VG007
Personal Mobile Gateway

Installation Guide

Installation Guide

Personal Mobile Gateway

VoIP Internet Gateway
with IEEE 802.11b/g Wireless Access Point,
IEEE 802.11b/g Wireless Client,
IEEE 802.11b/g Wireless Repeater,
and PSTN Telephony Functions

VG007
E122005-R01
149100032900E

Federal Communication Commission Interference Statement
This device complies with Part 15 of the 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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, 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 to correct the interference by one of the following measures:

Reorient or relocate the receiving antenna

Increase the separation between the equipment and 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

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IMPORTANT NOTE:FCC Radiation Exposure Statement
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters (8 inches) between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Industry Canada -Class B
This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled “Digital Apparatus,” ICES-003 of Industry Canada.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matérial brouilleur: “Appareils Numériques,” NMB-003 édictée par l’Industrie.

EC Conformance Declaration CE !

Marking by the above symbol indicates compliance with the Essential Requirements of the R&TTE Directive of the European Union (1999/5/EC). This equipment meets the following conformance standards:

- EN 60950 (IEC 60950) - Product Safety
- EN 300 328 - Technical requirements for 2.4 GHz radio equipment
- EN 301 489-1, EN 301 489-17 - EMC requirements for radio equipment

This device is intended for use in the following European Community countries:

- Austria
- Belgium
- Denmark
- Finland
- France
- Germany
- Italy
- Luxembourg
- Netherlands
- Norway
- Spain
- Sweden
- Switzerland
- United Kingdom
- Portugal
- Greece
- Ireland
- Iceland

Requirements for indoor vs. outdoor operation, license requirements and allowed channels of operation apply in some countries as described below:

- In Italy the end-user must apply for a license from the national spectrum authority to operate this device outdoors.
- In Belgium outdoor operation is only permitted using the 2.46 - 2.4835 GHz band: Channel 13.
- In France outdoor operation is only permitted using the 2.4 - 2.454 GHz band: Channels 1 - 7.

Contents

Chapter 1: Introduction

The Personal Mobile Gateway is a compact multi-funtion network connection device. The unit provides secure wired and wireless high-speed data and VoIP (Voice over Internet Protocol) communications through an Internet connection.

The Personal Mobile Gateway functions in the following operating modes:

- Secure Internet Gateway
- IEEE 802.11b/g Wireless Access Point
- IEEE 802.11b/g Wireless Client
- IEEE 802.11b/g Wireless Repeater

The Personal Mobile Gateway's capabilities make it ideal for business travelers or home users. The device provides a secure Internet gateway function between a cable/DSL modem connection and its wired LAN port and wireless clients. The integrated VoIP ability offers voice communications over the Internet from a wired or wireless connected PC, or by connecting a regular telephone set to its PHONE port. It can function as an 802.11b/g Wi-Fi access point providing a service to wireless clients. Or, it can function as a wireless client itself for PC connections to other Wi-Fi networks. In its wireless repeater mode, the Personal Mobile Gateway can extend the wireless range of other access points for greater flexibility when seeking a comfortable working location.

In addition, the Personal Mobile Gateway can automatically select the operating mode based on its port connections, or it can be fully configured through an easy-to-use web-browser management interface.

Package Checklist

The Personal Mobile Gateway package includes:

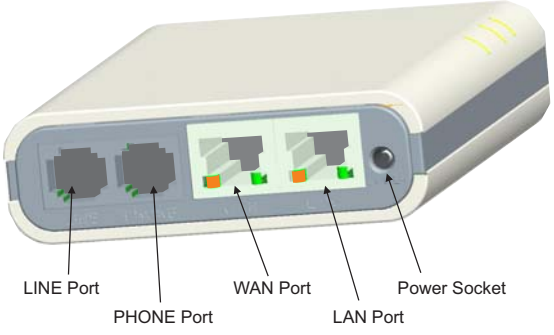
- One Personal Mobile Gateway
- Two RJ-45 Category 5 network cables
- One RJ-11 telephone cable
- One Y-type USB power supply cable
- One AC power adapter with detachable plug
- Documentation CD (includes Installation Guide and Management Guide)

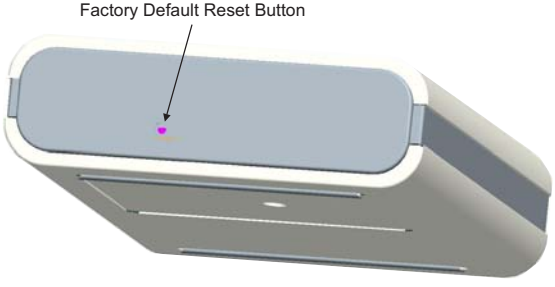
Inform your dealer if there are any incorrect, missing or damaged parts. If possible, retain the carton, including the original packing materials. Use them again to repack the product in case there is a need to return it.

Hardware Description

Top Panel

Side Panels





Component Description

WAN Port

The Personal Mobile Gateway's WAN port is a standard RJ-45 Ethernet network port. It is for connecting the gateway to an Internet connection device, such as an ADSL or cable modem, or to a switch in an Ethernet network that provides Internet access.

The WAN port can be attached directly to your cable/DSL modem using one of the included Category 5 network cables. If you choose to use other, longer Category 5 network cables, be sure they conform to the specifications and pinouts provided in Appendix B.

Note: The WAN port supports automatic MDI/MDI-X operation, which means you can use the same "straight-through" network cable for connection to a cable/DSL modem or Ethernet switch.

LAN Port

The Personal Mobile Gateway's LAN port is a standard RJ-45 Ethernet network port that connects directly to your PC. It can also be connected to an Ethernet switch or hub to support more than one user.

The LAN port can be attached directly to your PC using one of the included Category 5 network cables. If you choose to use other, longer Category 5 network cables, be sure they conform to the specifications and pinouts provided in Appendix B.

Note: The LAN port supports automatic MDI/MDI-X operation, which means you can use the same "straight-through" network cable for connection to a PC or an Ethernet switch.

PHONE Port

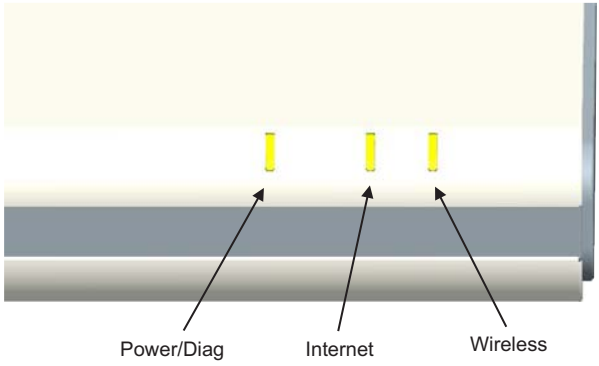
The Personal Mobile Gateway's PHONE port is a standard RJ-11 telephone port that connects directly to a standard (analog) telephone set. This allows a regular telephone to be used for making VoIP calls over the Internet.

LINE Port

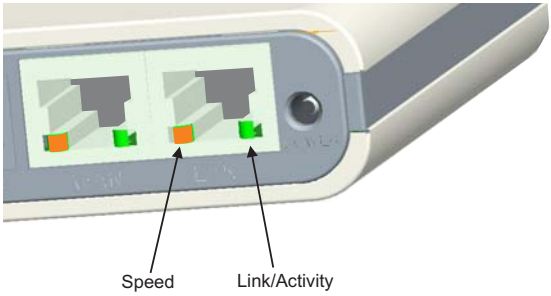
The Personal Mobile Gateway's LINE port is a standard RJ-11 telephone port that connects directly to a Public Switched Telephone Network (PSTN) jack.

LED Indicators

The Personal Mobile Gateway includes three system status LED indicators and two port LED indicators for each of the LAN and WAN ports, as described in the following figures and tables.



LED	Status	Description
Power/Diag	On Green	Indicates that the system is working normally.
	On Amber	System running its power-on-self-test. If the LED remains on amber for more than 20 seconds, it indicates system errors.
Internet	On Green	Indicates the Personal Mobile Gateway has recieved an IP address from a DHCP server and can connect to the Internet.
	Off	The Personal Mobile Gateway has no configured IP address to connect to the Internet.
Wireless	Slow Flashing Green	Indicates a wireless association (connection) with a strong radio signal.
	Fast Flashing Green	Indicates a wireless association (connection) with a weak radio signal.
	Off	Indicates no wireless association (connection) or no radio signal



LED	Status	Description
Right (Link/Activity)	On Green	Indicates a valid network link on the port.
	Flashing Green	Indicates network activity on a port link.
	Off	There is no valid network link on the port.
Left (Speed)	On Amber	Indicates the port is operating at 100 Mbps.
	Off	Indicates the port is operating at 10 Mbps.

Factory Default Reset Button

This button is used to reset the Personal Mobile Gateway to its factory default configuration. If you press and hold down the button for 5 seconds or more, any configuration changes you may have made are removed and the factory default configuration is restored.

Power Connector

The Personal Mobile Gateway does not have a power switch. It is powered on when connected to the AC power adapter, and the power adapter is connected to a power source. The power adapter automatically adjusts to any voltage between 100-240 volts at 50 or 60 Hz. No voltage range settings are required.

The Personal Mobile Gateway can also be powered directly from a PC's USB ports using the included Y-type USB power cable. The Personal Mobile Gateway requires two USB port connections to receive sufficient power.

Radio Antenna

The Personal Mobile Gateway includes an integrated internal antenna for wireless comunications. No external connections or adjustments are required.

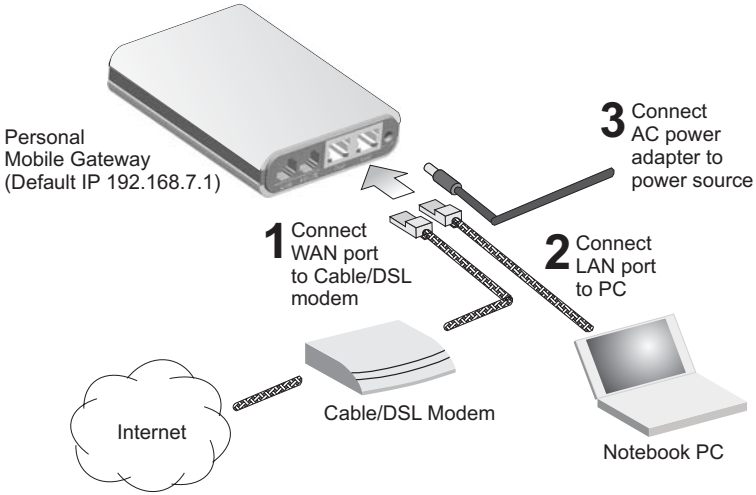
Chapter 2: Connecting the Personal Mobile Gateway

In its default setting, the Personal Mobile Gateway's operating mode is determined by how it is connected. The Internet gateway and wireless client modes are automatically implemented depending on the WAN port connection. The wireless access point and wireless repeater modes, as well as VoIP functions, require manual configuration using the Personal Mobile Gateway's web management interface.

The connections for each operating mode are described in the following sections.

Internet Gateway

Used as a gateway, the unit routes traffic between an Internet connected cable or ADSL modem, and wired or wireless PCs or notebooks.



To connect the Personal Mobile Gateway for use as an Internet gateway, follow these steps:

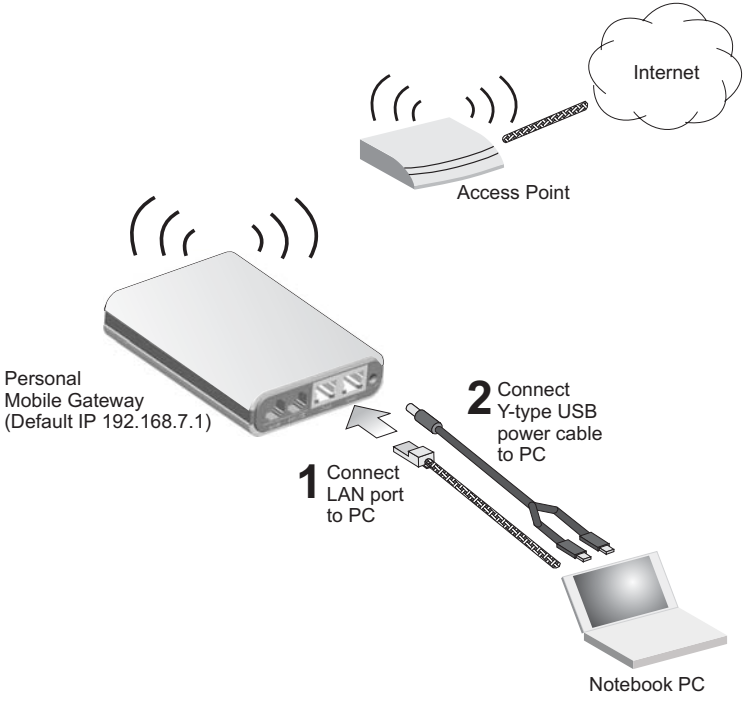
1. Connect an Ethernet cable from the Personal Mobile Gateway's WAN port to your Internet connected cable or ADSL modem.
2. Connect an Ethernet cable from the Personal Mobile Gateway's LAN port to your PC. Alternatively, you can connect to a workgroup switch to support multiple users. The Personal Mobile Gateway can support up to 32 wired or wireless users.

3. Power on the Personal Mobile Gateway by connecting the AC power adapter and plugging it into a power source.
4. Use your PC's web browser to access the Personal Mobile Gateway's management interface and run the Setup Wizard to make any configuration changes (refer to the Management Guide for details). The Personal Mobile Gateway has a default IP address of 192.168.7.1 and a subnet mask of 255.255.255.0.

Note: If your PC has an IP address assigned by DHCP (Dynamic Host Configuration Protocol) or is set on the same subnet as the Personal Mobile Gateway (that is, the PC's IP address starts 192.168.7.x), you can connect immediately to the web management interface. Otherwise, you must first change your PC's IP address to be on the same subnet as the Personal Mobile Gateway.

Wireless Client

Used as a wireless client, the Personal Mobile Gateway can connect your PC to any nearby access point.



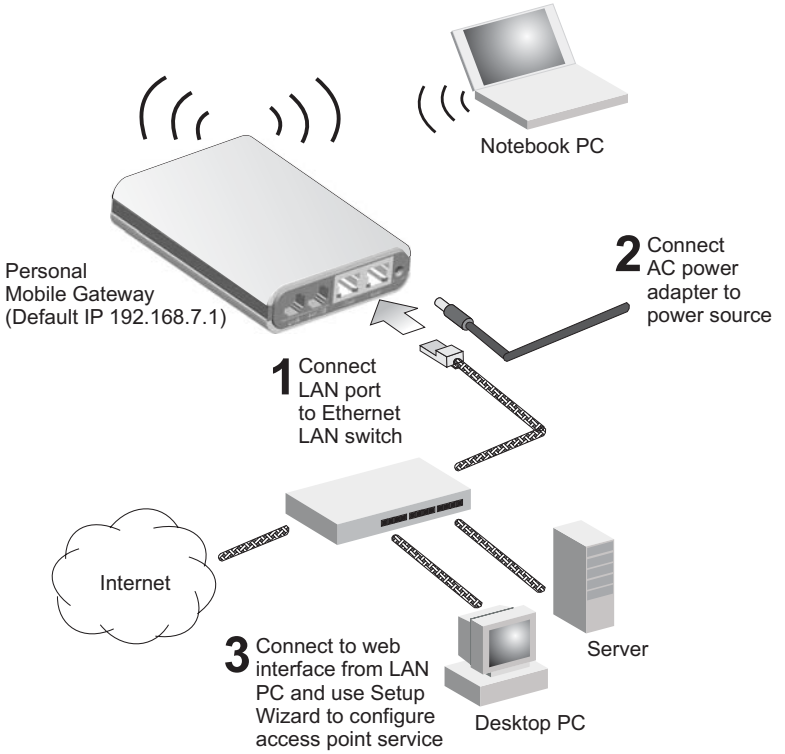
To connect the Personal Mobile Gateway for use as a wireless client, follow these steps:

1. Connect an Ethernet cable from the Personal Mobile Gateway's LAN port to your PC.
2. Power on the Personal Mobile Gateway by connecting the Y-type power cable to the unit and plugging the USB connectors into two of your PC's USB ports. Alternatively, if you have access to a nearby power source, you can also power on the Personal Mobile Gateway by using the AC power adapter.
3. Use your PC's web browser to access the Personal Mobile Gateway's management interface and run the Setup Wizard to scan the area and select a specific access point for connection (refer to the Management Guide for details). The Personal Mobile Gateway has a default IP address of 192.168.7.1 and a subnet mask of 255.255.255.0.

Note: If your PC has an IP address assigned by DHCP (Dynamic Host Configuration Protocol) or is set on the same subnet as the Personal Mobile Gateway (that is, the PC's IP address starts 192.168.7.x), you can connect immediately to the web management interface. Otherwise, you must first change your PC's IP address to be on the same subnet as the Personal Mobile Gateway.

Wireless Access Point

Used as a wireless access point, the Personal Mobile Gateway connects to an Ethernet LAN switch and extends the local network to associated wireless clients (PCs or notebooks with 802.11b/g wireless capability). From any nearby location, you can then make a wireless connection to the Personal Mobile Gateway and access the Ethernet network resources, including local servers and the Internet.



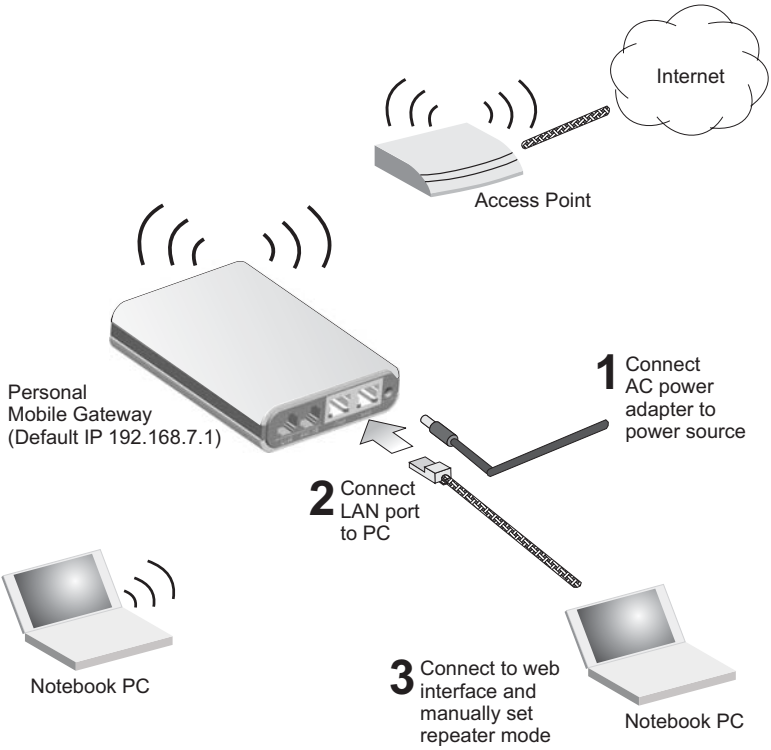
To connect the Personal Mobile Gateway for use as an access point, follow these steps:

1. Connect an Ethernet cable from the Personal Mobile Gateway's LAN port to your local network switch.
2. Power on the Personal Mobile Gateway by connecting the AC power adapter and plugging it into a power source.
3. From a PC on the local network, use a web browser to access the Personal Mobile Gateway's user interface and run the Setup Wizard to configure the access point service (refer to the Management Guide for details). The Personal Mobile Gateway has a default IP address of 192.168.7.1 and a subnet mask of 255.255.255.0. If the default IP address is not compatible with the local network, you can first configure the Personal Mobile Gateway from a direct connection to a PC before installing the unit in the network.

Wireless Repeater

The Personal Mobile Gateway can also operate in a wireless “repeater” mode to extend the range of other wireless access points. The unit forwards wireless traffic between wireless-enabled PCs and an access point.

In repeater mode, the Personal Mobile Gateway does not forward wireless traffic to its LAN port. The LAN port can only be used for management access to the web interface. Note that when the unit operates in this mode, only half the normal wireless traffic throughput is possible. This is because the unit has to receive and then re-transmit all data on the same wireless channel.



To connect the Personal Mobile Gateway for use as a wireless repeater, follow these steps:

1. Power on the Personal Mobile Gateway by connecting the AC power adapter and plugging it into a power source.
2. Connect an Ethernet cable from the Personal Mobile Gateway’s LAN port to your PC.

3. Use your PC's web browser to access the Personal Mobile Gateway's management interface and manually set the unit to repeater mode (refer to the Management Guide for details). The Personal Mobile Gateway has a default IP address of 192.168.7.1 and a subnet mask of 255.255.255.0.

Note: If your PC has an IP address assigned by DHCP (Dynamic Host Configuration Protocol) or is set on the same subnet as the Personal Mobile Gateway (that is, the PC's IP address starts 192.168.7.x), you can connect immediately to the web management interface. Otherwise, you must first change your PC's IP address to be on the same subnet as the Personal Mobile Gateway.

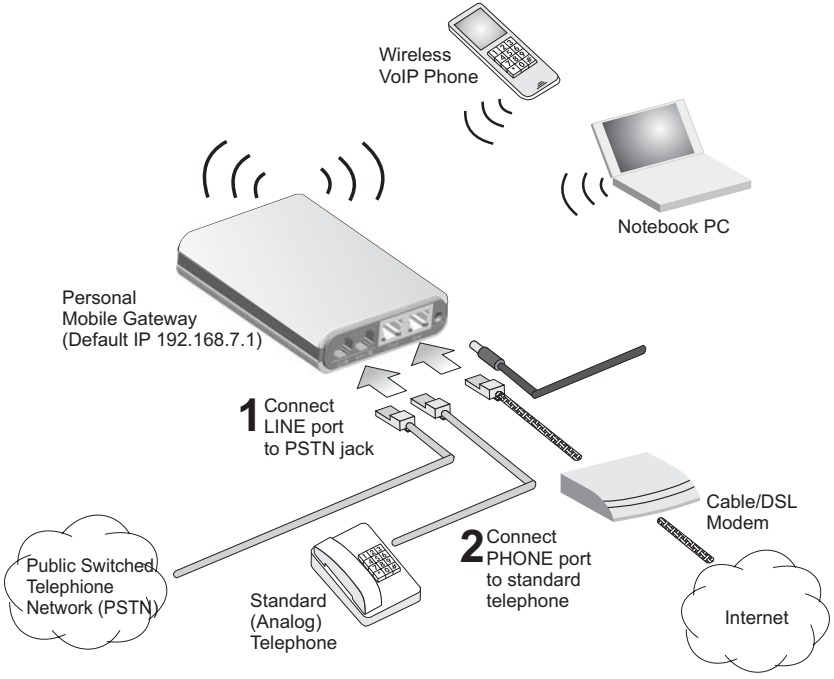
4. When you have completed setting the Personal Mobile Gateway to repeater mode, you can remove the PC connection to the unit.

VoIP Telephony Functions

The Personal Mobile Gateway can function as a VoIP gateway for making telephone calls over the Internet. Using the Internet to make VoIP calls to any other VoIP user in the world is essentially free, and even calls to regular PSTN (Public Switched Telephone Network) phones are much cheaper than making a traditional long distance calls.

The Personal Mobile Gateway enables VoIP calls to be made using a regular (analog) telephone set, as well as a PC or VoIP phone. The regular telephone can also be used to make PSTN calls through the Personal Mobile Gateway.

The Personal Mobile Gateway uses standard Session Initiation Protocol (SIP) technology to make VoIP calls. When you have connected the unit in either gateway, access point, wireless client, or repeater mode, use the web management interface to set up the SIP parameters. Refer to the Management Guide for more information on VoIP and SIP.



To connect the Personal Mobile Gateway to use its telephony functions, first connect and configure the Personal Mobile Gateway in the operating mode you want to use (see the appropriate section in this chapter.), then follow these steps:

1. Connect an RJ-11 telephone cable from the Personal Mobile Gateway's PHONE port to your standard (analog) telephone set.
2. Connect an RJ-11 telephone cable from the Personal Mobile Gateway's LINE port to an available PSTN telephone jack.
3. Use your PC's web browser to access the Personal Mobile Gateway's management interface and configure your VoIP and SIP settings (refer to the Management Guide for details).

Note: To make a PSTN call through the Personal Mobile Gateway, you must first dial "0" on the standard telephone set. The default on the PHONE port is for VoIP calls.

Appendix A: Troubleshooting

Diagnosing LED Indicators

Troubleshooting Chart	
Symptom	Action
Power LED is Off	• AC power adapter may be disconnected. Check connections between the Personal Mobile Gateway, the power adapter, and the wall outlet.
Power LED is Amber for more than 20 seconds	• The Personal Mobile Gateway has detected a system error. Reboot the Personal Mobile Gateway to try and clear the condition. • If the condition does not clear, contact your local dealer for assistance.
WAN or LAN link LED is Off	• Verify that the Personal Mobile Gateway and attached device are powered on. • Be sure the cable is plugged into both the Personal Mobile Gateway and corresponding device. • Verify that the proper cable type is used and its length does not exceed specified limits. • Check the cable connections for possible defects. Replace the defective cable if necessary.

Note: For information on troubleshooting wireless connectivity issues, refer to the Management Guide.

Appendix B: Cables and Pinouts

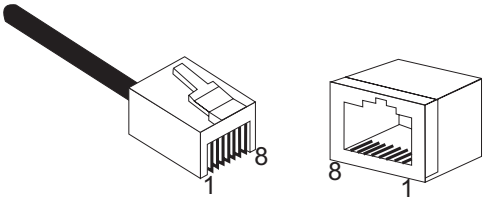
Twisted-Pair Cable Assignments

For 10/100BASE-TX connections, a twisted-pair cable must have two pairs of wires. Each wire pair is identified by two different colors. For example, one wire might be green and the other, green with white stripes. Also, an RJ-45 connector must be attached to both ends of the cable.

Caution: Each wire pair must be attached to the RJ-45 connectors in a specific orientation. (See “Straight-Through Wiring” on page B-2 and “Crossover Wiring” on page B-2 for an expADSL connectionation.)

Caution: DO NOT plug a phone jack connector into the RJ-45 port. Use only twisted-pair cables with RJ-45 connectors that conform with FCC standards.

The following figure illustrates how the pins on the RJ-45 connector are numbered. Be sure to hold the connectors in the same orientation when attaching the wires to the pins.



10/100BASE-TX Pin Assignments

Use unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable for RJ-45 connections: 100-ohm Category 3 or better cable for 10 Mbps connections, or 100-ohm Category 5 or better cable for 100 Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).

The RJ-45 port on the personal mobile gateway supports automatic MDI/MDI-X operation, so you can use straight-through or crossover cables for all network connections to PCs, switches, or hubs. In straight-through cable, pins 1, 2, 3, and 6, at one end of the cable, are connected straight through to pins 1, 2, 3, and 6 at the other end of the cable.

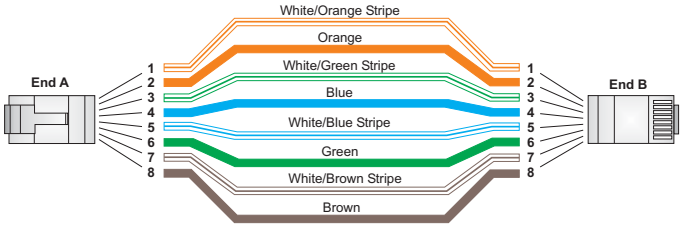
Table B-1. 10/100BASE-TX MDI and MDI-X Port Pinouts		
Pin	MDI-X Signal Name	MDI Signal Name
1	Receive Data plus (RD+)	Transmit Data plus (TD+)
2	Receive Data minus (RD-)	Transmit Data minus (TD-)
3	Transmit Data plus (TD+)	Receive Data plus (RD+)
6	Transmit Data minus (TD-)	Receive Data minus (RD-)
4,5,7,8	Not used	Not used

Note: The "+" and "-" signs represent the polarity of the wires that make up each wire pair.

Straight-Through Wiring

If the twisted-pair cable is to join two ports and only one of the ports has an internal crossover (MDI-X), the two pairs of wires must be straight-through.

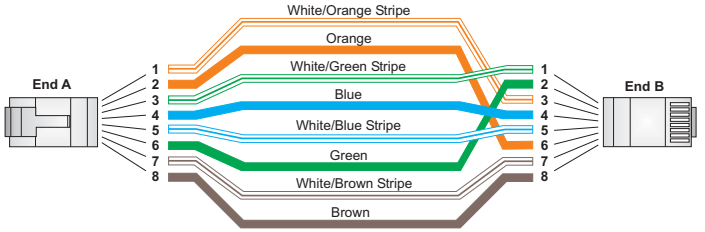
EIA/TIA 568B RJ-45 Wiring Standard
10/100BASE-TX Straight-through Cable



Crossover Wiring

If the twisted-pair cable is to join two ports and either both ports are labeled with an "X" (MDI-X) or neither port is labeled with an "X" (MDI), a crossover must be implemented in the wiring.

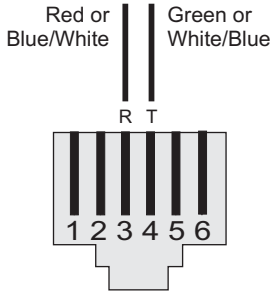
EIA/TIA 568B RJ-45 Wiring Standard
10/100BASE-TX Crossover Cable



RJ-11 Ports

Standard telephone RJ-11 connectors and cabling can be found in several common wiring patterns. These six-pin connectors can accommodate up to three wire pairs (three telephone lines), but usually only one or two pairs of conductor pins and wires are implemented.

The RJ-11 ports on the side of the Personal Mobile Gateway contain only one wire pair on the inner pins (3 and 4).



R = Ring T = Tip

Pin	Signal Name	Wire Color
1	*Not used*	
2	*Not used*	
3	Line 1 Ring	Red or Blue/White
4	Line 1 Tip	Green or White/Blue
5	*Not used*	
6	*Not used*	

Appendix C: Specifications

Physical Specifications

Ports
2 10/100BASE-TX ports, RJ-45 connector, auto MDI/X
  10BASE-T: RJ-45 (100-ohm, UTP cable; Category 3 or better)
  100BASE-TX: RJ-45 (100-ohm, UTP cable; Category 5 or better)
1 FXS port (PHONE), RJ-11 connector
1 FXO port (LINE), RJ-11 connector

LED Indicators
Power, Internet, Wireless (802.11b/g Wireless Link/signal strength),
WAN (Ethernet Link/Activity, Speed), LAN (Ethernet Link/Activity, Speed)

AC Power Adapter
Vendor: PHIH
Model Number: PSC11R-050
Input: 100-240 VAC, 50-60 Hz
Output: 5 VDC, 2A

Unit Power Supply
DC Input: 5 VDC, 1 A maximum
Power Consumption: < 5 W

Physical Size
105 x 78.67 x 24.7 mm (4.13 x 3.1 x 0.97 in)

Weight
0.1 kg (0.22 lbs)

Temperature
Operating: -10 to 50 °C (14 to 122 °F)
Storage: -40 to 70 °C (-40 to 158 °F)

Humidity
5% to 95% (non-condensing)

Wireless Specifications

Maximum 802.11b/g Channels
FCC/IC: 1-11
ETSI: 1-13
France: 10-13

Operating Frequency
2.4 ~ 2.4835 GHz (US, Canada, ETSI)

Maximum Wireless Clients
32

Data Rate
802.11g: 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps (automatic fall back)
802.11b: 1, 2, 5.5, 11 Mbps (automatic fall back)

Modulation Type
802.11g: CCK, BPSK, QPSK, OFDM
802.11b: CCK, BPSK, QPSK

RF Output Power
802.11b: 18 dBm
802.11g: 14 dBm

VoIP Specifications

Voice Signaling Protocol
SIP v2

Voice Codec
G.711
G.726
G.729 a, b

Voice Quality
VAD (Voice Activity Detection)
CNG (Comfortable Noise Generation)
Echo cancellation (G.165/G.168 echo canceller) up to 16 milliseconds
Adaptive jitter buffer, 70 to 200 milliseconds
DTMF tone detection and generation
Call progress generation
Custom tone generation

Call Features
Call transfer
Call waiting/hold/retrieve
3-way conference call
Call-ID number and name
Call-ID block
Anonymous call blocking
T.38 fax relay
Dial plan (E.164 dialing plan)
Do not disturb setting
Speed dial
Repeat dialing on busy
Call return
Call forwarding: No Answer/Busy/All
Distinctive ringing

Compliances

Emissions
FCC Part 15B Class B
FCC ID grant
IC RSS-210
IC ID grant
EN 55022 Class B
EN 55024

Radio Signal Certification
FCC Part 15C 15.247, 15.207
EN 300-328
EN 301-489

Temperature
IEC 68-2-14

Vibration
IEC 68-2-36, IEC 68-2-6

Shock
IEC 68-2-29

Drop
IEC 68-2-32

Safety
UL/cUL (UL 60950)
EN 60950 (CB)

TUV/GS

Standards
IEEE Std. 802.3-2002 10BASE-T and 100BASE-TX
IEEE 802.11b, g
Wi-Fi 11b/g, WPA
UPnP

Model Number: VG007
Pub. Number: 149100032900E, E122005-R01