected at one site using an RS485 or TCP/IP local area network and multiple RTUs can be connected in a fault tolerant configuration for high integrity applications. A typical Maxi RTU comprises a 32-bit 80x86 based Intelligent System Processor (ISP) card, communications modules, Input/Output (I/O) modules and a Power Supply module complete with a suitable housing. The Maxi RTU can communicate with the Master Station via its communications interface over radios, fibre optics, microwave links, dedicated lines using modems or the Public Switched Telephone Network (PSTN) using auto dial/ answer modems.

The Maxi RTUs modular design provides considerable flexibility and expandability. System expansion is achieved by the simple insertion of additional plug in Intelligent Communications Processor (ICP) modules or I/O modules as required. This modular design has the advantage of high reliability and reduced mean time to repair (MTTR).

Within the Maxi RTU, the 32-bit based ISP card is the interface to the rack mounted communications and I/O modules. The plug-in I/O modules share the equipment rack and communicate with the processor via a common I/O bus. The ISP and ICP modules are microprocessor based and provide on-board intelligence and memory. Modularity and a selection of I/O module types allows an individual RTU to be configured to specific field device requirements using proven components and design. Each module has Light Emitting Diodes (LEDs) on the front panel to indicate its operational status and the state of its inputs, outputs or serial communications ports.

SOFTWARE

The standard Maxi RTU software package contains modules which handle Master Station communications on a continuous full update or Report By Exception basis. Sequential control of process equipment at the RTU site can be accommodated using software modules from our applications library or by incorporating new modules into the package. Interfaces to other intelligent equipment at the RTU site can be implemented using the ICP module which provides up to four synchronous or asynchronous serial interfaces and carries out any protocol conversion required. Each Maxi RTU can have multiple ICP modules giving scope for monitoring of numerous intelligent equipmentís.

The Maxi RTU can use multiple microprocessors to distribute intelligence throughout the SCADA system. The powerful ISP module enables much of the SCADA system processing to be carried out at the RTU, reducing the dependence of the system on communications links between the RTU and the Master Station. Each ICP module has its own processor and memory, allowing the RTU to monitor and control intelligent equipmentís at the remote site without degrading the performance of the RTU and its ISP module. The RTUs are capable of running control programs and storing information for transmission without intervention from the Master Station computer. As a result the consequences of communication or Master Station failure are kept to a minimum.

POWER SUPPLIES

The RTU processor supplies are isolated from the field circuits by DC to DC converters. External power can be derived from existing DC supplies, AC supplies or via an Un-interruptible Power Supply (UPS). The UPS can be configured to support the RTU and communications equipment in the event of mains power failure.

FIELD INTERFACE

All field cabling is terminated at the rear of the appropriate RTU module using plug in screw connectors. I/O modules available include 16 channel digital, analogue and pulse input, and, digital and analogue output cards. The RTU can be supplied in wall mounting or floor standing enclosures.