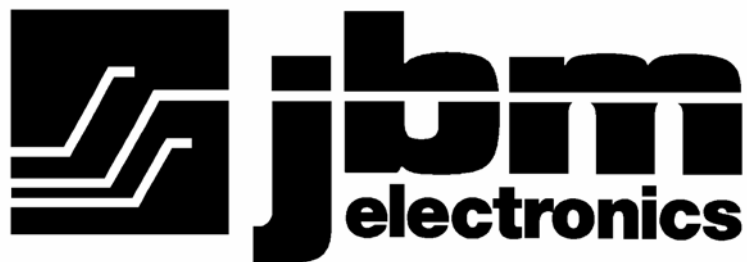# Gateway 900 Installation Manual

NOTICE

**Specifications described in this manual are
subject to change without notice.**

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For further information, contact:

JBM Electronics Co.
4645 LaGuardia
St. Louis, MO 63134
(314) 426-7781
Fax: (314) 426-0007

Website: http://www.jbmelectronics.com

Overview

JBM Electronics' Gateways are low-cost routers designed for users who need to interface Legacy protocol devices to a Frame Relay network. The Gateway 900 (G900) provides one serial port, a 10/100BaseT port and a WAN port with an integrated T1/E1 DSU

The Gateways convert Legacy protocols to TCP/IP or UDP for connection to a Frame Relay network. The Gateways can also interface IP-only devices to a Legacy protocol network. Terminal emulation for the IP device is available, providing a unique migration path for a network. This capability allows an IP device to coexist with an older protocol network.

Applications

The Gateways offer several advantages in customer networks, including:

- Converts data from Legacy protocol devices to TCP for connection to a WAN network, providing a migration path to an IP-based network.

- Allows TCP/IP devices to access a Legacy protocol network.

- Provides host and terminal emulation for all polled protocols, which allows up to 100 physical devices to be connected to one serial port.

- Converts data from a TCP/IP device to UDP for Ethernet networks.

- Provide secure communications with optional Firewall, SSL, IPSec encryption and VPN tunneling software.

- Offers RIP, OSPF and BPG routing for IP data.

- Provides full Frame Relay support and complete control over the frame network interface, including Priority and CIR allocation.

- Provides special support software for ATMs and POS devices to enhance error reporting and recovery.

- Concentrates multiple Legacy protocol applications from one location without replacing existing devices. Existing applications are supported with protocol conversion; data format manipulation, text manipulation, custom data translation, unique network addressing, or specialized host or terminal messaging.

- Offers custom modifications to handle unique user requirements, such as text or data manipulation, special log-in commands, host application messages, or data translations.
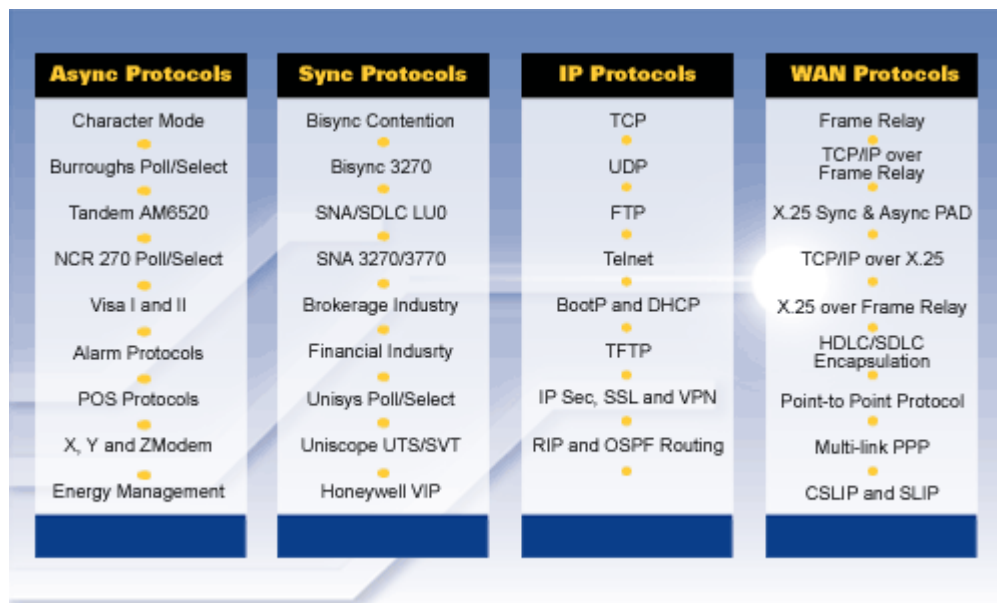
Benefits

The Gateway simplifies network design by eliminating the need for network changes to handle Legacy protocols. The conversion eliminates the need for a separate network for the legacy protocol and protects the investment in Legacy devices when moving to an IP network. The Gateway can help protect the investment in Legacy devices when moving to a new network.

The Gateway's security software can be used to protect attached devices from unauthorized access or establish a Virtual Private Network (VPN) to connect separate locations into a secure network using Internet connections.

Protocol Support

The Gateways support many standard LAN, WAN and serial protocols, including:

Async Protocols	Sync Protocols	IP Protocols	WAN Protocols
Character Mode	Bisync Contention	TCP	Frame Relay
Burroughs Poll/Select	Bisync 3270	UDP	TCP/IP over Frame Relay
Tandem AM6520	SNA/SDLC LU0	FTP	X.25 Sync & Async PAD
NCR 270 Poll/Select	SNA 3270/3770	Telnet	TCP/IP over X.25
Visa I and II	Brokerage Industry	BootP and DHCP	X.25 over Frame Relay
Alarm Protocols	Financial Indusrty	TFTP	HDLC/SDLC Encapsulation
POS Protocols	Unisys Poll/Select	IP Sec, SSL and VPN	Point-to Point Protocol
X, Y and ZModem	Uniscope UTS/SVT	RIP and OSPF Routing	Multi-link PPP
Energy Management	Honeywell VIP		CSLIP and SLIP

The Gateway's protocol support includes local polling (spoofing) of attached devices and Client and Server support for the IP protocols.

Diagnostics

The Gateways can be configured through Application Commands entered via Telnet interface. The Telnet connection provides command and control of the Gateway. SNMP Traps provide notification of major events in the Gateway. All of the protocol-specific diagnostics, such as LUSTATS, Notify, and Status and Sense Bytes are supported. Extensions to the Telnet or SNMP commands are available as a special order.

Network Diagram

This drawing illustrates a configuration using a G900. All of the Gateways provide the same IP connectivity; the only difference is the number of serial and Ethernet devices that can be attached.
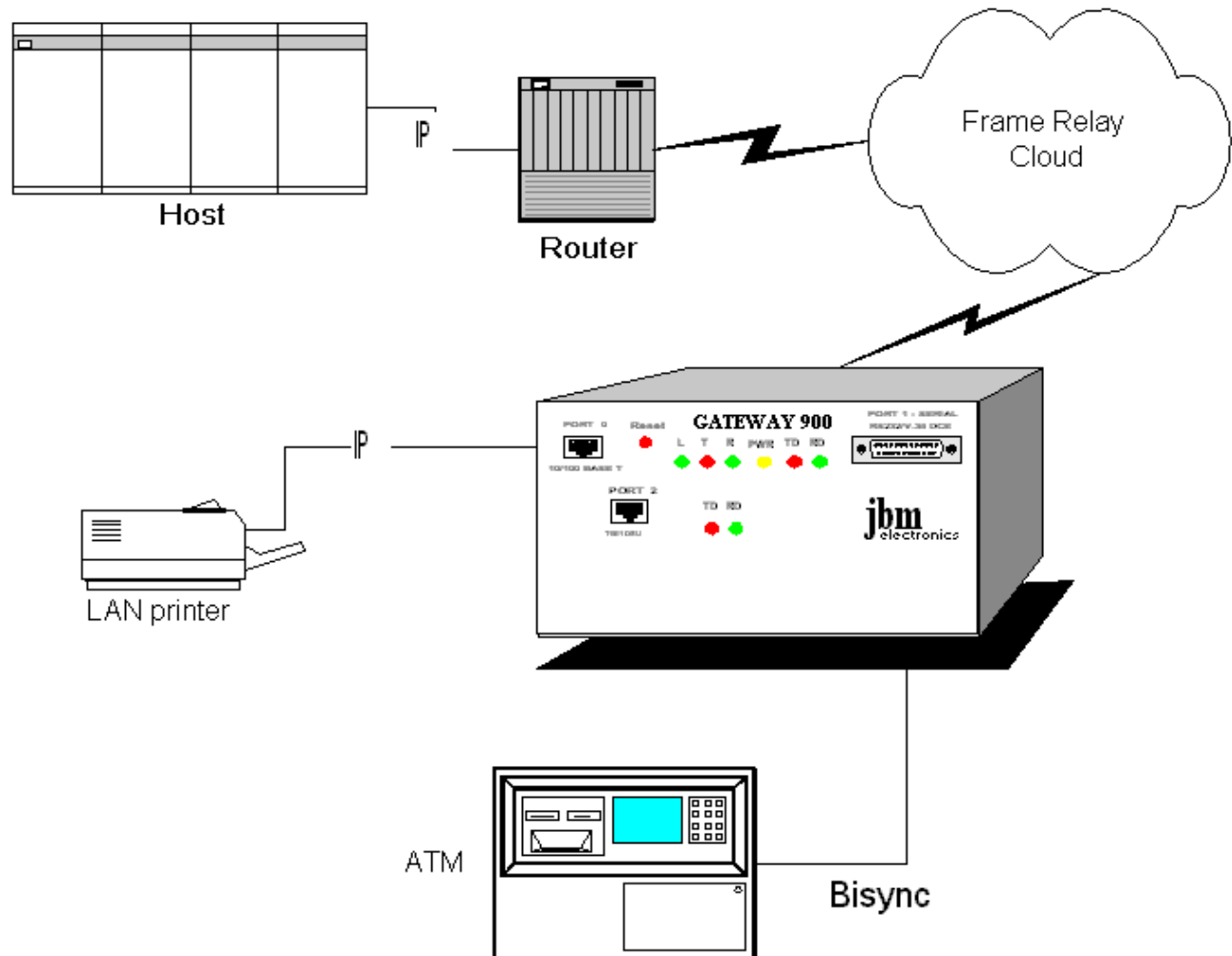
The Gateways can be ordered with Frame Relay connections using an internal or external DSU. The Gateway 700 provides the same port configuration as the G900 but uses an external DSU.   The Gateway 800 provides an integrated 56/64/72 KB DSU. With the frame connection, the Gateways provide a complete router replacement with full protocol conversion.

Frame Relay Support

The Gateway provides full support for Frame Relay networks, including:

- Supports up to 100 Logical Channels (DLCIs).
- Both CPE and Access Node configurations.
- ANSI T1.617 Annex D, Q.933 or LMI Local Signaling.
- Frame Size to 4096 Bytes.
- Flow control using individual Committed Information Rate (CIR) for each DLCI.

Our Frame Relay support is certified to ISO and ITU standards by major network laboratories. The X.25 support is certified to European NET2 standards by the ROLAND Laboratory.

Installation

The manuals used with the Gateways are:

Manual	Usage
Installation	Unpacking and installing the Gateway
Setup	Defining the Gateway's configuration
Operations	Controlling the Gateway
Cables	Cable Wire Lists

The Setup and Operations Manuals are on the CD supplied with the Gateway.

1.   Remove the JBM Electronics Gateway 900 from the shipping carton.

2.   Inspect the Gateway for shipping damage. If any damage is found, retain the carton and contact the carrier.

3.   Connect the cables according to the following table:

Port	Description	Connector
Port 0	Ethernet Port - supports IP protocols on a 10/100BaseT port.	RJ-45
Port 1	Serial Port - supports Legacy protocols at speeds up to 56 KB. The serial interface is RS-232C DCE with DTE Enabled through a cable adapter (G50-adapter).	DB-25
Port 2	WAN Port - supports Frame Relay or X.25 at speeds up to T1/E1 through the integrated DSU.	RJ-45
Port 5	Console Port (on back) – supports async at 115.2 KB. The serial interface is RS-232C DTE with DCE selectable through a cable adapter.	DE-9

4.   Connect the Ethernet cable to the Ethernet port (Port 0). Verify the cable is connected to a network.

WARNING: RJ-45 Ports. These are shielded RJ-45 data sockets. They cannot be used as standard traditional telephone sockets, or to connect the unit to a traditional PBX or public telephone network. Only connect RJ-45 data connectors, network telephony systems, or network telephones to these sockets. Either shielded or unshielded data cables with shielded or unshielded jacks can be connected to these data sockets.

AVERTISSEMENT: Points d'accès RJ-45. Ceux-ci sont protégés par des prises de données. Ils ne peuvent pas êntre utilisés comme prises de téléphone conventionnelles standard, ni pour la connection de l'unité à un réseau téléphonique central privé ou public. Raccorder seulement connecteurs de données RJ-45, systèmes de réseaux de téléphonie ou téléphones de réseaux à ces prises.

Il est possible de raccorder des câbles protégés ou non protégés avec des jacks protégés ou non protégés à ces prises de données.

5. Connect the serial cable from the computer to the DB-25 port (Port 1). If the Gateway will be connected to a modem, then the special DTE Cable (JBM Electronics part number G50-Adapter) must be used. The RS-232C cable and adapter are listed in the Cables Manual on the CD supplied with the unit.

6. Connect the phone cable to the WAN Port (Port 2).

7. Plug the Gateway into a power outlet.

8. Configure the Gateway through a stand-alone Configuration Program. This program builds a configuration file that is subsequently transferred to the Gateway. Information and operating instructions for the Configuration Program are available in the Configuration Program Manual. Refer to this manual for instructions to create and transfer the configuration file.

9. Transfer the configuration file to the Gateway using the instructions in the Setup Program Manual.

10. Configure the WAN interface (Page 10) with the integrated console application. Instructions for accessing the console port are available on Page 7.

11. The Gateway is now ready for use.
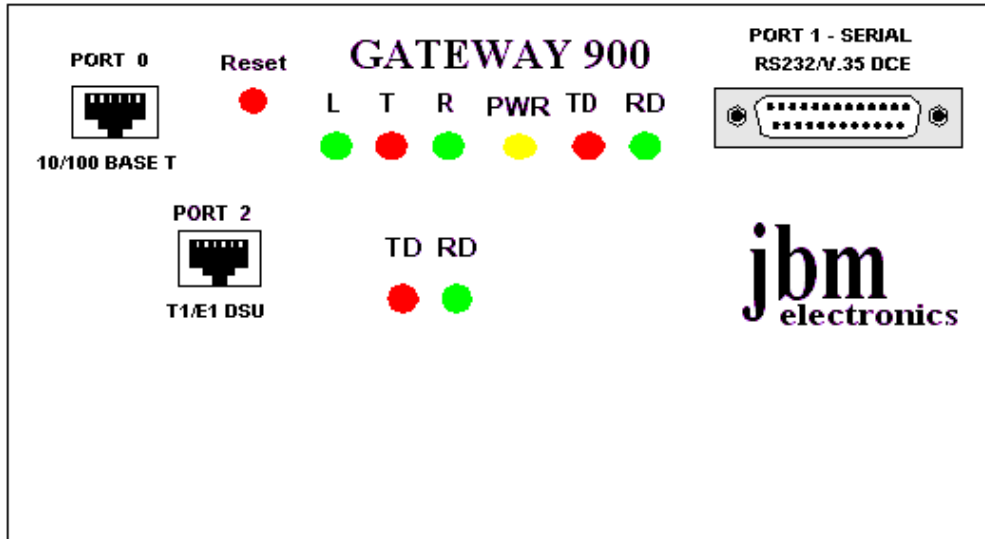
Operation

The Gateways are designed for unattended operation. The Gateways can be controlled through the Console Port (Port 5) or via Telnet (if the Gateway's IP Address is known). The connection provides access through a variety of Application Commands.

The JBM Operations Manual provides further information on the operation of the Gateway, including Command Line instructions, JBM Administrative Menu and other features.

Follow these instructions to access the Gateway through the Console Port:

1.   Verify your system is connected to the COM Port on the Gateway. This can be accomplished by connecting a cable to the DE-9 connector on the back of the Gateway.

2.   Start an async terminal emulator on your system or use an async terminal with the following parameters:

Parameter	Value
Protocol Type	Serial
Port	Com 1 or Com 2
Baud Rate	9600
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	RTS/CTS
Emulation Type	VT100

3.   The Gateway will display the Login Screen.

Screen 1 – Initial Login Screen

4.   Once this screen is displayed, Log in to the Gateway using **root** for the user name and **gateway** for the password. These entries are case sensitive and must be entered in the appropriate case.

This userid and password is used for Console and Telnet access.

Note: *We recommend you change password using the instructions in the Gateway Operations Manual.*

Note: *Password security for the JBM Application is disabled as a shipment default. This security can be enabled through the JBM Administration Menu. Refer to the Operations Manual for instructions.*

Configure the WAN interface

Instructions for configuring the WAN interface are available through the console:

- Readme.config (configuring IP over frame)
- Wanpipe Configuration.pdf (general overview)

Wanpipe Configuration

Before starting WANPIPE, a configuration file (wanpipeN.conf, where N=1,2,3..etc.) must be created in /etc/wanpipe directory. This file contains the line, hardware and interface definitions for the WAN connection.

The program /usr/sbin/wancfg should be used to create the configuration file(s). It is a GUI, ncurses based, configurator that contains all wanpipe options as well as extended help information on each option.

Things you should know before starting /usr/sbin/wancfg:

Protocol	IP Information
Frame Relay	Type of Status Signaling (LMI, ANSI, or Q.933) DLCI numbers IP info for each DLCI
CHDLC	IP info
PPP	IP info
X.5	Maximum packet size Number of SVCs/PVCs IP info
T1/E1 CSU/DSU	Encoding Framing Active Channels/Baud Rate
56K CSU/DSU	N/A

For the rest of this document, we will assume we are working with the following ISP/Telco supplied data:

Protocol: Frame Relay
Prot Info: Num of DLCI's = 2
               DLCI=16 and 17
IP Info: LCI 16
               Local   =201.1.1.1
               PtoP   =201.1.1.2
               Netmask =255.255.255.0
               Gateway =201.1.1.2 (i.e. this is the system default gateway)
               DLCI 17
               Local   =202.1.1.1
               PtoP   =202.1.1.2
               Netmask =255.255.255.0
               Gateway =N/A

WANCFG

1.   Start /usr/sbin/wancfg

2.   Select 'Create' option

3.   Select a wanpipe device. If this is the first device select wanpipe1 and hit the **SELECT** button.

4.   Choose WAN Protocol Definition and choose Frame Relay.

5.   Select Hardware Setup

     Select Adapter Type. When selecting the Adapter Type, note the PORT option. Usually PORT=PRI would be used.

     Define the I/O Port to 0x280 and the IRQ to 7.

     Exit Hardware Setup

6.   Network Interface Setup

     The network interface set-up depends on the type of connection. For instance Frame Relay supports many interfaces, each on its own DLCI, so there are questions related to the number of DLCIs and configuration information for each DLCI. In the case of Point-to-Point protocols like PPP and HDLC, there is only one interface per physical port.

This example is Frame Relay with two DLCIs. The first input is: "Please specify the number of DLCIs supported on this Frame Relay connection"

Enter in number 2

For each network interface do the following:

-        DLCI Number: Enter in the DLCI number. Note the default number is always 16.

-        Interface Name: The Interface name will also have default value. You can leave it as is or change it. For instance, you could change it to ?chicago? or ?toronto?.

IMPORTANT: If you are using iptables you might want to change the default interface name to something like "wan0". Iptables and Ipchains don't like "_" in interface name.

e.g.: 'iptables -o wp1_fr16 ...' will give you an error

-        Operation Mode: WANPIPE is for IP Routing API is used for custom API applications.

-        DLCI Protocol Setup: In this section leave everything as default. Unless the ISP has specified specific protocol options such as CIR.

-        IP Setup: Put in your IP info as supplied by ISP Enable Default gateway for the first interface.

7.   Once all network interfaces are setup keep hitting the **BACK** button until Main Menu is reached.

Then select **EXIT** and save the config file.

The new config file will be located in /etc/wanpipe directory.

8.   Start the device:

wanrouter start wanpipe1

Note: The card doesn't have to be connected to start the wanrouter.

9.   Troubleshooting the driver load process

All wanpipe driver events will be recorded in /var/log/messages.

Thus if errors occur, first check /var/log/messages to find out what exactly went wrong with the drivers startup.

Once the device is started you should see a "link connecting" message. This message indicates that the card was been configured successfully and that the link is trying to connect.

Reset Function

The Gateways have a Reset Button that can be used to perform the following function:

Function	Action
Restart	Press and release the switch. The Gateway will clear its buffers and restart the program. All current sessions will be closed.

LED Status Indicators

The Gateways have LED indicators that can be used to isolate problems. The LEDs indicate the following activity:

LED	COLOR	FUNCTION	NORMAL STATUS
Power	Yellow	Signifies that power is available to the Gateway	Always On
TD	Red	Indicates that data is being transmitted from the attached device	Blinks during data transmission
RD	Green	Indicates that data is being received from the attached device	Blinks during data reception
Link	Green	Indicates there is a Link with the Ethernet network.	On when connected
Transmit	Red	Indicates that data is being transmitted to the Ethernet connection.	Blinks during data transmission
Receive	Green	Indicates that data is being transmitted by the Ethernet connection.	Blinks during data reception.

Gateway 900 Specifications

Serial Port:	Baud Rate:	110-56,000 bps
	Interface:	One Female DB-25 connector RS-232C/V.35, DCE mode, DTE mode with adapter cable
WAN Port:	Baud Rate:	T1/E1 DSU
	Interface:	One Female RJ-45 connector
LAN Port:	Ethernet:	10/100BaseT
		One Female RJ-45 connector
Console Port:	Baud Rate:	Up to 115,200 bps
	Interface:	One Male DE-9, RS-232C DTE mode DCE mode with adapter cable
Management:	Console Port:	CLI Access through async connection
	IP Protocol	SNMP and Telnet
LED Indicators:	Serial Port(s):	TD and RD (each port)
	WAN Port:	TD and RD
	LAN Port:	Link, Transmit, Receive (each port)
	Power:	On/Off State
Power:	120-240 VAC, 50/60 Hz (Internal)	
Physical:	Size:	6.5" W x 3.5" H x 10" L
	Weight:	5 pounds
Processor:	486DX-100	
Memory:	32 MB RAM, 128 K BRAM, 16MB Flash	
Warranty:	1 Year Parts and Labor	

SAFETY INFORMATION

Please read the following safety information carefully before installing the Gateway.

WARNING: Installation and removal of the unit must be carried out by qualified personnel only.

- The unit must be connected to an earthed (grounded) outlet to comply with international safety standards.

- Do not connect the unit to an A.C. outlet (power supply) without an earth (grounded) connection.

- If the Gateway is provided with an IEC320 plug, the appliance coupler (the connector to the unit and not the wall plug) must have a configuration for mating with an EN60320/IEC320 appliance inlet.

- The socket outlet must be near to the unit and easily accessible. You can only remove power from the unit by disconnecting the power cord from the outlet.

- This unit operates under SELV (Safetly Extra Low Voltage) conditions according to IEC 60. The conditions are only maintained if the equipment to which it is connected also operates under SELV conditions.

France and Peru only
This unit cannot be powered from IT[†] supplies. If your supplies are of IT type, this unit must be powered by 230V (2P+T) via an isolated transformer ration 1:1, with the secondary connection point labeled Neutral, connected directly to earth (ground).

[†] Impédance â la terre

Power Cord Set
This must be approved for the country where it will be used, for example:

U.S.A. and Canada

- The cord set must be UL-approved and CSA certified**.**
- The minimum specifications for the flexible cord are:
  No. 18 AWG
  Type SV or SJ
  3-conductor
- The cord set must have a rated current capacity of as least 10A.
- The attachment plug must be an earth-grounding type with a NEMA 5-15P (15 A, 125 V) or NEMA 6-15P (15 A, 250 V) configuration.

Denmark

- The supply plug must comply with Section 107-2-D1, Standard DK2-1a or DK2-5a.

Switzerland

The supply plug must comply with SEV/ASE 1011.

UK

- The supply plug must comply with BS1363 (3-pin 13-amp) and be fitted with a 5 A fuse which compiles with BS1362.
- The main cords must be <HAR> or <BASEC> marked and be of type HO3VVF3G0.75 (minimum).

Europe

- The supply plug must comply with CEE7/7 ("SCHUKO")
- The main cords must be <HAR> or <BASEC> marked and be of type HO3VVF3G0.75 (minimum).

L'INFORMATION DE SÉCURITÉ IMPORTANTE
Veuillez lire à fond l'information de la sécurité suivante avant d'installer le Baseline Dual Speed Hub.

Avertissement: L'installation et la dépose de ce groupe doivent être confiés à un personnel qualifié.

- Ne branchez pas votre appaireil sur une prise secteur (alimentation électrique) lorsqu'il n'y a pas de connexion de mise à la terre (mise à la masse).
- Vous devez raccorder ce groupe à la terre (mise à la masse) afin de respecter les normes internationales de sécurité.
- Le coupleur d'appareil (le connecteur du goupe et non pas la prise murale) doit repecter une configuration qui permet un branchement sur une entrée d'appareil EN60320/IEC 320.
- La prise secteur doit se trouver à proximité de l'appareil et son accès doit être facile. Vous ne pouvez mettre l'appareil hors circuit qu'en dèbranchant son cordon électrique au niveau de cette prise.
- L'appaireil fonctionne à une tension extrêmement basse de séciroté qui est conforme à la norme IEC60950. Ces conditions ne sont maintenues que si l'equipement auquel el est raccordé fonctionne dans les mêmes conditions.

France et Pérou uniquement:
Ce groupe ne peut pas être alimenté par un dispositif à impédance à la terre. Si vos alimentations sont du type impédance à la terre, ce groupe doit être alimenté par une tension de 230 V (2 P+T) par le biais d'un transformateur d'isolement à rapport 1:1, avec un point secondaire de connesion portant l'appellation Neutre et avec raccordement direct à la terre (masse).

Cordon électrique
Il doit être agréé dans le pays d'utilisation.

Etats-Unis et Canada
- Le cordon doit avoir reçu l'homologation des UL et un certificat de la CSA.
- Le cordon souple doit respecter, à titre minimum, les spécifications suivantes:
    Calibre 18 AWG
    Type SV ou SJ
    à 3 conducteurs
- La cordon doit être en mesure d'acheminer un courant nominal d'au moins 10A.
- La prise femelle de branchement doit être du type à mise à la terre (mise à la masse) et respecter la configuration NEMA 5-15P (15 A, 125 V) ou NEMA 6-15P (15 A, 250 V).

Danemark
▪ La prise mâle d'alimentation doit respecter la section 107-2 D1 de la norme DK2 1a ou DK2 5a.

Suisse
▪ La prise mâle d'alimentation doit respecter la norme SEV/ASE 1011.

Europe
▪ La prise secteur doit être conforme aux normes CEE 7/7 ("SCHUKO")
▪ Le cordon secteur doit porter la mention <HAR> ou <BASEC> et doit être de type H03VVF3GO.75 (minimum).

Technical Information

Related Standards
The Gateway 900, 905 and 910 have been designed to the following standards:

EMC
FCC PART 15, SUBPART B, Class A
CISPR 22/EN 55022, Class A
IEC 61000-4-2/EN 61000-4-2
IEC 61000-4-3/EN 61000-4-3, ENV 50204
IEC 61000-4-4/EN 61000-4-4
EN 61000-4-5
IEC 61000-4-6/EN 61000-4-6
ITU-T-K.20
IEC 61000-3-2/EN 61000-3-2
IEC 61000-3-3/EN 61000-3-3
ETSI EN 300 386 V1.2.1 (1998-11)

CE Statement (Europe)

This product complies with the European EMC Directive 89/336/EEC.

Regulatory Notices

FCC Statement
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. 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. Operation of this equipment in a residential area is likely to cause harmful interference to radio communications, in which case the user will be required to correct the interference at their own expense.

Information To The User
If this equipment does cause 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 or more of the following measures:

- Reorient the receiving antenna.
- Relocate the equipment with respect to the receiver.
- Move the equipment away from the receiver.
- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

How to Identify and Resolve Radio-TV Interference Problems

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

In order to meet FCC emissions limits, this equipment must be used only with cables with comply with IEEE 802.3.

CSA Statement
This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Warranty

JBM Electronics provides a limited warranty for the Gateway, which consists of the following:

♦ This warranty is effective for one year from the delivery date of the Gateway to the purchaser.

♦ The purchaser is responsible for returning the defective unit to our factory, freight prepaid.

♦ If the Gateway is under warranty, we will repair it at our cost and return it, freight prepaid, via UPS ground service.

♦ If the Gateway is not covered by the warranty, we will notify you of the repair charges. We will not repair the Gateway without your permission.

♦ All repairs are guaranteed for 90 days or the remainder of the warranty, whichever is longer.

Except for the express warranty set forth herein, JBM Electronics Co. grants no warranties, either express or implied, of merchantability and fitness. The stated express warranty is in lieu of all liabilities or obligations of JBM Electronics Co. for damages including but not limited to consequential damages occurring out of or in connection with the delivery, use or performance of JBM products.

Buyer's remedies for breach of warranty shall be limited to repair or replacement subject to adjustment as stated herein, or full or partial adjustment to purchase price.

Software Terms

Software supplied with each JBM Electronics' product remains the exclusive property of JBM Electronics. JBM grants with each unit a perpetual license to use this software with the express limitation that the software may not be copied or used in any other product for any purpose. It may not be reverse engineered, or used for any other purpose other than in and with the computer hardware sold by JBM Electronics.

Extended Warranty Program

JBM offers an extended warranty for the Gateway. This program extends the original warranty on a yearly basis. In addition to extending the original warranty, the emergency replacement program is included for the cost of freight only. The extension must be purchased before the original warranty expires. Please contact JBM Electronics for further information.

Return for Repair

If you want us to repair the Gateway, contact JBM for a Return Authorization Number (RA). Once you have the RA number, carefully pack the defective unit, and return it freight prepaid. Do not use Parcel Post. Repair charges are a flat fee for units outside of the warranty.

Please include a letter with the RA number, your name and address, and details of the difficulty experienced. The letter is important since the shipping material is discarded. Units should be sent to:

> JBM Electronics Co.
> 4645 LaGuardia
> St. Louis, MO 63134
> Attention: RA #