

UP Quick Setup and STX/ETX Determination

Here is the procedure for setting up a read only device such as a barcode scanner:

1. There is no need to use the PLC example programs. Just use the embedded web page.
2. Load the latest Ethernet/IP firmware on the DeviceMaster Up using PortVision.
3. Configure the IP address, gateway, and net mask on the DeviceMaster UP for your network.
4. Bring up the embedded home web page on the DeviceMaster UP using either PortVision or an internet browser such as Internet Explorer.
5. Configure the port(s) using the embedded web page.
 - a) Open the configuration for each port by clicking on "Port N".
 - b) Select the serial port configuration. (Mode, Baud rate, etc.)
 - c) Select the serial packet identification. The STX (start of transmission) and ETX (end of transmission) Rx Detection byte(s) must be configured correctly in decimal format. Please refer to your serial device's User Manual for these settings.
 - d) Set up the Ethernet/IP Interface settings.
 - 1) Set the Rx (To PLC) Ethernet Transfer Method to "Write-to-Tag/File".
 - 2) Input the PLC IP Address. (In xxx.xxx.xxx.xxx format.)
 - 3) Input the PLC Controller Slot Number. This can vary for ControlLogix PLCs, but must always be zero for CompactLogix. (This field is ignored for SLC/PLC-5 PLCs.)
 - 4) For ControlLogix family PLCs, input the name of the tag where you want the data placed. (The tag must be an array of SINTs (bytes) large enough to hold the maximum sized data plus four bytes for the sequence number and length fields.)
For SLC or PLC-5 PLCs, input the File number where you want the data placed. (This must be an Integer file large enough for the maximum sized data plus two integers for the sequence number and length fields.)
 - 5) Set "Reset Port" and "Save in Flash".
 - 6) Submit.

If all is set up correctly, the DeviceMaster UP will place the data packets into the specified Tag(s) or File locations. The first 16 bit Integer received is the sequence number. This is incremented with each new data packet. The next 16 bit integer is the length which indicates the number of bytes of data received. The rest is data.

STX/ETX Setup.

The STX detect and ETX detect should always be set up to match the STX/ETX bytes received from the serial device if at all possible. If running with settings of “none” and letting the received serial message time out the data rate will be much slower. This is not a good setting as it will delay the serial message by at least the “Rx Timeout Between Packets” value. Also, several messages can become merged together and the data may even become scrambled, depending on how the end device is operating.

The only time the “none” options should be used is if the end device does not send any STX/ETX bytes or to determine what the STX/ETX bytes are. Once known, the STX/ETX detect bytes should then be configured. This will cause the DeviceMaster UP to:

1. Properly recognize all packets and prevent two or more packets from being lumped together.
2. If running in Write-to-Tag mode (or RX Master mode for Modbus TCP), immediately send RX packets to the PLC with no delay.
3. Ensure proper alignment of the received packets in the PLC memory.

If the STX/ETX is set to “none” when it should not be, there will be at best an unnecessary delay and quite possibly long delays, an inconsistent data stream, and possibly lost data.

If the “none” option is required for the STX/ETX detect settings, the “Rx Timeout Between Packets” value needs to be set very low. For all but the lowest baud rates (4800 or less), a value of 10 or 20 msec should be used.

To determine your STX and ETX values use this quick tutorial.

These procedures are to be used after the DeviceMaster is sending data to the PLC.

Open the web page to your DeviceMaster UP running Ethernet/IP firmware.

From the Home Page, click "Display Serial Logs"

Here is a sample of the Serial Interface Log file in Ethernet/IP

Serial Receive/Transmit Logs

(Reset Serial Log)

Port1 Rx/Tx Packets (first 128 packets, max of 128 bytes):

```
Pkt(1): 000 04:43:06.630:Rx:test(0Dh)(0Ah)
Pkt(2): 000 05:41:04.390:Rx:17162(0Dh)(0Ah)
Pkt(3): 000 05:41:11.470:Rx:12345670(0Dh)(0Ah)
Pkt(4): 000 05:41:17.820:Rx:0123456784(0Dh)(0Ah)
```

Pkt This is the descriptor for Packet

(1): This is the ID number of the packet

000 04:43:06.630 breaks down as this:

000 = day number
04: = hour number
43: = minute number
06. = second number
630 = milliseconds

The day and time values are NOT the date and time of day. The DeviceMaster UP does not have a Date/Time clock. This is the period of time that the DeviceMaster UP has been running. Rebooting the DeviceMaster UP will reset all of these values back to 0.

Rx: This is the indication of a receive from the serial port.

Tx: This is the indication of a transmit to the serial port (There are none in this sample)

These are all the actual data from the bar code scanner.

```
Test
17162
12345670
0123456784
```

(0Dh)(0Ah) = The ETX (End of Text) value provided by the scanner. These values must be converted to DECIMAL to be entered into the "Serial Device Configuration>Port#>Serial Packet Identification".

(0Dh) This indicates that a HEX value of 0D is used. This corresponds to CR (Carriage Return) in ASCII and 13 in DECIMAL.

(0Ah) This indicates that a HEX value of 0A is used. This corresponds to LF (LineFeed) in ASCII and 10 in DECIMAL.

(You may use any ASCII chart from the web to determine your translations.)

After converting to DECIMAL we now know that we use a Carriage Return and a LineFeed to define our ETX.

Open the web page to "Serial Device Configuration"

Click on the serial port # to configure.

Scroll down to the "Serial Packet Identification" section of the page.

In the ETX (End of Transmission) Rx Detect set the number of bytes to use. In this sample we will use 2 bytes

In the Byte 1: field enter the number 13

In the Byte 2: field enter the number 10

Scroll to the bottom of the page and click on the "Submit" button.