

***WIRES-II***

*Wide-Coverage Internet Repeater Enhancement System*

**WIRES-II**

**REFERENCE MANUAL**

**VERTEX STANDARD CO., LTD.**

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# TABLE OF CONTENTS

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Introduction .....	1
WIRES™ END-USER LICENSE AGREEMENT .....	2
About WIRES-II Operating Modes: SRG and FRG .....	7
Terminology User in the Setup Illustrations .....	8
Resistration with the WIRES™ Server .....	12
WIRES™ System Components .....	12
HRI-100 Interface Box .....	13
System Setup .....	15
WIRES-II Software Installation .....	16
WIRES-II Functional Setting Page .....	18
WIRES-II Main Page .....	19
WIRES-II Property Screen .....	22
SRG GROUP LIST .....	22
FRG GROUP LIST .....	23
CALL OPTION .....	24
General Setting .....	26
HRI-100 SETUP .....	28
WIRES™ Operation .....	30
1. Non-Linked Communication .....	30
2. SRG (“Sister Repeater Group”) Comunication .....	30
3. FRG (“Friends’ Repeater Group”) Communication .....	31
Closing the WIRES-II software .....	32
Customer Support Inquiries .....	33
In Case of Trouble ... ..	34
HRI-100 Interface Box Specifications .....	36
Accessories & Options .....	36

## **INTRODUCTION**

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This manual describes the installation and operation of WIRES-II hardware and software.

WIRES™ (Wide-Coverage Internet Repeater Enhancement System) is a protocol allowing the use of Internet voice technology to link repeaters via networks created and/or hosted in the WIRES™ host server. Access to faraway repeaters is provided by the use of DTMF tones generated by the users' hand-held or mobile Amateur Radio transceivers. Once a link is established, the voice signals are relayed to the appropriate repeater ("node") via the Internet.

Unique features are the "SRG" ("Sister" Repeater Group) configuration, which utilizes peer-to-peer communication in a network of up to ten nodes, and the "FRG" (Friends' Repeater Group) configuration, which provides linking to thousands of WIRES-II nodes throughout the world.

You are encouraged to read this manual thoroughly, so as to facilitate the trouble-free installation of WIRES-II into your repeater system. We hope your communication experience is enhanced by the installation of WIRES-II!

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Any waivers or amendments shall be effective only if made in writing. This Agreement is the complete and exclusive statement of the mutual understanding of the parties and supersedes and cancels all previous written and oral agreements and communications as well as any different or additional terms of any subsequent purchase order, confirmation or similar form relating to the subject matter of this Agreement, unless mutually agreed upon by the parties in writing.

YOU AGREE THAT YOU HAVE NOT RELIED ON ANY PROMISES OR REPRESENTATIONS, NOT EXPRESSLY SET FORTH IN THIS AGREEMENT, TO MAKE THIS AGREEMENT.

## ABOUT WIRES-II OPERATING MODES: SRG AND FRG

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Two basic configurations of WIRES exist in the WIRES-II format: SRG and FRG.

### **SRG**

In the SRG (“Sister Repeater Group”) configuration, you operate within WIRES-II in a small-ten-node (maximum) network that is ideal for closed-group operations (such as that between locations that have a “Sister City” relationship, for example). Within the network, all nodes operate using the same repeater node list, so you can link only to stations within this ten-node network. Because there are only ten nodes maximum, access to any of these nodes is possible using a single DTMF tone when calling. At the beginning of each transmission, this single DTMF tone locks communication between the calling node and the called node, but local (non-linked) transmissions are also possible, simply by omitting the DTMF tone at the beginning of the transmission.

### **FRG**

When operating in the FRG (“Friends’ Repeater Group”) configuration, you may call any repeater registered with the WIRES-II FRG server. In the case of FRG operation, a six-digit DTMF code is required for access, and once the link is established this code need not be sent again (this is called the “LOCK” mode), if the link is within the TOT period, unless the operator wants the ability to make non-linked transmissions (“UNLOCK” mode), in which case the six-digit code must be sent at the beginning of each transmission (using the DTMF Autodial feature of the transceiver, for example). Group calling to pre-set ten-repeater “B,” “C,” and “D” lists is also possible.

## **TERMINOLOGY USER IN THE SETUP ILLUSTRATIONS**

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### **BUSY GROUND (HRI-100 SETUP folder)**

This refers to the polarity of the signal associated with the BUSY terminal of the repeater (“Active Low” or “Active High” options are available).

### **CALL OPTION (Call Option Folder)**

This folder allows setup of the calling techniques to be used during WIRES-II operation.

### **CALL CANCEL**

These are switches which make certain DTMF tones, received from a caller, invalid.

### **CALL CANCEL DELAY TIME (HRI-100 SETUP Folder)**

Until the **CALL CANCEL DELAY TIME** expires at the beginning of a transmission, any DTMF tones associated with the **CALL CANCEL** switch(es) will remain invalid; after this time period expires, the DTMF tones will be allowed to pass.

### **COM Port. No. (General Setting Folder)**

This refers to the selection process for the COM port on the computer, to which the HRI-100 Interface Box is connected.

### **CONNECTION BEEP SELECTION (General Setting Folder)**

When an Internet connection is established, this refers to the feedback sound (computer “WAV” file) that may be selected, confirming (to the calling operator) that the Internet link has been accomplished.

### **CONNECTION BEEP ENABLE/DISABLE (General Setting Folder)**

This enables or disables the Connection Beep described above.

### **FRG GROUP DISPATCH (Call Option Folder)**

This enables or disables the option of simultaneous calling of groups of stations (10 maximum) as established during the setup process in the WIRES-II computer.

### **FRG GROUP LIST (FRG GROUP LIST Folder)**

This folder is used for the setup of Group Dispatch calling lists during FRG operation. Three such FRG Groups, labeled “B,” “C,” and “D,” may be established on the WIRES-II computer being set up, with a maximum of ten stations in each FRG Group.

## TERMINOLOGY USER IN THE SETUP ILLUSTRATIONS

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### **FRG RECEIVE (Call Option Folder)**

This is a switch which enables the acceptance of incoming FRG calls from the WIRESTM server.

### **FRG Transmit (Call Option Folder)**

This is a switch that enables or disables “individual” calling during FRG operation.

### **General Setting Folder**

This is the setup folder used for configuration of a number of overall setting used within WIRES-II.

### **IDLE/NET (WIRES-II Main Screen)**

This indicates the status of the Internet link. While the system is standing by, “IDLE” will be indicated. When a connection to another WIRES-II repeater is established, “NET” will appear in Green.

### **INTERNET PC AF LEVEL (WIRES-II Main Screen)**

This refers to the adjustment of the output level of the audio, from your repeater to the Internet (via the HRI-100 Interface Box).

### **HRI-100 (WIRES-II Main Screen)**

This refers to the status of the connection between the computer and the HRI-100 Interface Box. If an abnormality is detected, this box lights up in Red to alert you to the condition.

### **HRI-100 CONNECTION BEEP LEVEL (HRI-100 SETUP Folder)**

This refers to the adjustment of the audio level of the Connection Beep (“WAV file”) that will be heard from the computer’s speaker.

### **HRI-100 INTERNET AF LEVEL (HRI-100 SETUP Folder)**

This refers to the adjustment of the repeater audio output level from the HRI-100 Interface Box to the computer’s Sound Card.

### **HRI-100 INFORMATION Button (HRI-100 SETUP Folder)**

This button is used to read the configuration data (as memorized per the previous settings of the HRI-100 Interface Box) from the HRI-100 memory.

## **TERMINOLOGY USER IN THE SETUP ILLUSTRATIONS**

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### **HRI-100 ON AIR LEVEL (HRI-100 SETUP Folder)**

This refers to the adjustment of the Internet audio output level from the **HRI-100** to your repeater's auxiliary audio input.

### **HRI-100 SETUP Folder**

This folder is used for the setup and verification of the settings of the **HRI-100** Interface Box, as well as the connection status between the **HRI-100** and your computer.

### **LOCAL/INTERNET (WIRES-II Main Screen)**

When your repeater receives a signal not bearing the DTMF tone(s) required to establish an Internet link, “**LOCAL**” lights up in Green. When an Internet link is established, though, by virtue of the correct DTMF tone(s) being utilized, “**INTERNET**” becomes illuminated in Green.

### **MONITOR LEVEL (WIRES-II Main Screen)**

This refers to the adjustment of the audio level of the Connection Beep (“WAV file”) that will be sent to the repeater, and heard by the calling operator.

### **ON AIR (WIRES-II Main Screen)**

When an incoming call (via the Internet) is received by your **HRI-100** from a distant repeater, this box lights up in Red.

### **ON AIR PC AF LEVEL (WIRES-II Main Screen)**

This refers to the adjustment of the audio output level of the Internet-linked audio from the computer's Sound Card to your repeater's auxiliary audio input.

### **PTT GROUND (HRI-100 SETUP Folder)**

This refers to the polarity of the signal associated with the PTT terminal of the repeater (“Active Low” or “Active High” options are available).

### **PTT PROTOCOL RTP/UDP (General Setting Folder)**

This switch allows changing of the protocol of the PTT command.

### **SRG GROUP LIST (SRG GROUP LIST Folder)**

This is the list of repeaters (ten maximum) which may be configured into a SRG (Sister Repeater Group) network. These repeaters must all be registered identically in the **SRG GROUP LIST** folders of all repeaters in the SRG network.

## **TERMINOLOGY USER IN THE SETUP ILLUSTRATIONS**

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### **SRG CALL LOCK/UNLOCK (Call Option Folder)**

This switch changes the calling protocol, during SRG operation, between the “LOCK” and “UNLOCK” modes.

### **SRG DELAY TIME (General Setting Folder)**

During SRG “UNLOCK” mode operation, this option allows adjustment of the Internet link hold time.

### **TOT (Time-Out Timer) (General Setting Folder)**

This timer allows setting of the time, after the last transmission, that the Internet link will be maintained during FRG operation.

### **TX DELAY TIME (General Setting Folder)**

This refers to the delay time, starting with the beginning of a repeater transmission, after which the “buffer” recording files will be allowed to pass, in the event they are engaged. This prevents the CW ID or other important signals from being cut off, at the beginning of the repeater transmission, by the recorded audio.

### **TX OFF DELAY TIME (General Setting Folder)**

This refers to the adjustment of the delay time, after the cessation of the PTT of the calling station, after which the “TX” command sent via the **HRI-100** will be cut off.

### **VOICE MEMORY (General Setting Folder)**

This switch enables or disables the use of “Voice Memory” in the computer for the purpose of providing a “buffer” for voice storage, in the event of traffic-related delays in sending the transmission.

### **WRITE Button (HRI-100 SETUP Folder)**

This button is used to write the contents of the **HRI-100 SETUP** folder to the memory of the **HRI-100** Interface Box.

## REGISTRATION WITH THE WIRESTM SERVER

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In order for you to use WIRES-II, it is necessary to obtain a Server I.D. number, which is issued by Vertex Standard upon receipt of a signed copy of the “WIRESTM End-User License Agreement” (enclosed). *Please fill out and sign the “WIRESTM End-User License Agreement” completely, leaving no empty boxes, and mail it to Vertex Standard at the address below; a Server I.D. number will promptly be assigned and sent to you return mail.*

### Vertex Standard U.S.A.

Attn: WIRES Customer Support  
10900 Walker Street  
Cypress, CA 90630

Once the Server I.D. number is assigned by Vertex Standard, you may now complete the setup of your WIRES-II system and use the WIRESTM server. Please keep a reference copy of the server I.D. number in a safe place, so you will always have access to it.

Vertex Standard has developed WIRESTM to further the prosperity of the Amateur Service, and to enhance the effectiveness of your repeater system’s performance. It is our intention to maintain support for WIRESTM indefinitely; however, if Vertex Standard management judges, in the future, that technological innovations or regulatory changes warrant, it may be necessary to discontinue management of the WIRES server.

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## WIRES SYSTEM COMPONENTS

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- WIRES-II Kit
- Transceiver (preferably with standard Packet jack)
- Internet Connection (dedicated connection preferred, but LAN may be used with the proviso that resetting may be necessary in the event of long periods of inactivity).
- Personal Computer
  - Intel® MMX 200 MHz (or faster) processor
  - Microsoft® Windows® 98SE or later operating system
  - 30 MB of available hard disk space
  - 64 MB or more RAM
  - CD-ROM (for software installation)
  - 640 x 480 color display recommended, with 256-bit color support on the video card
  - 56 kbps or faster modem
  - 44.1 kHz Sound Card (note that some sound cards may not work properly)

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## HRI-100 INTERFACE BOX

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### Front Panel

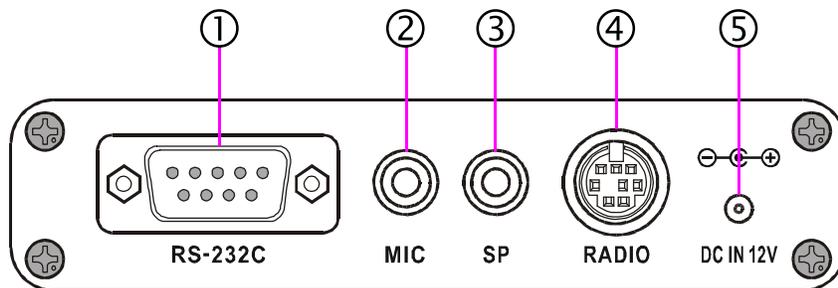


### ① POWER

This green LED indicates when power is applied to the **HRI-100**.

## HRI-100 INTERFACE BOX

### Rear Panel



#### ① RS-232C

This DB-9 connector is for interconnection of the **HRI-100** to the personal computer's COM port. Use a straight serial cable for this connection, not a null-model type.

#### ② MIC

This 3.5 mm jack is used for connection to the Sound Card's MIC line. This jack provides audio output from the HRI-100 to the Sound Card.

#### ③ SP

This 3.5 mm jack is used for connection to the Sound Card's "Speaker" line. It provides audio input from the Internet to the **HRI-100**.

#### ④ RADIO

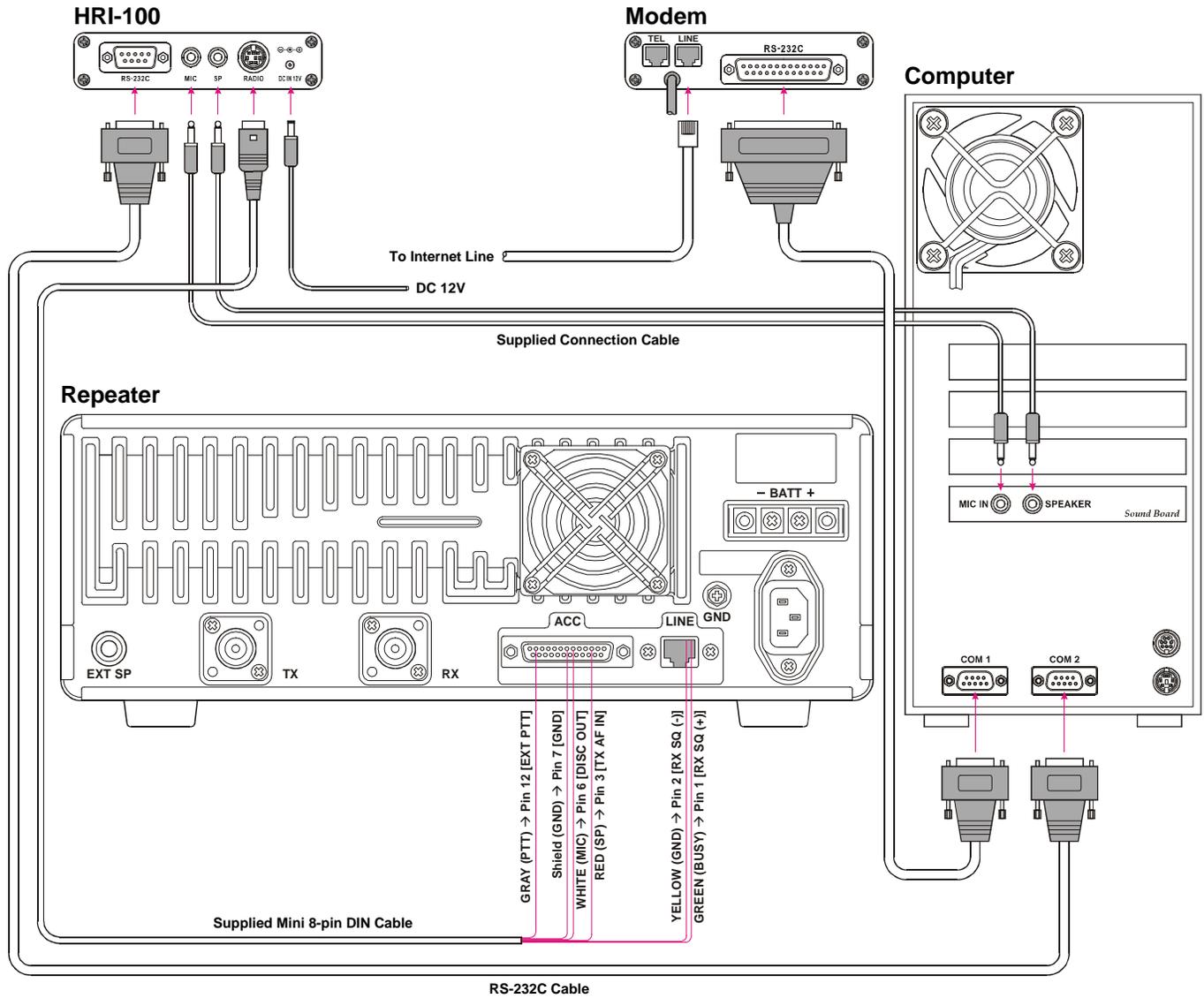
Connect the **PTT/COR** controls and **AUDIO IN/OUT** signals from the repeater to this jack using the supplied control cable.

Pin No.	Function	Cable Color
1	BUSY/COR	GREEN
2	-	-
3	AUDIO OUT	RED
4	-	-
5	GND	YELLOW
6	PTT	GRAY
7	AF INPUT	WHITE
8	-	-
Case	GND	Shield

#### ⑤ DC IN 12 V

This is the **HRI-100**'s power input jack. The **HRI-100** requires a well-regulated source of 12 Volts DC, at up to 500 mA of current. On the connector supplying power to the **HRI-100**, the center pin carries the positive side of the DC circuit.

## SYSTEM SETUP



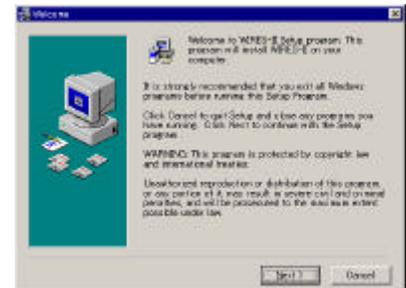
## WIRES-II SOFTWARE INSTALLATION

Before attempting installation of the WIRES-II software, you must obtain a Server I.D. number from Vertex Standard. Without this Server I.D. number, even though you complete the installation steps, the WIRES™ Server will not recognize your node within the system.

Installation of the software of WIRES™ involves the installation of the “WIRES-II” software, contained on the supplied CD-ROM, to the hard disk of PC. Before beginning the installation process, please close all other applications you may have running on your computer.

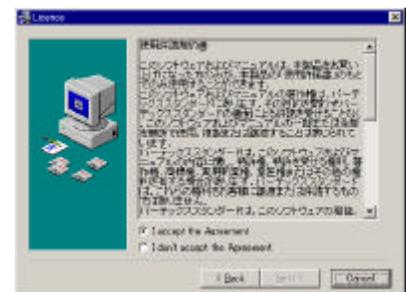
In the descriptions regarding installation and operation, “Click” means to perform a single click using the Left mouse button. Double-click also refers to the left mouse button. Any operations referring to the right mouse button will specifically designate the right button.

1. Insert the supplied CD-ROM “**AP01**” into your computer’s CD-ROM drive.
2. On the computer display’s Desktop, double click on the “My Computer” icon.
3. When the various drives appear in the “My Computer” window, double-click on the “CD-ROM” drive’s icon (usually, this is Drive D).
4. When the CD-ROM window appears, double-click on [**Setup.exe**]; when the opening screen appears, click on [**Next**] to enter the setup process.
5. The “Welcome” window will appear, click on [**Next**].
6. The “License” window will appear, select “I accept the Agreement” if you agree to its Terms and Conditions, then click on [**Next**] to enter the next step. If you do not click on the “I accept the Agreement” option, installation will abort.
7. The next window, “Choose Destination Location,” has three check-box selections to be addressed.



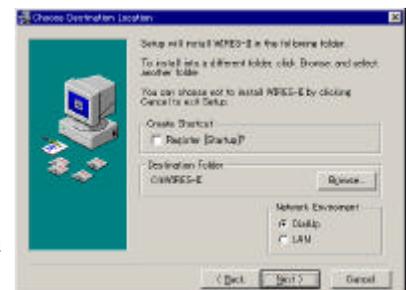
### Autostart

- A screen will appear, with the title “Create Shortcut.” A check-box will be seen, with the title “**Register [Startup]?**” Click in the box. There after, the WIRES-II program starts when the Windows starts automatically.



### Network Environment

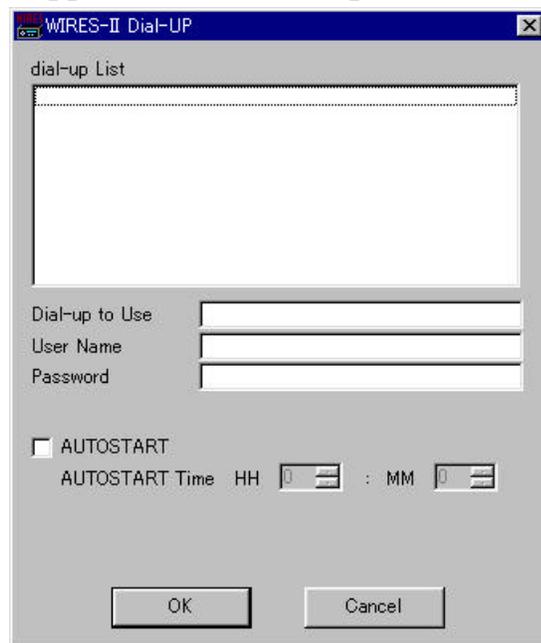
- If using a Dial-up connection for Internet access, click in the “**DialUp**” box; if using a high-speed (permanent) connection (such as DSL, ISDN, etc.), whether or not you are engaged in a LAN environment for everyday operation, click in the “**LAN**” box.
8. When the above three selections have been made, click on [**Next**] at the bottom of the page. The “WIRES-II” program will now install.
  9. On the some computers, it may be required that you “re-boot” the computer. In this case, re-boot the computer into Windows.



## WIRES-II SOFTWARE INSTALLATION

10. When program installation has been completed, one of two windows will appear. If “DialUp” was selected in step (7) above, the [VsDialUP] icon will appear on the Desktop; if “LAN” was selected, the [VsLAN] icon will appear on the Desktop.

11. If you selected “DialUp” during the setup process, double-click on the [VsDialUP] icon to get the “WIRES-II Dial-UP” window. A “dial-up list” will appear; click on the dial-up service you wish to use, if there is more than one, then enter your “User Name” and the Password and e-mail address associated with that dial-up service.



### Program Automatic Start-up Functions

There is an automatic re-connect function within the WIRES-II Dial-up window, which is engaged if you put a check-mark in the [AUTOSTART] check box. If you put a check-mark in the box, the program will automatically start up if the connection has been interrupted or otherwise terminated. The connection will re-connect within five minutes, depending on computer or other traffic considerations.

Then, the connection will be automatically connected to the line again after 1-5 minutes (at random), meaning, the dial-up starts automatically to connect the telephone line, everyday in the same time.

In the case of LAN operation, the Internet connection is always present; clicking on the [VsLAN] icon will start the “WIRES-II” program.

12. Discussions of the various set-up pages will be found on the following pages.

### Important Note

- If using a Router, please be sure to configure the Router correctly. Routers using NAT or Static IP Masquerade may be used. Set the Router’s configuration using both TCP/IP and UDP settings open. In the case of a WAN, it must be a Global IP (a Fixed IP is not required). Consult your Router’s Instruction Manual for further advice.
- Check the Network configuration for your computer. In some instances, an incorrectly-loaded program in this area might cause a Password List (PWL file) not to be referenced properly. Go to “Control Panel,” click on “Network,” then look in the “Primary Network Logon” selection box. While other programs may also work satisfactorily, try to utilize either “Microsoft Family Log-On,” or “Client for Microsoft Networks” if possible. If both programs are loaded into your computer, try “Microsoft Family Log-On” first.
- If you are using a router, please check to be sure that the “40000 - 65534” ports are “open” for the passing of both TCP and UDP traffic.

## WIRES-II FUNCTIONAL SETTING PAGE

This page is where you perform the actual operations for the registry of your node. This registry is necessary in order for you to gain access to the WIRES server. From the WIRES-II Main Page, look on the Tool Bar, click on [**File**], and then click on [**Personal ID**] to get to this page.

**SERIAL No.:** This is the 8-digit alphanumeric serial number of your **HRI-100**.

**ID No.:** This is an Identification Number which is provided from Vertex Standard so as to establish a secure identification of your node. Click on the [**ID Entry**] box to activate the entry process for this field. When you sign on to the server, and all the information matches the records at the server, the

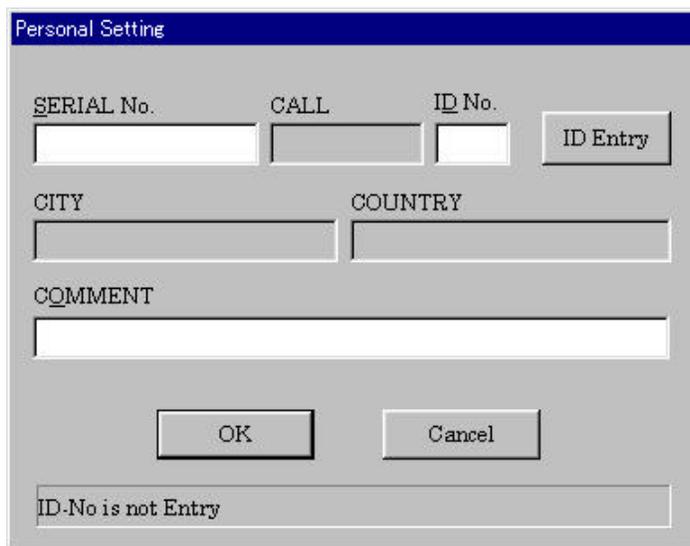
“CALL,” “CITY,” and “COUNTRY” fields will automatically be filled by the server. If these three fields do not automatically appear, then you may have made an error in the input of the ID Number or the Serial Number. Please check your work, and try again.

**CALL:** This field, as mentioned above, will be automatically filled by the server when you sign in, based on correct entry of the ID Number and the Serial Number.

**CITY:** This field, as mentioned above, will be automatically filled by the server when you sign in, based on correct entry of the ID Number and the Serial Number.

**COUNTRY:** This field, as mentioned above, will be automatically filled by the server when you sign in, based on correct entry of the ID Number and the Serial Number.

**COMMENT:** You may enter any note you wish here (for example, the start-up date for the node, etc.).

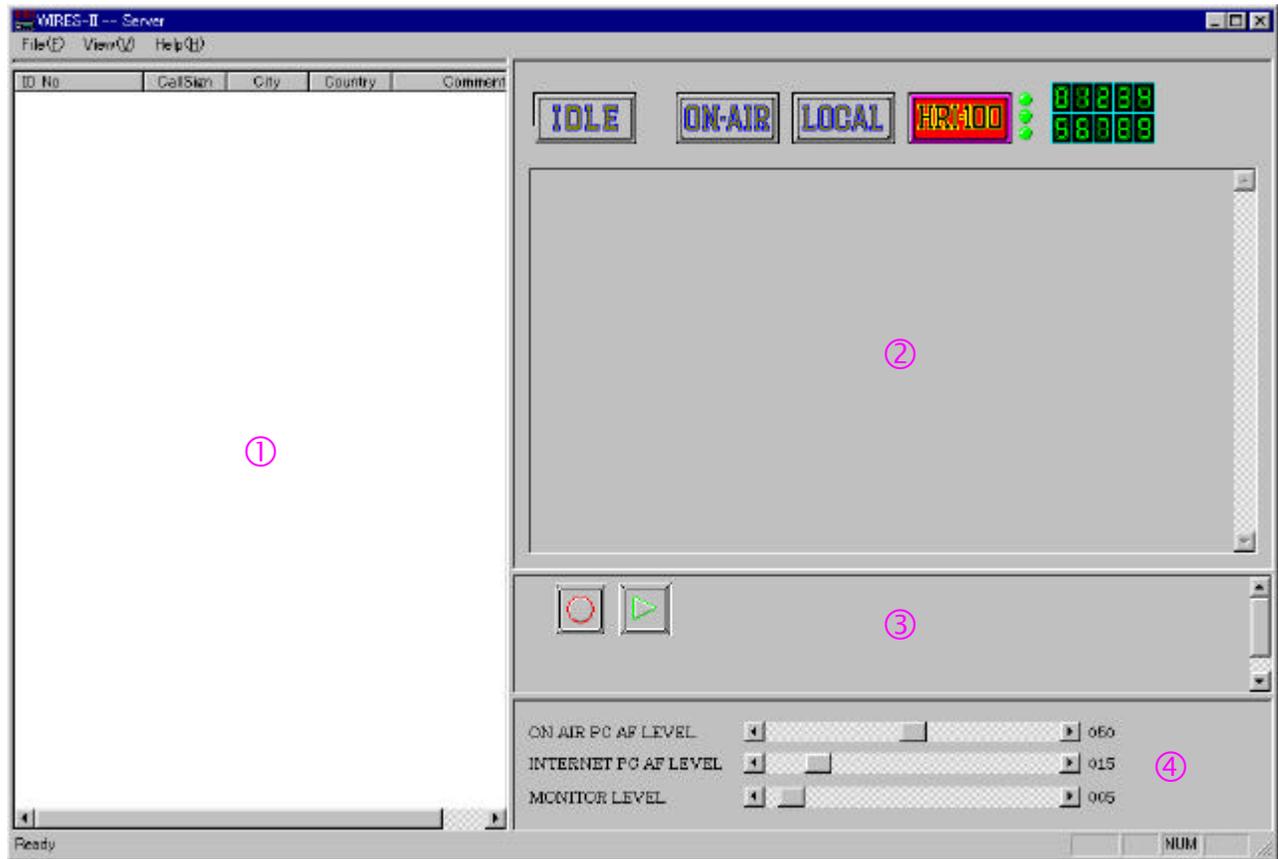


If you select the [**Cancel**] command:

- Click the right mouse button on the [**VsDialUP**] icon () or [**VsLAN**] icon () in the Task bar to open the pop-up menu.
- Click the left mouse button on “Quit” in the pop-up menu. The [**VsDialUP**] icon () or [**VsLAN**] icon () will disappear from the Task bar.
- Click the left mouse button on the close button () in the upper right corner of the WIRES-II main page.

## WIRES-II MAIN PAGE

The Main page of the WIRES-II program consists of four main boxes.



① This block shows the SRG or FRG Groups that have been selected for networking or calling. All active nodes within these groups will be displayed, so you know which nodes are available.

② The block in the upper right-hand area indicates the operational status of the **HRI-100** Interface Box.

### **IDLE/NET:**

When the Internet connection is disengaged, “**IDLE**” is displayed. When the Internet link becomes active, this box changes to a green “**NET**” box.

### **ON AIR:**

When an incoming (linked) call is received from another WIRES-II repeater, this box lights up in Red. Your repeater will go into the “transmit” mode when this occurs, passing the incoming audio to its downlink.

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## WIRES-II MAIN PAGE

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### LOCAL/INTERNET:

When your repeater receives a signal not bearing the DTMF tone(s) required to establish an Internet link, “**LOCAL**” lights up in Green. When an Internet link is established, though, by virtue of the correct DTMF tone(s) being utilized, “**INTERNET**” becomes illuminated in Green.

### HRI-100:

This refers to the status of the connection between the computer and the HRI-100 Interface Box. If an abnormality is detected, this box lights up in Red to alert you to the condition. If this happens:

- Check the connections between the **HRI-100** and the PC;
- Check the COM Port number in the “Property” page under “General Settings” to be sure it is correct.
- Check to be sure power is being supplied to the **HRI-100**.

### ● (3 dots):

● The operational condition of the **HRI-100** is indicated here. During normal operation, these glow green. If an abnormality occurs, these dots will turn red. Try removing power from the **HRI-100**, wait 30 seconds, then plug it back in. If these dots remain red, consult Vertex Standard Service for advice.

### [0] – [9]:

This is the number of the SRG WIRESTM node to which your repeater is connected at the present time.

### LOG:

This is a scrolling log of activity in the Internet link.

- ③ This block, in the center field of the right side, shows the status of the Voice Memory buffer in the computer.
- When WIRES-II is recording into the buffer, because of a “system busy” or other traffic condition, this lights up in red. This allows messages to be transmitted, in full, when the system congestion condition has passed.
  - ▶ When playing back the audio signal that has been recorded, this lights up in green. If a “local” communication were in progress when an incoming WIRESTM message came to your node, WIRESTM will not interrupt the local communication; when the local transmission is completed, the computer will play the incoming message stored in the buffer.

## WIRES-II MAIN PAGE

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- ④ This block shows the relative levels for the audio passed via the Sound Card.

**ON AIR PC AF LEVEL:**

This is the audio output level from the Speaker jack of the Sound Card (to the **HRI-100**). Default setting: 50.

**INTERNET PC AF LEVEL:**

This is the audio output from your repeater, that will be routed, via the **HRI-100**, to the Internet link. The default value is 15, and excessive advancement of this control may cause distortion on the audio passed to the Internet link. If, on the other hand, you do not get enough output to sustain an adequate audio level, you may wish to check the “Microphone Boost” check box.

**MONITOR LEVEL:**

This is the level of the “Wav” files to the repeater. If a user attempts to make a call, and some condition (e.g. the called repeater is busy), a “Wav” file will announce the situation to the calling user. The default setting of 5 generally works satisfactorily; this level setting affects the **ON AIR PC AF LEVEL** setting, so if you change the **MONITOR LEVEL** setting you may need to re-adjust the **MONITOR LEVEL** setting once more.

## WIRES-II PROPERTY SCREEN

This screen covers a wide variety of operation settings for your WIRESTM node. From the WIRES-II Main screen, click on [File], then click on [Property] to get to the screen shown below. The individual folders of the Property screen will be discussed below.

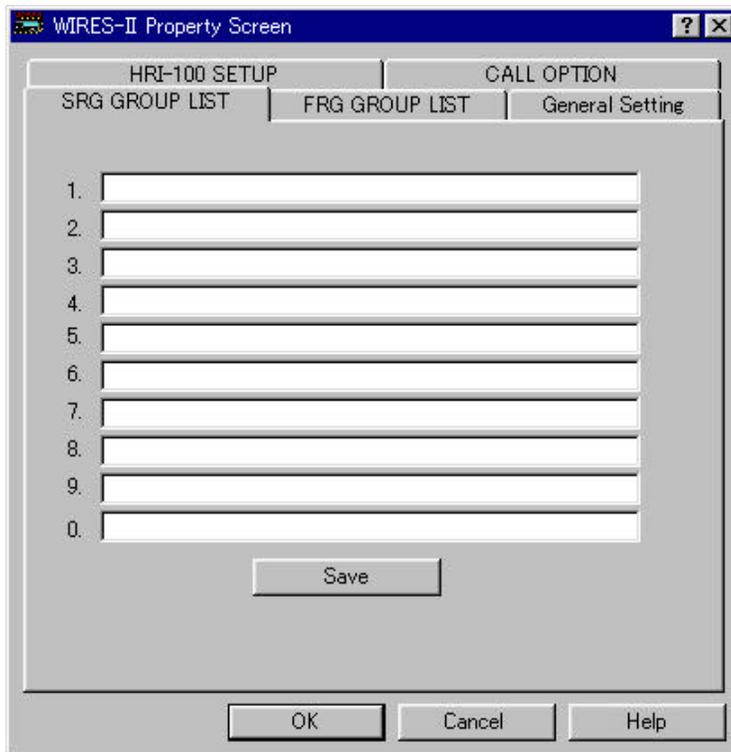
### SRG GROUP LIST

This is the calling list for the Sister Repeater Group (SRG) that is your main network within WIRES-II. The nodes listed in the **SRG GROUP LIST** are accessed by a single DTMF digit (corresponding to their position on the list), *and each member of the SRG Group (network) of ten (maximum) nodes must configure their SRG Call PC List identically, in order for the network to function correctly.*

For example, let us say that your repeater bears an ID Number of “12345” and you are forming a mini-network with another repeater with an ID Number of “67890.” By prior agreement with that other repeater, you might enter “12345” onto line 1; this will designate your node as Node “1” on your SRG Group, and by entering “67890” onto line 2, the other repeater will be designated as Node “2” on your SRG Group. Then, during operation, a user on your node would send the “2” DTMF tone to make a call to the other node (Node 2), and a user on Node 2 would send the “1” DTMF tone to call your node (Node 1).

In a group with more than two nodes, sending the “A” DTMF tone at the beginning of the transmission causes all nodes within the SRG Group to be called; this should only be done in an emergency, so as to minimize disruption to the other repeaters.

When the **SRG GROUP LIST** entry is complete, click on the [Save] box to save your work.



The screenshot shows the 'WIRES-II Property Screen' window. It has a title bar with a question mark and a close button. The main area is divided into two sections: 'HRI-100 SETUP' and 'CALL OPTION'. Under 'HRI-100 SETUP', there are three tabs: 'SRG GROUP LIST' (selected), 'FRG GROUP LIST', and 'General Setting'. The 'SRG GROUP LIST' section contains a list of ten numbered lines (1 through 10), each with an empty text input field. Below the list is a 'Save' button. At the bottom of the window are three buttons: 'OK', 'Cancel', and 'Help'.

## WIRES-II PROPERTY SCREEN

### FRG GROUP LIST

The **FRG GROUP LIST** consists of three ten-node lists of repeater ID numbers, obtained from the main WIRESTM server at “[www.standard-comm.co.jp/wires/e/index.html/](http://www.standard-comm.co.jp/wires/e/index.html/),” although these lists differ significantly from the function served by the SRG list. In the case of the “B,” “C,” and “D” lists, these are strictly “Group Call” lists, the repeaters on which will be called simultaneously if the [B], [C], or [D] DTMF tone is sent at the beginning of the transmission by a user. Just as with the SRG Group, such group calls should not be performed in the course of everyday operation, as all repeaters will simultaneously be tied up. During emergency communications, however, there may be a need to communicate with a wide number of stations on different repeaters, so the group calling feature could be extremely valuable in such cases.

Enter the ID Numbers for the desired nodes into the boxes provided on the various lists, and click on the [Save] box when done; click on [OK] to exit. These ID numbers need not correspond to any list on any other node, by the way; these lists strictly pertain to your node for group calling purposes.

If the “**FRG GROUP DISPATCH**” function of the “**CALL OPTION**” folder is checked (enabling the function), all members in the above-described lists will then be available by just pressing the “B,” “C,” or “D” key at the beginning of the transmission. Please see the details on page 21.

The screenshot shows a window titled "WIRES-II Property Screen" with a blue title bar. The window is divided into two main sections: "HRI-100 SETUP" and "CALL OPTION". Under "HRI-100 SETUP", there are three sub-sections: "SRG GROUP LIST", "FRG GROUP LIST" (which is currently selected), and "General Setting". The "FRG GROUP LIST" section contains three columns labeled "B", "C", and "D". Each column has ten numbered rows (1 through 0) with input boxes for entering ID numbers. Below the input boxes is a "Save" button. At the bottom of the window are three buttons: "OK", "Cancel", and "Help".

## WIRES-II PROPERTY SCREEN

### “CALL OPTION” Folder

This folder is used to set the calling and communication technique to be used during WIRES-II operation, as it applies to your node.

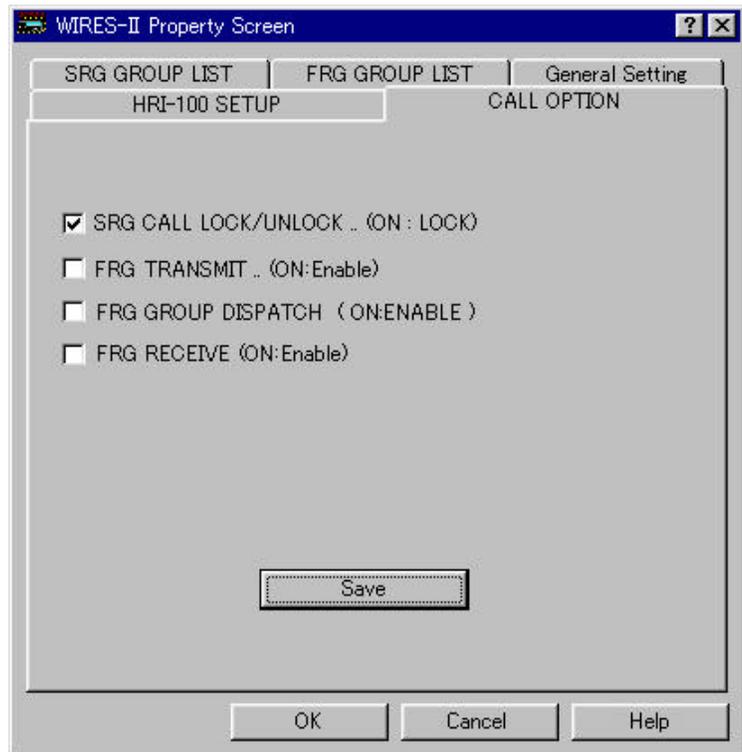
### **SRG LOCK/UNLOCK**

Basically, there are two general modes of operation during SRG use:

**LOCK:** In the “LOCK” mode, the calling command (a single DTMF tone in the case of SRG) need be sent only once, and thereafter the Internet link will be maintained until the cutoff command (**#99999** or **#9999D**) is sent; if no cutoff command is sent, the link will time out based on the configuration of the “TOT” (Time Out Timer) setup on the “**General Setting**” folder. (Note: FRG always operates in the “LOCK” mode).

**UNLOCK:** In the “UNLOCK” mode, the aforementioned single-tone SRG DTMF command must be sent at the beginning of each transmission; if no DTMF tone is sent on the second transmission of a series, in the UNLOCK mode, the link will not be maintained. The UNLOCK mode allows both linked and local communications to be interchanged, “on the fly,” without the need to wait for the Time-Out Timer to bring down the link. Also, when communicating with Node 4 on your SRG list, you can instantly change to a link with Node 3 by just pressing the [3] key on your radio’s DTMF pad; if you were operating in the “LOCK” mode, you first have to drop the link to Node 4, then send the [3] DTMF digit to open the link to Node 3. Or you may quickly jump to a group call by sending the [A] DTMF code, if desired.

Each of the Call Options may be set independently:



## WIRES-II PROPERTY SCREEN

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### **FRG TRANSMIT:**

Click in the box if you wish to be able to make FRG Individual calls. To place a call, you send the “#” key followed by the four digits of the other repeater’s Server I.D. number, then the “D” DTMF tone, or (if the other repeater has a five-digit I.D. number), send the “#” followed by the five numerical digits. Please see page 31.

### **FRG GROUP DISPATCH:**

Click in the box if you wish FRG Group Calls to be possible from your repeater, using the “B,” “C,” or “D,” keys.

### **FRG RECEIVE:**

If a check is placed in this box, you enable the acceptance of calls from any node world-wide in the overall FRG listing on the host server (i.e. all FRG repeaters). If you do not check in this box, your node will only respond to calls from members of your SRG group, as well as any nodes listed in the “B,” “C,” or “D” FRG Call Group lists.

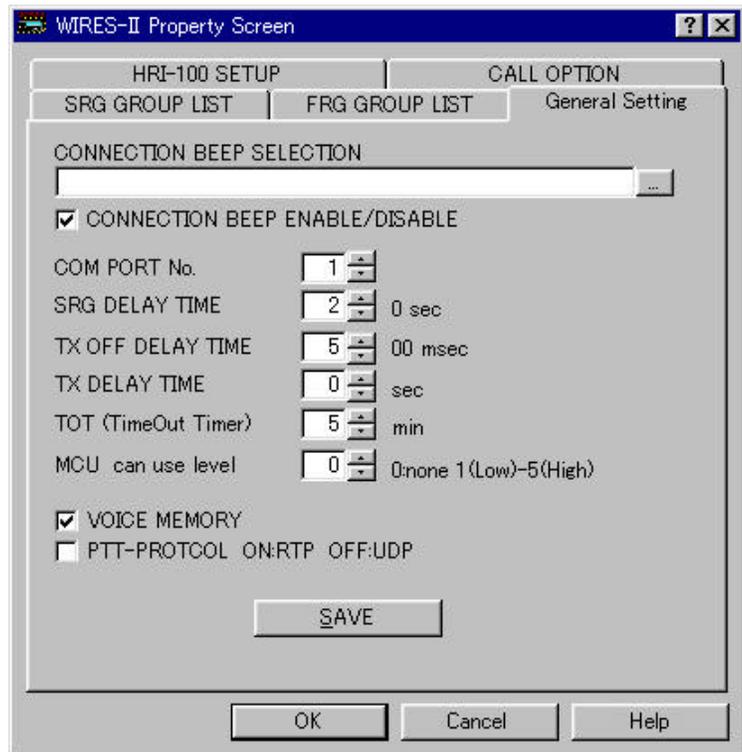
## WIRES-II PROPERTY SCREEN

### “General Setting” Folder

This folder is used for a number of operational settings helpful when using WIRES-II.

#### CONNECTION BEEP SELECTION:

When a successful connection is made via the Internet, you may select to have a “Wav” file provide audible feedback reflecting the establishment of the link. By pressing on the small button at the far right edge of this field, you will open a browsing window that will display the available “Wav” files. Note that the selection of the desired “Wav” file does not activate it; that is done in the next section.



#### CONNECTION BEEP ENABLE/DISABLE:

Once you have made your selection of the desired “Wav” file, click on this box to put a “check” in the box; this signifies that the “Wav” file has been activated. The Connect Sound setup is related to the “**TX DELAY TIME**” setting, discussed below.

#### COM PORT No.:

Set this box to the COM port number corresponding to the port connected to your **HRI-100**.

#### (Unlock Mode) **SRG DELAY TIME:**

During SRG Unlock Mode operation, this command sets the “holding time” within which, after your last transmission, the link will be maintained in the event of a short interruption (for example, if your finger slips off the PTT switch of your transceiver). The setting may be adjusted between 10 seconds and 300 seconds (the default setting is 20 seconds). Once this holding time has expired, the DTMF access command must again be sent in order for the outbound transmission to be linked.

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## WIRES-II PROPERTY SCREEN

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### **TX OFF DELAY TIME:**

Because there is no actual “transmission command” sent via the Internet, there is a need to terminate the outbound transmission as relayed via the repeater and originated from the user’s transceiver. The default setting of 500 milliseconds is ideal for most applications, although setting between 100 ms. and 3 seconds are possible.

### **TX DELAY TIME:**

The incoming message buffer feature prevents a message from being sent only partially, in the event of traffic on the Internet, etc. Because of the possibility that the repeater’s CW ID might be appearing at the head of the transmission, this command sets the delay, from the beginning of the repeater transmission, after which the buffered audio will be played. If you note the amount of time it takes for the CW ID to be sent on your repeater (the ID will cover the audio being played back), and add in the time associated with the “Wav” file you selected in the “**CONNECTION BEEP SELECTION**” section, this value (in seconds) will be satisfactory. The default setting is 0 seconds.

### **TOT** (FRG and SRG LOCK-Mode Time-Out Timer):

This setting affects the maximum link time for FRG operation (and for SRG operation in the LOCK mode). After the interval of Internet-linked time has passed, as set in this field, the Internet connection will drop automatically. The default setting is 5 minutes, and this can be increased to any value up to 60 minutes.

### **VOICE MEMORY** (Check Box):

This box, when checked, enables recording of audio into a buffer. This is highly recommended, as it will store messages for transmission (or playback) in case local traffic prevents the real-time forwarding of audio. During the Non-Linked Communication, the audio from the Internet will not be recorded.

### **PTT-PROTOCOL** (Check Box):

This check box controls the protocol for the “PTT” command. The normal setting for this box is the “not checked” state, which is UDP (“User Datagram Protocol”). If you regularly experience heavy traffic that causes PTT response to be slow, try placing a check here by clicking on the box; this switches to RTP (“Realtime Transport Protocol”). In the RTP mode, however, you may experience signal breakups, in which case the UDP setting (no check in the box) will be better.

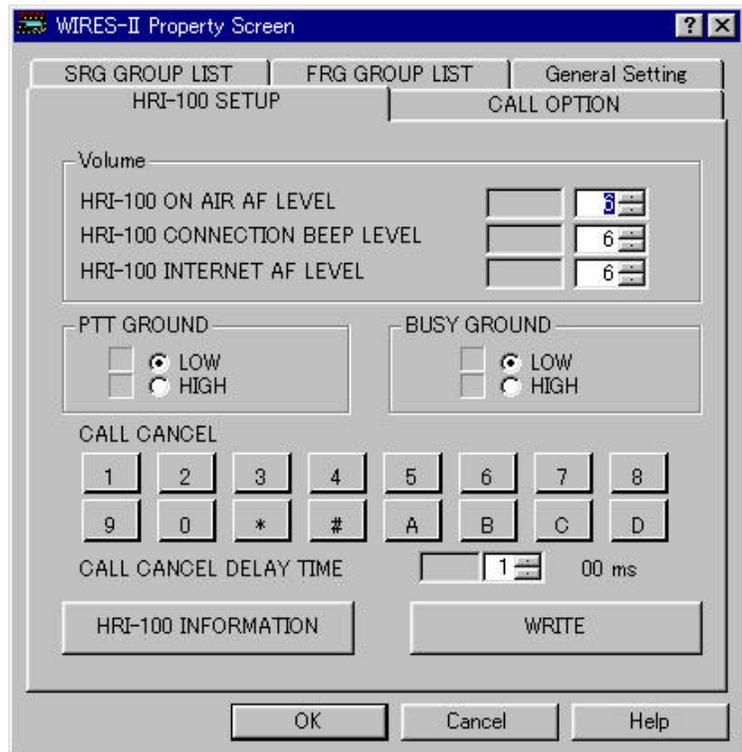
## WIRES-II PROPERTY SCREEN

### “HRI-100 SETUP” Folder

The “**HRI-100 SETUP**” folder is used for setup of levels and other operating conditions between the repeater and the **HRI-100** Interface Box.

#### WRITE Button:

When all settings in the “**HRI-100 SETUP**” folder have been completed, click on this box to write the settings into the **HRI-100** Memory. When some of the DTMF keys have been set so as to be blocked, they will be made a light gray in color, instead of black, indicating their inaccessibility. When the **WRITE** process is completed, “**OK**” keys will be indicated with a “**O**” indication, while inaccessible keys will be indicated by “**X**” instead.



#### **HRI-100 ON AIR AF LEVEL** (Level Setting):

This setting controls the level of the voice volume level from the Interface Box to the repeater. Excessive advancement of this level control will cause distortion and reduced intelligibility, so try the system with the default value (“6”) first.

#### **HRI-100 CONNECTION BEEP LEVEL** (Level Setting):

This setting adjusts the output level of the connection verification sound that is generated in the **CONNECTION BEEP SELECTION** area in the “**General Setting**” folder.

#### **HRI-100 INTERNET AF LEVEL** (Level Setting):

This sets the audio output level from the **HRI-100** Interface Box to the computer’s Sound Card. Once again, excessive advancement of this level control will cause distortion and reduced intelligibility, so try the system with the default value (“6”) first.

#### **PTT GROUND:**

This sets the polarity of the PTT terminal of the repeater (“Active Low” or “Active High” options). If the repeater goes into transmit when the **HRI-100** is first connected, and no signal is present, please modify this setting.

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## WIRES-II PROPERTY SCREEN

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### **BUSY GROUND:**

This sets the polarity of the BUSY terminal of the repeater (“Active Low” or “Active High” options). If the Squelch is properly set (no noise is present, but the “**LOCAL**” box on the “WIRES-II” Main Screen does not become gray (in other words, if it stays green), please modify this setting.

### **CALL CANCEL** Switches ([0] – [9], [A], [B], [C], [D], [\*], [#] Switches):

This setting is used to cause an incoming DTMF tone to be blocked, so as not to interfere with other repeater control purposes.

Within WIRES-II, a DTMF tone or tones are used at the beginning of a transmission. But if a DTMF control signal or tone string is used on the repeater for other purposes, it might disable the Internet connection accidentally. For example, if you click on [A] in this area, a user attempting to make an “All Call” transmission (sending the “A” DTMF tone) would not be able to make that call. Likewise, to lock out calls to repeater number “9” in an SRG group, click on the [9] box in this area. If a string of DTMF digits is involved in repeater control, enter all digits that may cause a problem. See the next section.

### **CALL CANCEL DELAY TIME:**

This sets the delay time, after the transmission of an initial DTMF tone, that will serve as a marker for whether the DTMF tone relates to WIRES-II operation, or, alternatively, repeater control operation. Available values vary from 100 ms (0.1 second) to 1000 ms (one second), and the default value is 100 ms.

For example, if you set the “\*” digit, in the “**CALL CANCEL**” section above, to be blocked, then the following situation occurs:

Let us say that the DTMF string \* 1 2 3 4 is received. If the **CALL CANCEL DELAY TIME** is set to 100 milliseconds:

- After receiving the \* DTMF digit, if the “1” digit is received more than 100 ms. after the \* digit, the \* digit will be blocked, and only the “1” digit will be recognized; if the “2” digit is received 99 ms or less after the “1” digit, the “1” and “2” digits will both be recognized, and so forth.
- After receiving the \* digit, if there is a 99 ms or less delay before the “1” is received, then the entire incoming DTMF string will be blocked.

### **HRI-100 INFORMATION** Button

Click on this button to read the current configuration settings for the “**HRI-100 SETUP**” folder as stored in the **HRI-100** memory. Furthermore, when the **HRI-100 INFORMATION** button is clicked, “OK” DTMF keys (per the “**CALL CANCEL**” discussion above) will be indicated with a “O” indication, while blocked keys will be indicated by “X” instead.

## WIRES™ OPERATION

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When operating in the “Server Mode,” three basic modes of operation are possible:

- (1) Non-Linked Communication;
- (2) SRG Communication; and
- (3) Three different modes of FRG Communication.

### **(1) Non-Linked Communication**

If no DTMF tone is sent to engage an Internet link, normal two-way communication takes place to and from the transceiver, and two and from the repeater, as usual, with no intervention by the **HRI-100** or other WIRES-II component. Only when an SRG paging tone is sent, or “LOCK” mode operation is engaged, will Internet linking result.

### **(2) SRG (“Sister Repeater Group”) Communication**

An SRG group is one where all the parties in the group have registered, as a group, to create a closed network which cannot be accessed from the outside. Calling of another repeater within the SRG group is accomplished by the transmission of a single DTMF digit at the beginning of the transmission. Because of the single-tone calling technique, the maximum size for an SRG network is ten stations.

Individual calling techniques depend on whether the SRG network is configured for “LOCK” or “UNLOCK” mode operation. In the “LOCK” mode, once communication is established by the initial calls bearing the single DTMF digit appropriate for the repeater being called, thereafter no further DTMF tone transmissions are necessary. In the “UNLOCK” mode, the single DTMF digit must appear at the beginning of each transmission, otherwise the link will not be brought up for that transmission. For more details regarding these modes, please see page 24.

For simultaneous calling of all stations on the SRG network, the calling station sends the [A] DTMF tone at the beginning of the transmission. Thereafter, however, a replying station may reply just to the repeater from which the “A” call originated, by sending “#0000D” or “#00000” at the beginning of the reply transmission. Thereafter, a “LOCK” mode within the “FRG” framework is established between the originating repeater and the replying repeater. Thereafter, just pressing PTT will keep the link active, and the connection will time-out as programmed by the repeater owners. Or, the link may be terminated by pressing “#9999D” or “#99999” at the end of the final transmission. This eliminates the need to wait for the connection to time out.

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## WIRES OPERATION

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### (3) FRG (“Friends’ Repeater Group”) Communication

The FRG mode is used to place calls to any repeater registered as an FRG repeater with the Vertex Standard WIRESTM Server.

#### Individual Calling

To call an individual repeater registered as an FRG repeater, a six-digit DTMF string needs to be sent at the beginning of the originating transmission (using the transceiver’s DTMF Auto-Dial feature, if available). When calling the repeater registered as “1234D” for example, send “**#1234D**” DTMF tones to establish a link to that repeater. Thereafter, the “LOCK” mode will be established between the originating repeater and the replying repeater. Therefore, just pressing PTT will keep the link active, and the connection will time-out as programmed by the repeater owners. Or, the link may be terminated by pressing “**#9999D**” or “**#99999**” at the end of the final transmission. This eliminates the need to wait for the connection to time out.

#### Group Calling

If you want to set up your repeater so that users on it can make Group Calls to up to ten other repeaters, you may load those ID numbers into the FRG Group Calling registers during setup. Then, pressing the [B], [C], or [D] DTMF keys will cause a group call to go out, much as if you were sending the [A] key within an SRG group. After the link is established to all these stations, the link will remain active until the Time-Out Timer expires, or until the “**#9999D**” or “**#99999**” command is sent from any station within the called group.

#### FRG/SRG Intercommunication

If you are in communication, from your repeater, with an FRG repeater, you can make an “All Call” transmission to the SRG Group of the other repeater, using the [A] command.

For example, let us say that your repeater’s Server ID Number is 2400D, and you are in contact with a repeater of Server ID Number 3200D (LOCK mode is engaged, of course, by virtue of being in the FRG mode). From the “2400D” repeater, if a user sends the [A] command, all stations in the SRG Group of the “3200D” repeater will be called. If you do not place a check in the **FRG RECEIVE** box in the screen of the **CALL OPTION** Folder, this function will be disabled.

## CLOSING THE WIRES-II SOFTWARE

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To close (disable) the WIRES-II software:

**Important note:** Before closing the WIRES-II software, please conclude all Internet-link operation.

1. Click the right mouse button on the [VsDialUP] icon () or [VsLAN] icon () in the Task bar to open the pop-up menu.
2. Click the left mouse button on “Quit” in the pop-up menu. The [VsDialUP] icon () or [VsLAN] icon () will disappear from the Task bar.
3. Click the left mouse button on the “close” button () in the upper right corner of the WIRES-II main page.
4. To activate the WIRES-II software again, double click the left mouse button on the [VsDialUP] icon or [VsLAN] icon on the Desktop.

## **CUSTOMER SUPPORT INQUIRIES**

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If you have any questions or comments regarding of the WIREST<sup>TM</sup> network in general, please feel free to contact us.

**Vertex Standard U.S.A.**

Attn: WIRES Customer Support

10900 Walker Street

Cypress, CA 90630

Voice: (714) 827-7600

Fax: (714) 527-9031

E-Mail: [wires@vxstdusa.com](mailto:wires@vxstdusa.com)

## IN CASE OF TROUBLE ...

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- ❑ **If You Cannot Connect via LAN (DSL, ISDN, etc.):**
  - Consult your computer manufacturer's Home page.
  - Can you utilize a Router? Routers using NAT or Static IP Masquerade may be used. Set up using both TCP/IP and UDP settings open.  
In the case of a WAN, it must be a Global IP (a Fixed IP is not required). Consult your Router's Instruction Manual for further advice.
  - You can use WIRES-II via a cable TV connection, if a Global IP can be granted by your provider.
  - If you make a paging transmission, but the "IDLE" box does not change to "NET," there may be a problem with password verification. Check the Network configuration for your computer. In some instances, an incorrectly-loaded program in this area might cause a Password List (PWL file) not to be referenced properly. Go to "Control Panel," click on "Network," then look in the "Primary Network Logon" selection box. While other programs may also work satisfactorily, try to utilize either "Microsoft Family Log-On," or "Client for Microsoft Networks" if possible. If both programs are loaded into your computer, try "Microsoft Family Log-On" first.
  - If you are using a router, please check to be sure that the "40000 - 65534" ports are "open" for the passing of both TCP and UDP traffic.
- ❑ **If You Cannot Connect via Dial-up:**
  - It may not be possible to connect with a monaural pin, which occasionally is found with respect to a sound card. Please use a conversion plug so as to emulate a stereo plug.
  - Please check the sampling rate of the sound card, to be sure it corresponds to the 44.1 kHz specification. See your sound card's Instruction Manual for assistance.
- ❑ **If Changes to the Property Screen are not Reflected:**
  - Be sure to click on the [Save] button after making changes; in the **HRI-100 SETUP** folder, click on the [WRITE] button.
- ❑ **If the "HRI-100" Indication on the WIRES-II Main Screen Lights Up in Red:**
  - Has power been applied to the **HRI-100** Interface Box?
  - Is data passing via the Serial Cable? Check connections on both sides.
  - Is the "COM Port No." in the "**General Setting**" folder properly set?  
If not, you will need to change it, and restart the WIRES-II program.
- ❑ **If One or More of the Three Vertical Indicator Dots (WIRES-II Main Screen) Light Up in Red:**
  - Go to the "**HRI-100 SETUP**" folder, and click on the [WRITE] button.

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## IN CASE OF TROUBLE ...

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- ❑ **If the “LOCAL” Indication on the WIRES-II Main Screen is Continuously Illuminated, Regardless of the PTT Condition:**
  - Check to be sure that the Squelch is closed on the repeater or link radio.
  - Is the “**BUSY GROUND**” setting in the **HRI-100 SETUP** folder properly set with respect to the repeater or link radio being used?
  
- ❑ **If the Repeater (or link radio) Continuously Transmitting, Regardless of the PTT Condition:**
  - Is the “**PTT GROUND**” setting in the **HRI-100 SETUP** folder properly set with respect to the repeater or link radio being used?
  
- ❑ **If the DTMF Signal is Not Being Received:**
  - Check to be sure the “ON” switch, in the “**CALL CANCEL**” area of the **HRI-100 SETUP** folder, hasn’t accidentally been activated.
  
- ❑ **During SRG Operation, if you Cannot Connect to Another SRG Node:**
  - Confirm that the other repeater is properly registered into the “**SRG GROUP LIST**” area during setup. All SRG nodes must have the Server ID numbers in the same order (i.e. the DTMF tones must correspond in all SRG nodes).
  
- ❑ **If the End of the Incoming Transmission Cuts Off Frequently:**
  - Please try increasing the value of the “**TX DELAY TIME**” in the “**General Setting**” folder. The initial value is 500 ms.

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## HRI-100 INTERFACE BOX SPECIFICATIONS

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<b>Supply Voltage:</b>	DC 12V $\pm$ 10%, Negative Ground
<b>SP Jack:</b>	500 mVrms @ 600 Ohms
<b>MIC Jack:</b>	500 mVp-p @ 600 Ohms
<b>RADIO Jack:</b>	TX AF IN: 500 mVrms @ 600 Ohms (Adjustable) DISC OUT: 500 mVp-p @ 600 Ohms (Adjustable) PTT: +5 V, negative ground
<b>Case Size (W x H x D):</b>	4.37 x 1 x 5.24 inches (111 x 25.4 x 133 mm) w/o connectors
<b>Weight (Approx.):</b>	10.6 oz (300 g)

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## ACCESSORIES & OPTIONS

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### Supplied Accessories

<b>AP01</b> CD-ROM .....	1
Power Cable .....	1
Connection Cable (RS-232C $\leftrightarrow$ RS-232C) .....	1
Connection Cable (Mini 8-pin DIN) .....	1
Connection Cable (3.5 $\phi$ plug $\leftrightarrow$ 3.5 $\phi$ plug) .....	2
Warrant Card .....	1
WIRES™ END-USER LICENSE AGREEMENT .....	1

### Option

**NC-72B** AC Adapter





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