

# Whozz Calling? Caller ID/ Call Accounting Unit



## User Interface Guide

Revision 4.0 - 01/01/2006  
(Master Processor Version 9.0 and above)

# **Whozz Calling? 4 & 8 Line Caller ID/Call Accounting Units**

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## INTRODUCTION

The Whozz Calling? unit captures Caller ID data and Touch Tone (DTMF) signals from as many as four telephone lines and sends them to a RS232 serial interface. The unit does not pick-up, go off-hook, or answer the telephone line. It does not affect the operation of any other devices connected to the telephone line.

The unit can be set to deliver only inbound Caller ID, ignoring all outbound dialed numbers. Or, both inbound and outbound data can be sent for complete call accounting applications. The data streams can be sent just as the call begins, just after the call ends, or both at the beginning and the end of the call. The unit can send data in two different formats of which each has two variations. Incoming calls can be blocked from passing through to the output jacks. This can be accomplished by dynamic control from the application software or by pre-loading blocked phone numbers into the unit's memory. First ring suppression to the output jack also can be performed. Setting this option prevents office employees from answering the telephone too quickly and thus inhibiting the Caller ID signal from being delivered. Finally, the unit can be set to deliver all detail information occurring on each telephone line. This includes every occurrence of Ring Signal, Off Hook, On Hook, and Hook Flash.

The Whozz Calling? unit uses setup toggles to determine how the unit will operate. The toggles are either upper or lower case and are stored in non-volatile memory. For information on unit toggles, please refer to page 3. Operating commands are used to list the setup parameters, input phone numbers in memory, and reset the system. The Send Data commands are used to set line numbers, internal clock, and phone numbers for internal blocking.

The manual is designed for the individual that prefers to quickly get the unit running and start experimenting immediately. The quick start procedure section is followed by a brief discussion of the setup toggles, commands, and data formats. Later, the manual gives a detailed explanation of all setup toggles, commands, and data formats, a discussion of Private and Out-Of-Area Caller ID types, and instructions on connecting units together.

## QUICK START PROCEDURE:

Refer to Fig. 1, on page 2 when connecting unit.

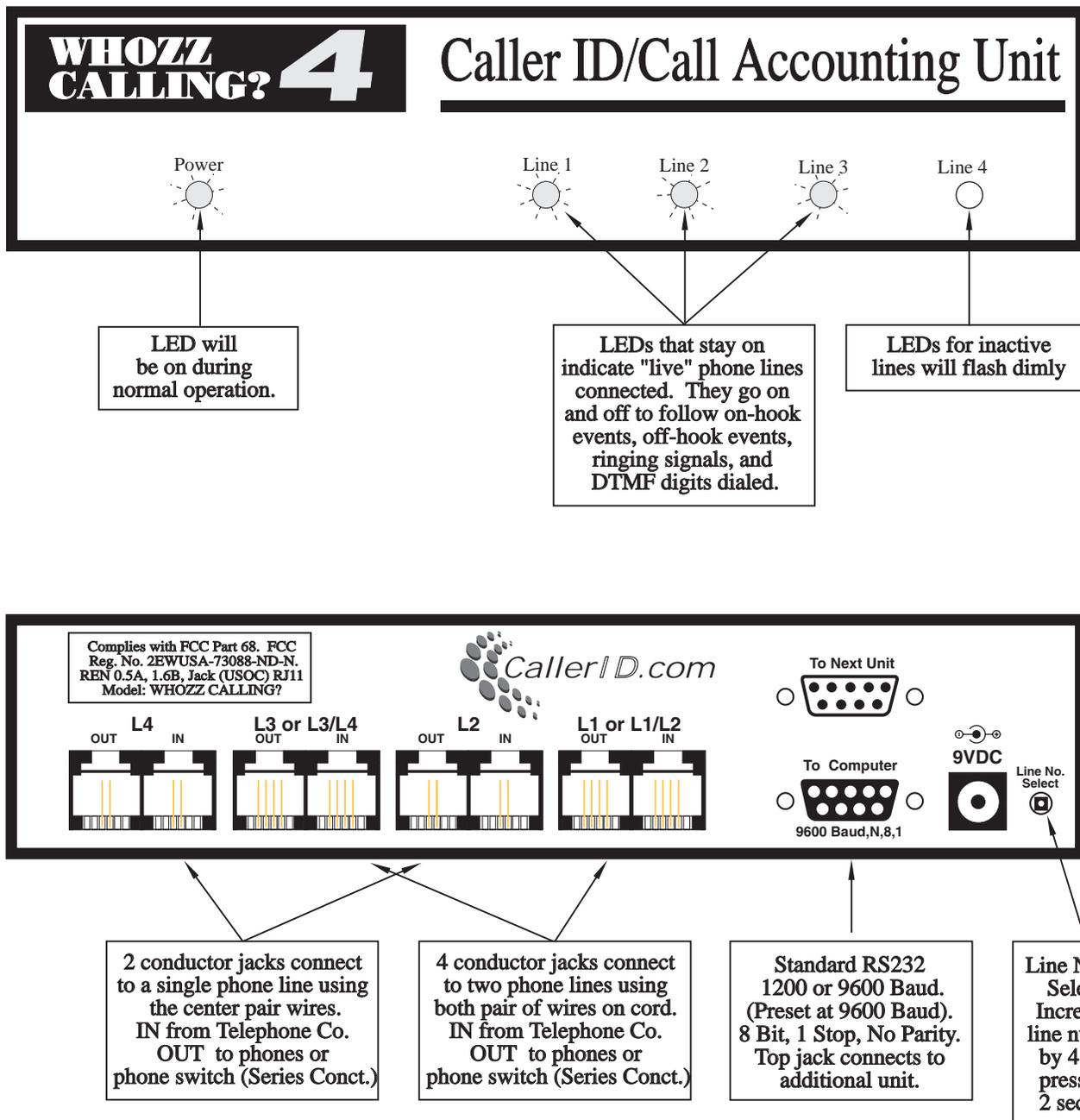
1. Plug in the power supply and make sure the red Power LED is on.
2. Connect the supplied 9 pin cable to the female serial connector on unit marked "To Computer".
3. Connect the same cable to an available serial port on the computer.
4. Plug in up to four phone lines into the input jacks marked "IN" on the unit.
5. Use any terminal emulation program or modem software set to terminal mode.
6. Set communication parameters to 9600 Baud, 8 Bit, 1 Stop, No Parity.

When turned on for the first time, the unit is set to communicate at 9600 Baud, 8 Bit, 1 Stop, No Parity. All setup toggles are set to their upper case values, but they can be changed later. The order of how the toggles are input or displayed is not important. They are stored in non-volatile memory so that if the unit loses power, the toggles will remain set. To display the toggle settings at any time use the "V" command. On start-up, the "V" command will display:

```
Vx.x ECXUDASOBKT L=01 00/00 00:00:nn
```

Where **Vx.x** is the version number of the firmware, **ECXUDASOBKT** are the setup toggles, **L=01** represents line number to which the first port of the unit is set, **00/00** is the date, and **00:00:nn** is the time of the internal time clock (in HH:MM:SS).

**Fig. 1 Front and Back Views of Whozz Calling? 4 Line Model**



For simple Caller ID applications, we suggest the following toggle setup:

### **ECXUDaSOBKT**

The combination of a lower case "a" and an upper case "S" instructs the unit to send call information only at the start of each call. With upper case "O" set, the unit will not report call information on outbound calls. This combination of toggles gives the simplest configuration for Caller ID only applications. The toggles can be configured in either upper or lower case and combinations set to support various applications such as Call Accounting, Integrated Voice Response (IVR) applications, Modem/Telephone Security, and Telephony Diagnostics.

All toggles can be changed by simply typing the new toggle. The unit is designed to accept one toggle at a time. If a software application sends an initialization string of toggles to the unit, a short pause of at least 50 milliseconds should be inserted between each toggle so the unit it has enough time to write the entry to non-volatile memory.

## **OVERVIEW OF TOGGLES, COMMANDS, AND FORMATS**

### **Setup Toggles**

This is a quick listing of the setup toggles. A complete explanation of each toggle begins on page 6.

- E** Echo OFF
- e** Echo ON
  
- C** \$ sign not sent as leading character in data stream & dashes inserted in phone number.
- c** \$ sign is sent as leading character in data stream & dashes removed in phone number.
  
- X** Comprehensive format with duration and checksum.
- x** Limited format denoting only inbound and outbound (not suggested for most applications).
  
- U** Internal blocking/passing OFF.
- u** Internal blocking/passing ON. (Block or pass is determined by "K,k" toggle).
  
- K** Pass calls until notified by Internal Memory routine ("u") or by **W** command.
- k** Block calls until notified by Internal Memory routine ("u") or by **W** command.
  
- A** Data sent BEFORE and AFTER call.
- a** Data sent as defined by "S,s" toggle.
  
- S** Data sent at the Start of call only. (If "a" set above).
- s** Data sent at the End of call only. (If "a" set above).
  
- B** Block first ring to output jack.
- b** Block first ring set to OFF.
  
- D** Detail information for call not sent.
- d** Detail information sent.
  
- O** Inbound call information sent only.
- o** Outbound and Inbound information sent.
  
- T** Do not capture DTMF on inbound calls.
- t** Capture DTMF on inbound calls. (Used mostly for Voice Mail and IVR applications)

### Operating Commands

- @ Send back # sign. (Used for establishing device communication).
- V Send firmware Version number, date & time, toggle settings, line numbers.
- v Send internal jumper settings (determining the Caller ID type captured and On/Off-Hook scheme used)
- J List all phone numbers in memory. (Used for internal blocking/passing).
- Q Delete all phone numbers in memory.
- R Reset system. Toggles set to upper case default values.

### Data Entry Commands

- Nnnnnnnnnn <CR>** Add phone number to memory for internal block/pass feature.
- Zmmddhhmm <CR>** Set date and time on internal device clock.
- Wnn <CR>** Normal use (toggle "K" set) is to block call on line **nn**. Usually sent after the CID string and before the 2nd ring. Or, pass call on line **nn**. ("k" set).

### Detail Mode Output

- nn R     Date & Time**     Ringing on line **nn**
- nn F     Date & Time**     Off Hook on line **nn**
- nn N     Date & Time**     On Hook on line **nn**
- nn H     Date & Time**     Hook Flash on line **nn** (Hook flash is a fast off/on hook used to transfer calls)

### Additional Detail Information

- nn Vxx    Date & Time**     Firmware version of slave ROM (Displays on start up)

### Error Condition

- ?    Error (invalid command or could not interpret data)

### Comprehensive Format (Recommended)

When the capital **X** toggle is set, the output is similar to the following:

```
01 I S 0276 G B3 09/26 11:28 AM 800-240-4637 CallerID.com<CR/LF>
```

<b>01</b>	Line number field	2 char.	(preset by user)
<b>I</b>	Inbound/Outbound field	1 char.	(or <b>O</b> for outbound)
<b>S</b>	Start/End of call field	1 char.	(or <b>E</b> for end)
<b>0276</b>	Duration of call in seconds	4 char.	(only sent at end of call)
<b>G</b>	Good checksum for CID string	1 char.	(or <b>B</b> for bad checksum)
<b>B3</b>	Number & Type*of Ring(s)	2 char.	(only sent on end of call)
<b>09/26</b>	Date field	5 char.	
<b>11:28</b>	Time field	5 char.	(12 hour format)
<b>AM</b>	AM/PM field	2 char.	
<b>Phone #</b>	Phone number field	14 char.	(in some cases only 7 digits sent)
<b>Name</b>	Name field	15 char.	(sent only in some areas)

Note: Each data string is followed by a carriage return and a line feed.  
1 space separates each field

\* Type of Ring is valid only if distinctive ring service is ordered from telephone company.

### Limited Format (Not recommended for most applications)

When the lower case **x** toggle is set, the output is similar to the following:

```
$01 09/26 02:30 PM 8002404637 I CallerID.com <CR/LF>
```

<b>\$</b>	Leading dollar sign	1 char.	("c" toggle set)
<b>01</b>	Line number	2 char.	(preset by user)
<b>09/26</b>	Date field	5 char.	
<b>02:30</b>	Time field	5 char.	(12 hour format)
<b>PM</b>	AM/PM field	2 char.	
<b>Phone #</b>	Dashes removed	14 char.	("c" toggle set)
<b>I</b>	Inbound call	1 char.	(or <b>O</b> for outbound)
<b>Name</b>	Name field	15 char.	(sent only in some areas)

Notes: Each data string is followed by a carriage return and a line feed.  
5 spaces separate each field (except \$ and line number).

## IN-DEPTH DISCUSSION OF TOGGLES, COMMANDS, AND FORMATS

### Setup Toggle Discussion

#### **E,e** Echo

Unit will or will not echo back commands that are sent to it. Set to lower case "e" for echo on.

#### **C,c** Leading \$ character and dashes removed in phone number field

Some applications need to detect a certain character in order to perform an operation. When this toggle is set to "c", the unit places a "\$" character before each data string. This includes detail data strings such as Ring, Off hook, On hook, and Hook flash (see toggle "**D,d**"). Also when c is set, the dashes are removed from the telephone number field. The telephone number justification remains as set by the "**X,x**" toggle.

#### **X,x** Format Options

Two different data formats can be sent by the unit. The limited format sends the line number, date and time, phone number, inbound/outbound indication, and name (if available). The comprehensive format sends the same along with the duration of the call, checksum indication, and number of rings. The comprehensive format is strongly recommended. More detail on these formats on page 9.

#### **U,u** Internal Block/Pass

The unit can block or pass incoming calls based on a match against phone numbers pre-loaded into the on-board memory. The "u" toggle turns on the Block/Pass feature. The "**K,k**" toggle determines whether the unit blocks or passes calls that match these numbers.

#### **K,k** Block or Pass Select

Set "**K**" to pass all calls until defeated. Set "**k**" to block all calls until defeated. These toggles can be defeated by either the "**W**" command sent by the host computer or signal sent by the internal memory when a phone number match is found.

#### **A,a** Data Delivery Option (Start & End or Start/End)

The unit is capable of delivering a data stream to the host computer immediately as the call arrives, when the call terminates, or both. For an inbound call, immediate data delivery allows the Caller ID information to be utilized before the call is answered for purposes of database queries, call routing, etc. Delivering the data stream after the call ends provides additional information about the call to the application program such as, the duration of the call and the number of rings before the call was answered. If lower case "a" is set, data is sent as defined by the "**S,s**" toggle.

#### **S,s** Data Delivery Option (Start/End)

For this toggle to affect operation "a" must be set. If call data is to be sent before the call is answered, set toggle to "**S**". If call data is to be sent only after call terminates, set toggle to "s". If call data is to be sent before and after the call, set toggle "**A**".

#### **B,b** First Ring Suppression

When this toggle is set to "**B**", the first ring to the output jack on each line is suppressed. Since the Caller ID stream is sent between the first and second rings on the telephone line, this prevents the call from being answered before the information is sent. However, in some cases, hearing the first ring might be essential for the user to respond to the call in a timely manner. If this is true, set this toggle to "**b**".

## **D,d** Detail Information

Some software applications may need additional call data. When the lower case "**d**" toggle is selected, the unit can provide an indication for Ring, Off hook, On hook, and Hook flash. The format is as follows: line number (**nn**); space; and either a **R** (**R**ing), **F** (**oF** hook), **N** (**oN** hook), or **H** (**H**ook flash). The date and time (HH:MM:SS) follow at the same offset as the date/time field in the comprehensive format. In the detail mode, the time is delivered in a 24 hour format. (Please note: If the "**c**" toggle is selected, a leading "\$" will be added to the above data string). For more information see the section on Detail Mode on page 8.

## **O,o** Inbound/Outbound Select

For basic Caller ID applications, use the upper case "**O**". If complete call accounting is required, use lower case "**o**". The lower case "**o**" instructs the unit to deliver for both inbound and outbound calls.

## **T,t** Inbound DTMF Monitoring

When set to lower case "**t**", unit will monitor for DTMF touch tones on inbound calls. This toggle is used primarily for voice mail and Integrated Voice Response (IVR) applications. The DTMF digits dialed during the call will be displayed in the "Name" field on the call record sent at the end of the call. If the Caller ID service provides the caller's name, the name will still appear in the call record sent at the beginning of the call. (If both the Caller ID name and the DTMF digits are needed use the upper case "**A**" to have the unit deliver both start and end records.)

## **Operating Commands Discussion**

### **@** Handshaking character when # is sent

The unit will return "#" when "@" is sent. This can be used to establish communication between the computer and the unit. One application for this command is a software setup routine that automatically searches for the unit by sending an "@" character on each **COM** port and **IRQ** until a "#" is returned. The corresponding **COM** port and **IRQ** number then can be set automatically in the application.

### **V** Firmware version and all settings

This command returns the firmware version, all toggle and line number settings, and date & time (in military format) on the internal time clock. On start-up, toggles will be defaulted to all upper case values; the line number will be set to "**L=01**"; and date & time will be set to zero. All toggles and line number settings are stored in non-volatile memory and will remain saved even if the unit loses power. The internal clock does not run while the unit is off, and therefore, it must be reset when power is restored. The clock can be reset by the software using the "**Z**" command or will be reset on the first good Caller ID signal. Subsequent Caller ID signals with good checksums will continue to reset the internal time clock with the telephone company's time.

### **v** Firmware version and all settings

This command returns the configuration of the internal jumper settings. Jumpers on the circuit board configure the unit to capture either of the 4 types of Caller ID signaling formats used around the world (refer to Appendix A, page 16) as well as the On/Off scheme used by the device. In most cases, the Caller ID signaling format is factory set to FSK (US type). If the Caller ID signaling type is pre-determined for your area before being shipped, these jumpers may be set to the pre-determined format. The On/Off-Hook scheme is also set using internal jumpers to either Voltage or Current Detection (Appendix B, page 18). Below are examples of lower case "v" outputs.

- v-VFU** (Voltage Detection, FSK, US Type)
- v-CFB** (Current Detection, FSK, BT/ETSI Type)

### **J** List all phone numbers in memory

This command lists all telephone numbers stored in non-volatile memory. These numbers can be used to either block or pass calls to the output phone jacks. (Refer to the section on use of toggles "**U,u**" and "**K,k**"). The non-volatile memory can store up to fifty, 10 digit or 7 digit phone numbers. Phone numbers are entered using the "**Nnnnnnnnnnn**" command discussed in Data Entry Command section, see section below.

### **Q** Delete all phone numbers in memory

This command deletes all telephone numbers stored in non-volatile memory.

## R Reset System

This command resets the operating system and resets all toggles to upper case values. It does not reset the line number or the baud rate. The baud rate can only be changed by moving a jumper on the circuit board, page 13. The line numbers of the unit can be changed pressing the line select button on the rear of the unit for 2 seconds. The time clock can be reset by using the "**Zmmddhhmm**" command (see details below), or by capturing a good Caller ID signal.

## Data Entry Commands Discussion

**Nnnnnnnnnnn <CR>** Add phone number to memory

This command allows telephone numbers to be entered into non-volatile memory. These numbers can be used to either block or pass calls to the output phone jacks. See section on use of toggles "**U,u**" and "**K,k**". The on-board memory can store as many as thirty, phone numbers. Phone numbers entered into memory must be between 7 and 12 digits in length. Any attempt to enter a number less than 7 or more than 12 digits long will cause the unit to send back a question mark and the number will not be accepted by the memory. Ten digit numbers are common for the US and Canada. Less than and more than 10 digit numbers are common in other countries.

If you want to add "Private" and "Out-of-Area" and callers to the memory list, refer to the following:

For **Private** Callers, enter: **N77<CR>**

For **Out-of Area** Callers, enter: **N66<CR>**

**Zmmddhhmm <CR>** Set date and time on internal clock

This allows the programmer to set the internal clock on the unit. Since there is no battery backup on board, once power is removed from the unit, the internal clock resets to "00/00 00:00:00". This command may never have to be used, due to the following: On the first incoming call with Caller ID and a good checksum, the internal time clock will be set to the time sent in the Caller ID signal. On every call thereafter, the internal clock is reset to the Caller ID time. The format for time entry using the "**Z**" command is **mm** (month), **dd** (day), **hh** (hour), and **mm** (minute).

**Wnn <CR>** Block (or pass) call on line **nn**

This command should be sent after the Caller ID signal and before the second ring. This way the call can be blocked (or passed) based on the Caller ID information. If toggle "**B**" is set, the first ring will be blocked. The application program determines whether the remaining rings should be blocked or passed. Please note: Normally, toggle "**K**" is set. This allows all calls to pass until a "**W**" is sent by the application (or an internal command is sent by the hardware memory). In a secure phone line application, the toggle "**k**" might be set in order to block all calls until the "**W**" command is sent (or the internal command is sent by the hardware memory).

## Detail Mode Output Discussion

If the toggle "**d**" is set, all detail information on each call is sent immediately. The detail events include Ring, On Hook, Off Hook, and Hook Flash. Each event reported by the unit starts with the line number, followed by the abbreviation of the event, and finally, the date and time. The date and time is offset 13 characters to the right so that it will appear in the same offset position as the date and time in the comprehensive format. Also, the time is displayed in a military format so that the time of the event can be determined exactly. An example is shown below.

<b>01 R</b>	<b>11/07 07:43:52</b>	Ring on line 1 at 7:43 AM
<b>01 F</b>	<b>11/07 17:45:04</b>	Off Hook on line 1 at 5:45 PM
<b>04 N</b>	<b>11/07 10:46:23</b>	On Hook on line 4 at 10:46 AM
<b>01 H</b>	<b>11/07 22:11:08</b>	Hook Flash on line 1 at 10:11 PM

## Error Condition Discussion

A question mark ("??") is returned on most any input that is not valid. Also, any non-interpretable characters contained within a Caller ID string will be sent as a question mark. Most likely the checksum will be calculated as "bad".

## Format Discussion

Two different output formats are available. They are selected using the "**X,x**" toggle. The comprehensive format is preferred by most programmers because more information is delivered about each call. The limited format is not as informative or flexible, but may be preferred in basic Caller ID applications.

### **Comprehensive Format - Inbound Calls**

The comprehensive format is highly recommended for all applications. The amount of data sent, combined with the flexibility of sending the data at the end of the call, makes it the format of choice for even very simple applications. The data string can be, 63 characters in length, including the leading \$ sign (if the "**c**" toggle is set), spaces, the carriage return, and line feed characters at the end of the data.

The comprehensive format for an inbound call is shown in Fig. 2a. The line number always precedes the data string. In this example, data from line 3 is discussed.

The Inbound/Outbound and Start/End of Call Indicators use I/O and S/E respectively. Remember that the unit can be set to send data on inbound and outbound calls or only on inbound calls (toggle "**O,o**"). Also, the data stream can be sent at the start of the call, end of the call, or both (see toggles "**A,a**" and "**S,s**").

Since the duration of the call is sent only after the call is complete, toggles "**O,o**" and "**S,s**" must be set so the unit will send data at the end of the call.

The Caller ID string sent by the telephone company always contains a checksum. The unit compares its checksum with the checksum sent by the phone company and displays the either "**G**" (Good) if the two match or "**B**" (Bad) if they do not match. The application programmer may elect to ignore this indicator and determine the validity of the data after reading in the data stream.

The next field contains both the number of rings delivered by the telephone company before the call was answered and the type of ring. A service called Distinctive Ring or Ring Master is offered to customers in many areas. It allows up to 4 telephone numbers to be routed to one phone line. Each phone number dialed causes the telephone to ring differently. The unit will determine which ring pattern is delivered and mark it as A,B,C, or D. Please note the number of rings is always zero except when the data is delivered at the end of an incoming call.

The date and time information is sent by the phone company as part of the Caller ID signal on each incoming call. For each incoming call with a good checksum, the time and date information will be used to reset the internal real time clock to match the telephone company's clock.

The phone number field for the comprehensive format is 12 characters and left justified. Dashes are inserted when the "**C**" toggle is set. If the "**c**" toggle is set the dashes are removed (and a leading \$ sign is inserted in front of the data string). In some areas of the US and Canada, no area code is sent for calls within the local calling area. In this case, the unit will send the 7 digit phone number, left justified. If the application software will be used in different areas of the country, it is suggested that the local area code reside in the software to be appended to any 7 digit number delivery to make it a 10 digit number.

In many areas, the name of the caller will be delivered along with the number. This service is sometimes referred to as Caller ID Plus, Caller ID Deluxe, or Enhanced Caller ID. If delivered by the local telephone company, the name will reside in a left justified, 15 character field, following the number field. Names for private residences are usually sent last name first, space, first name, space, and then middle initial. Business names are most often sent as they are listed, but if they over 15 characters, truncation will occur. Even though most local telephone companies send all upper case names, the Bellcore and Bell Canada specification provides for the delivery of both upper and lower case characters.

# Comprehensive Output Format [Recommended]

(Capital "X" Toggle Set)

Figure 2a

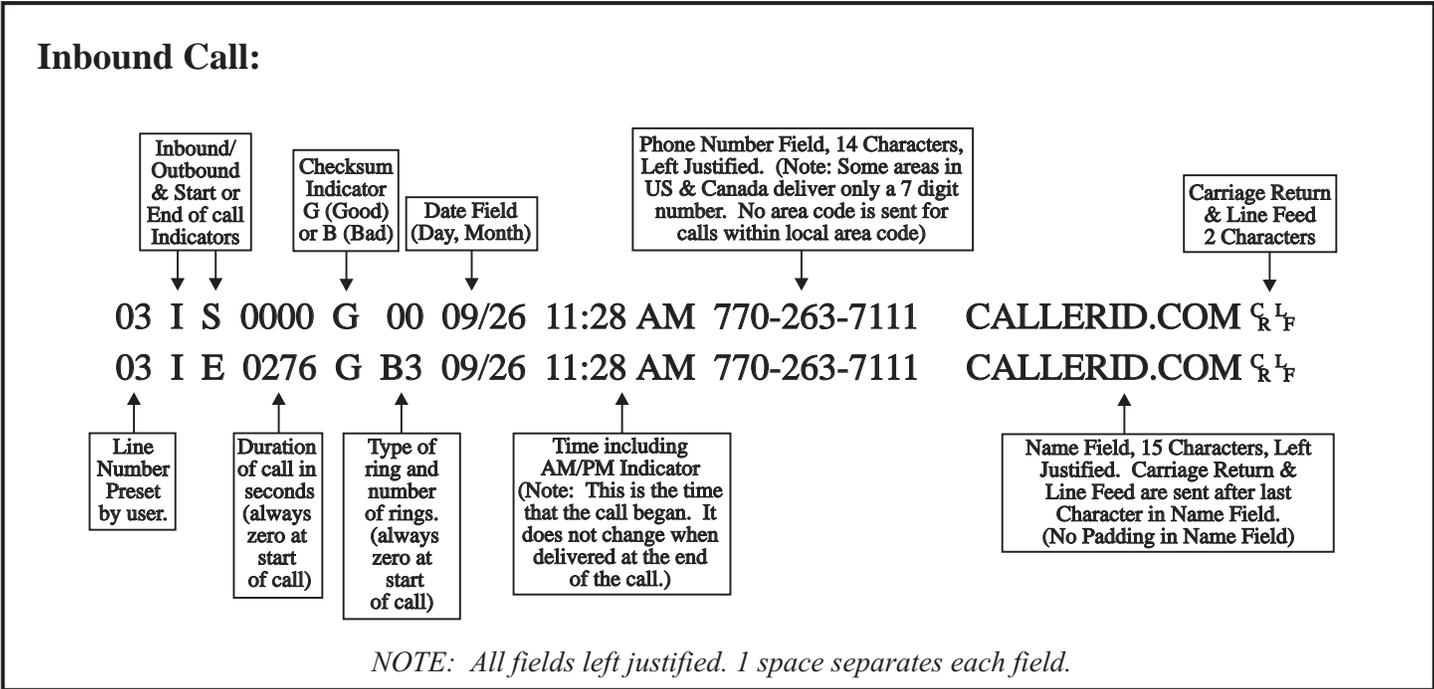
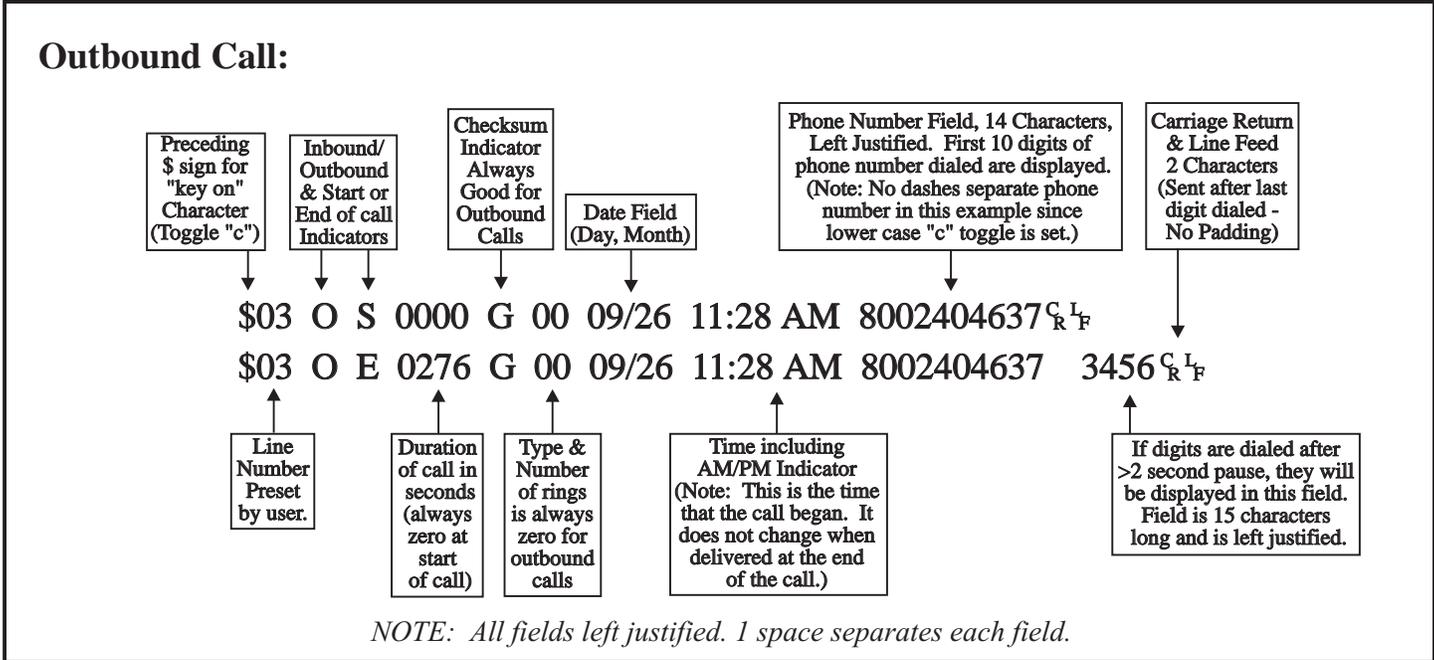


Figure 2b



## **Comprehensive Format - Outbound Calls**

Figure 2b shows the Comprehensive format for outbound calls. Unlike figure 2a, toggle "c" is set. (Remember toggle "c" places a \$ sign before the data stream and removes dashes in the phone number field.)

The outbound indicator displays **O** and the Start/End indicators are the same as inbound calls. The duration of the call is only sent at the end of the call and is displayed in seconds. The checksum indicator is always "good" and the number of rings remains "zero" at all times. The date/time displayed is the date/time that the call was initiated and does not change at the end of the call. The unit tries to be as "smart" as possible in determining where to place outbound dialed digits. Digits dialed are placed in either the number or name field. The algorithm below explains where the unit places digits.

All digits dialed within 2 seconds of each other will be displayed beginning in the number field. If more than 10 digits are dialed, the additional digits will be displayed in the name field. The "Start" data string for outbound calls will be sent immediately after a period of 2 seconds when no digits are dialed. Any digits dialed after this 2 second interval will be displayed in the name field and will be displayed only at the end of the call. In the example in Fig. 2a, second data string, the 800 number was originally dialed. After a few rings, an automated answering device answered the call. The caller then dialed additional digits responding to voice menu selections.

An exception to this 2 second rule provides for 7 and 10 digit numbers to be reported in the number field on the end record, regardless of the interval between dialed digits.

## **Limited Format - Inbound Calls**

The limited format is designed for simple inbound Caller ID delivery. Even though outbound dialed numbers can be captured, it is recommended for only the simplest call accounting applications. Even if your application only requires simple inbound Caller ID data delivery, we still recommend the comprehensive format over the limited format. In this way, your application can grow with the increasing needs of your business.

The limited format for an inbound call is shown in Fig. 3a. The data string can be up to 73 characters long including the leading \$ sign (if "c" toggle is set), spaces, and the carriage return/line feed characters at the end of the data. The line number always precedes the data. Data for line 3 is discussed in this example.

The date and time information is sent by the phone company as part of the Caller ID signal on each incoming call. For each incoming call with a good checksum, the time and date information will be used to reset the internal real time clock to match the telephone company's clock.

The phone number field for the comprehensive format is 14 characters and RIGHT justified. Dashes are inserted when the "C" toggle is set. If the "c" toggle is set the dashes are removed (and leading \$ sign is inserted in front of the data string). In some areas of the U.S. and Canada, no area code is sent for calls within the local calling area. In this case, the unit will send the 7 digit phone number, RIGHT justified. If the application software will be used in different areas of the country, it is suggested that the local area code is stored in the software and added to any 7 digit number received so as to make it a 10 digits. In this way, a 10 digit look-up routine can still be used for local calls.

In many areas, the name of the caller will be delivered along with the number. This service is often referred to as Caller ID Plus, Caller ID Deluxe, or Enhanced Caller ID. If delivered by the local telephone company, it will reside in a RIGHT justified, 15 character field, following the number field. Names for private residences will usually be sent last name first, space, first name, space, and then middle initial (if applicable). Business names are most often sent as they are listed, but if they are over 15 characters, truncation will occur. Most local telephone companies send all upper case names, the Bellcore and Bell Canada specification provides for the delivery of both upper and lower case characters.

For reference, the line number field is 2 characters in length. The date field is 5 characters. The time field is 8 characters. The number field is 14 characters. The Inbound/Outbound field is 1 character. The name field is 15 characters. The carriage return line feed characters are sent immediately after the last data character. Therefore, no spaces are sent to fill the remaining characters in the last field. All fields are separated by 5 spaces in the limited format.

# Limited Output Format

(Lower Case "x" Toggle Set)

Figure 3a

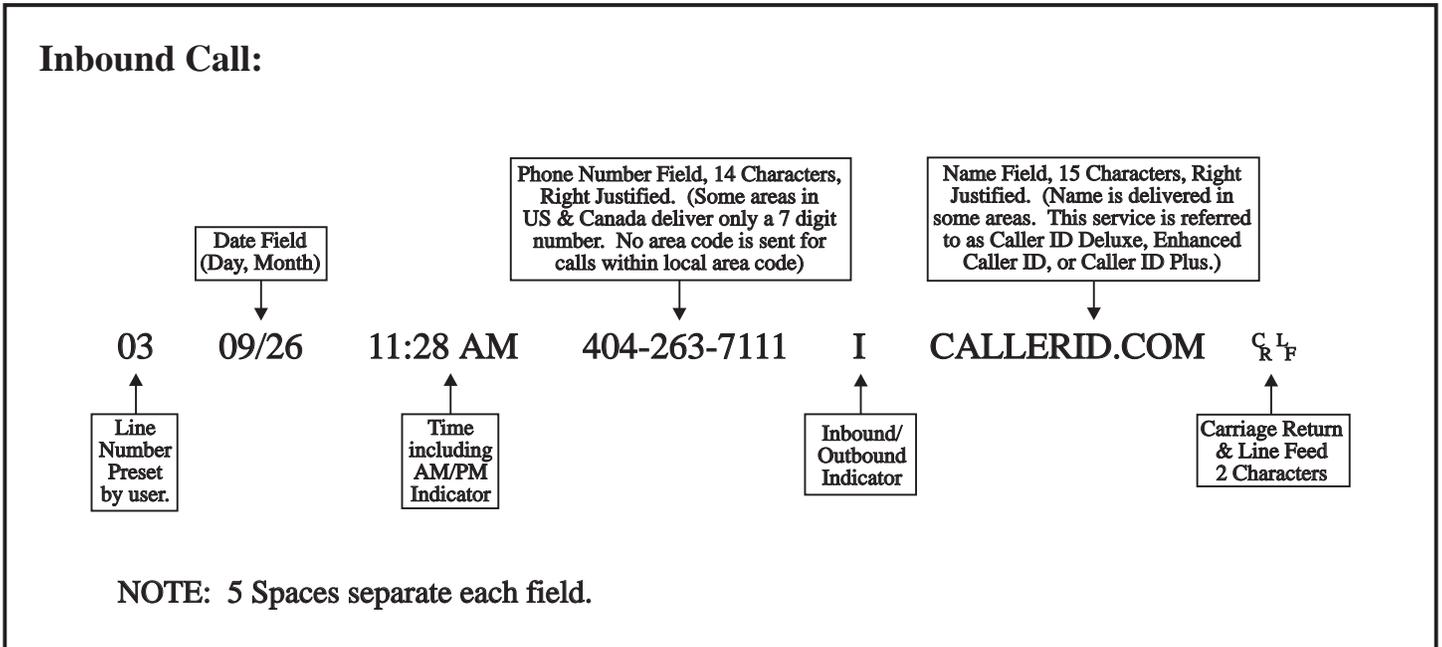
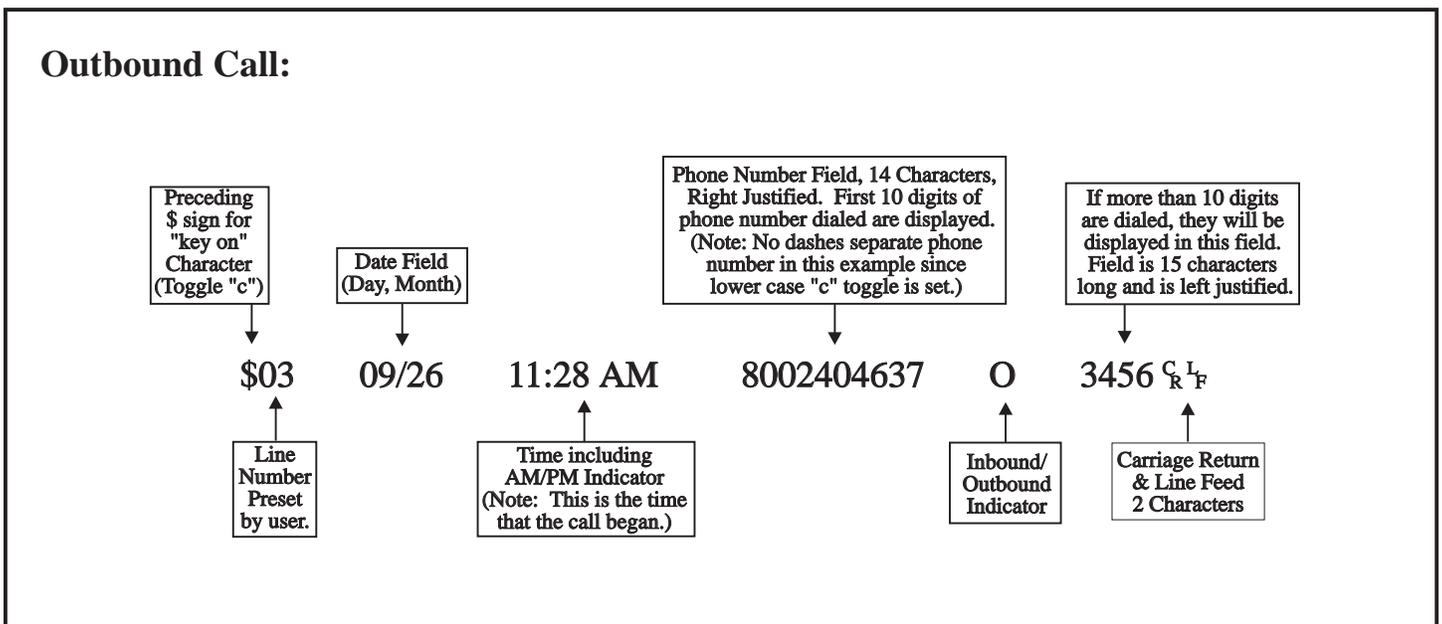


Figure 3b



## **Limited Format - Outbound Calls**

Figure 3b shows the Limited Format for outbound calls. Unlike figure 3a, toggle "c" is set. (Remember toggle "c" places a \$ sign before the data string and removes all dashes in the phone number field.)

The date and time come from the on-board time clock. The Inbound/Outbound indicator is placed between the number and name field. All digits dialed within 2 seconds of each other will be displayed beginning in the number field. If more than 10 digits are dialed, the additional digits will be displayed in the name field LEFT justified. The data string for outbound calls will be sent immediately after, a period of 2 seconds, when no digits are dialed. Any digits dialed after this 2 second interval will not be reported. Remember that the data string for limited format cannot be sent after the call is concluded. Therefore, once the data is sent at the beginning of the call, any digits dialed thereafter, will not be reported.

For reference, the line number field is 2 characters in length. The date field is 5 characters. The time field is 8 characters. The number field is 14 characters. The Inbound/Outbound field is 1 character. The name field is 15 characters. The carriage return line feed characters are sent immediately after the last data character. Therefore, no spaces are sent to fill the remaining characters in the last field. All fields are separated by 5 spaces in the limited format.

## **DISCUSSION OF PRIVATE AND OUT-OF-AREA CALLERS**

Two unique messages can be delivered as designated by Caller ID specifications. An "Out-of-Area" message occurs if the information on a caller is unavailable. This is true for most cellular calls and is sometimes the case when the call originates outside the telephone company's Local Access Transmission Area (LATA). This loosely translates to long distance calls. In the near future, Caller ID will be delivered on a long distance basis. Inter-LATA and interstate Caller ID delivery is scheduled to begin in all areas by June, 1996.

A "Private" message is sent for callers who have blocked their Caller ID number from being transmitted to the called party. Blocking can occur either on a per call or on a per line basis. For per call Caller ID blocking, a code (\*67) can be dialed before each call is made. In some areas, customers can request that all calls from their line be permanently blocked. In either case, the recipient of calls from these numbers will receive a "Private" or "Anonymous" indication from their Caller ID device.

Private and Out-of-Area messages can occur in either the number or name fields if number and name service is being delivered. For example, some telephone companies allow customers to have private numbers, but names are always sent. In another case, the number might be sent, but the name of the customer is Out-of-Area. This would most likely happen if the customer had just received new service and the telephone company's database had not been recently updated. Be aware that your application software might need to handle various combinations of number, name, private, and out-of-area messages in both the number and name fields.

## **CONNECTING UNITS TOGETHER**

Use the supplied serial cable to connect unit #1 with unit #2. The cable attaches to the unit #1 port marked "To Next Unit" to the unit #2 port marked "To Computer." Unit #2 connects with unit #3 in the same manor.

## **SETTING LINE NUMBERS ON INDIVIDUAL UNITS CONNECTED TOGETHER**

As many as 7 monitoring Caller ID units can be connected together into one serial port. Each unit has a line selector switch located on the rear panel. This switch is used to set up additional units for the appropriate line numbers. Each time the switch is depressed for 2 seconds the line numbers on the unit will increase by four. For example, the switch should be pressed once for the second unit to set it for lines 5 through 8. The switch should be pressed twice on the third unit to set it for lines 9 through 12. Additional unit line numbers can be set accordingly.

The switch will set line numbers up to 49 and then roll over to 1. Loss of power to the unit will not affect line numbers set by the switch. The line number set for channel 1 of each unit can be seen in the HyperTerminal program

described in Appendix E – "Using Hyperterminal In Windows to Monitor Unit", page 22. Within the main terminal screen, type a capital "V" (for version). The unit will respond with the version of the firmware, unit toggle settings, and the line number of Channel 1.

Use the supplied serial cable to connect unit #1 with unit #2. The cable attaches to the unit #1 port marked "To Next Unit" to the unit #2 port marked "To Computer." Unit #2 connects with unit #3 in the same manor.

### **SPECIFICATIONS**

Supply Voltage:	9 VDC, center negative
Supply Current:	Less than 250 mA
Loop Current Draw:	Less than 1 mA
Loop Voltage:	30 to 105 VDC
Ringing Voltage:	60 to 130 VAC
Insertion Loss:	Less than 0.3 dB
Voltage Drop:	2.7 VDC at 20 mA loop current
Dimensions:	8.0" W x 2.0" H x 6.25" D
Ringer Equivalence:	(REN) 0.1 B

### **FCC INFORMATION**

This unit is designed to conform to federal regulations and complies with Part 68 of the FCC rules. On the back of this equipment is a label that contains the FCC registration number and ringer equivalence number (REN) for this equipment. Upon request, you may have to provide the FCC registration number and the REN to your telephone company.

The ringer equivalence number (REN) is used to determine how many devices can be connected to your telephone line. In most areas, the sum of the REN's on any one line should not exceed 5. If too many devices are attached, your phones may not ring properly and other devices on the line may not detect the ring signal.

In the most unlikely event that your unit causes significant problems on the telephone line, the telephone company can disconnect your service. The telephone company will attempt to notify you in advance and will advise you of your right to file a complaint with the FCC.

The telephone company may make changes in its technical operation and procedures that may affect the operation of this device. The telephone company is required to give adequate notice of such changes. This product should not be connected to coin operated or party line systems.

## **MANUFACTURE'S INFORMATION**

CallerID.com  
3107-D Medlock Bridge Road  
Norcross, GA 30071

Sales	(800) 240-4637
Customer Service	(770) 263-7111
FAX	(770) 263-0049
Web Site	www.callerid.com

## **WARRANTY INFORMATION**

CallerID.com will repair this product with new or rebuilt parts, free of charge, when returned postage prepaid to the CallerID.com repair facility in Norcross, GA within 90 days from the date of original purchase.

This warranty is extended only to the original purchaser. A purchase receipt or other acceptable proof of purchase date will be required before warranty service is rendered.

This warranty covers failures due only to defects in materials or workmanship occurring during normal use. It does not cover damage which occurs in shipment; failures which are caused by products not manufactured by CallerID.com; failures which result from accident, misuse, abuse, neglect, mishandling, misapplication, alteration, modification or unintended use of product; service by anyone other than an authorized CallerID.com repair facility; or damage attributed to an act of God. Lightning is considered an act of God.

CallerID.com makes no other warranty, either expressed or implied, with respect to this product.

If a problem develops concerning this product, contact your local dealer or CallerID.com directly for a Return Material Authorization (RMA) number. A RMA number is required for all returns.

## Appendix A - International Caller ID formats and Internal Jumper Settings

Caller ID is a data signal generated by the phone company's central office (CO). The type of Caller ID signal that will be sent by a phone company will depend on the type of equipment in use at their CO.

Caller ID signaling formats vary throughout the world. At present, there is four basic formats with local variations of each format type. By setting the proper combination of internal jumpers (shunts), the Whozz Calling? unit can capture any of these four basic Caller ID signaling formats. The four basis formats are:

1. Bellcore 202 - USA Type. Sent in many countries. FSK sent between the 1<sup>st</sup> and 2<sup>nd</sup> ring cycle.
2. British Telecom – Only Sent in United Kingdom. FSK sent before the 1<sup>st</sup> ring cycle.
3. ETSI - Sent primarily in Western Europe. FSK sent after very short 1<sup>st</sup> ring.
4. DTMF - Sent in regions that use older CO equipment. DTMF (touch-tones) sent before the 1<sup>st</sup> ring.

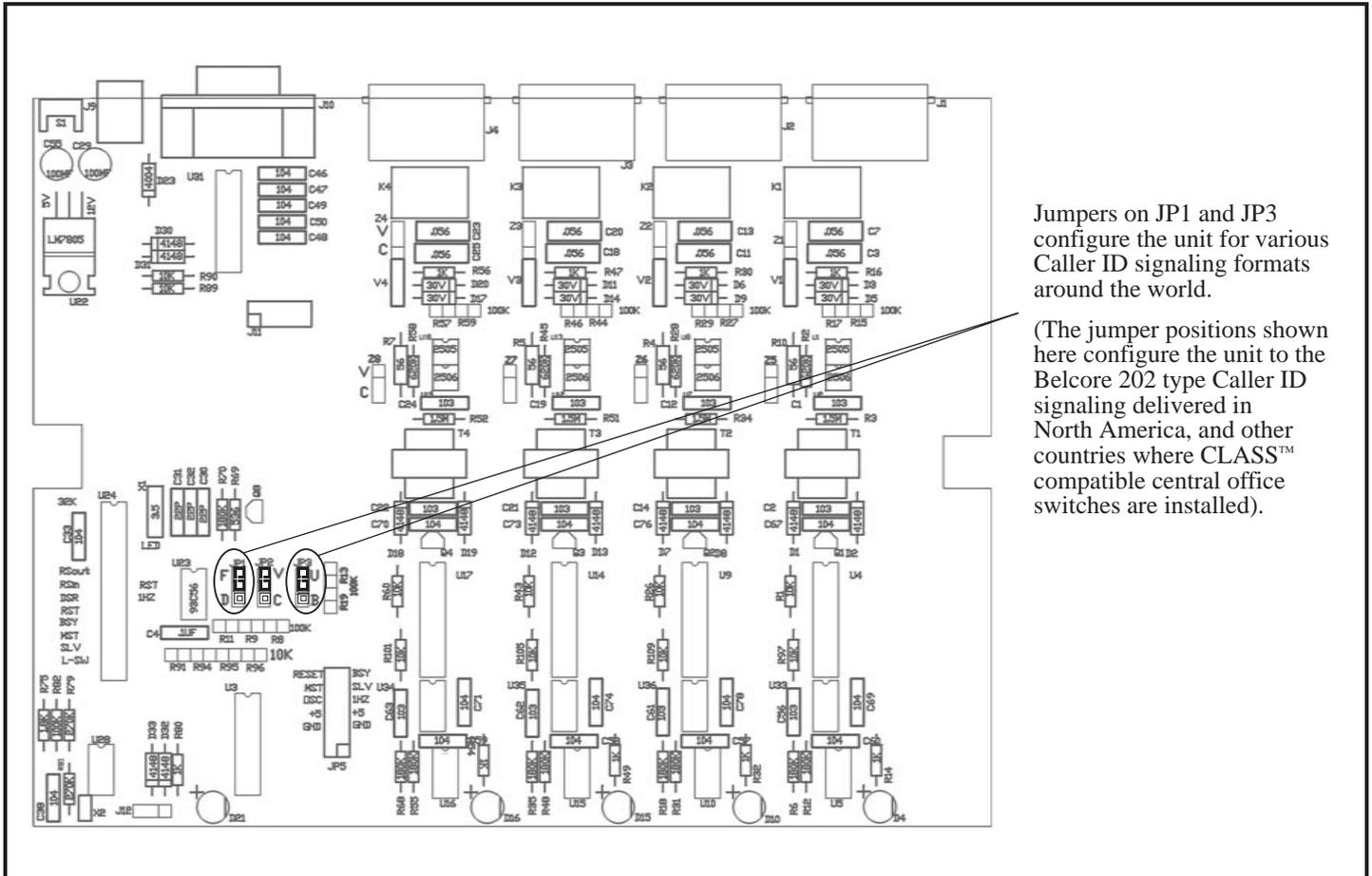
NOTE: Refer to the table in Fig. A1 for more information on known formats in particular countries.

The standard factory setting for Whozz Calling? units is to capture Bellcore 202 type Caller ID. If the signaling format was determined in advance of the unit being shipped, the Whozz Calling? may be set for an alternate format.

In order to configure the unit to a different Caller ID signaling format, the top of the enclosure must be removed and shorting jumpers moved on the circuit board. Use the following steps and refer to Fig. A1 on the next page.

1. Remove power to the unit.
2. Remove the top of the enclosure by first removing the two Phillips head screws on the bottom of the unit.
3. Slide the top of the enclosure off.
4. Locate the shorting jumpers on the circuit board used for Caller ID signaling formats using Fig. A1.
5. Slide off the appropriate jumper(s) and reconnect as per the table below the diagram.
6. Replace the top of the enclosure and replace the two screws.

**Fig. A1 - Configuring Unit for Different Caller ID Signaling Formats**



**Configuration Table for Caller ID Signaling Formats**

Jumper Positions	Caller ID Signaling	Characteristics	Countries/Regions Known
<p><b>JP1 JP3</b></p> <p>F <input type="checkbox"/> U</p> <p>D <input type="checkbox"/> B</p>	Belcore 202	FSK signal between the 1st and 2nd ring. Time & date sent, Caller ID name optional.	USA, Canada, most of Mexico, most of the Caribbean, Panama, Argentina, Australia, New Zealand, Hong Kong, Singapore, China, Israel, Malta and other areas using CLASS compatible central office switches
<p><b>JP1 JP3</b></p> <p>F <input type="checkbox"/> U</p> <p>D <input type="checkbox"/> B</p>	British Telecom and ETSI	FSK signal before 1st ring or after very short 1st ring. Time & date sent, Caller ID name optional.	United Kingdom, France, Germany, Spain, Italy, Norway, South Africa, Turkey, Japan and any other countries that adopted the ETSI standard.
<p><b>JP1 JP3</b></p> <p>F <input type="checkbox"/> U</p> <p>D <input type="checkbox"/> B</p>	DTMF (touch-tone)	DTMF tones sent before 1st ring. No time & date, no Caller ID name, only Caller ID number sent.	Brazil, Uruguay, Guatemala, and many other Central and South American countries. Denmark, Holland, Iceland, Sweden, India, Saudi Arabia, Kuwait, U.A.E., and other Middle Eastern countries.

## **Appendix B - On and Off-Hook Detection (Voltage vs. Current)**

The Whozz Calling? detects when the phone is on-hook and off-hook. This allows the unit to determine the length of each phone call and report this detailed information to the software. Telephone monitoring equipment can detect the occurrence of the On Hook and Off Hook status of the phone line by two methods. It can either sense the voltage on the phone line itself or sense current flow on a phone line passed through the equipment.

Voltages on incoming central office (CO) phone lines are consistent among all branches throughout a physical location (building). If the voltage levels are in standard range, monitoring equipment functioning in a voltage detection mode is able to sense On and Off Hook on any branch in the building. The obvious advantage to this detection scheme is that the monitoring equipment can be connected in parallel to the CO lines. Your unit comes from the factory set to voltage detection mode because, in most locations, this detection scheme works properly.

Current on phone lines only flows to the telephone device that is Off Hook. Monitoring equipment that senses On and Off Hook by means of current flow must be connected between the phone company's incoming line and the device(s) that goes Off Hook. The current will flow through the monitoring equipment to the Off Hook device. With this detection scheme, any telephone device that makes or receives phone calls must be attached in series (i.e to the output jacks) "behind" the monitoring equipment.

### **VOLTAGE DETECTION CIRCUITRY AND TELEPHONE LINES**

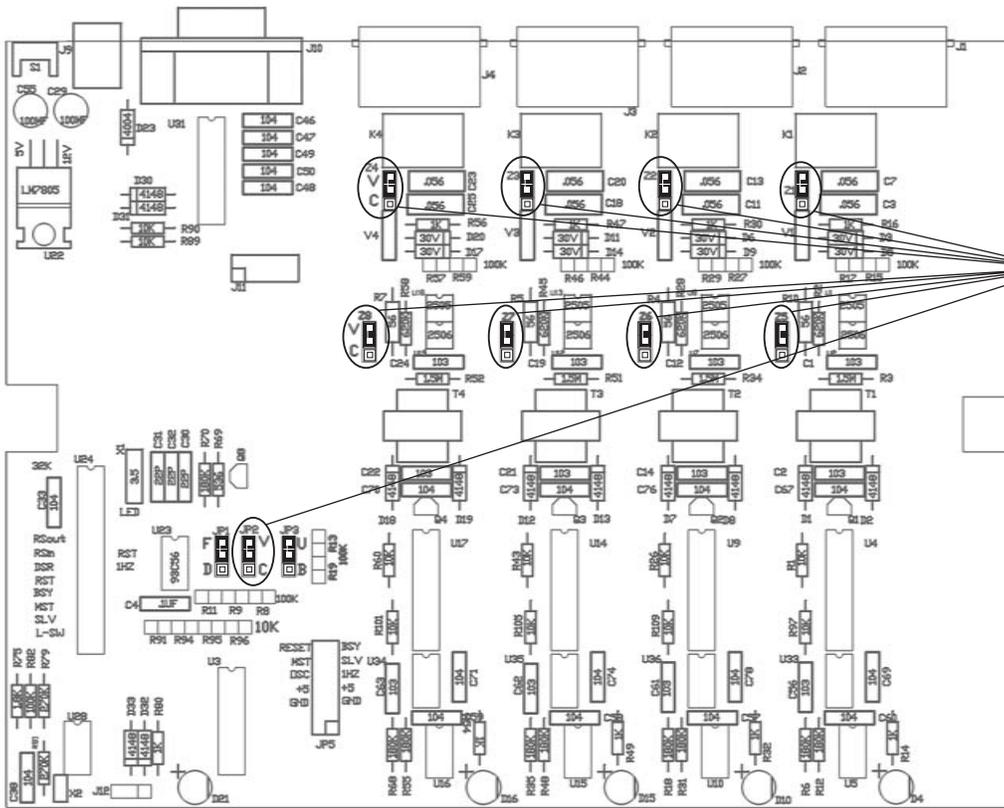
In order to sense the voltage on the phone line, the unit's circuitry must draw a small amount of current from the phone line. The current draw is very small (70  $\mu$ A, similar to a voltmeter), and is drawn when the phone line is On Hook. The telephone company's amplifier supplying the power to your location may not be able to supply this current and still keep the On Hook voltage level within the standard range. This occurs primarily in older residential and commercial locations. An unsophisticated telephone company repair technician may diagnose this small current draw by the unit as a "short" on the line. Therefore, the telephone company will not address the shortcoming of their supply amplifier. If this situation occurs, the unit cannot be used in the voltage detection mode, it must be reconfigured to the current detection mode.

### **RECONFIGURING UNIT TO CURRENT DETECTION MODE**

In order to configure the unit to a different Caller ID signaling format, the top of the enclosure must be removed and shorting jumpers moved on the circuit board. Use the following steps and refer to Fig. B1 on the next page.

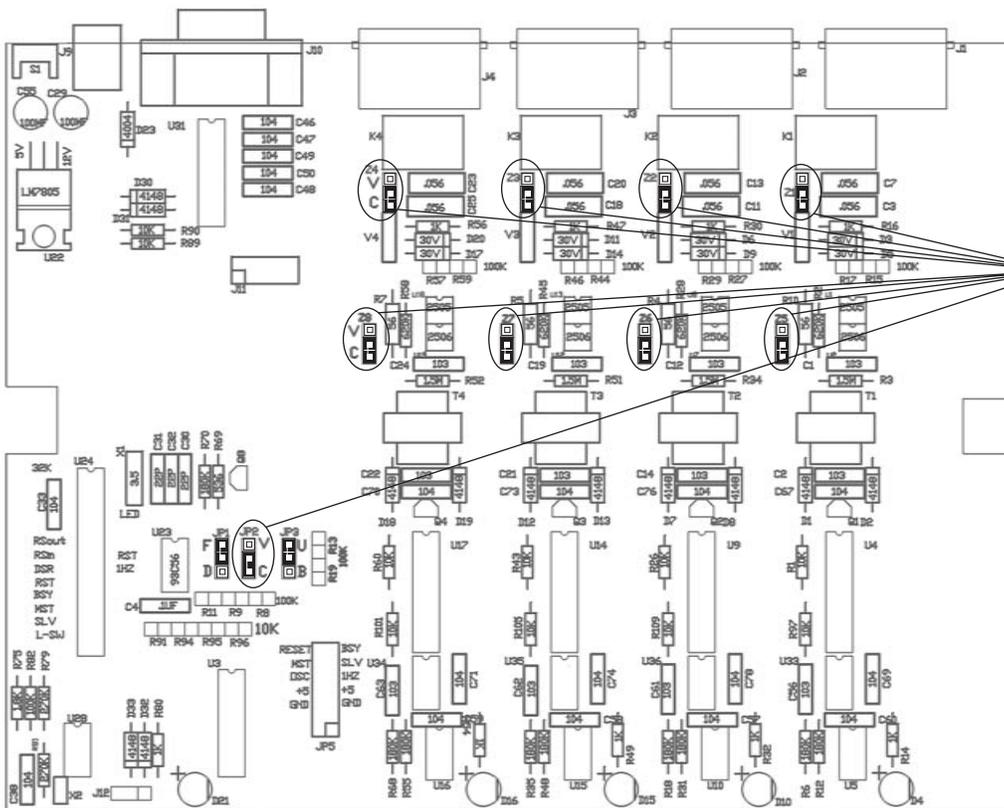
1. Remove power to the unit.
2. Remove the top of the enclosure by first removing the two Phillips head screws on the bottom of the unit.
3. Slide the top of the enclosure off.
4. Locate the shorting jumpers on the circuit board (2 per channel and 1 main jumper) used for configuring the unit to Current Detection using Fig. B1
5. Slide off the appropriate jumper(s) and reconnect as per lower diagram.
6. Replace the top of the enclosure and replace the two screws.

**Fig. B1 - Voltage and Current Detection Configuration on a 4 Line Model**



Unit configured for Voltage Detection when all 9 shunts are connected between the center pin and the pin nearest the rear of the unit.

**Voltage Detection [4 line unit] - All 9 Shunts to the Rear of Unit)**



Unit configured for Current Detection when all 9 shunts are connected between the center pin and the pin nearest the front of the unit.

**Current Detection [4 line unit] - All 9 Shunts to the Front of Unit)**

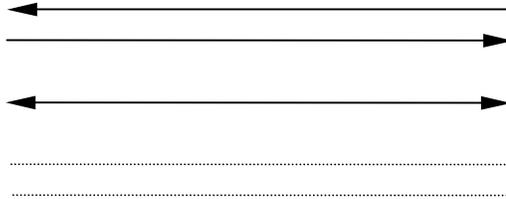
## Appendix C - RS232 Pin Outs

### 9 PIN CONNECTIONS

When the serial port is configured to “No Flow Control,” only **Transmit, Receive, and Ground** connections are required. Pin 7 and Pin 8 need to be connected only if other serial flow control types are selected.

#### Computer DB9/M Serial Port

Pin 1 (Carrier Detect)  
 Pin 2 (Receive )  
 Pin 3 (Transmit)  
 Pin 4 (Data Term. Ready)  
 Pin 5 (Ground)  
 Pin 6 (Data Set Ready)  
 Pin 7 (Request to Send)  
 Pin 8 (Clear to Send)  
 Pin 9 (Ring Indicator)



#### Monitoring Unit DB9/F

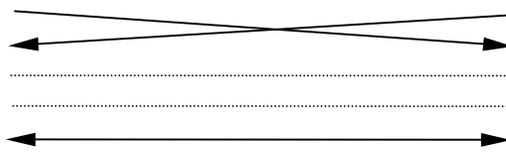
Pin 1 (No Connection)  
 Pin 2 (Transmit)  
 Pin 3 (Receive)  
 Pin 4 (No Connection)  
 Pin 5 (Ground)  
 Pin 6 (Control Line between Units)  
 Pin 7 (Internal Connection)  
 Pin 8 (Internal Connection)  
 Pin 9 (No Connection)

### 25 PIN CONNECTIONS

If connecting to a 25 pin serial port on the computer, we suggest using a 9 to 25 pin serial adapter. The pin outs on a 25 pin serial port are not the same as a 9 pin port. When the serial port is configured to “No Flow Control”, only **Transmit, Receive, and Ground** connections are required. **Request to Send** and **Clear to Send** connections will need to be connected only if other serial flow control types are selected.

#### Computer DB25/M Serial Port

Pin 2 (Transmit)  
 Pin 3 (Receive )  
 Pin 4 (Request to Send)  
 Pin 5 (Clear to Send)  
 Pin 7 (Ground)



#### Monitoring Unit DB9/F

Pin 2 (Transmit)  
 Pin 3 (Receive)  
 Pin 7 (Internal Connection)  
 Pin 8 (Internal Connection)  
 Pin 5 (Ground)

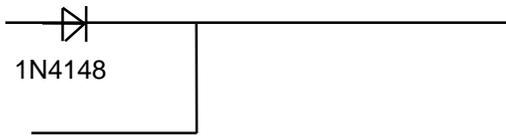
### APPLICATION NOTES

Pin 6 is connected only between multiple Whozz Calling? units and acts as a control line. When units are not transmitting data this line resides at -9 VDC. Upon transmit, the unit pulls this line to +9 VDC. Other Whozz Calling? units connected will detect this as a busy condition and will not transmit until the line returns to -9 VDC.

If your application program is designed to perform software controlled real time call blocking/passing it is important that the Pin 6 control line is at the very least, monitored for the busy condition. Since units cannot transmit and receive data at the same time, any commands that are issued by the software must be sent while units are not transmitting. The best solution is to monitor the control line on Pin 4 and pull it high with Pin 6 when your software is transmitting. This method will assure that commands sent to units will get through. This line should be pulled high by your serial port through a standard 1N4148 diode as diagrammed below.

#### Computer 9 Pin Serial Port

Pin 6 (Data Set Ready)  
 Pin 4 (Data Terminal Ready)



#### CallerID.com Female DB9

Pin 6 (Control Line)

## Appendix D - Requirements and Compatibility

### COMPUTER REQUIREMENTS

The unit must be connected to a dedicated serial port (either 9 or 25 pin) on your computer that is free of COM port and Interrupt (IRQ) conflicts. It is not required that the serial port reside on any particular COM number or IRQ value. This is important only to application software that you may be running in conjunction with the unit. The requirements for computer CPU speed, disk drive space, memory, and operating system are determined by the software application you are running.

### PHONE LINE COMPATIBILITY

The unit should be connected to the telephone lines coming into your building commonly know as the Central Office or “CO” lines. These lines are otherwise referred to as flat rate, local loop, or 1FB lines. The unit can also operate on analog Centrex™ lines. In order to operate the unit on trunk lines (otherwise know as “ground start” lines) you will have to contact CallerID.com to swap your unit for a current detection model. The unit will not work connected directly to digital Centrex™, T1, or ISDN lines. If you have an ISDN interface hardware that has analog telephone outputs, outbound monitoring is possible but only with a current detection unit. Also, with a current detection unit you can monitor outbound calls if the unit is placed on analog extensions from a telephone switch. See Table 1 for telephone line type compatibility.

**Table 1 - Phone Line Compatibility**

Depending on the type of phone line, the unit may be compatible with Caller ID and outbound call monitoring, or just outbound call monitoring only. The unit senses On/Off Hook by detecting the telephone line voltage levels. If the voltage levels are not in standard local loop ranges, the unit can be replaced with a current detection model by CallerID.com to detect On/Off Hook by means of current flow through the device

	Caller ID Capture	Outbound Calls	On/Off Hook Detect
Standard Local Loop (1FB)	Yes	Yes	Voltage or Current
Analog Centrex	Yes	Yes	Voltage or Current
Ground Start (Trunk)	Yes	Yes	Current Only
ISDN Interface w/ Analog Ports	Yes, if interface generates <u>analog</u> Caller ID	Yes, through analog ports only	Current Only
Switch Analog Extensions	No	Yes	Current Only
Switch Digital Extensions	Not Compatible	Not Compatible	Not Compatible
ISDN, T1*, Digital Centrex	Not Compatible*	Not Compatible*	Not Compatible*

**\* Note: T1 circuits terminated with external routers capable of separating and combining Voice and Data are, in fact, compatible with Whozz Calling? units. These routers supply standard analog 1FB lines to the phone system.**

In order to capture Caller ID, an analog Caller ID signal must be present on the phone line. This signal can be sent directly from the phone company or certain types of ISDN interface units can regenerate digital Caller ID data as analog Caller ID signals to its analog ports. Analog Caller ID will not pass through telephone switches to extension lines. Even Caller ID compatible telephone switches do not pass or regenerate analog Caller ID signals to extensions lines. Units will not operate if directly connected to digital phone lines.

## Appendix E - Using Hyperterminal In Windows to Monitor Unit

### RUNNING HYPERTERMINAL

1. Make sure that any software program that runs in conjunction with “Whozz Calling?” is closed.
2. Select “Start”, then “Accessories”, then “Communications”, then “**Hyperterminal**”.
3. Double Click on “**Hypertrm.exe**”.
4. In the Connection Description dialog box Type: “**Test**” on the Name line and Select: **OK**
5. In the Phone Number dialog box leave phone number blank and Select: Connect using Direct to COMx. Where “x” represents the COM port number being tested (ex. 1,2,3, etc.). Select: **OK**
6. In the Properties dialog box Select Bits per second: 9600, Data bits: 8, Parity: None, Stop bits: 1, and Flow Control: None. Then Select: **OK**
7. Select: **File/Properties**. In the Test Properties dialog box select the **Settings** tab and set Emulation to **ANSI**.
8. Type capital “V”.
  - a) If a string is returned similar to: “V7.5 ECXUDASOBKT L=01 00/00 00:00:42”, the serial port is functioning properly and the unit will display information through Hyperterminal.
  - b) If you do not see a similar string, Select: **Call/Disconnect**. Select **File/Properties**, choose another COM port and click **OK**.
  - c) Select: **Call/Connect** and type capital “V” again. Repeat above as necessary until the above string appears.
9. If you obtain a positive result, skip to the section entitled “Capturing Data in a Terminal Program to a Text File.” If not, go to the section entitled “Loopback Test for a Serial Port in Windows” to test if your serial port is transmitting and receiving properly.

### LOOPBACK TEST FOR A SERIAL PORT CONNECTION IN WINDOWS

1. Make sure that any software program that runs in conjunction with “Whozz Calling?” is closed.
2. Select “Start”, then “Accessories”, then “Communications”, then “**Hyperterminal**”.
3. Double Click on “**Hypertrm.exe**”.
4. In the Connection Description dialog box Type: “**Test**” on the Name line and Select: **OK**
5. In the Phone Number dialog box leave phone number blank and Select: Connect using Direct to COMx. Where “x” represents the COM port number being tested (ex. 1,2,3, etc.). Select: **OK**
6. In the Properties dialog box Select Bits per second: 9600, Data bits: 8, Parity: None, Stop bits: 1, and Flow Control: None. Then Select: **OK**
7. Select: **File/Properties**. In the Test Properties dialog box select the **Settings** tab and set Emulation to **ANSI**. Select **ASCII Setup** and make sure that Echo typed characters locally box is not checked. Select: **OK** to close and **OK** again to close the Test Properties box.
8. Disconnect the serial cable from the unit, and attach the Loopback Connector to the to the cable (the other end is connected to the serial port on the PC).
9. Type any character.
  - a) If the character you typed shows on the screen, the serial port is functioning properly, the test is positive.
  - b) If you do not see the character typed, Select: **Call/Disconnect**. Select **File/Properties**, choose another COM port and click **OK**.
  - c) Select: **Call/Connect** and type any character again and repeat above as necessary.

**NOTE:** If a fax/modem board is installed in your computer, the Loopback test performed on this COM port will give a false positive result. You can check to see if the FAX/modem is on the COM port your testing by typing “AT” and pressing the “Enter” key. A FAX/modem will return “OK”.

10. If you obtain a positive result, go to “Loopback Test Successful”. If not, you may have a conflict between your serial port settings and an internal device such as a FAX/modem. Consult your computer technician to resolve the conflict.

## **LOOPBACK TEST SUCCESSFUL**

After a successful Loopback test, reconnect the unit and type a capital “V” (Shift “V”). The unit will respond with the firmware version number, setup toggles, line number of the first channel, and date & time. The unit is now communicating with the serial port. Note the COM port number to which you are directly connected.

Make a test phone call on each of the phone lines. If the phone call data appears on your screen, most likely the phone lines are connected correctly and the unit is working properly.

If you are using application software, exit your terminal program and run your application software again. If phone call data still does not appear in you application software, determine whether the software can be manually configured to the correct COM port. Contact your application software provider if problems still persist.

## **CAPTURING DATA IN A TERMINAL PROGRAM TO A TEXT FILE**

Monitoring the output from the unit in a terminal program does not save data unless you capture it to a text file. If not captured, the data that scrolls off your screen is lost. When you enter your terminal program you must immediately set it to capture data to a file. Since terminal programs can be set to append data to an existing text file, you can capture data to the same file every time you run your terminal program. Below are instructions on how to start capturing data to a text file for three specific terminal programs. If you are using another terminal program refer to its help instructions.

From the terminal screen:

**Windows Hyperterminal** - Select: Transfer/Capture Text, and type text file name

**Procomm Plus for DOS** - Press Alt-F1, type text file name

## **Appendix F - Explanation Of Start Up Sequence And Front Panel Lights**

Once the unit is powered on, it goes through a start up sequence. The power light comes on, the channel lights are individually pulsed, the relays are pulsed, and the firmware version of the channel microprocessors is sent. This process takes approximately 5 seconds and thereafter, the unit is operational and is ready to monitor calls.

The unit is shipped from the factory set to detect On and Off Hook by sensing the telephone line voltage (refer to Appendix B, page 18, for more information). Internal jumpers (shunts) can be set to sense On and Off Hook via current flow through the unit. Channel lights will operate differently for voltage and current detect modes

### **VOLTAGE DETECTION MODE** (Normal Factory Default)

A solid channel light indicates that a live phone line is attached and is On Hook. A channel light that goes out and pulses once every second indicates either an Off Hook condition on that line or a live phone line is not attached

The following discussion assumes a live phone line attached to a channel. When a phone goes Off Hook the channel light goes off and pulses every second. The light will come on during every touch tones dialed. When the phone goes back On Hook the channel light will return to solid on. On inbound calls, the channel light will follow the ring pattern on the line. When the ring signal is present the light will be on. Between rings, the light will go off. Also, when the Caller ID signal is sent between the first and second rings, the light will pulse momentarily

### **CURRENT DETECTION MODE** (When Internal Jumpers are Reconfigured to sense loop current)

Channel lights will remain on except when a live line is attached and is On Hook. When a live line goes Off Hook the channel light will go off and pulse every second. As with the voltage detection mode, the light will come on during every touch-tone dialed. When the phone goes back On Hook the channel light will return to solid on. On inbound calls, the channel light will follow the ring pattern on the line. When the ring signal is present the light will be on. Between rings, the light will go off. Also, when the Caller ID signal is sent between the first and second rings, the light will pulse momentarily

## **Appendix G - Installation Directions**

The Whozz Calling? and Scout monitoring units capture all details of inbound and outbound calls and delivers this information to a computer.

The monitoring unit is designed to collect call data from standard telephone lines (trunk or CO lines) coming into your building. It will not work properly if connected to extensions (or station) lines coming from a telephone switch. Connect the unit only to standard local loop start or analog Centrex™ phone lines. It is not designed for ISDN, T1, DID, Digital Centrex, or Ground Start lines

The unit connects to your computer through a serial port. The serial port must be free of COM Port and IRQ conflicts and dedicated to the monitoring unit. The unit can work with any serial port regardless of the COM number and/or IRQ it is using. Multiple Whozz Calling? units can be connected together (daisy chained) in order to monitor up to 40 telephone lines on one serial port. Whozz Calling? with Memory and Scout unit cannot be daisy chained.

### **OVERVIEW OF CONNECTIONS**

Phone lines are connected to the back of the unit using modular jacks. Input and output ports are provided for wiring systems using either 2 wire connections (RJ11 > 1 phone line per phone cord) or 4 wire connections (RJ14 > 2 phone lines on one phone cord). If the wiring coming into your building does not terminate in modular jacks, contact your telephone vendor to add modular connections.

The supplied six foot, 9 pin serial cable connects the unit to an available serial port on the computer. If the computer has a 25 pin serial port, a 9 to 25 pin adapter can be purchased at any computer or Radio Shack™ store. Additional monitoring units are connected to one another using the same type cable. Please refer to page 13 for more information on connecting multiple units.

### **CONNECTING TO COMPUTER**

You may have purchased a software package designed to work in conjunction with the Whozz Calling? unit. The software may have a built-in automatic search and find function. This routine will search all COM and IRQ numbers in an attempt to determine settings for the serial port with which the unit is connected. If an error message indicates that the software cannot communicate or “find” the unit, you will need to run the Loopback Test to determine if there exists communication port conflicts within your computer. If your software requires a manual selection of the COM and/or IRQ settings, the Loopback Test is also helpful in determining these parameters.

The unit should be connected to the serial port, placed in a convenient location next to the computer, and your software installed. Permanent installation and phone line connections can be made once communications between the software and hardware is established. Plug in the power to the unit and run the software. Phone lines need not be connected at this time. The software will either communicate with the unit connected to the computer or display a message indicating no communication.

If a no communication error is indicated and your software has an automatic search function, it has tried to communicate with the unit using every combination of COM and IRQ numbers. The serial port is probably not configured correctly and chances are the COM port number and/or IRQ number defined for the serial port conflicts with another device such as an internal FAX/ modem. If an auto-search function is not performed within the software, the COM and/or IRQ numbers must be set manually. Enter different combinations of COM and/or IRQ numbers to establish communication. If unsuccessful, use the Loopback Test to help determine whether communication conflicts reside in your computer.

To determine whether a serial port is configured and working properly run HyperTerminal in Windows and Loopback test procedure below.

## RUNNING HYPERTERMINAL

1. Make sure that any software program that runs in conjunction with “Whozz Calling?” is closed.
2. Select “Start”, then “Accessories”, then “Communications”, then “**Hyperterminal**”.
3. Double Click on “**Hypertrm.exe**”.
4. In the Connection Description dialog box Type: “**Test**” on the Name line and Select: **OK**
5. In the Phone Number dialog box leave phone number blank and Select: Connect using Direct to COMx. Where “x” represents the COM port number being tested (ex. 1,2,3, etc.). Select: **OK**
6. In the Properties dialog box Select Bits per second: 9600, Data bits: 8, Parity: None, Stop bits: 1, and Flow Control: None. Then Select: **OK**
7. Select: **File/Properties**. In the Test Properties dialog box select the **Settings** tab and set Emulation to **ANSI**.
8. Type capital “V”.
  - a) If a string is returned similar to: “V7.5 ECXUDASOBKT L=01 00/00 00:00:42”, the serial port is functioning properly and the unit will display information through Hyperterminal.
  - b) If you do not see a similar string, Select: **Call/Disconnect**. Select **File/Properties**, choose another COM port and click **OK**.
  - c) Select: **Call/Connect** and type capital “V” again. Repeat above as necessary until the above string appears.
9. If you obtain a positive result, skip to the section entitled “Capturing Data in a Terminal Program to a Text File.” If not, go to the section entitled “Loopback Test for a Serial Port in Windows” to test if your serial port is transmitting and receiving properly.

## LOOPBACK TEST FOR A SERIAL PORT CONNECTION IN WINDOWS

1. Make sure that any software program that runs in conjunction with “Whozz Calling?” is closed.
2. Select “Start”, then “Accessories”, then “Communications”, then “**Hyperterminal**”.
3. Double Click on “**Hypertrm.exe**”.
4. In the Connection Description dialog box Type: “**Test**” on the Name line and Select: **OK**
5. In the Phone Number dialog box leave phone number blank and Select: Connect using Direct to COMx. Where “x” represents the COM port number being tested (ex. 1,2,3, etc.). Select: **OK**
6. In the Properties dialog box Select Bits per second: 9600, Data bits: 8, Parity: None, Stop bits: 1, and Flow Control: None. Then Select: **OK**
7. Select: **File/Properties**. In the Test Properties dialog box select the **Settings** tab and set Emulation to **ANSI**. Select **ASCII Setup** and make sure that Echo typed characters locally box is not checked. Select: **OK** to close and **OK** again to close the Test Properties box.
8. Disconnect the serial cable from the unit, and attach the Loopback Connector to the to the cable (the other end is connected to the serial port on the PC).
9. Type any character.
  - a) If the character you typed shows on the screen, the serial port is functioning properly, the test is positive.
  - b) If you do not see the character typed, Select: **Call/Disconnect**. Select **File/Properties**, choose another COM port and click **OK**.
  - c) Select: **Call/Connect** and type any character again and repeat above as necessary.

**NOTE:** If a fax/modem board is installed in your computer, the Loopback test performed on this COM port will give a false positive result. You can check to see if the FAX/modem is on the COM port your testing by typing “AT” and pressing the “Enter” key. A FAX/modem will return “OK”.

10. If you obtain a positive result, go to “Loopback Test Successful”. If not, you may have a conflict between your serial port settings and an internal device such as a FAX/modem. Consult your computer technician to resolve the conflict.

## LOOPBACK TEST SUCCESSFUL

After a successful Loopback test, reconnect the unit and type a capital “V” (Shift “V”). The unit will respond with the firmware version number, setup toggles, line number of the first channel, and date & time. The unit is now communicating with the serial port. Note the COM port number to which you are directly connected. Make a test phone call on each of the phone lines. If the phone call data appears on your screen, most likely the phone lines are connected correctly and the unit is working properly.

If you are using application software, exit your terminal program and run your application software again. If phone call data still does not appear in you application software, determine whether the software can be manually configured to the correct COM port. Contact your application software provider if problems still persist.

## CONNECTION TO PHONE LINES

There are two basic methods of connecting the monitoring unit to your phone lines: the series (pass through) connection, or the parallel (branch off) connection. The series connection uses both input and output modular jacks on the unit. The parallel connection uses only the input jacks.

### Series Connection

Connecting the unit in series allows the use of the first ring suppression feature. Since the Caller ID signal is sent on the telephone line between the first and second ring, suppressing the first ring will prevent the call from being answered before the Caller ID data is sent. A series connection allows the user to have the option of suppressing the first ring simply by selecting it in the software.

Figures 2a & 2b show series connections. Each phone line to be monitored passes through the unit. Phone lines coming into the building connect to the input jacks on the unit (through bare wire to modular adapters, if needed). Lines connected to the output jacks continue to the desktop phones (through a phone switch, if present).

### Parallel Connection

A parallel phone line connection is often easier since the incoming lines to the building need only "branched off" to the unit. The unit can monitor the telephone activity simply by being connected to the phone lines of interest. With this connection only the input ports on the unit are used.

Figures 3a & 3b show parallel connections. This involves branching off or "tapping" from each phone line to be monitored and connecting them to their respective input jacks on the unit (through bare wire to modular adapters, if needed). As mentioned above, this method of connection does not provide for first ring suppression capability.

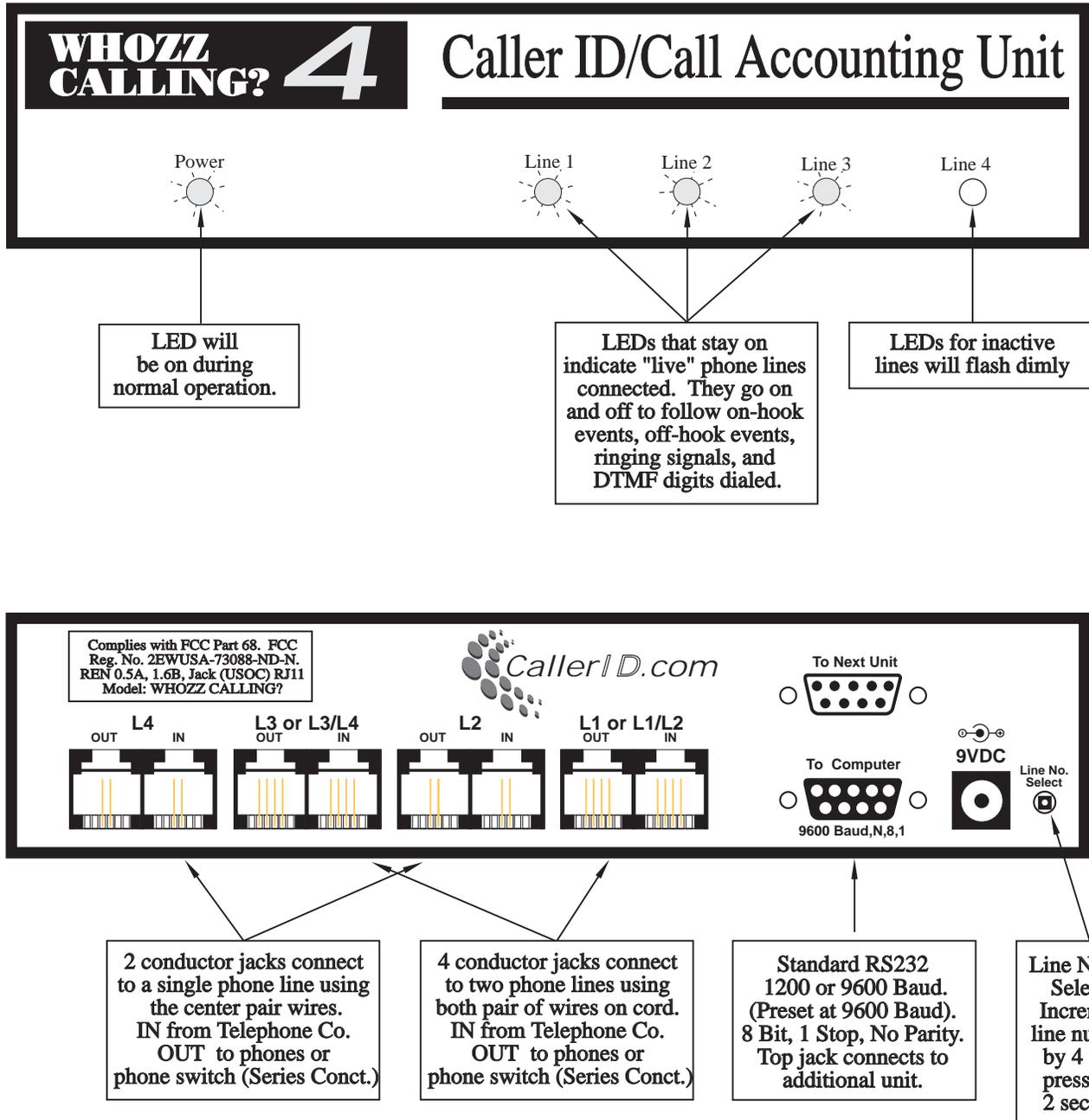
### 2-Wire (RJ11) or 4-Wire (RJ14) Phone Cord Connections.

Most modular phone cords contain 4 wires which can handle two phone lines (2 wires for each line.) Your system may have either 2 of the wires connected (RJ11 - 1 phone line) or four wires connected (RJ14 - 2 phone lines). The modular connectors on the unit are equipped to handle either arrangement. They are marked similar to the modular connectors on a 2 line phone. For example, Channel 1 is marked “L1 or L1/L2”. L1 is for a 2-wire phone cord and L1/L2 is for a 4-wire phone cord. Please refer to Fig. 1.

For a 2-wire (RJ11) system one phone cord simply plugs into each channel on the unit. Caution must be observed when connecting a 4-wire (RJ14) system. Phone cords must only be connected to channels 1 and 3. To prevent crossed telephone lines, do not connect phone cords to channels 2 and 4 on a RJ14 system.

If you are unsure whether your system is 2 wire or 4 wire a quick check can be made using the unit. First, power on the unit. Connect one cord to the input of channel 1. If only the Line 1 light comes on, you have a 2-wire (RJ11) cord. If both Line 1 and Line 2 lights come on, you have a 4-wire (RJ14) cord. Continue checking the rest of your cords in this manor.

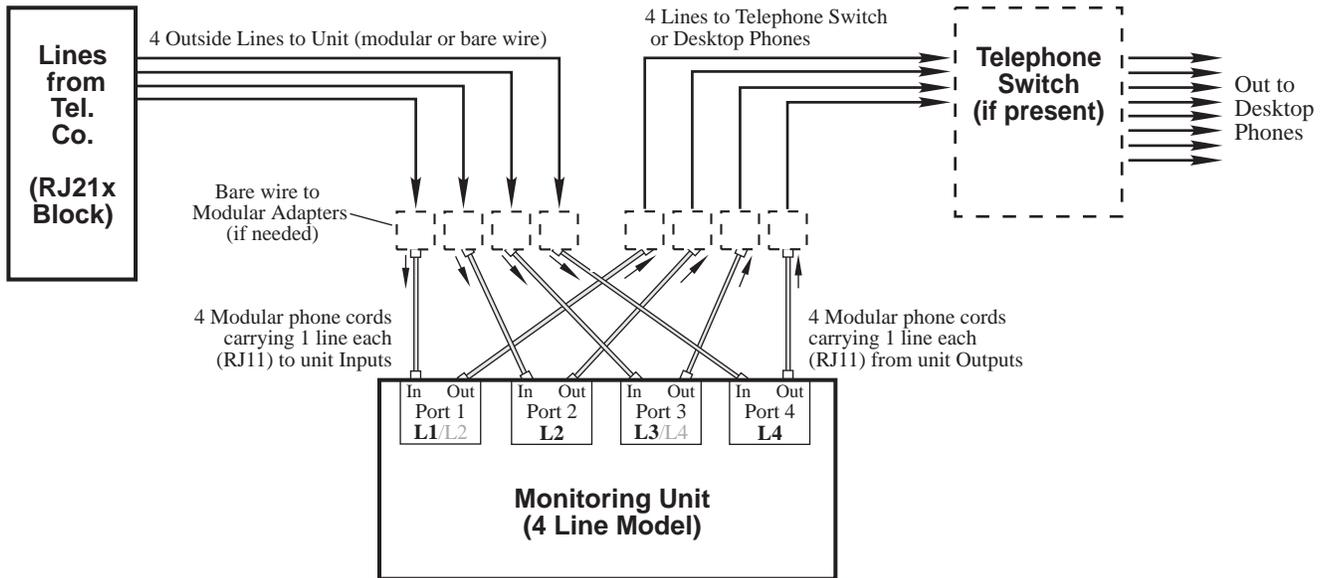
**Fig. G1 Front and Back Views of Whozz Calling? 4 Line Model**



( *Current Detection units must be connected in Series* )

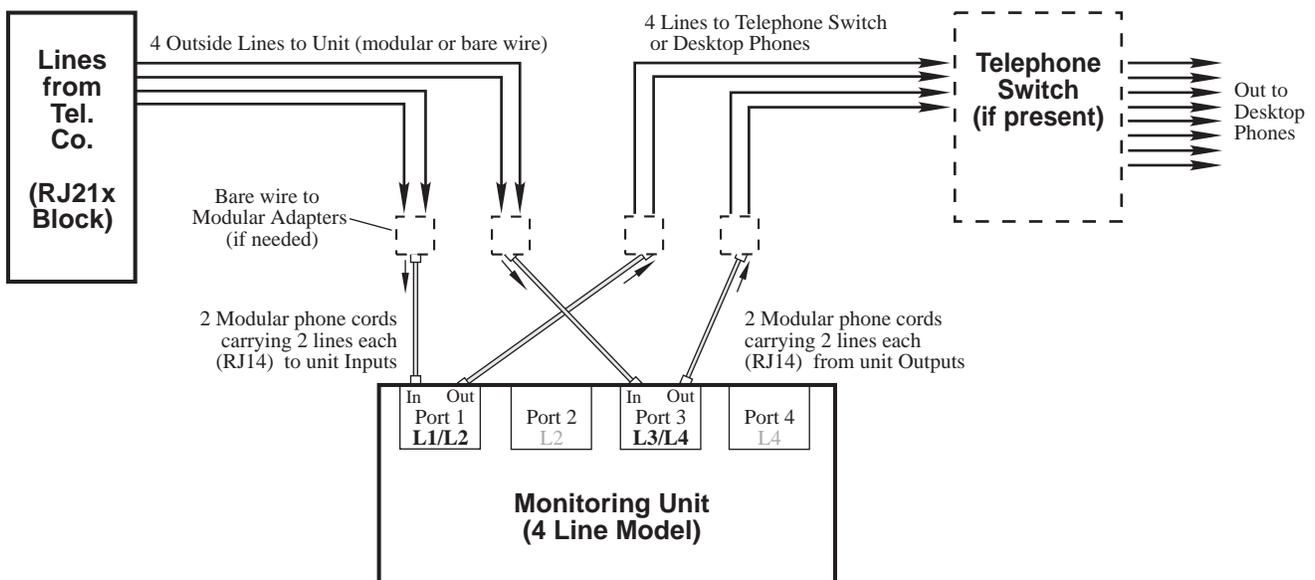
**Fig. G2a Series Connection for 2-Wire (RJ11) system**

Lines coming into the building from the telephone company are connected to the input jacks on the monitoring unit. If these lines do not terminate in modular connectors, solid wire to modular adapters need to be installed. The output lines from the unit go to the desktop phones. If a telephone switch is present, they connect through the switch first.



**Fig. G2b Series Connection for 4-Wire (RJ14) system**

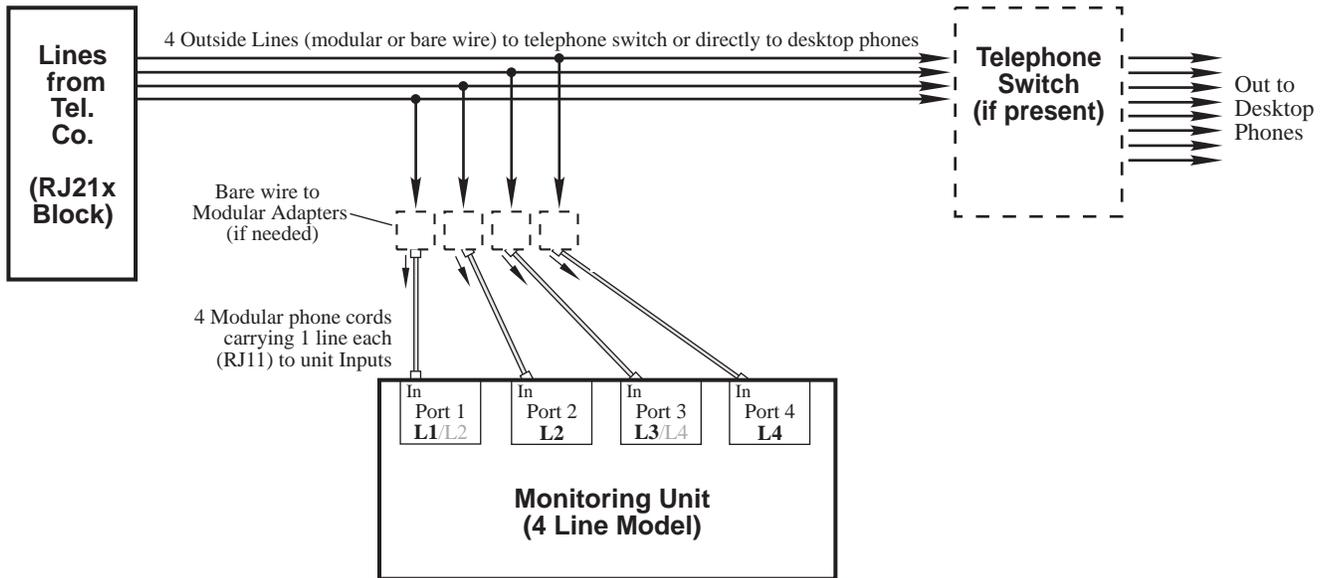
In a 4-wire (RJ14) system each phone cord carries 2 phone lines. Notice only 2 cords are connected to the inputs and of the monitoring unit. These cords are connected to Ports 1 and 3. Ports 2 and 4 are not connected.



( *Current Detection can not be connected in Parallel* )

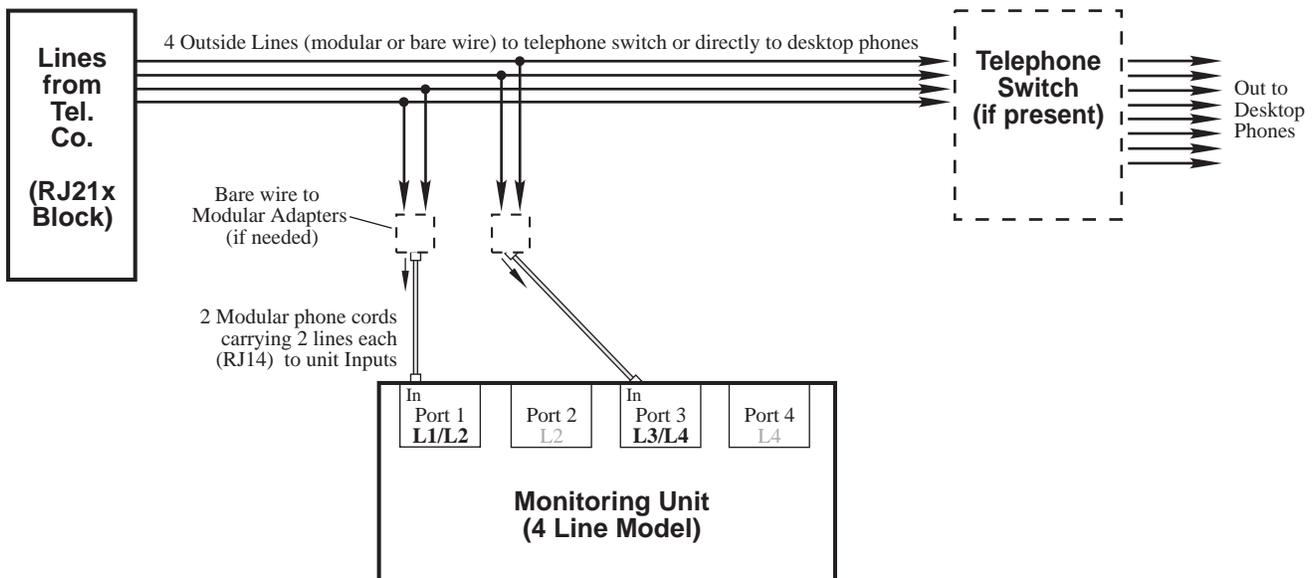
**Fig. G3a Parallel Connection for 2-Wire (RJ11) system**

Lines coming into the building from the telephone company are connected to the telephone switch or directly to desktop phones. These lines are branched (or tapped) so that they can be connected to the input jacks of the monitoring unit. If these lines are not modular, solid wire to modular adapters need to be installed. The output lines on the unit are not connected.



**Fig. G3b Parallel Connection for 4-Wire (RJ14) system**

In a 4-wire (RJ14) system each phone cord carries 2 phone lines. Notice only 2 cords are connected to the monitoring unit inputs. These cords are connected to Ports 1 and 3. Ports 2 and 4 are not connected.



## **MOUNTING HARDWARE**

A one inch wide black plastic mounting bracket is used to attach the unit to a wall or phone board. Remove the two Phillips head screws on the bottom of the enclosure and attach the bracket to the unit with the same screws. Mount on wall using appropriate hardware.

## **DAISY CHAINING MULTIPLE UNITS**

As many as 7 monitoring Caller ID units can be connected together into one serial port. Each unit has a line selector switch located on the rear panel. This switch is used to set up additional units for the appropriate line numbers. Each time the switch is depressed for 2 seconds the line numbers on the unit will increase by four. For example, the switch should be pressed once for the second unit to set it for lines 5 through 8. The switch should be pressed twice on the third unit to set it for lines 9 through 12. Additional unit line numbers can be set accordingly.

The switch will set line numbers up to 49 and then roll over to 1. Loss of power to the unit will not affect line numbers set by the switch. The line number set for channel 1 of each unit can be seen in the HyperTerminal program described above in this section and in Appendix E – "Using Hyperterminal In Windows to Monitor Unit", page 22. Within the main terminal screen, type a capital "V" (for version). The unit will respond with the version of the firmware, unit toggle settings, and the line number of channel 1.

Use the supplied serial cable to connect unit #1 with unit #2. The cable attaches to the unit #1 port marked "To Next Unit" to the unit #2 port marked "To Computer." Unit #2 connects with unit #3 in the same manner.



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