TransPort® WR44

Wireless Routers

Installation Guide

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Digi Technical Support Contact Information

United States:	(952) 912-3444 or (877) 912-3444
Other Locations:	+1 (952) 912-3444 or (877) 912-3444
EMEA	+44 870 35 000 35

Safety Notices

1. Please read all instructions before installing and powering the unit. You should keep these instructions in a safe place for future reference.

2. If the power supply shows signs of damage or malfunction, stop using it immediately, turn off the power and disconnect the power supply before contacting your supplier for a repair or replacement.

3. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Use only the accessories, attachments, and power supplies provided by the manufacturer – connecting non-approved antennas or power supplies may damage the unit, cause interference or create an electric shock hazard, and will void the warranty.

4. Do not attempt to repair the product. The unit contains no electronic components that can be serviced or replaced by the user. Any attempt to service or repair the unit by the user will void the product warranty.

5. Products in the TransPort WR® family are designed for indoor use (except for the WR44 R) and should be used in an environment that is suitable for computers and other electronic equipment.

6. Ports that are capable of connecting to other apparatus are defined as SELV ports. To ensure conformity with IEC60950 ensure that these ports are only connected to ports of the same type on other apparatus.

Table of Contents

Preface

This guide describes the installation procedure for the TransPort WR family of routers. It is intended to provide sufficient information to be able to connect the unit to terminal equipment and power-on the unit. A complete reference guide to the software features that are available on the product is available separately in PDF format and can be downloaded from the Digi International web site (*www.digi.com*).

2 Introduction

The Digi TransPort WR family of cellular routers offers an all-in-one mobile communications solution with true enterprise class routing, security and firewall. These multifunction cellular routers feature a flexible design with an optional integrated Wi-Fi access point (with multi SSID) / Client, USB, serial, and Ethernet, as well as a variety of configuration options including multiple serial ports (async or sync), GPS or I/O telemetry modules.

The Digi TransPort family also offers an advanced routing, security and firewall feature set including stateful inspection firewall and integrated VPN. Enterprise class protocols incorporate BGP, OSPF and VRRP+, a patented technology built upon the popular VRRP failover standard providing true auto sensing, auto failure and auto recovery of any line drop.

Digi TransPort WR routers are ideal for transportation and mobile applications. Flexible power options include AC, DC and 4-pin Molex connectors for direct integration into vehicle applications. Also available is the Digi Remote Manager™ which provides easy setup, configuration and maintenance of large installations of Digi TransPort devices.

Digi TransPort WR routers are available on the following networks:

|		GPRS	EDGE	UMTS	HSUPA	EVDO / 1xRTT
Model	**WR44-E**	✓	✓			
	WR44-G	✓				
	WR44-U	✓	✓	✓	✓	
	WR44-C					✓
	WR44-U5	✓	✓	✓	✓	✓

2.2   Front Panel Features
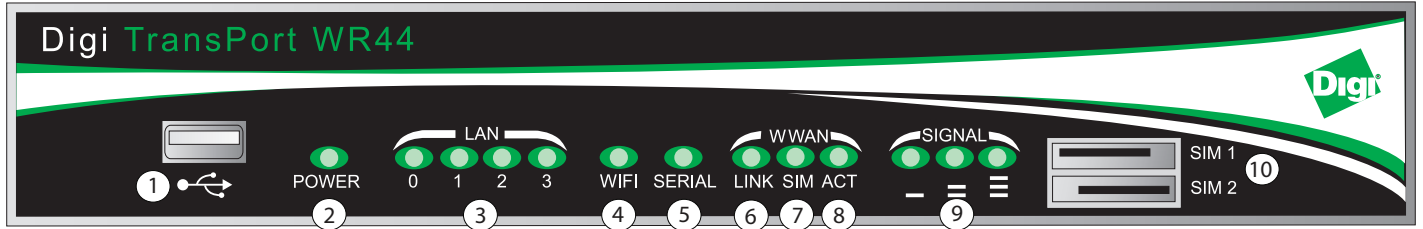
1. USB Host Connector - The USB host connector may be used to connect compatible USB 2.0 client devices such as memory sticks, and serial adapters. The total current available to power USB devices is 0.5A.

2. LED Status Indicator - POWER - Illuminates steady when power is connected.

3. LED Status Indicator - LAN (0, 1, 2, 3) - Illuminates steady when there is a network connection to the LAN port and flashes when data is transmitted or received.

4. LED Status Indicator - Wi-Fi -Illuminates steady if Wi-Fi activity is present.

5. LED Status Indicator - SERIAL - Illuminates steady if a terminal is connected to the SERIAL 0 port and the DTR signal is on. Flashes when data is transmitted or received.

6. LED Status Indicator - LINK - Illuminates steady when a wireless data connection has been established.

7. LED Status Indicator - SIM - Illuminates steady when a valid SIM card is installed.

8. LED Status Indicator - ACT - Flashes to indicate that data is being transferred over the wireless network.

9. LED Status Indicator - SIGNAL.

    a) WR44 - G, -E and -U models: signal strengths are as follows:

        - 0 LEDs illuminated: < -113 dBm (effectively no signal)
        - 1 LED illuminated: >= -112 dBm and <= -87 dBm (weak)
        - 2 LEDs illuminated: >= -86 dBm and <= -71 dBm (medium)
        - 3 LEDs illuminated: >= -70 dBm and <= -51 dBm (strong)

    b) WR44 - C models: signal strengths are as follows:

        - 0 LEDs illuminated: < -116 dBm (effectively no signal)
        - 1 LED illuminated: >= -115 dBm and <= -104 dBm (weak)
        - 2 LEDs illuminated: >= -103 dBm and <= -94 dBm (medium)
        - 3 LEDs illuminated: >= -93 dBm and <= -83 dBm (strong)

10. SIM / R-UIM Sockets (SIM card models only) - SIM 1 and SIM 2 are for use with the Subscriber Identification Module(s) (SIMs) or Removable User Identification Module(s) (R-UIMs).

2.4   Under Unit Features

TransPort WR44

[Front of Unit]

[Rear of Unit]

TransPort WR44 R

[Front of Unit]

[Rear of Unit]
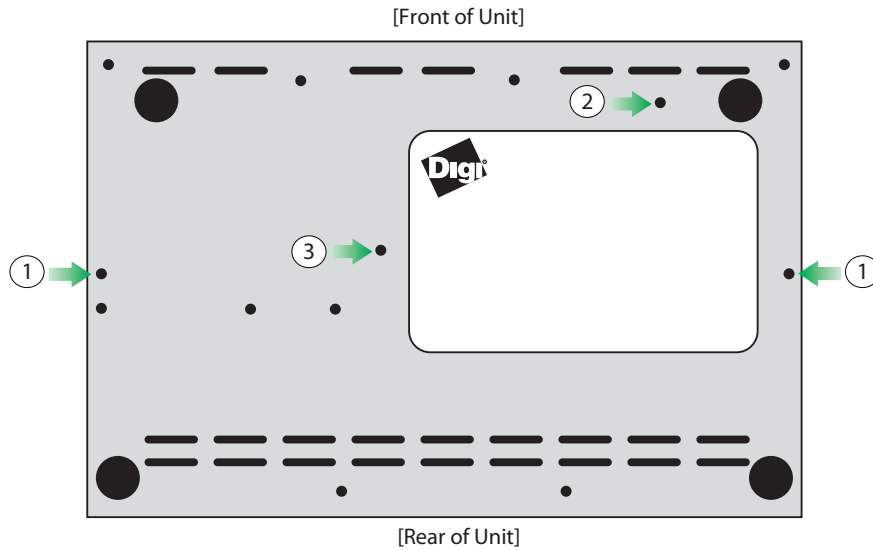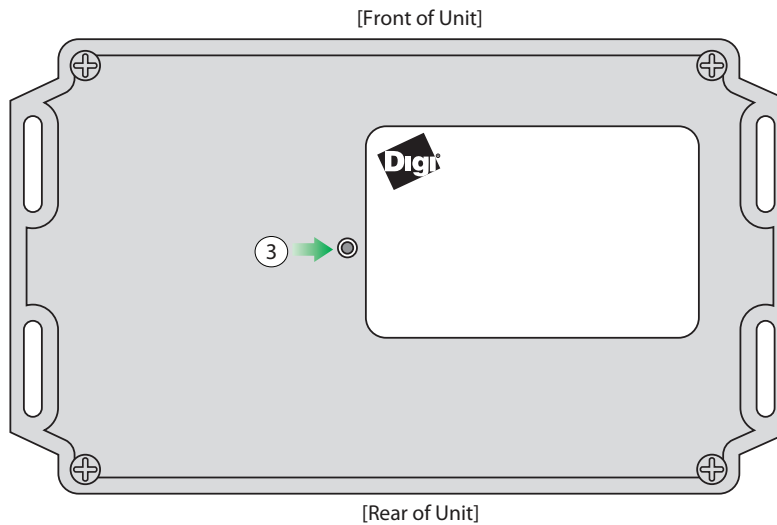
1.   Unit mounting holes.

2.   SIM slot cover plate mounting hole.

3.   Reset button - The reset button allows the user to return the unit to its factory default settings. It is recessed [to avoid accidental reset], and can be accessed via a small 2.5mm hole located on the underside of the unit.

2.4.1   Reset instructions

Step 1) Turn the unit on and wait 15 seconds for the unit to complete its initialization process.

Step 2) Press and hold the reset button gently for 5 seconds. After this time, the unit will automatically re-boot and display a pattern of alternating LEDs flashing followed by the normal boot sequence.

Note: Do not remove power from the unit during this operation as corruption of the flash memory may occur.

1. ASY Serial Port (3x) - Provides three additional asynchronous RS232 serial ports using RJ45 connectors.

2. SYN/ASYN Serial Port - Provides an X.21/RS422/RS232 synchronous / asynchronous serial port using a DB25 connector.

3. GPS - Provides GPS capabilities using an SMA male connector.

4. ISDN - Provides an ISDN Basic Rate Interface (BRI) via an RJ45 port. This can be configured either as a TE (terminal endpoint) or as NT-1 (network termination). The option also includes an additional asynchronous serial port via a second RJ45 port.

5. Telemetry 1 I/O Interface - Provides 4 opto-isolated digital input ports and 1 opto-isolated digital output port. It also provides a relay I/O port, a voltage monitoring port, and internal temperature monitoring.

6. Telemetry 2 I/O Interface - Provides 4 isolated analog I/O ports and 4 non-isolated digital I/O ports.

7. Fleet I/O Interface - Provides CAN and J1708 interface, GPS, 4 non-isolated digital I/O ports, ignition sense port, and a 3 axis accelerometer.

8. PSTN - Provides a PSTN interface via an RJ45 connector that can be used to dial out and receive calls.

9. ISDN-U/PSTN - Provides an ISDN-U interface suitable for the USA plus PSTN interface. It can be configured for Bell-103 modulation in leased line mode as well as a normal PSTN interface.

10. DialServ - This RJ11/FXS connection converts a PSTN analog modem to a RS-232 serial signal.

For more information on the Telemetry 1, Telemetry 2, and the Fleet I/O Interfaces please see the product specific user's guides which can be found at: *http://ftp1.digi.com/support/documentation/transport/technicalnotes.htm*

The TransPort WR44 also allows for dual network installations where one wireless service can be used as a back-up in the event that the primary service fails. These installations cannot be used to access two networks simultaneously. By default, SIM 1 is used for access to the primary network and SIM 2 is used for the back-up network.

For added security, Digi offers a "SIM Slot Cover Plate" that can be installed on the unit to deter theft or tampering of the SIM cards, (see the Accessories section on page 22 for more information).

Step 2) Connect the Cellular (WWAN) Antenna(s): Connect the cellular antenna to the "WWAN PRIMARY" connector (SMA Female) on the unit. If the unit is equipped with a secondary cellular antenna connector (WWAN SECONDARY), it is highly recommended to connect an additional antenna to this connector for diversification. Dual antennas will provide improved signal strength thus better performance.

Note: For most applications, the antenna(s) included with the unit will provide suitable reception, but some circumstances/environments may require a higher quality antenna or one mounted in a different location. If this is the case, Digi has many antenna options to chose from -- please contact us or visit www.digi.com. If antennas other than the supplied antenna(s) are used, the separation between the two should be no less than five inches (5").

Step 3) (Wi-Fi models only) – Connect the Wi-Fi Antennas: Connect the Wi-Fi antennas to the 'WIFI PRIMARY and WIFI SECONDARY' antenna connectors (SMA Male).

Step 4) Connect the LAN Cable: Connect one end of the Ethernet cable to the "LAN" port on the unit and the other end to a LAN port on a PC.

Step 5) Connect the Serial Cable (optional): Connect one end of the serial cable (not included) to the "SERIAL 0" port on the unit and other end to the serial port on a third-party serial terminal device. If you wish to connect the unit to a PC, it is recommended that you purchase Digi's serial cable (P/N: 76000858).

Some TransPort models also include additional serial ports which have RJ45 connectors. For those models, Digi offers the following serial cables for connectivity:

- P/N: 76000855 -- RJ45 to DB9 Female - 6'
- P/N: 76000856 -- RJ45 to DB25 Male - 6'
- P/N: 76000857 -- RJ45 to DB25 Female - 6'

Step 6) Connect the Power Supply: Depending on model, the unit will either come with an AC power supply, 4-pin DC power cord, or a Fleet power cord. Instructions for all options are described below.

AC Power Supply - Connect the locking barrel end of the power supply to the "MAIN" connector on the unit, and plug the other end into a wall outlet. "International" units come with interchangeable Power Supply Adapters which can be used according to regional needs.

4-Pin DC Power Cord - Connect the 4-pin molded end of the cord to the "AUX" connector on the unit, and wire the four bare wires accordingly to your needs. The red and black wires provide basic DC power input, and the blue and green wires are programmable signal lines.

WARNING: Only one of the power connectors should be used. Never apply power to both the MAIN and AUX ports at the same time.

Fleet Power Cord - Connect the 4-pin molded connector to the "Pwr" port on the unit. Connect the locking barrel jack to the "MAIN" connector on the unit. Finally, wire the two bare wires accordingly to your needs.

For sample wiring diagrams and pinout information, see the 4-Pin DC Power Cord and Fleet I/O Interface User's Guides, which can be found online at *http://ftp1.digi.com/support/documentation/transport/technicalnotes.htm.*

Step 7) When the unit is powered-up, the POWER indicator will illuminate and the unit will initiate a series of diagnostic self-tests. During this process one or more of the other indicators will flash to show that the unit is busy. When the flashing stops, the unit has completed its self-test diagnostics and is ready to be configured.

The Quick Start Wizard is located in the Getting Started section on the Home menu.
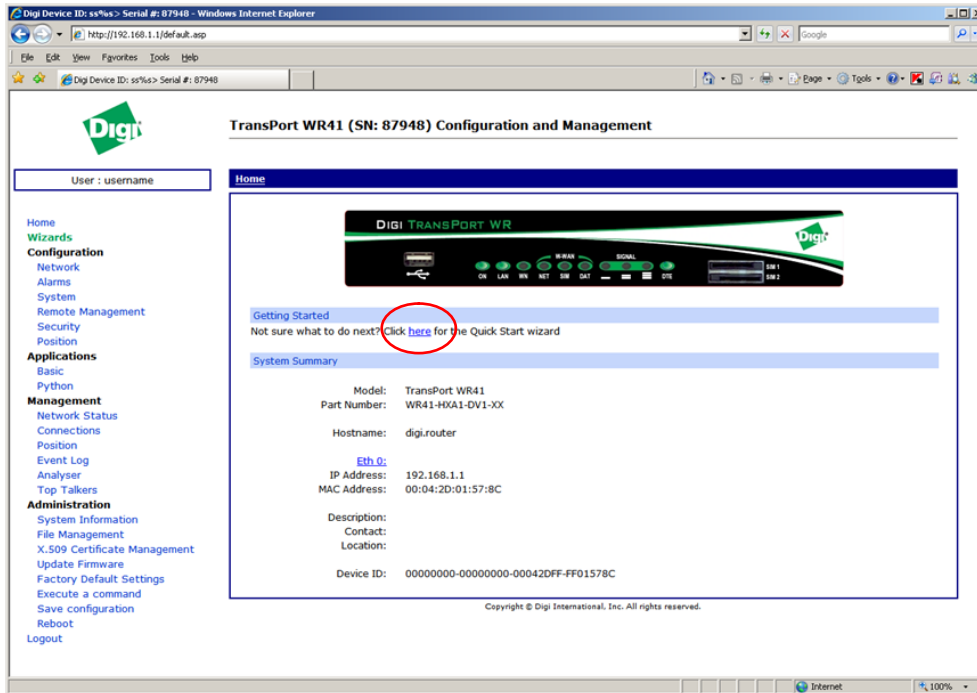

4.2.1 Cellular: CDMA

If your unit is to be used on a CDMA network, the embedded module must be provisioned on the network before it can make a connection.

Note: If your unit uses a Gobi module (indicated by a model number of WR44-U5xx-xxx-xx), and you did not select the appropriate CDMA carrier via the Quick Start Wizard, you must run the GOBI Module Carrier Wizard before provisioning can be successfully completed.

To provision the CDMA mobile device, navigate to the CDMA Provisioning section by clicking on **Network > Mobile > CDMA Provisioning.**
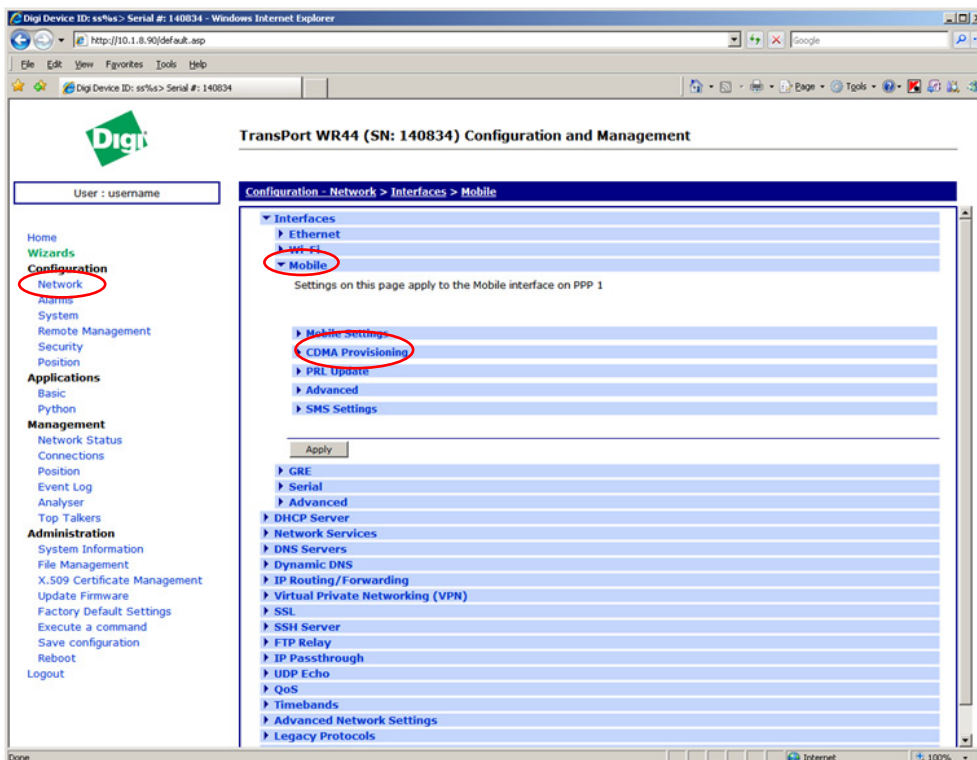
4.3   Command Line Interface (CLI)

In order to configure the unit serially, ensure that the unit is connected to a PC (as outlined in Step 5 on page 14 of the Installation section). Also, terminal emulation software (such as HyperTerminal) will be required.

4.3.1   CLI Notes

- To view the current configuration settings, enter the command **CONFIG C SHOW**.

- To save changes made to the unit, enter the command **CONFIG 0 SAVE**.

- All entered commands will take effect immediately.

4.3.2   Communication Settings

Step 1) Configure the following settings for the unit:

COM Port: [select the appropriate port; typically COM1]

Baud Rate: 11500

Data Bits: 8

Stop Bits: 1

Parity: No Parity

Flow Control: None

Step 2) Ensure the connection is active by entering the command **AT**. If the device is functioning properly, it will return the response OK.

Step 3) Ensure the COM port is setup correctly by entering the command **ATI5**.

4.3.3   Network Settings

To configure the unit with an IP address as part of an existing network, use the commands below.

Note: *The DHCP server will still operate unless it is disabled.*

Command	Description
ETH 0 IPADDR *XXX.XXX.XX.XXX*	Sets the Eth 0 IP address
ETH 0 MASK *XXX.XXX.XX.XXX*	Sets the Eth 0 subnet mask

As an example, to assign the IP address 192.168.10.254/24, the following commands would be entered:

ETH 0 IPADDR 192.168.10.254

ETH 0 MASK 255.255.255.0

Note: *When setting the mask to the above 255.255.255.0 value, it will not appear in the output of the* **CONFIG C SHOW** *command as it is a default value.*

5   Troubleshooting

5.1   Troubleshooting Resources

There are several resources available to you for support of your Digi product or resolving configuration difficulties at Digi's Support site, *http://www.digi.com/support/*. Try these troubleshooting steps to eliminate your problem. After working through these steps and your problem is not solved, try the resources listed below.

1. Digi's Support knowledge base: *http://www.digi.com/support/kbase*.

2. Digi TransPort support documents: *http://ftp1.digi.com/support/documentation/transport/technicalnotes.htm*.

3. If the knowledge base or support forums do not have the information you need, submit an Online Support Request via: *http://www.digi.com/support/eservice/login.jsp?p=true*. You will need to create a user account if one is not already set up.

When submitting a support request, please include a copy of the debug.txt file from the unit's flash. This will greatly improve the quality of the initial response you receive. Without this file, it is often very difficult for the support team to provide accurate answers to your queries.

For instructions on how to download the debug.txt file from the unit, view the online document "QN24 - Extracting the debug.txt file from a Digi TransPort or Sarian router".

5.2   Unable to open the Web Interface

Ensure that the LAN cable is properly connected to the LAN port and that the "LAN" status indicator on the front of the unit is illuminated. If it is not, then there is a problem with either the LAN cable or the device it is connecting to. If the status indicator is illuminated, check that the PC can communicate with the unit. To do this, open the Command Prompt window on your PC and enter the command "ping 192.168.1.1". If you do not get a response, then the problem could be one of the following:

•   The IP address of the unit has been changed from its default of 192.168.1.1. Use the Digi TransPort Connection Wizard (which can be downloaded from the Support area at Digi.com or the Digi Device Discovery Tool). It can usually discover the unit on a network as long as the unit's firewall has not been enabled.

•   PC IP configuration. The PC's LAN interface that is connected to the unit should be configured to "Obtain an IP address automatically". If required, the Digi TransPort Connection Wizard can be used to configure the PC.

•   Check the PC's LAN connection and any LAN device (e.g. Ethernet switch) that is used to interconnect to the unit.

•   Refresh the PC's IP settings by opening a command window and enter "ipconfig /release" then "ipconfig / renew".

•   ARP resolution. Clear the PC's ARP cache with the command "arp –d *", then retry the ping command. If you do get a response but are unable to view the Web Interface, then there is most likely a problem with your web browser configuration.

5.3   Unable to log in to the Web Interface

Access to the unit can be achieved via any of the asynchronous serial ports. Connect your PC to the unit using a "straight through" RS232 serial cable. This will allow you to change the configuration via the Command Line Interface (CLI). Please refer to the Digi TransPort User Guide for information on how to use the CLI. The User Guide can be downloaded from the Digi Support site. If you have further questions about your product please contact Digi Technical Support (see page 2 for contact information).

7 Accessories

AC Power Supplies

North America (NA)	76000823
International (Intl.)	76000823
NA - Extended Temp.	76000790
Intl. - Extended Temp.	76000789

DC Power Cords

Barrel Plug to Bare Wire	76000854
Barrel Plug to 12V Auto Power Outlet	76000861
4-pin to 12V Auto Power Outlet	76000863
4-pin to Bare Wire	76000774

Mounting Brackets

DIN Rail	76000777
Wallmount	76000778
Rackmount	76000840

Adapters

RJ45 to DB9 Female - 6'	76000855
RJ45 to DB25 Male - 6'	76000856
RJ45 to DB25 Female - 6'	76000857

Cables

RJ45 to RJ45 - 0.5m	76000825
RJ45 to RJ45 - 2m	76000826
RJ45 to RJ45 Crossover - 2m	76000827
RJ45 to RJ45 - 12'	76000828
RJ45 to RJ45 Crossover - 12'	76000829
SMA Male to SMA Female - 5m	76000830
SMA Male to SMA Female - 10m	76000831
SMA Male to SMA Female - 15m	76000832
DB9 Female to DB9 Male - 6'	76000858

SIM Slot Cover Plates

10-pack	76000785
10-pack Starter Kit	76000779
Torx Driver Tool	76000853

Declaration of Conformity

EC Declaration Of Conformity

We,

Manufacturer's Name: Digi International

of

Manufacturer's Address: 11001 Bren Road East
Minnetonka, MN 55343

declare under our sole responsibility that the product:

Product Name: TransPort WR44

Model Numbers: Reference product list

to which this declaration relates are in conformity with the essential requirements and other relevant requirements of the Directive 2004/108/EC (EMC), Directive 2006/95/EC (LVD) and Council Directive 1999/5/EC R&TTE.

EMC: (article 3.1b) EN55022:2006 + A1:2007
EN55024:1998 + A1:2001 + A2:2003
EN61000-3-2:2006
EN61000-3-3:1995 + A1:2001 + A2:2005
EN301489-7:v1.2.1
EN301489-17:v2.1.1

Safety: (article 3.1a) EN60950-1:2006+A11:2009

Minnesota, USA, 16 November, 2010
(Place and date of issue)

**Authorised signature for and on behalf of Digi International Inc.
Joel Young, VP, Engineering**

European
Representative: Andreas Burghart
Digi International GmbH Branch Breisach
Kueferstr. 8, 79206 Breisach, Germany
Telephone: +49-7667-908-124

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