PROTOCOL CONVERTER

ARCHITECT AND ENGINEER SPECIFICATIONS

RLE TECHNOLOGIES

1. GENERAL SPECIFICATION

1.1 The contractor shall provide a RLE Technologies FDS-PC (hereinafter referred to as the "FDS-PC") as described in subsequent sections of this specification to perform the functions of protocol conversion, signal relay, and network communications.

1.2 The contractor shall supply the complete FDS-PC with components that shall include but not be limited to: a Falcon FDS-PC, and a 24VDC wall adapter.

1.3 The FDS-PC components listed above shall be manufactured by RLE Technologies, 104 Racquette Drive, Fort Collins, CO 80524, U.S.A. Tel (970) 484-6510, Fax (970) 484-6650, URL: **www.rletech.com**

1.4 The manufacturer shall warrant the FDS-PC against defects in materials and workmanship for a period of twelve (12) months from the date of shipment. This warranty shall be limited to parts and labor to repair or replace the system if it is found to be defective. To ensure warranty coverage, all installation and other instructions must be followed properly. All installation and setup work must be performed by qualified personnel who are knowledgeable of the equipment and aware of appropriate safety, wiring, and other applicable practices.

1.5 The contractor shall submit copies of all applicable drawings, specifications, datasheets and user guides.

1.6 All materials and equipment used for this project shall be new and unused.

2. CODES/STANDARDS COMPLIANCE

2.1 The FDS-PC shall have the following listings and approvals for international standards specifying general safety requirements for electrical equipment intended for professional, industrial process, and educational use:

2.1.1 None at this time.

3. SYSTEM DESCRIPTION

3.1 The FDS-PC shall consist of the FDS-PC basic unit, connected to an SNMP, Modbus TCP/IP or BACnet/IP network through a 10/100 BASE-T communications port, and to a Modbus-RTU network through an EIA-485 communications port.

3.2 The FDS-PC shall be capable of communicating with a maximum of 32 units, nodes, modules or devices. Among these 32 devices, the FDS-PC shall be capable of monitoring up to 1024 object identifiers, instances, or Modbus registers.

3.3 The FDS-PC shall be capable of integration with any network management system (NMS) or building management system (BMS), or any other system using a mixture of EIA-485 and 10/1000 BASE-T networks.

4. COMPONENT DESCRIPTION

4.1 PHYSICAL DESCRIPTION

4.1.1 The FDS-PC shall be a stand alone system, running its own firmware and proprietary operating system.

4.1.2 The FDS-PC shall be housed in a metal Type 1 enclosure suitable for rack mounting.

4.1.3 The overall size of the FDS-PC shall be 9.8"W x 5.3"D x 1.8"H (248mmW x 135mmD x 46mmH).

4.1.4 The FDS-PC 1U shall operate on 24VDC or 24VAC @ 600mA max. The FDS-PC shall include a barrel-type connector for a 24VDC or 24VAC wall adapter, and a terminal block for either 24VDC or 24VAC power.

4.1.5 The FDS-PC shall be suitable for operating at ambient temperatures between 32°F and 122°F (0°C and 50°C), relative humidity between 5% and 95%, non-condensing, and a maximum altitude of 15,000 feet (4,572m). The FDS-PC shall be suitable for storage at temperatures between -4°F and 185°F (-20°C and 85°C).

4.1.6 The FDS-PC shall have the following rear panel indicators and switches:

A.) Status LED: this LED is not used in the current configuration.

B.) Communications LEDs:
RS485 TX – illuminate green when data is being transmitted by the FDS-PC.
RS485 RX – illuminate green when data is being received by the FDS-PC.

C.) Network Communications LEDs:
Link – illuminates green if network link is established, red if no network is present.
Active – illuminates green when data is being transmitted or received by the FDS-PC.

4.1.7 Switch to connect an RS485 100-ohm termination resistor.

4.2 NETWORKING

4.2.1 The FDS-PC shall be capable of integration into larger systems, such as network management systems (NMS) via Modbus or SNMP protocols, or building management systems (BMS) through BACnet protocols.

4.2.2 The FDS-PC shall be capable of serial communications with a host through a 9-pin DIN RS232 connector. The RS232 connector shall support communication with a PC for local IP configuration, firmware downloads and troubleshooting.

4.2.3 The FDS-PC shall be capable of Modbus/RTU communications (Master and Slave) via the RS485 serial port.

4.2.4 The FDS-PC shall support the Standard version of the Modbus protocol.

4.2.5 The FDS-PC RS485 network shall not exceed 4,000ft (1,219m) in cable length, and shall be terminated with a 100-ohm termination resistor. The FDS-PC shall include a configuration switch for enabling an internal termination resistor when the FDS-PC is the first or last device in the RS485 network.

4.2.6 The FDS-PC shall be capable of 10/100baseT/Ethernet communications via an RJ45 Ethernet connector. The FDS-PC shall support the following protocols over the Ethernet connection: Modbus TCP/IP (Master and Slave); BACnet/IP; SMTP; SNMP V1 (Get/Set/Trap); SNMP V2C MIB2 compliant; TCP/IP; TFTP; HTTP/HTML.

4.2.7 The FDS-PC shall be accessible and configurable from a standard Web browser on a PC connected to the FDS-PC through Ethernet, or through the RJ45 Ethernet port using a crossover cable. The HTML-based webpages shall display the FDS-PC device status, and a link to the configuration menus. Configuration menus shall be password protected.

5. SYSTEM COMMISSIONING AND MAINTENANCE

5.1 Upon completion of the system installation, the installer shall perform the following tests in the presence of the owner and shall provide the owner with a copy of the results:

5.1.1 System Turn-On

A.) Upon connecting the ground terminal to earth ground and plugging in the wall adapter, the Network Communications Link LED shall illuminate green if the FDS-PC is connected to a 10/100BASE-T network, and red if it is not connected.

5.1.2 Communications

A.) After the FDS-PC IP address has been set according to instructions in the FDS-PC Quick Start Guide, the IP address shall be entered in a Web browser window of a PC connected

to the FDS-PC through Ethernet or RS232. The FDS-PC shall respond by displaying the Main Menu, according to instructions in the FDS-PC Quick Start Guide.

5.2 The RLE Technologies FDS-PC shall be maintained as recommended in the FDS-PC User Guide.

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