ENGINEERING SPECIFICATION

SYMCOM SOLUTIONS-M SOFTWARE

PART 1 GENERAL

1.1 REFERENCES

    A. PI-MBUS-300 Modicon MODBUS Protocol - Modicon
    B. MODBUS Application Protocol Specification – MODBUS.org
    C. MODBUS Messaging on TCP/IP Implementation – MODBUS-IDA

    Solutions-M Software shall conform to the MODBUS messaging protocol.

PART 2 PRODUCTS

2.1 MANUFACTURERS

The product specified is the Solutions-M software package, manufactured by SymCom, Inc.

2.2 DESCRIPTION

    A. Regulatory Requirements:

        1. The product shall conform to the MODBUS standard, providing both MODBUS-RTU and MODBUS-TCP functionality.

2.3 PERFORMANCE/DESIGN CRITERIA: MODBUS DEVICE MONITORING/CONFIGURATION TOOL

    A. Communication Protocols

        1. The software shall communicate using the MODBUS-RTU and MODBUS-TCP protocols.

    B. Network Features/Functions

        1. The software shall provide the ability to create and configure multiple MODBUS networks, with each network having its own set of communications settings.

        2. The software shall provide the ability to adjust the following communications parameters for a MODBUS-RTU network:
           a. name of the serial port
           b. baud rate at which the network communicates (9600 or 19200)
           c. data bits expected with each packet received (0-10)
           d. parity (none/even/odd/stop)
           e. stop bits at the end of each received message (0-2)
           f. message timeout: amount of time spent waiting for a message response (300 ms – 1000 ms)
           g. message retries: number of times a message is resent after a timeout occurs (0 – 3)

        3. The software shall provide the ability to adjust the following communications parameters for a MODBUS-TCP network:
           a. IP address for a MODBUS gateway
           b. TCP port used
           c. message timeout: amount of time spent waiting for a message response (300 ms – 1000 ms)
           d. message retries: number of times a message is resent after a timeout occurs (0 – 3)

        4. The software shall provide the ability to add devices to the network by one of the following methods:
           a. automatic detection
           b. manual addition

        5. The software shall provide the ability to detect faulted devices on a network. The software shall display detailed fault information including:
           a. the time and date of the fault
           b. the type of fault that has occurred
           c. the node address of the device that has faulted

        6. The software shall provide the ability to monitor and log real-time data.

        7. The software shall provide the ability to view and configure settable parameters for devices.

        8. The software shall be able to import device library files.

        9. The software shall provide the ability to synchronize a device's internal clock with the computer's clock (if applicable to device).

        10. The software shall provide the ability to save and reopen networks.

        11. The software shall provide the ability to read events, past faults, and pending faults from a device (if applicable to device) along with the following associated data:
           a. Date/time of event or fault
           b. Name of event or fault
           c. The MODBUS address at which the event or fault was received

        12. The software shall be able to control and/or monitor inputs and outputs for devices (i.e. the fault relay on a SymCom 777).

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C. Parameter Features/Functions

1. The software shall display real-time and settable parameters in one of the following formats:
   a. numeric with units
   b. enumerated string (displayed in a drop-down list for settable parameters)
   c. bit string with individual bit descriptions

2. The software shall be capable of displaying a description of the parameter and a valid range of values for settable parameters.

3. The software shall provide the ability to lock/unlock settable parameters (SymCom 777 family of products).

4. The software shall include the following:
   a. ability to automatically retrieve settable parameter values from a device immediately after the device is selected
   b. ability to automatically send settable parameter values to a device immediately after the value is changed
   c. ability to specify the number of devices that are scanned for faults after each real-time scan
   d. ability to lock a network so settable parameters cannot be uploaded or changed; this is useful in commissioning multiple devices with the same set of settable parameters

5. The software shall provide the ability to print and export a device's parameters and the parameters' respective value.

D. Logging Features/Functions

1. The software's logging options shall include:
   a. an adjustable logging interval (amount of time elapsed before data is logged) of 5 seconds to 1 hour
   b. an adjustable setting to specify user-controlled or time-controlled logging
      1) Start time/date, end time/date, and repeat daily options shall be provided for time-controlled logging
   c. an adjustable directory where logging files are stored
   d. an adjustable setting to overwrite or append to existing logging files

2. The software shall be able to log the following:
   a. communications errors
   b. pending and Latched Fault events (if applicable to device)
   c. motor/pump starts (if applicable to device)
   d. motor/pump stops (if applicable to device)
   e. real-time parameters

3. The software shall provide the ability to specify which devices are to be logged.

4. The software shall provide the ability to specify which parameters for a device are logged.

5. The software shall provide the ability to specify when a parameter for a device is logged based upon the following conditions:
   a. the value to be logged is greater than a specified threshold
   b. the value to be logged is greater than or equal to a specified threshold
   c. the value to be logged is equal to a specified threshold
   d. the value to be logged is less than or equal to a specified threshold
   e. the value to be logged is less than a specified threshold

6. The software shall provide the ability to view up-to-date logging files at any time using the following methods:
   a. a textual display with no formatting
   b. a spreadsheet-type format with color highlighted special events
   c. a graphical plot

E. Distribution

1. The software shall be distributed on a USB flash drive, compact disc, or via internet download.
2. The product shall have the ability to activate the software without the need for a hardware key.

F. Hardware/System Requirements

1. The product shall operate on the Microsoft Windows 2000/NT/XP/Vista operating systems.
2. The product shall communicate with MODBUS RS-485 networks via a RS-232 or USB serial port.

End of Section