



## Product Type: ASC/3

Reference: AN2116

Date: 17 April 2009

### ASC/2M to ASC/3 Ethernet Connection Using Digi PortServer TS2 H MEI

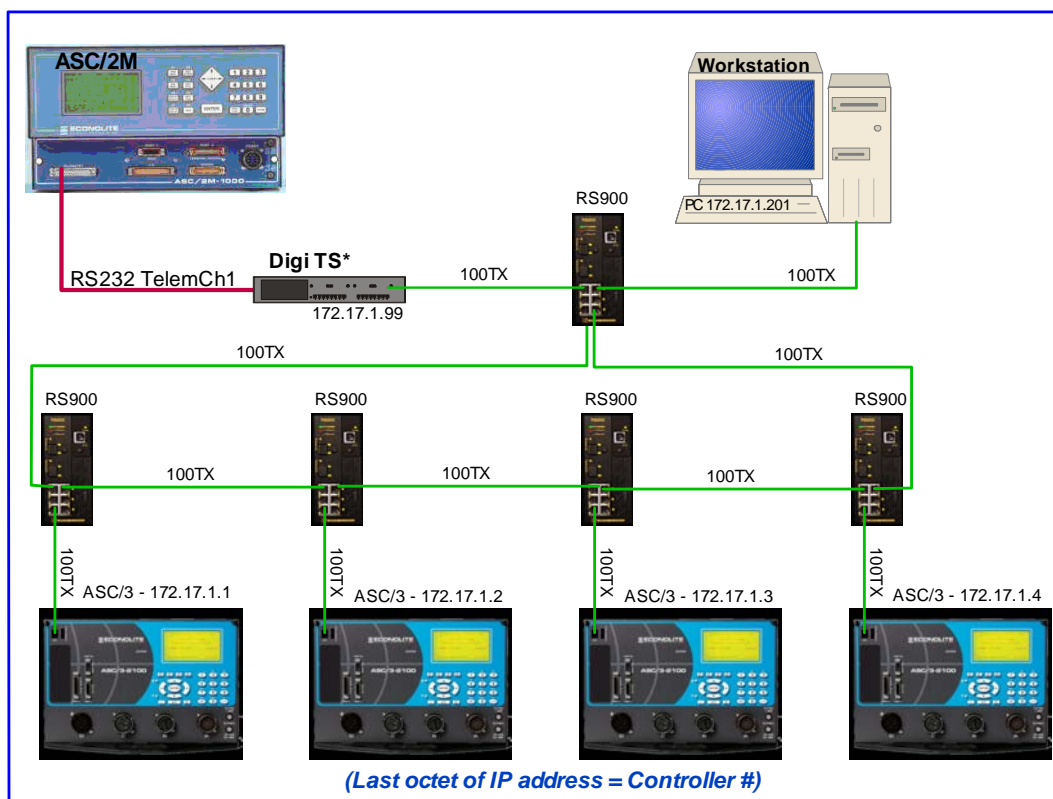
## Purpose

This application note discusses the necessary hardware components and procedures that allow Ethernet-type communications to connect an ASC/2M Master Controller to four ASC/3 Local Controllers.

## Introduction

There are many factors involved in a successful implementation of an Ethernet-type Communications Network. Most of these factors are beyond the scope of this application note and are not included in this document. This note assumes that you are knowledgeable with the various Microsoft Windows® operating systems, administrative functions, and general LAN/WAN terminology and topologies. If you need assistance, please contact your Econolite Account Manager.

Figure 1 shows the basic design discussed in this document.



**Figure 1. ASC/2M to ASC/3 Ethernet Connection through Digi Portserver TS2 H MEI**  
(For more information, contact Econolite Technical Support.)



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### Hardware

The hardware listed here is shown in Figure 1. (Not all hardware shown is listed)

- **Digi PortServer TS 2 H MEI:** Each unit has a separate plug-in power supply. The Digi PortServer TS 4 H MEI unit meets the NEMA temperature range specification. It is temperature-hardened to operate from -35C to +70C. The unit supports both 10base-t and 100base-tx Ethernet speeds and auto negotiates the correct duplex operation. EIA-232 (RS-232) connections to the Master are thru an RJ45 to DB-9, male connector.

**NOTE:** This application note only applies to Digi brand Terminal servers and does NOT apply to other manufacturers or brands.

- **Switch:** The usual name for this is a “Layer 2 Switch” or a “Bridge.” Units are available from many different manufacturers such as Ruggedcom (pictured is an RS900), etc. and come in many different port configurations (4, 8, 10 port units are most common). It is necessary for switches installed in the traffic cabinet to be environmentally hardened to at least the NEMA specification of -35C to +70C.
- **Workstation:** Any common desktop or laptop can be used running any of the latest versions of the Microsoft Windows OS and an Ethernet port. Computer setup:
  - Set the IP address to agree with your LAN.
  - If you use XP or Vista, make sure that your windows firewall is turned OFF.

Controller #	MAC Address	IP Address*	Controller Address
1	00:40:81:2A:54:A8	172.17.1.1	1
2	00:40:81:2A:5E:A8	172.17.1.2	2
3	00:40:81:2A:54:25	172.17.1.3	3
4	00:40:81:2A:C7:D4	172.17.1.4	4

\* The IP addresses in this table are the same as the example in this document. They will probably be different in your particular deployment, because they will need to be the same as your current LAN/WAN infrastructure. Notice that the IP address assigned to each controller is unique.

### Design Considerations

**Network:** This application note is not intended to describe all of the variables that go into network design. If you need design assistance in this area, please call your Account Manager.

Specifically, this application note is intended to describe cabled infrastructure (Ethernet over fiber/copper) only. Please note, we have not yet tested the different wireless technologies.



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**NOTE:** All devices on an Ethernet network must contain a unique IP address but the Subnet mask must be identical on each device.

**Controllers:** There are several ways to implement a closed loop system over IP (CL/IP). Three of these are listed below, each with its application note:

- This application note describes an *ASC/2M Master* used with an external Digi Terminal server to talk to *ASC/3* locals utilizing its internal Ethernet module.
- For an *ASC/2M Master* with *ASC/2S* locals, refer to AN2106, *ASC/2M to ASC/2S Ethernet Connection using a Digi Portserver TS2 H MEI*.
- If you have older *ASC/2* controllers and/or a mixture of *ASC/2* and *2S* controllers, refer to AN2107, *ASC/2M to ASC/2 Ethernet Connection Using Ruggedcom Terminal Servers*.

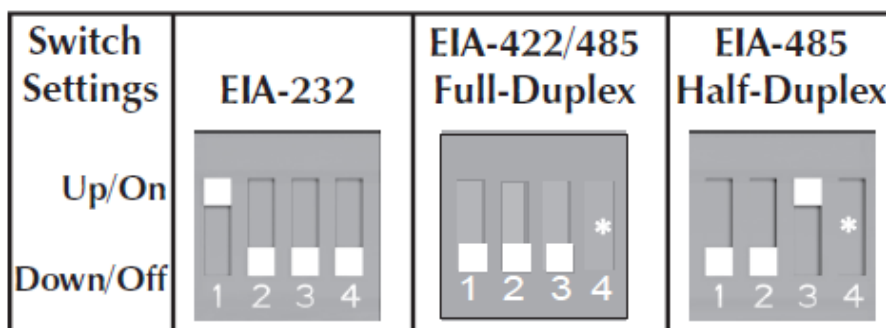
**Aries®:** You can also use the Digi PortServer to make a connection from *Aries* to an *ASC/2M Master*. Refer to AN1063, *ASC/2M Ethernet Connection Using Digi PortServer TS1 H MEI*.

**NOTE:** This application note assumes that you know how to set up a master-local communications channel, and therefore this procedure is not given here.

## Device Configuration: Digi PortServer TS 4 H MEI - ASC/2M Telemetry Port

### Part I: Configuration of the Serial Server that is connected to the ASC/2M Master Controller

1. On the back of the unit, set DIP switches for EIA-232 (RS232) operation.



**NOTE:** There are several different models of the Digi PortServer that will work with this application (TS1, TS2, and the TS4). Depending on which model you choose, these DIP switch settings may be different. For clarity, refer to specific product instructions.



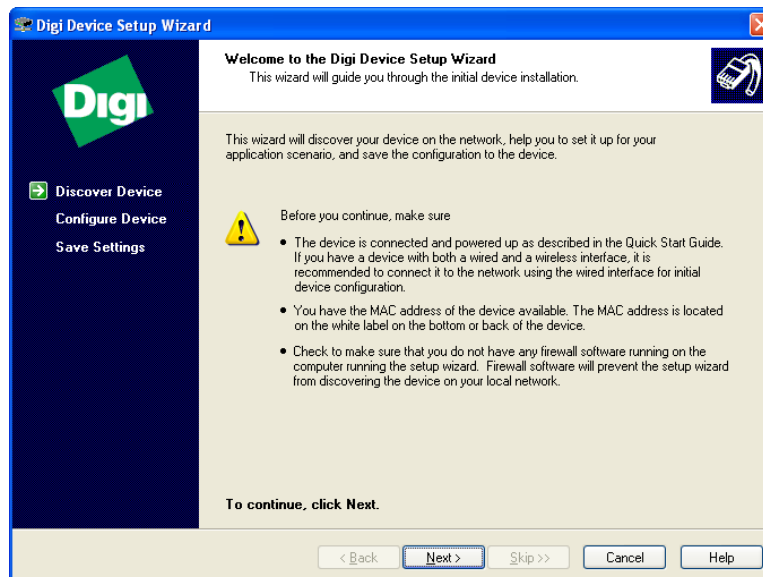
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2. Insert the CD that comes with the TS2.
3. Run the set-up.



4. Click [Next].

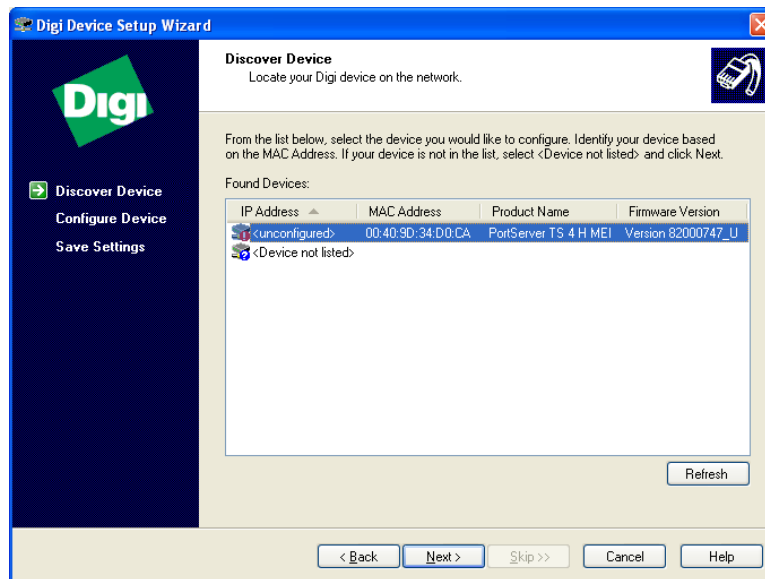




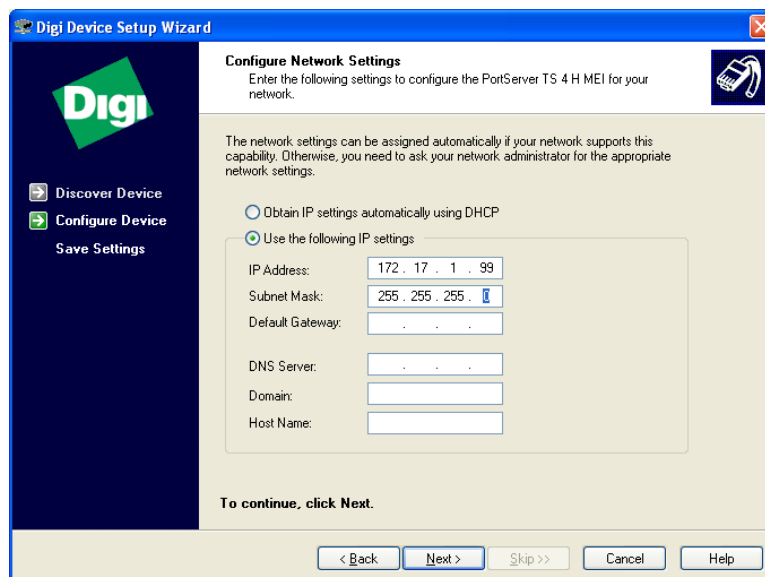
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5. Highlight the PortServer TS4 H MEI.
6. Click [Next].



7. Click the radio button “Use the following IP settings”.
8. Enter the correct IP address.
9. Click [Next].



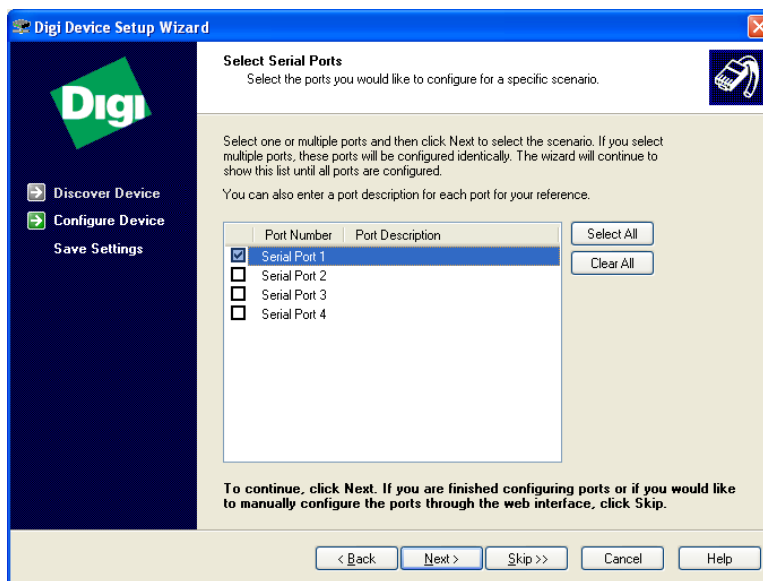


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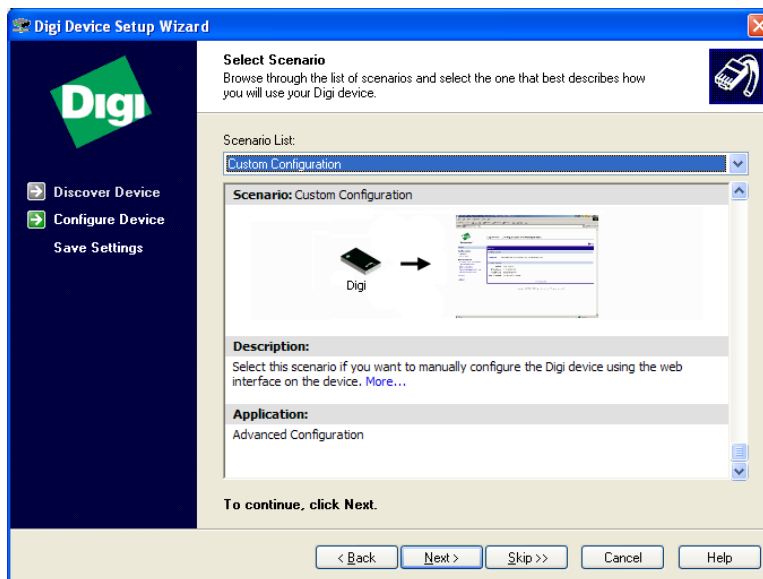
10. Check the box “Serial Port 1”.

11. Click [Next].



12. From “Scenario List,” select “Custom Configuration.”

13. Click [Next].



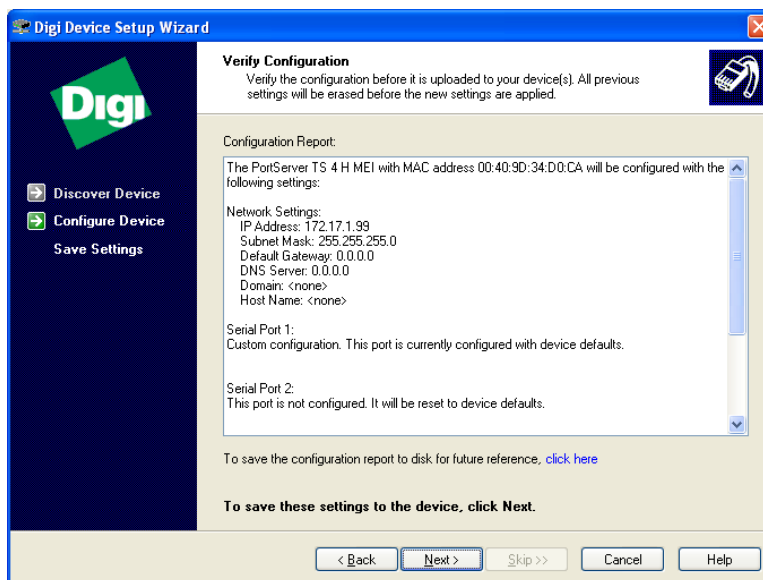


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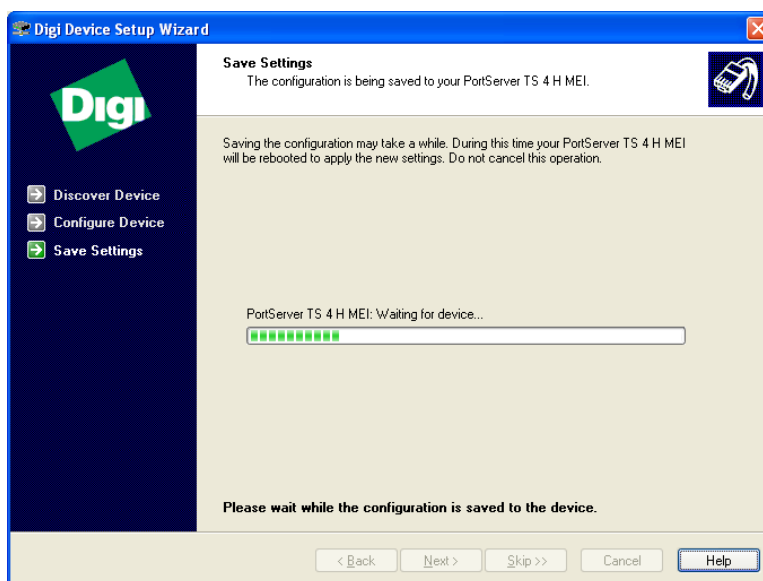
14. If you are using the Digi TS2 (as we are in this example):

- a. Skip Serial Port 2.
- b. On the “Verify Configuration Page,” click [Next].
- c. Do the same with Port 3 and Port 4 on TS4.



15. Wait for the setting to be saved.

16. The unit will reboot.



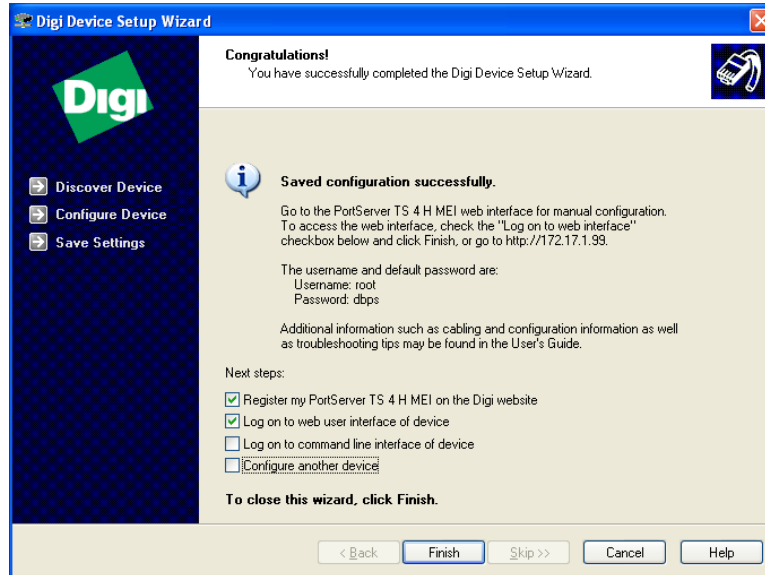


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17. Click [Finish].

**NOTE:** If you are NOT connected to the internet, uncheck the box “Register my PortServer TS 4 H MEI on the Digi website.”



18. Login with the default:

User Name: **root**

Password: **dbps**

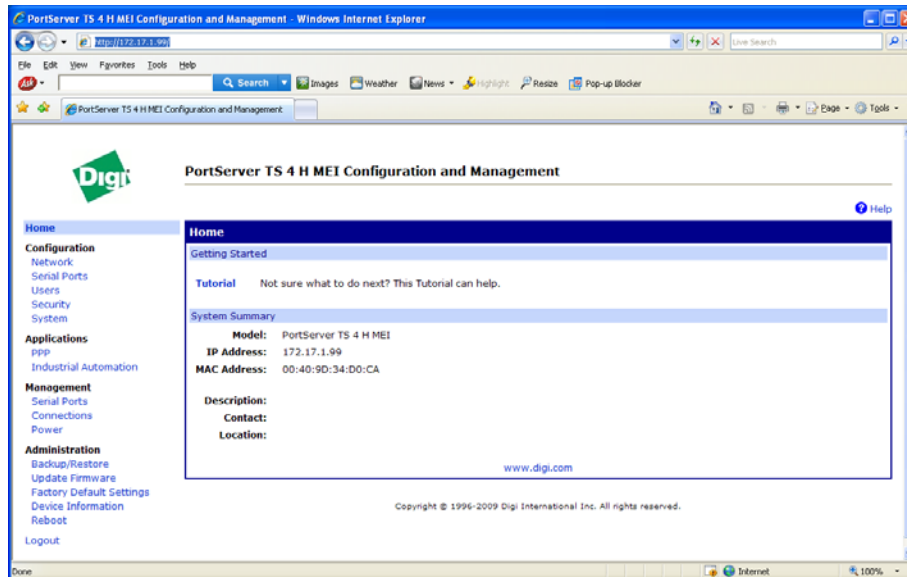




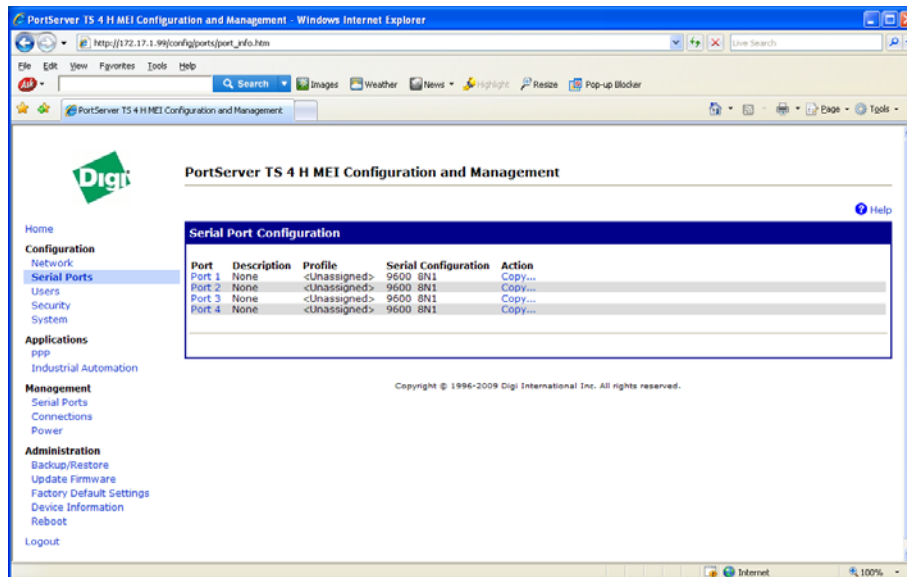
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19. Under “Configuration,” select “Serial Ports.”



20. Under “Serial Port Configuration,” select “Port 1.”

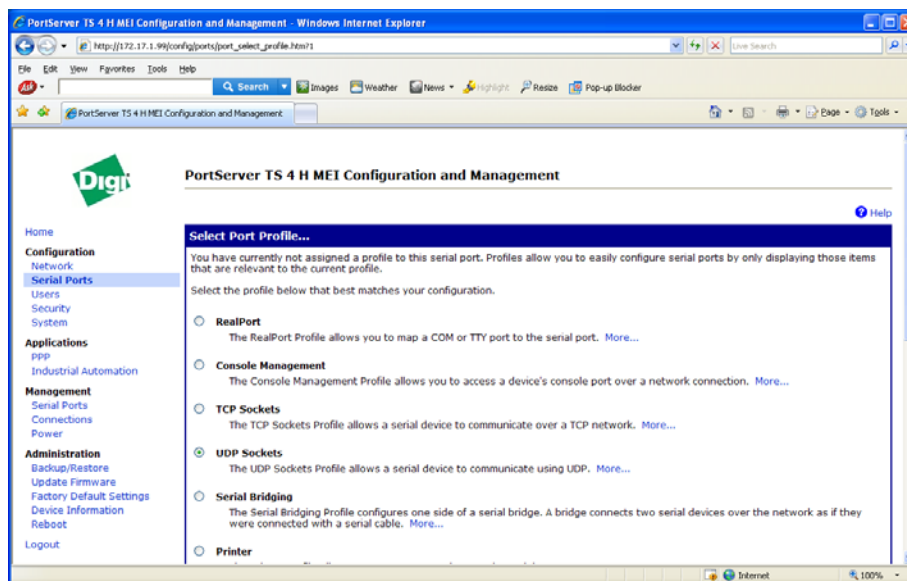




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21. Select the radio button “UDP Sockets.”
22. At the bottom of the page, click [Apply].

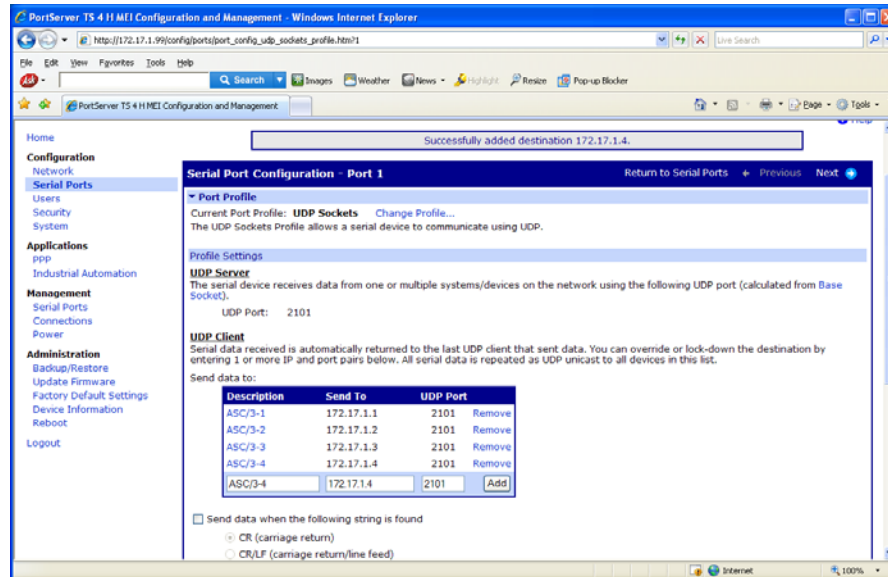


23. Enter the Controller name, IP address and UDP Port number of each controller on the Channel.  
(NOTE: The ASC/3 is automatically listening on UDP port 2101 for ECPIP calls from an ASC/2M.)
24. Change the “Send data after the following number of idle milliseconds” field to 2 ms.
25. At the bottom of the page, click [Apply].

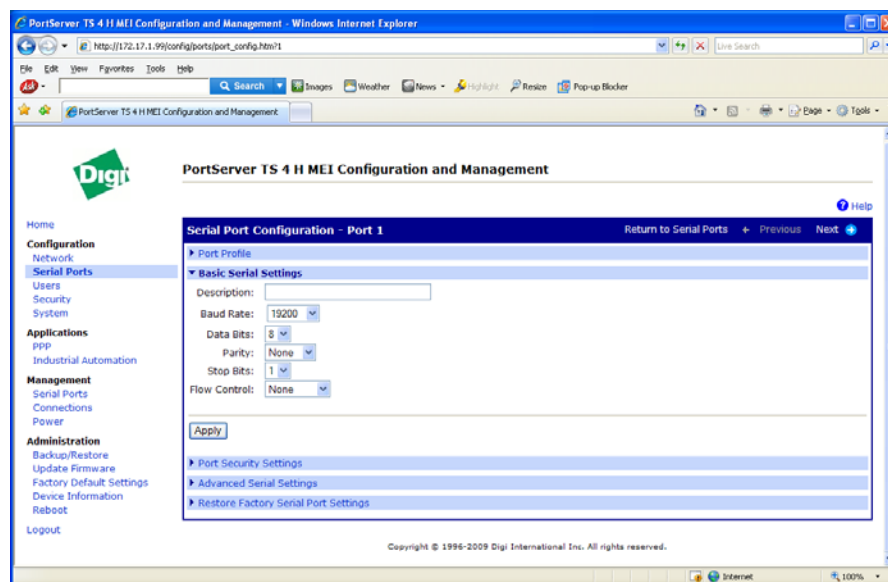


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26. At the bottom of the page, click “Basic Serial Settings.”
27. Make these settings the same as the telemetry port settings on the *ASC/2M Master* (MM-1-0-9). We recommend the settings shown.
28. Set “Flow Control” to “None.”
29. Click [Apply].



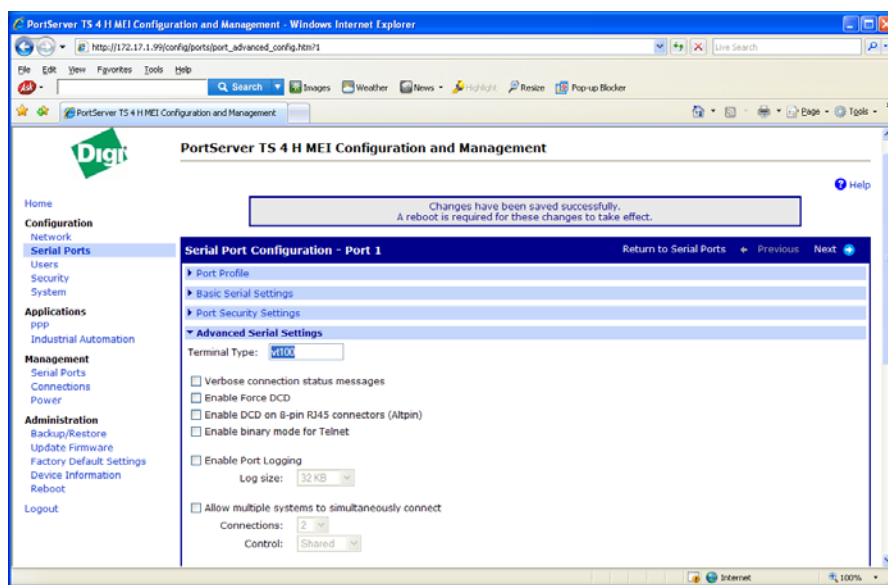


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- 30. Click “Advanced Serial Settings.”
- 31. Make sure that all boxes are unchecked on this page.
- 32. At the bottom of the page, click [Apply].

This is the end of the configuration for the Serial Server attached to the *ASC/2M Master* Controller and you can now close this window. This is the end of the Digi configuration.



## Configuration of the Master

- 1. To configure the *ASC/2M* telemetry settings, go to MM-1-0-9.
- 2. Enter the settings shown.

TELEMETRY SETUP AND OPTIONS		
TELEMETRY SETUP		
	CH1	CH2
DATA RATE (bps).....	19.2K	****
DATA FRAMING (parity, stop) .....	8,N,1	****
COMMANDS / SECOND .....	25	****
COMMAND TIME .....	724	****
WINDOW .....	80	****
BUFFER LEVEL .....	2	****
RTS TO CTS DELAY .....	0	****
TRANSMIT TIME .....	0	****



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3. To enable devices in the ASC/2M, go to MM-1-0-2.

(NOTE: You will probably have more settings because of more locals than this example shows.)

DEVICE#	ENABLE DEVICES				
	SYSTEM DET.	CONT. TRAP	SPEED	TELEM. CHAN.	
1.....	.	x	.		x
2.....	.	x	.		.
3.....	.	x	.		
4.....	.	x	.		
5.....	x	.	.		
6.....	x	.	.		
7.....	x	.	.		
8.....	x	.	.		

4. To set up the Telemetry Sequence for Channel 1 in the ASC/2M, go to MM-1-0-3.

(Again, your settings will probably be different for your application.)

TELEMETRY SEQUENCE CHANNEL 1						
(See HELP for caution.)						
LOCAL TELEM ADDRESS	CTR 1-24	AUX 1-24	SDA1 1-32	SDA2 1-32	SDB1 1-32	SDB2 1-32
1...	1	1	1	0	0	0
2...	2	2	2	0	0	0
3...	3	3	3	0	0	0
4...	4	4	4	0	0	0
5...	0	0	0	0	0	0
6...	0	0	0	0	0	0



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### Configuration of the ASC/3 Locals

**NOTE:** ASC/3s must be running 2.44.10 software or later.

On the ASC/3 controllers, we will be configuring IP information and the ECPIP Controller Address. We will not be configuring a UDP port. (ASC/3 code 2.44.xx or later is automatically listening on UDP port 2101 for ECPIP calls from an ASC2M.)

To configure IP information in the ASC/3, go to MM-1-5-1.

ETHERNET	MAC	00:40:81:xx:xx:xx
CONTROLLER IP.....		172. 17. 1. 1
SUBNET MASK .....		255.255.255.0
DEFAULT GATEWAY IP .....		172. 17. 1.254
SERVER IP.....		172. 17. 1. 99
LINK SPEED/DUPLEX .....		AUTO
DROP-OUT TIME .....		10

Next, go to MM-1-5-6 and configure the controller address.

ECPIP	
CONTROLLER ADDRESS.....	1
EXPANDED SYSTEM DETECTORADDRESS.....	0

This is the conclusion of the ASC/3 configuration.



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## Make sure of Master to Local Communications

1. To go to the “TELEMETRY RESPONSE STATUS” screen, in the master, go to MM-3-6.
2. If all has gone well, the screen should be similar to the screen shown here.

**NOTE:** Packet loss is <1%.

Depending on your communications architecture, you may want to adjust the telemetry response delay (either up or down) in the locals to get the packet loss as low as possible.

