

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).

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