User Guide



Digi TS Family

Digi One TS, Digi One TS Wireless, Digi One RealPort, Digi One RealPort Wireless, PortServer TS 2/4, PortServer TS 2/4 MEI, PortServer TS 2/4 Wireless, PortServer TS 1/3 + Modem, and PortServer TS 8/16



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About This Guide

Purpose

This user guide provides the following:

- Configuration and administration procedures
- Configuration examples

Audience

This guide is intended for the person responsible for configuring and administering device server. It assumes that this person has experience configuring network devices and is familiar with networking concepts.

Scope

This guide provides step-by-step instructions for configuring and administering your Digi device's main features. It focuses on performing these tasks through the Web user interface. It does not address how to configure every option, provide complete information on commands, or discuss hardware installation. These topics are covered in other documents in the Digi library.

Other Documents in the Library

Related documents in the library include:

Quick Start Guide

The guide that comes in the package with the Digi device covering the first steps necessary to get your device up and running.

Digi Command Reference

This online manual, available on the Software and Documentation CD, provides complete information on commands.

RealPort Setup Guides

These online manuals provide information on setting up servers for RealPort software.

Online Help for the Web UI

This context-sensitive online help provides information on configuration fields used with web browser configuration interface.

Setup Overview

Following is an overview of the process for setting up a device in the Digi TS family of devices for use. The rest of this guide provides details on each step of the process.

Step A: Plan

Before beginning setup, consider the following:

- How to assign an IP address to the Digi device's Ethernet interface, which can be accomplished in a number of ways. See "Configuring the IP Address" on page 13.
- How to configure serial ports. A key consideration is whether to use RealPort. Other considerations include the type of peripheral that will connect to the port and the peripheral's cabling requirements. See "Setting Up RealPort" on page 35 and the online RealPort driver documentation and Cable Guide, both of which are on the Software and Documentation CD.
- The various ways in which your Digi device can be configured. See "About Configuration Methods" on page 9 for more information.

Step B: Set Up the Hardware

- 1. If the Digi device supports multiple serial port interfaces (EIA-232, EIA-422/485), set the interface with the dip switches on the device.
- 2. Connect the device to the network.
- 3. Connect peripherals to serial ports. See the Cable Guide on the Software and Documentation CD.
- 4. Connect the power supply to the Digi device.

Step C: Install and Setup Digi Port Authority-Remote

Digi Port Authority-Remote is a utility that provides one of the ways to configure an IP address and also provides port monitoring.

Step D: Configure an IP Address

There are a number of ways to configure an IP address. See "Configuring the IP Address" on page 13 for more information.

Step E: Configure Ports

See the following for more information:

- "Setting Up RealPort" on page 35
- "Network Settings" on page 17

Step F: Configure Other Features as Required

See the following for information on setting up other features:

- "PPP Settings" on page 31
- "Configuring Autoconnection" on page 43
- "Configuring IP Routing" on page 47
- "Configuring Security Features" on page 49
- "Special Features:Domain Name System (DNS)" on page 63

Supported Devices

This manual provides information on the following Digi devices:

- Digi One TS, Digi One TS H (high temperature), and Digi One TS Wireless
- PortServer TS 1/3 + Modem
- PortServer TS 2/4, PortServer TS 2/4 MEI, PortServer TS 2/4 H, PortServer TS 2/4 MEI H, and PortServer 2/4 Wireless
- PortServer TS 8/16, PortServer TS 16 Rack, PortServer TS 16 DC Rack

About Configuration Methods

Use this section to learn about the different configuration methods.

Configure the Digi Device with the Wizard

Simply follow the prompts and choose your configuration with the wizard. Choose either a Microsoft Windows or Unix platform.

Configure the Digi Device from an Attached Terminal

With this method, you cable a terminal or PC running terminal emulation software to a device server port and then use the command line to enter commands. This method allows you to configure all features. It requires, however, that you and the device server be in the same location. Some users find it advantageous to configure the device server IP address this way and then use one of the other methods for the rest of the configuration.

Configure the Digi Device from a Telnet Session

With this method, you Telnet to the device server and use the command line to complete configuration tasks. The only disadvantage to this method is that you have to configure the device server with an IP address before you can Telnet to it.

Configure the Digi Device from the Web Interface

The great advantage to this method is ease of use. This method requires that you configure the IP address before you can access the configuration from the web interface, however, some features cannot be configured this way.

Downloading a Configuration File

With this method, you configure a Digi device and then do the following:

- 1. Download an existing configuration file to a host system.
- 2. Edit the file with specific configuration using a text editor.
- 3. Upload the file to the device server.

This an excellent method for maintaining highly similar configuration files for multiple Digi devices. The disadvantage is that the device server requires some configuration steps, such as the IP address, to be completed before it can be used.

Accessing the Configuration from the Web Interface

To access the configuration from the web interface, follow these steps.

This procedure assumes that you have configured the Digi device with an IP address already. See "Configuring the IP Address" on page 13.

- 1. Access the Digi device from a web browser by specifying the device server's IP address in the URL window.
- 2. Log on as root. The default password is dbps.

Quick Find Table

The following table is a quick reference for specific features and where to find the web interface configuration procedures.

The Digi TS Family includes the following devices:

- Digi One TS (and high temperature models)
- Digi One TS Wireless
- PortServer TS 2 (and high temperature models)
- PortServer TS 4 (and high temperature models)
- PortServer TS 2 MEI (and high temperature models)
- PortServer TS 4 MEI (and high temperature models)
- PortServer TS 2 Wireless
- PortServer TS 4 Wireless
- PortServer TS 1 + Modem
- PortServer TS 3 + Modem
- PortServer TS 8
- PortServer TS 16 (and Rack models)

Feature	Products Availability	Configuration Details
RealPort	Digi TS Family	Serial Port > Port Profile > RealPort
Wireless	Digi One TS Wireless Digi One RealPort Wireless PortServer TS 2/4 Wireless	Network > Wireless LAN Settings

Feature	Products Availability	Configuration Details
Modem Emulation	Digi One TS PortServer TS 2/4 MEI PortServer TS 2/4 Wireless PortServer TS 1 + Modem PortServer TS 3 + Modem PortServer TS 8/16	Serial Port > Port Profile > Modem Emulation
Embedded Modem	PortServer TS 1 + Modem PortServer TS 3 + Modem	Serial Port > Port Profile > Internal Modem
AutoConnection	Digi TS Family	Serial Port > Port Profile >TCP Sockets
IP Routing	PortServer TS 8/16	Serial Port > Port Profile > IA > Serial Master > Packet Routing
Access Control	Digi TS Family	User > New User > determine access
DNS	Digi TS Family	System > System Name
Industrial Automation (IA)	Digi One TS PortServer TS 2/4 MEI PortServer TS 2/4 Wireless PortServer TS 1 + Modem PortServer TS 3 + Modem PortServer TS 8/16	Serial Port > Port Profile >Industrial Automation
Power Over Serial Port	Digi One TS Wireless Digi One RealPort Wireless PortServer TS 2/4 Wireless PortServer TS 2/4 MEI	See "Special Features: Power Over the Serial Ports" on page 59
PPP	Digi TS Family	System > PPP
SSH Version 2	PortServer TS 2/4 MEI PortServer TS 8/16	Network > Security > Custom
TCP Socket Communication	Digi TS Family	Serial Port > Port Profile >TCP Sockets
UDP Multicast Communication	Digi TS Family	Serial Port > Port Profile >UDP Sockets
RADIUS	PortServer TS 8/16	Security > RADIUS
Power Management	PortServer TS 2/4 MEI PortServer TS 2/4 Wireless PortServer TS 8/16	Serial Port > Port Profile >Power Management

Configuring the IP Address

The next step in the device configuration process is to configure an IP address and access the device for more advanced configurations. You must set the initial IP before you can use the web interface. Once the IP is set, the device can be accessed through the web interface and any changes made including changing the IP address.

Options for Configuring the IP Address and Mask

The device server IP address can be configured using the following methods:

- With the Wizard from the Software and Documentation CD. (Insert the CD and the wizard automatically pops up for Microsoft Windows systems. If you have a UNIX system see the back of the quick start guide for mounting instructions.)
- With Digi Port Authority-Remote, a Digi utility on the Software and Documentation CD.
- From the command line, using the set config command. See the *Digi Command Reference* for more details.
- By updating the ARP table on a server and then pinging the Digi device (called ARP-Ping, see "Configuring the IP Address Using ARP-Ping" on page 14).
- Using a DHCP server ("Configuring an IP Address using DHCP and RARP" on page 15.)
- Using a RARP server ("Configuring an IP Address using DHCP and RARP" on page 15.)

The IP address and mask can also be changed using the web interface, but not for initial IP address configuration.

Device Support: Digi Port Authority-Remote and ARP-Ping for IP Address Configuration

Not all Digi devices can use Digi Port Authority-Remote and ARP-Ping for IP address configuration. To determine if you can use these features, find the hardware label on your Digi device and then use the table below to determine whether this feature is available:

Device	Part Number	Revision Required
Digi One IA RealPort	50000764-01	F or higher
Digi One RealPort	50000723-01	J or higher
PortServer TS 2	50000723-02	J or higher
PortServer TS 4	50000723-03	G or higher

Configuring the IP Address with Digi Port Authority-Remote

Use this section to configure an initial IP address, subnet mask, and default gateway using Digi Port Authority-Remote. This procedure cannot be used to change the IP address, but only to assign the initial IP address. It also cannot be used if a DHCP server is active.

Assumptions

This procedure assumes the following:

- That your Digi device supports this feature. See "Device Support: Digi Port Authority-Remote and ARP-Ping for IP Address Configuration" on page 13.
- That your Digi device is connected to the Ethernet network.
- That the Digi device has DHCP client turned on. This is the default setting and it will be on unless it was turned off.
- That you do **not** have a DHCP server to serve IP address. If you do, use the DHCP procedure. See "Configuring an IP Address using DHCP and RARP" on page 15.
- That you have installed Digi Port Authority-Remote version 2.01.11 or later. Click the Help button on the tool bar in Digi Port Authority-Remote to check the version number.

Procedure

- 1. Run Digi Port Authority-Remote.
- 2. Click Discover. A list of Digi devices appears. Systems with IP addresses of 0.0.0.0 need IP addresses.
- 3. Select a device from the list and then click Configure.
- 4. Supply an IP address, subnet mask, and default gateway and then choose OK.

Digi Port Authority-Remote configures the IP address, subnet mask, and default gateway.

Configuring the IP Address Using ARP-Ping

An IP address can be configured by manually updating a server's ARP table and then pinging the Digi device.

Note: The ARP-Ping command assigns the IP address you designate but also assigns default subnet mask and gateway addresses. It is necessary to change the subnet mask and gateway addresses.

Assumptions

This procedure assumes the following:

- That your Digi device supports this feature. See "Device Support: Digi Port Authority-Remote and ARP-Ping for IP Address Configuration" on page 13.
- That your Digi device is connected to the Ethernet network

Procedure

- 1. Record the MAC address of the Digi device. The MAC address is on the back of the unit.
- 2. Access a server on the same subnet as the Digi device.
- 3. Manually update the server's ARP table using the Digi device's MAC address and the IP address you want assigned to the Digi device. The following is an example of how this is done on a Windows NT 4.0 system:

arp -s 143.191.2.1 00-00-9d-22-23-60

4. Ping the Digi device using the IP address just assigned. The following is an example:

ping 143.191.2.1

The ping will probably time out before there is a response from the Digi device.

5. Wait several seconds and then ping the Digi device again.

The Digi device replies to the ping, indicating that the IP address has been configured.

Configuring an IP Address using DHCP and RARP

About DHCP and RARP

When the device server boots, it transmits a DHCP request and a RARP request. This continues until an address is assigned.

Procedure

To use RARP or DHCP follow these steps:

- 1. Set up an entry for an address on a DHCP or RARP server. If you intend to use RealPort, do the following:
 - Reserve a permanent IP address.
 - Record the IP address. You will need it when you configure the RealPort driver.
- 2. Power on the device server.

The DHCP or RARP server assigns the device server an IP address.

Accessing the Digi Device

- 1. Enter the IP address in the URL bar of your browser.
- 2. Enter your login name (root) and password (dbps).
 - Note: The following screen appears allowing you to configure the device for your specific needs. A tutorial is available to guide you in your decisions. The Help

button in the upper right corner is also available.

Home		
Getting Started		
Tutorial No	t sure what to do next? This Tutorial can help.	
System Summary	r	
Medelt	PortServer TS 16	
IP Address:	192 168 2.2	
MAC Address:	00:40:9D:23:4F:18	
Description:		
Contact		
Location:		
	www.dgl.com	

From the web interface, you make any changes you need for your configuration. Remember to click Apply to save your changes and **Reboot** when you are ready for the changes to take effect.

Configuration

The next step in the device setup process is to configure the network and serial port settings. In order to access the web interface an IP address must be assigned. It is assumed you have logged onto the web interface using the username, **root** and password, **dbps** in order to make any changes or additional configuration assignments. However, it is important to note that if you have used the wizard, your configuration is complete and you do not additional changes.

Network Settings

1. Click Network to view the IP settings or make any changes to the IP address.

* IP Settings	
Obtain an IP address	automatically using DHCP *
O Use the following IP a	ddress:
* IP Address:	14011012022
* Subnet Mask:	255-255-2224 B
Default Gateway:	1-01914201
Name Server:	264221113109
Domain:	likyi cores
Host Name:	
Base Socket:	2000
Secure RealPort:	1027
* Changes to DHCP, IP a	Idress and Subnet Nask require a reboot to take effect.
Apply	

2. Click Advance Network Settings.

Ethernet Interface					
Speed:	Auto	14	Model	Auto	H .
TCP/IP Settings					
TCP Time-To-Live:	64	1005	IP Time-To-Live:	64	5005
Probe Interval:	26	SPCE	Probe Count:	10	
letransmission Timeout:	240	secs			
manually set and override	e these	setting	r, select to Ignore 7	СР Кенер	wive settings from DHCP and reboot.
Enable TCP Keepalive Enable TCP Keepalive Idle Timeouti	setting ive hrs	s from D	mins 📃 sets		
Enable TCP Keepalive Enable TCP Keepalive Idle Timoout:	setting ive hrs yte in T	o from D	HCP mins 0 sets salive pathets		
Ignore TCP Keepalive Enable TCP Keepa Idle Tmeout: Store extra b OHCP Settings Enable Custore Identif	setting live hrs ste in T	o from D	HCP mins () sets salive packets		
Ignore TCP Keepalive Enable TCP Keepa Idle Timeout: Store extra b CHCP Settings Enable Custon Identifier: Custom Identifier:	setting ive the this yte in T	s from D 0 CP Keep	HCP mins () sets salive pathets		
Ignore TCP Keepalive Enable TCP Keepa Idle Timeout: Store extra b OHCP Settings Enable Custom Identifier: Wiscellaneous Settings	setting ive this yte in T	6 from D	HCP mins () sets salive pathets		
Ignore TCP Keepalive Enable TCP Keepa Idle Timotut: Store extra b CHCP Settings Enable Custom Identif Custom Identifier: Store Settings Hiscellaneous Settings Teinet Break: Stenderd	setting live hrs yte in T fier	(CP Keep	HCP mins () sets salive packets		

Adjust the network settings to fit your configuration needs. If you need additional information use the Help button on the top right hand corner of the configuration screen.

- 3. Click Apply to save any changes you make.
- 4. Click **Reboot** for changes to take effect.

Procedure for Using a Name Server

To configure a DNS server, follow these steps:

- 1. Click **Network** and select Use the following IP address.
- 2. Enter the IP address for the DNS server in the Name Server box. The DNS server maps names (MyDeviceName.mycompany.com) to IP addresses (192.105.1.2).
- 3. Enter a name for a group of network devices.
- 4. Enter the domain name that this device will live in and is tied to the DNS server address assigned in step 2. This name can be used by other network devices to talk to it, instead of using the its IP address. Get this name from the network administrator, because it must be entered in the DNS server to work properly.
- 5. Enter the Base Socket. The base socket is the incoming port number which remote devices need to use to access the device using the named protocols.

Note: Base Socket

This determines which network port (socket) on this Digi terminal server another network device (such as another Digi terminal server or a PC) uses to communicate using certain services. Most applications can leave this value unchanged. To calculate these settings: Telnet port = Base Socket + Serial Port Number Raw port = Base Socket + 100 + Serial Port Number

Service	Base Socket	Network Port
telnet	2000	2001
raw (TCP or UDP)	2000	2101

- 6. Click Apply.
- 7. Click **Reboot** for changes to take effect.

Configuring the Serial Ports

1. Click Serial Ports under Configuration.

		a di da man			0 Ha
Serial F	Port Configu	ination .			
Port	Description	Profile	Serial Configuration	Action	
Port 1	None	<unassigned></unassigned>	9600 BN1	Copy	
Point 2	None	«Unassigned»	960D BN1	Copy	
Part 3	Name	<unassigned></unassigned>	9500 BN1	Capy	
Port 4	None	<unassigned></unassigned>	9600 BN1	Copy	
Port 5	None	<unassigned></unassigned>	9600 BN1	Copy	
Purt ti	None	<unassigned></unassigned>	Vedo DN1	Citpy	
Part 7	None	<unassigned></unassigned>	9500 BN1	Copy	
Port 8	None	<unassigned></unassigned>	9600 BN1	Copy	
Purt 9	None	<unassigned></unassigned>	9600 BN1	Copy	
Part 10	None	cUnassignedo	9600 BN1	Cupy	
Port 11	None	cUnassigned>	9600 BN1	Copy	
Port 12	None	<unassigned></unassigned>	9600 BN1	CODY	
Part 13	None	<unassigned></unassigned>	9600 BN1	Copy	
Fort 14	None	<unassigned></unassigned>	9600 BN1	Capy	
Port 15	None	<unassigned></unassigned>	9600 BN1	CODV	
Purt 16	None	<unassigned></unassigned>	9600 BN3	CRDY	

- 2. Click the port number that you want to configure.
- 3. Click Change Profile and select a profile based on the device you have connected to your port.

Note: The following section shows the settings available for each profile.

Note: The 'More' link will describe the profiles with additional information.

sek	ect Port Profile
rou disp	have currently not assigned a profile to this serial port. Profiles allow you to easily configure serial ports by only laying those items that are relevant to the current profile.
Sele	ct the profile below that best matches your configuration.
0	RealPort
	The RealPort Profile allows you to map a COM or TTY port to the serial port. None
0	Console Management
	The Console Management Profile allows you to access a device's console port over a network connection. Nore
0	TCP Sackets
	The TCP Sockets Profile allows a serial device to communicate over a TCP network. More
0	UDP Sockets
	The UDP Sockets Profile allows a serial device to communicate using UDP. Nore
0	Secial Bridging
	The Serial Bridging Profile configures one side of a serial bridge. A bridge connects two serial devices over the network as if they were connected with a serial cable. More
0	Printer
	The Printer Profile allows you to connect a printer to the serial port. More
Ó	Terminal
	The Terminal Profile allows you to connect a terminal to the serial port. More
0	Industrial Automation
	The Industrial Automation (IA) Profile allows you to communicate and network-enable various IA devices and PLCs. Nore
0	Modern Cenulation
	The Modern Emulation Profile allows you to configure the serial port to act as a modern. More
0	Nodem
	The Modern Profile allows you to connect a modern to the serial port in order to establish or receive connection from other systems and moderns. Nore
0	Power Management
	The Power Management Profile allows you to control and manage a power controller to turn on and off outlets and devices. More
0	Custom
	The Custom Profile is an advanced option to allow full configuration of the serial port. More
Ap	aly Cancel

- Note: Profiles appear depending on your device. Naturally, if you do not have a device capable of a specific profile such as Power Management or Wireless, you will not have that particular profile available.
- 4. Click Apply to save the profile. The interface will determine any additional settings and advise you what tab to click next. See "Port Profiles" on page 21 or click Help for additional information.
- A port profile or port options page will come up and ask for additional parameters if needed. Enter the appropriate parameters and click Apply.
- 6. Click **Reboot** for changes to take effect.

0

Port Profiles

Each port profile determines the settings needed. The following screenshots of each profile show the port settings. For a complete description of each profile click the Help button.

RealPort

Installed on a network-based PC, RealPort emulates a serial port. That is, the application "thinks" it is working with a real serial port, such as COM1. When the application sends data to this serial port, RealPort ships the data across the network to the device server which in turn routes it to the serial device. This is also referred to as COM Port Redirection. The network is transparent to both the application and the device.

* Port Profile	
Current Port Profile The RealPort Profile	RealPort Charge MoNe and Annual Part and the serial part.
Profile Settings	
ReisPort will set the	setal port settings as directed by the PC application.
see this User Guide f sour CD or download	or Realifiert installation instructions. The User fluide can be found an leaf from lifter (Insection) dig com.
tion Sarial Setting	P
Advanced timble to	the pi
Besture Factory Se	nal Port Settings

Console Management

Access a device's console port over a network connection. Most network devices such as routers, switches, and servers offer serial port(s) for management. Instead of connecting a terminal to the console port, cable the console port to the serial port of your Digi device. Then using TCP/IP utilities like reverse telnet, network administrators can access these consoled serial ports from the LAN.

* Part Profile
Current Port Profile: Censele Menegement. Change Profile The Consele Management Profile allows you to assess a device") consiste port over a network convection.
Profile Settings
🛄 Enable Port Logging
Legisler IIII -
Convect to the following TCP parts on the network (calculated from Base Eccket). Televic TCP Part 2003 Secure Shall (SSH) TCP Part 2503
(Apply)
Basis Secol Settings
Advanzed Sanal Settings
E Mesteve Pieture Servic Part Settings

TCP Sockets

TCP socket communication enables serial devices to communicate with each other over an Ethernet network as though they were connected by a serial cable.

Configuring TCP socket communications involves configuring the Digi device for the following types of connections:

- Inbound connections, that is, connections that are initiated by the device on the other side of the network.
- Outbound connection, that is, connections that are initiated by the device connected to the serial port.

* Part Profile	Andreas Barlin		
The TOP Sockets Profile alloves a r	stal device to communicate ove	er a TCP natieork.	
evolia settiogs			
TCP. Server Connect to the following TCP port	r on the network (casulated fro	in hace howers.	
Teinet TCP Port: Raw TCP Port:	2001 2101		
1CP Client Automatically establish TCP conne	diate to a server or other nets	earted danica.	
Anonaticaly establish top of	onections.		
Connect	 divides When data arrives when DCD goes high 		
Convert To:	16.8.0		
Service:	Page 10		
TCF Port Number:	P		
Connect Ac:	tican (M		
Rush Shart Character:	Auto and		
liend Keepalive Packets:			
Altele			
AFFY			

Note: TCP Sockets profile is also the profile to use for Autoconnection. See "Click Reboot for changes to take effect." on page 33 for more information.

UDP Sockets

The Digi TS Family devices are capable of UDP multicast. UDP multicast is used to send serial data over an Ethernet cable to one or many hosts at the same time. UDP is a 'connectionless' protocol, meaning UDP does not need a protocol, but is sending data without any form of acknowledgement or error correction. Up to 64 devices can receive a UDP multicast at one time. Both the transmitting and receiving devices must be configured properly for UDP multicast to work.

Configuring UDP multicast communications involves configuring the Digi device for the following types of connections:

- Inbound connections, that is, connections that are initiated by the device on the other side of the network.
- Outbound connection, that is, connections that are initiated by the device connected to the serial port.

* Port Peakle			
Ouvent Part Profile The UOP Socialts P	II UOP Sockets Ch Vofile allows a serial O	eniae to cora	trianicates Lasing UDP.
Profile Settings			
UDP Server The serial device in isologiated from the	comes data hon one: tes Sockett.	er miktele s	systems/devices on the redwork using the following UDP port
UDP Port:	2101		
upp Client Automatically send	I serial data to one or (ture devices	e or systems on the network using VDP sockets.
Send data to:			
Description	s Seed To	UDP P	Part
No destina	tions currently configur	red.	
riest	0.0.0 0	- 0	Add
itiu m	ng before sending		
E Serel data eta	the following number	of idle militar	uesorsda
108 (9			
Alwars sared data	after the following run	ber of bytes	8
TEM to	tura -		
Apply			
. Barn Sertel Sette	nga		
· Advisiond terral	Sufficial I		
P. Heitzre Factory	ental Port Settings		

Note: The serial parameters for two connecting devices must match meaning if one device is set for 9600 bps, the other device must be set for the same rate.

Serial Bridging

A serial bridge is a network connection between two serial devices, each of which uses a device server. The serial devices "think" they are communicating with each other across a serial cable using serial communication techniques. There is no need to reconfigure the server or the serial device. Neither is aware of the intervening network.

This profile configures each side of the bridge separately. Repeat the configuration for the second Digi device server of the bridge specifying the IP address of the first Digi device server.

* Port Profile	
Current Part Profile: The Serial Bridging Pr as If they ware corre	Serial Bridging Charge Profile of the configures one side of a serial bridge. A bridge connects two serial devices over the netwo cool with a serial sable.
Profile Lettings	
@ Peer-to-over brid	
C Client/Genner brid	
This served	device initiates connections to the other senal device
> This sector	device receives convectors from the other serial device
Cornect To:	001
TCP Part Number:	
Connect to the follow	ing TCP ports to connect to this client (receiving) device (calculated from Base Socket).
Tainet TCP Port: 21 Nam TCP Port: 21	80. 191
Apply	
Base: Seriel Setterp	
Advantational Station State	5+44
Fedore Factory Se	a Port Setting:

Printer

This profile allows you to connect a printer to a serial port. Use this profile if you intend to print using the lpd protocol on your UNIX system.



Note: Refer to your UNIX User Guide for tips on configuring the print spooler on your UNIX system.

Terminal

This profile allows you to connect to a terminal to the serial port.

* Part Profile	
Eurord Port Andles Terminal The Terminal Profile allows you to	Change Profile
Profile Settings	
Terminal Type: U108	
Automatically establish TCP co	mactions when data arrives
Connect Tax	R R R R R R R R R R R R R R R R R R R
Bervice:	Televet St.
TOP Port Number:	13 (13)
Connect As:	Arrest 20
Fluin start characters	
Send Keepelive Packets:	
Apply	
• Nasar Sectal Settings	
Adversed Serial Settings	
Restory Pattory Sarial Port Satte	G1

Industrial Automation

The Industrial Automation (IA) Profile allows you to connect IA devices and PLCs to the serial port in order to network-enable the devices. Use this profile if you need to communicate over the network with an IA device or PLC that only uses serial protocols. This profile may also be used to add routing capabilities to IA devices or PLCs that act as serial masters and send packets to various systems or devices on the network. Industrial Automation enhances the IA device or PLC connected to the serial port.

* Part Profile	
Current Port Profile, Bad	Instrial Automation Charge Profile
The Industrial Automatic	m (IA) Ptofile allows you to constructicate and network-estable various IA devices and PLCs
Profile Settings	
Current Protocol US My PLC or other IA de system on the network	er Defined Serial Slave Change Protocol. vice is connected to the serial port and needs to communicate with another PLC, device, or 1.
• Liver Defined Settle	ND .
Mer perined Protocol	settings
Start Celimiter;	
End Celevitar:	1999
Message Timeout:	1008 100
100000000	Standard Harris
Process AVELE	iscope Characters
Apply	
• Basic berial bettings	
Advanted Serial Settor	25
Bastore Factory Gerial	Port Gattarian
Select IA Protocol.	
Please select the best n Serial Slave : M PLC, then, acts a using RealPort IC	addring scenario that dosely natches your environment: i device or PLC allegts incoroing requests from other systems, othen referred to as inasters. Is a a slave device. This scenario accepts connections over the redukork or through a serial brid OH port redirectory).
 Serial Master: 1 referred to as sla requests, which a two serial PLC's, 	Is device or PLC initiates connections, and sends requests to one or more casters, often rvds. W PLC, then, acts as a macter. This scenario uses routing to determine where to send can be a device or a different small port, another Dig device acting as a senial bridge betwee or any other networked device.
Apply Cascal	

Modem Profiles

There are 3 types of modem profiles:

Modem Emulation

Modem Emulation allows the Digi device to function as a modem. A short description follow the modem profiles listed below. For more specific information about Modem Emulation see "Special Features: Modem Emulation" on page 43, including AT commands specific to this function.

• Modem

The Modem profile configures the Digi device for attaching a modem to a serial port. For more specific information about the modem profile use the Help button in the upper right corner on the profile page of the web interface.

 Internal Modem The Internal Modem profile (not listed in the graphic) is specific to the PortServer TS 1/3+Modem devices. The fully functioning modem is embedded in port one and uses the standard AT command set. See the Documentation on the Digi CD for the complete AT Command Reference.

Modem Emulation

Modem Emulation allows you to configure the serial port to **act** as a modem. The Digi device **emulates** modem responses to a serial device and seamlessly sends and receives data over an Ethernet network instead of a PSTN (Public Switched Telephone Network). The advantage for a user is the ability to retain legacy software applications without modification and use a less expensive Ethernet network in place of public telephone lines.

* Part Profile	
Current Port Profile: Medien Envelopment Charge Profile The Modern Envilopment Envilopment is allower you to configure the serial port to act as a modern.	
Profile Gettings	
Configure the Salie terral Settings, Otherwise, no further configuration is necessary.	
Appy	
• Date Server Dettrip	
 Advanced Senal Setting: 	

Modem

Modem allows you to **attach** modem devices to the serial port in order to **establish or receive** connections from other systems and modems.

* Part Pro	file .
Current Po The Moder other syst	ort Prufile: Modent Change Profile In Profile allows you to connect a modern to the serial port in order to establish or receive connections from arms and readante.
Postle Set	tangs
This mode	in uses the following type of connection:
0 1	Incoming Connection
0	Dubgoing Connection
8	Network Bridge (connection (b-directional)
0.04	the FFP Connections on this Micken
100	nm curréponation to configure recurring or outgoing RM currenctions that use this senal port.
Apply	
Barr. Sa	nul Gettings
Advance	d Serial Settings
. Restored	Patters Sanal Port Settings

Note: Click the PPP Configuration link to set up incoming, outgoing or advanced PPP settings if the attached modem uses PPP connections. See "System Configuration" on page 31 for more information about PPP settings.

- Gyrtani	
• Oute/Time	
10	
* Besic HPP Settlegs	
Enable Dynamic IP Address Pool for Incoming Connections	
Pirst IP Address: 11/101	
Number of Addresses: 15 -	
Aprily	
Insurant IDD Connectory -	
Cutate-green convertions	
 Advanced INVE Settings 	
diag	

Power Management

The Power Controller feature allows the administrators of the Digi CM to use console management to control power functions. Power control consists of three basic functions: on, off, and reboot (power cycle). There are two typical scenarios when using a power controller. The simplest scenario is a non-serial device connected to a power controller (for example, an environmental sensor controller or a tape backup device).

* Part Pratte
Current Port Profile - Peneer Management - Charge Profile - The Power Management Profile allows you to control and manage a power controller to turn on and st outlots and devices.
Profile Settings
Controller Settings
Automatically Detail Power Controller
O Manually Configure Power Controller
Manufacturer: Enclose (in
overes 1
Threshelds (Drive Configurable when Controller is Connected) Current Alerne (ange)
Apply
Controller Guilets
Bant Sand Settings
Advanced timig bettings
Ferrury Factory Lectal Port Serrings

Note: Power controller settings can be automatically detected or configured manually.

* Part Pre	Gle .
Current Po	nt Profile: Perser Management Change Profile Menagement Profile allows you to control and menage a power controller to turn on and off sutjets and devices.
Frotte Ger	trea ()
* Cont	wher mettings
8 A	itametically Detect Power Controller
. G. M	anually Configure Power Controller
	and acturary (Inclusion in)
0	utheta: 1
T	restholds (Drify Configurable when Controller is Connected):
	Current Alarve (anos) 100
	Temperature (HC): IT7
Apply	1
+ corts	olar Gutats
· Bane Se	14 Settings
· Advance	d Serial Settings
· Federa	Faiture Savier Purt Selfange

Custom

This profile allows you to see all settings and set them accordingly. Use this profile only if your application does not fit into any of the predefined port profiles.

and include and in the		
Current Port /	Profile: Castiers C	trange Profile .
The Custon P	tofile a an adrance	d option to allow full configuration of the secial port.
Profile Setting	14	
Device Type:	E Daniel Contraction of the	
TEP Server Connext to th	e fallowing TCP port	s on the network (calculated from nace facility).
	Raw TEP Port:	2561 2103
TCP Client Automaticalis	establish TCP (crime	ations to a server or other networked device.
🗌 Astonati	cally extablish TCP of	avietiste.
	Connels To :	
	Dervice:	Tanat (8)
	TCP Part Number:	I man a second sec
	Convert As:	New m
The	h Start Character	Arts (1)
Sends	Installes Packets:	
	UDP Ports	2101
UDP Client	UDP Ports	
UDP Client Automatically	UDP Port:	2101 ane or more devices or systems on the network using UDP packets.
UDP.Client Autometicely Send data for	UDP Psrt:	2101 ane or more devices or systems on the network using UDP packets.
UDP Client Automatically Send tieta to Rente fito de	LOP Parts send senal data to o total Senal stinations surrently	2101 ane or more devices or systems on the network using UDP packets. Te IEP Part configured
UDP Client Automatically Send tieta to Deno fice de Joott	UDP Party send senal data to o todas Senal stinations sumerity o 08.80	2101 ane or more devices or systems on the retwork using UDP packets. Te UEP Part configured
UDP Client Automatically Send slata to Reco Sector Jacob	UDP Port) send sensil data to o hillon Send stinotons surrenth 0880	2101 ane or more devices or systems on the retwork using UDP packets. To UEP Part configured 0 0 Add
UDP Client Automatically Send state to True de Joint True de	UDP Part) send sensil data to o hydras Send stinotions surrently (0.8.00 a shen the following	2101 ane or more devices or systems on the retwork using UDP packets. To UEP Part configured 0 0 Add
UDP Client Automatically Send data to True de Joint True de Joint True dat True dat	UDP Part) send sensil data to o lydias Gand ethnotons surrently (0.8.80 a ethen the following 8 (carriage return)	2101 ane or more devices or systems on the network using UOP packets. To ILEP Part configured 0 0 Add
USP Client Autometrally Send data to Dente desti desti Dente dat desti	UDP Parts averal detail data to o collars Social ethnotions surverity (0.0.00 a when the following 8 (carriage return) 8,6.F (carriage return)	2101 ane or more devices or systems on the network using UDP packets. To LLOP Part configured) 0 Add g string is found (fine feet)
UDP Client Autometrally Send data to Ten de destri	UDP Parts mend sensel data to o stinutions surrently (0.0.00 a when the following 8 (carriage return) 8(SF (carriage return) estion string	2101 ane or none devices or systems on the network using UDP packets. To UDP Pack configured) 0 4dd g string is found (line feed)
UDP Client Autometrally Send tists to fre de detri	UDP Parts arend sensel data to o stimutions surrently (0.8.80 (0.8.80 (0.8.80 (0.8.80 (0.8.80 (0.8.80 (0.8.80) (0.8.80 (0.8.80) (2101 ane or more devices or systems on the network using UOP packets. To UDP part configured 0 0 4dd g string is found Ubie field
UDP Client Autometrally Send tists to free de detri	UDP Parts arend sensel data to o the sensel data to o the sense sense the stimutions surverity (0.8.80 (0.8.80 (0.8.80 (0.8.90) (2101 ane or more devices or systems on the network using UOP packets. The state of the packets of the system g string is found utine fixed
UDP Client Autometrally Send tists to free de detri	UDP Parts send sensil data to o trinotions surrently (0.8.80 a sciencitis following 8 (Carriage return) 8/CF (carriage return) 8/CF (carriage return) big stong before sen a sfar the following a star the following	2001 and or more devices or systems on the network using UOP packets. TO UOP particular configured 0 0 4 Add g string is found ubine fixed noting mother of othe relineaconds
UBP Client Autometrally Send data to free de destri D Terrol dat C	UDP Parts nered sensel data to o tetrations surrectly (0.8.80 a when the following A (carriage return) SpEF (carriage return) SpEF (carriage return) store string top storing before sen a after the following ms	2101 ane or more devices or systems on the network using UOP packets. The system of the network using UOP packets. The system of the network using UOP packets. (Internet of the network of the network using UOP packets.) (Internet of the network of the network using UOP packets.)
IBP Client Autometrally Send data to Fre de detri D Terrd dat D C D C D C D C D C D C D C D C D C D C	UDP Parts send sensil data to o (plice Send stinutions surrently (0.0.00 a schen the following A (carriage return) SpEF (carriage return) SpEF (carriage return) store string bits store string a star the following mil	2001 and or more devices or systems on the network using UOP packets. To UOP packets or UOP

User Configuration

Although it is not required, the device server is often configured to accommodate the requirements of particular users. Typical configurable user attributes include:

- Whether the user is required to supply a password.
- Autoconnection attributes, such as the system to which the user should be automatically connected at login.
- The interface the device presents the user, such as a menu or command line.
- Whether the user has access to outbound ports.

Note: For information on configuring PPP users, see "PPP Settings" on page 31.

Common User Features

Feature	Description
autoconnect	Automatically connects the user to the host specified on the autohost field using the service (TCP port) defined on the autoport or autoservice fields.
	Autoconnection can also be implemented by port instead of by user.
Default access type	Defines the type of access the user is restricted to. Menu, command line, autoconnect, and outgoing and netservice are the types.
Menu access	Defines the menu that is to be presented to a user with menu access.
Port access	Defines the number of outbound ports a user connected over the LAN can access at one time.
	This feature is not configurable from the web interface.
PPP	Defines PPP-related parameters for the user.
Routing updates	Defines whether RIP routing updates are forwarded over the link to this user.

1. Click Users > New User

2. Enter the Username, password, and password confirmation and click Next.

• Usemane:	Ginger	
Password:		
Confirm:	******	
• Denotes req	ared fields	
44 Press	Napt 22	Care

3. Select the profile that fits the user's environment/needs and click Next.

tained the cardia balow that had consistentia to this score's measurement. Reflict hals to consisting	the end and
configuration be only displaying the parameters that directly relate to that specific proble. If none of the pre-defined profiles match, select Custom Profile to allow advanced configuration of t	this user.
Console Management Use this profile if this user is expected to connect to and manage senal devices that have a c can connect directly, use a suctom menu interface, or revenue tenset or size into a senial port.	anaole port. Usere
O Terminel/Terminal Grud atom Use the profile if this user is using a terminal an terminal emulation program to connect to the needs to automatically connect to a termin analable on the network.	e serial port and
O Custom Scenario Use the profile to allow custom configuration of the user with all the available options. This p users to use if one of the pre-defined profiles do not correspond.	rofile is for advance
* Censiter required Delts	
REPrint Flant 14	Dancel

- 4. Select the Ports to manage or the Autoconnect function if needed and click Next.
- 5. Review settings and click Finish.

The Advanced tab under User allows you to set Escape characters for Connect, Telnet, Rlogin, and Kill as well as an SSH Public Key. Click Apply to save the settings.

6. Click **Reboot** for changes to take effect.

Security Configuration

Security settings allow the administrator to set passwords, security levels, and authentication via RADIUS server. Some services, such as Telnet and Rlogin, can be disabled for inbound users. This means that the users cannot access the Digi device using those services. This feature allows you to turn off individual services or to specify a security level, which means that all services <u>not</u> included in that level are turned off. The following services can be turned off.

- HTTP
- RealPort
- Reverse TCP
- Reverse Telnet
- Remote login
- Remote shell
- SNMP
- SSH
- Telnet

Procedure

- 1. Click **Security** > and enter a new password for the root administrator.
- 2. Enter the confirmation password and click Apply.
- 3. Click **Network Security** and select the security level appropriate to your environment and click Apply.

Note: Secure Access Levels -

Secure: SSH is the only service available to inbound users. High: SSH, HTTP, SNMP, and RealPort services are available to inbound users. Normal: all services are available. Custom, which means you can select services to turn off. The default service level is Normal.

- 4. Click RADIUS and select Authenticate users via RADIUS server.
- 5. Enter the appropriate IP address and secret and click Apply. The secret is the password used for encryption of messages between the RADIUS server and the Digi device.
- 6. Click **Reboot** for changes to take effect.

System Configuration

System settings allow you to set the bandwidth (throughput or latency) the date and time, PPP connections, and SNMP traps.

- Click System and enter the System Description (network name assigned to the Digi device), Contact (SNMP contact person -often the network administrator), Location (text description of the physical location of the Digi device), and Optimization (bandwidth used on the network) and click Apply
 - Note: Latency Allows fast access to time-sensitive devices. Requires more network bandwidth. Throughput - Allows better network performance at higher throughput.
- 2. Click Date/Time
- 3. Enter the date and time information and click Apply.
- 4. Click **Reboot** for changes to take effect.

PPP Settings

Under System Configuration, users can set the PPP (Point-to-Point Protocol) options to enable or disable the dynamic IP address pool. The dynamic IP address pool is a set of reserved IP addresses unique to the network that are assigned to the incoming connections. Users set the first IP address to use and the number of sequential addresses (plus one) to be reserved for assignment.

- 1. Click PPP.
- 2. If you are using PPP select Enable Dynamic IP Address Pool for Incoming Connections.
- 3. Enter the first reserved IP address of the incoming connections and the number of addresses to use and click Apply.
- 4. Click Incoming Connections > New Connection

Authentication Configura	tion	
Usemamer		
Password:		
Confirm Password:		
Authentication:	CHAFJEAF	
Peer Configuration		
 Automatically A Assign Static R Remote IP Add 	isign Remote IP Address from IP Address Pool mote IP Address ves: 0.010	
Allow Client Ac	ess to Local Network via PPP Connection vess: 0000	
Advanced Configuration		
Enable Session Timeout:	Timeout secs	
Enable Idle Tim Timeout:	eout	
Charles Council		

- 5. Enter the appropriate parameters and click Apply.
- 6. Click **Reboot** for changes to take effect.

For outgoing connections, CHAP or PAP authentication, password configuration, follow the procedure for Outgoing Connections.

1. Click Outgoing Connections

uthentication Confi	puration			
Usemar	10:			
Passwo	ret:			
Confirm Passed	ret:			
Phone Numb	er:			
Authenticati eer Configuration	ONAPENE			
Automatica	ly Obtain JP Addrs	ss from Hernote	Pear	
Request Sp	ecific IP Address			
3P Address	00.01			

- Note: CHAP authentication can be used to restrict PPP user access to outbound ports.
- 2. Enter the appropriate parameters and click Apply.
- 3. Click **Reboot** for changes to take effect.

For dynamic routing or proxy ARP settings follow the procedure for Advanced PPP settings.

4. Click Advanced PPP settings.

System Configuration	
 System 	
Date/Time	
* ppp	
Basic PPP Settings	
Decoming FPP Connections	
Outgoing PPP Connections	
* Advanced PPP Settings	
Enable Dynamic Routing (REV1) Esten for Routes (passive) Listen for Routes and Advertise to External Hosts (adive)	
Process ARP Requests (Proory ARP)	
Apply	

- 5. Select Enable Dynamic Routing (RIPv1)
- 6. Select the passive or active route setting.
- 7. Select the Process ARP requests if appropriate.
- 8. Click Apply.
- 9. Click **Reboot** for changes to take effect.

About Autoconnection

The autoconnection feature allows you to configure a user to access the device server and then be automatically connected to a host on the LAN.

You can implement autoconnection in the following ways:

- By port, where all port users are automatically connected to the same host. The device server is completely transparent to them.
- By user, where a user is required to log on and may be required to supply a password. Once the user is authenticated, an automatic connection to a host is made.

Configuring a Port for Autoconnection

- 1. Select Serial Ports under Configuration.
- 2. Click the TCP Sockets Port Profile.

Note: TCP Sockets is the Autoconnection profile.

- 3. Click Apply.
- 4. Select Automatically establish TCP connections and the appropriate parameters. Use the Help button for additional information.
- 5. Click Apply.
- 6. Click **Reboot** for changes to take effect.

Note: To return to the main Ports menu, choose Ports from the Menu again.

Configuring a User for Autoconnection

- 1. Click **Users** from the menu.
- 2. Choose New User.
- 3. Enter a username and then click Next.
- 4. Select the "Terminal/Terminal Emulation" user profile and click Next
- 5. Select Automatically connect to a ... Be sure to specify the following:
 - Hostname or IP address that will be the destination
 - Service
 - Destination TCP port number, which determines the type of connection for this user (such as 23 for Telnet)
- 6. Click Next and Verify the settings.
- 7. Click Finish to save settings.

Setting Up RealPort

The next step in the device setup process is to configure RealPort. This section provides a brief introduction to RealPort. If you use the wizard, follow the steps in the pop-up after selecting the Incoming scenario.

About RealPort

What is RealPort?

RealPort is a feature that allows network-based host systems to use the ports of the device server as though they were the host system's own ports, appearing and behaving as local ports to the network-based host.

RealPort Advantages

RealPort provides the following advantages:

- It expands the number of ports available to the host system.
- It enables device server ports to be treated as if they were directly connected to the host, which means they use all standard operating system interfaces that control baud rate, parity, stop bits, and flow control.
- It enables host administrators to do most of the required configuration on the host, the system with which the administrator is most familiar.
- It dramatically reduces host CPU overhead because multiple terminal or printer sessions are multiplexed over the same TCP/IP connection.

Configuring the RealPort Software

You must install and configure RealPort software on each host that will use RealPort ports. See the RealPort documentation for more information.

1. From the CD, click **Software**. (If the wizard pops up, click **cancel**.)

P Install Driver - Instructions	×			
You need to sun the Add Hardware Wizard to install or update your driver. Be sure to check the documentation for any specific instructions related to your hardware.				
To Instalt 1. Click the "Run Add New Hardware Wizsed" button below. 2. Dhoose «Next> at the "Welcome to the Add Hardware Wizsed" dialog window. 3. Dhoose "Next. I have already connected file hardware", frien click. «Next>. 4. Dhoose "Next Hardware Device", frien click «Next>. 5. Dhoose "Install the hardware that I manually selected from a list (Advanced)", frien click «Next>. 6. Select "Multi-port serial adapters", then click «Next>. 7. Select "Multi-port serial adapters", then click «Next>. 8. When prompted for the path press ChI-V, then click OK. 9. Select your model from the list and click «Next> for instructions on installation and configuration 10.When you linish the configuration, exit the Wizard and restart the system.				
To Update: 1. Uninstall the driver 2. Go to the "To Install" section above and proceed as you would a tresh installation.				
Instal/Update source directory (stored in your clipboard): E:/drivers/windows/w2k/realpot				
Bun Add Hardware Wizard. Close				

2. From the Control Panel, click Add new hardware and follow the prompts listed above.

The files are located in the drivers\windows\win2k\realport folder.

If you use the wizard, follow the steps in the pop-up after selecting the Incoming scenario.
Special Features: Wireless

Use this chapter for the initial configuration of your Digi Wireless device. After the initial configuration, the device can be configured using the same methods as the other Digi TS family products.

Configuration Considerations

The Digi wireless devices work ONLY with the antennae provided. You can use the wizard to configure your wireless device available on the Software and Documentation CD. You will need an Ethernet cable and a network PC to configure the wireless Digi device. After assigning the IP address, access the device from your browser by entering the IP address in the URL address bar.



Using Ethernet

1. Connect serial cable, Ethernet cable, and power supply.



2. Insert the CD in the drive. The configuration wizard will automatically start. Follow the steps in the wizard (either for Microsoft Windows or Unix) to configure the device.

Or:

If you do not want to use the wizard, click Cancel and follow the remaining procedure steps to set up the IP address and configure the device through the web interface.

- 3. Select Discover Digi Device (from the CD).
- 4. Select the wireless device and assign the IP address.
- 5. Click Set IP.
- 6. Enter the IP address, Subnet, and Gateway mask and click OK.

- 7. Select the device and click **Configure** to launch your browser.
- 8. Enter the username **root** and password **dbps** and click OK.

3	Please type y	our user name and password.
9	Sile:	192 168 2 2
	Realm	PortServer TS 4 MEI Wireless
	<u>U</u> ser Name	root
	Password	2333
	□ Save this	password in your password list

The home screen appears.

Ulgh	PortServer T	S 4 W Configuration and Management	
Connectware ²⁴			😯 Help
Home	Home		
Configuration Network	Getting Started		
Serial Ports Security System	Tetorial No	t sure what to do next? This Tutorial can help,	
Management	System Summary	r	
Port Logs	Model:	PortServer TS 4 W	
Administration Backup/Restore	IP Address: Host Name:	143.191.3.16	
Update Firmware Factory Default Settings System Information Reboot	MAC Address:	00:40:90:22:CF:82 www.digi.com	
Logout		Copyright @ 1996-2003 Digi Internetional. All rights reserved.	

9. Click **Network > Wireless LAN**

10. Enter parameters, click Apply to save.

Network Configuration	
 IP Sattings 	
* Wireless LAN Settings	
You are currently using the Ett For more information on using	nemet (wired) interface for your network configuration. the Wireless LAN interface, please consult the Quick Start or Online Help.
Automatically connect to a	any available wireless network
Network name (SSID):	berhaven
Security: Network Authentication:	Open -
Data Encryption:	WEP 💌
Network Key:	
Apply	
Advanced Network Settings	

- 11. Click Reboot for changes to take effect.
- 12. Click Advanced Network Settings, enter any additional parameters needed and click Apply to save..

Network Configuration				F
F Settings				
Windows LAN Settings				
* Advanced Network Setting	в			
Ethernet Interface				
Speed:	Alao 💌	Model	Auto	2
Wireless LAN Interface				
Country	United States ·			
Fragmentation Threshold:	2000	RTS Threshold	2000	
TCP/IP Settings				
TCP Time-To-Live:	54 secs	IP Time-To-Live:	64 5	ecs
Probe Interval:	25 1803	Probe Count:	10	
Retransmission Timeout:	243 5805		A	
TCP Learning an Cottons				
The following TCP Keepak However, you have select server, unselect (prore 70	ve settings are normali off to manually set and P kaepalive settings from	y set by the DHCP override these set In DHCP and reboot	server that ttings. To u	t assigns your network settings use the settings supplied by the DHCP
R Ignore TCP Keepalve :	attings from DHOP			
Enable TCP Keepal	WB.			
Idie Treeout	hrs mins	18CI		
E Store extra by	te in TCP Keepalive pa	okets		
DHCD Sattings				
F Enable Outtom Identif	er.			
Contract Manufactor E.	00%40%90%22%CF%A1	1.0		
Culturn Identifier: W				
Microflaneous Settings				
Microflaneous Semings Teinet Broak: Stenderd	-			

13. Unplug the Ethernet cable from the Digi device, disconnect the power, and power the unit up (reboot).

Configuration is complete.

Embedded Modem

The PortServer TS 1+ Modem and PortServer TS 3 + Modem functions as both terminal server and modem. The embedded modem can be used with PPP, dial-out, or auto answer and conforms to the standard AT command interface.

The PortServer TS 1 + Modem and PortServer TS 3 + Modem allow

- remote monitoring
- diagnostics
- data collection
- dial-up, wireless, or Ethernet connectivity

For a complete AT command reference see the AT Command reference from the CD under Documentation.

The remaining ports can be configured the same as any Digi TS Family product, either through the web interface or command line.

Installing the PortServer TS 1/3 + Modem

The PortServer TS 1/3 + Modem comes with a bi-directional cable for connecting the modem (port 1) to the phone line.

- 1. Plug the cable with the ferrite end into the modem port.
- 2. Plug other end into phone line.
- 3. Connect Ethernet.
- 4. Connect power supply.



Configuring the PortServer TS 1/3 + Modem

- 1. Follow the setup wizard from the CD to assign an IP.
- 2. If the wizard scenarios need additional configuration, login to the device IP from the URL.
- 3. Select Serial Ports > Change profile
- 4. Select the appropriate profile (Custom shows all options)

- 5. Enter the appropriate parameters and click Apply to save.
- 6. Click **Reboot** for changes to apply.

Chapter 7

Modem Emulation

The following Digi TS Family products include Modem emulation:

- Digi One TS
- Digi One TS Wireless
- PortServer TS 2/4 MEI
- PortServer TS 2/4 Wireless
- PortServer TS 1/3 + Modem

Note: Port one on the PortServer TS 1/3 + Modem is an actual embedded modem. The remaining ports are capable of emulating a modem.

PortServer 8/16

Modem emulation enables a system administrator to configure a networked Digi device to act as a modem. The Digi device emulates modem responses to a serial device and seamlessly sends and receives data over an Ethernet network instead of a PSTN (Public Switched Telephone Network). The advantage for a user is the ability to retain legacy software applications without modification and use a less expensive Ethernet network in place of public telephone lines.

To use a Digi device for modem emulation, do the following:

- Use a cable with the correct wiring pinouts (see "Modem Emulation Cable Signals" on page 44)
- Configure the serial ports and device type with the Web Interface serial port profile Modem Emulation
- Note: Before AT commands are accepted, DSR must go high on the Digi device-Common User Scenarios

The Digi device in modem emulation mode allows for the easy replacement of modems in almost any environment where there is a LAN or WAN.



User Scenario-Diagram A

In Diagram A, the Digi One TS replaces a modem connected to a workstation running an application. The Digi One TS allows for the use of software applications without modification by responding to all the AT commands configured in the workstation application. The Digi One TS

connects to the IP Address of the server when an ATDT *ipaddress:port* (ATDT 192.168.25.5:50001) command is issued. Once the remote device establishes the TCP connection, a CONNECT message is sent to the serial port and only then does the Digi device switch from AT command mode to data mode. Using the modem escape sequence or dropping DTR on either side terminates the connection. A DISCONNECT message will be sent to the application if the remote side closes the TCP connection.



In Diagram B, two Digi devices will replace modems on both sides of the connection. The initiation of the connection occurs with either of the Digi devices. If both ends are Digi devices, the TCP listening port number is 50001 for port 1. An example of the connection command is ATDT 192.168.25.30:50001. Upon establishing a successful TCP connection, a CONNECT message is sent to the serial port and only then does the Digi device server switch from AT command mode to data mode. After the CONNECT is received, the transmission of data begins. Using the modem escape sequence or dropping DTR on either side terminates the connection.

Modem emulation has the ability to communicate to an infinite number of other devices.

Modem Emulation Cable Signals

Use the following signal assignments to make a cable connecting the Digi device to a serial device.

Serial Device		Digi Device
CTS (in)		RTS (out)
RTS (out)		CTS (in)
DSR (in)		DSR (in)
DTR (out)	>	

Serial Device		Digi Device
DCD (in)	◄	DTR (out)
TX (out)		RX (in)
RX (in)	•	TX (out)
GND		GND

DSR and DTR on the serial device side are connected to the DSR signal of the Digi device.

Scenarios for Modem Emulation

Outgoing Modem Emulation Connection

Serial device sends ATDx.x.x.y command, which triggers the device server to establish a telnet connection to destination IP=x.x.x.x, port=y.

Incoming Modem Emulation Connection

A device on the network telnets to port 50001 (50000+1 = 1st serial port). This incoming connection triggers the device server to generate a RING on the serial port. The device attached to the serial port will answer the RING and the connection is established.

Modem Emulation Pooling

This is a combination of Incoming Modem Emulation Connection and a hunt group. A device on the network telnets to port 50000. The device server checks if a serial port configured for modem emulation is available. If so, it connects to the port, otherwise returns an error.

Modem Emulation Bridge

A combination of Outgoing and Incoming Modem Emulation Connections, in which both serial devices require to talk to a modem. The first serial device telnets to the second device using ATDx.x.x.x;y, the second device gets a RING and accepts the incoming telnet connection.

Originating, Answering, and Disconnecting Calls

In the following table, an application requests a TCP session with the Digi device. The table displays the responses of the Digi device and application as they negotiate a TCP connection.

Application AT Com- mand	Digi Device Server Response	Notes
AT&F	OK.	AT command request to restore defaults to factory set- tings-Digi device server responds OK.
ATDT ipaddress:TCPport#	Receives request to start a TCP session. CONNECT 115200.	Request to start TCP session with IP address and TCP port number of the Digi device server-Digi device server starts a TCP session
<p>+++<p></p></p>	ОК	Escape sequence is sent <p> is Pause in seconds with "+++" being the escape sequence in ASCII characters - Digi device server switches from AT command to data mode</p>

Application AT Com- mand	Digi Device Server Response	Notes
ATH	NO CARRIER response sent	Disconnect AT command is sent-Digi device server responds with NO CARRIER

In the following table, the Digi device server receives a request for a connection.

AT Command	Digi Device Server Response	Notes
	RING	The Digi device server sends a Call Notification
ATA (or ATS0=n)	CONNECT 115200	Manual (ATA) or Auto Answer (ATS0=n) response-the Digi device server sends a CONNECT message when the TCP session is started
	NO CARRIER	The Digi device server sends a NO CARRIER message when the remote disconnects

Originating Calls

To send data to a Digi device server, enter the following information for your application replacing the telephone number with the Digi device server's IP address and TCP port number. Enter the following command:

ATDT ipaddress:tcp_port#

an example is ATDT 146.135.13.5:50001

Answering Calls

The Digi device server listens on a pre-defined TCP port to receive data. When the Digi device server receives a call notification (RING) through a serial port to begin a TCP connection, it needs to reply with an ATA or a pre-configured Auto-Answer to answer the call.

Note: The TCP ports assigned to the serial ports are as follows: Serial port 1 listens on TCP port 50001 Serial port 2 listens on TCP port 50002 Serial port 3 listens on TCP port 50003 Serial port 4 listens on TCP port 50004

Disconnecting Calls

The TCP connection disconnects by either dropping the DTR signal on the serial port or sending the escape sequence <P>+++<P> to the Digi device server. <P> represents a one second pause.

Disconnecting Calls-Digi Device Server

The Digi device sends a NO CARRIER response to the serial port when the network connection is dropped.

Modem Emulation AT Command Set

AT Command	Function	Result Code
ΑΤΑ	Answer command: The Digi Device Server will go off hook and answer a TCP connection request.	

AT Command		Result Code	
	This command dire the IP address ent TCP connection. If respond no dial tor		
	Note: If the ATD comodem will respon		
	Dial Modifiers. The tuation characters spaces being ignored		
	0-9 DTMF dig	its 0 to 9.	
	. Dot notatio	on used for IP addresses.	
	IP address	es are written as four numbers separated by periods, where the	
	first numbe	er is between 1 and 255 and the other three numbers are	
ATD <ip>:</ip>	between 0	and 255. Retype the IP address in the format xxx.xxx.xxx.xxx .	
<tcp PORT></tcp 	: Colon nota	tion used for the TCP port	
	L Re-dial last	number: the modem will re-dial the last valid telephone	
	number. Th	he L must be immediately after the D with all the following	
	characters	ignored.	
	P This comm	and is accepted, but not acted on.	
	T This comm	and is accepted, but not acted on.	
	R This comm	and is accepted, but not acted on.	
	S=n Dial the nu	mber stored in the directory (n=0 to 3). (See &Z.)	
	, Dial pause	the modem will pause for a time specified by S8 before dialing ollowing ""	
	- Ignored: m	av be used to format the dial string.	
	<space> Ignored; m</space>	av be used to format the dial string.	
	<i> Invalid cha</i>	racter: will be ignored.	
	· · · · · -		
ATEn	Command echo. T characters to the E value, if valid, is w	OK n=0 or 1	
	E0 : Disables com	Otherwise	
	E1 : Enables command echo		
	Disconnect (Hang	up) command	
	This command init	iates a hang up sequence	OK n=0 or 1
АТН	H0 · Disconnect th	ERROR Otherwise	
	H1 : If on-book the		
	mode.		
	Identification comr	nand	
	10 reports product		
	11 reports 255		
	12 reports "OK"		
	12 reports "OK"		OK $n=0 \text{ or } 9$
ATIn		TS	ERROR
	IS reports "OV"	_10	Otherwise
	IS reports UK		
	17 reports "OK"		
	18 reports "ERROF	<u>,</u>	
	19 reports "ERROF		

AT Command	Function	Result Code
ATLn	Accepted but ignored.	OK n=0 or 3 ERROR Otherwise
ATMn	Accepted but ignored.	OK n=0 or 3 ERROR Otherwise
ATNn	Accepted but ignored.	OK n=0 or 1 ERROR Otherwise
ATOn	 Return to On-Line Data Mode. This command determines how the modem will enter the on-line data mode. If the modem is in the on-line command mode, the modem enters the on-line data mode. If the modem is in the off-line command mode (no connection), ERROR is reported. O0Enters on-line data mode. Handling is determined by the Call Establishment task. Generally, if a connection exists, this command connects the DTE back to the remote modem after an escape (+++). O1Same as above 	OKn = 0 or 1 and a connection exists. ERROR Otherwise or if not connected.
ATP	Accepted but ignored.	ОК
	Quiet Results Codes Control command.	
ATQn	The command enables or disables the sending of the result codes to the DTE according to the parameter supplied. The parameter value, if valid, is written to S14 bit 2. Q0 Enables result code to the DTE (Default).	OK n=0 or 1 ERROR Otherwise
ATSn	n Establishes S-register n as the last register accessed n=v Sets S-Register n to the value v. n? Reports the value of S-Register n.	
ATT	Accepted but ignored.	ОК
ATVn	Result Code Form. This command selects the sending of short-form or long- form codes to the DTE. The parameter, if valid, is written to S14 bit 3. V0 Enables short-form (terse) result codes. Line feed is not issues before a short-form result. V1 Enables long-form (verbose) results codes (Default).	OK n=0 or 1 ERROR Otherwise
ATWn	Accepted but ignored.	OK n=0 to 3 ERROR Otherwise
ATXn	Accepted but ignored.	OK n=0 to 3 ERROR Otherwise
ATYn	Accepted but ignored.	OK n=0 or 1 ERROR Otherwise
ATZn	Accepted but ignored. (Soft Reset and restore Profile).	OK n=0 or 1 ERROR Otherwise
AT&Cn	 DCD Option. The Digi Device Server controls the DCD output in accordance with the parameter supplied. The parameter value, if valid is written to S21 bit 5. &C0 DCD remains ON at all times. &C1 DCD follows the state of the connection 	OK n=0 or 1 ERROR Otherwise

AT Command	Function	Result Code
	DTR Option. This command interprets the ON to OFF transition of the DTR signal from the DTE in accordance with the parameter supplied. The parameter value, if valid, is written to S21 bits 3 and 4. Also see S25.	
	&D0 -DTR is ignored (assumed ON). Allows operation with DTEs which do not provide DSR.	
AT&Dn	&D1DTR drop is interpreted by the modem as if the asynchronous escape sequence had been entered. The modem returns to asynchronous command state without disconnecting.	OK n=0 to 3 ERROR Otherwise
	&D2DTR drop causes the modem to hang up. Auto-answer is inhibited. (Default.)	
	&D3DTR drop causes the modem to perform a soft reset as if the Z com- mand were received. The &Y setting determines which profile is loaded.	
	Restore Factory Configuration (Profile)	
AT&Fn	The Device Server loads the factory default configuration (profile). The fac- tory defaults are identified for each command and in the S-Register descrip- tions. A configuration (profile) consists of a subset of S-Registers.	OK n=0 or 1 ERROR Otherwise
	&F0Restore factory configuration 0.	Otherwise
	&F1Restore factory configuration 1.	
AT&Jn	Accepted but ignored.	OK n=0 or 1 ERROR Otherwise
AT&Gn	Accepted but ignored.	OK n=0 or 1 ERROR Otherwise
AT&Jn	Accepted but ignored.	OK n=0 or 1 ERROR Otherwise
	Flow control. This command defines the DTE/DCE flow control mechanism. The parameter value, if valid, is written to S39 bits 0, 1, and 2.	
	&K0 Disables flow control	OK n=0,3,4,5,or 6
AT&Kn	&K3 Enables RTS/CTS flow control (Default)	ERROR
	&K4 Enables XON/XOFF flow control	Otherwise
	&K5 Enables transparent XON/XOFF flow control	
	&K6 Enables both RTS/CTS and XON/XOFF flow control.	
AT&Ln	Accepted but ignored.	OK n=0, 1, 2 ERROR Otherwise
AT&Mn	Accepted but ignored.	OK n=0, 1, 2 ERROR Otherwise
AT&Pn	Accepted but ignored.	OK n=0, 1, 2 ERROR Otherwise
AT&Qn	Accepted but ignored.	OK n=0 to 8 ERROR Otherwise

AT Command	Function	Result Code
	RTS/CTS Option This selects how the Digi Device Server controls CTS. CTS is modified if hardware flow control is selected (see &K command). The parameter value, if valid, is written to S21 bit2.	
AT&Rn	&R0CTS reflects the ability of the modem to transmit data. For example, CTS will drop during retrains. In sync mode, CTS tracks the state of RTS; the RTS-to-CTS delay is defined by S26. In async mode, CTS is normally ON and will turn OFF only if required by flow control.	OK n=0 or 1 ERROR Otherwise
	&R1CTS forced on (default). In sync mode, CTS is always ON (RTS transi- tions are ignored). tracks the state of RTS. In async mode, CTS is normally ON and will turn OFF only if required by flow control. &R2CTS follows RTS	
	DSD Overside	
AT&Sn	This command selects how the modem will control DSR. The parameter value, if valid, is written to S21 bit 6.	OK n=0 or 1 ERROR
	&S1DSR will become active after answer tone has been detected and inac- tive after the carrier has been lost.	Otherwise
AT&Tn	Accepted but ignored.	OK n= 0 ERROR Otherwise
AT&V	Display Current Configuration and Stored Profiles There is no NVRAM support currently.	ОК
AT&Vn	Accepted but ignored.	OK n=0 to 5 ERROR Otherwise
AT&V6	Display current IP settings of the Device Server	OK
AT&Wn	Accepted but ignored.	OK n=0 or 1 ERROR Otherwise
AT&Xn	Accepted but ignored.	OK n=0 or 1 ERROR Otherwise
AT&Yn	Accepted but ignored.	OK n=0 or 1 ERROR Other- wise
AT&Zn	&Zn=x - Store Telephone Number. Currently not supported	OK n=0 or 3 ERROR Otherwise
AT∖An	Accepted but ignored.	OK n=0 to 3 ERROR Otherwise
AT\Gn	Accepted but ignored.	OK n=0 or 1 ERROR Otherwise
AT\Kn	Accepted but ignored.	OK n=0 to 5 ERROR Otherwise

AT Command	Function	Result Code
AT∖Nn	Operating Mode This command controls the preferred error correcting mode to be negotiated in a subsequent data connection. \N0 Selects normal speed buffered mode \N1 Serial interface selected - Selects direct mode \N2 Accepted but ignored. \N3 Accepted but ignored. \N4 Accepted but ignored. \N5 Accepted but ignored.	OK n=0 to 5 ERROR Otherwise
AT\Vn	Accepted but ignored.	OK n=0 or 1 ERROR Otherwise
AT+MS	Accepted but ignored.	ОК
AT+MI	Accepted but ignored.	ОК
AT%Cn	Accepted but ignored.	OK n=0 to 3 ERROR Otherwise

S-Registers

Register	Function	Range	Units	Saved	Default
	Rings to Auto-Answer				
SO	Sets the number of rings required before the Digi Device Server automatically answers a call. Setting this register to Zero disables auto- answer mode.	0-255	Rings	*	0
	Ring Counter				
S1	S1 is incremented each time the modem detects a ring signal on the telephone line. S1 is cleared if no rings occur over an eight second interval.	0-255	Rings		0
	Escape Character				
S2	S2 holds the decimal value of the ASCII char- acter used as the escape character. The default value corresponds to an ASCII '+'. A value over 127 disables the escape process, i.e., no escape character will be recognized.	0-255	ASCII	*	43
	Carriage Return Character				
S3	Sets the command line and result code termi- nator character. Pertains to asynchronous operation only.	0-127	ASCII		13
	Line Feed Character				
S4	Sets the character recognized as a line feed. Pertains to asynchronous operation only. The Line Feed control character is output after the Carriage Return control character if verbose result codes are used.	0-127	ASCII		10
	Backspace Character				
S5	Sets the character recognized as a backspace. Pertains to asynchronous operation only. The modem will not recognize the Backspace char- acter if it is set to a value that is greater than 32 ASCII. This character can be used to edit a command line. When the echo command is enabled, the modem echoes back to the local DTE the Backspace character, an ASCII space character and a second Backspace character; this means a total of three characters are trans- mitted each time the modem processes the Backspace character.	0-32	ASCII		8
S6	Accepted but ignored.	2-255	S	*	2
S7	Accepted but ignored.	1-255	S	*	50
S8	Accepted but ignored.	0-255	S	*	2
S9	Accepted but ignored.	1-255	0.1 s	*	6
S10	Accepted but ignored.	1-255	0.1 s	*	14
S11	Accepted but ignored.	50-255	0.001 s	*	95
S12	Escape Prompt Delay Defines the maximum period, in fiftieths of a second, allowed between receipt of the last character of the three escape character sequence from the DTE and sending of the OK result code to the DTE. If any characters are detected during this time, the OK will not be sent. Note that sending of the OK result code does not affect entry into command mode.	0-255	0.02 s	*	50

Register	Function	Saved	Default		
S13	Reserved	-	-		-
S14	General Bit Mapped Options Status Indicates the status of command options. Default:138 (8Ah) (10001010b) Bit 0This bit is ignored. Bit 1Command echo (En) 0 =Disabled (E0) 1 =Enabled (E1) (Default.) Bit 2Quiet mode (Qn) 0 =Send result codes (Q0) (Default.) 1 =Do not send result codes (Q1) Bit 3Result codes (Vn) 0 =Numeric (V0) 1 =Verbose (V1) (Default.) Bit 4Reserved Bit 5Tone (T)/Pulse (P) 0 =Tone (T) (Default.) 1 =Pulse (P) Bit 6Reserved Bit 7Originate/Answer 0 =Answer 1 =Originate (Default.)			*	138 (8Ah)
S15	Reserved	-	-		-
S16	Accepted but ignored.	-	-		0
S17	Reserved	-		-	-
S18	Accepted but ignored.	0-255	S	*	0
S19	Accepted but ignored.	-	-		0
S20	Accepted but ignored.	0-255	-	*	0

Register	Function	Range	Units	Saved	Default
S21	FunctionGeneral Bit Mapped Options StatusIndicates the status of command options.Default:52 (34h) (00110100b)Bit 0Set by &Jn command but ignored otherwise.0 =&J0 (Default.)1 =&J1Bit 1ReservedBit 2CTS behavior (&Rn)0 =CTS tracks RTS (&R0)1 =CTS always on (&R1) (Default.)Bits 3-4DTR behavior (&Dn)0 =&D0 selected1 =&D1 selected2 =&D2 selected (Default.)3 =&D3 selectedBit 5RLSD (DCD) behavior (&Cn)0 =&C0 selected1 =&C1 selected (Default.)Bit 6DSR behavior (&Sn)0 =&S0 selected (Default.)Bit 7Long space disconnect (Yn)0 =Y0 (Default.)	-	<u>Units</u>	*	Default 52 (34h)
S22	Accepted but ignored.	-	-	*	117 (75h)

Register	Function	Range	Units	Saved	Default
S23	General Bit Mapped Options Status Indicates the status of command options. Default:62 (3Dh) (00111110b) Bit 0Grant RDL 0 =RDL not allowed (&T5) (Default.) 1 =RDL allowed (&T4) Bits 1-3DTE Rate 0 =0 - 300 bps 1 =600 bps 2 =1200 bps 3 =2400 bps 4 =4800 bps 5 =9600 bps 6 =19200 bps 7 =38400 bps or higher (Default.) Bits 4-5Assumed DTE parity 0 =even 1 =not used 2 =odd 3 =none (Default.) Bits 6-7not action applied			*	62 (3Dh)
S24	Accepted but ignored.	0-255	S	*	0
S25	 Accepted but ignored. Delay to DTR Off Sets the length of time that the modem will ignore DTR for taking the action specified by &Dn. Its units are seconds for synchronous modes and one hundredths of a second for other modes. 		s or 0.01 s		5
S26	S26 RTS-to-CTS Delay S26 Sets the time delay, in hundredths of a second, before the modem turns CTS ON after detecting an OFF-to-ON transition on RTS when &R0 is commanded. Pertains to synchronous operation only.		0.01 s		1
S27	General Bit Mapped Options Status	-	-	*	73 (49h)
S28	Accepted but ignored.	-	-	*	0
S29	Accepted but ignored.	0-255	10 ms		70
S30	Accepted but ignored.	0-255	10 s		0
S31	Accepted but ignored.	-	-	*	194 (C2h)
S32	XON Character	0-255	ASCII		17 (11h)
S33	XOFF Character	0-255	ASCII		19 (13h)
S34	S35 Reserved	-	-		-
S36	Accepted but ignored.	-	-	*	7

Register	Function	Range	Units	Saved	Default
S37	General Bit Mapped Options Status Telnet support for modem emulation. Default:0 Bit 0-1 Send TCP transmit data timer 0 = 100ms 1 = 200 ms 2 = 300 ms 3 = 500 ms Bits 2-3 Service TCP transmit data watermark 0 = 256 1 = 512 2 = 768 3 = 1024 Bits 4-5 Service TCP receive data watermark 0 = 256 1 = 512 2 = 768 3 = 1024 Bits 6-7 Telnet support (RFC 2217) 0 = Disabled 1 = Receive Telnet support enabled $2 = Transmit Telnet support enabled3 = Receive and Transmit Telnet supportenabled$	-	-	*	0
S38	Accepted but ignored.	0-255	S		20
S39	 Flow Control Bit Mapped Options Status Default:3 (00000011b) Bits 0-2Status of command options 0 =No flow control 3 =RTS/CTS (&K3) (Default.) 4 =XON/XOFF (&K4) 5 =Transparent XON (&K5) 6 =Both methods (&K6) Bits 3-7Reserved 	-	-	*	3
S40	Accepted but ignored.	-	-	*	104 (68h)
S41	Accepted but ignored.	-	-	*	195 (C3h)
S42 - S45	Reserved	-	-		-
S46	Accepted but ignored.	-	-	*	138
S48	Accepted but ignored.	-	-	*	7
S82	Accepted but ignored.	-	-		128(40h)
S86	Accepted but ignored.	0-255	-		-

Register	Function	Range	Units	Saved	Default	
S91	Accepted but ignored.	0-15	dBm		10 (Coun- try depen- dent)	
S92	Accepted but ignored.	0-15	dBm		10 (Country depen- dent)	
S95	Accepted but ignored.	-	-	*	0	
* Register value may be stored in one of two user profiles with the &W command.						

Result Codes

Short	Long Form	Short	Long Form	Short	Long Form
0	ОК	13	CONNECT 7200	84	CONNECT 33600
1	CONNECT	14	CONNECT 12000	91	CONNECT 31200
2	RING	15	CONNECT 14400	165	CONNECT 32000
3	NO CARRIER	16	CONNECT 19200	166	CONNECT 34000
4	ERROR	17	CONNECT 38400	167	CONNECT 36000
5	CONNECT 1200	18	CONNECT 57600	168	CONNECT 38000
6	NO DIALTONE	19	CONNECT 115200	169	CONNECT 40000
7	BUSY	20	CONNECT 230400	170	CONNECT 42000
8	NO ANSWER	59	CONNECT 16800	171	CONNECT 44000
9	CONNECT 0600	61	CONNECT 21600	172	CONNECT 46000
10	CONNECT 2400	62	CONNECT 24000	173	CONNECT 48000
11	CONNECT 4800	63	CONNECT 26400	174	CONNECT 50000
12	CONNECT 9600	64	CONNECT 28800		

Chapter 8

Serial Power Feature

The Serial Power feature available for the Digi One TS, PortServer TS 2 MEI, and PortServer TS 4 MEI allows the Digi device to power a serial device (power out) or use a serial device to power the Digi device (power in). The advantage of this feature is to eliminate an external power supply.

Power out is available on all ports through Ring Indicator (RI) or Data Terminal Ready (DTR). Power in is available only through RI and **only** on port one (1). The Serial Power feature is active on a specific port when that port is configured for RS 232 operation.

- The power out budget equals one (1) watt (the total amount of power available). The available power can be divided in any combination between the ports but the following rules must be observed:
 - RI = 5 volts @ up to 200 mA (max)
 - DTR = 9 volts @ up to 100 mA (max)
 - You may use DTR or RI as the source of power (power out) on any port but you may not use both DTR and RI on the same port.
- Pinout information
 - RI is pin 1
 - DTR is pin 9
- RI signaling is lost when the pin is used for power

Configuring RI Power

RI Power In

Ring Indicator (RI) power in accepts power into the Digi device server **only** on port one. Power in is available using the RI pin. The Digi device requires power in the range of 9-30 VDC @ 525mA (max). Ports 2, 3, and 4 can still supply power to a serial device through the RI or DTR pins for each port. When using power in through the RI, the external power supplies (both powered Ethernet and the barrel connector power supply) are inoperative. Altpin will not work for RI power in.

1. Open the device unit enclosure and move the black jumper to the following settings:

P-6 jumper on pins 1 and 2



Note: When the jumper is placed correctly for power in, the jumper will set on the pins closest to the edge of the board. The left arrow indicates the open pin and the right arrow is pointing to the jumper.

2. Close the device unit enclosure.

RI Power Out

Ring Indicator (RI) power out is available on all ports. The total power budget for this feature is one (1) watt not to exceed 5 volts @ up to 200mA on any single port. The following procedure assumes the unit will only be used for RI power out.

- 1. Set the port DIP switches to the following places: switch 1 and 3 are up and 2 and 4 are down (see "Serial Power Table" on page 61 for illustration).
- 2. Enable the RI power through the web interface.
- 3. Connect power supply with the barrel-connector power supply provided with the device or use powered Ethernet.
 - Note: If the unit will be used with RI power in (port 1 only), set the jumper to the following setting:
 P-6 jumper on pins 1and 2 and do not use an external power source. Port 1 cannot be used for both power in and power out.

Configuring DTR Power

Power Out

Data Terminal Ready (DTR) power out is the factory default on the Digi device server. Total power budget for this feature is one watt not to exceed 9 volts @ up to 100mA to any single port.

1. Set the port DIP switches to EIA 232 (switch 1 is up, 2,3, and 4 are down) to enable DTR power.

2. Open the port and set DTR high.



Note Here are the pins to verify the jumper position. The **default** position has the jumper on the two pins furthest from the edge. DO NOT MOVE THE JUMPER FROM THE DEFAULT UNLESS USING RI POWER IN.

If you are having trouble with your unit after using the Power over port feature, you may have tripped the circuit breaker in the unit. You can identify this by the RI or DTR signal indicators found in the System Information under Administration on the main menu in the web interface. Click the port number using serial power. (Remember serial power out is unavailable if the MEI settings are not 232.)

Under serial power will be a message if the breaker is tripped. Follow the instructions to reset.

From the command line use the two examples below for additional information.

display circuitbreaker

Display the status of the circuit breaker

set configuration circuitbreaker=reset

Reset the circuit breaker

Note: set configuration print will also give the status of the circuitbreaker state.

Serial Power Table

Use this table for summary information for a serial power setup.

Quick Summary	DTR Power	RI P	ower	
Table for Setup of Serial Power	OUT	OUT	IN	
Switch Settings			3 4	
DTR setting	DTR ON	DTR OFF	DTR OFF	
Ports Allowed	1, 2, 3, 4	1*, 2, 3, 4 *unless port 1 is used for power in	1	
Jumper Pin Settings	P-6 jumper on pins 2 & 3 (Factory Default)	P-6 jumper on pins 2 & 3 (Factory Default)	P-6 jumper on pins 1 & 2	
Power Budget	9v @ up to 100mA one watt	5v @ up to 200 mA one watt	9 -30 v @ up to 525mA (max)	

Special Features: IA (Industrial Automation)

Industrial Automation (IA) uses the Modbus protocol that defines how devices in an IA environment communicate. It specifies that a controlling unit, called a master, manages one or more units, called slaves. Only the master may initiate communication, and slaves may only respond.

Some of the elements of communication between devices that are defined by the Modbus protocol include:

- The structure of Modbus messages
- How the master requests information from the slave or specifies an action for the slave to take
- How the slave is to respond
- Addressing conventions
- Handling of many of the other details required for communication to occur.

Modbus defines two encoding schemes: Modbus ASCII and Modbus RTU. Each Modbus device uses one or the other.

Designed to function over a serial communication cable, Modbus has been extended in recent years to function over an Ethernet network using Modbus/TCP, which defines a method of encapsulating Modbus ASCII or Modbus RTU messages in IP packets for transport over the network.

The extermely flexible Digi implementation includes support for Modbus ASCII, Modbus RTU, Modbus/TCP, and two other methods of transport over a network, TCP socket and UDP socket communication. The implementation enables multiple network-based masters to concurrently initiate communication with serial-based slaves using any of the supported network protocols.

Configuring Industrial Automation with Modbus

- 1. Click Serial Port > Change profile and select Industrial Automation.
- 2. Click Apply.
- 3. Under Profile settings, click change protocol.
- 4. Select the protocol that best matches your environment (master or slave) Use the Help button for additonal information.
- 5. Enter the User defined protocol settings (Start delimiter, end delimiter, Message timeout, and Process ANSI escape characters) and click Apply.
- 6. Click Packet Routing > Add.
- 7. Enter the packet routing information. Click the Help button for additional information.
 - Note: Configure the serial port for the serial communication parameters (baud rate, data bits, parity and stop bits) required by the connected IA device. If you configure the port for a slave, you do not have to configure a network-based master. Communication with the master just works. (If the master is

connected to a serial port, it must be configured, however.) If you configure a port for a master and the slaves are located on the network, TCP sockets, UDP sockets, and Modbus/TCP are all supported. Use the protocol required by the master.

Special Features: SNMP

This chapter describes the configuring SNMP, the network management protocol that governs the exchange between nodes and stations.

About SNMP and the Device Server Agent

This section introduces SNMP and network management in TCP/IP networks and it describes the device server agent. It discusses the following:

- Network management components
- SNMP agent
- SNMP traps
- MIB support of the device server agent
- Support traps of the device server agent

Network Management Components

The TCP/IP network management architecture contains the following components:

- Managed nodes such as host systems, routers, terminal and communications servers (such as device server) and other network devices.
- One or more network managers (also called network management stations), which are the points from which the network is managed
- Agents that reside on managed nodes and retrieve management information and communicate this information to network managers.
- The network management protocol, SNMP, which governs the exchange of information between the nodes and stations.
- Management information, which is the database of information about managed objects. This database is called the *management information base* (MIB).

SNMP Management Agent

Each managed node contains at least one agent—a component that responds to requests from the network manager—that retrieves network management information from its node and notifies the manager when significant events occur.

SNMP Traps

A mechanism defined by SNMP is called a trap, which is a report or "alarm" from a managed node to an SNMP manager that a significant event has occurred.

MIB Support

The SNMP management agent supports the following MIBs:

- Read-write for MIB II (RFC 1213), which is an Internet-standard MIB, consisting of managed objects from the systems, interfaces, IP, ICMP, TCP, UDP, transmission, and SNMP group
- Read-write for the character-stream devices using SMIv2 MIB (RFC 1658)
- Read-write for the RS-232-like hardware devices MIB (RFC 1659)
- Read-write for the device server IP Network Control Protocol of the Point-to-Point Protocol MIB (RFC 1473)

Message Support

The SNMP agent supports the Set, Get, GetNext, and Trap messages as defined in RFC 1157. These messages are used as follows:

- Set, which means set the value of a specific object from one of the supported MIBs
- Get, which means retrieve the value of a specific object form one of the supported MIBs
- GetNext, which means retrieve the value of the next object in the MIB
- Trap, which means send traps to the manager when a particular type of significant event occurs

Supported Traps

The agent can send traps when any of the following occur:

- Cold starts (device server initializes)
- Authentication failures
- Login attempts

Configuration Procedure: Web Interface

- 1. Click **SNMP** under System from the menu.
- 2. Fill in the configuration fields and click Apply to save settings.
- 3. Click **Reboot** for changes to take effect.

Chapter 11

This chapter describes configuration-management activities, including firmware upgrades and restoring the device configuration to defaults.

Upgrading the Firmware

Firmware upgrades can be performed from the web interface, using HTTP or FTP.

HTTP or TFTP Upgrade Procedure

If your hardware is okay, make sure you are running the latest firmware version available. Check the Digi Support site for the latest firmware and/or POST updates for your device:

http://ftp.digi.com/support/firmware

- 1. Download a copy of the firmware file.
- Access the Digi device server's web interface by entering the Digi device server's IP address in a browser's URL window and log on (User Name root, Password dbps).
- 3. Choose **Update Firmware** under Administration from the main menu.
- 4. Browse to the location on your system where the firmware has been saved, select the correct file, and click Update.
- 5. Reboot the device when prompted.
- 6. Access the Digi device server's web interface and verify on the Information Page that the Firmware version has been successfully updated.

Copying the Configuration to and from a Remote Host

You can copy the configuration to a remote host and from a remote host, which means you can configure the Digi device remotely by entering commands in a text file and then copying the file to the Digi device.

When To Use Remote Configuration

Typically, you use remote configuration when you have several device servers with similar configurations and want to keep a master configuration on a remote host, from which you can easily create variations for downloading to individual device servers.

Download Procedure

- 1. Access the web interface by entering the device server IP address in a browser's URL window.
- 2. Log on to the device server as **root**. The default password is **dbps**.
- 3. From the main menu, choose **Backup/Restore** > **Backup File**.
- 4. Enter the location to save the file and click Save.
- 5. Access the device to configure.
- 6. Click **Backup/Restore** > Restore.

Do not leave your browser until you are prompted to reboot. 7. Enter the location of the configuration file saved in step 4 and click Open.

TFTP Procedure

- 1. Ensure that TFTP is running on the remote host.
- 2. Access the web interface by entering the device server IP address in a browser's URL window.
- 3. Log on to the device server as **root**. The default password is **dbps**.
- 4. From the main menu, choose **Backup/Restore** > **TFTP Server**.
- 5. Enter the name of the file and the IP address of the TFTP server and click Backup (to save the file) or Restore to apply the file.

Resetting Configuration to Defaults

To reset the configuration to defaults, follow these steps:

- Note: The reset procedure causes the Digi device to lose all configuration changes. If you have a complex configuration, contact Digi before performing for information on saving your configuration. See "Reference and Certifications" on page 69 for information.
- 1. Use a pen, the point of a paper clip, or some other device to press the recessed button on the front panel.
- 2. While holding down the button, power on the Digi device.
- 3. When the 1-5-1 LED pattern is displayed, release the button.

Note: It may take approximately two minutes for the device to boot up.

The device boots up.

Interpreting the LEDs

LED	Color	State	Indicates
Power	Green (labeled PWR)	On	Power detected
		Steady blinking	Waiting for an IP address
		Blinking 1-1-1	Starting the EOS
		Blinking 1-3-1	Starting the TFTP process
		Blinking 1-5-1	Configuration returned to factory defaults
		Off	No power detected
Radio Signal Strength	Yellow	Varying brightness	Signal strength relates to brightness or dimness of the light
Status	Status (Link) Green	On	Physical network detected
(Link)		Off	No physical network detected
ACT	Yellow	On	Bad initialization
		Off	Ready
		Blinking	Network activity

LED Diagnostics

LED Activity	Indication
1-1-1 pattern	Starting the EOS.
1-3-1 pattern	TFTP boot process started.
1-5-1 pattern	Tells you that configuration has been return to the factory configuration. See "Configuration Management" on page 67.
9-1-1 nattern	Contact Tech Support for help.
	1-952-912-3444 or outside the U.S. (+011) 952-912-3444
Steady blinking	Device seeking an IP address from DHCP server.
Solid	On Digi One RealPort and PortServer TS 2/4 devices, this means the boot completed sucessfully.

Device EIA 232/422/485 Switch Settings

Note: MEI Switch settings apply only to Digi One TS, PortServer TS 2/4 MEI, and the Wireless Family.

Function	Switch Settings				
Function	1	2	3	4	
EIA-232	Up	Down	Down	Down	
EIA-422/485 Full-duplex	Down	Up	Down	If up, termination.	
EIA-485 half-duplex	Down	Down	Up	no termination	



RJ-45 Pinouts

RJ-45 Pin	EIA-232	EIA-422/485 Full-Duplex	EIA-485 Half- Duplex
1	RI	TxD-	TxD-
2	DSR	RxD-	RxD-
3	RTS	RTS+	NA
4	GND	GND	GND
5	TxD	TxD+	TxD+
6	RxD	RxD+	RxD+
7	SG	SG	SG
8	CTS	CTS+	NA
9	DTR	RTS-	NA
10	DCD	CTS-	NA

Safety Statements

PortServer TS 8/16

WARNING: To prevent electric shock, do not remove the cover of this module while unit is powered up. There are no user-serviceable parts inside. Refer servicing to qualified personnel.

CAUTION: This unit has two power inputs. For total isolation from electrical shock and energy hazard, disconnect both power inputs. The device is intended to be mounted in an indoor only type system.

Rack Mounting Installation (PortServer TS 16 Rack and DC Rack)

- Distribute weight evenly in the rack to avoid overloading.
- Ensure proper ventilation with at least 12 inches (30 centimeters) of clearance on all sides.
- Check equipment nameplate ratings before connecting to the supply circuit to avoid overloads which may damage over-current protection devices and supply wiring.
- Maintain reliable earthing for rack-mounting equipment, especially for supply connections.
- Install equipment in Restricted Access Areas only (dedicated equipment rooms/closets) in accordance with Articles 110-16, 110-17, and 110-18 of the National Electrical Code, ANSI/NFPA 70.
- Connect equipment to a DC supply source (reliably earthed) that is electrically isolated from the AC source.
- Directly connect the equipment chassis to the DC supply systemgrounding electrode conductor or a bonding jumper from a grounding terminal bar (or bus) that is connected to the DC supply system grounding electrode conductor.
- Contain equipment that has a connection between the grounded conductor of the same DC supply circuit, the grounding conductor, and also the point of grounding of the DC system in the same immediate area. Do not ground the equipment elsewhere.
- Locate the DC supply source within the same premises as the equipment.
- Route away and secure all DC input wiring from sharp edges to prevent chaffing as well as provide strain relief.

Provide a readily accessible disconnect device and protective device a fixed wiring for a DC power supply suitable for the specified rated voltage and current. Disconnect and protective devices to be rated 2A Amps maximum.

PortServer TS 1/3 + Modem

To avoid contact with electrical current:

- Never install electrical wiring during an electrical storm.
- Never install telephone jacks in wet locations unless that jack is specifically designed for wet locations.
- Use caution when installing or modifying telephone lines.
- Use a screwdriver and other tools with insulated handles.
- You and those around you should wear safety glasses or goggles.
- Do not place telephone wiring or connections in any conduit, outlet or junction box containing electrical wiring.



- Installation of inside wire may bring you close to electrical wire, conduit, terminals and other electrical facilities. Extreme caution must be used to avoid electrical shock from such facilities. You must avoid contact with all such facilities.
- Telephone wiring must be at least 6 feet from bare power wiring or lightning rods and associated wires, and at least 6 inches from other wire (antenna wires, doorbell wires, wires from transformers to neon signs), steam or hot water pipes, and heating ducts.
- Before working with existing inside wiring, check all electrical outlets for a square telephone dial light transformer and unplug it from the electrical outlet. Failure to unplug all telephone transformers can cause electrical shock.
- Do not place a jack where it would allow a person to use the telephone while in a bathtub, shower, swimming pool, or similar hazardous location.
- Protectors and grounding wire placed by the service provider must not be connected to, removed, or modified by the customer.

CAUTION!	Do not touch uninsulated telephone wiring if lightning is likely!
Important!	External Wiring Any <i>external</i> communications wiring you may install needs to be constructed to all relevant electrical codes. In the United States this is the National Electrical Code Article 800. Contact a licensed electrician for details.

Specifications

PortServer TS 8/16

Power Requirements (Standard Models)			
2-contact barrel connector	+9 to +30 VDC 525 mA (max) external power supply		
Environmental	PortServer TS 8	PortServer TS 16	
Ambient temperature	0 to 50° Celsius 32 to 131° Fahrenheit		
Relative humidity	5% to 90% non-condensing		
Altitude	0 to 12,000 feet 0 to 3,658 meters		
------------	---------------------------------------	-----------------------------------	
Mechanical	PortServer TS 8	PortServer TS 16	
Length	21.08 centimeters 8.3 inches	34.04 centimenters 13.4 inches	
Width	9.4 centimeters 3.7 inches	16.76 centimenters 6.6 inches	
Height	2.54 centimeters 1 inches	4.06 centimenters 1.6 inches	
Weight	.227 Kilos 3.05 lbs	2.4 Kilos 5.3 lbs	

Digi One TS Wireless, PortServer TS 2/4 Wireless

Power Requirements (Standard Models)		
2-contact barrel connector	+9 to +30 VDC 525 mA (max) external power supply	
Environmental		
Ambient temperature	0 to 50° Celsius 32 to 131° Fahrenheit	
Relative humidity	5% to 90% non-condensing	
Altitude	0 to 12,000 feet 0 to 3,658 meters	
Mechanical		
Length	13.31 centimeters 5.42 inches	
Width	8.46 centimeters 3.3 inches	
Height	2.42 centimeters .952 inches	
Weight	64 grams 2.25 ounces	

PortServer TS 2/4 MEI, Digi One TS

Power Requirements (Standard Models)			
2-contact barrel connector	+9 to +30 VDC 525 mA (max) external power supply		
	Environmental		
Ambient temperature	0 to 50° Celsius 32 to 122° Fahrenheit		
Ambient temperature for TS H models	-35 to 70° Celsius -31 to 158° Fahrenheit		
Relative humidity	5% to 90% non-condensing		
Altitude	0 to 12,000 feet 0 to 3,658 meters		
	Mechanical		
Length	13.31 centimeters 5.42 inches		
Width	8.46 centimeters 3.3 inches		
Height	2.42 centimeters .952 inches		
Weight	64 grams 2.25 ounces		

PortServer TS 2/4

Power Requirements (Standard Models)		
2-contact barrel connector	+9 to +30 VDC 525 mA (max) external power supply	
Environmental		
Ambient temperature	10 to 55° Celsius 50 to 131° Fahrenheit	
Ambient temperature for TS H models	-25 to 70° Celsius -13 to 158	
Relative humidity	5% to 90% non-condensing	

Altitude	0 to 12,000 feet 0 to 3,658 meters	
Mechanical		
Length	13.31 centimeters 5.42 inches	
Width	8.46 centimeters 3.3 inches	
Height	2.42 centimeters .952 inches	
Weight	64 grams 2.25 ounces	

PortServer TS 1/3 + Modem

- ITU-T V.92/V.90/56K (-92 build option)
- V.34/V.33.6 (-34 build option
- V.32 bis/14.4K (-32 build option)
- V.22 bis/2400 baud (-22 build option)
- V.22
- V.23
- V.21
- Bell 212A and Bell 103
- V.44 Error Correction
- V.42 LAPM, MNP 2-4 Error Correction
- V.42 bis and MNP Class 5 data compression

Regulatory Notices

PortServer 1/3 + Modem	
Electromagnetic Emissions	 FCC Part 15 Subpart B, Class B EN55022 Class B AS/NZS 3548 VCCI EN61000-3-2 EN61000-3-3
Electromagnetic Immunity	• EN55024:1998
Safety	UL/CUL 60950-1IEC60950EN60950
Power Supply	• 9-30 Vdc 50/60 Hz @ 15 W

Digi One RealPort, Digi One TS, PortServer TS 2/4, PortServer TS 2/4 MEI, PortServer TS 16		
Emission	 FCC P15 Subpart B, Class B ICES-003, Class B EN55022:1994, Class B AS/NZS 3548 VCCI EN61000-3,2:2000 EN61000-3-3:1995 	
Immunity	• EN55024:1998	
Safety	 UL60950-1 CSA 22.2 No. 60950-1-03 IEC60950 EN60950 	
Power Supply	• 9-30 Vdc 50/60 Hz @ 15 W	

Digi One TS Wireless, PortServer TS 2/4 Wireless		
Emission	 FCC P15 Subpart B, Class B ICES-003, Class B EN55022:1994, Class B AS/NZS 3548 VCCI EN61000-3,2:2000 EN61000-3-3:1995 	
Immunity	EN55024:1998EN 301 489-3	

Digi One TS Wireless, PortServer TS 2/4 Wireless		
Safety	 UL60950-1 CSA 22.2 No. 60950-1-03 IEC60950 EN60950 	
Power Supply	• 9-30 Vdc 50/60 Hz @ 15 W	
P	PortServer TS 8	
Emission	 FCC P15 Subpart B, Class A ICES-003, Class A EN55022:1994, Class A AS/NZS 3548 VCCI EN61000-3,2:2000 EN61000-3-3:1995 	
Immunity	• EN55024:1998	
Safety	 UL60950-1 CSA 22.2 No. 60950-1-03 IEC60950 EN60950 	
Power Supply	• 9-30 Vdc 50/60 Hz @ 15 W	
Digi One TS, PortServer TS 2/4, PortServer TS 2/4 MEI, PortServer TS 16		
Emission	 FCC P15 Subpart B, Class B ICES-003, Class B EN55022:1994, Class B AS/NZS 3548 VCCI EN61000-3,2:2000 EN61000-3-3:1995 	
Immunity	• EN55024:1998	
Safety	 UL60950-1 CSA 22.2 No. 60950-1-03 IEC60950 EN60950 	
Power Supply	• 9-30 Vdc 50/60 Hz @ 15 W	

FCC Part 15 Class A (PortServer TS 8)

Radio Frequency Interference (RFI) (FCC 15.105)

This equipment has been tested and found to comply with the limits for Class A digital devices pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Labeling Requirements (FCC 15.19)

This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Modifications (FCC 15.21)

Changes or modifications to this equipment not expressly approved by Digi may void the user's authority to operate this equipment.

Cables (FCC 15.27)

Shielded cables *must* be used to remain within the Class A limitations.

ICES 003 Class B (Digi One TS, Digi One TS Wireless, PortServer TS 2/4, PortServer TS 2/4 MEI, PortServer TS 2/4 Wireless, PortServer TS 16)

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la class B prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

Antennae (Wireless only)

Digi Wireless products can only use the Digi antennae provided in the box.

Maximum Permissible Exposure (Wireless only)

To comply with Maximum Permissible Exposure requirements, antennas must be installed to provide at least 20 cm of separation from all persons per FCC 47 CFR 2.1091.

Declaration of Conformity

(in accordance with FCC Dockets 96-208 and 95-19)

Digi International declares, that the product:

Manufacturer's Name:	Corporate Headquarters:	Manufacturing Headquarters
Digi International	11001 Bren Road East Minnetonka MN 55343	10000 West 76th Street Eden Prairie MN 55344

Product Name:

Model Numbers:

Digi One TS	50000836-01
Digi One TS (High temperature model)	50000837-01
PortServer TS 2 (High temperature model)	50000837-02
PortServer TS 4 (High temperature model)	50000837-03
PortServer TS 2	50000723-02
PortServer TS 4	50000723-03
PortServer TS 2 MEI	50000836-02
PortServer TS 4 MEI	50000836-03
PortServer TS 1+Modem	50000836-05
PortServer TS 3+Modem	50000836-06
Digi One TS Wireless	50000836-10
PortServer TS 2 Wireless	50000836-11
PortServer TS 4 Wireless	50000836-12
PortServer TS 16	50001207-01
PortServer TS 16 Rack	50000854-01
PortServer TS 16 DC Rack	50000722-01

to which this declaration relates, meets the requirements specified by the Federal Communications Commission as detailed in the following specifications:

- Part 15, Subpart B, for Class B Equipment
- FCC Docket 96-208 as it applies to Class B personal
- Computers and Peripherals

The product listed above has been tested at an External Test Laboratory certified per FCC rules and has been found to meet the FCC, Part 15, Class B, Emission Limits. Documentation is on file and available from the Digi International Homologation Department.

Digi Contact Information

Digi International 11001 Bren Road East Minnetonka, MN 55343 U.S.A.

Digi Contacts		
World Wide Web:	http://digi.com	
email	digi.info@digi.com	
Telephone (U.S.)	1-952-912-3444	
Telephone (other locations)	(+011) 952-912-3444	

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