Application Note

Topic: **MODSOFT Modbus Plus Access to Quantum NOE via Modbus TCP/IP** **APN-MEBTCP-03**
Product: **MEB-TCP** **03 November, 1997**
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Abstract

The MEB-TCP may be used to connect personal computers running MODSOFT® with the SA85 MB+ card to remote TSX Quantum PLCs using the NOE TCP/IP Ethernet card.

Introduction

The Niobrara MEB-TCP may be used to provide a gateway between MB+ and Modbus TCP/IP Ethernet. This allows non-Ethernet MODSOFT computers on the MB+ network to be able to program remote Ethernet PLCs.

Setup

The figure below shows a MODSOFT computer with an SA85 Modbus Plus card on the same MB+ network as an MEB-TCP. The SA85 card is set to MB+ drop 5 and the MEB's MB+ port is set to drop 3.

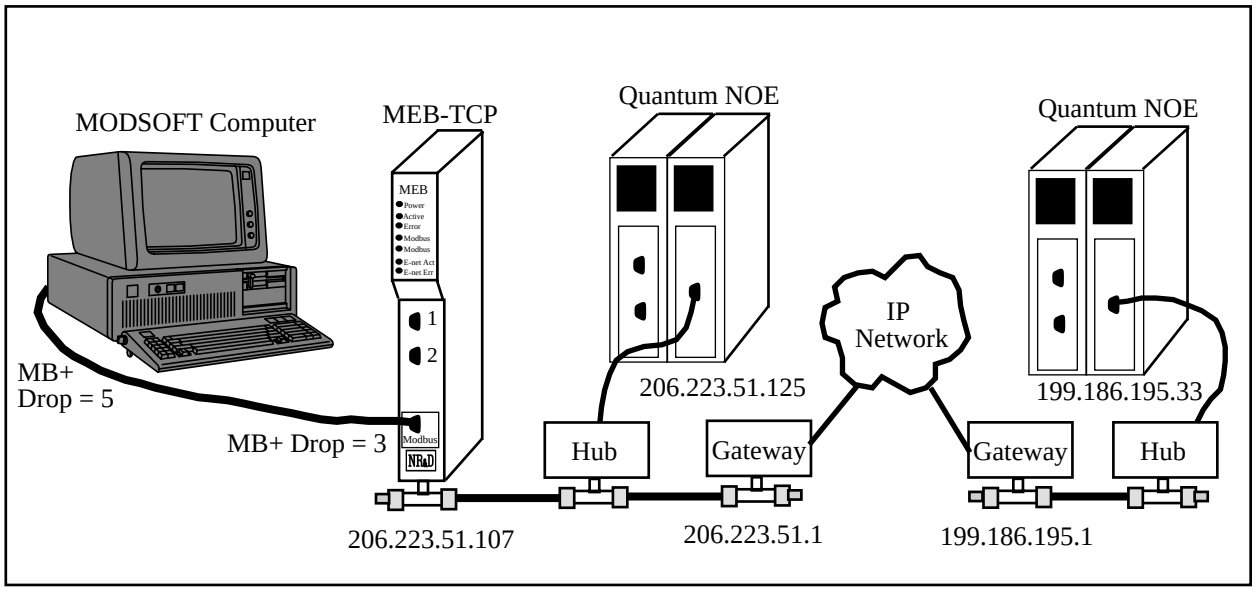
The Ethernet port of the MEB-TCP is set for Modbus TCP mode with an IP address of 206.223.51.107. The Quantum NOE is located on the same subnet as the MEB-TCP through a 10BaseT hub with an IP address of 206.223.51.125. Both the MEB and NOE have a subnet mask of 255.255.255.0 and a Default Gate set for 206.223.51.1. The default gateway provides the connection to the external IP network.

The remote location includes a Quantum NOE at IP address 199.186.195.33 with a subnet mask of 255.255.255.0 and a default gateway of 199.186.195.1. It is connected through a hub to that network's default gateway.

The MEB-TCP is mounted in an NR&D **NRK2** single slot rack with built-in power supply. The MEB-TCP is configured using the MEBSW.EXE application through one of its serial ports with an **SC902** RS-232 <> RS-422 converter cable.

Modbus Plus Routing

This application makes use of the MEB-TCP as a Client with each NOE acting as a Server. The TCP Routing Table for the MEB's Ethernet port must be



configured to translate the MB+ route to the target IP address. from the Modbus Plus messages into downstream MB+ routes. The MEB-TCP supports up to 200 entries in its TCP Routing Look-up table.

For this example, two entries are required as shown below:

Drop	IP Address	Downstream Route
0	0.0.0.0	NONE
1	206.223.51.125	1
2	199.186.195.33	1
4	0.0.0.0	NONE
5	0.0.0.0	NONE
etc.		

Drop zero has been skipped to avoid confusion with the zero being used as a terminator in the MB+ message structure.

Drop 1 points to the IP address of the local NOE. The Downstream Route of 1 becomes the Destination Index of the Modbus TCP/IP message.

Drop 2 points to the IP address of the remote NOE. The Downstream Route of 1 becomes the Destination Index of the Modbus TCP/IP message.

The setting for MODSOFT will be:

Address	Protocol	Routing Address	Device
1	MODBUS PLUS	05.04.00.00	0

to reach the local Quantum. The Address will be set to 2 to reach the remote Quantum.

The Address field (1 or 2) selects the TCP look-up entry. The Routing Address field entry 05 selects the MEB's MB+ drop number while the 04 selects the Ethernet port within the MEB. The value 04 may also be 05, 06, 07, or 08 which will also select paths to the Ethernet port.

The MEB-TCP is capable of having multiple MODSOFT programmers connected at the same time. If multiple devices are routing through the MEB from MB+, it is recommend that the drop number following the MEB's MB+ port in the route be changed to 5, 6, 7, or 8 to improve throughput.

The MEB-TCP may also act as a TCP/IP Server to route messages from the Ethernet to MB+ simultaneously.

Summary

The Niobrara MEB-TCP provides a simple interface to allow programmer applications using Modbus Plus to access devices on an Ethernet Modbus TCP/IP network.