SPH10

Analog Telephone Hybrid

Installation & Operation Manual

Gentner®

Perfect Communication through Technology, Service, and Education™

SPH10 Installation and Operation Manual
Gentner Part No. 800-012-201
April 2000 (Rev. 2.0)

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The connection ports on the SPH10 are to be used as follows:

Power	Connection to the provided power cord
Remote	Connection to external controlling and status device(s)
Monitor Out	Connection to external speaker 8 ohm
Send In	Connection to audio output devices
Caller Out	Connection to audio input devices
Aux Out	Connection to audio input devices
Telco Line	Connection to telephone line
Telco Set	Connection to telephone set

This equipment complies with the requirements of the EU guidelines:

CE

89/336/EEC “Electromagnetic Compatibility”
73/23/EEC “Electrical operating material for use within specific voltage limits”
1999/5/EC “Radio equipment and telecommunications equipment”

Conformity of the equipment with the above guidelines is attested by the CE mark.

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1 Introduction

Congratulations on purchasing the SPH10 Analog Hybrid. The SPH10 interfaces telephone calls to your audio equipment, providing superior analog telephone integration into broadcast applications.

The SPH10 is an analog hybrid, allowing connection of a single telephone line for on-air use. When connected in accordance to United States, Canada, the United Kingdom, and mainland Europe compliance standards, the SPH10 is optimal for your telephone application.

This manual gives installation, set up, and operation instructions and helps you resolve technical problems, should any arise. For more information, please contact Gentner Communications at the location noted below. We welcome and encourage your comments so we can continue to improve our products and serve your needs.

The SPH10 is an interface between a telephone line and audio equipment. Separate send and caller connections provide audio input and audio output connections to the telephone line. Therefore, the SPH10 is ideal for sending audio and/or receiving audio from another location over a telephone line.

What's In This Manual

The manual is divided into the following sections:

Overview summarizes the main capabilities of the SPH10 and describes the controls and connectors.

Installation explains how to connect SPH10 cables and how calibrate the different controls on the unit.

Operation describes how to use the front panel controls to connect and disconnect calls, switch calls to and from the hybrid, and use the remote control option.

Appendices includes SPH10 specifications, connector pinouts, and detailed warranty and compliance information.

Technical Support

Technical Support

For additional help on how to install, set up, operate or to obtain repair procedures and schematics for the SPH10, please contact Gentner technical support.

Telephone: 1.800.283.5936 (USA) **or** 1.801.974.3760
Fax: 1.801.974.3638
E-mail: tech1@gentner.com
Web site: www.gentner.com

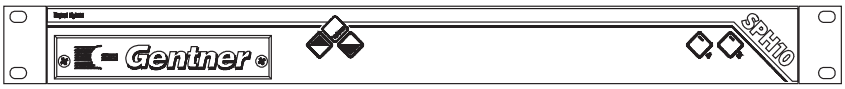
Sales and Customer Service

Telephone: 1.800.945.7730 (USA) **or** 1.801.975.7200
Fax: 1.800.933.5107 (USA) **or** 1.801.977.0087
E-mail: bcastinfo@gentner.com

Gentner Communications Corporation
1825 Research Way, Salt Lake City, UT 84119

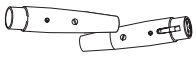
Unpacking

Ensure that the following items were received with your shipment:



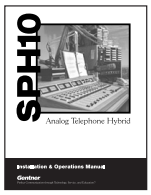
SPH10
Part 910-012-201 (Domestic)
Part 910-012-203 (Pan European)
Part 910-012-204 (Australian)

AC Power Cord
Part 699-150-006



XLRs
1 male, 1 female
Parts 664-600-003
and 664-500-003

12-foot Modular
Telephone Cable
Part 830-000-012



SPH10 Installation and
Operations Manual
Part 800-012-201

4 Rack Mount Cups
Part 684-400-001

4 Rack Mount Screws
Part 681-400-001

Gentner Communications is not responsible for product damage incurred during shipment. You must make claims directly with the carrier. Inspect your shipment carefully for obvious signs of damage. If the shipment appears to be damaged, retain the original boxes and packing material for inspection by the carrier. Contact your carrier immediately.

Product Registration

Please register your SPH10 online by visiting Gentner Technical Support on the World Wide Web at **www.gentner.com**. When your product is properly registered, Gentner Communications can better serve you should you require technical assistance or want to receive upgrades or new product information.

2 Overview

About the SPH10

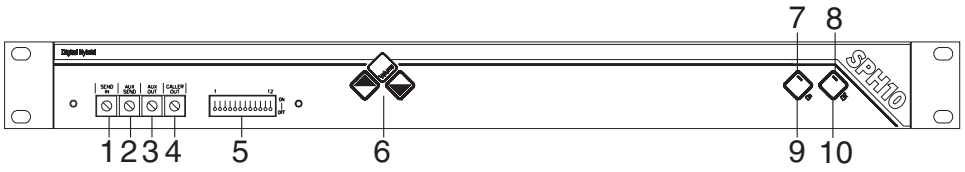
- Separate audio send input and caller output level adjustments
- Analog filter minimizes hum and Central Office switching noise
- Built-in 1W monitor amp with front panel push button volume control
- On/Off control via front panel and rear-panel remote connection
- Analog receive filter for telephone line-noise reduction
- Professionally balanced XLR inputs and outputs
- Auxiliary XLR output for recording both send and caller audio
- Simple installation and operation
- Selectable mic/line input

Product Description

The SPH10 provides superior analog telephone integration into broadcast applications. The SPH10 also provides easy on/off control as well as level adjustment of the Monitor Out jack from the front panel.

Front-Panel Controls

The SPH10 front-panel controls perform the following functions:



SPH10 front-panel controls

1. **Send In.** This trim pot adjusts the level of audio sent to the phone line via the Send In jack. At its midpoint (6 o'clock position), the trim pot is set for nominal send level (0dBm).

2. **Aux Send.** This trim pot adjusts the level of the auxiliary send audio coming from the remote connector input and going onto the telephone line to the caller. At its midpoint (6 o'clock position), the trim pot is set for nominal level (0dBm).

3. **Aux Out.** This trim pot adjusts the level of the audio at the Aux Out jack which includes both the caller audio and the send audio. At its midpoint (6 o'clock position), the trim pot is set for nominal level (0dBm).

4. **Caller Out.** This trim pot adjusts the caller audio level to the user's equipment. At its midpoint (6 o'clock position), the trim pot is set for nominal caller level (0dBm).

5. **DIP Switches.** Three active dip switches (2, 3, and 4) configure the SPH10 system. Individual switch functions are defined in Calibration (page 17).

6. **Volume.** These up/down buttons control the audio level of the Monitor Out speaker amplifier. Pressing once changes the level by 1dB. Pressing and holding the buttons sweeps the level up or down.

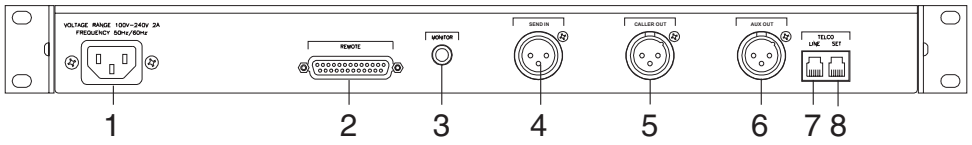
7. **On LED.** This LED indicates the SPH10 has connected with the telephone line. The LED illuminates green when the hybrid is on and flashes green when the phone line is ringing.

8. **Off LED.** This LED indicates the SPH10 is not connected to the telephone line. The LED illuminates red when the hybrid is off.

9. **On.** The On button connects the hybrid to the telephone line. When the hybrid is on, the Set jack is disconnected from the telephone line. Therefore, if a telephone set is connected to the Set jack, it will become inactive when the hybrid is on.

10. **Off.** The Off button disconnects the hybrid from the telephone line and mutes all audio going to and from the telephone line. When the hybrid is off, the Set jack is connected to the telephone line which makes a connected telephone set active.

Rear-Panel Connectors



SPH10 rear-panel connectors

1. **Power.** The AC power cord input is a IEC type connector allowing use of premolded domestic US power cords as well as various other premolded international power cords.

2. **Remote.** This DB25 female connector provides remote control and status of the hybrid. Unbalanced Send in, Caller out ,and Aux out audio are also available at the remote connector. See Appendix C: Connector Pinouts (page 23).

3. **Monitor Out.** This 1/4" jack is a speaker connection for monitoring the caller audio signal. The monitor output provides 1W into an 8 Ohm speaker.

4. **Send In.** This balanced, female, 3-pin XLR input receives audio from the source (microphone or mixer) and sends it to the caller. The send audio must not include the caller's audio signal. See Mix-Minus (page 13).

If using a single microphone that needs phantom power to operate, you must supply this power to the microphone. The SPH10 does not supply phantom power.

5. **Caller Out.** This balanced, male, 3-pin XLR output contains the audio from the telphone line (the caller's voice).

6. **Aux Out.** This balanced, male, 3-pin XLR output contains a mix of the Send In Audio and the Caller Out Audio. This connector can feed a recording device to record both the caller and send audio.

7. **Line.** This RJ11 connector provides connection of the telephone line to the SPH10 hybrid.

8. **Set.** This RJ11 connector allows connection to a standard analog telephone set. The telephone line is present at this connector when the SPH10 is Off. The telephone line is not present at this connector when the hybrid is On.

3 Installation

Before You Install

Power Requirements

The SPH10 automatically adjusts to accept voltage requirements of 100–240VAC, 50/60Hz.

Telephone Line Requirements

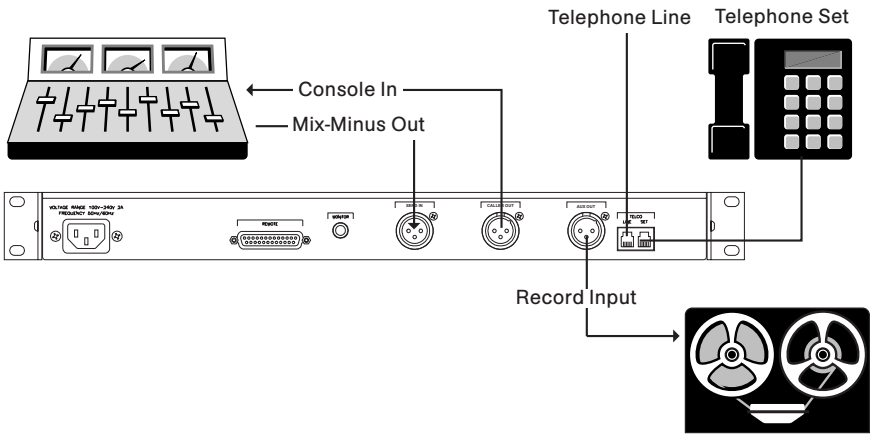
The SPH10 operates on a standard POTS (plain old telephone service) analog telephone line or an analog extension from a PBX via a standard RJ11C modular jack.

Some telephone lines do not provide battery voltage (dry line, no DC offset voltage). If yours does not, the SPH10 may be configured by qualified personnel for dry line operation. Please contact Gentner Technical Support for details.

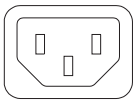
Installation

The SPH10 is designed for easy installation and setup. All necessary interface connections are made through rear-panel connectors. Refer to SPH10 Rear-Panel Connectors (page 9) for a description and placement of each of the connections you will be making. Each connection is numbered for easy identification.

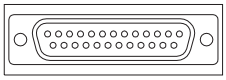
The diagram below illustrates a typical SPH10 interconnection.



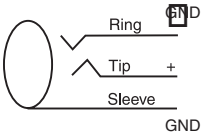
To install your SPH10, make the following connections:



Power Connection
The SPH10 will operate at any power level between 100–240VAC, 50–60Hz.



Remote Control
If using a remote control for parallel control and hybrid status, use the DB25 Remote connector. For pinouts, see Appendix C: Connector Pinouts (page 27). The remote control connector provides remote control and status of the hybrid. It also provides unbalanced audio inputs and outputs.

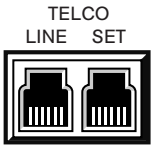


Monitor Out
Connects an 8 Ohm speaker to this 1/4" TRS jack to monitor a 1W amplified caller signal.

Send In
Connect the Send In female XLR jack to an output from your studio console. Connect the audio you want the caller to hear to this audio input. Audio coming from the console must be a mix-minus. See Mix-Minus (page 13).

Caller Out
Connect the Caller Out male XLR jack to an input on your audio console. This audio output contains the caller's voice.

Aux Out
Connect this male XLR jack to your recording device. This connector contains a mix of send audio and caller audio.



Line
Plug your analog telephone line into the RJ11C Line jack.

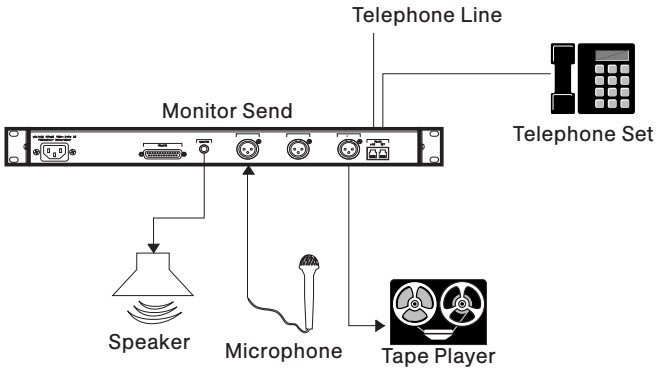
Set
Plug your telephone set into the RJ11C Set jack.

Mix-Minus

Mix-minus is a mix of all audio being sent to the Send In jack of the hybrid, minus the caller audio. Without a mix-minus feed from the console, the caller audio sent to the console will be retransmitted to the caller. This can cause hollow sounding audio and can even result in feedback. The following are some ways to create/configure an external mix minus feed for the SPH10 hybrid.

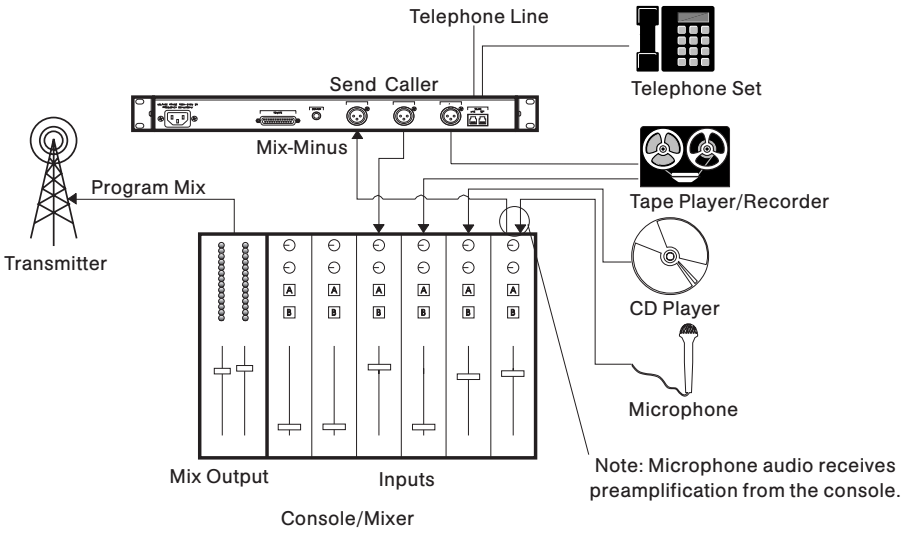
Using the Mic Preamp of the Hybrid

If only microphone audio is being sent to the caller, the internal microphone preamplifier of the hybrid may be used. When doing this, change the Send In jack from a line level input to a mic level input by placing dip switch #4 to the on (up) position. In this configuration make sure the microphone is not picking up the caller's audio as it is presented in the room by the speaker.



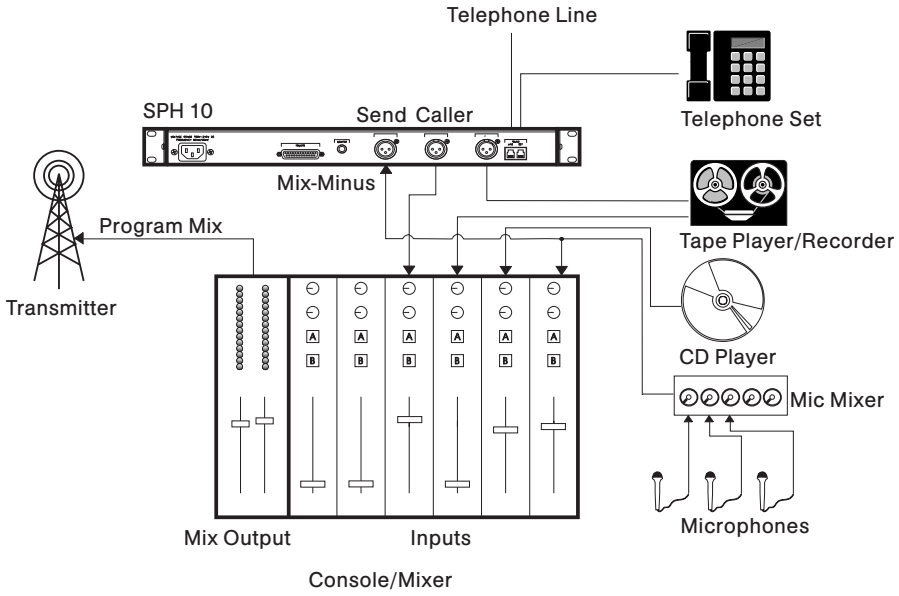
Using the Direct Mic Output of the Console

If only microphone audio is being sent to the caller, then it is possible to use the console's direct microphone output. Use the console direct microphone output to provide line level microphone audio to the Send In jack of the SPH10.



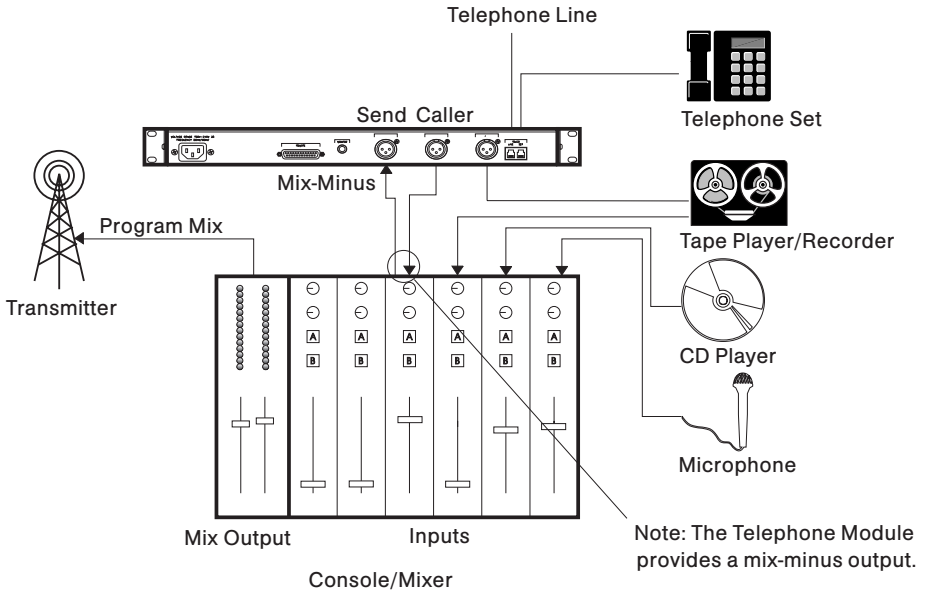
Using a Discrete Microphone Mixer

If only microphone audio is being sent to the caller, a separate microphone mixer may be used. The mic mixer will provide the mix-minus feed for the hybrid, because its output contains no caller audio.



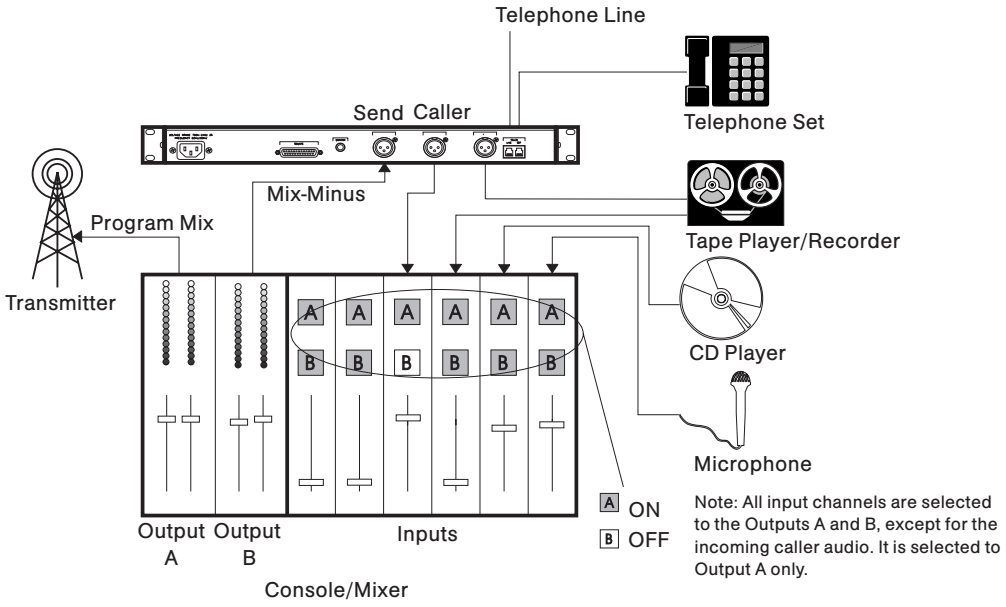
Using an Internal Mix Bus (Telephone Module)

Many console manufacturers provide optional Telephone Hybrid Modules for their consoles. These modules are designed to receive audio from a hybrid and transmit audio to the hybrid. A telephone module will create a mix-minus for the hybrid at its output.



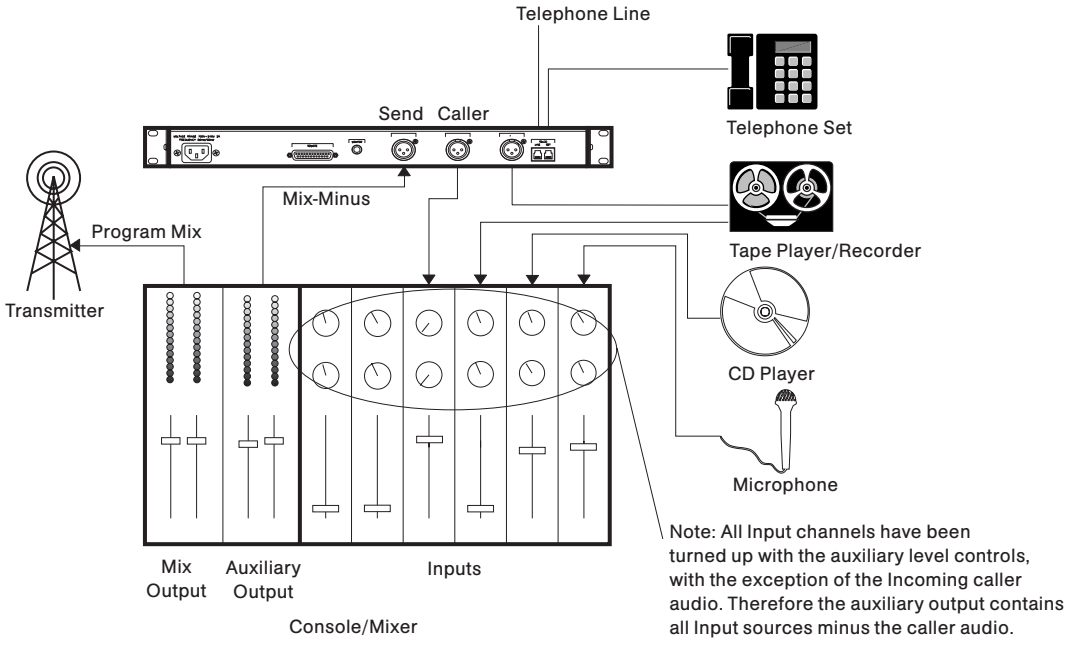
Using a Separate Mix Output Bus from the Console

If the console has an extra mix output, then use this extra output to provide a mix-minus feed for the hybrid. Simply route all audio, minus the caller audio, to the extra output bus of the console (Output B).



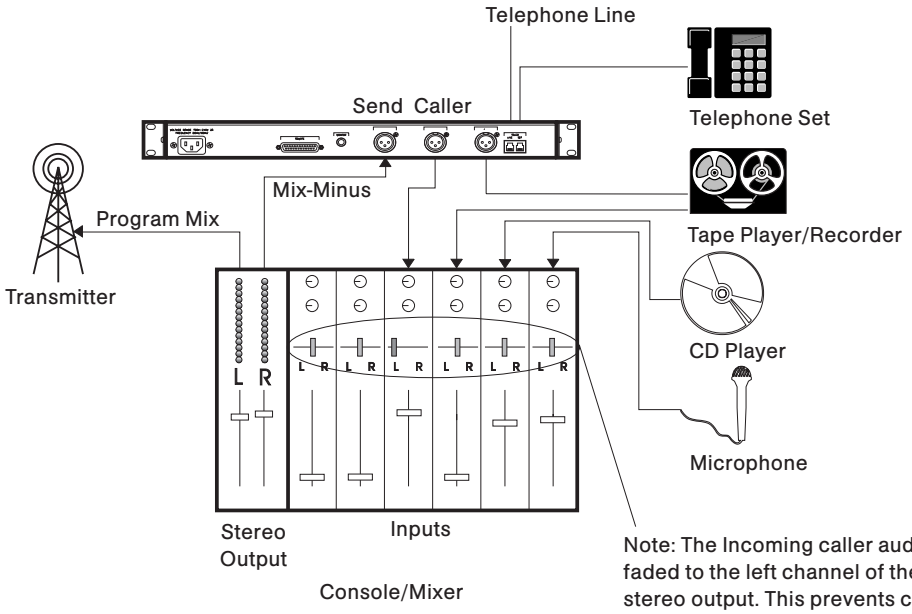
Using a Separate Auxiliary Output Bus from the Console

If the console has an auxiliary output, usually called Aux Out or Aux Send, then use this auxiliary output to provide a mix-minus feed for the hybrid. Simply route all audio, minus the caller audio to the auxiliary output bus of the console.



Using the Stereo Outputs of the Console

By using the stereo outputs of the console, it is possible to create a mix-minus for the hybrid. By panning the caller audio to the left channel only, the caller audio is prevented from reaching the right channel output of the console. Therefore, the right channel output is a mix-minus, a mix of all audio minus the caller audio.



Calibration

DIP Switches

DIP switches are “off” in the down position and “on” in the up position.

Caller Boost

DIP switch 2 adds a 6dB level boost to the caller’s audio at the Caller Out jack. In the Off position (down), the Caller Boost is disabled. In the On position (up), the Caller Boost is enabled.

Remote On/Off Control

DIP switch 3 allows the hybrid to work with two types of switches for external control: momentary and latching. In the off position (down) the On/Off control inputs respond to momentary closures to ground. This turns the hybrid on when it receives a momentary closure on the On control input and off when it receives a closure on the Off control input. In the on position (up), the Off control input is disabled and the On control input responds to a latching closure to ground. This will cause the hybrid to turn on when the latching switch is closed to ground and the hybrid will remain on until the closure to ground is opened. This DIP switch setting also affects the operation of the front panel On/Off buttons. See Appendix B (page 23) for remote control connector pinouts.

Mic/Line Select

DIP switch 4 sets the gain of the Send In jack. In the off position (down), the input is a line level (0dB) input. In the on position (up), the input is a mic level providing 55dB of input gain.

Trim Pots

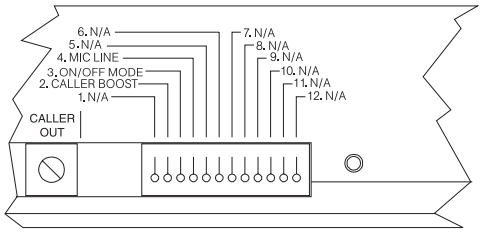
The front panel trim pots provide level adjustments of the Send In, Aux Send, Aux Out, and Caller Out audio connectors. Separate audio level controls let you optimize the audio level(s) of the SPH10 to match the audio levels required by the interfaced audio equipment.

Send In Adjustment

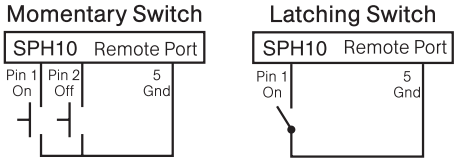
This pot adjusts the Send In audio. Adjust this pot along with your console audio control until callers verify that the audio level they are receiving is at a comfortable listening level.

Aux Send Adjustment

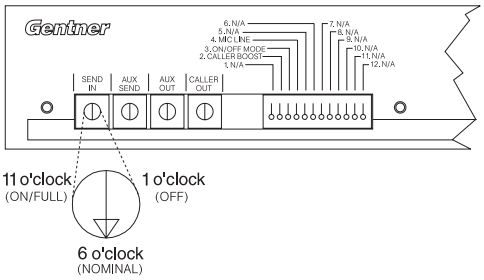
This pot adjusts the level of the auxiliary send audio at the remote connector input. Adjust this pot along with your console audio control until callers verify that the audio level they are receiving is at a comfortable listening level.



SPH10 DIP switches



Momentary and latching switches



SPH10 trim pots

If you are experiencing too much send audio in the caller output, a null procedure may be performed by qualified personnel. Please contact Gentner Technical Support for details.

Aux Out Adjustment

This pot adjusts the level of send and caller audio at the Aux Out jack. Adjust this pot along with your console audio control to set the proper level for your recording device or other external devices.

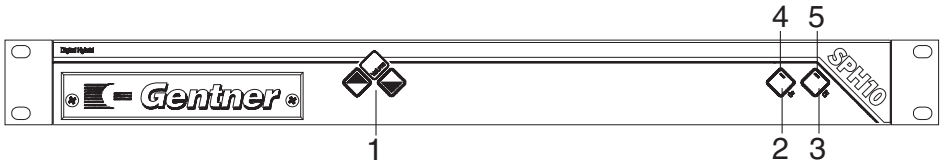
Caller Out Adjustment

This pot adjusts the Caller Out audio. Adjust this pot along with your console audio control to set the caller's voice/audio to a comfortable listening level.

4 Operation

Front Panel

Easy-to-access front-panel controls make operation of the SPH10 simple.



Front panel controls

Using the Hybrid

Press the On button (2) to connect the hybrid to the telephone line. Press the Off button (3) to disconnect the hybrid from the telephone line. The On LED (4) and Off LED (5) will illuminate to indicate the On/Off status of the hybrid

The On and Off buttons do not turn on/off the power to the SPH10. They only connect and disconnect the SHP10 to and from the telephone line.

Using the Telephone Set

Lift the handset to connect the telephone to the telephone line. Hang up the handset to disconnect the telephone from the telephone line.

The On LED (4) will flash green indicating the connected telephone line is ringing.

Switching a Call from the Set to the Hybrid

Press the hybrid's On button (2). The active call will switch from the phone to the hybrid.

Switching a Call from the Hybrid to the Set

Make sure the telephone handset is off hook. Then press the hybrid's Off button (3). The active call will switch from the hybrid to the phone.

Disconnecting a Call

To disconnect the telephone line, the hybrid must be off and the telephone handset must be hung up. If either the hybrid is on or the handset is off hook, then the phone line is still active.

Placing a Call

Lift the handset and listen for the dial tone. Dial the party you wish to call. Talk to the caller with the telephone set or press the hybrid's On button (2) to talk through the hybrid. When finished, press the Off button (3) and/or hang up the handset.

Adjusting the Monitor Output Level

To adjust the level at the monitor output, use the volume buttons (1). With each press, the ▲ volume button increases the monitor output level by 1dB. The ▼ volume button decreases the monitor output level by 1dB.

Pressing and holding the ▲ or ▼ button will sweep the level up or down respectively.

Remote Control Option

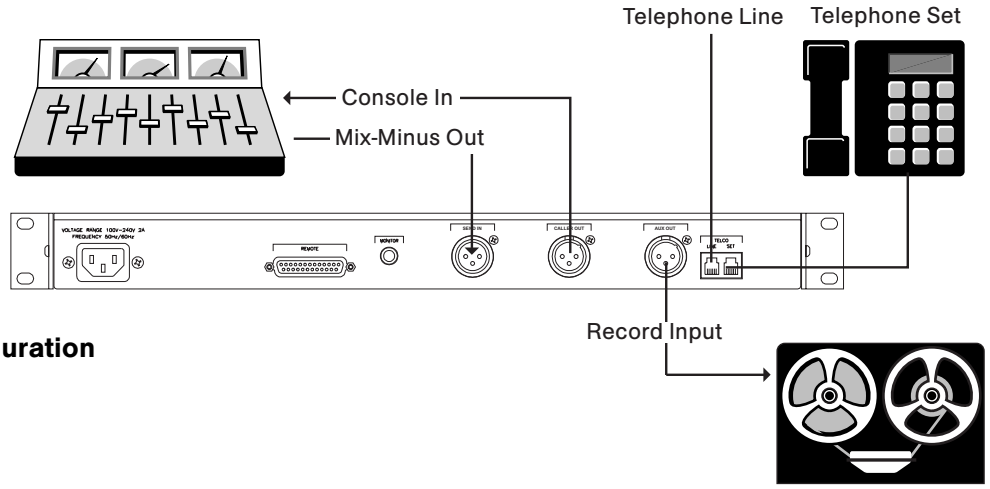
The remote control connector can be used to perform three functions: Monitor Mute On/Off, Hybrid On, and Hybrid Off.

If using a remote control device, internal DIP switch 3 will select the type of button switch function you need (momentary or latching). See Calibration (page 17).

DIP switch 3 does not change the operation of the monitor mute input. The monitor output will be muted for as long as the monitor mute input pin is tied to ground.

Recording Option

While on a connected call, a mix of both send and caller audio will be routed to the Aux connector. Connect your recording device to this connector. Activate the record function of the external recording device to capture the audio.



Typical recording configuration

Appendices

Appendix A: Specifications

DIMENSIONS
17.125"/43.5cm W x 1.75"/4.44cm H x 10.125"/25.7cm D

WEIGHT
6.35lbs/2.88kg (dry)
10.95lbs/4.97kg (shipping)

OPERATING TEMPARATURE
32–100°F/0–38°C

HUMIDITY
0–80 percent

FRONT PANEL CONTROLS
CONTROLS:
- ON/OFF Buttons
- Volume UP/DOWN Buttons

STATUS LEDS:
- On Status, Off Status

ADJUSTMENTS:
- Send Input Level
- Caller Output Level
- Auxiliary Input Level
- Auxiliary Output Level
- Mic/Line Select
- Caller Boost Select
- Momentary/Latching Select

REAR PANEL CONNECTORS
POWER: IEC Type
- Auto Adjusting 100-240VAC, 2A, 50/60Hz, 30W

REMOTE: DB25 Female
- Remote Send Input:
  - 0dBu nominal, adjustable, unbalanced, 20kOhm impedance
- Remote Caller and Aux Output:
  - 0dBu nominal, adjustable unbalanced, 50 Ohm impedance
- Control Inputs:
  - Remotely activate any of the following functions with a switch closure to ground: ON, OFF, and Monitor Mute
- Status Outputs:
  - Remotely check the status of the hybrid using the ON and OFF status outputs. Status outputs are open collector outputs rated at 30VDC and 40mA maximum.

MONITOR OUTPUT: 1/4" stereo jack
- 1W output into an 8 Ohm load

SEND INPUT: XLR female
- Mic/Line selectable, -55/0dBu nominal adjustable, balanced, bridging, 20kOhm impedance

CALLER OUTPUT: XLR male
0dBu nominal, adjustable, balanced, 50 Ohm impedance
AUX OUTPUT: XLR male
0dBu nominal, adjustable, balanced, 50 Ohm impedance
TELCO LINE: RJ11 connector
POTS (plain old telephone service) line or analog extension from a PBX or dry line (no DC offset voltage). A-Lead supervision provided
TELCO SET: RJ11 connector
A-Lead supervision provided

TELEPHONE TRANSMIT

Nominal send input of 0dBu referenced to -15dBu onto the telephone line.
FREQUENCY RESPONSE:
+1dB from 250Hz to 3.5kHz
SIGNAL TO NOISE RATIO:
>56dB
DISTORTION:
<0.2%

TELEPHONE RECEIVE

Nominal telephone line level of -15dBu referenced to caller output of 0dBu.
FREQUENCY RESPONSE:
+2dB from 250Hz to 3.5kHz
SIGNAL TO NOISE RATIO:
>56dB
DISTORTION:
<0.3%

NULL

SEND TO CALLER SEPARATION:
12dB nominal

All specifications are subject to change without notice.

Appendix B: Connector Pinouts

Remote Connector Pinout

Pin	Description
1	Remote hybrid On *
2	Remote hybrid Off *
3	N/C
4	N/C
5	Switch/Indicator Common
6	N/C
7	N/C
8	N/C
9	Unbalanced Send Audio Input (0dBu nominal)
10	Unbalanced Caller Audio Output (0dBu nominal)
11	Unbalanced Aux Audio Output (0dBu nominal)
12	Monitor Mute Control*
13	Audio Common
14	Hybrid On indication **
15	Hybrid Off indication **
16	N/C
17	N/C
18	Switch/Indicator Common
19	N/C
20	N/C
21	Switch/Indicator Common
22	Audio Common
23	Audio Common
24	Audio Common
25	Switch/Indicator Common

* Remote control provided via contact closure to Switch/Indicator Common

** Remote indicators provided via open collector outputs to Indicator Common (<30 V, <40 mA)

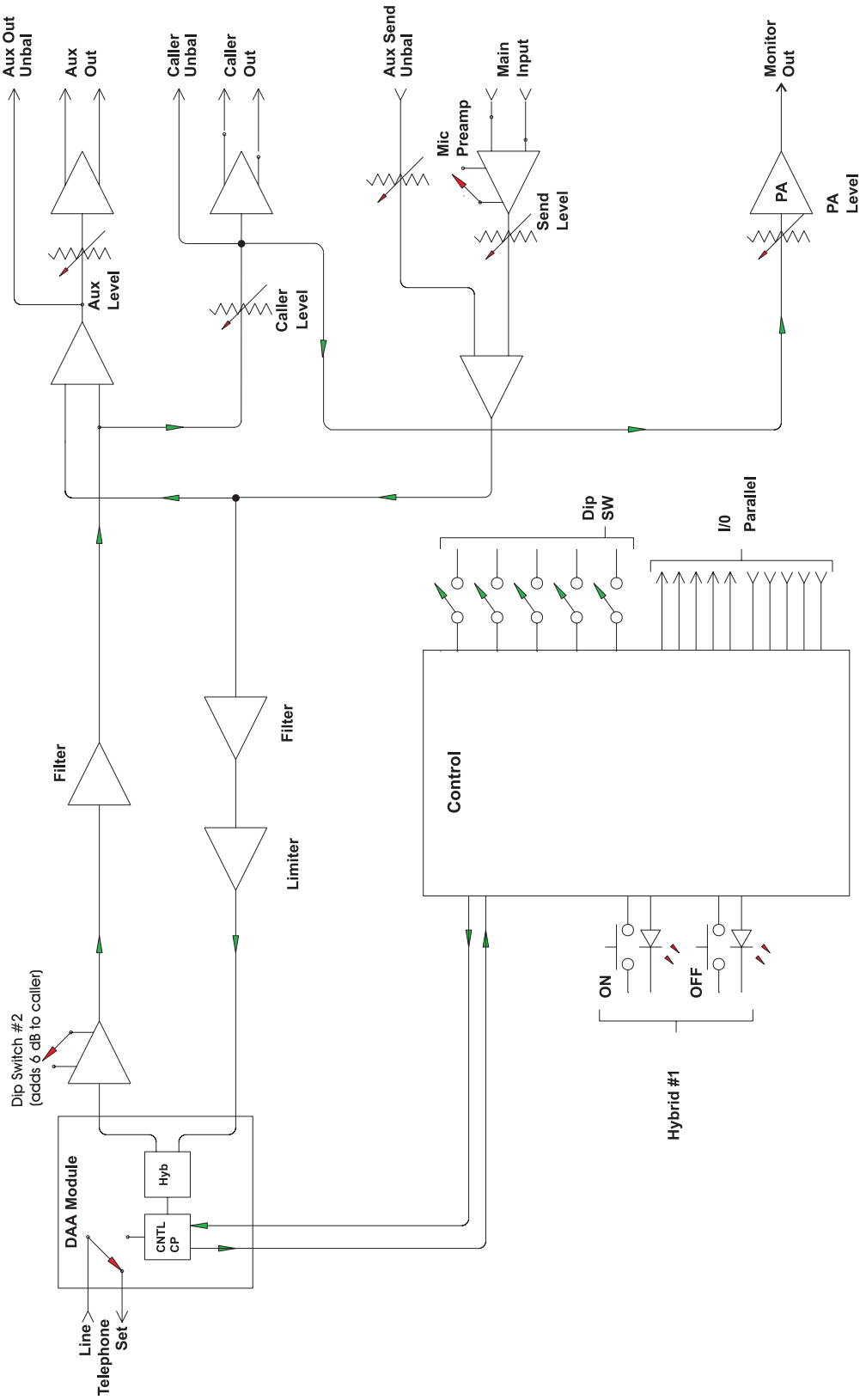
Line Connector Pinout

Pin	Description
1	To pin 6 of SET RJ11C
2	To pin 5 of SET RJ11C
3	Tip
4	Ring
5	To pin 2 of SET RJ11C
6	To pin 1 of SET RJ11C

Set Connector Pinout

Pin	Description
1	To pin 6 of LINE RJ11C
2	To pin 5 of LINE RJ11C
3	Ring
4	Tip
5	To pin 2 of LINE RJ11C
6	To pin 1 of LINE RJ11C

Appendix C: Block Diagram



Appendix D: Warranty & Compliance

Warranty

Gentner Communications Corporation (Manufacturer) warrants that this product is free of defects in both materials and workmanship. Should any part of this equipment be defective, the Manufacturer agrees to:

A. Repair or replace any defective part free of charge (except transportation charges) for a period of one year from the date of the original purchase, provided the owner returns the equipment to the Manufacturer at the address set forth below. No charge will be made for parts of labor during this period; or,

B. Furnish replacement for any defective parts in the equipment for a period of one year from the date of original purchase. Replacement parts shall be furnished without charge, except labor and transportation.

This Warranty excludes assembled products not manufactured by the Manufacturer whether or not they are incorporated in a Manufacturer product or sold under a Manufacturer part or model number.

THIS WARRANTY IS VOID IF:

A. The equipment has been damaged by negligence, accident, act of God, or mishandling, or has not been operated in accordance with the procedures described in the operating and technical instructions; or,

B. The equipment has been altered or repaired by other than the Manufacturer or an authorized service representative of the Manufacturer; or,

C. Adaptations or accessories other than those manufactured or provided by the Manufacturer have been made or attached to the equipment which, in the determination of the Manufacturer, shall have affected the performance, safety, or reliability of the equipment; or,

D. The equipment's original serial number has been modified or removed.

NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR USE, APPLIES TO THE EQUIPMENT, nor is any person or company authorized to assume any warranty for the Manufacturer or any other liability in connection with the sale of the Manufacturer's products. Manufacturer does not assume any responsibility for consequential damages, expenses, or loss of revenue or property, inconvenience, or interruption in operation experienced by the customer due to a malfunction in the purchased equipment. No warranty service performed on any product shall extend the applicable warranty period.

In case of unsatisfactory operation, the purchaser shall promptly notify the Manufacturer at the address set forth below in writing, giving full particulars as to defects or unsatisfactory operation. Upon receipt of such notice, the Manufacturer will give instructions respecting the shipment of the equipment, or such other matters as it elects to honor this warranty as above provided. This warranty does not cover damage to the equipment during shipping and the Manufacturer assumes no responsibility for such damage. All shipping costs shall be paid by the customer.

This warranty extends only to the original purchaser and is not assignable or transferable.

Gentner Communications Corporation, 1825 Research Way, Salt Lake City, Utah 84119

FCC Part 15 Compliance

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 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 instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense.

Changes or modifications not expressly approved by Gentner Communications Corporation could void the user's authority to operate the equipment.

FCC Part 68 Compliance

A label containing, among other information, the FCC registration number and Ringer Equivalence Number (REN) for this equipment is prominently posted on the top plate, near the rear of the equipment. If requested, this information must be provided to your telephone company.

USOC Jacks: This device uses RJ11C terminal jacks.

The REN is used to determine the quantity of devices which may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the RENs should not exceed five (5). To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the telephone company to obtain the maximum RENs for the calling area.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice for you to make the necessary modifications in order to maintain uninterrupted service.

If you experience problems with this equipment, contact Gentner Communications Corporation, 1825 Research Way, Salt Lake City, Utah 84119, or by telephone at (801) 975-7200 for repair and warranty information. If the trouble is causing harm to the telephone network, the telephone company may request you remove the equipment from the network until the problem is resolved.

No user serviceable parts are contained in this product. If damage or malfunction occurs, contact Gentner Communications for instructions on its repair or return.
This equipment cannot be used on telephone company provided coin service. Connection to Party Line Service is subject to state tariffs.

IC Compliance

NOTICE: The Industry of Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by Gentner Communications. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

European Compliance

This equipment 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 equipment supplier in the first instance.

Gentner Communications Corporation of 1825 Research Way, Salt Lake City, Utah 84119, U.S.A. declares that this equipment is designed to be compatible with the following networks: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom.

Safety Information

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.