LINEHUNTER
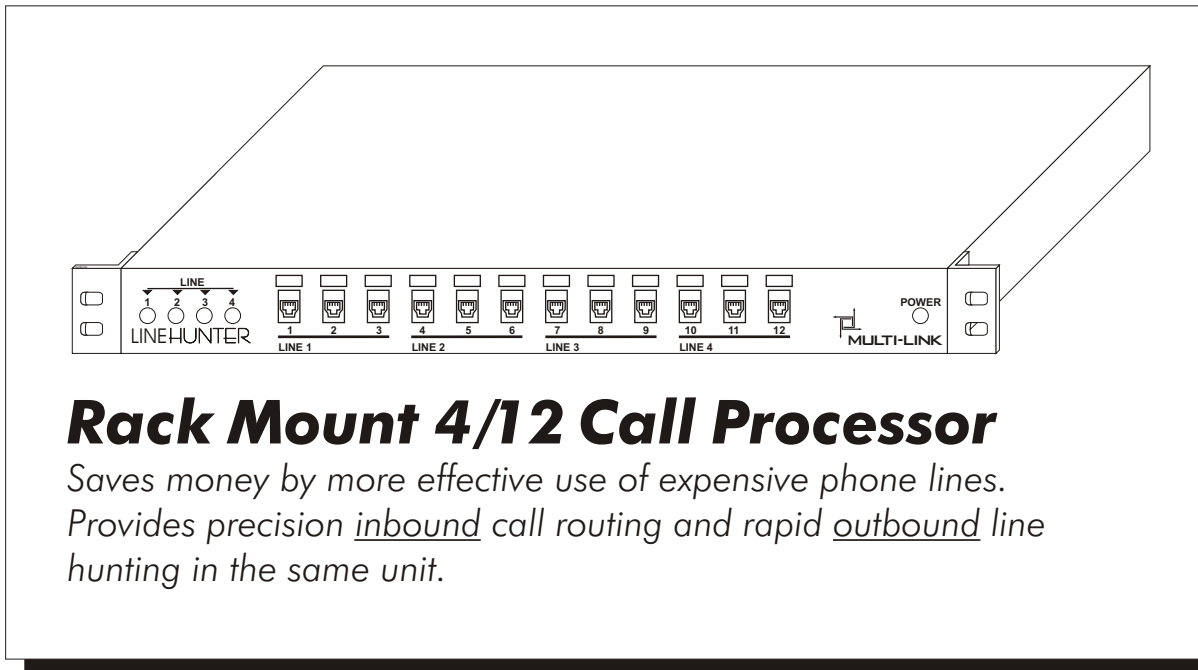## Product Manual

— ***Precision Inbound Call Routing***
— ***Fast Outbound Line Hunting***
— ***Streamlined Telecommunications***

Rack Mount 4/12 Call Processor

Saves money by more effective use of expensive phone lines. Provides precision <u>inbound</u> call routing and rapid <u>outbound</u> line hunting in the same unit.

LINEHUNTER
Product Manual

CONTENTS

1 HOW THE LINE HUNTER WORKS

The Line Hunter has been designed to provide effective call processing functionality for two applications. First and foremost, it is a powerful call processor that handles <u>both</u> inbound and outbound traffic seamlessly. Feature-rich and robust, The Line Hunter excels as a workhorse built for high-traffic commercial environments. The second function is designed for applications where inbound traffic routing is not important.

2-IN-1 FUNCTIONALITY: The Line Hunter is a versatile 4-Line Call Processor that effectively handles two processing functions:
— **FUNCTION 1 - FULL FUNCTION:** Precision Inbound Call Routing <u>AND</u> Outbound Line Hunting
— **FUNCTION 2 - Outbound Line Hunting <u>Only:</u>** Emphasis on Out-going Traffic. NO CALL ROUTING CAPABILITIES. Calls will only be directed to the PRIMARY LINE PORT ONLY (Ports 1, 4, 7 ,10).

FUNCTION 1 — **FULL FUNCTIONALITY:** <u>PRECISION INBOUND ROUTING and OUTBOUND HUNTING</u> — The benefit of this configuration is that all 12 ports can have a unique telephone number (address) allowing the Line Hunter (using Selective Ring Service from Local Telephone Service Provider) to <u>precisely</u> route incoming calls to a particular device. All telecommunications devices attached to ports on the Line Hunter will hunt for an available telephone line. NOTE: Selective Ring Service (3 telephone numbers per line: Master + 2 Selective Rings) MUST be ordered for each line for the precision inbound routing functionality.

High Capacity (12-Port) ROUTING — The Line Hunter is a four line call processor that uses the "Selective Ring" service provided by the phone company to route calls to the proper port.   Each phone line is assigned a "master" phone number and up to two other unique phone numbers that will ring in a distinctive pattern when a phone call addressed to the specific number comes in. For line 1, a single burst ring will ring device 1, a double burst ring will ring device 2, and a triple burst ring will ring device 3. The same ring sequence is followed by Lines 2,3, and 4.

The "Selective Ring" service goes by different names depending on the telephone company — *Custom Ring by U.S. West, Smart Ring by GTE, Ring Master by Southwestern Bell, Call Identification Service by Ameritech, Ident-a Ring by Verizon, etc*. These 'ring management' services all work in the same manner. Up to three different telephone numbers can be requested from the phone company. The numbers ring through a single line coming into the business or residence and each number can be distinguished by the pattern of the ring. These ring patterns are made up of various combinations of ring bursts.

<u>Example of the different ring patterns:</u>
Original Telephone Number — Regular Ring
Second Telephone Number — 2 Rings (Short Burst - Short Burst)
Third Telephone Number — 3 Rings (Short Burst - Short Burst - Long Burst)
NOTE: Each Service Provider has its own ring cadence identification.

The Line Hunter can be connected to up to 12 independent telecommunications devices. Each device has its own unique telephone number. The Line Hunter rapidly routes incoming calls to the appropriate device.

OPERATIONAL NOTE: Operating with less than 4 Telephone Lines will diminish the inbound routing capabilities: (4 Lines = 12 Ports, 3 Lines = 9 Ports, 2 Lines = 6 Ports, 1 Line = 3 Ports). Unless all four telephones are operational, the vacant PRIMARY LINE PORT and its subordinate ports will be by-passed and not be available for call routing functions. Example: If a telephone line is not attached to the Line 4 Position, Ports 10, 11, 12 will NOT be included in the routing sequence.

If a line is not connected, there will be no inbound call routing to its group.

PANEL FRONT - DEVICE SIDE

PANEL BACK - LINE SIDE
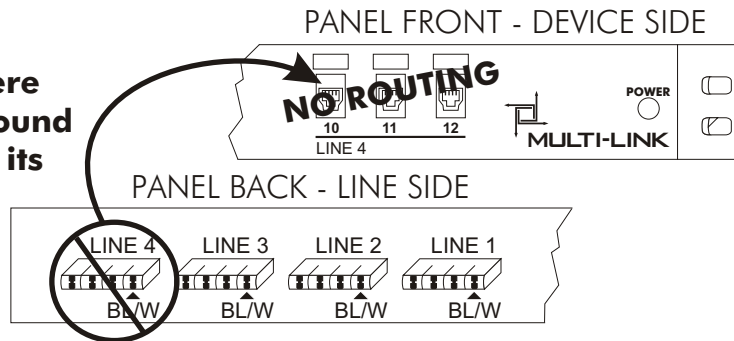
HUNTING — The Line Hunter hunts for an available line in a sequential order. That is, a device attached to port 1, 2, or 3 will be connected to line 1 if available. If line 1 is not available, it will be connected to line 2, 3, or 4 if they are available. If no lines are available, the device will not be connected to any outside line. A busy tone can be provided to any device that requests an outside line when none are available (programmed using DIP SWITCH).

HUNT ORDER — The hunt order for devices runs sequentially — Ports 1, 2, 3 first try to access LINE 1, then LINE 2, LINE 3 and LINE 4. Ports 4, 5, and 6 start with LINE 2, LINE 3, LINE 4 and LINE 1. Ports 7, 8, and 9 hunt LINE 3, LINE 4, LINE 1 and LINE 2, etc.

PHONE SYSTEM COMPATIBILITY — The Line Hunter was not specifically designed to be integrated into the rollover sequence of your KSU or PBX. However, there are some applications where this configuration may be desired. NOTE: Some Key Systems and PBX's do not respond well to a 'Distinctive Ring' Line integrated as part of a rollover sequence. PLEASE CHECK WITH THE MANUFACTURER OF YOUR PHONE SYSTEM FOR DETAILS.

PANEL FRONT - DEVICE SIDE

PANEL BACK - LINE SIDE
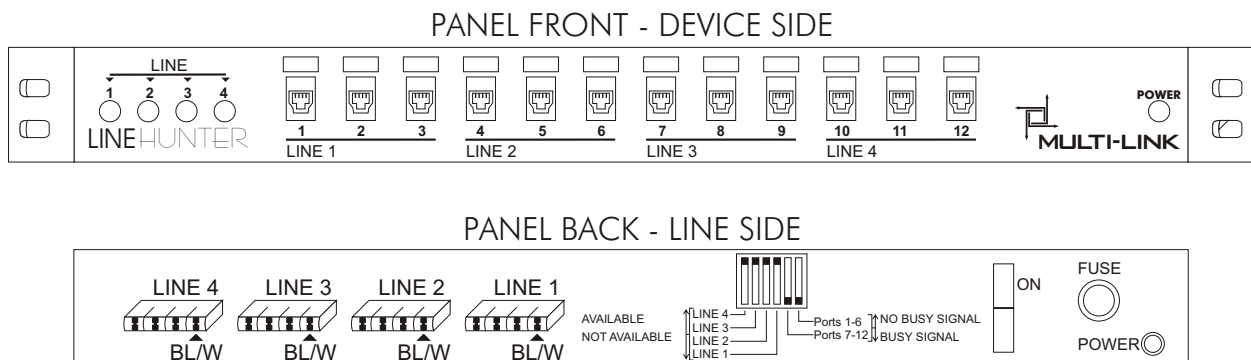
Precision Inbound Call Routing
AND
Fast Outbound Line Hunting

LINEHUNTER

FULL FUNCTION CONFIGURATION — The benefit of this configuration is that all 12 ports can have a unique telephone number (address) allowing the Line Hunter (using Selective Ring Service from Local Telephone Service Provider) to precisely route incoming calls to a particular device (or station). All telecommunications devices attached to ports on the Line Hunter will hunt for an available telephone line. NOTE: Selective Ring Service (3 telephone numbers per line: Master + 2 Selective Rings) MUST be ordered for each line for the precision inbound routing functionality.
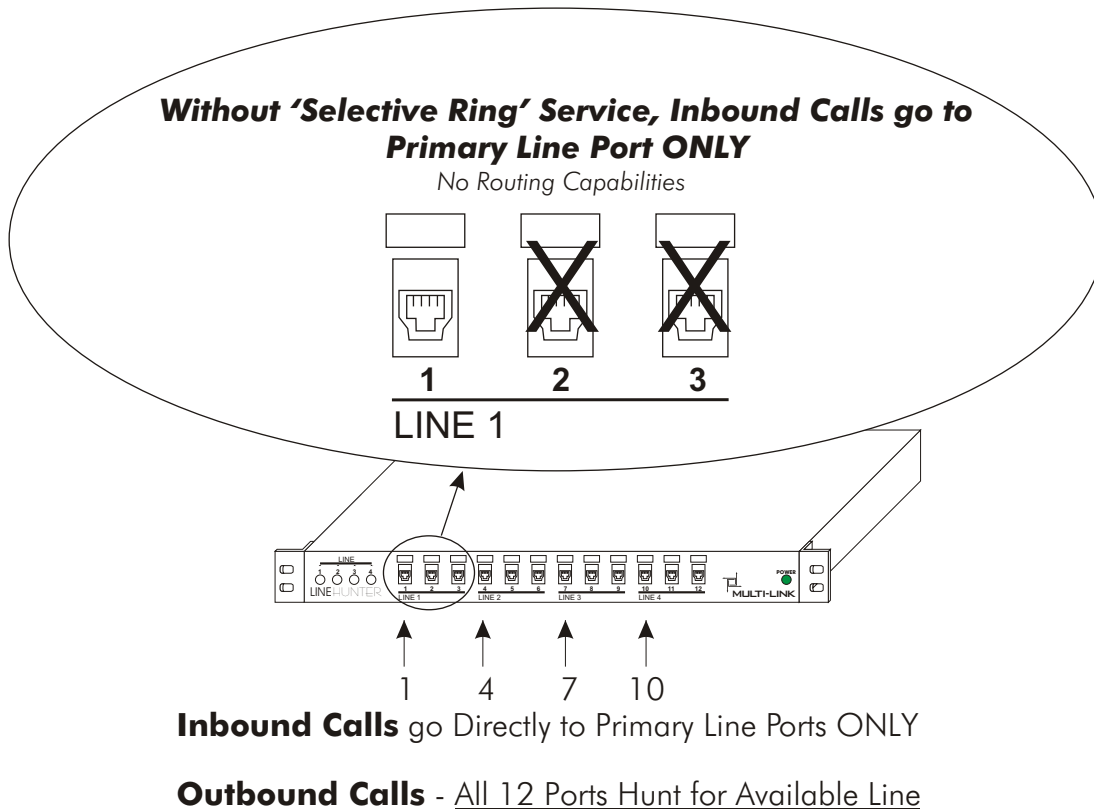
DEVICE INTERFACE
8 Position Modular Jack

Compatible with 6 Position Modular Jack

PRIMARY LINE PORT   SUBORDINATES
SUB 1   SUB 2

1   **2**   **3**

LINE 1

Each Port has its own Phone Number

12 Phone Number Inbound Routing

555-1201   555-1202   555-1203

1   **2**   **3**

LINE 1

LINE
1 2 3 4
LINEHUNTER   1 2 3   4 5 6   7 8 9   10 11 12
LINE 1   LINE 2   LINE 3   LINE 4
POWER
MULTI-LINK

Line Hunting Order

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| LINE 1 | | | LINE 2 | | | LINE 3 | | | LINE 4 | | |

Ports 1, 2, 3 will initially hunt for Line 1. If Line 1 is in-use -

They will sequentially hunt for Line 2, 3, 4.

If all 4 lines are in use a 'Busy Signal' is generated.

NOTE: Busy Signal can be de-activated at Dip Switch.d.
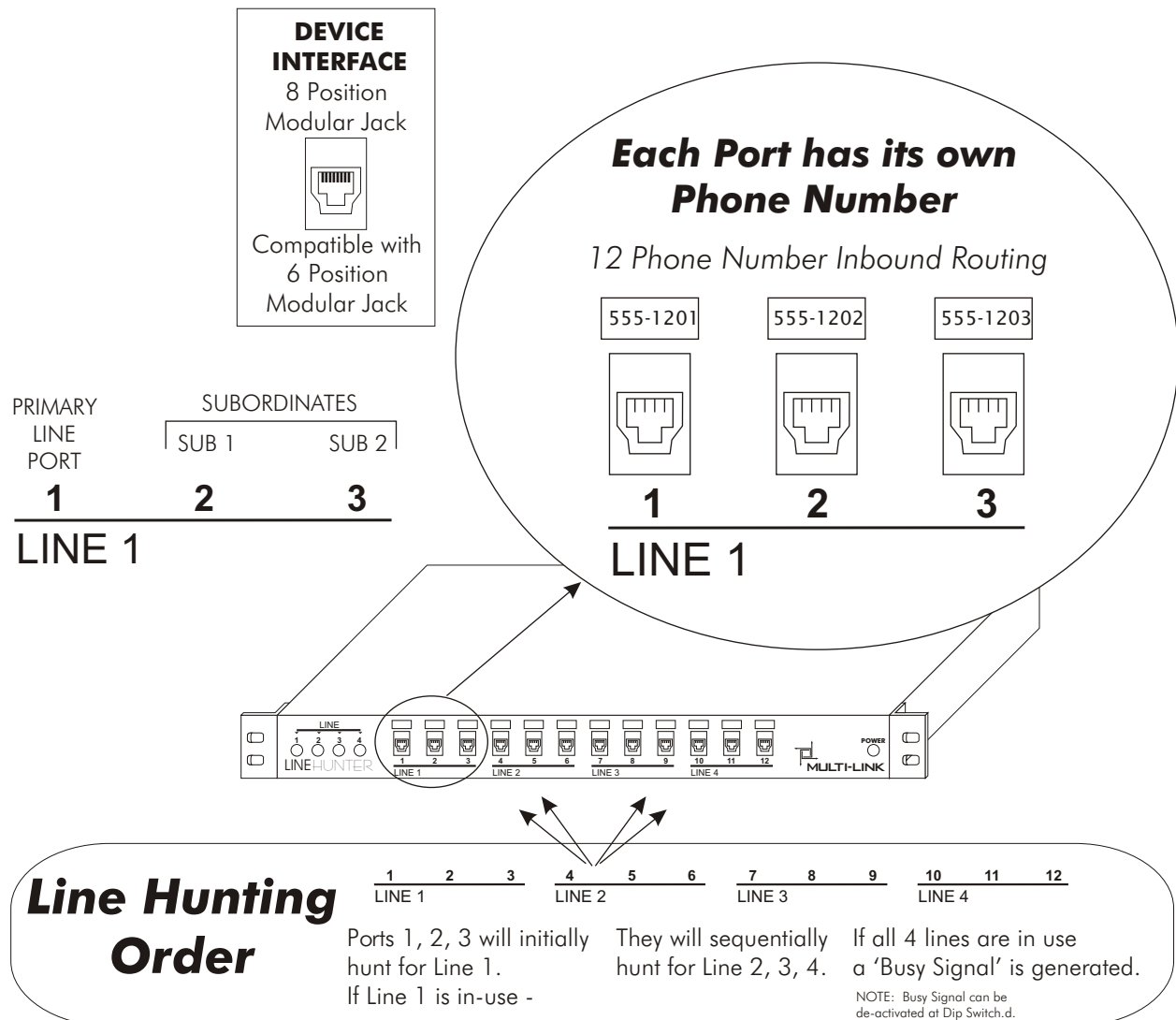
FUNCTION 2: Outbound Line Hunting — This configuration places emphasis on outbound traffic. Up to 12 telecommunication devices are always in queue to hunt for one of 4 available lines, but only 4 ports will accept inbound calls.

Incoming traffic will NOT be routed. Incoming calls will will be directed to the PRIMARY LINE PORT ONLY.
Line 1 will ONLY connect Port 1(Primary Line Port)
Line 2 will ONLY connect Port 4 (Primary Line Port)
Line 3 will ONLY connect Port 7 (Primary Line Port)
Line 4 will ONLY connect Port 10 (Primary Line Port)

CALL ROUTING IN THIS CONFIGURATION:
If Selective Ring Service is not used, The Line Hunter has no ability to 'locate' (or route to) ports.
Line 1 will connect Primary Line Port 1ONLY.
Line 2 will connect Primary Line Port 4 ONLY.
Line 3 will connect Primary Line Port 7 ONLY.
Line 4 will connect Primary Line Port 10 ONLY.
No further routing is possible - Ports 2, 3, 5, 6, 8, 9, 11, 12 are invisible to incoming traffic.

Without 'Selective Ring' Service, Inbound Calls go to
Primary Line Port ONLY
No Routing Capabilities

1   **2**   **3**

LINE 1

1   4   7   10

Inbound Calls go Directly to Primary Line Ports ONLY

Outbound Calls - All 12 Ports Hunt for Available Line

DIP SWITCH: There is a six position DIP switch that will enable/disable any phone lines connected to it (follow silk-screen on back panel for position selection). The DIP switch will also enable/disable a busy signal for outbound calls when the phone lines are not available. It is recommended to disable any line that is not in use for the Line Hunter to be more efficient when hunting for any available line. Changes to the DIP switch settings take place immediately. Power does not need to be re-applied.

Dip Switch Programming

AVAILABLE

LINE 4
LINE 3
LINE 2

NOT AVAILABLE LINE 1

Ports 1-6 — NO BUSY SIGNAL
Ports 7-12 — BUSY SIGNAL
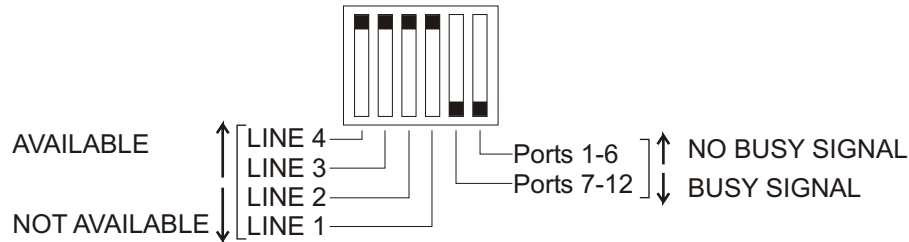
LED INDICATORS: It has one green LED to show power status and four red LEDs to show the status of the 4 lines. The red LED indicators will glow solid when the line is in use. They will flash if the line is enabled by the DIP switch but determined to be non-functioning, and the indicators will remain off if the line is disabled by the DIP switch or is idle.
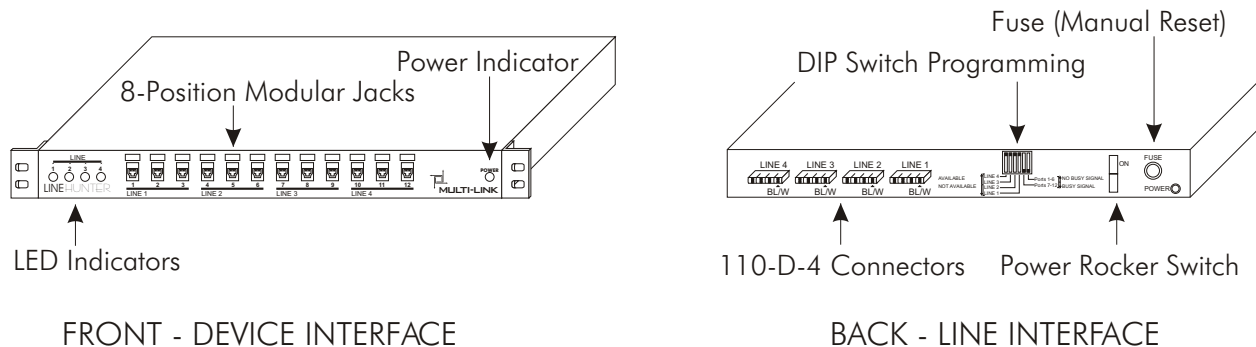
FRONT PANEL - DEVICE INTERFACE: The Line Hunter is equipped with 8-position modular jack interface (sometimes referred to as RJ-45) on the device side (front). 8-position jacks are universal interfaces and can accommodate another 8-position jack or a smaller 6-position modular jack (sometimes referred to as RJ-11). Either type of modular jack will provide optimum performance.

REAR PANEL - TELEPHONE LINE INTERFACE
Four 110-Type, 4-pair connectors are provided on the line side. Termination is made to the BLUE/WHITE insulation displacement connector.

POWER SWITCH AND CIRCUIT BREAKER (FUSE)
The Line Hunter comes with a Power switch and a circuit breaker that is manually reset.

Power Indicator

8-Position Modular Jacks

LED Indicators

FRONT - DEVICE INTERFACE

Fuse (Manual Reset)

DIP Switch Programming

110-D-4 Connectors   Power Rocker Switch

BACK - LINE INTERFACE

2 AUTO TEST - LINE TEST FUNCTION

There is a built-in function within the Line Hunter that will identify lines that are enabled, but found to be non-functioning. If a device requests an outside line by going off-hook, the Line Hunter will select an appropriate line, if any are available. After the device has been connected to the line for 1 second, if no loop current is detected, the Line Hunter will verify whether the line is functional. If loop current can be detected, the line is placed back in the available status. If no loop current is detected, either the line is down or there is an equipment failure. The Line Hunter then begins to flash the LED for that line. The non-functioning line is not available for selection by a device at this time.

3 FEATURES

BARGE-IN PROTECTION
It protects phone calls and data transmissions from being interrupted by other phone devices on the same line. A busy signal can be provided when no lines are available.

SURGE PROTECTION
Harmful voltage spikes will be carried to the earth ground through the Line Hunter's internal surge protection network when the Line Hunter is properly installed.

DIRECT INBOUND ROUTING
Distinctive Ringing allows precise inbound routing of calls. Direct/Private Phone Numbers (not on key system or PBX)permit tremendous application flexibility.

RAPID OUTBOUND HUNTING
12-Port hunting matrix rapidly seizes available outbound line.

POINT OF SALE AND POLLING APPLICATIONS
Immediate customer transactions (POS) and modem polling.

FLEXIBLE AND CONSISTENT APPLICATIONS
Precision call routing and hunting.
— No more misdirected calls.
— Add equipment without having to add phone lines
— Works with virtually any phone line application!

4 APPLICATIONS

The Line Hunter is an extremely versatile telecommunications routing/hunting device. Up to 12 independent devices can be connected to the unit.
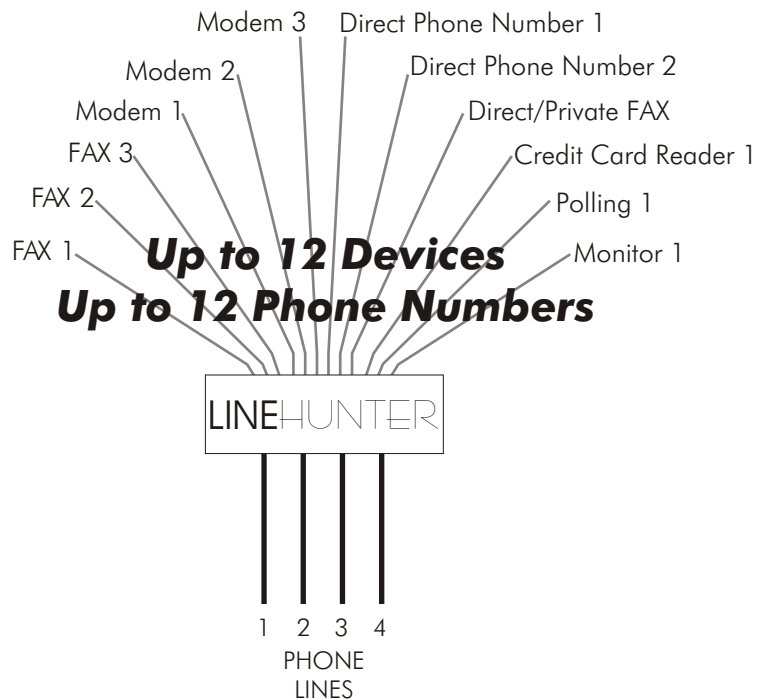
TELECOMMUNICATIONS ZONE (CLOSET)
Mounted in an equipment rack in a telecommunications closet, the Line Hunter can provide telephone line access for virtually any telecommunications device that transmits data over a telephone line.

Applicable devices include:
— Fax Machines
— Modems
— Direct (private) Phone Numbers (Not on KSU or PBX)
— Point of Sales Transactions - Credit Card Readers
— Polling Applications Recorders
— Meters
— Monitors

Flexible Applications

Modem 3   Direct Phone Number 1
Modem 2   Direct Phone Number 2
Modem 1   Direct/Private FAX
FAX 3   Credit Card Reader 1
FAX 2   Polling 1
FAX 1   *Up to 12 Devices*   Monitor 1
Up to 12 Phone Numbers

LINEHUNTER

1   2   3   4
PHONE
LINES

Concentrate Phone Lines - Save $

5 SAFETY INSTRUCTIONS

When using the Line Hunter, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

1) Read and understand all instructions

2) Follow all warnings and instructions marked on the product.

3) Unplug this product from the wall before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for wiping off the cabinet.

4) Do not use or install this product near water, for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.

5) Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.

6) This product should never be placed near or over a radiator or heat register.

7) This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your dealer or local power company.

8) This product is equipped with a three wire grounding type plug having a third (grounding) pin. This plug will only fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding type plug.

9)Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abuse by persons walking on it.

10) Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.

11) Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.

12) To reduce the risk of electric shock, do not disassemble this product, but take it to a qualified serviceman when some service or repair is required. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock when the appliance is subsequently used.

— Safety Instructions Continued

13) Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:a) When the power cord is damaged or frayed.

b) If liquid has been spilled into the product.

c) If the product has been exposed to rain or water

d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions because improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.

e) If the product has been dropped or the cabinet has been damaged.

f) If the product exhibits a distinct change in performance.

14) Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.

15) Do not use the telephone to report a gas leak in the vicinity of the leak.

Installation Precautions

1) Never install telephone wiring during a lightning storm.

2) Never install telephone jacks in wet locations unless the jack is specially designed for wet locations.

3) Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

4) Use caution when installing or modifying telephone lines.

6   INSTALLATION

The Line Hunter is a rack mounted panel that is designed
to be screwed to a standard (EIA) 19.00" or 23.00"
equipment rack cabinet or wall bracket using
four 5/8" x 12-24 screws (supplied).

**19.00"
Equipment Rack
or
23.00"
Equipment Rack**

1U = 1.75"
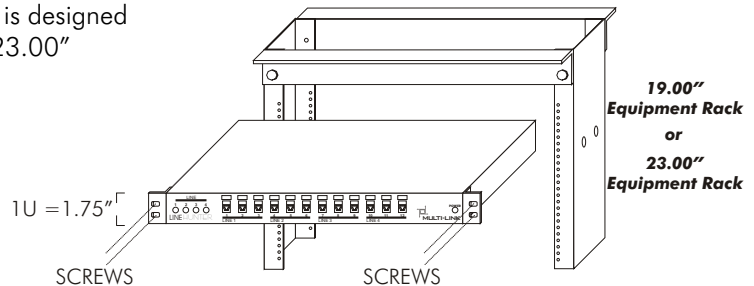
SCREWS   SCREWS

1. Slide Line Hunter into equipment rack and secure with 4 screws.

2. Plug the AC power cord into AC receptacle.

3. Program Dip Switch (if factory default settings are not suitable for application).

4. Insert device patch cords in appropriate port on Line Hunter panel. Use standard 6 or 8 position modular
plugs.

7   TECHNICAL SPECIFICATIONS

Input Power Requirements
     Voltage: 110-125 Volts AC only, 50-60 Hz
     Current: less than 100mA

CO Interface:
     REN: (to be determined)
     Input Ring Detection: 40-150 Volts AC, 15-68 Hz.

Device Interface:
     Battery: -48 Volt DC to all 12 device ports
     Off-Hook detection: 6-150 mA

Power Consumption: 12 Watts

Connectors:
     CO Interface: 110-type-4-pair punch-down
     Device Interface: 8-position modular, compatible with both standard 6-position RJ-11 and 8-position
modular plugs.

Trunking: 12 device ports/ 4 CO line ports

8 FCC REGISTRATION

This equipment complies with Part 68 and Part 15 of the FCC rules. On the bottom of this equipment there is a label that contains, among other information, the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. You must, upon request, provide this information to your telephone company.

The Line Hunter is required to be connected behind a 110 or 66 type punch-down block, which is to be connected to the network. Wires for such installation are not provided. The registration jack USOC for the Line Hunter is "HARDWIRED"

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all of those devices ring when your telephone number is called. In most, but not all areas, the sum of the RENs of all devices connected to one line should not exceed five (5.0) To be certain on the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.

If your telephone equipment causes harm to the telephone network, the telephone company may discontinue your service temporarily.   If possible, they will notify you in advance. But if advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact Multi-Link Inc. for information on obtaining service or repairs.

The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is nor malfunctioning.

Repairs on the Line Hunter should be performed only by dealers authorized by Multi-Link Inc.

This equipment may not be used in coin service provided by the telephone company, and is not intended for use with party line service.

9 IC REGISTRATION

The Department of Communications 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 accepted 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 the supplier. 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.

User 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.

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

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all devices does not exceed 100.

Notice: This product has been tested and meets the class B limits for radio emissions set out by the Radio Interference Regulations of the Canadian Department of Communications.

10 Limited Warranty

We warrant that if the Line Hunter manufactured by Multi-Link Inc. and purchased by you proves to be defective in material or workmanship, we will provide without charge for a period of one year, the labor and parts necessary to remedy any such defect. Warranty commences on the date of purchase by the original retail customer.

The duration of any implied warranty of merchantability, fitness for a particular purpose, or otherwise on this product, shall be limited to the duration of the applicable express warranty set forth above. In no event shall we be liable for any loss, inconvenience or damage whether direct, incidental, consequential or otherwise resulting from breach of any express or implied warranty, of merchantability, fitness for a particular purpose, or other wise with respect to this product, except as set forth herein. Some states do not allow limitations on how long an implied warranty lasts and some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This warranty does not cover damage which results from accident, misuse, abuse, improper line voltage, lightning strike, fire, flood, or damage resulting from unauthorized repairs or alterations performed by unauthorized service center. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

RETURN: In the event that The Line Hunter proves to be defective under the warranty, contact Multi-Link and obtain a RETURN AUTHORIZATION (RA). Material will NOT be accepted unless a RETURN AUTHORIZATION NUMBER IS ISSUED IN ADVANCE. Phone: 800-535-4651 FAX: 859- 885-6619.

The Line Hunter is made in the U.S.A.