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T E C H N I C A L N O T E

Doc No.: TN30-07
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Version: 1.1
Subject: Modbus/TCP Slave

OVERVIEW:

Modbus/TCP communication protocol is supported by the MC206 and MC224 Trio Motion Coordinators using the P296 Ethernet Daughter Board. The Motion Coordinator acts as a Modbus/TCP Slave device. Its functionality is similar to the existing Trio Modbus RTU Slave (over RS-232 or RS-485), except an Ethernet connection is used.

Modbus/TCP support requires system software version 1.6209 or higher in the Motion Coordinator, and firmware version 1.0.3.1 or higher in the Ethernet Daughter Board.

SETUP:

1. The *IPAddress* and *Subnet Mask* of the Ethernet Daughter board may need to be changed from their default values to communicate with the Modbus/TCP Master.
2. Make the proper Ethernet cable connections to the Modbus/TCP Master.
3. The following `ETHERNET` command can be used to set which data type is used for communications.

ETHERNET(2, slot number, 7, data type)

slot number = comms slot where Ethernet Daughter Board is installed

data type = 0, for 16-bit signed integer data communication (default)

1, for 32-bit signed floating point data communication

This parameter only needs to be initialized if passing floating point data, and must be set before Modbus/TCP communications are attempted. It is not maintained through power cycles, so it must be initialized once after power up.

When using floating point data alternate VR() variable numbers are used (VR(0), VR(2), VR(4), etc.).

It should be noted that floating point mode isn't covered by the Modbus specification, so it is up to each manufacturer's chosen implementation.

*Information on configuring the Ethernet Daughter Board is contained in Technical Note **TN30_04 - Ethernet IP Definitions** and in the Trio Technical Reference Manual V6.2.*

OPERATION:

Once the above setup is complete the Motion Coordinator is available as a Modbus/TCP Slave device. Communications can then be initiated by a Modbus/TCP Master (such as a supervisory PC, HMI, etc.). A program does not need to be running in the Motion Coordinator for the communications to be active.

Additional Information on Modbus functionality can be found in Trio Motion Coordinator Technical Reference Manual page 13-3.

To independently test the Modbus/TCP communications, there is a third party Modbus Poll program that can be downloaded from www.wittecom.com/download.htm . This Modbus Poll program runs on your PC and acts as a Modbus/TCP Master that can initiate communication with a Trio Modbus/TCP Slave.

SPECIFICATION:

Ethernet connection:

Port Number	502
IP Address	User Programmable
Subnet Mask	User Programmable
Default Gateway	User Programmable

Modbus read/write functions:

Modbus Function	Description
1	Read input status (read I/O)
2	Read coil status (read I/O)
3	Read Holding Registers (read VR variables)
5	Force single coil (write to I/O)
6	Set single Holding Register (write to a VR variable)
16	Set multiple Holding Registers (write to multiple VR variables)