

Chapter 1: NetPower Modbus Tools Overview

What is NetPower Modbus Tools?

NetPower Modbus Tools is an application used to define Modbus registers for a NetPower DeviceServer. A NetPower DeviceServer serves as an interface between IMPACC devices and a Modbus Master, and supports a subset of the Modbus protocol, which defines how data is transmitted across a serial bus. NetPower Modbus Tools enables a NetPower DeviceServer to do the following:

- ◆ Send polled device attributes to a Modbus Master.
- ◆ Send commands from a Modbus Master to IMPACC devices.

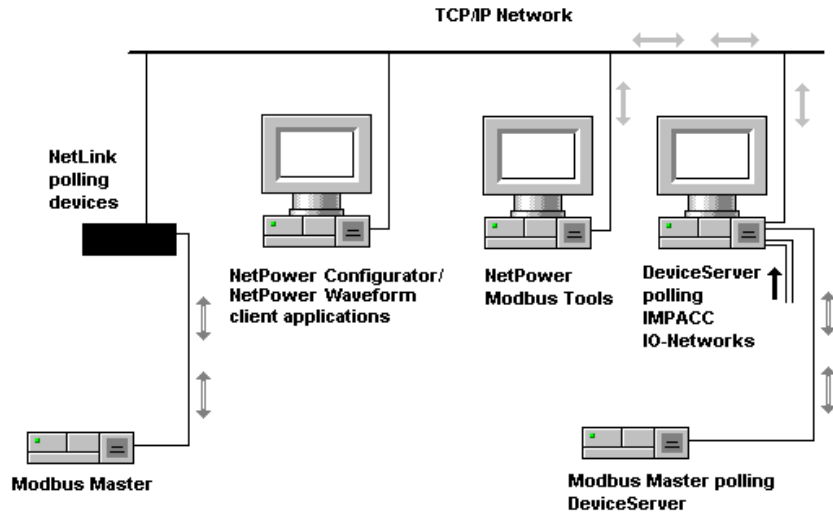
After you configure IMPACC devices to a NetPower DeviceServer using NetPower Configurator, you run NetPower Modbus Tools to configure Modbus registers for the NetPower DeviceServer. By configuring Modbus registers, you enable communications between a Modbus Master and IMPACC devices through the NetPower DeviceServer. The Modbus Master may then receive IMPACC device data and send control commands to IMPACC devices.

How Does NetPower Modbus Tools Work?

The NetPower Modbus Tools application enables communications between a Modbus Master and IMPACC devices through a NetPower DeviceServer. The NetPower DeviceServer acts as a slave to the Modbus Master by providing requested information from specific IMPACC devices. A DeviceServer with Modbus support cannot initiate a command or request for data. It passes commands from the Modbus Master to IMPACC devices, and collects data from IMPACC devices and returns it to the Modbus Master.

Using NetPower Modbus Tools, you designate what data is passed to the Modbus Master by “mapping” IMPACC device attributes to particular Input Registers. These registers store the data that is received from IMPACC devices. By configuring the application in this way, you control the data collection from devices, and where the data is stored in

the registers. The following picture displays the interaction between the Modbus Master, NetPower Modbus Tools, NetPower Configurator, and the NetPower DeviceServer.



Sample Network

- ◆ NetPower Configurator configures the IMPACC devices in the NetPower DeviceServer, and sets the polling rates (for the device attributes) between the IMPACC devices and the NetPower DeviceServer.
- ◆ NetPower Modbus Tools maps device attributes (current, voltage, etc.) to Modbus Input Registers. When NetPower Modbus Tools maps the Input Register, the value of the device attribute is returned to the Modbus Master (if it is scanning for data) and to NetPower Modbus Tools (if it is subscribing for data).
- ◆ NetPower Modbus Tools also maps IMPACC devices to NetPower DeviceServer Holding Registers. When a device is mapped to a Holding Register, the Modbus Master can send device control commands to the Holding Register, and the NetPower DeviceServer subsequently sends the command to the mapped IMPACC device.

Supported Functions

The Modbus Protocol provides numerous functions. NetPower Modbus Tools supports a subset of these functions. The following table lists a subset of the functions that NetPower DeviceServer supports.

Modbus Type	584/984 Address	Point Type/Access	Modbus Function
Input Register	30,001–40,000 (decimal)	16-bit integer, read only	4
Mapped Holding Registers	40,001–42,000 (decimal)	16-bit integer, read/write	3, 6, 16
Loopback Test	Diagnostic Code 0	16-bit integer	8

For more information about the Modbus protocol and functions, see the *Modicon Modbus Protocol Reference Guide*.

Communication

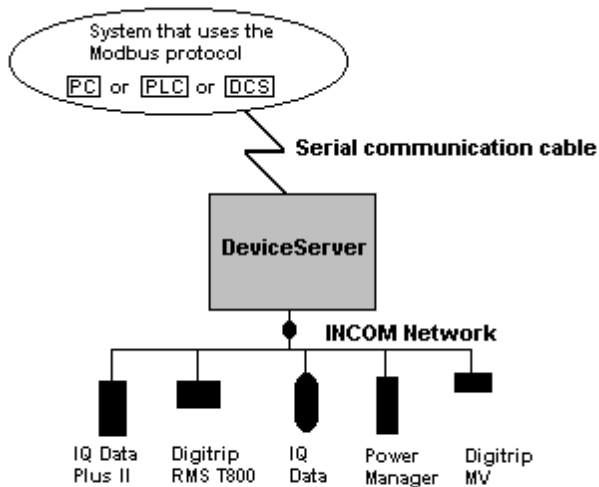
The Modbus Master communicates with the NetPower DeviceServer via an RS232 communication channel, using the Modbus protocol.

The NetPower DeviceServer and the IMPACC devices communicate via an INCOM network using the INCOM protocol.

Example

Assume that your company has an IMPACC network with a NetPower DeviceServer and a PLC that uses the Modbus protocol. When the PLC issues a command (such as to reset a device), the command is passed across the serial cable to the NetPower DeviceServer Holding Registers, then the NetPower DeviceServer interprets the command and passes it to the appropriate IMPACC device. When the command is executed, a status code (indicating the status of the performed task) is returned to the Modbus Master. Data that is polled across the IMPACC devices passes through the NetPower DeviceServer to the PLC.

The following diagram shows the relationship between the Modbus and INCOM protocols.



The system that uses the Modbus protocol is the master, which may be a PLC, a PC, or a DCS in a building automation system. The master receives data from IMPACC devices and sends commands that control the devices.

By mapping IMPACC data to specific locations (the register locations you define) the NetPower DeviceServer enables the Modbus Master to communicate with IMPACC devices.

What are Input and Holding Registers?

A register is a storage area for data. Modbus uses two types of registers to store data and commands.

Input Registers store collected data from IMPACC devices. Modbus provides 10,000 Input Registers, each represented by a unique number between 30,001 and 40,000.

Holding Registers store commands that are sent to IMPACC devices. Modbus provides 2,000 Holding Registers, each represented by a unique number between 40,001 and 42,000.