IntelliShare PSTN
Telephone Line Sharer

How To Contact your Local Black Box

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Contents

1. APPROVALS, CERTIFICATION AND SAFETY NOTICES

C E The CE marking applied to this product symbolises a Declaration of Conformity with the following applicable Directives of the European Union as of the dates indicated:

January 1, 1995: Council Directive 73/23/EEC amended by Council Directive 93/68/EEC, *Approximation of the laws of the member states related to low voltage equipment.*

January 1, 1996: Council Directive 89/336/EEC, *Approximation of the laws of the member states related to electromagnetic compatibility.*

A full declaration, defining the relevant directives and referenced standards can be obtained from Black Box.

IntelliShare PSTN has been approved in accordance with Council Decision 98/482/EC for pan-European single terminal connection to the public switched telephone network (PSTN). However, due to differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance of successful operation on every PSTN network termination point. In the event of problems, you should contact your local supplier in the first instance.

In general, under the scope of this approval, this product has been designed to work with the national PSTNs of the following countries:

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

The test standard used for this approval is TBR21. To assist in the use and application of terminal equipment approved against this standard, the European Telecommunication Standards Institute (ETSI) has issued an advisory document (EG 201 121) which contains notes and voluntary additional requirements to ensure network compatibility of TBR21 terminals. IntelliShare PSTN has been designed against, and is fully compliant with, all of the relevant advisory notes contained in this document.

WARNING

The IntelliShare PSTN is certified, manufactured and tested in compliance with strict safety and radio frequency interference regulations. Any unauthorised alteration which includes the addition of new functions or the connection of external devices may impact this certification.

In order to allow this equipment to operate in proximity to industrial, scientific and medical (ISM) equipment, the external radiation from the ISM equipment may have to be limited or special mitigation measures taken.

Safety Notices:

Your IntelliShare PSTN has been designed and tested to meet strict safety requirements. These include safety agency examination and approval, and compliance to established environmental standards. Please read these instructions carefully before operating this equipment and refer to them as needed to ensure the continued safe operation of your product.

Follow all warnings and instructions marked on or supplied with the product.

Power disconnection: The mains inlet at the rear of this equipment is the mains power disconnect device.

Do not use this product near water, wet locations, or outdoors.

This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your local power company.

This product is not suitable for use with IT power distribution systems.

Do not allow anything to rest on the power cord. Do not locate the product where persons will step on the cord.

Never spill liquid of any kind on the product.

Always remove the power cord before unscrewing and removing the attached cover. This equipment contains a number of configuration dip-switches. Apart from these switches, there are no user serviceable parts inside

Use of an extension cord with this product is not recommended or authorised. Users should check building codes and insurance requirements if a properly earthed extension cord is to be used. Ensure that the total ampere ratings of the products plugged into the extension cord do not exceed the extension cord ampere rating. Also, make sure that the total amperage of all products plugged into the wall outlets does not exceed the outlet rating.

This product provides various ports for interconnection to other equipment. The safety status of the Line-in and Output Ports 1 through 5 is defined as Telephone Network Voltage (TNV). It is important when connecting other equipment to this product that these ports be connected only to ports on other equipment with the same safety status.

2.   SPECIFICATIONS

Mechanical

Height:	58mm
Width:	229mm
Depth:	212mm
Weight:	1.5kg

Power Supply

Input Voltage:	220 –240Vac, 50Hz
Input Current:	0.25A

Connectors

1 x Mains IEC inlet for input voltage
5 x RJ-11 sockets for "extension" apparatus connection
1 x RJ-11 socket for connection to PSTN

Indicators

1 x Green LED to indicate Mains Power On
1 x Orange LED to indicate Unit In Use (PSTN line occupied)

Environmental

Operating Temperature Range:	0 to 40 degrees centigrade
Storage Temperature:	-20 to 60 degrees centigrade
Operating Relative Humidity:	20% to 80%
Vibration withstand:	1.25G applied between 2.5 to 15Hz for one hour
Drop withstand:	Survive intact when dropped from a height of 300mm onto hard surface

Reliability

Mean Time Between Failure (MTBF):	100,000 switching operations

3.   INTRODUCTION

The IntelliShare PSTN Telephone Line Sharer allows a number of devices (telephones, modems, fax machines, etc) to share a single standard telephone line, with each device having full un-interruptible access to the telephone line as needed. There is no difficult set-up or configuration required. Just plug the IntelliShare PSTN into a power outlet and hook up the telephone line and extension ports. The IntelliShare PSTN has been designed to be a totally professional class of product and it will provide continuous, reliable, maintenance free operation.
The IntelliShare PSTN provides the advantage that it is silent in operation. It will quietly answer incoming calls and only ring an extension port when routing information has been received.
The IntelliShare PSTN provides one (1) telephone line connection and five (5) "extension" ports. The extension ports are compatible with any POTs (Plain Old Telephone) type device and can be used with telephones, answering machines, modems, faxes, etc.
Calls received by the IntelliShare PSTN are automatically routed to the connected devices using either DTMF (Touch Tone), modem and fax calling tones.
When the IntelliShare PSTN is "in use" by a connected device, all other connected devices receive a busy tone if they try to use the telephone line.
These simple features coupled with the professional design and reliability of the IntelliShare PSTN make it a very powerful problem solver for all types of telecommunication issues.

The IntelliShare PSTN is approved for use throughout Western Europe.

The following chapter details various ways in which the IntelliShare PSTN can be used to reduce the costs and administration problems associated with multiple telephone lines.
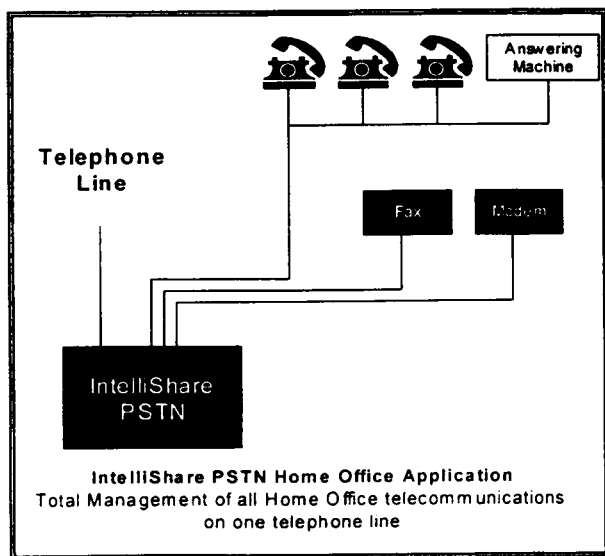
4. TYPICAL APPLICATIONS

4.1 Home Office

The IntelliShare PSTN is a professional class Telephone Line Manager for Home Office applications. Standard telephones and an answering machine can be connected to the default extension port (port 1). A fax machine and a modem can be connected to ports 2 and 3 respectively.
Using the IntelliShare PSTN's fax and modem call discrimination feature, incoming fax and modem calls will automatically be routed to the correct device. Because the IntelliShare PSTN is silent in operation, only the required device will receive ringing. This means that telephones will not ring at all if the call is a modem or fax call.
The IntelliShare PSTN device privacy feature also means that if you are on the telephone at a time when the fax decides to re-dial a number, it cannot interrupt your telephone call.
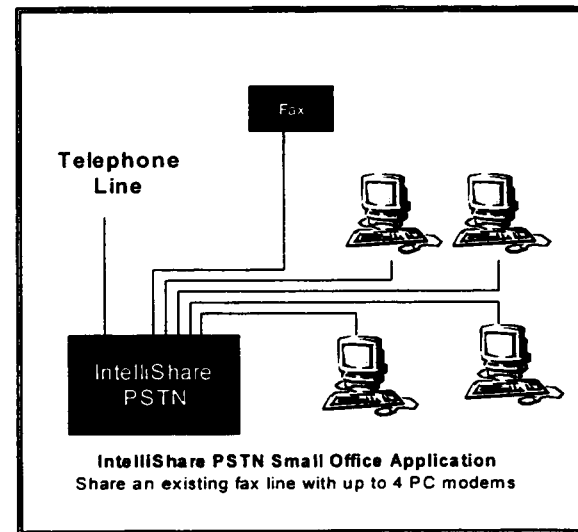Likewise, if your modem is in the process of a scheduled dial in to your internet provider to receive e-mail, if you lift the telephone handset you will hear a busy tone indicating that the telephone line is currently in use.
The IntelliShare PSTN allows you to run a completely professional Home Office on a single standard telephone line. Other devices may, of course, be connected to the spare extension ports if so desired.

IntelliShare PSTN Home Office Application
Total Management of all Home Office telecommunications on one telephone line

4.2 Small Office

The IntelliShare PSTN is an essential tool when you start to expand your business. The standard migration path for a small business is to move from a single telephone line used for all communication to having two telephone lines, one for voice and one for fax traffic.
Most PCs now incorporate modems and many provide low cost or free internet accounts. As you add employees and computers to your organisation, it makes sense to make use of this built in technology and take advantage of the efficiencies of allowing each PC user access to e-mail and the internet. With a single IntelliShare PSTN you can connect up to four (4) internet modems to your dedicated fax line. This means that you can run individual internet access accounts on up to four (4) PCs and schedule e-mail transmission on each with no fear of modem "collision" or a scheduled e-mail transmission interrupting a fax call, etc.

IntelliShare PSTN Small Office Application
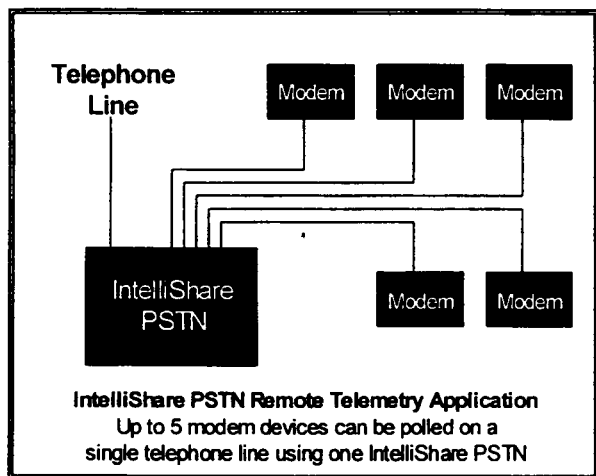Share an existing fax line with up to 4 PC modems

4.3   Remote Telemetry

Modems can be added to all kinds of products and systems to allow monitoring of system performance, environmental conditions, etc. The IntelliShare PSTN makes it possible to interrogate multiple, co-located modem equipped products and systems using just one telephone line.
Using the IntelliShare PSTN DTMF (Touch Tone) routing feature, any modem connected to any "extension port" on the IntelliShare PSTN can be individually called and polled by a central site modem thus alleviating the need to install multiple telephone lines.
A single IntelliShare PSTN unit will allow up to 5 modem equipped products to be connected to a single standard telephone line.

Telephone Line

Modem **Modem** **Modem**

IntelliShare PSTN

Modem **Modem**

IntelliShare PSTN Remote Telemetry Application
Up to 5 modem devices can be polled on a
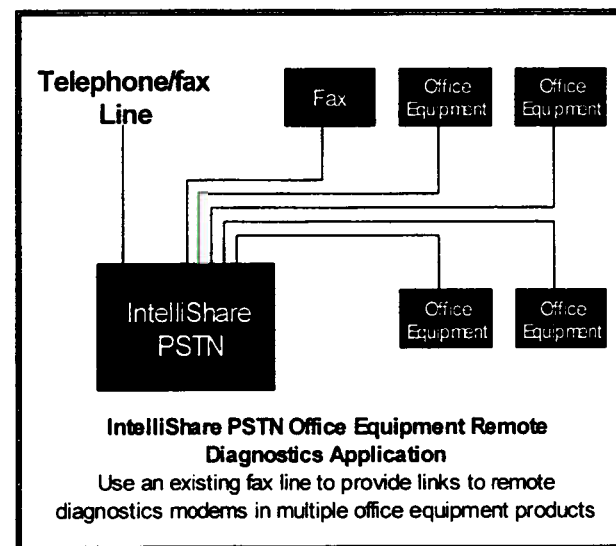single telephone line using one IntelliShare PSTN

For applications where more than 5 modem equipped products are co-located, multiple IntelliShare PSTN's can be cascaded to allow direct routing and polling of a larger number of modems. The maximum number of modems that can be connected being limited only by the number of IntelliShare PSTNs and practical constraints on the time required to poll each modem.

4.4   Remote Diagnostics

There is increasing interest in equipping office equipment such as printers and photocopiers with modems for remote diagnostics. The advantage to suppliers of such equipment is that the modem can be used to determine the operational status of the office equipment; i.e. if a service is required, if consumables are required, how many copies, prints have been made, etc. The problem for office equipment suppliers is convincing customers that they should install and pay for an additional telephone line (or lines) just to allow this remote access.
The IntelliShare PSTN overcomes all customer resistance to the deployment of remote diagnostics modems by allowing such products to be connected unobtrusively to a customers existing fax line. The office equipment modems can be directly accessed from a central site modem by using the IntelliShare PSTN DTMF (Touch Tone) routing feature. The IntelliShare PSTN will automatically route fax calls to a connected fax machine. The end result is that the customer will see no impact on existing fax communications.
Because the IntelliShare PSTN has 5 extension ports, this means that only one unit is required to service multiple modem equipped printers, photocopiers, etc. This makes the IntelliShare PSTN an ideal problem solver for customers running larger print rooms.

Telephone/fax Line

Fax **Office Equipment** **Office Equipment**

IntelliShare PSTN

Office Equipment **Office Equipment**

IntelliShare PSTN Office Equipment Remote Diagnostics Application
Use an existing fax line to provide links to remote
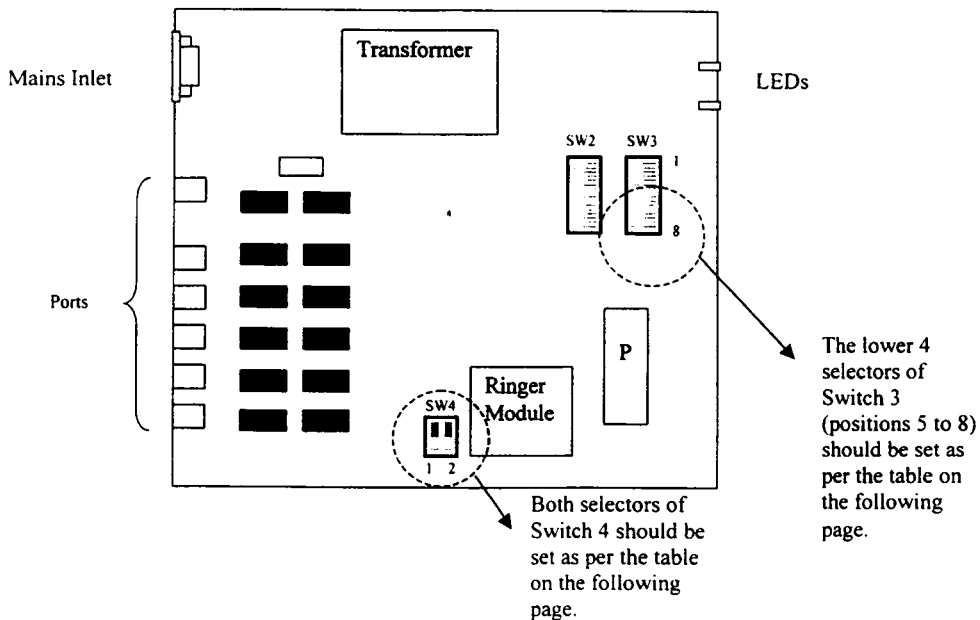diagnostics modems in multiple office equipment products

5. COUNTRY CONFIGURATION

The IntelliShare PSTN contains a number of 'Dip Switches' which are set to configure the unit for use in specific countries.

To gain access to the switches, it is necessary to take the cover off the unit by removing the 4 cross head screws (2 at either side). **Ensure the mains cable is disconnected from the unit before removing the cover.**

Once removed, you should locate the 3 banks of switches as shown on the diagram below.

TOP VIEW OF PCB

The lower 4 selectors of Switch 3 (positions 5 to 8) should be set as per the table on the following page.

Both selectors of Switch 4 should be set as per the table on the following page.

SW2 and the first 4 selectors of Switch 3 (positions 1 to 4) are factory set. Do not adjust these settings. Altering these settings may invalidate the approval of the Intellishare PSTN. The settings of these switches are also shown on the next page for reference only.

Before using the IntelliShare PSTN, you should set the switches as detailed in the following tables **in the white columns** for the country of use. The settings that are shown in black columns are factory set and provided for reference only.
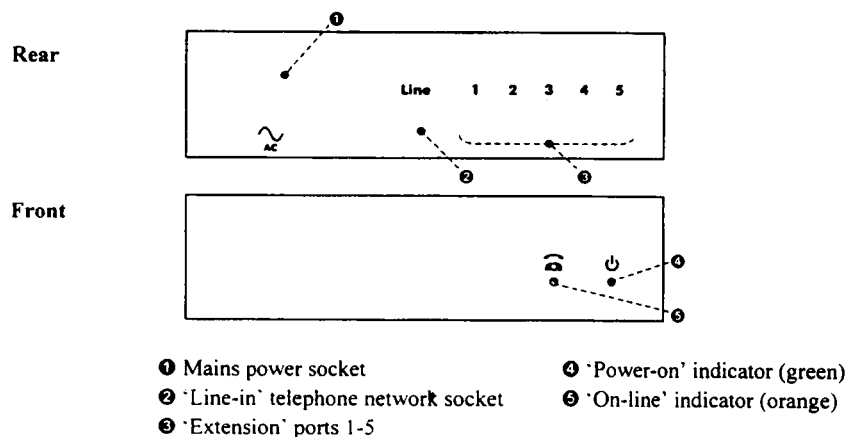
COUNTRY OF USE	Switch 4		Switch 3							
	1	2	1	2	3	4	5	6	7	8
Austria	On	On	On	Off	Off	Off	Off	Off	On	On
Belgium	Off	Off	On	Off	Off	Off	Off	On	On	On
Denmark	Off	Off	On	Off	Off	Off	On	Off	On	On
Finland	Off	Off	On	Off	Off	Off	On	Off	On	On
France	On	On	On	Off	Off	Off	Off	On	On	On
Germany	Off	Off	On	Off	Off	Off	On	Off	On	On
Greece	Off	Off	On	Off	Off	Off	On	Off	On	On
Iceland	Off	Off	On	Off	Off	Off	Off	Off	On	On
Ireland	Off	Off	On	Off	Off	Off	On	On	Off	On
Italy	Off	Off	On	Off	Off	Off	On	Off	On	On
Luxembourg	Off	Off	On	Off	Off	Off	On	Off	On	On
Netherlands	Off	Off	On	Off	Off	Off	On	Off	On	On
Norway	Off	Off	On	Off	Off	Off	On	Off	On	On
Portugal	Off	Off	On	Off	Off	Off	Off	Off	On	On
Spain	Off	Off	On	Off	Off	Off	Off	On	On	On
Sweden	Off	Off	On	Off	Off	Off	Off	Off	On	On
Switzerland	Off	Off	On	Off	Off	Off	On	Off	On	On
UK	Off	Off	On	Off	Off	Off	On	On	Off	On

COUNTRY OF USE	Switch 2							
	1	2	3	4	5	6	7	8
All Countries	Off	On	Off	Off	On	Off	On	Off

Adjustment of settings in the black boxes may invalidate the approval of the IntelliShare PSTN.
Incorrect settings of switches in the white columns may result in attached equipment not answering calls.

6.   PANEL DETAILS AND INSTALLATION INSTRUCTIONS

The panel details of the IntelliShare PSTN are shown below.

Rear

Front

- ❶ Mains power socket
- ❷ 'Line-in' telephone network socket
- ❸ 'Extension' ports 1-5
- ❹ 'Power-on' indicator (green)
- ❺ 'On-line' indicator (orange)

The green 'power-on' indicator marked ⏻ will operate whenever power is supplied to the unit, and the orange 'on-line' indicator marked ☎ will light up when a call is in progress.

The IntelliShare PSTN should be connected to an analogue telephone line using the supplied telephone cable. The other end of this cable must be inserted into the socket marked 'Line' at the rear of the unit.

It is possible to connect any POTS device (telephone, modem or fax machines etc) to any of the extension ports 1 to 5, using the country specific adapters if necessary. However, the IntelliShare PSTN has been designed to answer incoming calls, listen for tones and automatically route to a connected fax machine or modem. If you wish to make use of this feature please note the following extension port designations:

Port 1:Default port. All calls will be routed to this port 8 seconds after the IntelliShare PSTN has answered the call if no valid routing signal is received (touch tone or fax calling tone or modem calling tone). Note: After defaulting to port 1, the IntelliShare PSTN will continue to 'listen' for a valid routing tone and, if received, will re-route the call accordingly. Once a routing tone has been received, no further re-routing is possible.

Port 2:Fax Port. All incoming fax calls will be routed to this port upon detection of a valid fax calling tone, providing that another valid routing tone (touch tone or modem calling tone) has not already been received.

Port 3:Modem port. All incoming modem calls will be routed to this port upon detection of a valid modem calling tone, providing that a valid routing tone (touch tone or fax calling tone) has not already been received.

The mains power cord supplied should be used to power the unit.

7.   Principles of Operation

When the unit is powered and operational, the 'Power-on' LED on the front panel will illuminate. If at any time this light fails to operate please ensure that the unit is plugged in and the power is turned on.

Making calls:

When any connected device is used to make a call, the 'On-line' LED illuminates to show that a call is in progress. Calls may be made using either pulse or tone signalling. The IntelliShare PSTN is transparent for the duration of the call.

If a call is already in progress (ie. the on-line LED is illuminated) and a call is attempted by another device, IntelliShare PSTN will return a busy tone to that device.

When a call is complete and the attached device hangs up, the IntelliShare PSTN resets and the 'On-Line' LED is extinguished.

Receiving calls:

When an incoming call is detected, the IntelliShare PSTN answers immediately and the 'On-line' LED on the front panel illuminates to show that a call is in progress. The IntelliShare PSTN will send a special 'jingle' and then a ring-back signal to the call originator for about 8 seconds, whilst it tries to detect a valid routing signal.

A valid routing signal may be one of three types:

1. *A valid touch tone digit (1 to 5).* If a valid digit is received, ringing is immediately sent to the port corresponding to that digit.

    If the remote caller is using a modem to call and wishes to route to a particular modem that is attached to the IntelliShare PSTN, he should insert 2 or 3 commas into the dial string, followed by the port which he would like to route to. Eg:

ATDT 018112345678 , , X   where X is the port (modem) that he wishes to connect to.

2. *A valid fax calling tone.* If a valid fax calling tone is received, ringing is immediately sent to port 2.

3. *A valid modem calling tone.* If a valid modem calling tone is received, ringing is immediatley sent to port 3.

If the IntelliShare PSTN does not detect a valid routing signal within 8 seconds, it defaults and starts to ring port 1. *In this default mode, the IntelliShare PSTN will continue to monitor for a valid routing signal while ringing port 1. If a valid routing signal is subsequently received, ringing is switched to the relevant port.*

The IntelliShare PSTN continues to ring the relevant port until the attached device answers. As soon as this occurs, the call is routed through the IntelliShare PSTN transparently and it switches into a monitoring mode. When the call is complete and the attached device hangs up, the IntelliShare PSTN resets and the 'On-Line' LED is extinguished.

If the IntelliShare PSTN rings a port for 60 seconds without answer, it automatically terminates the call (hangs up) and resets.

It should also be noted that after a valid routing signal has been detected, no further re-routing is possible.

Power failure:

In the event of a power failure both lights on the front of the unit will be extinguised. However, port 1 can continue to be used for making or receiving calls. Ports 2 to 5 will not operate in this mode. Calls in progress on port 1 during a power failure will remain connected. Calls on all other ports will be disconnected.

8.   TROUBLESHOOTING

If you believe that the IntelliShare PSTN is malfunctioning, do not attempt to repair the unit.
It contains no user-serviceable parts.
In the first instance, you should disconnect the mains power, remove the cover and check the
switch settings against those shown in the tables in section 5. The switches should be set as
per the entry for the country in which the product is being used.
Check that the IntelliShare PSTN telephone line cord is connected to Line port . Check the
other end of the line cord is connected to the wall socket.
Check that all the connected devices are connected securely to ports 1 to 5. Remember that
incoming fax calls are automatically routed to port 2 and modem calls to port 3, unless a
touch tone digit is received first.

If the problem persists, please contact Black Box technical support ensuring you have the
following information available:

❑   The nature and duration of the problem.
❑   When the problem occurs.
❑   The current switch settings of the unit.
❑   Any particular application or use of a connected device that makes the problem worse.

9.   SHIPPING AND PACKAGING

If you need to transport or ship your IntelliShare PSTN:

❑   Package it carefully. It is recommended that you use the original packaging.
❑   If you are shipping the IntelliShare PSTN for repair, make sure you include everything
    that you received with the unit.

NOTES