TELEX

RADIO DISPATCH PRODUCTS

Model IP-2002
Radio Control Console
Technical Manual

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For warranty and service information, refer to www.telex.com/warranty.

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Claims

No liability will be accepted for damages directly or indirectly arising from the use of our materials or from any other causes. Our liability shall be expressly limited to replacement or repair of defective materials.

Warning:

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Do not open the unit. No user serviceable parts are contained within. Bosch cannot be responsible for damage. If the unit is opened, the warranty can be voided.

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CHAPTER 1

Introduction

IP-2002 Two-Line VoIP Radio Console

The IP-2002 is a unique multi-channeled, full-featured, self-contained desktop radio control console. It controls two (2) lines and is an Ethernet Only console. Use the IP-223/IP-224 Adapter Panel to enable a connection between the console and your base station via an Ethernet connection. The IP-223/IP-224 accommodates Ethernet connections for controlling two radios.

The IP-2002 has a **VF** (Vacuum Florescent) Display allowing the user to view the display in all lighting conditions. The display provides a channel alpha/numeric indication, a 12/24-hour clock and an audio-level meter with a modern membrane keypad. These features allow for a flexible dispatch environment in which the console may be installed. It is easy for the console operator to use the console while sitting or standing.

The IP-2002 can use a desk microphone, along with a handset (or headset and Telex Radio Dispatch's HB-3 Plus adapter), as indicated on the side of the IP-2002 console. When a **PTT** (Push-To-Talk) occurs from one of the two microphones, the other microphone mutes to avoid any unnecessary ambient noise during the transmission. When the handset is taken offhook and a line is selected, the receive audio from that line is transferred to the earpiece. The IP-2002 has a front panel microphone that can be used when the handset/headset is onhook.

The IP-2002 uses a **DSP** (Digital Signal Processor), more specifically a TMS320VC5510, to allow easy field programming using a web browser. Unlike other manufacturers' equipment, no additional software is required to configure the IP-2002 console. If you require a special feature enhancement, please contact the Radio Dispatch Sales Department for cost and feasibility.

Features

- Half or Full Duplex Per Line
- Four Alert Tone Cadence
- 2 Line VF Display
- Crossmute Per Line (Ethernet)
- TX Microphone Notch Filter
- Instant Recall Recorder[a]
- Crosspatch
- Paging[a]
- Web Browser Configured[b]
- Radio Scan Control
- Channel Control
- MDC ANI Display (with IP-223/IP-224)
- FleetSync ANI Display (with IP-223/IP-224)
- Clock and VU Meter
- Summed Audio Recorder Output
- Phone Line Control
- FTP Firmware Upgradable
- Call History
- Call List

a. Not available in Software Version 1.0 and earlier.

b. Internet Explorer version 6.0 or later; Firefox version 4.0 or later

Hardware Overview

The IP-2002 is a multi-line, multi-mode console designed specifically for medium-level system requirements. All functions are housed in a single console and consist of the following sub-assemblies:

- Main Processing Board
- Keypad/Display Board

Main Processor PCB

The **Main Processor Board** contains two (2) distinct sections, the Ethernet Circuitry and the Signal Processing circuitry.

Ethernet Circuitry Section

The **Ethernet Circuitry** section consists of an ARM processor[1] (a 32-bit RISC processor) with an Ethernet **MAC**[2] (Media Access Control) Address, connected to the physical **NIC** (Network Interface Card) card and transformer. Around the ARM processor are various peripheral devices, including FLASH (non-volatile memory that can be electrically erased and reprogrammed.) and **SRAM** (Static Random Access Memory*)* that retains its contents as long as power remains applied. This section controls all the Ethernet processing, such as the FTP server, web browser, and packet transfer for the IP-2002.

Signal Processing Circuitry Section

The **Signal Processing Circuitry** section, with DSP, is used to process all audio on the IP-2002. DSP is a microprocessor designed to work with analog signals, such as video or audio, that have been digitally encoded. The DSP also controls all the keypad and device I/O as well as the **LED** (Light-Emitting Diode) and display drivers.

Keypad PCB

The **Keypad PCB** board is interfaced to the main board via a 40-pin **IDC** (Insulation Displacement Connector) ribbon cable. This board contains the circuitry to decode the keypad matrix and interface the DSP to the display.

Display

1. *ARM is the industry's leading provider of 32-bit embedded RISC microprocessors. Due to their power saving features, ARM CPUs are dominant in the mobile electronics market, where low power consumption is a critical design goal.*
2. *The MAC Address uniquely identifies each node of a network and interfaces directly with the network media.*

The **Display** is mounted to the chassis cover with four screws and connected to the keypad PCB with a 14-pin IDC ribbon cable.

Browser Requirements

- Internet Explorer version 6.0 or later
  OR
  Firefox version 4.0 or later

Controls and Indicators

IP-2002 Console Top

The **IP-2002 Console** top, shown in Figure 1, contains the user I/O, which features volume control, intercom and monitor functions, panel PTT with indicator, built-in panel microphone, per line select, release and mute functions, **DTMF** (Dual-Tone Multi-Frequency) keypad, supervisory, scan, menu, and channel buttons used with the F1–F4 Function Tone keys. The IP-2002 is programmed from the top panel using the four gray soft keys located below the console display screen. The display screen provides channel and numeric indications, clock, and audio-level meter.

Common Controls and Indicators

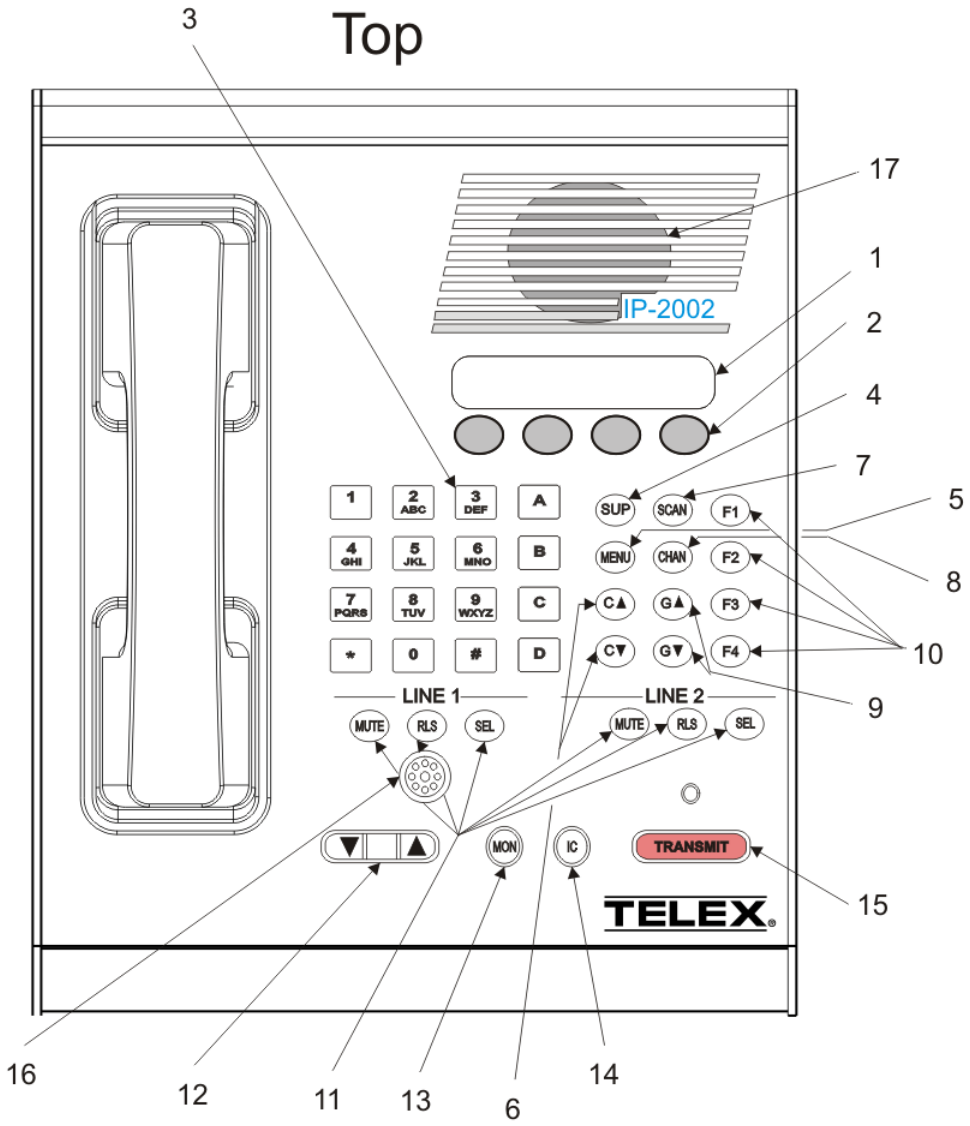


FIGURE 1. IP-2002 Console Top

The numbers in Figure 1 correspond to the numbered list below.

1. **Console Display** - Displays the following items:

   VU Meter - A **VU** (Volume Unit**)** meter is an audio metering device. It is designed to visually display the "loudness" of an audio signal. The meter uses the first 12 top character blocks on the display, beginning on the left.

   Clock - The clock can be configured to display in either 12- or 24-hour notation. For more information see “CLK Menu” on page 28 or “Alternate method: Set Quick Clock Mode” on page 29.

   Line and Function - The line number and the function choice is displayed.

2. **Soft keys (1–4)** - Use the soft keys to “soft” program the console. When different modes are accessed on the IP-2002, these buttons have different functions. The function displays above the corresponding button on the bottom line of the display window.
3. **DTMF Keypad** - Use the 16-key DTMF keypad to transmit DTMF digits, select frequencies, and enter alphanumeric strings for various features.
4. **Supervisor Button** - Use the SUP button, from a single dispatch location, to seize control of a line or group of lines. For more information see “System Setup 1” on page 99.

   NOTE: This is an **IP**-based (Internet Protocol) Supervisor mechanism. No wiring is required.

5. **Menu Button** - Use the Menu button to access the Main Menus (A–D). Each menu contains four possible command setups during the install and program process. For more information see “Softkey Setup Main Menu (A–D)” on page 110.
6. **Channel UP/DOWN Buttons (C▲& C▼)** - Use the C UP and C DOWN buttons to scroll through lists of programmed channels enabled on radio.
7. **Scan Button** - Use the SCAN button, if enabled, to scan radio channels from the console. The scan function does not work while in other modes such as IRR, Paging, etc. For more information see “Scan Button” on page 120.
8. **Channel Button** - Use the CHAN button to change the selected line’s F-tone frequency via the DTMF keypad. The CHAN button is also used to send alert tones using DTMF keys (A–D). For more information see “CHAN Button” on page 118.

   NOTE: The general sequence occurs as follows: CHAN,0,1 = F1, CHAN,0,2 = F2,....CHAN,9,9 = F99.

9. **Group UP/DOWN Buttons (G▲& G▼)** - Use the G UP and G DOWN buttons to change the between standard phone mode and radio phone mode on the selected line.
10. **Function Buttons (F1–F4)** - Use the F1-F4 buttons to change function tones. When a function is selected it lights to indicate the function chosen. The function remains selected until the operator changes the setting to another function tone.
11. **Line 1 & Line 2 Buttons** - Three buttons are available for each line:

    ***SEL** button* - Use the SEL button to put the line in select mode. When a line is selected, the SEL button lights. For more information “SEL (Line 1 or Line 2) Button” on page 115.

    ***REL** button* - Use the REL button to release a line from select mode. A blinking red RLS button indicates there is receive audio activity on the line. A solid red button indicates the TX block is occurring. For more information see “Releasing a Phone Line” on page 121.

    ***MUTE** button* - Use the MUTE button to stop monitoring received audio through the speaker. When the MUTE button light is steady red, the line will mute when audio is received. A blinking red button indicates RX block is occurring. For more information see “MUTE Button” on page 118.

12. **Volume Control (▲ & ▼) Buttons** - Use the volume UP and DOWN buttons to adjust the speaker and handset audio level of the receive input. When adjusting the level up or down, the display window shows the selected level on a relative scale. If the handset is offhook, HSVOL is displayed and the handset volume is adjusted; otherwise SPKR is displayed when the speaker volume is adjusted.

    NOTE:

    - The volume remains at the last setting for each line until it is reset with the volume buttons.
    - A minimum volume level can be set in the web browser configuration so the console operator cannot turn the speaker volume to zero.

13. **Monitor Button** - Use the MON button to send out a packet burst to the selected line. The MON button lights red while the button is pressed. For more information see “MON Button” on page 119.
14. **IC Button** - Use the IC button to transmit audio packets marked as Intercom. (Intercom is not considered a PTT-based audio stream). For more information see “IC Button” on page 119.

    NOTE: To PTT while in IC mode, press the IC button and the TRANSMIT button at the same time while speaking into the microphone or headset.

15. **Transmit Button and LED** - Use the TRANSMIT button to send audio from the console to all selected lines. The TRANSMIT LED lights red when any PTT source is pressed, keying up the console.
16. **Panel Microphone** - Use the panel microphone to talk, as an alternative to the handset. Audio will be transmitted to the selected line(s). Press and hold the TRANSMIT button before speaking.
17. **Speaker** - The speaker plays sidetone and audio from selected and unselected lines.

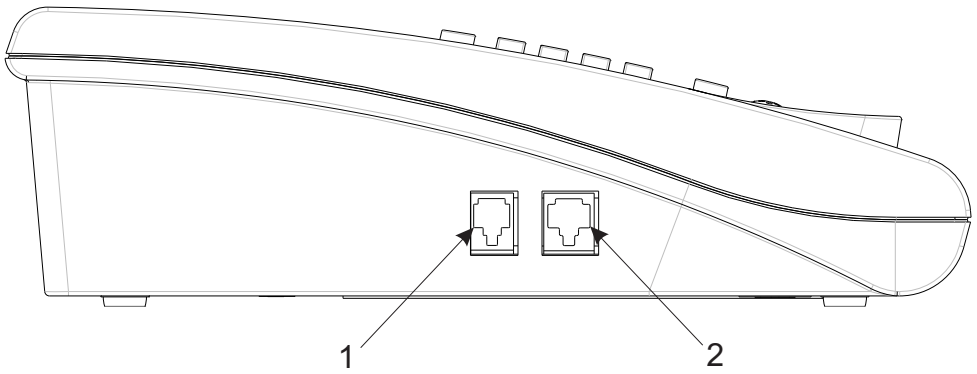
    NOTE: The handset onhook or offhook, affects the audio being played from the speaker.

Side Panel Connections

The IP-2002 **side panel connections** consist of two (2) ports located on the left side of the unit.

1. **Handset Port** - The handset port is used to connect the handset (included) or headset (not included) to the unit.
2. **Desk Mic Port** - The desk mic port is used to connect a desk mic (not included) to the unit.

    NOTE: When PTT is active on either the 4- or 6-wire input, the opposite microphone input is muted.



Back Panel Connections

The IP-2002 **back panel connections,** shown in Figure 2, are used to connect power and peripheral devices. The connections are described in the following section.

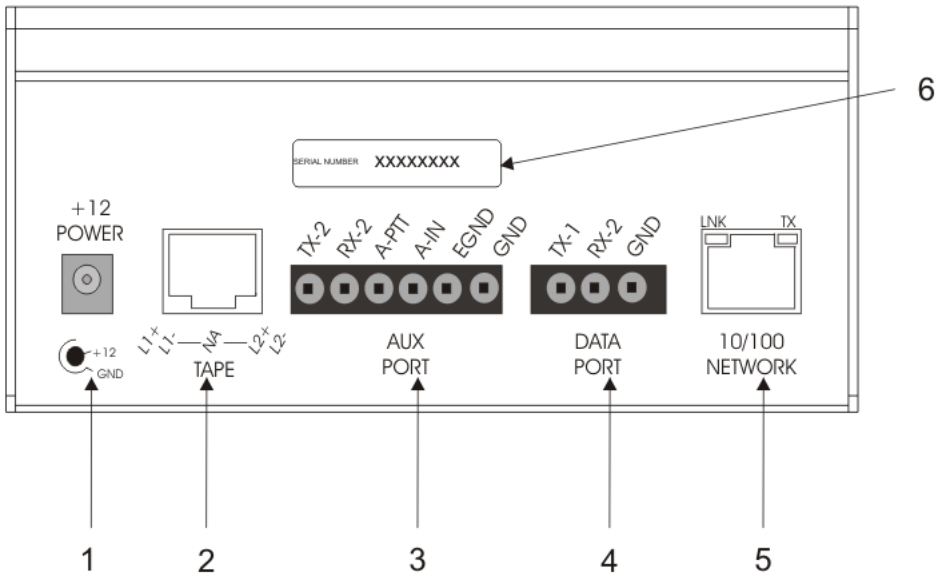


FIGURE 2. IP-2002 Console Back

1. **Power Jack -** The power jack is used to connect the included power supply (2.5mm center positive plug) cord into the unit. The IP-2002 requires +12Vdc to +16Vdc to operate correctly.
2. **Tape Port -** The tape port is used to connect an analog recorder with an RJ-45 connector that has Line 1 and Line 2 tape recorder outputs. Line 1 on pins 1 & 2, Line 2 on pins 7 & 8.
3. **Auxiliary Port -** The auxiliary port takes audio from an external device to transmit over the network.

TX-2 and RX-2 -	Pins 1 and 2 provide the secondary RS-232 port. This feature is currently not supported.
Auxiliary PTT -	Pin 3 provides an alternate or auxiliary PTT input mechanism.
Auxiliary Audio Input -	Pin 4 is an audio input used as the audio source when Aux PTT is pressed.
Earth Ground -	Provides an Earth ground connection. For safety reasons, the use of earth ground is advised.
Digital Ground -	Provides a ground connection for auxiliary PTT.

4. **Data Port -** The data port is used to communicate between the console and computer. For more information on cable requirements, see “J3 3-Pin Cable” on page 32.
5. **10/100 Network (Ethernet) Port -** Standard RJ-45 Ethernet interface. Link and TX LEDs are built into the connector. This is NOT a **PoE** (Power over Ethernet) device.
6. **Serial Number Label -** The IP-2002 Console serial number is printed on this label.

Specifications

Power Requirements:

117VAC, 60Hz, 22W, or 12VDC at 1A maximum

CAUTION: The IP-2002 is *NOT PoE Compatible*. Serious damage may occur to the unit by plugging it into ports supplied by PoE.

Distortion:

3% maximum at full compression

Hum and Noise:

50dB below operating levels

Speaker (One):

3 in., 8 Ohm, heavy-duty

Amplifier Power:

2W maximum at 3%THD into an 8 Ohm load or equivalent

Handset Audio Level:

Adjustable level independent of speaker volume. Range: RX +12dB through -34.5dB, TX +12 through -34.5dB

Audio Frequency Response:

±1.5dB, 300Hz to 3000Hz, except at the transmit tone notch frequency

Microphone Connections:

4-wire Headset and 4-wire Handset:
Pin 1: Microphone In, Pin 2: Ground, Pin 3: PTT, Pin 4: Earpiece Out
6-wire Deskmic:
Pin 1: Ground, Pin 2: Mic in (electric), Pin 3: Ground, Pin 4: PTT, Pin 5: Monitor, Pin 6: +10 VDC

Operating Temperature:

0° to 50° C (32° F to 122° F)

Dimensions:

4” H x 10” D x 8” W (76.2mm H x 254mm D x 203.2mm W)

Weight:

2.94 lb. (1.334 kg)

IP-2002 Terminal Description Tables

TABLE 1. Tape Pin Out

Pin Name	Description
L1+	600 Ohm balances .0dB nominal
L1-	600 Ohm balances .0dB nominal
L2+	600 Ohm balances .0dB nominal
L2-	600 Ohm balances .0dB nominal

TABLE 2. Aux Port Pin Out

Pin Name	Description
TX-2	RS-232 Tx Data output
RX-2	RS-232 Rx Data input
A-PTT	Aux PTT Contact closure to ground
A-IN	Aux Audio Input 0dB nominal
EGND	Earth Ground
GND	Circuit Ground

CHAPTER 2

Communications System Design

System Design

Designing a system with the IP-2002 requires an understanding of the radio network and how the various radios and communication equipment are connected.

The first step in designing a system with the IP-2002 is to create a road map of the radio, console, IP-223/IP-224 and any other communication equipment locations. This road map must include the following:

- Multicast addresses for each channel of **TX** (transmit) and **RX** (receive) communication.
- Port numbers for each channel of TX and RX communication.
- Base IP addresses assigned to each console and IP-223/IP-224 on the network.

Network Requirements

Bandwidth

Each VoIP channel requires 50kBit of bandwidth while active. **Full-duplex** conversation (audio in each direction) requires 100kBit of bandwidth.

NOTE: Most radio voice communications are **half-duplex** (only in one direction at any one time), thus requiring 50kbits.

Some radio systems transmit *go-ahead* beeps when it is clear to talk. In order for the console operator to hear the beeps, the system must support full-duplex communication. Full-duplex bandwidth may only be required for the first few seconds of a conversation, due to the brief nature of the *go-ahead* beeps at the beginning of the transmission.

When using a PIB-223, C-6200, or the NI-223 for a telephone connection, 100kBit is required since it is a constant, full-duplex conversation.

Multicast

In general, Radio Dispatch systems require **multicast** to function. The network must be able to create a static Multicast Address that is accessible at all times.

It is very common for networks to enable multicast after an **IGMP** (Internet Group Management Protocol) join message is sent out, and then prune off branches after a period of time. Due to the intermittent usage patterns of 2-way radio, such a system can appear to work flawlessly for a period of time, then no longer work.

NOTE: When using Cisco technology, **IP PIM dense mode** is generally recommended. Generally speaking, **sparse-dense-mode** can also be implemented effectively. We recommend explicitly joining the multicast group with an **IP IGMP static-join X.X.X.X command**. For more information on Cisco and IGMP, visit www.cisco.com

Internet Group Management Protocol

IGMP (Internet Group Management Protocol) can be used to control where multicast is allowed to propagate. When a console on the subnet is expected to be continually operational, multicast must be active for that subnet at all times.

Network Performance

Networks should perform well under any loading conditions. The default audio delay is 120ms, plus any delay added by the network. While delay alone does not cause issues, variable delay (jitter) does. Jitter in a network cannot exceed the maximum packet buffer of any individual product buffer. Refer to the individual product manuals for these specifications. For example, the IP-2002 can handle approximately 600ms of network jitter.

NOTE: Losing more than 5% of the total packets transmitted compromises audio quality and system performance. Optimally, packet loss should be less than 1%.

CHAPTER 3

Install, Configure, and Update

CAUTION: As with all communication equipment, Earth Ground should be used. Earth ground is a low impedance path to the earth for the purpose of discharging lightening, static, and radiated energy.

Hardware Installation

The back of the IP-2002 provides a power jack and ports for tape, auxiliary, and network connections. The side of the unit provides ports for handset and desk mic connections.

Power Jack

The **Power Jack** is included in the shipment with the IP-2002 console.

To **connect the power jack**, do the following:

1. Insert the **receptacle end** into the back of the unit.
2. Insert the **plug** into an electrical outlet.
   The unit power is on.

CAUTION: Power specifications are: +12Vdc to +16Vdc. Do not operate the unit outside this range.

TAPE Port

The **TAPE** port is provided for analog tape recorder connection.The RJ-45 cable is not included in IP-2002 shipment.

To **connect an analog tape recorder to the unit**, do the following:

> Consult your tape recorder's **manufacturing data** for proper interface instructions and required hardware.

AUX Port

The **AUX** port is used to connect an auxiliary device to the IP-2002 using the 6-pole terminal connector included in the IP-2002 shipment. Consult manufacturer's data for proper interface instructions and hardware requirements.

IMPORTANT: The ground connection on the AUX port must be connected for proper operation. It provides a path for any external noise to be shunted.

DATA Port

The **DATA** port is used to connect to a computer for reprogramming the IP-2002. For more information see, “Alternate method: Change IP Address and Subnet Mask” on page 32.

10/100 NETWORK Port

To **connect to a network computer**, do the following:

1. Insert **one end of an Ethernet cable** into the 10/100 NETWORK port on the back of the console.
2. Insert the **other end of the Ethernet cable** into a router connected to a computer.

   NOTE: Alternatively, a crossover cable may be used to connect the IP-2002 directly to a computer.

IMPORTANT:	The computer and the IP-2002 must be on the same subnet. For information on how to change your computer’s IP Address, contact your system administrator.

CAUTION:	The IP-2002 is NOT PoE Compatible. Serious damage may occur to the unit by plugging it into ports supplied by PoE.

Handset port

The **Handset** is included in the shipment with the IP-2002 console.

To **connect the handset**, do the following.

1. Insert **one end of the handset cord** into the handset.
2. Insert **the other end of the cord** into the handset port on the left side of the IP-2002 console.
   The handset receives and transmits audio when PTT is activated.

Desk mic Port

The **Desk mic** port allows you to connect Telex peripheral devices such as a Gooseneck Desk mic to the IP-2002 console.

To **connect a desk mic device**, do the following:

1. Insert **one end of the desk mic cable** into the desk mic device of your choice.
2. Insert the **other end of the desk mic cable** into the Desk mic port on the left side of the IP-2002 console.
   The device receives and transmits audio when PTT is activated.

   NOTE: When PTT is active on either the 4- or 6-wire input, the opposite microphone input is muted.

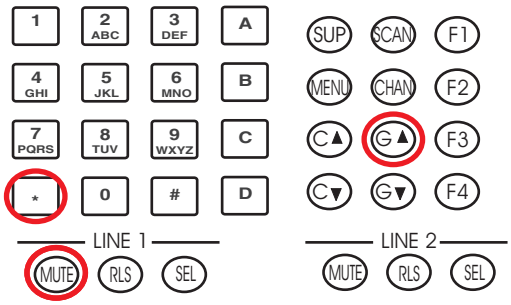
Programming Mode Menu

The **Programming Mode** menu, shown in Figure 3, is accessed directly from the IP-2002 console. If an admin **PIN** (Personal Identification Number) has been set, then it will be required to enter programming mode; otherwise, no PIN is required. Once you are in the Programming Mode menu you can access the programmable menus to change the *clock (CLK), IP Address and Subnet Mask (IP Setup),* and *set a new PIN number (PIN)*.

NOTE: Only the administrator has permission to upload new firmware to the IP-2002.

To **access Programming Mode without a PIN**, do the following:

> O the IP-2002 keypad, press and hold the **G▲** button, Line 1's **MUTE** button, and the ***** button**,** in that order.
> *One of two menus appear on the console display PIN Login screen or Console Programming Mode, see Figure 3.*



PIN Login Menu

The IP-2002 comes with a programmable **PIN Login** menu, shown in Figure 3. Once an admin PIN has been set, it is required to access the Programming Mode menu.

To **login to Programming Mode with a PIN**, do the following:

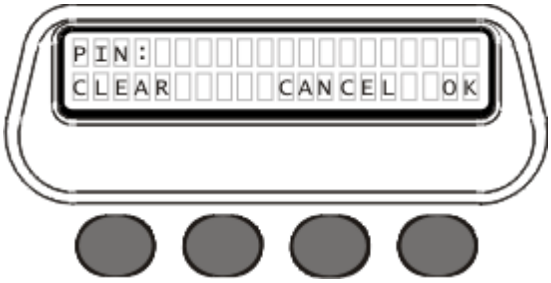
1. On the IP-2002 keypad, press and hold the **G▲** button, Line 1's **MUTE** button, and the ***** button**,** in that order.
   One of two menus appear on the console display: PIN Login screen or Programming Mode, see Figure 3.
2. Using the DTMF keypad, enter the **admin PIN number**.
   Asterisks appear, on the top line, for each character you enter.

   NOTE: To clear the entry, press the **Clear** softkey.

   NOTE: To exit without making changes, press the **Cancel** softkey.
3. Press the **OK** softkey.
   You are in programming mode.

.

PIN Login



Console Programming Mode:

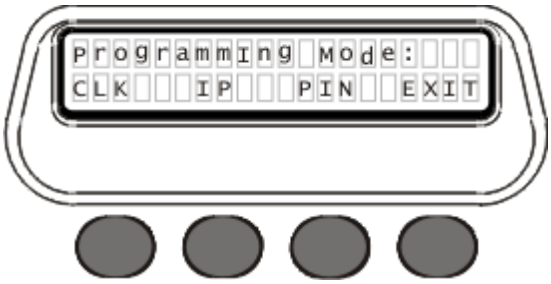


FIGURE 3. PIN Login and Console Programming Mode Menus

Programmable Menus

The **Programmable** menus are used to change the *CLK, IP Setup,* and *PIN* settings.

CLK Menu

The **CLK** menu, shown in Figure 4, is used to set the console clock, see Figure 4.

NOTE: For alternate method of setting the console clock, see “Alternate method: Set Quick Clock Mode” on page 29.

To **set the console clock**, do the following:

1. On the IP-2002 keypad, press and hold the **G▲** button, Line 1’s **MUTE** button, and the ***** button**,** in that order.
   One of two menus appear on the console display: PIN Login or Programming Mode, see Figure 3.
2. Using the DTMF keypad, enter the **admin PIN number**, if one is required.
   Asterisks appear, on the top line, for each character you enter.
3. Press the **OK** softkey.
   The Programming Mode menu appears.
4. Press the **CLK** softkey.
   The clock menu appears. Options Edit, A/P, 12/24, and back appear.
5. Press the **12/24** softkey until *12hr* displays.
   The 12-hour clock mode is selected. In the upper-right corner of the display, 12hr appears.
   OR
   Press the **12/24** softkey until *24hr* displays.
   The 24-hour clock mode is selected. In the upper-right corner of the display, 24hr appears.
6. Press the **A/P** softkey to set the 12-hour clock time to *AM* or *PM*, if 12-hours clock mode is selected.
   The time appears with AM or PM on the right.
7. Press the **Edit** softkey.
   The clock settings appear on the display.
8. Press the **Hours** softkey.
   The Hours menu appears and displays the current setting.
9. Press the **12** softkey.
   The clock resets to 12 hours or 1200 hours depending on selected mode.
10. Press the **dwn** or **up** softkey until correct hours displays.
    The hour setting changes.
11. Press the **back** softkey after setting the hours.
    The edit clock menu appears.
12. Press the **Mins** softkey.
    The minutes menu appears and displays the current settings.

13. Press the **0** softkey.
The clock reset to 0 minutes.
14. Press the **dwn** or **up** softkey until correct minutes displays.
The minutes setting changes.
15. Press the **back** softkey after setting the hours and minutes.
The hour and minutes setting menu appears.
16. Press the **back** softkey.
The edit clock menu appears.
17. Press the **back** softkey.
The Programming Menu appears.
18. Press the **EXIT** softkey.
The console displays, Resetting IP-2002. Changes are saved.

Alternate method: Set Quick Clock Mode

The **Quick Clock Mode** is used to change the console clock without having to log on to the Programming Mode menu.

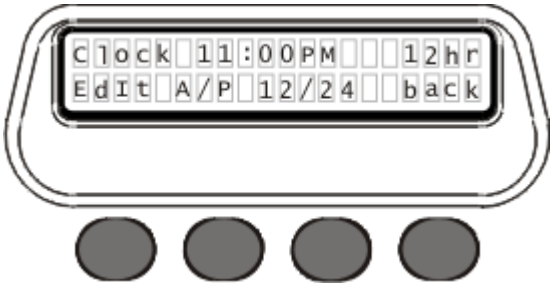


FIGURE 4. Clock Menu

To **set the console clock in quick mode**, do the following:

1. Press and hold **Line 1's MUTE** button, **Softkey 1**, see Figure 3, and the ***** button, in that order.
The clock menu appears on the display, see Figure 4.
2. Follow steps **5–18** in "CLK Menu" on page 28.

IP Setup Menu

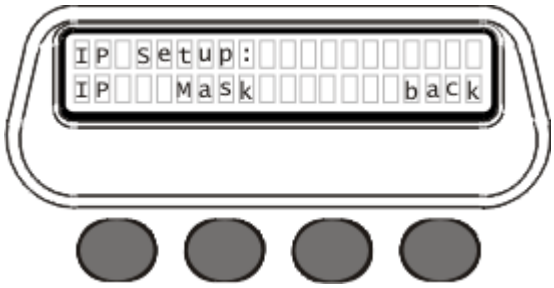
The **IP Setup** menu is used to set both the IP Address and Subnet Mask of the IP-2002 console to allow communication between the console and web browser configuration.

NOTE: For an alternate method to set the IP Address and Subnet Mask with Microsoft® Hyper Terminal, see "Alternate method: Change IP Address and Subnet Mask" on page 32.

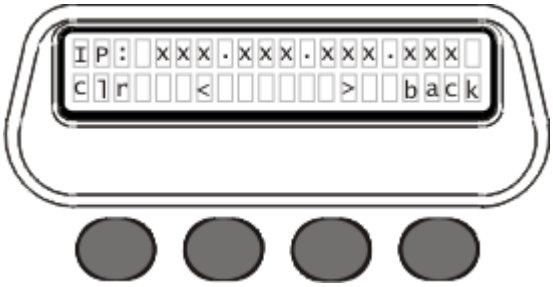
To **set or change an IP Address and Subnet Mask**, do the following:

1. On the IP-2002 keypad, press and hold the **G▲** button, Line 1's **MUTE** button, and the ***** button**,** in that order.
One of two menus appear on the console display: PIN Login screen or Programming Mode, see Figure 3
2. Using the DTMF keypad, enter the **admin PIN number**, if one is required.
Asterisks appear, on the top line, for each character you enter.
3. Press the **OK** softkey.
The Programming Mode menu appears.

4. Press the **IP** softkey.
   The IP Setup menu appears on the display.



5. Press the **IP** softkey.
   The IP menu appears.



6. Enter the **IP Address** you want to assign to the IP-2002 (use the * key for the dot between the octets).
7. Press the **back** softkey.
   The IP Setup menu appears.
8. Press the **Mask** softkey.

NOTE: The following keys are used to enter the IP and Mask dotted quad once the IP or Mask menu is accessed.

DTMF 0–9 -	The DTMF digits allow entry of the specific numbers.
*DTMF * or A* -	DTMF “*” or “A” is the decimal point used in entering the octet.
Softkey 1 -	The “Clr” function clears the entered value and starts over.
Softkey 2 -	The < “backspace” function deletes the last entered number.
Softkey 3 -	The > “forward space” function steps, to the right, past the next number.
Softkey 4 -	The back softkey is pressed, once the IP Address has been entered.

9. In the Mask field, enter the **Subnet Mask** of the network to which the IP-2002 is connected (use the * key for the dot between the octets).
10. Once you are finished entering the Subnet Mask, press the **back** softkey.
    The IP Setup programming menu appears on the console display.
11. Press the **back** softkey.
    The Programming Mode menu appears on the console display.
12. Press the **EXIT** softkey
    IP-2002 Resetting, appears on the console display. It is now possible to connect to the IP-2002 using the web browser. To access the IP-2002 web browser, see page 36.

NOTE: Press the **Clr** softkey to delete all characters from the display.
Press the < or > softkey to navigate between characters in the IP Address.
See your network administrator if you need help determining which IP Address to use.

PIN Setup Menu

The **PIN Setup** menu is used to delete, set new or change the existing admin PIN number. This is the same admin PIN as the web browser configuration admin PIN. When an admin PIN is set, the IP-2002 prompts for it before allowing changes.

NOTE: To set or change the admin PIN number with the web browser configuration, see "Account Setup" on page 60, or "Clone & PIN" on page 74.

To **set a new admin PIN number**, do the following:

1. On the IP-2002 keypad, press and hold the **G▲** button, Line 1's **MUTE** button, and the ***** button**,** in that order.
   One of two menus appear on the console display: PIN Login screen or Programming Mode, see Figure 3 on page 28.
2. Using the DTMF keypad, enter the **current admin PIN number**, if one is required.
   Asterisks appear, on the top line, for each character you enter.
3. Press the **OK** softkey.
   The Programming Mode menu appears.
4. Press the **PIN** softkey.
   The PIN Setup menu appears.
5. Press the **New** softkey.
   The PIN entry menu appears.
6. Using the DTMF keypad (0–9) enter a **new 4–16 digit PIN number**.
   Asterisks appear for each number you enter.

   NOTE: To delete the PIN entry from the console display, press the **CLEAR** softkey.

   NOTE: To exit the menu and return to the PIN Setup menu without saving changes, press the **QUIT** softkey.
7. Press the **OK** softkey.
   The confirm PIN menu appears.
8. Using the DTMF keypad, reenter the **new PIN number**.
   Asterisks appear for each number you enter.

   NOTE: To exit the menu and return to the PIN Setup menu, without saving changes, press the **QUIT** softkey.
9. Press the **SAVE** softkey
   The PIN Setup menu appears.

   NOTE: If you enter the wrong PIN, an *Invalid PIN* message appears. To return to the PIN Setup menu, press the **OK** softkey.
10. Press the **back** softkey.
    The Programming Mode menu appears.
11. Press the **EXIT** softkey.
    Resetting IP-2002 message appears on the console display. A new admin PIN is set.

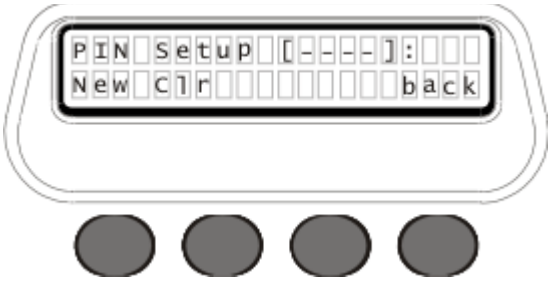
The **set the admin PIN to none required**, do the following:

1. On the IP-2002 keypad, press and hold the **G▲** button, Line 1's **MUTE** button, and the ***** button**,** in that order.
   One of two menus appear on the console display: PIN Login screen or Programming Mode, see Figure 3.
2. Using the DTMF keypad, enter the **admin PIN number**, if one is required.
   Asterisks appear, on the top line, for each character you enter.
3. Press the **OK** softkey.
   The Programming Mode menu appears.
4. Press the **PIN** softkey.
   The PIN Setup menu appears.

5. Press the **Clr** softkey.
   Message, Clear PIN?, appears.

   IMPORTANT: To exit the menu without clearing the PIN, press the **NO** softkey.

6. Press the **YES** softkey.
   The PIN is cleared from the IP-2002 setup.
7. Press the **back** softkey.
   The Programming Menu appears.
8. Press the **EXIT** softkey.
   Resetting IP-2002 appears and changes are saved.



Alternate method: Change IP Address and Subnet Mask

An alternative to setting the IP Address and Subnet Mask from the IP-2002 console is to configure the settings with **MicrosoftHyper Terminal.**

NOTE: Go to http://www.hilgraeve.com/htpe/ for information about using HyperTerminal with Microsoft Vista.

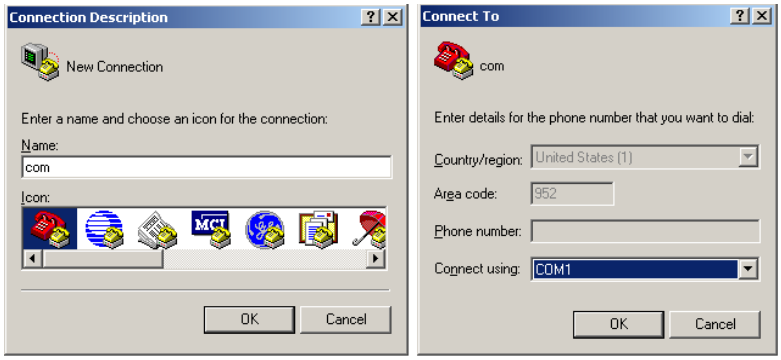
J3 3-Pin Cable

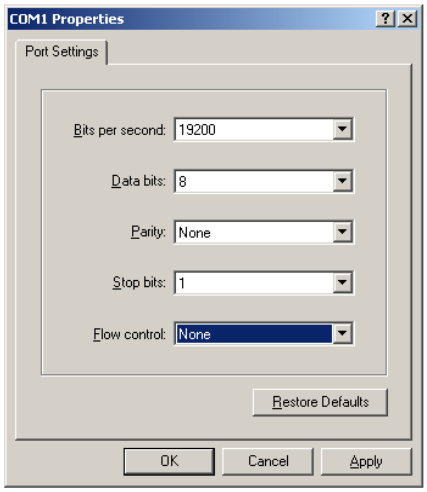
A **J3 3-Pin Cable** (not included) is required to reprogram the IP-2002. The cable is connected to the computer (RS-232 port) and the 3-pin data port on the back of the console, for location see “IP-2002 Console Back” on page 19.

J3 3-Pin Data Port on rear of IP-2002 console	RS-232 Port	
	DB-9 Pin	DB-25 Pin
Pin 1	Pin 2	Pin 2
Pin 2	Pin 3	Pin 3
Pin 3	Pin 5	Pin 7

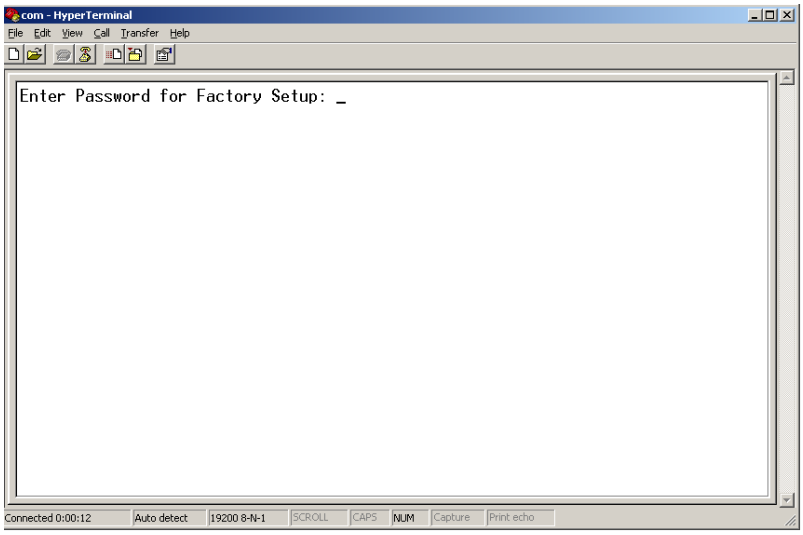
To **change the IP Address and Subnet Mask using Microsoft Hyper Terminal**, do the following:

1. Using a DB-9 or DB-25 serial cable, connect the **IP-2002 data port** (J3 3-pin data port) to your computer.
2. From the Start Menu on your computer, open the **Hyper Terminal application**.
   Click (Start|Programs|Accessories|Communications|Hyperterminal).
   The Connection Description field appears.





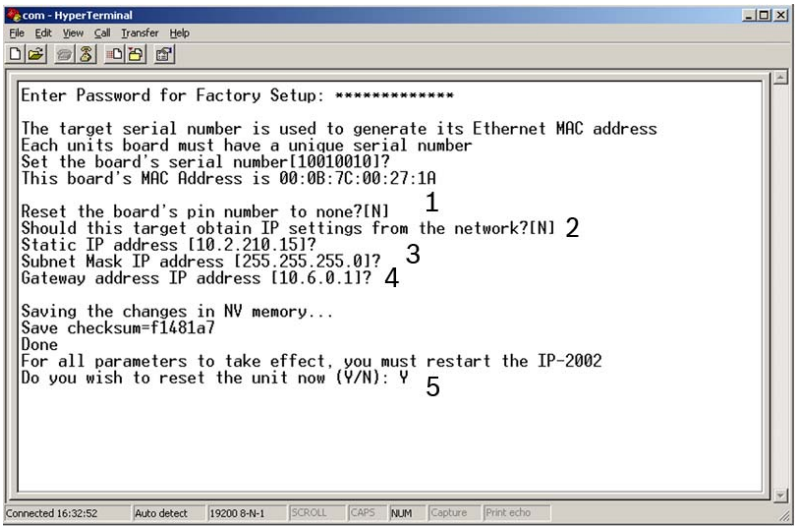
3. In the Name field, enter **com**.
4. Click **OK**.
   The Connect To window appears.
5. From the Connect Using: drop down menu, select **COM1**.
6. Click **OK**.
   The COM1 Properties window appears.
7. From the Bits per second drop down menu, select **19200**.
8. From the Data bits drop down menu, select **8**.
9. From the Parity drop down menu, select **None**.
10. From the Stop bits drop down list, select **1**.
11. From the Flow Control drop down menu, select **None**.
12. Click **OK**.
    The Main Hyper Terminal window appears.



13. In the Hyper Terminal Window, enter an uppercase **S**.

IMPORTANT: Toggle your keyboard Scroll Lock OFF.

14. Press **Enter**.
    Enter Password for Factory Setup appears in the window.
15. Enter "**technobabble**" for the factory password.
16. Press **Enter**.
    The HyperTerminal Setup window appears.



NOTE: The board's serial number and MAC Address[1] are listed. The serial number is fixed and should match the serial number label on the back of the IP-2002. The label location is shown in Figure 2.

Factory Setup Options:

1 = Allows user to reset the admin PIN number.

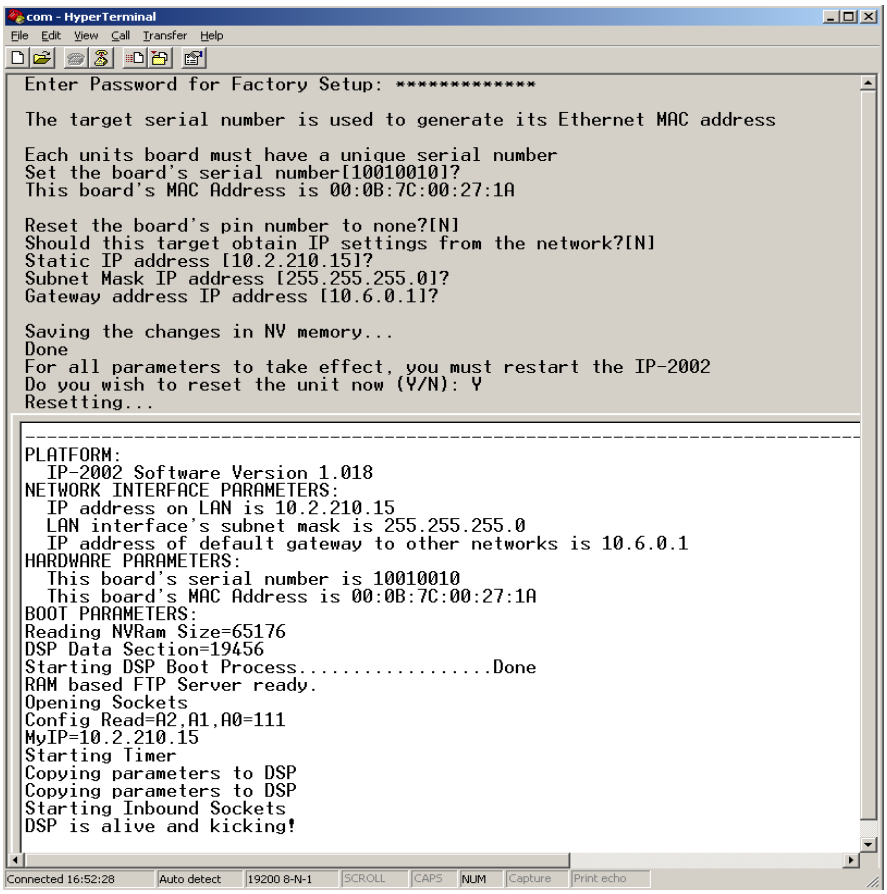
2 = Allows the unit to get an IP Address via DHCP or to manually set the IP Address.

3 = Allows manual entry or revision to a Subnet Mask.

4 = Allows manual entry or revision to a Gateway Address.

5 = Provides the ability to reset the unit.

17. Reset the **IP-2002**.
The message indicating your computer can communicate with the IP-2002 appears.



1. *The MAC Address uniquely identifies each node of a network and interfaces directly with the network media.*

IP-2002 Web Browser Configuration

The **IP-2002 Web Browser Configuration** is used to setup many of the system and network settings. The following sections describe the system configuration and network settings for the IP-2002.

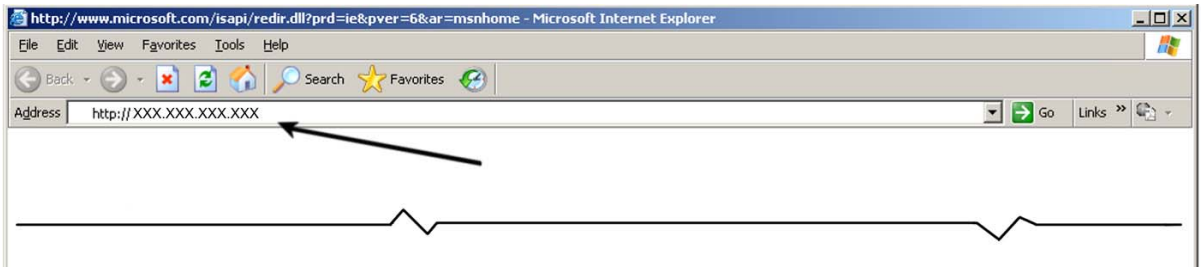
NOTE: A **crossover cable** provides for direct PC to IP-2002 programming through the Ethernet port. This cable should not be used for a direct IP-2002 to Ethernet port connection.

NOTE: To access the IP-2002 via a web browser, the host PC must share the same subnet as the IP-2002. See your network administrator if you need help determining which IP Address to use.

To **begin configuring the IP-2002 console with the web browser**, do the following:

1. Open a **browser** window.
2. Enter the **IP Address** of the IP-2002 in the Address field.

   NOTE: XXX.XXX.XXX.XXX.XXX refers to the octet values.



3. Press **Enter** on the keyboard.
   The Connect to [IP Address] window appears.

4. In the User name drop down menu, select or enter **admin**.
   If this is the first time you are signing into the IP-2002 Web Configurator enter "admin."
   OR
   Enter, **user**.
   OR
   Enter, the **username** configured for your account.
5. In the PIN number field, enter the appropriate **PIN Number**.
   If this is the first time the IP-2002 has been started and a PIN has not been assigned to the unit, no entry is required.
6. Click **OK**.
   The Welcome window, shown in Figure 6, appears.

   NOTE: After successful login, use the bookmark feature in your browser to save this page for later use.

   NOTE: To log off, close the browser window.

IP-2002 Windows Standards

Links

The **Links** across the top of each web browser window, shown in Figure 5, are used to access information and enter parameters to configure the IP-2002. A brief description of each link is provided below.

FIGURE 5. Links

	Displays the “Welcome Window” on page 40.
	Displays the “Basic Ethernet Setup” on page 41.
	Displays the “General Gain Setup” on page 45.
	Displays the “Multicast Address Setup” on page 48.

	Displays the “Per Line Setup” on page 51.
	Displays the “Save To EEPROM” on page 59.
Account Setup	Displays the “Account Setup” on page 60.
Clone & PIN	Displays the “Clone & PIN” on page 74.
ID Directory	Displays the “ID Directory” on page 77.
Paging Directory	Displays the “Paging Directory” on page 83.
Paging Setup	Displays the “Paging Setup” on page 88.
System Setup 1	Displays the“System Setup 1” on page 99.
System Setup 2	Displays the “System Setup 2” on page 104.

Configuration

A web browser interface makes IP-2002 console **configuration** easy. General gain setup, per line setup, ID directory setup, paging and directory setup, as well as supervisory, intercom, monitor, and handset/headset features are configured in the individual windows. PIN and account setup and the ability to copy an existing console's configuration directly to a second console are also available.

To **access a configuration window**, do the following:

> Click the desired **link**.
The setup window for the selected link appears.

Submit Button

The **Submit** button, located at the bottom of each configuration window, is used to upload changes to the IP-2002.

IMPORTANT: The submit button saves changes in temporary memory only.

To **permanently save changes,** do the following:

1. Click **Submit**. 

The changes are sent to the IP-2002 in temporary storage.

2. Click **Save to EEPROM**. 

The Save to EEPROM window opens.

3. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

Welcome Window

The **Welcome Window**, shown in Figure 6, provides a basic description of the IP-2002 functions and features. You can also change the console name from this window.

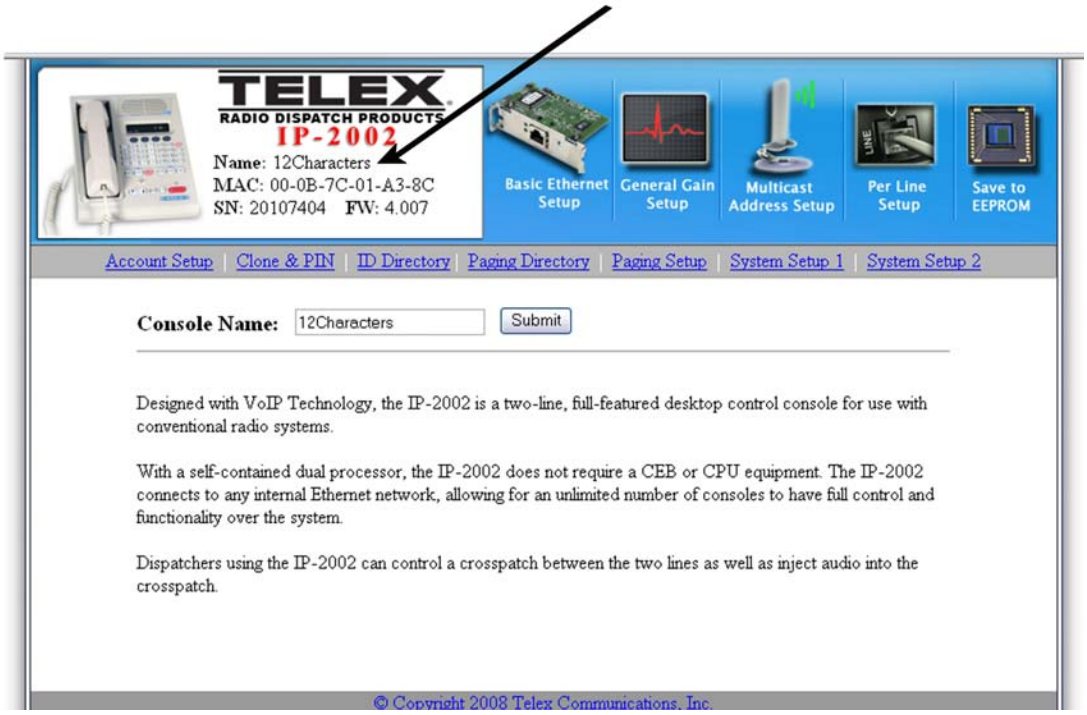


FIGURE 6. Welcome Window

Console Name Field

The **Console Name** field is used to identify the currently active console setup.

To **name the console**, do the following:

> Enter a **name** for the console, *12 characters* are allowed.
The name appears in the Console Name field.

To **permanently save the console name,** do the following.

1. Click **Submit**. Submit
The console name appears at the top of the Welcome window.
2. Click **Save to EEPROM**. Save to EEPROM
The Save to EEPROM window opens.
3. Click **Save Parameters**. Save Parameters
Changes are now permanently saved to the IP-2002 console.

NOTE: To navigate back to the Welcome Window, click the **IP-2002 photo** in the upper-left corner of the window.

Basic Ethernet Setup

The **Basic Ethernet Setup** window, shown in Figure 7, is used to configure your network connections by setting the hosting protocol, IP-2002 console IP Address, Subnet Mask, Gateway Address, as well as, setting the network time protocol and packet delay. With the Basic Ethernet Setup window, you can configure an Ethernet crossmute of up to 15 Telex Radio Dispatch VoIP consoles on the same network.

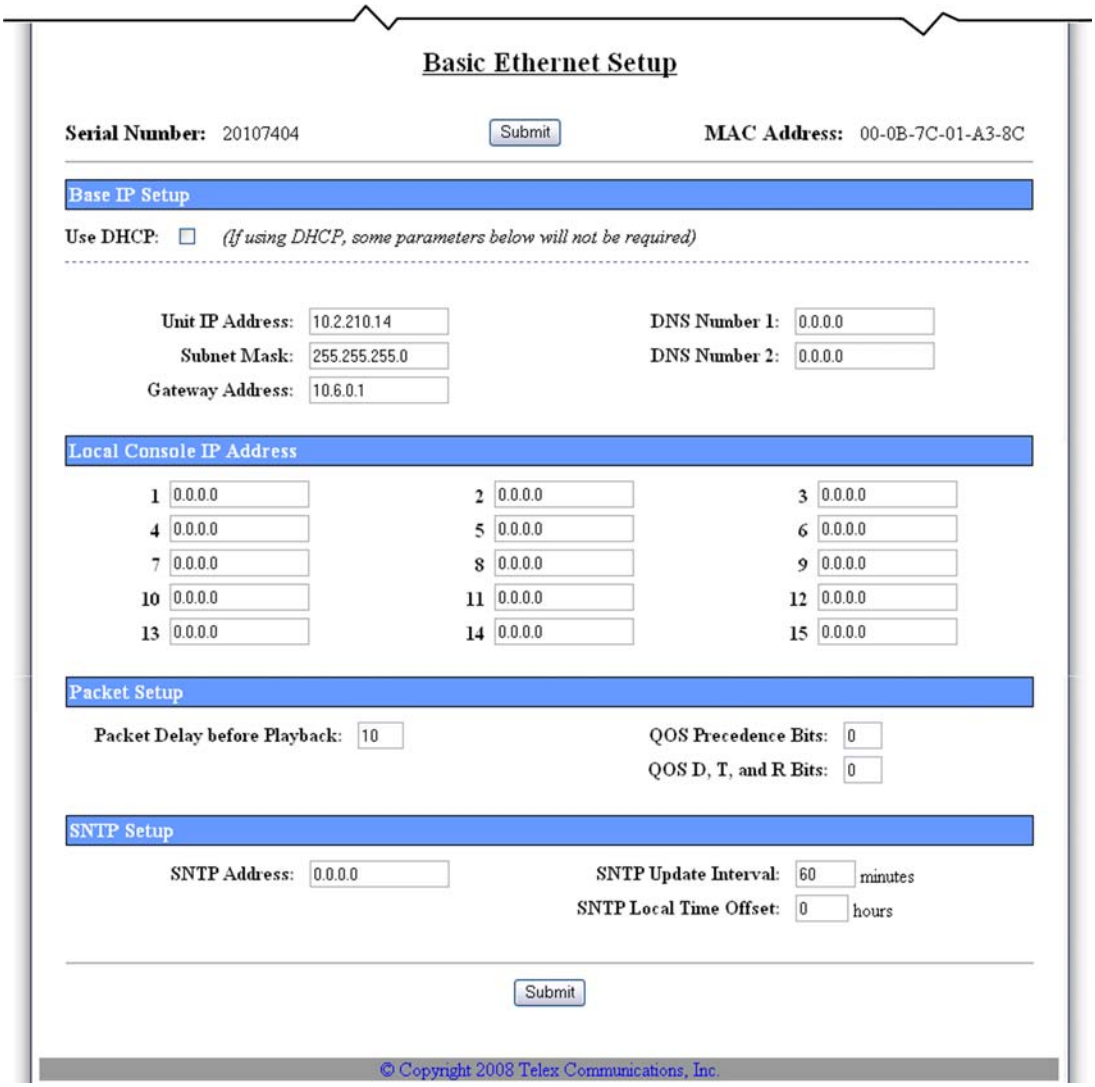


FIGURE 7. Basic Ethernet Setup

Serial Number Display

The **Serial Number** field displays the serial number of your IP-2002. The serial number label is located on the back of the console should match the number in this field. See “IP-2002 Console Back” on page 19 for location.

Submit Button

The **Submit** button, located at the top and bottom of the window, is used to temporarily save changes to the IP-2002. Submit changes before navigating from this window.

MAC Address

The **MAC Address** field displays the MAC Address of the IP-2002. See footnote on page 14 for more information.

Base IP Setup

Use DHCP Server Check Box

The **Use DHCP Server** check box indicates whether or not **DHCP** (Dynamic Host Configuration Protocol) is used. If selected, DHCP allows the IP-2002 to obtain its network address information for operation from the network, bypassing any manual entries.

IMPORTANT: Telex does not recommend operating with DHCP running. This can cause the base IP Address to change without notice.

Unit IP Address Field

The **Unit IP Address** field is used to enter a unique base IP Address for the IP-2002. The web browser configuration uses the IP Address to identify the IP-2002 for such operations as setup and software upgrades.

Subnet Mask Field

The **Subnet Mask** field is used to enter the Subnet Mask Address. The Subnet Mask is used to distinguish local addresses, from addresses that require the use of a gateway to reach. See your network administrator for this field value.

NOTE: A subnet is a portion of a network that shares a common address component with other nodes on the network. On a TCP/IP network, a subnet is described as all computers or devices whose IP Address have the same prefix.

Gateway Address Field

The **Gateway Address** field is used to enter the gateway address. The gateway address is the IP Address for the node used to reach other networks. See your network administrator for this field value.

DNS Number 1–2 Fields

The **DNS Number 1–2** fields are currently not supported by version 4.100 and previous versions of the IP-2002 firmware.

Local Console IP Address

Local Console IP Addresses 1–15 Fields

The **Local Console IP Addresses 1–15** fields are used to enter local IP Addresses of other Radio Dispatch VoIP consoles in the same network. This list is used for Ethernet crossmute function. The IP-2002 examines the source of the audio, if the source is from another console in this list, the IP-2002 then mutes the parallel transmit audio. You can enter up to 15 consoles.

This feature is generally used on consoles in the same room.

Packet Setup

Packet Delay Before Playback Field

The **Packet Delay Before Playback** field is used to enter a delay of audio packets before they are sent. Some buffering of these packets must occur before playback, to absorb network jitter and delays. The typical value for this field is 6. Larger values may be required for larger networks and smaller values for smaller networks.

Field values range from *4 to 29*.

QOS Precedence Bits Field

The **QOS: Precedence Bits** (Quality of Service) field is used when differentiated services QOS is active on the network. Typically this value is set to 0 for normal traffic or set to 6 for voice traffic.

QOS D, T, and R Bits Field

The **QOS: D, T, and R Bits** field is used for advanced configuration purposes. These bits are typically set to 0. Contact your network administrator for proper field values.

QOS options include the following:

Delay (D) - *an active delay bit tells the router to choose a high speed to minimize delay.*

Throughput (T) - *an active throughput bit specifies high capacity links should be used.*

Routing (R) - *an active routing bit, directs routing protocols and network management applications to select fault-tolerant paths.*

For information on binary equivalents for delay, throughput, and reliability see ”D, T, R Table”in “D, T, R Table” on page 143.

Field values range from *0 to 7*.

SNTP Setup

SNTP Address Field

The **SNTP Address** (Simple Network Time Protocol) field is used to enter the IP Address of the time server on the network. The time server is used as a standard clock for all devices on the network. It can be a PC, a national atomic clock source available on the internet, or a local GPS or atomic clock-based network resource.

SNTP Update Interval Field

The **SNTP Update Interval** field is used to set, in minutes, the amount of time between queries to the time server for updates. Update this value once per hour, at a maximum.

Field values range from *0 to 9999 seconds*.

SNTP Local Time Offset Field

The **SNTP Local Time Offset** field is used to enter the offset time, in hours, from **UTC** (Coordinated Universal Time). The Time Server always displays its time as UTC. See the ”UTC Offset Tables”in “UTC Offset Table” on page 145, for offset values.

Field values range from *-12 to 14 hours*.

NOTE: UTC is an atomic time scale that approximates **GMT** (Greenwich Mean Time).

To **permanently save changes,** do the following:

1. Click **Submit**. 

The changes are sent to the IP-2002 in temporary storage.
2. Click **EEPROM**. 

The Save to EEPROM window opens.
3. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

General Gain Setup

The **General Gain Setup** window, shown in Figure 8, is used to adjust gain levels, as required. Except for handset sidetone gain, the gains are set to *0 dB*, by default, and can be adjusted up or down.

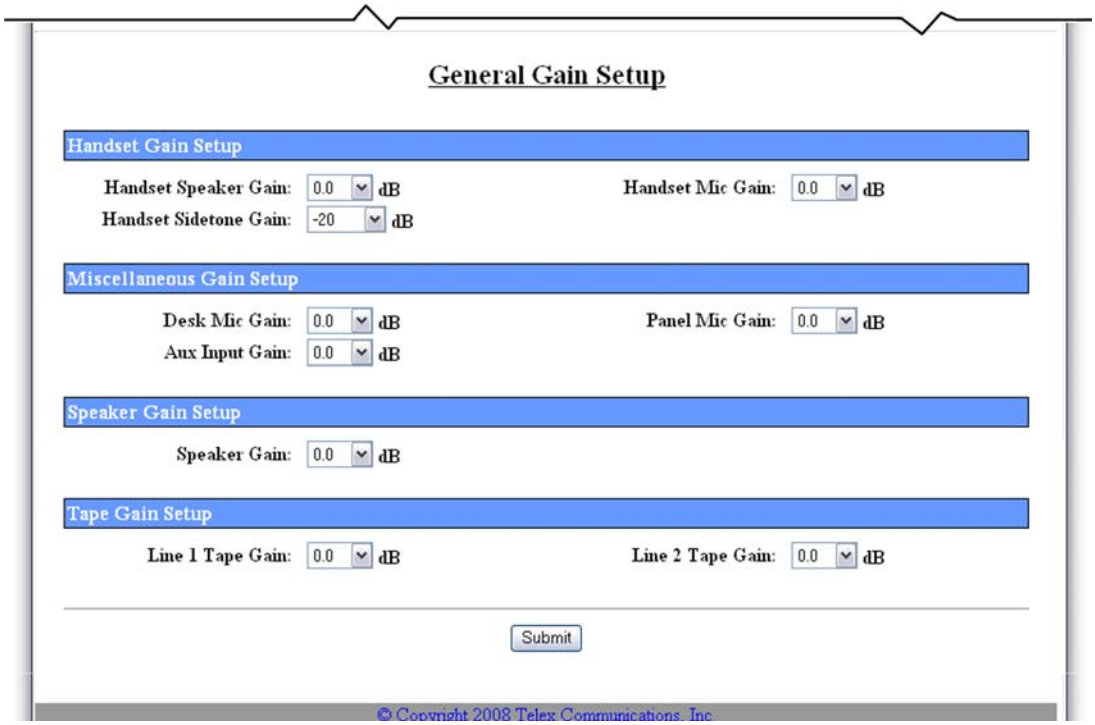


FIGURE 8. General Gain Setup

Handset Gain Setup

Handset Speaker Gain Drop Down Menu

The **Handset Speaker Gain** drop down menu is used to set the gain, in dB, of the handset speaker, see Figure 9. By default, this field is set at *0.0dB*.

Field values are as follows: *12.0, 10.5, 9.0, 7.5, 6.0, 4.5, 3.0, 1.5, 0.0 (default), -1.5, -3.0, -4.5, -10.5, -16.5, -22.5, -28.5, -34.5*.

Handset Sidetone Gain Drop Down Menu

The **Handset Sidetone Gain** drop down menu is used to set the volume, in dB, of sidetone you hear in the handset. By default, this field is set at *-20dB*.

Field values are as follows: *-12, -14, -16, -18, -20 (default), -22, -24, and MUTE*.

NOTE: Sidetone is an adjustable amount of your voice signal sent back through the handset, so you can hear yourself talk.

Handset Mic Gain Drop Down Menu

The **Handset Mic Gain** drop down menu is used to set the gain level, in dB, for the handset mic. The location of the handset mic is shown in Figure 9. By default, this field is set at *0.0dB*.

Field values are as follows: *12.0, 10.5, 9.0, 7.5, 6.0, 4.5, 3.0, 1.5, 0.0 (default), -1.5, -3.0, -4.5, -10.5, -16.5, -22.5, -28.5, -34.5.*

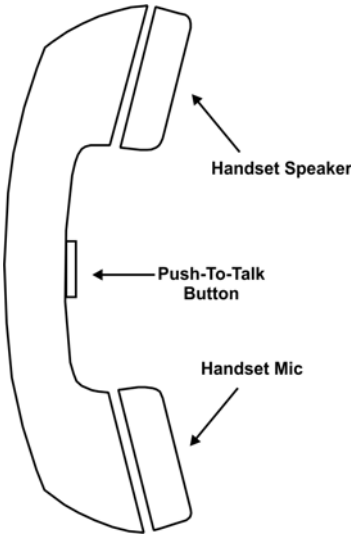


FIGURE 9. Handset Components

Miscellaneous Gain Setup

Desk Mic Gain Drop Down Menu

The **Desk Mic Gain** drop down menu is used to set the gain level, in dB, for an external desk mic, where applicable. By default, this field is set at *0.0dB*.

Field values are as follows: *12.0, 10.5, 9.0, 7.5, 6.0, 4.5, 3.0, 1.5, 0.0 (default), -1.5, -3.0, -4.5, -10.5, -16.5, -22.5, -28.5, -34.5*.

Aux Input Gain Drop Down Menu

The **Aux Input Gain** drop down menu is used to set the gain level, in dB, for the auxiliary input audio. The auxiliary port takes audio output from an external device to pass over the network. By default, this field is set at *0.0dB*.

Field values are as follows: *12.0, 10.5, 9.0, 7.5, 6.0, 4.5, 3.0, 1.5, 0.0 (default), -1.5, -3.0, -4.5, -10.5, -16.5, -22.5, -28.5, -34.5*.

Panel Mic Gain Drop Down Menu

The **Panel Mic Gain** drop down menu is used to set the gain, in dB, of the panel mic, see Figure 1 on page 16. By default, this field is set at *0.0dB*.

Field values are as follows: *12.0, 10.5, 9.0, 7.5, 6.0, 4.5, 3.0, 1.5, 0.0 (default), -1.5, -3.0, -4.5, -10.5, -16.5, -22.5, -28.5, -34.5*

Speaker Gain Setup

Speaker Gain Drop Down Menu

The **Speaker Gain** drop down menu is used to set the gain, in dB, of the console speaker, see Figure 1. By default, this field is set at *0.0dB*.

Field values are as follows: *12.0, 10.5, 9.0, 7.5, 6.0, 4.5, 3.0, 1.5, 0.0 (default), -1.5, -3.0, -4.5, -10.5, -16.5, -22.5, -28.5, -34.5*.

Tape Gain Setup

Line 1 Tape Gain Drop Down Menu

The **Line 1 Tape Gain** drop down menu is used to set the gain, in dB, of the Line 1 Tape output audio. By default, this field is set at *0.0dB*.

Field values are as follows: *12.0, 10.5, 9.0, 7.5, 6.0, 4.5, 3.0, 1.5, 0.0 (default), -1.5, -3.0, -4.5, -10.5, -16.5, -22.5, -28.5, -34.5*.

Line 2 Tape Gain Drop Down Menu

The **Line 2 Tape Gain** drop down menu is used to set the gain, in dB, of the Line 2 Tape output audio. By default, this field is set at *0.0dB*.

Field values are as follows: *12.0, 10.5, 9.0, 7.5, 6.0, 4.5, 3.0, 1.5, 0.0 (default), -1.5, -3.0, -4.5, -10.5, -16.5, -22.5, -28.5, -34.5*.

Submit Button

The **Submit** button is used to temporarily save changes to the IP-2002. **Submit** changes before navigating from this window.

To **permanently save changes,** do the following:

1. Click **Submit**. 

The changes are sent to the IP-2002 in temporary storage.
2. Click **Save to EEPROM**. 

The Save to EEPROM window opens.
3. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

Multicast Address Setup

The **Multicast Address Setup** window, shown in Figure 10, is used to determine which ports the IP-2002 uses to communicate information across various lines. The fields for Multicast Address Setup are described on the following pages.

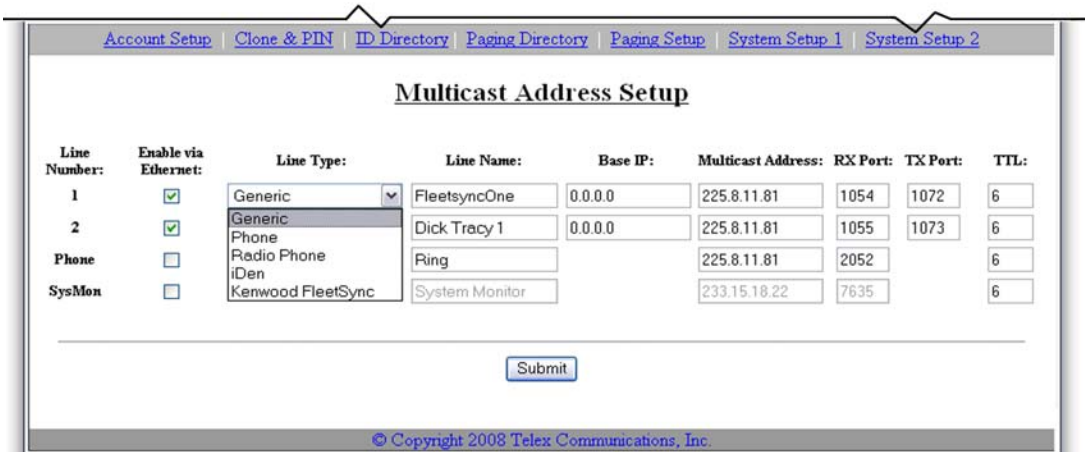


FIGURE 10. Multicast Address Setup

Line Number

The **Line Number** is used to label the rows for multicast address setup. Lines 1 and 2, a phone line, and system monitor are labeled.

Phone Line

The **Phone** line is used to setup the system to receive phone calls.

To **enable standard phone calls**, do the following:

1. From the Line Type drop down menu, select **Phone**.
2. In the Line Name field, enter a **Line Name** for your reference.

   NOTE: The line name displays at the top of the Per Line Setup window.

3. Select the **Enable via Ethernet** check box for **Phone** if any line on the console is defined as a phone line.

   NOTE: A line must be selected from the **Local Phone Line** drop down menu in the Per Line Setup window. See “Phone Setup” on page 55 for details.

   NOTE: If you want to setup one line for both Standard Phone and Radio Phone, you must select the check box for Phone & Radio Phone, see “Phone Setup” on page 55 for details.

System Monitor Line

The **System Monitor** line is used to configure the line type for system monitor. The system monitor is used by the system manager to update and configure units.

IMPORTANT: To enable this feature, additional system monitor software must be installed on your network.

NOTE: Multicast Address and RX Port cannot be changed for this feature.

Enable via Ethernet Check Box

The **Enable via Ethernet** check box is used to turn the Ethernet connectivity ON/OFF for the specified line. Line activation requires the Enable via Ethernet check box be selected for the line.

Line Type Drop Down Menu

The **Line Type** drop down menu identifies the type of device assigned to the ID when the CLST menu is accessed by the console operator.

NOTE: The **Disable Call List** check box on “System Setup 1” on page 99 must unselected.

The following line type options are available from the drop down menu:

Generic
Phone
Radio Phone
iDEN
Kenwood FleetSync

NOTE: To enable both Radio and Phone, see “Phone Setup” on page 55.

The following line types are default setting when Enable via Ethernet is selected:

Ring Signal - Phone line setting.
System Monitor

Line Name Field

The **Line Name** field is used to enter an alphanumeric label to a particular line. The name displays on the Per Line Setup window, shown in Figure 11.

Up to *12 characters* can be entered into this field.

Base IP Address Field

The **Base IP Address** field is used to enter the base IP Address of the IP-223/IP-224 controlling the radio or phone asset.

Multicast Address Field

The **Multicast Address** field is used to enter the broadcast address for all audio traffic. This number must be between 224.0.0.2 and 239.255.255.255. With the exception of phone operation, all lines must have the same multicast address to allow for communication between consoles.

NOTE: IP Address exception for phone operation requires each line assigned to a phone have the static IP Address of the C-6200 with phone cards installed or an IP-223/IP-224 with a Telex® **PIB** (Phone Interface Box) attached.

RX and TX Port Fields

The **RX and TX Port** fields identify the **RX** (Receive Audio) and **TX** (Transmit Audio) port numbers. These numbers must be unique, per channel, and be between *1024* and *65535*.

If you want all consoles to monitor receive or transmit audio for a specific channel, you must have their base multicast address set the same, as well as the same RX and/or TX port number.

NOTE: Port number exception for phone operation requires the multicast address port have a unique port number entered into any line assigned phone operation.

TTL Field

The **TTL** (Time To Live) field identifies the number of routers the multicast audio packets pass through before being discarded. Network design dictates this value. See your network administrator for further information.

TTL values range from *0–128, the* default value is 6.

Submit Button

The **Submit** button is used to temporarily save changes to the IP-2002. Submit changes before navigating from this window.

To **permanently save changes,** do the following:

1. Click **Submit**. 

The changes are sent to the IP-2002 in temporary storage.

2. Click **Save to EEPROM**. 

The Save to EEPROM window opens.

3. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

Per Line Setup

The **Per Line Setup** window, shown in Figure 11, Figure 12, Figure 13, and Figure 14 is used to view and set the parameters specific to each line on the IP-2002. The parameters for each line can be viewed and modified by clicking the **Line 1** or **Line 2** button at the top of the page. The fields on this page are described below.

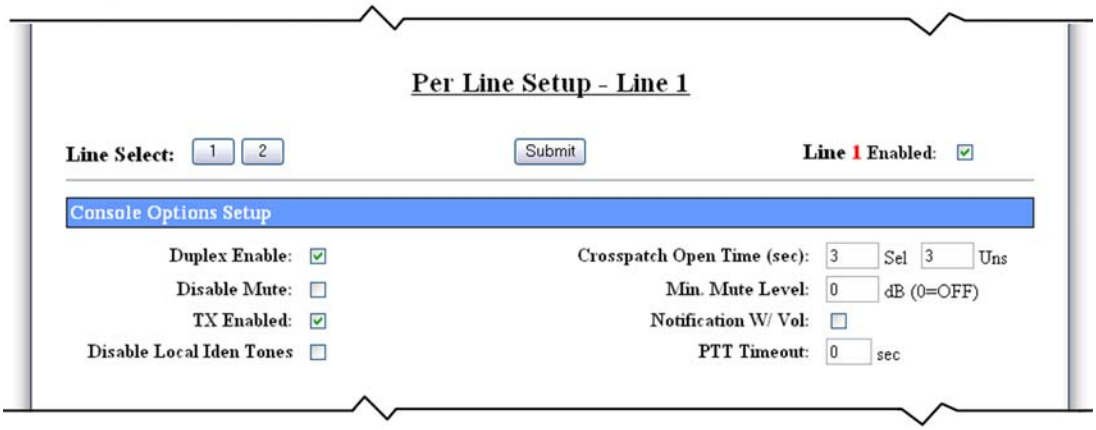


FIGURE 11. Per Line Setup (1)

Line Select Buttons (1–2)

The **Line Select (1–2)** buttons display the IP-2002 parameters for the selected line.

Submit Button

The **Submit** button, located at the top and bottom of the window, is used to temporarily save changes to the IP-2002. Always submit changes before navigating between windows.

Line (1 or 2) Enabled Check Box

The **Line (1 or 2) Enabled** check box is used to indicate if the line is enabled. When selected, the line is enabled. If the line is disabled, selection for transmission to play or receive audio is not allowed.

Console Options Setup

Duplex Enable Check Box

The **Duplex Enable** check box is used to make the selected line full-duplex (audio travels in two directions). If selected, the line is in full-duplex mode. In full-duplex mode the console operator can both receive and transmit audio at the same time.

In half-duplex mode the operator must wait for received audio to clear before transmitting. To learn more about full- and half-duplex modes, see “Network Requirements” on page 23.

Disable Mute Check Box

The **Disable Mute** check box is used to disable the mute function on the line. When selected, the operator cannot mute the line. This forces the operator to monitor the line.

TX Enabled Check Box

The **TX Enable** check box is used to enable the line for transmit operations. If selected, the line is able to perform transmit operations. Otherwise, the console operator is only allowed to monitor the line.

Disable Local iDEN Tones Check Box

The **Disable Local iDEN Tones** check box indicates the IP-2002 does not generate go-ahead beeps. If selected, iDEN tones do not occur when the operator selects PTT on the console.

Crosspatch Open Time (sec) Sel Field

The **Crosspatch Open Time Sel** field is used to set the amount of time, in seconds, the console continues to play audio while receiving audio, on the selected line, above the squelch threshold. This parameter is also used by the Ethernet to determine how long to transmit audio.

The field value ranges from *0 (0=OFF) to 60 seconds*.

Crosspatch Open Time (sec) Uns Field

The **Crosspatch Open Time Uns** field is used to set the amount of time, in seconds, the console continues to play audio while receiving audio, on the unselected line, above the squelch threshold. This parameter is also used by the Ethernet to determine how long to transmit audio.

The field value ranges from *0 (0=OFF) to 60 seconds*.

Min. Mute Level Field

The **Min. Mute Level** field is used to set the minimum level, in dB, of audio heard when the mute key is selected. Setting a minimum level prevents the operator from setting the level to *0 (OFF)*.

The field value ranges from *-60dB to 0 (0 = OFF)*.

To **set the Min Mute level**, do the following:

> In the Min Mute Level field, **enter a value**, in dB, for the lowest acceptable audio level while in mute condition. *When the console operator mutes the line, audio will be received at the configured level*.

Notification W/ Vol Check Box

The **Notification W/Vol** check box is used to override volume control of phone ring, Nextel go-ahead & busy beep, paging sidetone, emergency alerts, and paging talk-time beeps. When the line is muted, and the Notification W/Vol check box is selected, the rings, tones and beeps are heard.

NOTE: To silence an Emergency alert on the IP-2002, press the **ACK** softkey (acknowledge). To clear the Emergency call on the console, press the **RSLV** softkey (resolve).

PTT Timeout Field

The **PTT Timeout** field is used to set the transmit timeout period. Once the transmit timeout period has lapsed and you have not released the PTT button, the IP-2002 will automatically release the PTT.

The field value ranges from *0 (0=off) to 60 seconds*.

FIGURE 12. Per Line Setup (2)

FTone Setup

Disable TX FTone Check Box

The **Disable TX FTone** check box is used to control changing FTones transmitted on parallel consoles. When one of the parallel console operators change FTones, the FTones on the parallel console may or may not change depending on the setting.

- If the Disable TX FTone check box is selected for console X, then console X does not change FTones when parallel consoles change FTones.
- If the Disable TX FTone check box is unselected for console X, then console X changes to the FTone selected by the parallel console.

Disable RX FTone Check Box

The **Disable RX FTone** check box is used to control changing FTones received on parallel consoles. When one of the parallel console operators changes FTones, the FTones of the parallel console may or may not change depending on the configuration.

- If the Disable RX FTone check box is selected for console X, then console X changes to the FTone selected by the parallel console.
- If the Disable RX FTone check box is unselected, then console X changes to the RX FTone selected by the parallel console.

Jump to FTone Drop Down Menu

The **Jump to FTone** drop down menu is used to navigate to a list of FTones to select from. The FTone list will change depending on which list is selected. A total of 100 FTones are available for selection. Once you have chosen the range of FTones you want to display, click **GO**.

FTone [Enable] Check Box

The **FTone Enable** check box is used to enable the FTone number for the line you are configuring.

FTone Alphanumeric Field

The **FTone Alphanumeric** field is used to label the FTone and will appear on the console display when selected by the operator. You can assign *up to 100 FTones* within the IP-2002 application.

EXAMPLE: FTone 66 could be named BOB. So, when FTone 66 is called on the IP-2002, the name BOB appears on the console display.

Up to *nine (9) characters* are allowed in this field.

Pair Setup

Pair 1 Check Boxes

The **Pair 1** check boxes are used to allow FTones to have function control, but are not used for actual frequency control. Only function 3 and 4 are available as pair mode control groups.

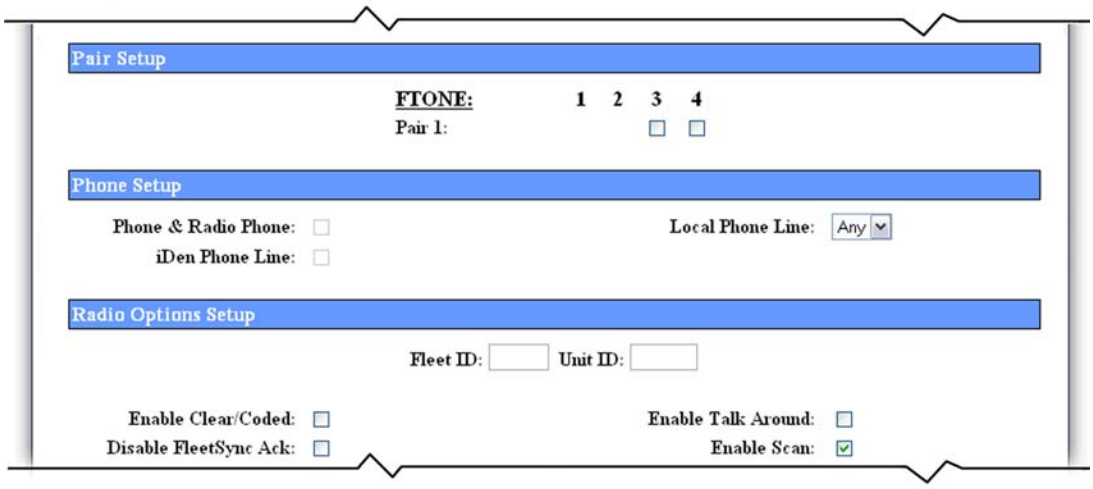


FIGURE 13. Per Line Setup (3)

Phone Setup

Phone & Radio Phone Check Box

The **Phone & Radio Phone** check box is used to enable the line for both standard phone and radio phone. If selected, the line is available for both phone and radio operation.

NOTE: Before this option can be selected, the line must be configured for **Radio Phone** or **Phone Line Type** on the Multicast Address Setup page, see page 48.

iDEN Phone Line Check Box (iDEN only)

The **iDEN Phone Line** check box is used to setup the line for an iDEN phone to control a remote IP-223/IP-224 with an iDEN interface.

NOTE: Before this option can be selected, the line must be configured for phone, see the “Multicast Address Setup” on page 48.

Local Phone Line Drop Down Menu

The **Local Phone Line** drop down menu is used to assign the console’s line to a standard phone line installed within the network.

This field value ranges from *1* through *18* (for specific phone lines) and *ANY* (for pool operation).

NOTE: Before this option can be selected, the line must be configured for Phone on the “Multicast Address Setup” on page 48.

To **configure the line for phone line selection** do the following:

> From the Local Phone Line drop down menu, select a **phone line** or **ANY**.
The phone line or pool is now assigned to the line.

NOTE: When configured for pool operations (ANY), any available network phone may be seized by the console.

Radio Options Setup

Fleet ID Field (Kenwood FleetSync Only)

The **Fleet ID** field is used to enter the Fleet ID number of a group of FleetSync radios and is assigned per line. The Fleet ID is three digits long and is added to the beginning of a FleetSync ID from the directory page, if it is four digits long, to form a seven digit number. When you set up a Fleet ID on this page, you eliminate the need to enter the Fleet ID to each FleetSync ID number in the ID Directory.

EXAMPLE: Fleet ID is 123 for the selected line. When the console operator selects FleetSync ID 4567, a call is made or status is sent to FleetSync ID number 1234567.

Unit ID Field (Kenwood FleetSync Only)

The **Unit ID** field is used to identify the console's (line 1 or 2) Fleet ID and Unit ID to FleetSync radios programmed for Over-the-Air Protocol. The FleetSync radio must be connected to IP-223/IP-224 through the Radio 1 or Radio 2 port.

The unit ID can be up to *4 digits* long.

NOTE: The IP-223/IP-224 must be setup for over the air protocol.

NOTE: The unit ID does not appear on radios connected with the serial port

Enable Clear/Coded Check Box (EF Johnson 5300 and Kenwood TK5x10 series)

The **Clear/Coded Transmit** check box is used to secure (encrypt) TX audio. If selected, the console operator can choose to encrypt the transmitted audio. This feature is available only on radios that support encryption.

NOTE: Before this option can be selected, the line must be configured for an encryption supported radio such as **EF Johnson 5300 series** or **Kenwood 5x10** on the "Multicast Address Setup" on page 48.

Disable FleetSync Ack Check Box (Kenwood FleetSync only)

The **Disable FleetSync Ack** check box is used to change the acknowledgment message to the console operator.

- If the FleetSync Ack Disable check box is selected, the console operator does not receive a message acknowledging a FleetSync status was sent to the field, although, the status is sent immediately.
- If the FleetSync Ack Disable check box is unselected, there is a momentary delay, and then the console operator receives a message that the FleetSync status was sent or not sent successfully.

NOTE: Before this option can be selected, the line must be configured for **Kenwood FleetSync** on the "Multicast Address Setup" on page 48.

Enable Talk Around Check Box (Kenwood FleetSync only)

The **Enable Talk Around** check box is used to toggle the talk around feature ON/OFF. Talk around is used to bypass a radio repeater system, permitting direct radio-to-radio communications.

NOTE: Before this option can be selected, the line must be configured for **Kenwood FleetSync** on the "Multicast Address Setup" on page 48.

Enable Scan Check Box

The **Enable Scan** check box is used to indicate the console operator can enable scan mode directly from the console.

When the Scan button on the console is pressed, the button lights red and audio from the selected line is received. Press the **Scan** button again, to disengage scan mode.

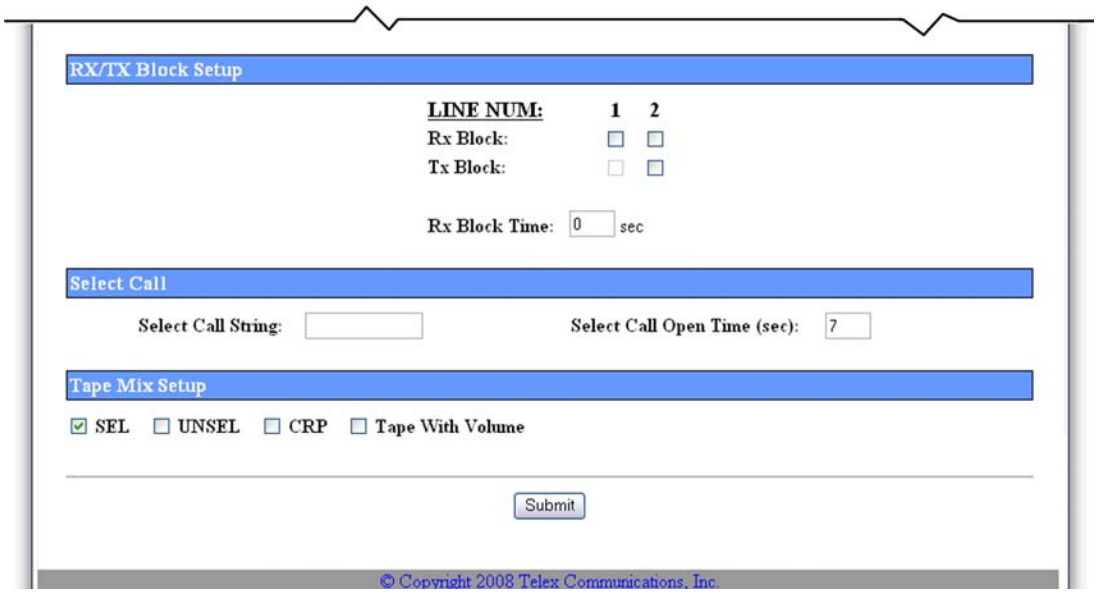


FIGURE 14. Per Line Setup (4)

RX/TX Block Setup

RX Block Check Boxes 1 and 2

The **RX Block** check boxes 1 and 2 indicates received audio is blocked during transmission on the selected line. The console operator is allowed to select other channels on Line 1 and Line 2 that should be RX muted during transmit on this channel.

TX Block Check Box 1 or 2

The **TX Block** check box is used to block transmission on the alternate line when the current line is transmitting. If selected the console operator is prevented from grouping both lines for transmission. The block check box (1 or 2) can only be selected for the alternate line. For example, when configuring Per Line Setup Line 1, only line 2 check box is available for selection.

RX Block Time Field

The **RX Block Time** field is used to set the amount of time, in seconds, to block/mute RX traffic to the specified line.

The values for this field can range from *0 to 60 seconds*.

Select Call

Select Call String Field

The **Select Call String** field identifies the string or code sent by the radio and decoded by the console to signal an incoming call. The string is a sequence of DTMF digits that open the mute gate to allow received audio to play through the IP-2002 speakers.

Up to *12 characters* can be entered into this field.

Select Call Open Time (sec) Field

The **Select Call Open Time** field indicates the amount of time, in seconds, the mute gate remains open to receive audio. When the Select Call String is received, the mute gate is left open to receive audio for the amount of time configured. After this time has expired, the selected line blinks and an audible tone notifies the console operator, which channel the audio was received on. This continues until the console operator performs a PTT operation on the channel.

The field value ranges from *0* to *60 seconds*.

Tape Mix Setup

The **Tape Mix Setup** section, see Figure 2, is used to directly connect and record the selected audio source using the TAPE connection on the back of the IP-2002.

SEL Check Box

The **SEL** check box indicates TX and RX audio is recorded from the selected line.

UNSEL Check Box

The **UNSEL** check box indicates TX and RX audio is recorded from the unselected line.

CRP Check Box

The **CRP** check box indicates audio can be recorded from the crosspatch.

Tape With Volume Check Box

The **Tape With Volume** check box indicates the console operator is able to adjust the volume of the recording.

NOTE: When audio from a handheld radio is received on the IP-2002, and Tape with Volume is enabled, the operator can adjust the volume for the line on which the call was received, either Line 1 or Line 2.

To **permanently save changes,** do the following:

1. Click **Submit**. 

The changes are sent to the IP-2002 in temporary storage.
2. Click **Save to EEPROM**. 

The Save to EEPROM window opens.
3. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

Save To EEPROM

The **Save to EEPROM** window, shown in Figure 15, is used to save parameters to non-volatile memory or reset the parameters to the last saved version in the IP-2002 console. The available functions are described below.

FIGURE 15. Save to EEPROM

Save Parameters Button

The **Save Parameters** button is used to store all parameters to the IP-2002's non-volatile memory for permanent storage. This also resets the DSP so it can reload its configuration data in a controlled manner.

Reset IP-2002 Button

The **Reset IP-2002** button is used to reset parameters in the IP-2002 console to its previous configuration. The previous configuration is the last configuration saved with the Save Parameters button.

The Reset IP-2002 button is also used to reset PIN numbers and new permissions in the console.

To **discard changes that have been submitted, but parameters have not been saved**, do the following:

> Click **Reset IP-2002.**
> OR
> Cycle **power** to the IP-2002 unit ON/OFF.

Account Setup

The **Account Setup** window, shown in Figure 16, is used to create or modify system and created accounts in the web browser configuration.

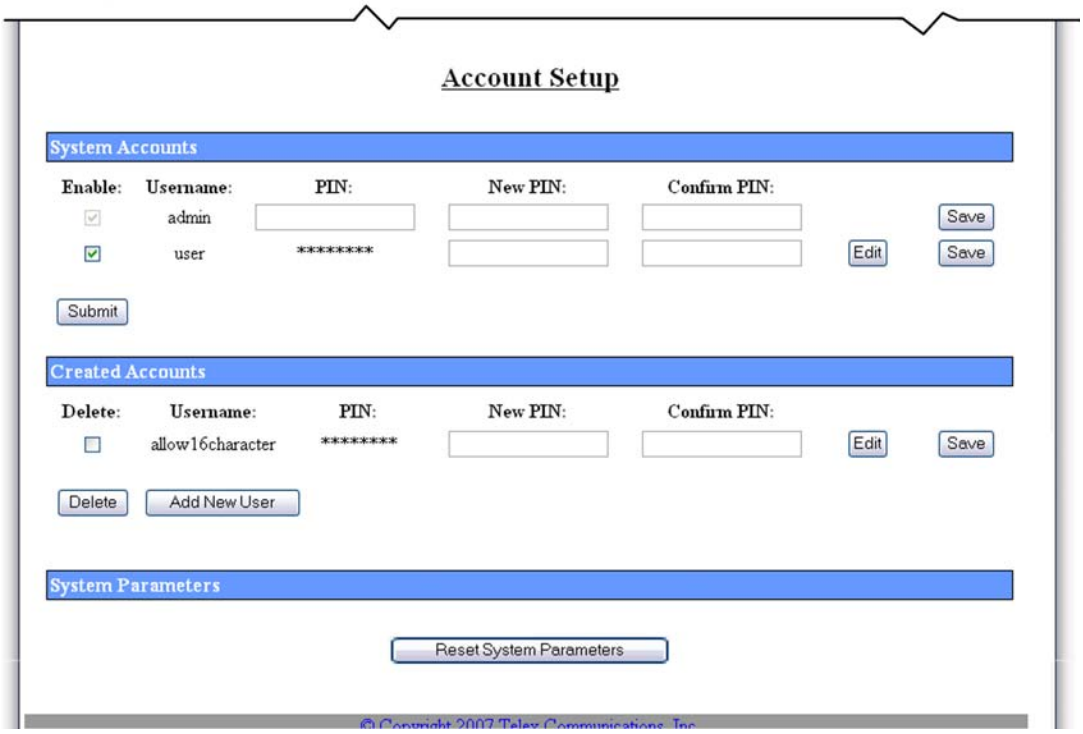


FIGURE 16. Account Setup

System Accounts

By default, the IP-2002 console is setup with two **System Accounts** created: system admin and system user. The system admin account is, by default, granted permission to change any of the web browser configurations for the IP-2002 console. The system user account has permission to change only the General Gain Setup, ID Directory, PIN Change, and Save to EEPROM configuration windows. The PIN is the only modifiable feature for both accounts.

NOTE: To setup configurations to grant more permissions to users, see “Created Account - Add New User Window” on page 70.

Enable Check Box

The **Enable** check box indicates the system user account is enabled.

NOTE: The admin system account is always enabled.

Username Column

The **Username** column displays the username of the system account. This field is not configurable in the System Account section of the window.

PIN Field

The **PIN** field displays the PIN number for the system admin or system user account. The PIN is shown in asterisks (********).

NOTE: The admin PIN field is always blank, whether or not an admin PIN number is assigned.

New PIN Field

The **New PIN** field is used to enter a new PIN number for the system account.

The PIN number must be a *4–16 digit* number.

NOTE: To set the admin system account PIN number for the first time, leave the PIN field blank (by default there is no PIN number)

To **set a New PIN**, do the following:

1. In the PIN field enter the **current PIN,** if required.
   Asterisks representing the characters appear in the field.
2. In the New PIN field, enter the **new PIN**.
   Asterisks representing the characters appear in the field.
3. In the Confirm PIN field, reenter the **new PIN**.
   Asterisks representing the characters appear in the field.
4. Click **Save**.
   The success message appears.

5. Click **Save to EEPROM**. 
   The Save to EEPROM window opens.
6. Click **Save Parameters**. 
   Changes are now permanently saved to the IP-2002 console.
7. Click **Reset IP-2002**. 
   The new PIN has been reset in the IP-2002 console.

   NOTE: The PIN can also be reset, see “Clone & PIN” on page 74.

Confirm PIN

The **Confirm PIN** field is used to confirm the PIN number you entered in the New PIN field. This PIN must match the PIN entered in the New PIN field.

Save Button

The **Save** button is used to temporarily save the PIN number, if a new one has been created.

Edit Button

The **Edit** button is used to navigate to the system user account window in edit mode to configure permissions.

NOTE: The admin account can not be modified.

To **navigate to the System User account edit window**, “System User Account - Edit Window” on page 63.

Submit Button

The **Submit** button is used to activate the system user account. Once the system user account is active, a new PIN number can be configured for the account.

To **activate the System User Account**, do the following:

1. Select the **Enable** check box for the user account.
2. Click **Submit**.
   The Edit and Save buttons on the system user account are active.

System User Account - Edit Window

The **System User Account** edit window is used to manage the system user account PIN number. The system user account is in edit mode when the username field is highlighted yellow.

By default, the System User Account has access to only the default admin pages General Gain Setup, ID Directory, and Save to EEPROM.

To **activate edit mode for the system user account**, do the following:

> In the System Accounts section, click **Edit**.
The System User Account window appears.

NOTE: You can only change the PIN numbers or select Set No PIN for the User account in the System Accounts edit window.

NOTE: To navigate back to the Account setup window, click **Save** to save changes or click the **Cancel** button

Save Button

The **Save** button is used to save the new PIN.

Cancel Button

The **Cancel** button is used to cancel the transaction.

To **change the PIN number for the System User Account**, do the following:

1. Enter the **new PIN number** in the New PIN field
Asterisks appear for each character.
2. Enter the **new PIN number** in the Confirm PIN field.
Asterisks appear for each character.
3. Click **Save**.
The Account Setup window appears.

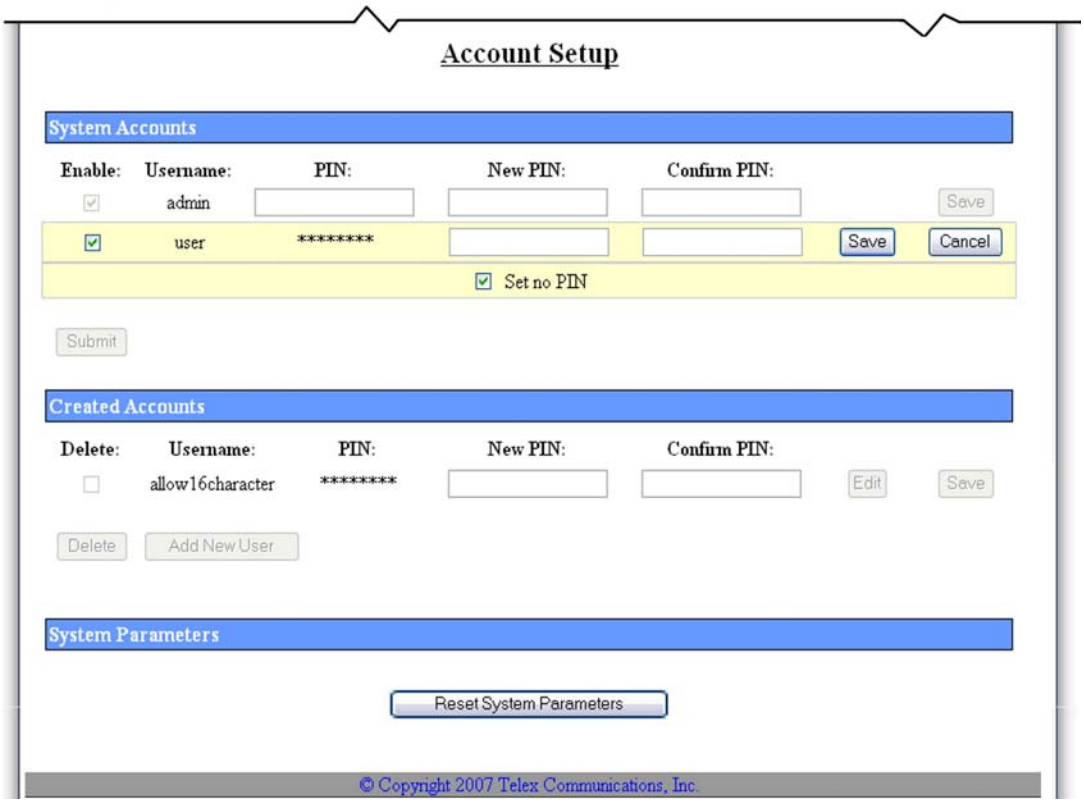
NOTE: Click **Cancel** to discard changes.

Set No PIN Check Box

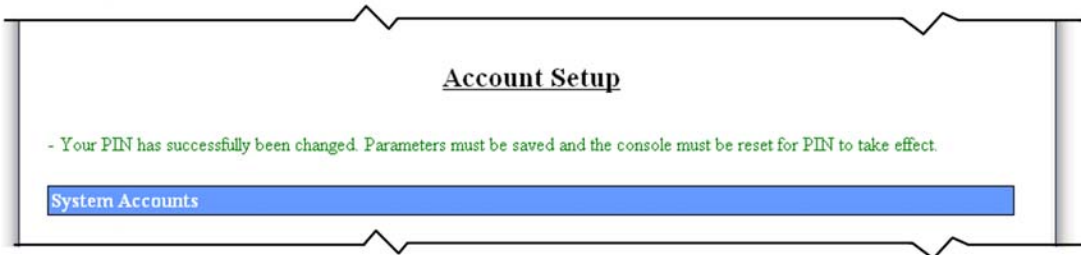
The **Set No PIN** check box is used to configure the system user account with no PIN required.

To **set no PIN for the system user account**, do the following:

1. Under the New PIN Column, select the **Set No PIN** check box.
2. Click **Save**, otherwise click **Cancel**.



3. Once you have made the changes to the system user account and your changes have been accepted a message appears at the top of the Account Setup window.



To **permanently save the new PIN to the IP-2002,** do the following:

1. Click **Save**. Save
   The changes are sent to the IP-2002 in temporary storage.

   NOTE: Click **Cancel** to navigate back to the Account Setup page without making changes

2. Click **Save to EEPROM**. Save to EEPROM
   The Save to EEPROM window opens.

3. Click **Save Parameters**. Save Parameters
   Changes are now permanently saved to the IP-2002 console.

4. Click **Reset IP-2002**. Reset IP-2002
   The new PIN is reset in the IP-2002 console.

Account Setup (continued)

Created Accounts

The **Created Accounts** section is used to configure permissions and set PIN numbers for up to five (5) users. By default there are no accounts created.

Delete Check Box

The **Delete** check box is used to delete unwanted user accounts.

To **delete an unwanted user account**, do the following:

1. Select the **Delete** check box next to the account you want to delete.
2. Click **Delete**.
   The user account is deleted.

Username Field

The **Username** field displays the assigned username for the created account.

PIN Field

The **PIN** field displays the PIN number for the created account. The PIN is shown in asterisks (********).

New PIN Field

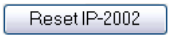
The **New PIN** field is used to enter a new PIN number for a created account.

The PIN number must be a *4–16 digit* number.

To **set a new PIN**, do the following:

1. In the PIN field, enter the **current PIN** (4–16 digits allowed), if required.
   Asterisks representing the characters appear in the field.
2. In the New PIN field, enter the **new PIN**.
   Asterisks representing the characters appear in the field.
3. In the Confirm PIN field, reenter the **new PIN**.
   Asterisks representing the characters appear in the field.
4. Click **Save**.
   Changes are saved to temporary memory and a success message appears, see Figure 17 on page 66.
5. Click **Save to EEPROM**. 

   The Save to EEPROM window opens.
6. Click **Save Parameters**. 

   Changes are now permanently saved to the IP-2002 console.
7. Click **Reset IP-2002**. 

   The new PIN is reset in the IP-2002 console.

Confirm PIN Field

The **Confirm PIN** field is used to confirm the PIN number you entered in the new PIN field. This PIN must match the PIN entered in the New PIN field. The success message, shown in Figure 17, appears.

FIGURE 17. New PIN Success

Edit Button

The **Edit** button is used to navigate to the created accounts setup window where you can configure permissions and change the PIN on created accounts. Editing a created account is described in “Created Account - Edit Window” on page 68.

To **navigate to the created user account edit window,** do the following:

> Click the **Edit** button**.**
The yellow highlighting indicates the window is in edit mode.

NOTE: See “Created Account - Edit Window” on page 68, for more information on how to configure created user accounts.

Save Button

The **Save** button is used to temporarily save the PIN number, if a new one has been created.

Delete Button

The **Delete** button is used to delete user accounts that have the **Delete** check box selected.

Add New User Button

The **Add New User** button is used to navigate to the Choose a Username and Set Permissions windows where you create a new user account. For more information on how to add a new user, see “Created Account - Add New User Window” on page 70.

To **permanently save the new PIN number to the IP-2002,** do the following:

1. Click **Save**. 

The changes are sent to the IP-2002 temporary storage.

2. Click **Save to EEPROM**. 

The Save to EEPROM window opens.

3. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

4. Click **Reset IP-2002**. 

The new PIN has been reset in the IP-2002 console.

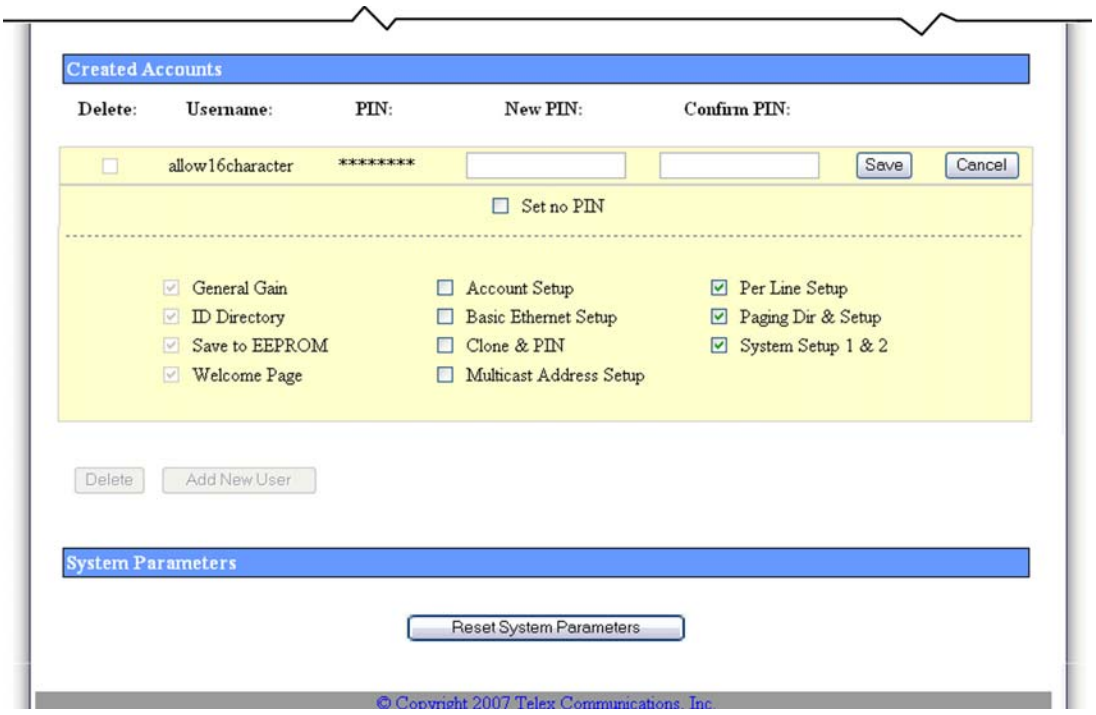
Created Account - Edit Window

The **Created Account** edit window is used to edit permissions and PIN numbers on an existing created account. The Created Account window is in edit mode for created accounts when the lower half of the window is highlighted yellow.

To **activate Created Account edit mode**, do the following:

> From the Account Setup Window in the Created Accounts section, click **Edit**.

NOTE: By default, each created account has permission to change the General Gain Setup, ID Directory, and to Save to EEPROM configuration windows.t



To **change a created account while in edit mode**, do the following:

1. From the Created Accounts - Edit Window, select or deselect check boxes to **grant or remove permissions**. *Permissions change based on selections.*
2. Click **Save**.

NOTE: Click **Cancel**, to discard the changes.

Delete Button

The **Delete** button is used to delete user accounts that have the Delete check box selected.

Username Field

The **Username** field is used to enter a new username.

The username can contain up to *16 characters*, must be lowercase, and no spaces are allowed.

NOTE: Once you have created the username, you cannot change it. You must delete the whole account.

PIN Field

The **PIN** field is used to enter a PIN number for the user account.

The PIN number must be a *4–16 digit* number.

New PIN Field

The **New PIN** field is used to enter a new PIN number for a created account.

The PIN number must be a *4–16 digit* number.

Confirm PIN Field

The **Confirm PIN** field is used to confirm the PIN number you entered in the PIN field. This PIN must match the PIN entered in the New PIN field.

Save Button

The **Save** button is used to save the changes to temporary memory.

To **permanently save changes,** do the following:

1. Click **Save to EEPROM**. 

The Save to EEPROM window opens.
2. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.
3. Click **Reset IP-2002**. 

The new PIN has been reset in the IP-2002 console.

Cancel Button

The **Cancel** button is used to cancel the modification and return to the Account Setup window.

Set No PIN Check Box

The **Set No PIN** check box is used to configure the created user account with no PIN required.

To **set no PIN for the system user account**, do the following:

1. Select the **Set No PIN check box**.
2. Click **Save**.
The account does not require a PIN number.

NOTE: Click **Cancel** to discard changes.

Permission Check Boxes

The **Permission** check boxes indicate which permissions are granted to the current account. If selected, the current account has access to the configuration window. By default, all created accounts have access to the *General Gain*, *ID Directory*, and *Save to EEPROM* windows. See “Set Permissions” on page 71, for more information.

Created Account - Add New User Window

Add New User Button

The **Add New User** button is used to navigate to the Add New User window for Account Setup. Once the Add New User button is selected, the account is configurable.

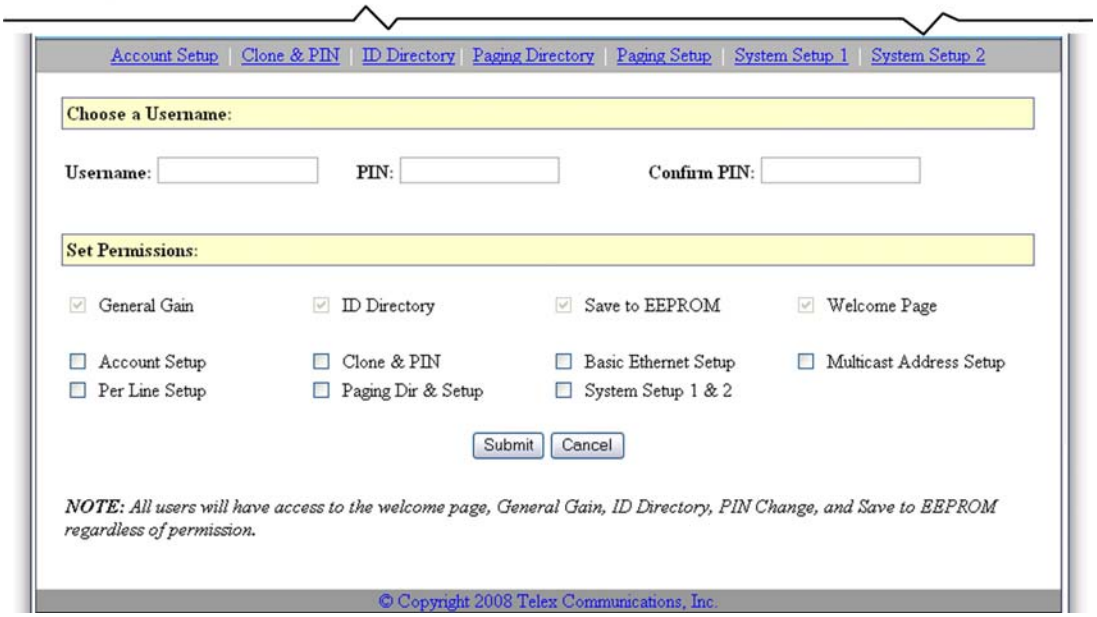


FIGURE 18. Created Account - Add New User

Choose a Username

The **Choose a Username** section is used to configure the Username and PIN for the new user account you are adding.

Username Field

The **Username** field is used to enter a username for the account.

There is a *16 character* limit, all lowercase, and no spaces allowed.

PIN Field

The **PIN** field is used to configure a PIN number for the account you are adding.

The PIN number must be a *4–16 digit* number.

Confirm PIN Field

The **Confirm PIN** field is used to confirm the PIN number entered in the PIN field.

Set Permissions

The **Set Permissions** section is used to configure permissions for the created account. By default, permission to change the General Gain, ID Directory, and Save to EEPROM windows are granted for every user.

General Gain Check Box

The **General Gain** check box indicates permission is granted to make changes to the General Gain page. Permission to change this window is granted on every created account. See “General Gain Setup” on page 45, for more information.

ID Directory Check Box

The **ID Directory** check box indicates permission is granted to make changes to the ID Directory page. By default, permission to change configurations in this window is granted on every created account. See “ID Directory” on page 77, for more information.

Save to EEPROM Check Box

The **Save to EEPROM** check box indicates permission is granted to use the Save to EEPROM page. By default, permission to change configurations in this window is granted on every created account. See “Save To EEPROM” on page 59, for more information.

Welcome Page Check Box

The **Welcome Page** check box indicates permission is granted to change the name of the console’s welcome window. By default, permission to change the name of this window is granted on every created account. See “Welcome Window” on page 40, for more information.

Account Setup Check Box

The **Account Setup** check box indicates permission is granted to make changes to the Account Setup window. See “Account Setup” on page 60, for more information.

Clone & PIN

The **Clone & PIN** check box indicates permission is granted to the Clone & PIN window where the user is able to clone parallel IP-2002 consoles or change PIN numbers for any username in the system. See “Clone & PIN” on page 74, for more information.

Basic Ethernet Setup Check Box

The **Basic Ethernet Setup** check box indicates permission is granted to the Basic Ethernet Setup page where changes can be made by the user. See “Basic Ethernet Setup” on page 41, for more information.

Multicast Address Setup Check Box

The **Multicast Address Setup** check box indicates permission is granted to the Multicast Address Setup page where changes can be made by the user. See “Multicast Address Setup” on page 48, for more information.

Per Line Setup Check Box

The **Per Line Setup** check box indicates permission is granted to the Per Line Setup window where changes can be made by the user. See “Per Line Setup” on page 51, for more information.

Paging Dir. & Setup Check Box

The **Paging Dir. & Setup** check box indicates permission is granted to both the Paging Directory page and the Paging Setup page where changes can be made by the user. See “Paging Directory” on page 83, for more information.

System Setup 1 & 2 Check Box

The **System Setup 1 & 2** check box indicates permission is granted to make changes to System Setup Page 1 and System Setup Page 2. See “System Setup 1” on page 99, or “System Setup 2” on page 104, for more information.

Cancel Button

The **Cancel** button is used to discard changes and return to the Account Setup window.

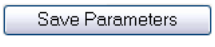
Submit Button

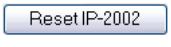
The **Submit** button is used to store the New Username, PIN number, and Permissions. Once you submit your new account the message in Figure 19, appears.

FIGURE 19. Create New User Success Message

To **permanently save changes,** do the following:

1. Click **Save to EEPROM**. 

The Save to EEPROM window opens.
2. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.
3. Click **Reset IP-2002**. 

The new PIN has been reset in the IP-2002 console.

Back to Account Setup Button

The **Back to Account Setup** button is used to navigate back to the Account Setup window.

To **return to the Account Setup window**, do the following:

> Click **Back to Account Setup**.
The Account Setup window appears.

Add Another User Button

The **Add Another User** button is used to navigate back to the Account Setup - Add New User window.

To **add another user**, do the following:

> Click **Add Another User**.
The Account Setup Add New User window appears. For more information, see "Created Account - Add New User Window" on page 70.

Cancel Button

The **Cancel** button is used to exit the created account edit window.

> Click **Cancel**, to exit without making changes.
You are now back at the Account Setup window.)

System Parameters

Reset System Parameters Button

The **Reset System Parameters** button is used to reset to factory default and remove all parameters in the ID Directory, Paging Directory, and Paging Setup windows.

To **reset system parameters** do the following:

1. Click **Reset System Parameters**. 

1. Click **Save to EEPROM**. 

The Save to EEPROM window opens.

2. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

NOTE: If you Reset System Parameters and do not want to permanently save the changes, you can restore the ID Directory, Paging Directory, and Paging Setup configurations.

To **restore system parameters**, do the following:

1. Click **EEPROM**. 

The Save to EEPROM window opens.

2. Click **Reset IP-2002**. 

The ID Directory, Paging Directory and Paging Setup configurations have been restored.

Clone & PIN

The **Clone & PIN** window (Clone Console/PIN Change), shown in Figure 20, is used to copy the configuration settings from another, specified console. In this case, both consoles must be connected to the Ethernet network. The fields for this screen are described below.

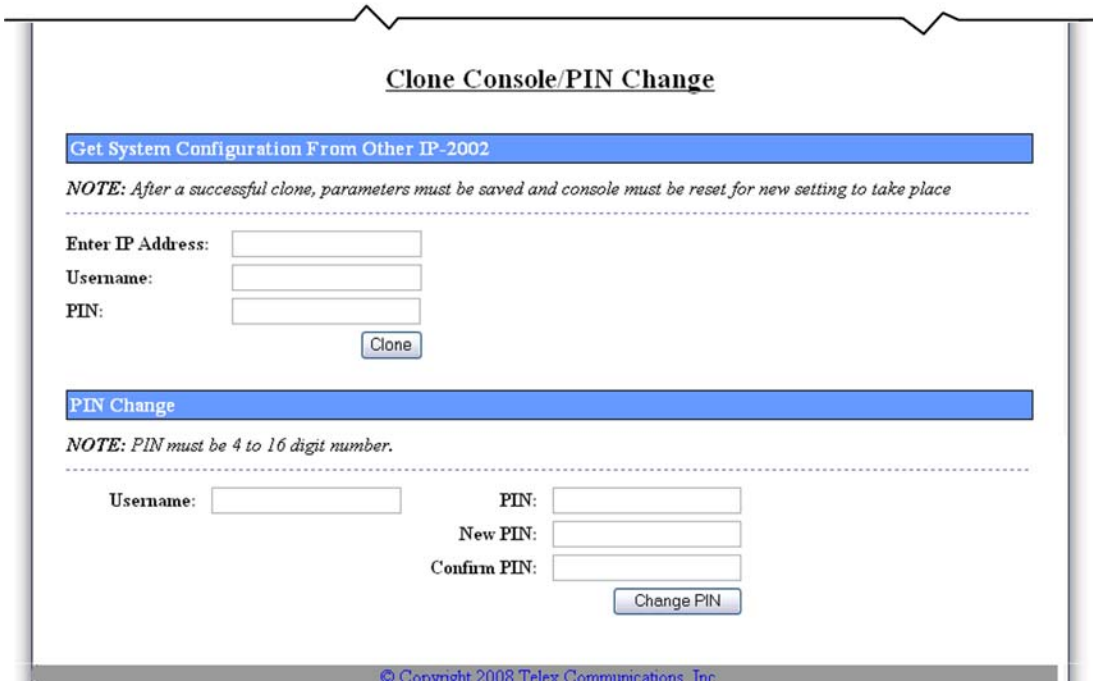


FIGURE 20. Clone Console/PIN Change

Get System Configuration From Other IP-2002

Enter IP Address Field

The **Enter IP Address** field is used to identify the IP Address of the IP-2002 console from which you are cloning.

Username Field

The **Username** field is used to identify the account username of the IP-2002 console from which you are cloning.

There is a *16 character* limit, all lowercase, and no spaces allowed.

PIN Field

The **PIN** field is used to identify the admin account PIN number of the IP-2002 console from which you are cloning.

The PIN number must be a *4–16 digit* number

Clone Button

The **Clone** button is used to send the configuration settings to the second IP-2002's temporary memory.

To **temporarily save the configuration settings**, do the following:

> Click **Clone**.
The configuration is temporarily saved to the console

To **permanently save changes,** do the following:

1. Click **Save to EEPROM**. 

The Save to EEPROM window opens.
2. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.
3. Click **Reset IP-2002**. 

The new PIN has been reset in the IP-2002 console.

PIN Change

Username Field

The **Username** field indicates the user name for which you want to change the PIN number.

There is a *16 character* limit, all lowercase, and no spaces allowed.

PIN Field

The **PIN** field indicates the current PIN number used to access the IP-2002 configuration options.

The PIN number must be a *4–16 digit* number

New PIN Field

The **New PIN** field indicates the New PIN number entered for this user.

The PIN number must be a *4–16 digit* number.

Confirm PIN Field

The **Confirm PIN** field is used to a re-enter the new PIN number.

Change PIN Button

The **Change PIN** button is used to temporarily save PIN changes.

To **change a PIN number**, do the following:

1. In the Username field, enter the **username**.
   Asterisks appear for each character you enter.
2. In the PIN field, enter the ***4–16 digit*** PIN.
   Asterisks appear for each character you enter.
3. In the New PIN field, enter the **new PIN**.
   Asterisks appear for each character you enter.
4. In the Confirm PIN field, re-enter the **new PIN**.
   Asterisks appear for each character you enter.
5. Click **Change PIN**.
   The new PIN is temporarily saved.

To **permanently save changes,** do the following:

1. Click **Save to EEPROM**. 

   The Save to EEPROM window opens.
2. Click **Save Parameters**. 

   Changes are now permanently saved to the IP-2002 console.
3. Click **Reset IP-2002**. 

   The new PIN has been reset in the IP-2002 console.

ID Directory

The **ID Directory** window, shown in Figure 21, in used to map ANI numbers to general alphanumeric names. This feature works in conjunction with the IP-223/IP-224. The fields on this page are described below.

A total of 500 ID entries are allowed in the IP-2002 ID Directory.

FIGURE 21. ID Directory

NOTE:

- You cannot leave empty rows between filled-in rows in the ID Directory. If you leave empty rows the software forces the filled-in rows up into the empty rows after clicking the submit button.
- After submitting settings, the name list is arranged in alphabetical order
- If any field is left empty, the console operator is not be able to access the entry. All fields must be filled before the entry is valid.

Jump to Entry Drop Down Menu

The **Jump to Entry** drop down menu is used to select an ID directory page to navigate to. The ID Directory window displays 20 IDs per page. Once you have chosen the range of pages you want to display, click **GO**.

Submit Button

The **Submit** button, located at the top and bottom of the window, is used to temporarily save changes to the IP-2002. Submit changes before navigating from this window.

Clear All Button

The **Clear All** button is used to clear all the ID entries on the ID Directory list.

IMPORTANT: The Clear All button clears all pages (1–500) with one click no matter which page you are currently viewing. You will not be given the chance to cancel the Clear All action, see Figure 22.

FIGURE 22. ID Directory - Clear All Button

Enable ID Look Up Check Box

The **Enable ID Look Up** check box is used to enable the use of the ID Directory. If selected, the IP-2002 displays the name when a call is received. Otherwise, the IP-2002 displays the ID when a call is received.

ID Directory Setup

Delete Check Box

The **Delete** check box is used to delete the selected ID.

To **delete the ID**, do the following:

1. Select the **Delete** check box**.**
2. Click **Submit**.
   The ID is deleted from the directory.

Name Field

The **Name** field is used to assign an easily recognizable alphanumeric name to the ID. The name appears on the IP-2002 console.

The Name field is also used to label the Status ID (maximum *2 characters*) if Status (Kenwood FleetSync only) is chosen in the ID Type drop down menu. It is important that the name given to any Status line type describe the Status ID function entered in the Status field because this is the only field that is visible to the console operator is some cases.

The field value can contain up to *12 characters.*

IMPORTANT: If this field is left blank, the entire line in the ID Directory is invalid and not available for selection.

EXAMPLE: If you enter the Status ID for an emergency you can enter EMERGENCY in the Name field. The IP-2002 console displays “EMERGENCY” as well as the Status ID number.

ID Field

The **ID** field indicates the identification number (for example; 2131111) of the unit you want to associate with the ID type. Most often this is an ANI number. See below for character length allowed.

The **ID** field is also used to enter a Status ID code for Kenwood FleetSync radios. See the manufacturer’s technical data for Status ID code numbers. *Status* must be chosen from the drop down menu in the ID Type field.

IMPORTANT: If this field is left blank, the entire line in the ID Directory is invalid and not be available for selection.

ID number format:

- No spaces or special characters (except for iDEN ID and group numbers, see below) are allowed.
- Character limits for each device are as follows:

• **Generic** - Up to *17 Characters* allowed

• **Phone** - Up to *11 characters* allowed within the US. Other countries vary. Maximum *17 character* field.

• **Radio Phone** - Up to *11 characters* allowed within the US. Other countries vary. Maximum *17 character* field.

• **iDEN** - Up to *17 characters* allowed.

• **Motorola**[1] **MDC1200** - Maximum *4 characters* allowed

• **Kenwood FleetSync** - Maximum *7 characters* allowed. Enter four (4) digits, if you are using the Fleet ID feature on the Per Line Setup window. See “Before this option can be selected, the line must be configured for Kenwood FleetSync on the “Multicast Address Setup” on page 48.” on page 56.

• **Status** - Maximum *2 characters* allowed. See manufacturer’s technical data for Status ID code numbers.

ID Type Drop Down Menu

The **ID Type** drop down menu indicates the device option configured for the line.

The following ID type options are discussed in detail below.

Generic
Phone
Radio Phone
iDEN
Motorola MDC1200
Kenwood FleetSync
Status

1. *See Copyright Information on page 2.*

Generic Option

The **Generic** option is used to configure the line for any other ID Type device.

Phone Option

The **Phone** option is used to configure the line for placing standard phone calls.

Radio Phone Option

The **Radio Phone** option is used to configure the line for placing radio phone calls.

iDEN Option

The **iDEN** option is used to configure the line for placing iDEN phone calls.

To **configure the iDEN ID for an individual,** do the following:

> In the ID field, enter the **ID number**.

To **configure the iDEN ID for a group**, do the following:

> In the ID field, enter "#" for the first character followed by the **group number**.

Motorola MDC 1200 Field

The **Motorola MDC1200** field is used to configure receiving and transmitting calls to and from Motorola MDC1200 devices. When the console receives audio the ID displays.

NOTE: This and earlier versions of the firmware do not support special MDC1200 features such as select call and sending status, etc.

Kenwood FleetSync Field

The **Kenwood FleetSync** field is used to configure the line for placing calls to Kenwood FleetSync radios.

Status Field

The **Status** field is used to store a FleetSync Status ID code number. See the manufacturer's technical data for Status ID code numbers.

RX Only Check Box

The **RX Only** check box indicates an ID number that cannot be selected for placing a call, but appears on the console display when receiving calls from the ID number.

Previous 20 Button

The **Previous 20** button displays the previous page of 20 IDs, if applicable.

Submit Button

The **Submit** button is used to temporarily save changes to the IP-2002. Submit changes before navigating from this window.

Next 20 Button

The **Next 20** button displays the next page of 20 IDs, if applicable.

To **permanently save changes,** do the following:

1. Click **Submit**. 

The changes are sent to the IP-2002 in temporary storage.
2. Click **Save to EEPROM**. 

The Save to EEPROM window opens.
3. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

Printer Friendly Link

The **Printer Friendly** link is used to navigate to the Print ID List window.

Print ID List Window (Directory)

The **Print ID List** window, shown in Figure 23, is used to select, display, and print a list of ID numbers for a particular device. The list consists of an index number, name (alias) and ID number. Once an ID list is displayed it can be printed or copied.

Select A List Drop Down Menu

The **Select A List** drop down menu is used to select a device for the ID list. Available list options are *All List, Generic, Phone, Radio Phone, iDEN, MotorolaMDC1200, Kenwood FleetSync, Status, and Paging.*

Submit Button

The **Submit** button is used to submit the request and generate a report to display in the window. The list is now ready for printing.

To **recall and print a list of ID numbers for a device**, do the following:

1. From the Select A List drop down menu, select a **device**.
2. Click **Submit**.
The ID List appears.
3. From the File menu, select **Print**.
A Print window appears.
4. Select a **printer** and click **Print**.
The list is sent to the printer.

NOTE: Once the list appears in the Print ID List window, the data can be highlighted, copied, and pasted into a spreadsheet.

ID List

The **ID List** displays all IDs assigned to the selected device, see Figure 23. The list displays the ID List title, Index, Name, and ID # columns.

ID List Title

The **ID List Title** appears at the top of the window and identifies the type of IDs in the list

Index Column

The **Index** column identifies an index number for each entry. The index number is used to select IDs on the console and saves the operator from tedious scrolling.

Name Column

The **Name** column identifies the alias assigned to the ID.

ID Column

The **ID** column identifies the ID number used to place calls.

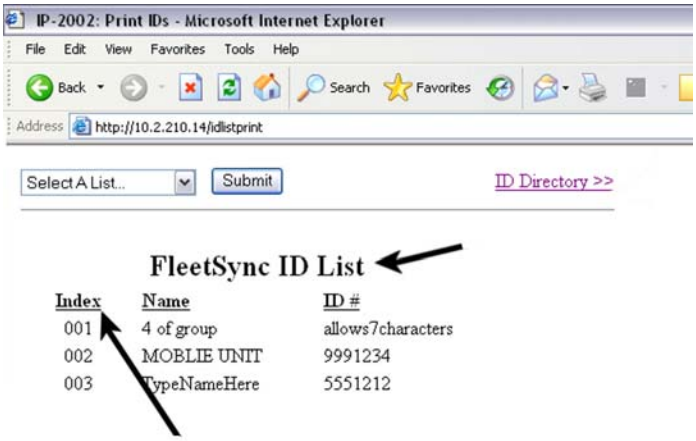


FIGURE 23. Print ID List

ID Directory >> Link

The **ID Directory** >> link is used to navigate back to the ID Directory window. Or you can use the browser window's Back button.

Paging Directory

The **Paging Directory** window, shown in Figure 24, is used to configure the lines for paging. There can be a total of 100 page entries, 20 entries per window, created in the IP-2002 Paging Directory. The fields in this window are described below.

NOTE: Pages must be configured on the Page Setup window, see page 88, before configuring the Paging Directory.

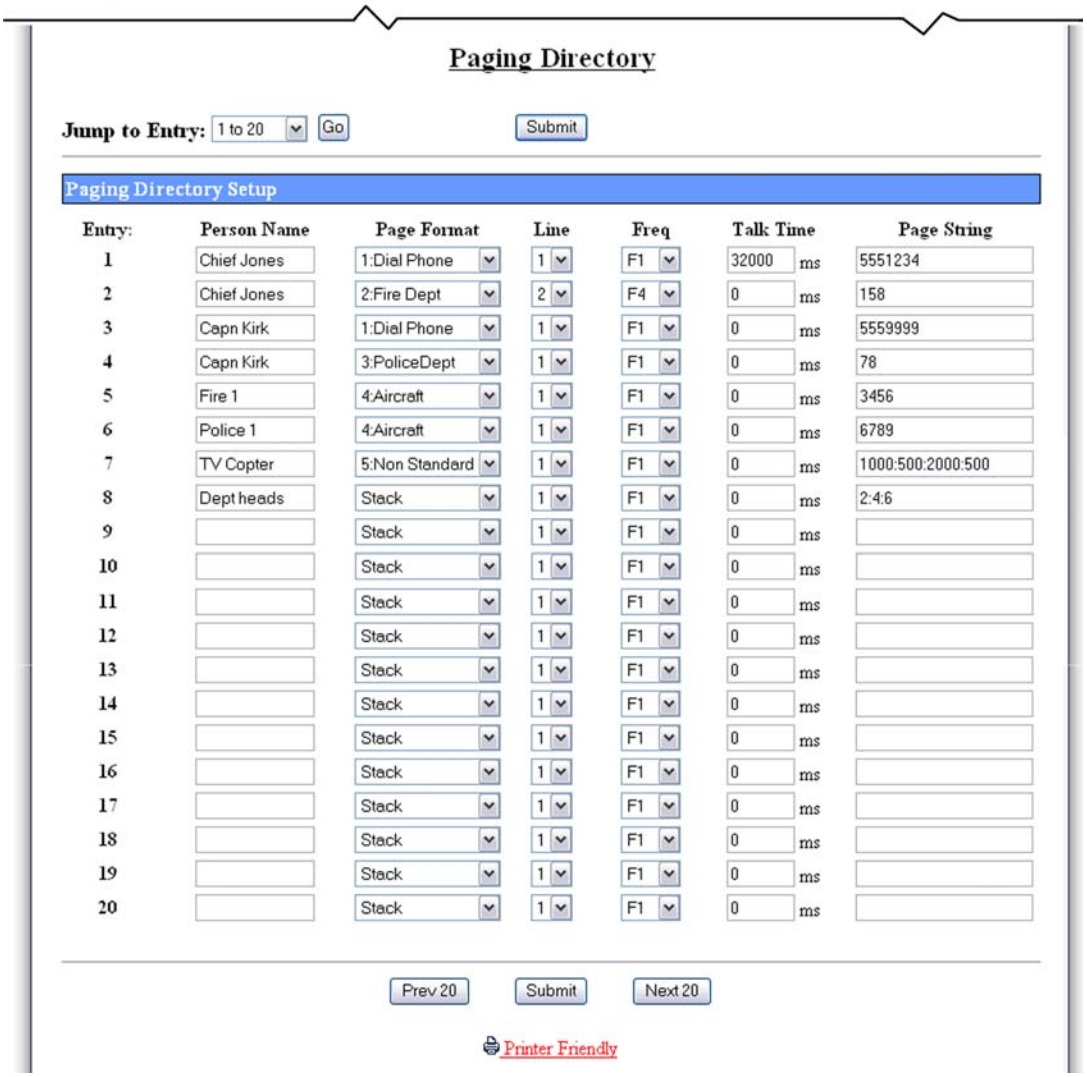


FIGURE 24. Paging Directory

Jump to Entry Drop Down Menu

The **Jump to Entry** drop down menu is used to select a Paging Directory window to navigate to. Once you have chosen the range of pages you want to display, click **GO**.

Submit Button

The **Submit** button is used to temporarily save changes to the IP-2002. Submit changes before navigating from this window.

Paging Directory Setup

Person Name Field

The **Person Name** field is used to enter the person's name or a description of the associated page. The name will display on the console when the page is available for selection.

Up to *12 characters* can be entered in this field.

Page Format Drop Down Menu

The **Page Format** drop down menu indicates the format of the page being entered into the directory. The Stack menu option is the default page format in the menu. Once Page formats are created in "Paging Setup" on page 88, their paging setup names appear in the Page Format drop down menu for selection.

Stack Menu Option

The **Stack** menu is the default option, it is used to stack several pages to send at one time.

To **stack pages**, do the following:

1. Enter a **description** in the Person Name field.
2. From the Page Format drop down menu, select **Stack**.

   NOTE: When stacking a page, the Line and Frequency drop down menus have no effect.
3. In the Talk Time field, enter a value between *0 and 32000ms*.
4. In the Page String field, enter each **page entry number** separated by a colon (:).

   EXAMPLE: To stack page entries 2, 4 and 6, enter 2:4:6 in the Page Stack field. See Figure 24.

   NOTE: Stacked pages are sent to each page's respective line. Stacked lines remain active until all pages have been sent.

Line Drop Down Menu

The **Line** drop down menu indicates which line the page is sent on.

Field values are *line 1* or *line 2*.

Freq Drop Down Menu

The **Freq** drop down menu indicates the frequency the page is sent on.

Field values are *F1 to F16*.

Talk Time Field

The **Talk Time** field indicates the amount of audio transmission time, in ms, the console operator has to talk to the field after the tone is sent to the radio.

NOTE: When the page format is set to a phone line, the talk time has no effect and should be set to zero (0).

The field value ranges from *0 to 32000ms*.

Page String

The **Page String** field indicates the required string or code to send the page to. Page string formats vary depending on the page type (*2 Tone 100, 2 Tone 1000, DTMF, or Manual*). The page type is assigned to the Page Format (called *Name* on the Paging Setup window) during the paging setup process. The name you enter on the setup page displays in the Page Format drop down menu. You must know the page type for the selected page format when entering the page string.

Use the following formats for the page string where the selected Page Format's page type is:

Stack - See "Stack Menu Option" on page 84.

2 Tone 100 Setup - Requires *2 digits*, see "Tone Group Frequencies" on page 149.

2 Tone 1000 Setup - Requires *3 digits*, see "Paging Plan Table" on page 150.

DTMF - Up to *20 characters* are allowed. The entry is restricted to the Number of Page Digits field configured on the Paging Setup window. For example, entry 1, shown in Figure 24, represents a 7-digit phone number.

Manual - Up to *20 characters* are allowed. Configure the tone and duration in the Page String field. This field is limited to 2 tones with each entry separated by a colon (:). For example, entry 7, shown in Figure 24, represents a 1000Hz tone for 500ms followed by a 200Hz tone for 500ms (1000:500:2000:500).

Previous 20 Button

The **Previous 20** button displays the previously viewed page, if applicable.

Submit Button

The **Submit** button is used to temporarily save changes to the IP-2002. Submit changes before navigating from this webpage.

Next 20 Button

The **Next 20** button displays the next page of 20 pages, if applicable.

To **permanently save changes,** do the following:

1. Click **Submit**. 

The changes are sent to the IP-2002 in temporary storage.
2. Click **Save to EEPROM**. 

The Save to EEPROM window opens.
3. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

Printer Friendly Link

The **Printer Friendly** link is used to navigate to the Print ID List window.

Print ID List Window (Paging)

The **Print ID List** window, shown in Figure 25, is used to select, display, and print a list of Paging IDs. The list consists of an index number, name (alias) and page string. Once a Paging ID list is displayed it can be printed or copied.

Select A List Drop Down Menu

The **Select A List** drop down menu is used to select Paging for the ID list.

Submit Button

The **Submit** button is used to submit the request and generate a report to display in the window. The list is now ready for printing.

To **recall and print a list of paging IDs**, do the following:

1. From the Select A List drop down menu, select **Paging ID**.
2. Click **Submit**.
The Paging ID List appears.
3. From the File menu, click **Print**.
A Print window appears.
4. Select a **printer** and click **Print**.
The list is sent to the printer.

NOTE: Once the list appears in the Print ID List window, the data can be highlighted, copied, and pasted into a spreadsheet.

ID List

The **ID List** displays all Paging IDs assigned to the page string, see Figure 23. The list displays the ID List title, Index, Name, and Page String columns.

ID List Title

The **ID List Title** appears at the top of the window and identifies the type of IDs in the list

Index Column

The **Index** column identifies an index number for each entry. The index number is used to select paging IDs on the console and saves the operator from tedious scrolling.

Name Column

The **Name** column identifies the name of the paging ID.

Page String Column

The **Page String** column identifies the page string used for paging.

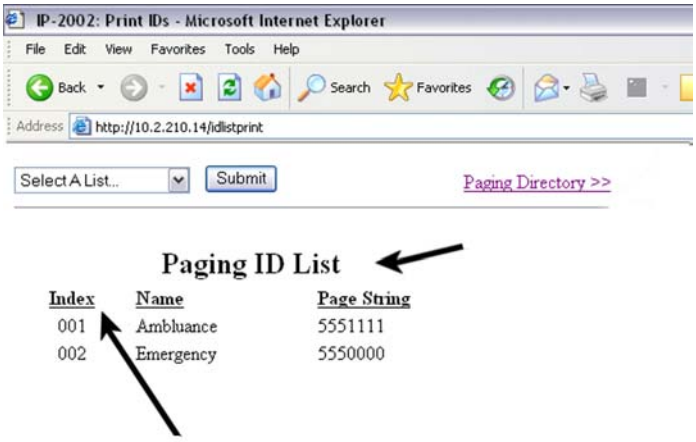


FIGURE 25. Print Paging ID List

ID Directory >> Link

The **ID Directory** >> link is used to navigate back to the ID Directory window. Or you can use the browser window's Back button.

Paging Setup

The **Paging Setup** window, shown in Figure 26, is used to configure up to ten (10) paging option groups and to navigate to the Paging Parameter Setup window for the paging option group configuration. Each of the page (encoder) types are detailed in the following pages.

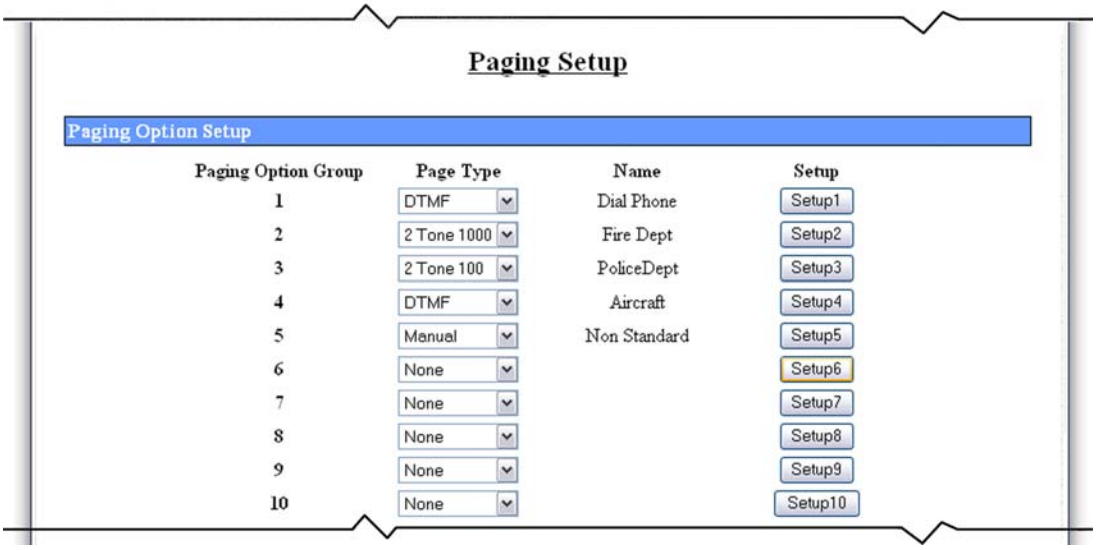


FIGURE 26. Paging Setup

Paging Option Setup

Paging Option Group Number

The **Paging Option Group** number indicates the group number for the paging setup.

Page Type Drop Down Menu

The **Page Type** drop down menu is used to select the paging encoder type you want to configure for the page group.

The following page types are supported:

2 Tone 100 (Quickcall II 100)
2 Tone 1000 (Quickcall II 1000)
DTMF
Manual

Name Field

The **Name** field is used to display the name of the Paging Option Group you configured in the Setup (1–10) window for the group. Once configured, the name appears in the Page Format drop down menu on “Paging Directory” on page 83.

Setup (1–10) Button

The **Setup (1–10)** button is used to navigate to the configuration window for the type selected in the Page Type drop down menu.

To **setup each of the 10 page types**, do the following:

1. From the Line 1 Page Type drop down menu, select the **page type** you want to set up.
2. Click **Setup**.
   The Paging Parameters window for the paging encoder you choose appears.

2 Tone 100 Setup Parameters

The **2 Tone 100 Setup Parameters** window, shown in Figure 27, is used to setup paging sequence parameters. This format requires a two-digit code to generate a group paging sequence. The top two (2) lines of the window give the page (encoder) type being configured, and the table entry number.

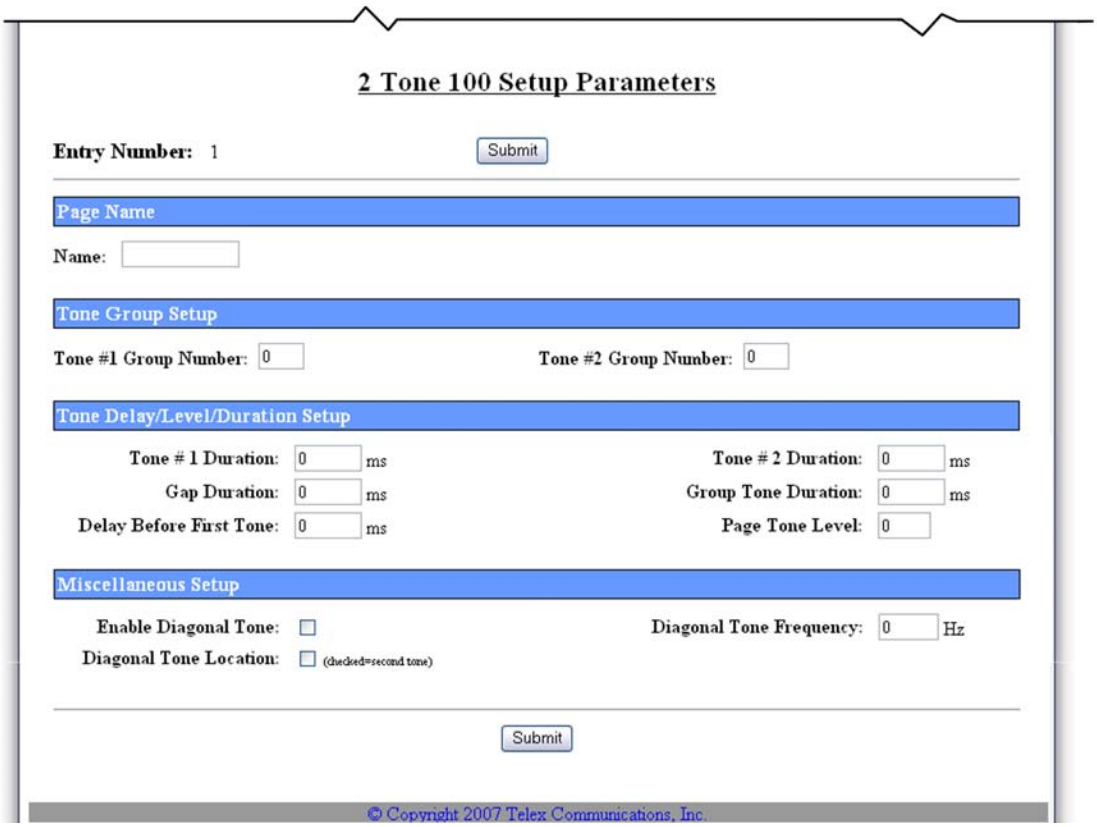


FIGURE 27. 2 Tone 100 Setup

Submit Button

The **Submit** button, located at the top and bottom of the window, is used to temporarily save changes to the IP-2002. Submit changes before navigating from this window.

Page Name

Name Field

The **Name** field indicates the name associated with a particular setup for this encoder.

Names can be up to *12 characters* long.

Tone Group Setup

Tone #1 and #2 Group Number Fields

The **Tone #1 and #2 Group Number** fields are used to configure the first and second page tone signals. See the ”Tone Group Frequencies 1–7”and ”Tone Group Frequencies 8–16”in “Tone Group Frequency and Paging Tables” on page 149, for tone group numbers.

These field values range from *1 to 14*.

To **designate a tone group for Tone #1 and #2**, do the following:

- In each Tone #1 and Tone #2 fields, enter a **number** from 1–14.
  When paging, Tone #1 then Tone #2 are played in sequence.

Tone Delay/Level /Duration Setup

Tone #1 Duration Field

The **Tone #1 Duration** field indicates the duration, in ms, the first tone is played.

This field value ranges from *0 to 32000ms*.

Gap Duration Field

The **Gap Duration** field indicates the duration, in ms, between tones.

This field value ranges from *0 to 32000ms*.

Delay Before First Tone Field

The **Delay Before First Tone** field indicates the amount of time, in ms, allowed from PTT until the first tone is played.

This field value ranges from *0 to 32000ms*

Tone #2 Duration Field

The **Tone #2 Duration** field indicates the duration, in ms, the second tone is played.

This field value ranges from *0 to 32000ms.*

Group Tone Duration Field

The **Group Tone Duration** field indicates the duration, in ms, the group tone is played. Generally, group tones conform to standard paging plans as listed in ”Paging Plan Table” in “Tone Group Frequency and Paging Tables” on page 149.

This field value ranges from *0 to 32000ms.*

Page Tone Level Field

The **Page Tone Level** field indicates the level, in dB, of page tone.

This field value ranges from *-60dB to 12dB*.

Miscellaneous Setup

Enable Diagonal Tone Check Box

The **Enable Diagonal Tone** check box is used to determine if the diagonal tone of a group is used or not used. When selected, the diagonal tone frequency is used in place of either the first or second tone depending on the configuration of the Diagonal Tone Location check box.

Diagonal Tone Location Check Box

The **Diagonal Tone Location** check box indicates whether or not the diagonal tone is used in place of the second tone. If selected, the diagonal tone overrides the second tone. Otherwise, group tone is used.

Diagonal Tone Frequency Field

The **Diagonal Tone Frequency** field indicates the frequency, in Hz, at which the tone is sent.

This field value ranges from *0 to 3000Hz*.

To **permanently save changes,** do the following:

1. Click **Submit**. 

The changes are sent to the IP-2002 in temporary storage.
2. Click **Save to EEPROM**. 

The Save to EEPROM window opens.
3. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

2 Tone 1000 Setup Parameters

The **2 Tone 1000 Setup Parameters** window, shown in Figure 28, is used to setup paging sequence parameters. This format requires a three-digit code to generate a group paging sequence. The top lines of the window give the page (encoder) type being configured, and the table entry number.

FIGURE 28. 2 Tone 1000 Setup Parameters

Submit Button

The **Submit** button, located at the top and bottom of the window, is used to temporarily save changes to the IP-2002. Submit changes before navigating from this window.

Page Name

Name Field

The **Name** field indicates the name associated with a particular setup for this encoder.

Names can be up to *12 characters* long.

Tone Plan Setup

Tone Plan Number Field

The **Tone Plan Number** field is used to configure the first and second page tones. See “Code Plan Numbers and Pager Capcode Tables” on page 151 and “Tone Group Frequencies” on page 149 for tone group numbers and frequencies.

EXAMPLE: If the pager to be reached is N349, the Telex Code Plan Number would be set to 12 which corresponds to group Mot N. All pagers using the N group would then reference the encoder setup in the listing of all persons. The 2 corresponds to the line, in Group N, from which the tone groups are select. in this case, there are 3 ways to take both the first and second tone from group number 3 (3+3). So, for N349, the first tone sent would be 313.0 for 1 second, followed by 1063.1 for 3 seconds. See Table 3 on page 93, for a full explanation.

TABLE 3. Example Tone Plan Number Locator

DIGIT	IDENTIFIES	DESCRIPTION	LOCATION
N	Pager	Locate the **Mot N group pagers** in “Code Plan Numbers and Pager Capcode Tables” on page 151. Enter the **Telex Codeplan #** from the top row in the Tone Plan Number (12). *This digit also identifies the entries for the Tone 1 Time, Gap Duration, Tone 2 Time and Group Tone Time fields, (see “Standard Paging Plans” on page 150).*	Where the Telex Codeplan # (12) and the Pager Capcode (3xx) intersect in the table to identify the Telex Group No. (3+3). This identifies the frequencies for Tone 1 and Tone 2.
3	Pager Capcode	Locate the **Pager Capcode (3xx)** in “Code Plan Numbers and Pager Capcode Tables” on page 151.	In the table’s left column.
4	Tone 1 Frequency	Using the first number identified above (3), locate the **Telex Group No. 3** and **Tone Group 4** (second digit in pager number) from “Tone Group Frequencies” on page 149.	Where these two items intersect in the table identifies the frequency of tone 1 (313.0).
9	Tone 2 Frequency	Using the second number identified above (3), locate the **Telex Group No. 3** and **Tone Group 9** (third digit in pager number) from “Tone Group Frequencies” on page 149.	Where these two items intersect in the table identifies the frequency of tone 2 (1063.2).

Tone/Delay/Level/Duration Setup

Tone #1 Duration Field

The **Tone #1 Duration** field indicates the duration, in ms, the first tone is played.

This field value ranges from *0 to 32000ms*.

Gap Duration Field

The **Gap Duration** field indicates the duration, in ms, between tones.

This field value ranges from *0 to 32000ms.*

Delay Before First Tone Field

The **Delay Before First Tone** field indicates the amount of time, in ms, allowed from PTT until the first tone is played.

This field value ranges from *0 to 32000ms*.

Tone #2 Duration Field

The **Tone #2 Duration** field indicates the duration, in ms, the second tone is played.

This field value ranges from *0 to 32000ms*.

Group Tone Duration Field

The **Group Tone Duration** field indicates the duration, in ms, the group tone is played. Generally, group tones conform to standard paging plans as listed in ”Paging Plan Table” in “Tone Group Frequency and Paging Tables” on page 149.

This field value ranges from *0 to 32000ms.*

Page Tone Level Field

The **Page Tone Level** field indicates the level, in dB, of tone for paging.

This field value ranges from *-60dB to 12dB.*

Miscellaneous Setup

Enable Diagonal Tone Check Box

The **Enable Diagonal Tone** check box indicates whether the diagonal tone of a group is used or not used. When selected, the diagonal tone frequency is used in place of either the first or second tone depending on the configuration of the Diagonal Tone Location check box.

Diagonal Tone Location Check Box

The **Diagonal Tone Location** check box indicates whether the diagonal tone is used in place of the first or second tone. If selected, the diagonal tone overrides either the first or second group tone. Otherwise, the diagonal tone is used.

Diagonal Tone Frequency Field

The **Diagonal Tone Frequency** field indicates the frequency, in Hz, at which the tone is sent.

This field value ranges from *0 to 3000Hz*.

To **permanently save changes,** do the following:

1. Click **Submit**. 

The changes are sent to the IP-2002 in temporary storage.
2. Click **Save to EEPROM**. 

The Save to EEPROM window opens.
3. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

DTMF Setup Parameters

The **DTMF Setup Parameters** window, see Figure 29, is used to setup DTMF paging. The standard DTMF digits are allowed in any length. The DTMF (Paging) Setup fields are described in detail below. The top two lines of the window give the following information: the page (encoder) type being configured, and the table entry number.

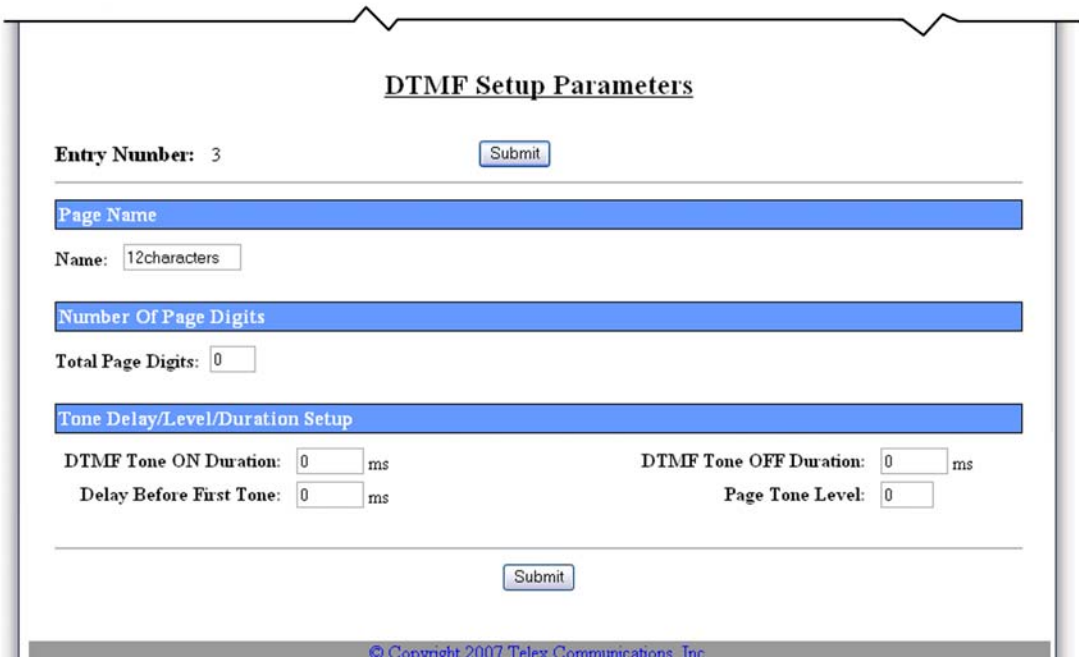


FIGURE 29. DTMF Setup Parameters

Submit Button

The **Submit** button, located at the top and bottom of the window, is used to temporarily save changes to the IP-2002. Submit changes before navigating from this window.

Page Name

Name Field

The **Name** field indicates the name associated with a particular setup for this encoder.

Names can be up to *12 characters* long.

Number of Page Digits

Total Page Digits Field

The **Total Page Digits** field indicates the number of digits in a standard page. All pages that utilize this option expect this number of digits when paged.

This field value ranges from *0 to 20 digits*.

Tone Delay/Level/Duration Setup

DTMF Tone ON Duration Field

The **DTMF Tone ON Duration** field indicates the amount of time, in ms, the DTMF tone is played.

This field value ranges from *0 to 500ms*.

Delay Before First Tone Field

The **Delay Before First Tone** field indicates the amount of time, in ms, allowed from PTT until the first tone is played.

This field value ranges from *0 to 32000ms*.

DTMF Tone OFF Duration Field

The **DTMF Tone OFF Duration** field indicates the amount of time, in ms, allowed between the DTMF tones.

This field value ranges from *0 to 500ms*.

Page Tone Level Field

The **Page Tone Level** field indicates the level, in dB, of tone for paging.

The field value ranges from *-60dB to 12dB*.

To **permanently save changes,** do the following:

1. Click **Submit**. 

The changes are sent to the IP-2002 in temporary storage.
2. Click **Save to EEPROM**. 

The Save to EEPROM window opens.
3. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

Manual Paging Setup Parameters

The **Manual Paging Setup Parameters** window, see Figure 30, is used to create tone pages using tones not included in the tone chart. The top two lines of the window give the page (encoder) type being configured, and the table entry number.

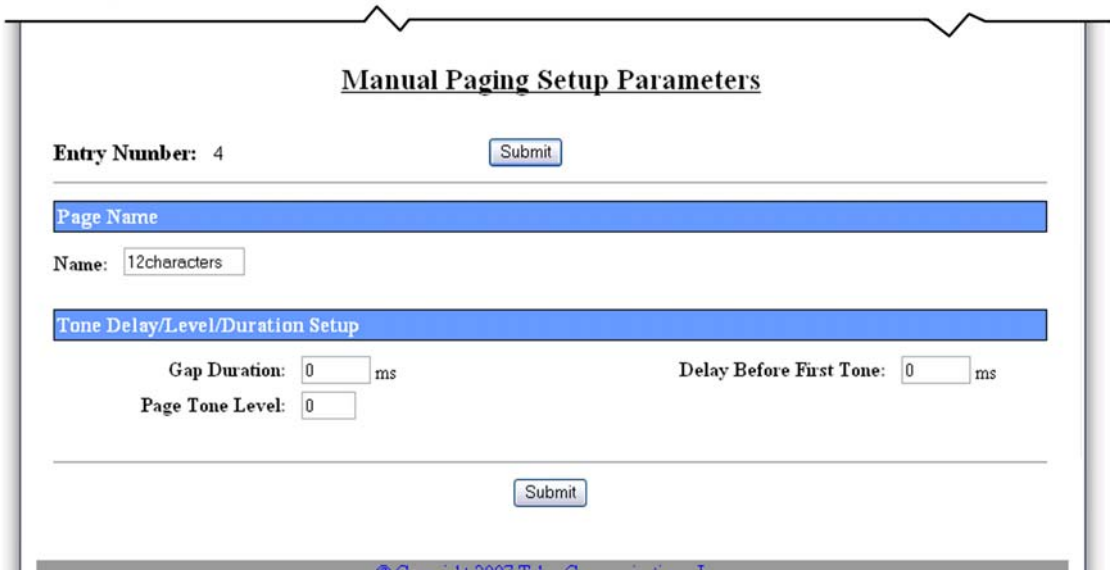


FIGURE 30. Manual Paging Setup Parameters

Submit Button

The **Submit** button, located at the top and bottom of the window, is used to temporarily save changes to the IP-2002. Submit changes before navigating from this window.

Page Name

Name Field

The **Name** field indicates the name associated with a particular setup for this encoder.

Names can be up to *12 characters* long.

Tone Delay/Level/Duration Setup

Gap Duration Field

The **Gap Duration** field indicates the amount of time, in ms, between tones.

This field value ranges from *0 to 50ms*.

Page Tone Level Field

The **Page Tone Level** field indicates the tone level, in dB, for paging.

This field value ranges from *-60dB to 12dB.*

Delay Before First Tone Field

The **Delay Before First Tone** field indicates the amount of time, in ms, allowed from PTT until the first tone is played.

This field value ranges from *0 to 32000ms*.

To **permanently save changes,** do the following:

1. Click **Submit**. 

The changes are sent to the IP-2002 in temporary storage.

2. Click **Save to EEPROM**. 

The Save to EEPROM window opens.

3. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

System Setup 1

The **System Setup 1** window, shown in Figure 31, is used to configure all functions not specific to a line. Each option on this window is discussed below.

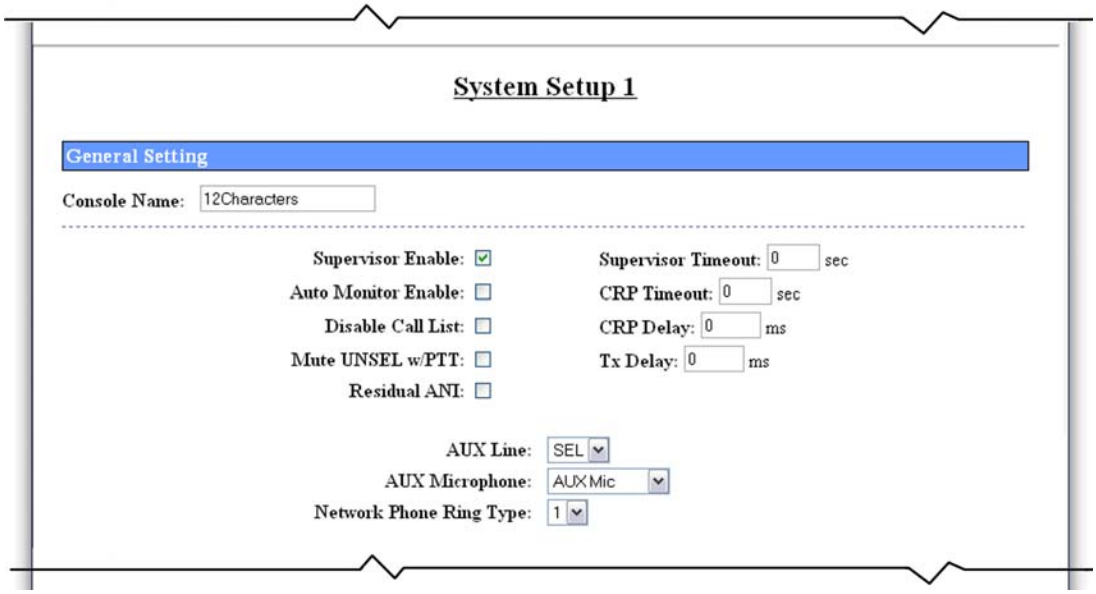


FIGURE 31. System Setup 1 (1)

General Setting

Console Name Field

The **Console Name** field, shown in Figure 6, displays the name assigned to the console and is displayed in the web browser configuration header.

This field value ranges from *0 to 12 characters*.

Supervisor Enable Check Box

The **Supervisor Enable** check box indicates the console operator can take control of any selected line. If selected, the console SUP button lights red. The console sends a SUP packet so other consoles are not able to transmit or monitor receive audio on the line. Otherwise, the console can be supervised at any time, but cannot be the supervisor.

Auto Monitor Enable Check Box

The **Auto Monitor Enable** check box indicates the handset or headset has been taken offhook. This function is used with the handset/headset option. If selected, a monitor packet is sent.

Disable Call List Check Box

The **Disable Call List** check box is used to disable the CLST feature on the console. The CLST option is used by the console operator to access the directory list of ID numbers.

NOTE: If the check box is not selected, the console operator can select the CLST softkey on the display and access the ID directory. For more information on setting up a call list see “Line Type Drop Down Menu” on page 49.

Mute UNSEL w/PTT Check Box

The **Mute UNSEL w/PTT** check box indicates received audio from any channel not selected during a PTT is muted. When selected, the audio received from an unselected line during PTT is muted.

Residual ANI Check Box

The **Residual ANI** check box indicates the console displays the previous caller’s ID when the current caller does not have an ID. Press **any** button to clear the ID from the console display.

If selected and the current caller does not have an ID, then the previous ID appears on the console.
If unselected and the current caller does not have an ID, then the previous ID automatically clears from the display.

Supervisor Timeout Field

The **Supervisor Timeout** field indicates the amount of time, in seconds, the supervisor button is active. If the field value is set to *0*, the supervisor function can be toggled ON/OFF.

This field value ranges from *0 to 3600 seconds*.

CRP Timeout Field

The **CRP Timeout** field indicates the amount of time, in seconds, a crosspatch is allowed to be inactive before it is automatically dropped.

This field value ranges from *0 to 3600 seconds*.

CRP Delay Field

The **CRP Delay** field indicates the delay, in ms, for the crosspatch audio. By setting this value greater than the radio system channel acquisition time, the crosspatch audio is delayed until the system is able to transmit.

This field value ranges from *0 to 1000ms*.

TX Delay Field

The **TX Delay** field indicates the amount of delay, in ms, for microphone audio. By setting this value greater than the radio system channel acquisition time, the console operator can begin speaking after the PTT button is pressed and the audio is delayed until the system is able to transmit.

This field value ranges from *0 to 1000ms*.

AUX Line Drop Down Menu

The **AUX Line** drop down menu is used to route the rear panel AUX input through the selected line.

The following auxiliary routing options are available:

SEL - The auxiliary rear input is routed to the selected line.

Line 1 - The rear auxiliary input is routed to Line 1.

Line 2 - The rear auxiliary input is routed to Line 2.

AUX Microphone Drop Down Menu

The **AUX Microphone** drop down field is used to indicate which mic is used on the selected auxiliary line.

The following auxiliary microphone options are available:

AUX Mic - The AUX microphone is the default for the selected line.

Panel Mic - The panel microphone is active when the console PTT button is pressed.

Desk Mic - The desk microphone is active when the console PTT button is pressed.

Handset Mic- The handset mic is the active source, if offhook.

Network Phone Ring Type Drop Down Menu

The **Network Phone Ring Type** drop down menu is used to select the type of annunciation (ring) the console plays when a call is received. There are eight (8) different rings to select from. Cadences are: one (1) second ring, four (4) second ring period. Possible rings are from lowest to highest: A=440Hz, B=494Hz, C=523Hz, D=587Hz, E=659Hz, F=698Hz,G=784Hz, 2A= 880Hz. Use Table 4 to make your ring selection.

TABLE 4. Annunciation Types

Setup Option	Note One	Note Two	Note Three	Note Four
1	E	A	E	A
2	A	E	C	G
3	F	G	A	C
4	G	D	A	D
5	A	C	E	G
6	G	E	C	A
7	G	G	C	C
8	G	2A	G	2A

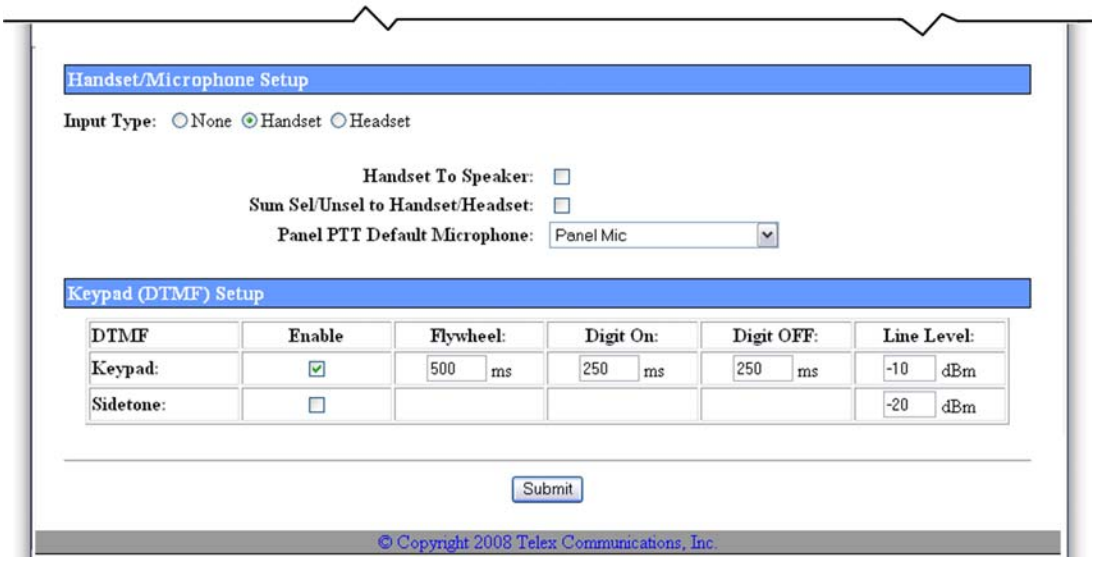


FIGURE 32. System Setup 1 (2)

Handset/Microphone Setup

Input Type Radio Buttons

The **Input Type** radio buttons are used to select the input source to route receive audio based on hookswitch position.

The following Input Type options are available:

None - received audio is not routed to any input source.

Handset - received audio is routed to the handset.

Headset - received audio is routed to the headset.

Handset to Speaker Check Box

The **Handset to Speaker** check box indicates to play audio, when the handset is offhook, from the selected line through the speaker and handset at the same time.

Sum Sel/Unsel to Handset/Headset Check Box

The **Sum Sel/Unsel to Handset/Headset** check box indicates received audio is sent to the handset and headset earpiece. When selected, the console receives audio and sends it to the earpiece through both Select and Unselected lines.

Panel PTT Default Microphone Drop Down Menu

The **Panel PTT Default Microphone** drop down menu is used to select the microphone source when the front panel PTT button is pushed.

The following Microphone options are available:

Panel Mic - The panel microphone is active when the front panel PTT is pressed.

Desk Mic - The desk microphone is active when the front panel PTT is pressed.

Handset/Headset-Panel - The handset/headset is the active source, if offhook. Otherwise, the panel microphone is active (onhook).

Handset/Headset-Desk mic - The handset/headset is the active source, if offhook. Otherwise, the desk microphone is active (onhook).

NOTE: If the handset and/or desk microphone are installed, they still operate normally.

Keypad (DTMF) Setup

DTMF Keypad Enable Check Box

The **DTMF Keypad Enable** check box indicates the DTMF keys on the IP-2002 are enabled or disabled. If selected, the DTMF keys on the unit are enabled.

DTMF Keypad Flywheel Field

The **DTMF Keypad Flywheel** field is used to set the time, in ms, between key presses without the unit de-keying.

This field value ranges from *0 to 2000 ms*.

DTMF Keypad Digit ON Field

The **DTMF Keypad Digit ON** field is used to set the minimum amount of time, in ms, a DTMF digit is active.

This field value ranges from *0 to 500ms*.

DTMF Keypad Digit OFF Field

The **DTMF Keypad Digit OFF** field is used to set the minimum amount of time, in ms, between DTMF digits.

This field value ranges from *0 to 500ms*.

DTMF Keypad Line Level Field

The **DTMF Keypad Line Level** field is used to set the approximate level of the DTMF digits for the lines.

This field value ranges from *-60dB to12dB.*

DTMF Sidetone Enable Check Box

The **DTMF Sidetone Enable** check box is used to enable the DTMF sidetone to play over the speaker. If the handset/headset is enabled and offhook, the sidetone is played to the earpiece.

DTMF Sidetone Line Level Field

The **DTMF Sidetone Line Level** field is used to set the approximate relative DTMF sidetone level played on the speaker. If the handset/headset is enabled and off, the sidetone is played to the earpiece.

This field value ranges from *-60dBm to 12dBm*.

Submit Button

To **permanently save changes,** do the following:

1. Click **Submit**. 

The changes are sent to the IP-2002 in temporary storage.
2. Click **Save to EEPROM**. 

The Save to EEPROM window opens.
3. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

System Setup 2

The **System Setup 2** window, shown in Figure 33, and Figure 34, is used to configure the four (4) alert tones and four (4) softkey commands for the console. Each of the options on this window are discussed below.

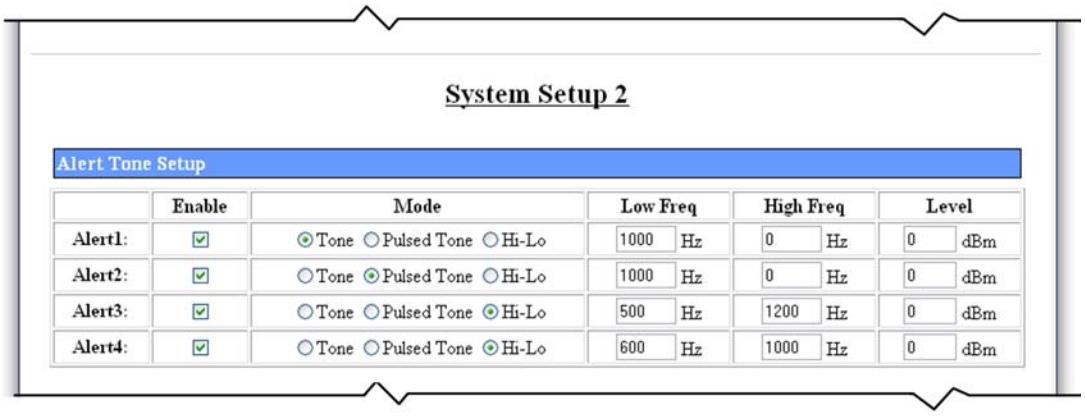


FIGURE 33. System Setup 2 (1)

Alert Tone Setup

Alert 1–4 Enable Check Box

The **Alert 1–4 Enable** check box is used to indicate which alert you want to make active. If selected, the alert is active.

Alert 1–4 Mode Radio Buttons

The **Alert 1–4 Mode** radio buttons are used to indicate what mode you want the alert to use. *(Single) Tone, Pulse Tone, and Hi-Lo warble* are all supported. The (Single) Tone and Pulsed Tone use the Low Freq setting only.

Alert 1–4 Low Freq Field

The **Alert 1–4 Low Freq** field is used to set the low frequency used by (Single) Tone and Pulsed Tone mode.

This field value ranges from *0 to 3000Hz*.

Alert 1–4 High Freq Field

The **Alert 1–4 High Freq** field is used to set the high frequency used by Hi-Lo warble mode.

This field value ranges from *0 to 3000Hz*.

Alert 1–4 Level Field

The **Alert 1–4 Level** field is used to set the approximate relative audio level, in dB, for the Alert tones.

This field value ranges from *-60dB to 12dB*.

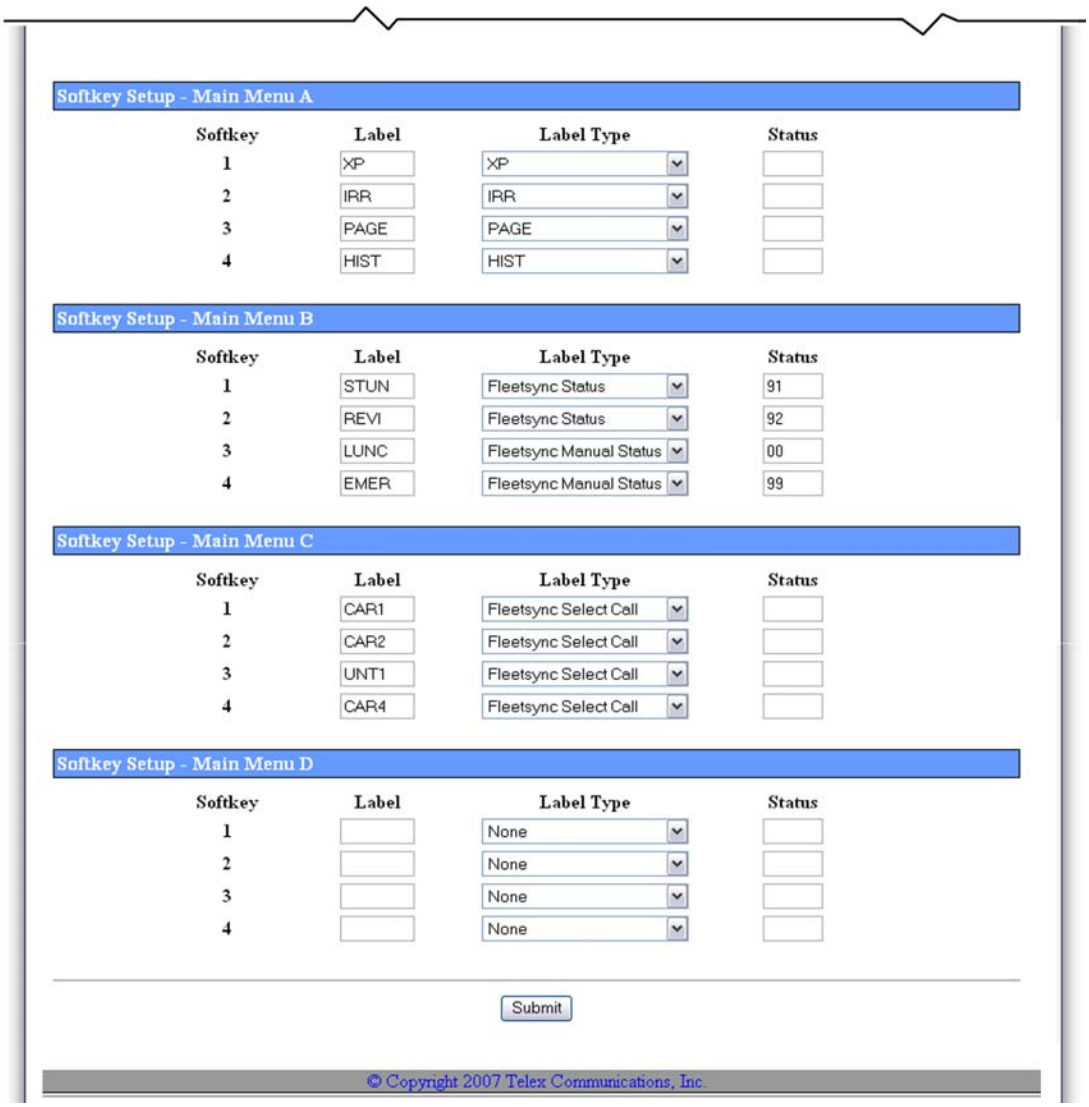


FIGURE 34. System Setup 2 (2)

Softkey Setup Main Menu (A–D)

The **Softkey Setup** main menus (A–D), shown in Figure 34, are used to assign a set of up to four (4) menus to each of the console main menus A–D. The console operator can select one of the main menus with the A–D keys on the DTMF keypad.

Softkeys 1–4 Label

The **Softkeys 1–4** label indicates the softkey you are configuring. Once a main menu has been selected, the operator chooses a menu by pressing the softkey (1–4) below the label on the display.

Label Field

The **Label** field is used to label the console softkey with a four letter description of the menu configured in the Label Type drop down menu. The label displays on the console above softkey (1–4).

Default label: The label field auto-fills when choosing XP, IRR, PAGE, or HIST as the Label Type.

Customized label for FleetSync Menu: Enter a four (4) character label that adequately describes the Status code you setup for the softkey. See “Status Field (Kenwood FleetSync only)” on page 110.

EXAMPLE: If you setup Menu A, softkey 1 for FleetSync Status with Status ID code 99 (emergency) you might enter *EMER* in the label field, Figure 35 on page 107, to indicate the status ID code is an emergency.

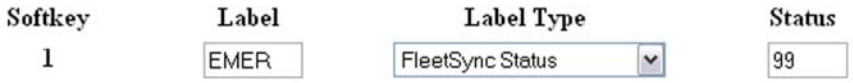


FIGURE 35. FleetSync Status Label Example

When the operator selects menu A, the *EMER* label appears on the console display, above softkey 1, shown in Figure 36.

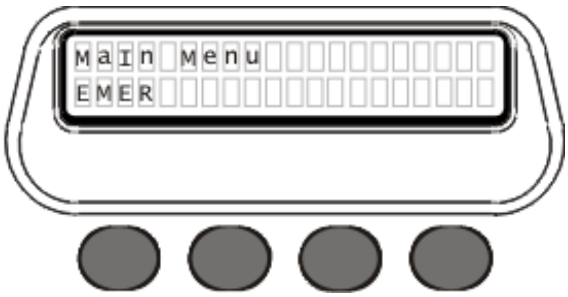


FIGURE 36. FleetSync Display Example

Label Type Drop Down Menu

The **Label Type** drop down menu is used to configure the menu you want to assign to the softkey. Select one of the following options from the drop down menu.

The following Label Type options are discussed in detail below:

XP
IRR
PAGE
HIST
FleetSync Status
FleetSync Manual Status
FleetSync Select Call

XP Label Type Option

The **XP Label Type** option configures the softkey for crosspatching to another line.

To **configure the line for Crosspatch,** see “Per Line Setup” on page 51

To **configure the softkey for crosspatching**, do the following:

1. From the label type drop down menu, select **XP**.
2. Click **Submit**.
   XP autofills in the Label field. The changes are sent to the IP-2002 in temporary storage.

   NOTE: Leave the Status field blank.

For operation**,** see “Main Menus A-D” on page 125.

IRR Label Type Option

The **IRR Label Type** option configures the softkey to playback a recording.

To **configure the line for instant call recording**, see “Per Line Setup” on page 51.

To **configure the softkey for instant call recording**, do the following:

1. From the label type drop down menu, select **IRR**.
2. Click **Submit**.
   IRR autofills in the Label field. The changes are sent to the IP-2002 in temporary storage.

   NOTE: Leave the Status field blank.

For operation**,** see “Main Menus A-D” on page 125.

PAGE Label Type Option

The **Page Label Type** option configures the softkey for paging.

To **configure the paging directory**, see “Paging Directory” on page 83.
To **configure the line**, see “Paging Setup” on page 88.

To **configure the softkey for paging**, do the following:

1. From the label type drop down menu, select **PAGE**.
2. Click **Submit**.
   PAGE autofills in the Label field. The changes are sent to the IP-2002 in temporary storage.

   NOTE: Leave the Status field blank.

For operation**,** see “Main Menus A-D” on page 125.

HIST Label Type Option

The **HIST Label Type** option configures the softkey for scrolling through up to 50 previously received calls.

To **configure the softkey for viewing history**, do the following:

1. From the label type drop down menu, select **HIST**.
2. Click **Submit**.
   HIST autofills in the Label field. The changes are sent to the IP-2002 in temporary storage.

   NOTE: Leave the Status field blank.

For operation**,** see “Main Menus A-D” on page 125.

(XXXX) FleetSync Status Label Type Option (Kenwood FleetSync only)

The **FleetSync Status Label Type** option configures the softkey to allow sending the assigned default status ID code to a Kenwood FleetSync radio. The operator scrolls and selects a FleetSync ID from the directory or enters an index number and then sends the status ID to the selected ID. The operator cannot override the default status ID code from this menu.

To **configure the softkey for FleetSync**, do the following:

1. In the Label field, type a **four character label *[XXXX]*** to describe the softkey’s purpose. See example on page 107.
2. From the label type drop down menu, select **Fleetsync**.
3. In the Status field**,** type a **two-digit Status ID code**. See the manufacturer’s technical data for Status ID code numbers.
   The Status ID code chosen is the default Status ID code for the softkey and cannot be changed by the operator.

(XXXX) FleetSync Manual Status Label Type Option (Kenwood FleetSync only)

The **FleetSync Manual Status Label Type** option configures the softkey to allow sending a Status ID code to a Kenwood FleetSync radio. The operator manually enters a FleetSync ID number, or scrolls and selects from the FleetSync ID directory, or enters an index number and then sends the call. Additionally, the operator can scroll and select either the default or choose an alternative Status ID code from the directory, to send to the field.

To **configure the softkey for FleetSync manual status**, do the following:

1. In the Label field, type a **four character label *[XXXX]*** to describe the softkey’s purpose. See example on page 107.
2. From the label type drop down menu, select **Fleetsync Manual Status**.
3. In the Status field**,** type a **two-digit Status ID code**. See the manufacturer’s technical data for Status ID code numbers.
   The Status ID code chosen is the default Status ID code for the softkey and can be changed by the operator.

   NOTE: Compare FleetSync with FleetSync Manual Status:

   FleetSync: the Status ID is predetermined by the configuration and cannot be changed by the operator. The FleetSync ID number can be changed by the operator.

   FleetSync Manual Status: the Status ID code and the FleetSync ID number can both be changed by the operator.

(XXXX) FleetSync Select Call Label Type Option (Kenwood FleetSync only)

The **FleetSync Select Call Label Type** option configures the softkey for placing a call to a Kenwood FleetSync radio. The operator manually enters a FleetSync ID number, or scrolls and selects from the FleetSync ID directory, or enters an index number and then sends the call.

To **configure the softkey for FleetSync select call**, do the following:

1. In the Label field**,** type a **four character label *[XXXX]*** to describe the softkey's purpose. See Figure 37.
2. From the label type drop down menu, select **Fleetsync Select Call**.
3. Leave the **Status** field blank.

EXAMPLE: If you setup Menu A, softkey 1 for FleetSync Select Call you might enter LIST in the label field, see Figure 37, to indicate the softkey opens the directory (list) of FleetSync IDs.

FIGURE 37. FleetSync Call Label Example

When the operator selects Menu A, LIST appears on the console display, above softkey 1, shown in Figure 38.

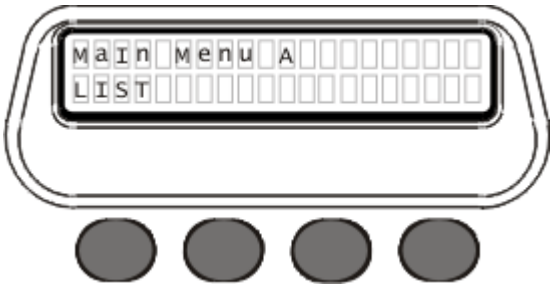


FIGURE 38. FleetSync Call Display Example

NOTE: For more on FleetSync configuration and operation, see the following:
To **configure the line for FleetSync**, see "Multicast Address Setup" on page 48.
To **configure fleet ID numbers,** see "Per Line Setup" on page 51.
To **create a list of Kenwood FleetSync ID numbers,** see "ID Directory" on page 77.
For operation**,** see "Main Menus A-D" on page 125.

Status Field (Kenwood FleetSync only)

The **Status** field is used to assign a default status ID code to the softkey. The status ID applies when FleetSync Status or FleetSync Manual Status is selected as the Label Type. See the manufacturer's technical data for Status ID code numbers.

To create a list of Status ID codes, see "ID Directory" on page 77.

To **configure a Status ID code for the softkey**, do the following:

> In the Status field, enter a **two-digit Status ID** code.
> *See the manufacturer's technical data for Status ID code numbers.*

NOTE: Additionally, you can configure a list of Status ID codes in the ID directory. These Status ID code labels offer more flexibility because they contain up to *12 characters*. Softkeys configured with FleetSync Manual Status have access to the Status IDs in the ID Directory.

Submit Button

The **Submit** button is used to temporarily save changes to the IP-2002. Submit changes before navigating from this window.

To **permanently save changes,** do the following:

1. Click **Submit**. 

The changes are sent to the IP-2002 in temporary storage.
2. Click **Save to EEPROM**. 

The Save to EEPROM page opens.
3. Click **Save Parameters**. 

Changes are now permanently saved to the IP-2002 console.

Update Firmware

Occasionally, updated IP-2002 firmware is released. You can download the latest software revision from the Telex website at (www.telexradiodispatch).

NOTE: The IP-2002 admin is the only account that has rights to upload firmware to the IP-2002 console.

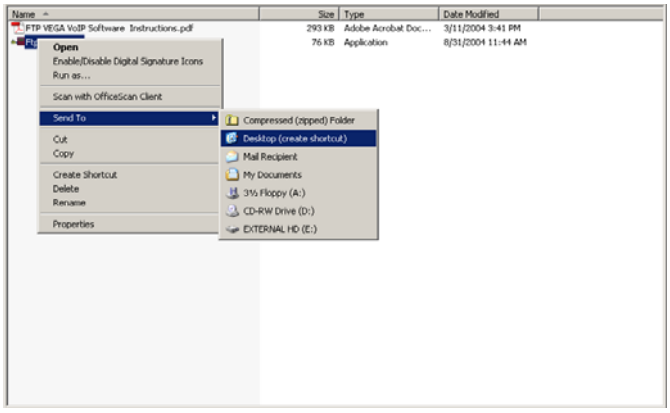
Along with the latest firmware there is an FTP application for the upload process. Both the firmware and the FTP application are available from the Telex website. The FTP application can be retrieved by clicking the hyperlink in the phrase “Download it here”. When you download the FTP application, you receive a.zip file. This.zip file contains instructions and the actual FTP application (FtpTelex.exe). The FtpTelex.exe file is the program used to update the software via the Ethernet port of the Vega VoIP products.

NOTE: You must download a copy of the firmware for the product you wish to update.

Once you have acquired all the necessary files, copy them into a subdirectory on your local machine (for example, *C:\ Telex Vega Ftp*). Create a shortcut from the FtpTelex.exe file to your desktop.

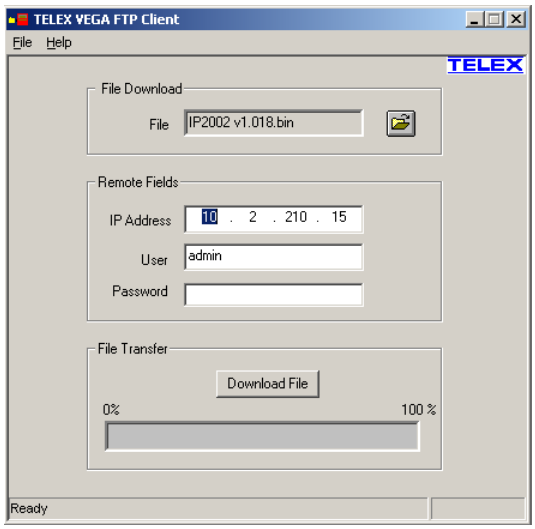
To **create a shortcut to the file**, do the following:

1. Right-click the **FtpTelex.exe file**.
A drop down menu appears.
2. From the Send To drop down menu. select **Send To**.
3. From the Desktop drop down menu, select **Desktop** (create Shortcut).
A shortcut to the file has been sent to your desktop.

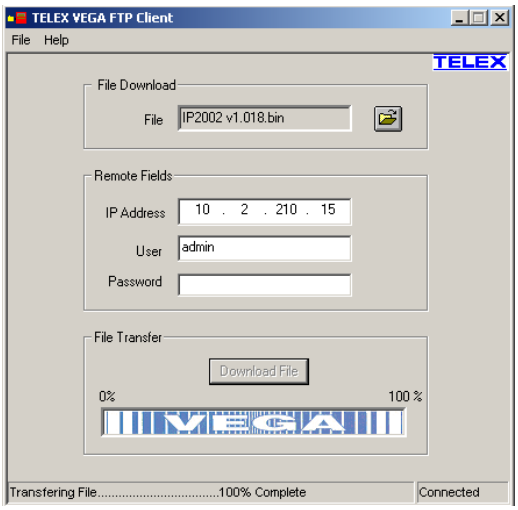


To **update the IP-2002 software**, do the following:

1. Verify the **IP-2002 is connected** to the PC with FtpTelex.exe over Ethernet.
2. Double-click **Shortcut to FtpTelex.exe**.
   The TELEX VEGA FTP Client appears.
3. In the File Download area, use the **open icon**  to navigate to the new software (usually a .bin file) you want to download to the IP-2002.



4. In the IP Address field, enter the **IP Address** of the IP-2002.
5. In the User field, enter the **admin user name** for the IP-2002, if applicable.
6. In the Password field, enter the **admin password** for the username, if applicable.
7. Click **Download File**.
   The .bin file begins to download. You can watch the progress meter as the file downloads.Once the download is complete, the task bar shows complete and automatically disconnects.The reboot takes about 30 seconds.



NOTE: If you have problems connecting to the IP-2002, you receive an error message.

If you receive this error message, verify the following:

- The Ethernet connection is correctly connected.
- The correct IP Address was entered.
- The correct username and password was entered.

CHAPTER 4

IP-2002 Console Operation

Console Display

Console Display Indications

The IP-2002 **Console Display** indications appear as blinking or steady LED buttons to indicate activity and VU indications display as text in the lower-right corner of the console display.

The following VU text is available:

RX1 - receive line 1

RX2 - receive line 2

EA - TX (transmit) w/encryption and talk around

TA - TX (transmit) w/talk around

EX - TX (transmit) w/encryption ON

TX - normal transmit

EI1 - intercom event on line 1

EI2 - intercom events on line 2

Console Buttons

See Figure 1 on page 16 for **Console Button** locations, descriptions, and names.

SEL (Line 1 or Line 2) Button

The **SEL** (select) button is used to designate which line is active. When pressed, the audio received from this line is placed on the speaker and the previously selected line is disengaged. The currently selected line name is displayed on the screen and the line's SEL button lights red.

To **select and transmit on a line**, do the following:

1. On the IP-2002 console, press **line 1 SEL** or **line 2 SEL**.
   The SEL button lights.

   NOTE: To select both lines for transmission, see “Select Button for Both Lines” on page 116.
2. Press the **F1** button**.**
   The button lights and Ln1F1 appears in the IP-2002 console display.
3. Press the **TRANSMIT** button**.**
   TX1 or TX2 appears in the IP-2002 console display and Ln1F1 programmed name appears on the IP-223/IP-224 console display.
4. Talk into the **panel mic.**
   The VU meter appears in the IP-2002 console display as you talk.
5. Release the **TRANSMIT** button when you are finished talking.
   The IP-2002 console display shows Ln1F1 or Ln2F1.

To **release the line**, do the following.

- Press the **RLS** button.
  The selected line’s light turns off and the line is released.

Master Volume Control Buttons

The **Master Volume Control** buttons ▲ or ▼ are used to adjust the volume of audio received from the selected line’s speaker. If the handset or headset is enabled and taken offhook, the received audio is transferred to the earpiece.

To **adjust the volume**, do the following:

- On the IP-2002 console, press the ▲ or ▼ button**s** to increase or decrease the console’s speaker volume.
  The speaker volume indicator appears on the console display. Audio increases ▲ or decreases ▼ as you press.

  NOTE: Select and Unselect audio levels per line can also be set from the front panel by pressing and holding Line 1 or Line 2 SEL or RLS buttons and adjusting the normal volume control.

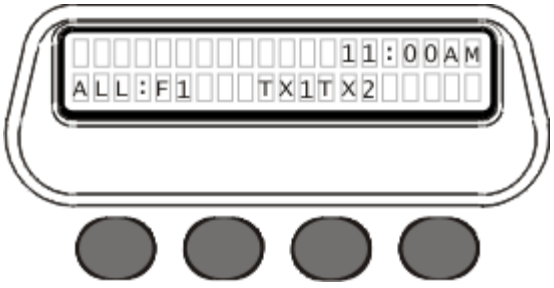
Select Button for Both Lines

The **SEL** buttons for both lines 1 and 2 can be selected simultaneously for transmitting on both lines at the same time.

To **select both lines for TX All Function**, do the following:

- At the same time, press both **line 1 SEL** and **line 2 SEL** button**s**.
  Both SEL buttons light and All:Fx (x is the selected function number 1-16) appears on the console display.

  NOTE: When the TRANSMIT button is pushed, *TX1* and *TX2* appear on the console display.

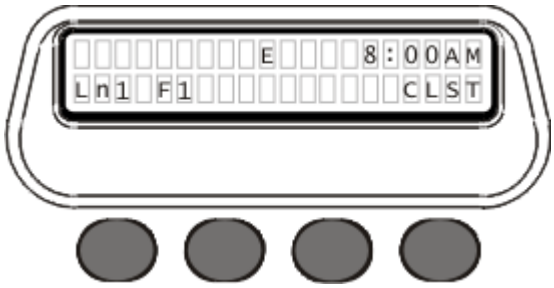


Select to Encrypt (Kenwood FleetSync only)

The **Encryption** toggle feature, when enabled on your system, is used to encrypt audio being transmitted.

To **toggle the encryption feature ON/OFF**, do the following:

> On the IP-2002 console, select and hold the **SEL** button for the line, and then press the **DTMF C** button.
> *The SEL button lights red. When encryption is ON, an "E" appears on the top line of the console. When encryption is OFF, the "E" is not visible.*

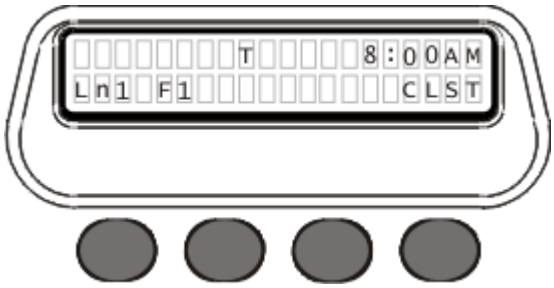


Select to Talk Around (Kenwood FleetSync only)

The **Talk Around** toggle feature, when enabled on your system, is used to allow direct FleetSync radio-to-radio communication.

To **toggle the talk around feature ON/OFF**, do the following:

> On the IP-2002 console, press and hold the **SEL** button for the line, and then press the **DTMF D** button**.**
> *The SEL button lights red.*
> *When Talk Around is ON, a "T" appears on the top line of the console display.*
> *When Talk Around is OFF, the "T" is not visible.*



Function (F1–F4) Buttons

The **Function (F1–F4)** buttons are used to select a function tone for a specific line. A line must be selected to change the function tone. If a group PTT is sent, the function packet corresponding to each line is sent on the specified line. If the function button is pressed independently, a function packet is sent. The Function keys are backlit with a single red LED.

To **change the function tone**, do the following:

> On the IP-2002 console, press **F1**, **F2**, **F3**, or **F4**. Or, use the **C▲**or **C▼** button**s** to select function tones 5 through 100.
> *The function button lights for the selected function (F1-F4) and the number (F1-F4) appears in the IP-2002 console display.*

NOTE: For functions 5 through 100, no function button lights, you can view the function selected on the console display.

CHAN Button

The **CHAN** (channel) button is used to select a channel or send alert tones by entering the channel number with the DTMF keypad.

To **send an alert tone with the CHAN number,** do the following:

1. Press the **SEL** button.
   The SEL button lights and the selected line is activated.
2. Using the DTMF keypad, enter the **desired channel number** (requires 2 digits).
3. Press and hold one (1) DTMF key **(A–D)**.
4. Press the **CHAN** button.
   The CHAN button lights and the alert is sent.

MUTE Button

The **MUTE** button is used to mute the line, when enabled. A brief line volume *ON/OFF* display occurs when the button is pressed.

To **mute the line**, do the following:

1. Press the **RLS** button.
   The RLS button lights and the line is no longer selected.
2. Press the **Mute** button.
   The Mute button lights and the speaker is muted.

SUP Button

The **SUP** (supervisor) button is used to disable all parallel IP-2002 consoles on a particular line if the SUP feature is enabled. Line 1, Line 2, or both lines must be selected before pressing the SUP button. On the consoles being supervised, the SUP button blinks to indicate the line is selected by the supervisor.

To **activate the SUP button**, do the following:

1. On the IP-2002 console, select **Line 1**, **Line 2**, or **both lines**.
   The SEL button(s) light red.
2. Press the **SUP** button.
   The SUP button lights red.

To **deactivate the SUP button**, do the following:

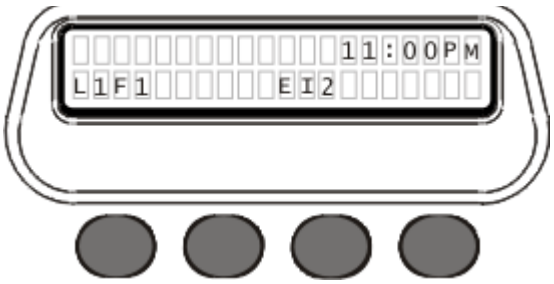
> Press the lit **SUP** button.
The button is no longer lit and SUP is deactivated.

IC Button

The **IC** (Intercom to Parallel Console) button is used to generate a packet stream that consoles, connected in parallel, play from their speakers. The button does not key a radio.

To **intercom with a parallel console**, do the following:

1. On the IP-2002 console, select the **shared line**.
2. Press the **IC** button.
The intercom menu appears.
3. Speak into the **panel mic or handset mic**.
The audio is heard from consoles monitoring shared lines.



MON Button

The **MON** (monitor) button is used to allow the console operator to send a packet burst, similar to a frequency change, to a remote radio, instructing the radio to open squelch or ignore **CTCSS** (Continuous Tone-Coded Squelch System).

To **monitor a call,** do the following:

> Press the **MON** button.
The MON button lights.

NOTE: Use the **C▲** and **C▼** button**s** to increase or decrease the volume.

To **disengage monitoring the call**, do the following:

> Press the **MON** button.
The MON button is dark.

Scan Button

The **Scan** button allows the console operator to scan the frequencies on the selected line. This feature works only on serially controlled radios.

To **scan a line**, do the following:

1. Press the **SEL** button for the line you want to scan.
   The SEL button lights.
2. Press the **SCAN** button.
   The SCAN button lights red, indicating the line is being scanned.

Phone Line

Phone calls can be sent from the IP-2002 console, if the **Phone Line** has been configured for phone use.

Placing a Phone Call

To **place a phone call**, do the following:

1. Select the **line** you want to use to place a call.
2. Using the DTMF keypad, enter the **phone number** you want to call.
   The numbers entered appear on the console display.

   NOTE: To delete an unwanted entry, press the **G▼**.

Answering a Phone Call

When **Answering a Phone Call**, the phone line goes offhook and the receive audio is then routed to the earpiece of the handset or headset. A call coming into the console can be configured to have an audible ring and/or a blinking LED.

To **answer an incoming phone call**, do the following:

> Press the desired line's **SEL** button.
  The phone call is answered.

Putting a Phone Line On Hold

To **put a phone line on hold**, do the following:

> After the call is initiated, press the **SEL** button.
  The SEL button blinks and the phone line audio is routed to the speaker.

  NOTE: To talk on a phone line already on hold, press the **SEL** button to release the hold.

Muting a Phone Line

The **MUTE** button is used on phone lines, when enabled, to mute audio received (RX) through the speaker.

NOTE: Phone lines on hold are, by default, played through the console speaker.

To **mute undesired audio**, do the following:

> Press the **MUTE** button for the line you want to mute.
  The MUTE button lights red to indicate the muted condition.

Sending a Hook-Flash

Hook Flash simulates a quick offhook/on-hook/offhook cycle. It is most commonly used in the call-waiting function on a standard phone. In the case of the IP-2002, hook-flash is sometimes needed to transfer calls.

To **switch from an engaged line to a caller waiting on the same line**, do the following:

1. Select the **RLS** button.
   The incoming call is received.
2. To switch back to the first call, press the **RLS** button.

Releasing a Phone Line

To **release a phone line when the call is done**, do the following:

> Press and hold the **RLS** button for one second.
The line is released.

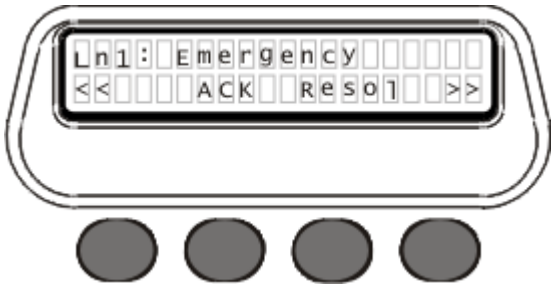
Emergency Calls

Emergency Calls

When the IP-2002 receives an **Emergency Call**, an audible hi-lo warble is emitted from the speaker. The console display appears.

To **acknowledge or resolve an emergency call**, do the following:

> Press the **ACK** softkey to acknowledge the emergency.
OR
Press the **Resol** softkey to resolve the emergency.



To **view previous emergency calls**, do the following:

> Press the << softkey.
The previous emergency call displays.

To **view the next emergency call**, do the following

> Press the >> softkey.
The next emergency call displays.

Index Number

The **Index Number** is used to recall a specific ID from the ID directory or the paging directory. The ID directory can contain up to 500 entries and the paging directory can contain up to 100 pages. Scrolling a long list of IDs can be a tedious task. The index number is entered to directly access a specific ID from the console. The index number feature is used while in the CLST menu or FLTS menu.

To get a list of index numbers and their assigned IDs, see “Printer Friendly Link” on page 81. To get a list of paging IDs, see “Printer Friendly Link” on page 86.

CLST Menu Option

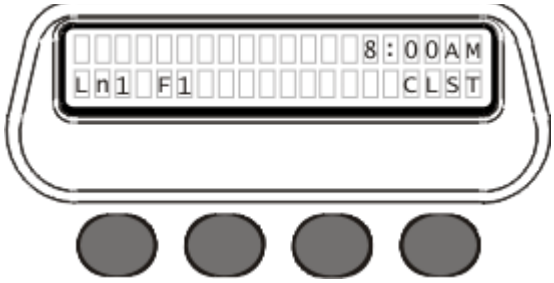
The **CLST** (call list) menu is used to view a list of ID names assigned to a particular device in the call list. If the CLST menu is enabled, the operator can select a device from the CLST menu and then scroll the list of ID names for that device or enter an index number to access the ID and paging directories. The CLST menu contains two of five different call list types: *GENE, PHN, RPHN, iDEN, FLTS*. Details for each type are given below.

Enter the CLST Menu

To **enter the CLST menu,** do the following:

> Press the **CLST** softkey.
> *One or two call list types appear on the menu.*

NOTE: To exit the CLST call list menu, press the **EXIT** softkey.



GENE Call List Menu

The **GENE** (generic) call list menu is used to view the list of generic IDs. This list is used for reference only.

To **view the Generic call list**, do the following:

1. Press the **SEL** button for the desired line.
   The SEL button lights.
2. Press the **CLST** softkey.
   One of the CLST options is GENE.
3. Press the **GENE** softkey.
   The first generic ID name appears on the console display.
4. Using the C▲ or C▼ buttons, scroll the list of **generic IDs**.
   Each generic ID and its index number appear as you scroll.
   OR
   Using the DTMF keypad, enter a **three-digit index number**.
   Once the entire index number is entered, the index number and assigned ID appear on the console display.

   NOTE: To exit the GENE call list, press the **MENU** button.

PHN Call List Menu

The **PHN** (phone) call list menu is used to select and place a phone call to a phone ID from the directory.

To **place a phone call,** do the following:

1. Press the **SEL** button for the desired line.
   The SEL button lights.
2. Press the **CLST** softkey.
   One of the call list options is PHN.
3. Press the **PHN** softkey.
   The first phone ID in the directory appears on the top line of the console display. DIAL and REDIAL commands appear on the bottom line.
4. Using the C▼ and C▲ buttons, scroll the list of **phone IDs.**
   A phone ID and its index number appear as you scroll.
   OR
   Using the DTMF keypad, enter an **index number**.
   Once the entire index number is entered, the index number and assigned ID appear on the console display.
5. To call the phone ID on the display, press the **DIAL** softkey.

   NOTE: To call the last phone ID dialed on the line, press the **REDIAL** softkey.

   NOTE: To exit the PHN call list menu without placing a call, press the **MENU** button.

RPHN Call List Menu

The **RPHN** (radio phone) call list menu is used to place a call to a radio phone ID selected from the directory.

To **place a radio phone call,** do the following:

1. Press the **SEL** button for the desired line.
   The SEL button lights red.
2. Press the **CLST** softkey.
   One of the call list options is RPHN.
3. Press the **RPHN** softkey.
   The first Radio Phone ID appears on the console display. DIAL and REDIAL options appear on the bottom line.
4. Using the C▼ and C▲ buttons, scroll the list of **radio phone IDs.**
   A radio phone ID and its index number appear as you scroll.
   OR
   Using the DTMF keypad, enter an **index number**.
   Once the entire index number is entered, the index number and assigned ID appear on the console display.
5. To call the radio phone ID on the console display, press the **DIAL** softkey.
6. To call the last radio phone ID dialed on the line, press the **REDIAL** softkey.

NOTE: To exit the RPHN call list menu without sending a call, press the **MENU** button.

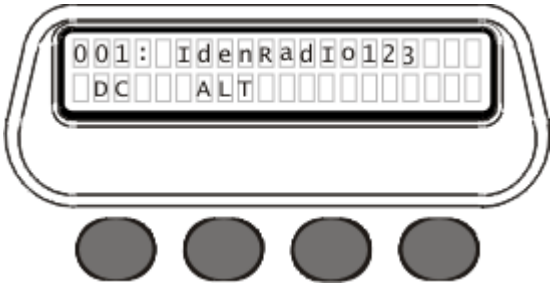
iDEN Call List Menu (iDEN only)

The **iDEN** call list menu is used to place a call or send an alert to an individual iDEN phone. As an option, the menu provides for calling a group of iDEN phones.

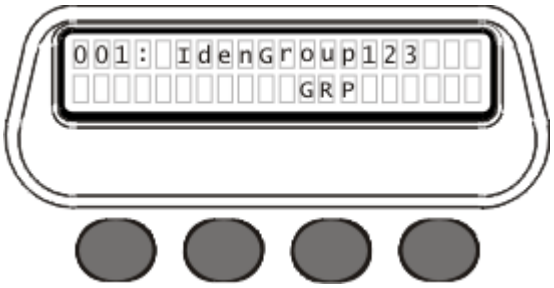
To **place a call to an iDEN device**, do the following:

1. Press the **CLST** softkey.
   One of the call list options is iDEN.
2. Press the **iDEN** softkey.
   The first iDEN ID in the directory appears on the top line of the console display.
3. Using the **C▼ and C▲** buttons, scroll the list of **iDEN IDs**.
   An iDEN ID and its index number appear on the top line as you scroll the directory. One of two menu options, depending on the type of iDEN ID, appear on the bottom line.
   OR
   Using the DTMF keypad, enter an **index number**.
   Once the entire index number is entered, the index number and assigned ID appear on the console display. One of two menu options, depending on the type of iDEN ID, appear on the bottom line.

iDEN Phone ID and Call List Options



iDEN Phone Group ID and Call List Option



NOTE: If your directory is set up for both individual and group calling, then, as you scroll the directory, the bottom line of the console display changes.

4. Choose from the following commands:
   - To place a direct call to the iDEN ID on the console display, press the **DC** softkey.
     A call is placed to the iDEN phone ID shown on the console display.
   - To send an alert to an individual phone, press the **ALT** softkey.
     An alert is sent to the iDEN phone ID shown on the console display.
   - To place a call to the iDEN group ID on the console display, press the **GRP** softkey.
     A call is placed to the iDEN group ID shown on the console display.

   NOTE: To exit the iDEN call list menu without placing a call, press the **MENU** button.

FLTS Call List Menu (Kenwood FleetSync only)

The **FLTS** (Kenwood FleetSync only) call list menu is used to view the list of Kenwood FleetSync IDs. This list is used for reference only.

To **view the Kenwood FleetSync call list**, do the following:

1. Press the **CLST** softkey.
   One of the call list options is FLTS.
2. Press the **FLST** softkey.
   You are now in the FleetsSync menu.
3. Using the C▲ or C▼ buttons, scroll the list of **Kenwood FleetSync IDs**.
   A FleetSync ID and its index number appear as you scroll.
   OR
   Using the DTMF keypad, enter an **index number**.
   Once the entire index number is entered, the index number and assigned ID appear on the console display.

   NOTE: To exit the FLTS call list menu, press the **MENU** button.

Main Menus A-D

The **Main Menus (A-D)** are used to access the main menus configured on your system. There are up to four Main Menus (A-D) available on the IP-2002 console.

To **access a main menu**, do the following:

1. Press the **Menu** button.
   Main Menu A appears on the console.
2. Press the **DTMF menu** button **(A, B, C, or D)** of your choice.
   The main menu appears on the console.

Menus

There are up to four (4) **Menus** configured for each main menu. The menus are accessible by selecting softkey (1-4) below the menu label. Use the softkey to select a menu for, crosspatching, recording, paging, viewing history, placing radio calls including Kenwood FleetSync, and placing phone calls including Nextel iDEN. Once the menu is accessed, the operator can execute commands and access directories to perform various functions.

Softkey menus and commands are labeled as follows and are discussed in detail below:

XP - Crosspatch menu

BLK - Block Call command

PTT - Push to Talk command

IRR - Internal Recall Recorder menu

UNS/SEL command toggle

PLAY/STOP command toggle

PAGE - Page menu

STK - Stack command

CLEAR - Clear command

SEND - Send command

HIST - Call history menu

NOTE: The three FleetSync menu labels are a four character (*XXXX*) description configured by your admin. The (*XXXX)* represents the softkey label for any of the three FleetSync menus that are described below.

(XXXX) - FleetSync Status Menu

SEND - Command to send Status ID code to the field.

(XXXX) - FleetSync Manual Status Menu

LIST - Menu to scroll list of FleetSync ID numbers in the directory.

STAT - Menu to scroll list of Status ID codes in the directory.

CLEAR - Command to clear ID number from the console display.

SEND- Command to send Status ID code to the field.

(XXXX) - FleetSync Select Call Menu

LIST - Menu to list FleetSync ID

CLEAR - Command to clear ID number from the console display.

SEND - Command to send Status ID code to the field.

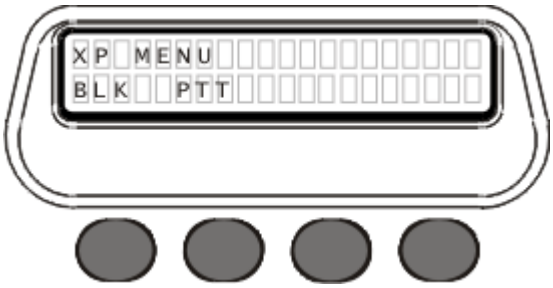
XP Menu

The **XP** (crosspatch) menu is used to activate the crosspatch available between line 1 and line 2.

To **crosspatch line 1 with line 2**, do the following:

1. Press the **MENU** button**.**
2. Select the **main menu (A-D)** of your choice.
   Main Menu (X) with XP menu appears on the console display.
3. Press the **XP** softkey.
   Both lines 1 and 2 are selected, and their select buttons light. The XP menu appears.

   NOTE: Once the XP menu opens, the available commands are BLK (block) and PTT (push-to-talk).



BLK Command

The **BLK** (block call) command is used to forcibly drop the current line that has control of the PTT operation. The console then waits for another line to take control of the crosspatch. This means the dropped line cannot take control until another line has taken control. Blocking is used to rid noise on the line or to terminate an offending user's line.

To **block a line**, do the following:

> Press the **BLK** softkey.

PTT Command

The **PTT** (push-to-talk) command is used to open the mic for audio transmission on a crosspatch.

To **talk on a crosspatch group**, do the following:

> Press the **PTT** softkey and **speak into the panel mic**.
  Audio is heard from both handheld radios.The IP-223/IP-224 displays the transmit information for both lines on the console display.

To **disengage a crosspatch group**, do the following:

> Once you are finished talking, press the **menu** button.

NOTE: To exit without crosspatching, press the **MENU** button.

IRR Menu

The **IRR** (Internal Recall Recorder) menu is used to select the line for audio playback received/transmitted during the last 15 seconds. By default, you can listen up to 15 seconds of recording. You can record from a selected or unselected line, as well as play back a recording.

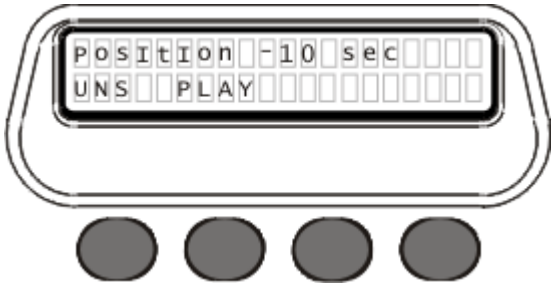
UNS/SEL, PLAY/STOP Commands

The **UNS/SEL** and **PLAY/STOP** commands are accessed from the IRR menu and are discussed below:

SEL - is used to recall the selected line's audio for playback.
UNS - recalls the unselected line audio for playback.
STOP - stops the audio before it plays through.
PLAY - command is used to select the recorder for audio playback.

To **playback audio**, do the following:

1. Press the **MENU** button.
2. Select the **main menu (A-D)** of your choice.
   Main Menu (X) with IRR option appears on the console display.
3. Press the **IRR** softkey.
   The IRR menu options appear.
4. To change the audio source for playback on the selected line, press the **UNS** softkey.
   The playback audio changes to SEL.



5. Press the **PLAY** softkey.
   STOP appears on the console display and the last 10 seconds (default) of audio is played from the audio source selected. The audio is continuously looped until either STOP is pressed or the menu is exited.
6. To resume playback, press the **PLAY** softkey.
7. To change the audio source, press the **UNS** softkey.
8. Once you are finished listening to the audio playback, press the **MENU** button on the IP-2002 to exit the menu.

To **change the amount of playback time**, do the following:

1. Press the **MENU** button.
   Maine Menu A appears on the console display
2. Select a **menu (A–D)** of your choice.
   Main Menu (X) with IRR option appears on the console display.
3. Press the **IRR** softkey.
   The IRR menu options appear
4. Use the **C▲** or **C▼** buttons to increase or decrease the playback time.
   The indicator appears on the console display.

NOTE: This change affects the current session of audio playback only. The next session of audio playback is reset to the 10 second default.

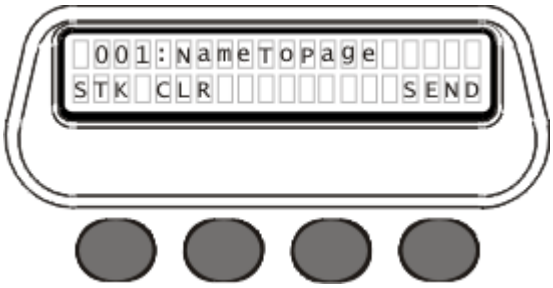
NOTE: To exit without recording, press the **MENU** button.

PAGE Menu

The **PAGE** menu is used to select from the paging options configured on your system. The page menu display and softkeys are used to select the person(s) or group to send a page. The console operator can choose to *STK* (stack), *CLR* (clear), or *SEND* the page.

To **access the page menu options**, do the following:

1. Press the **MENU** button.
2. Select the **main menu (A-D)** of your choice.
   Main Menu (X) with PAGE option appears on the console display.
3. Press the **PAGE** softkey**.**
   The page menu displays.
4. Using the C▲ or C▼ buttons, scroll the list of **paging IDs**.
   A page ID and its index number appear as you scroll. STK, CLR and SEND appear on the bottom line.
   OR
   Using the DTMF keypad, enter an **index number**.
   Once the entire index number is entered, the index number and assigned ID appear in the display. STK, CLR, and SEND appear on the bottom lines.



STK, CLR, SEND Commands

The **STK, CLR,** and **SEND** commands are accessed from the Page menu and are discussed below:

STK (stack) - allows you to send a page to multiple users.

CLR (clear) - allows you to clear the page stack.

SEND - sends a page to the selected ID on the console display.

To **stack and send a page**, do the following:

1. On the IP-2002 console, press the **MENU** button.
2. Select the **main menu (A-D)** of your choice.
   Main Menu (X) with PAGE option appears on the console display.
3. Press the **PAGE** softkey**.**
   The first entry in the Paging Directory appears. There are up to 100 paging entries in the directory to choose from.
4. Using the **C▼** or **C▲** buttons, scroll through the ID directory.
   A page ID and its index number appear as you scroll. STK, CLR nd SEND appear on the bottom line.
   OR
   Using the DTMF keypad, enter an **index number**.
   Once the entire index number is entered, the index number and assigned ID appear on the display. STK, CLR, and SEND appear on the bottom line.
5. To add the ID to the stack, press the **STK** softkey.
   An asterisk appears before the ID.
   OR
   To delete an ID from the stack, press the **CLR** softkey.
   The asterisk before the ID disappears.
6. Repeat **step 4 and 5** until all the IDs you want to stack are included.
7. Once the stack is established, press the **SEND** softkey**.**
   A page is sent to the members of the stack.

   NOTE: To exit without paging, press the **MENU** button.

HIST Menu

The **HIST** (history) menu is used to review the list of received calls, place phone calls, and place iDEN direct connect calls. The list contains up to *50 ID*s.

To **view call history,** do the following:

1. Press the **MENU** button.
2. Select the **menu (A-D)** of your choice.
   Main Menu (X) with HIST option appears on the console display.
3. Press the **HIST** softkey.
   The first number in the call list is displayed.
4. Using the **C▼ and C▲** buttons, scroll the list.
   Received calls appear on the console display as you scroll.

To **place a phone call or iDEN direct connect call**, do the following:

1. Press the **MENU** button.
2. Select **menu (A-D)** of your choice.
   Main Menu (X) with HIST option appears on the console display.
3. Press the **HIST** softkey.
   The first ID in the call list displays.
4. Using the **C▼** and **C▲** buttons., scroll the list.
   The previous caller ID appears on the console display as you scroll.
5. To send a call to the ID in the console display, press the **Dial** softkey.
   A call is sent to the ID on the console display.

NOTE: To exit without placing a phone call, press the **MENU** button.

NOTE: Toggle ID name and ID number by pressing softkey **3**.

NOTE: Speed the process by holding the **C▼** or **C▲** button as you scroll the list.

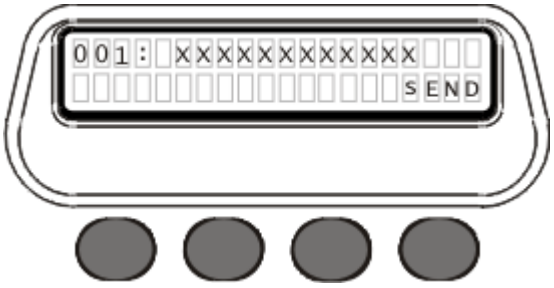
(*XXXX*) Menu (Kenwood FleetSync only)

The **(*XXXX*)** menu, shown in Figure 39, is used to access one of three Kenwood FleetSync Menus. The Kenwood FleetSync menu is used to send Status ID codes and place calls to FleetSync radios.

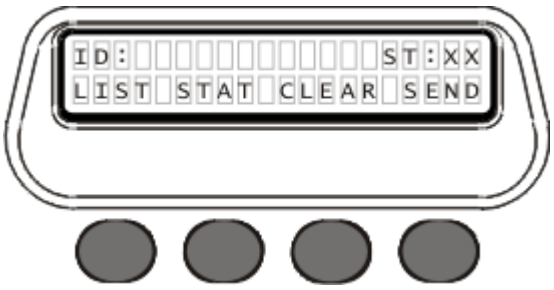
IMPORTANT: The label (*XXXX*) on the softkey is a four-character description chosen by your system admin.

After selecting a (*XXXX*) softkey to enter a Kenwood FleetSync menu, one of the following menus appear on the console display and are discussed in detail below:

(*XXXX*) FleetSync Status Menu



(*XXXX*) FleetSync Manual Status Menu



(*XXXX*) FleetSync Select Call Menu

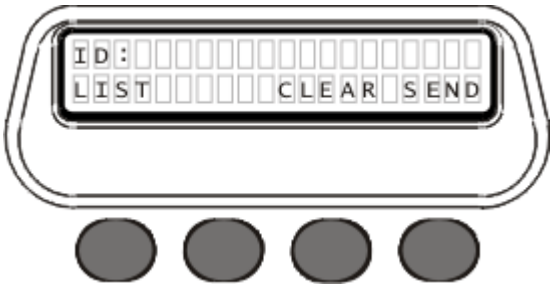


FIGURE 39. FleetSync Menus

(*XXXX*) FleetSync Status Menu (Kenwood FleetSync only)

The **FleetSync Status** menu, shown in Figure 39, is used to send the default Status ID code, assigned to the softkey, to the FleetSync ID you select from the directory or recall using the FleetSync ID's index number. Your system admin labels the softkey, with four characters, to describe the default Status ID code.

EXAMPLE: **Admin programs the console:** The softkey is labeled STUN. The (FleetSync) ID is RADIO 101. The default Status ID code is set to 91 (disables the radio from further use in case of loss or theft).
Console operator decides to send status: The STUN softkey is pressed and the FleetSync Status menu appears. The first ID to appear on the console is RADIO 109. The operator scrolls the list of IDs until RADIO 101 appears on the console display. The operator presses the SEND softkey.
Result: RADIO 101 is disabled with the Status ID code sent by the console operator.

NOTE: While in FleetSync Status menu, the FleetSync ID is visible, but the Status ID code is not visible on the console display.

To identify the FleetSync Status menu, reference Figure 39.

The following FleetSync Status options appear:

001 - labels the first FleetSync ID in the directory.

XXXXXXXXXXXX - the first FleetSync ID number in the directory.

SEND - command to send a Status ID code to the alias in the console display.

To **select an ID and send the Status ID code to a FleetSync ID radio, while in the FleetSync Status menu,** do the following:

1. Using the C▼ and C▲ buttons, scroll the **list of FleetSync ID codes**.
   A FleetSync ID and its index number appear as you scroll.
   OR
   Using the DTMF keypad, enter an **index number**.
   Once the entire index number is entered, the index number and assigned ID appear on the console display.
2. To send the default Status ID code to the FleetSync ID on the console display, press the **Send** softkey.
   "Sending Status" appears on the console display. The status ID code is sent to the radio.

   NOTE: To exit the menu without sending a status ID code, press the **menu** button.

(*XXXX*) FleetSync Manual Status Menu (Kenwood FleetSync only)

The **FleetSync Manual Status** menu, shown in Figure 39, is used to select Status ID code and FleetSync ID numbers manually. With this menu you can scroll the list of IDs and aliases in the directory or enter your own ID with the DTMF keypad as well as choose the default or manually enter the Status ID code to send.

To identify the FleetSync Manual Status menu, reference Figure 39.

The following FleetsSync Manual Status options appear:

ID - is blank and appears in the upper-left corner of the console display.

ST:***XX*** - displays the ST label and the two-digit Status ID code and appears in the upper-right corner of the console display.

LIST, STAT, CLEAR and *SEND* - menus and commands appear on the bottom line of the console display.

ID Field

The **ID** field is used to enter the FleetSync ID number to send the status ID.

To **manually enter an ID number to send status to, while in the FleetSync Manual Status menu** do the following:

> Using the **DTMF keypad**, enter the ID numbers.
The numbers you enter appear on the console display.

NOTE: To delete the last character entered, press the **G ▼** button.

NOTE: To select a FleetSync ID from the directory, see “LIST Menu” on page 133.

ST:XX Field

The **ST:XX** field is used to display the Status ID code being sent. Initially, the *ST* field displays the softkey’s default Status ID code.

To **change the Status ID code**, do the following:

1. Press the **#** button.
The STATUS menu appears.
2. Enter a **two-digit status ID code**.
The status code you enter displays.

   NOTE: For more information about status ID codes, see Kenwood’s Fleetsync technical data.
3. Press the **OK** softkey.
The status ID code you entered appears in the upper-right corner of the console display.

LIST Menu

The **LIST** menu is used to view and select from the list of FleetSync ID numbers and their alias names.

To **choose an ID number from the list**, **while in the FleetSync Manual Status menu,** do the following:

1. Press the **LIST** softkey**.**
The ID number and its alias appear on the console display.
2. Using the C▼ and C▲ buttons scroll the **list of ID numbers**.
A FleetSync ID and its index number appear as you scroll.
OR
Using the DTMF keypad, enter an **index number**.
Once the entire index number is entered, the index number and assigned ID appear on the console display.
3. To select the ID number on the console display, press the **OK** softkey.
The ID number you choose appears on the top line of the console display and you are back at the FleetSync Manual Status menu.

   NOTE: If you selected the wrong ID number, then press the **LIST** softkey to reenter the directory.

   NOTE: Press the **Menu** button to exit the Main Menu.

STAT Menu

The **STAT** (status) menu is used to select and overwrite the default Status ID code (upper-right corner on the console display) with a Status ID code you select from the directory.

To **change the Status ID code, while in the FleetSync Manual Status menu**, do the following:

1. Press the **STAT** softkey**.**
   The console displays the first Status ID code and label name from the ID directory
2. Using the C▼ and C▲ buttons, scroll the **list of Status ID codes**.
   The Status ID code you want to send appears on the console display.
3. Press the **OK** softkey.
   The Status ID code you just chose, overwrites the default Status ID code and appears in the top right corner on the console display. You are back at the FleetSync Manual Status menu.

   NOTE: The Status ID code label is visible only while in the STAT menu.

   NOTE: The Status ID code labels in the directory can be up to *12 characters* in length.

CLEAR Command

The **Clear** command is used to clear ID numbers from the console display.

To **clear ID numbers from the console display,** do the following:

> Press the **CLEAR** softkey.
  The ID number is cleared from the console display.

SEND Command

The **Send** command is used to send the Status ID code to the ID shown on the console display.

To **send a Status ID code to the field**, do the following:

> Press the **SEND** softkey.
  The status ID code is sent to the ID listed on the console display.

  NOTE: If *ERROR: Invalid Entry* appears on the console display, then you have left the ID field blank. Enter an ID Number in the **ID field** manually or press the **LIST** softkey to scroll through the ID directory list.

  NOTE: If *Sending Status...* appears on the console display, your Status ID code has been successfully sent to the ID number shown on the console display.

(*XXXX)* FleetSync Select Call Menu (Kenwood FleetSync only)

The **FleetSync Select Call** menu is used to call a Kenwood FleetSync radio. When the softkey you have selected opens this menu you can scroll the list of ID numbers, manually enter the ID number you want to call, clear numbers from the console display and, after choosing an ID number to call, send the call to the field.

To identify the FleetSync Select Call menu, reference Figure 39.

The following FleetSync Select Call options appear:

ID - field is blank.

LIST, CLEAR and SEND - menus and commands appear on the bottom line of the console display.

To **manually enter an ID number to call, while in the FleetSync Select Call Menu,** do the following:

1. Using the DTMF keypad, enter the **FleetSync ID number**.
   The numbers you enter appear on the console display.
2. Press the **SEND** softkey.

   NOTE: To delete the last character entered, press the G ▼ button.

ID Field

The **ID** field is used to enter the FleetSync ID number to send the status IDs.

LIST Menu

The **LIST** menu is used to view and select from the list of FleetSync ID numbers and their alias names.

To **choose an ID number from the directory and send a call**, **while in the FleetSync Select Call menu,** do the following:

1. Press the **LIST** softkey**.**
   The ID number and its alias appear on the console display.
2. Using the C▼ **and C▲** buttons, scroll the list of **FleetSync ID numbers**.
   A FleetSync ID and its index number appear as you scroll.
   OR
   Using the DTMF keypad, enter an **index number**.
   Once the entire index number is entered, the index number and assigned ID appear on the console display.
3. To select the ID number on the console display, press the **OK** softkey.
   The ID number you chose appears on the top line on the console display and you are back at the FleetSync Select Call menu.
4. To place a call to the ID listed on the console display, press the **SEND** softkey.
   Sending Sel Call... appears on the console display and you call has been sent.

   NOTE: If you selected the wrong ID number you can press the **LIST** softkey to reenter the directory.

   NOTE: Press the **Menu** button to exit the Main Menu without sending a call.

CLEAR Command

The **Clear** command is used to clear the Fleetsync ID number from the console display.

To **clear ID numbers from the console display**, do the following:

> Press the **CLEAR** softkey.
  The ID field is now blank.

SEND Command

The **Send** command is used to place a call to the FleetSync ID listed on the console display.

To **send a Status ID code to the field,** do the following:

> Press the **SEND** softkey.
  A call is placed to the FleetSync ID listed on the console display.

Update Firmware

Update Firmware

Telex VoIP Hardware firmware can be updated using **TSM** (Telex System Manager). A copy of TSM is available on the CD included in the shipment with the VoIP hardware. The firmware can also be downloaded at www.telexradiodispatch.com.

NOTE:

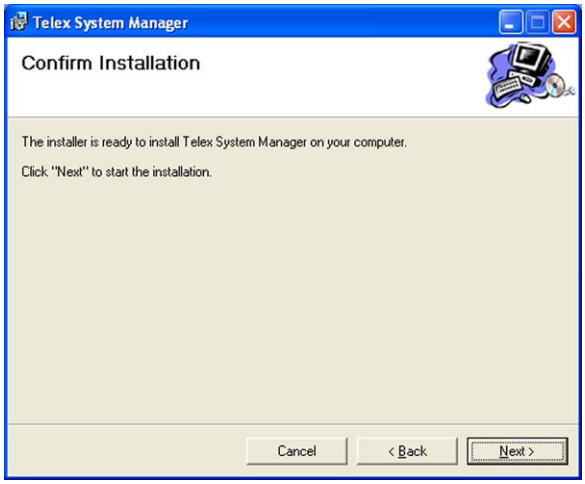
- VoIP hardware includes the following Telex devices: IP-223/IP-224, IP-2002, IP-1616, C-6200 and NEO-10.
- TSM uses .tfb (Telex Firmware Binary) files to update VoIP firmware.

Install TSM

To **install TSM**, do the following:

1. Locate the **setup.exe file** on the Telex CD.
   OR
   Download **TSM** from www.telexradiodispatch.com.
2. Double-click **setup.exe**.
   The Telex System Manager install window appears.
3. Click **Next**.
   The Select Installation Folder window appears.

4. To specify an installation path for TSM, click **Browse**.
   OR
   To accept the default folder location, leave the **path** entered in the Folder field
   By default, TSM is installed at **C:\Program Files\Telex Communications\Telex System Manager**.
5. To allow any user to access TSM, select **Everyone**.
   OR
   To allow only one user to access TSM, select **Just Me**.
6. Click **Next**.
   The Confirm Installation window appears.
7. Click **Next**.
   A Please Wait message appears. Once TSM is installed, a success message appears on the Confirm Installation window.
8. Click **Close**.



Download Telex Firmware

When new firmware becomes available it is posted to our website. It can be downloaded at www.telexradiodispatch.com. Check the website periodically for updated firmware.

FIGURE 40. Telex Website Download Link

To **download firmware**, do the following:

NOTE: If you have not previously logged onto the website, contact Telex technical support for the passphrase to set up your account.

1. In the username field, enter your **username**.
2. In the password field, enter you **password**.

TIP: If the login form is not visible in the left pane, scroll down to view.

3. In the left pane, click **Download**.
   The Download window appears.
4. In the LATEST SOFTWARE/FIRMWARE pane, click the **link** for TSM's Official version.
   The Telex System Manager Download window appears.
5. Click **Download**.
   The File Download window appears.
6. Click **Save**.
7. Save the **file** to your computer.

TIP: Extract the TSM firmware .zip file to your Telex Communications folder.

8. Double click the **setup.exe** file.
The new version of TSM is installed.

Update Firmware Tool Window

The **Update Firmware Too**l window, shown in Figure 41, is used to upload the newest version of firmware to the device selected in the Destination field.

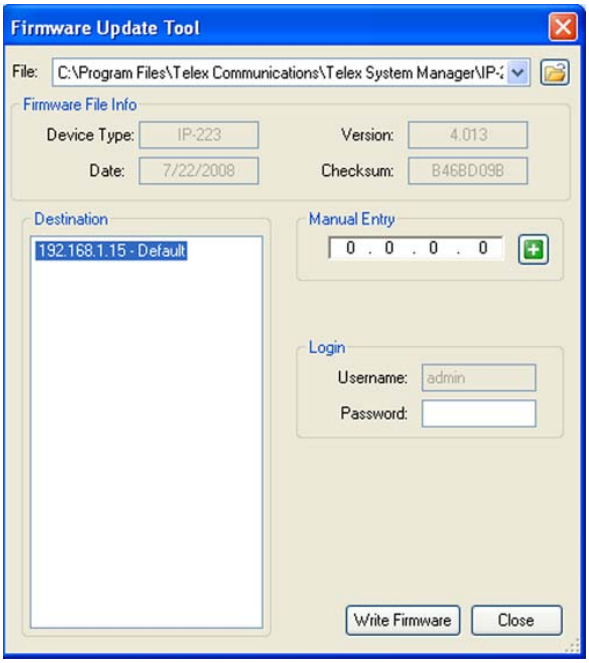


FIGURE 41. Firmware Update Tool

File Field

The **File** field is used to select a firmware file to upload to the VoIP hardware.

Firmware File Info Group Box

Device Type Field

The **Device Type** field displays the type of device supported by the currently selected file in the File field.

Firmware Version Field

The **Firmware Version** field displays the currently selected file’s firmware version.

Left Navigation Pane

The **Left Navigation Pane** displays all detected devices from the main dialog's Device list with device types that match the currently selected firmware files. Manually entered IP Addresses also appear in the navigation pane. Once the device is added, it appears in the left navigation pane and is available for selection.

NOTE: If the device you are updating does not automatically appear in the navigation pane, manually enter the IP Address in the Manual Entry field.

Manual Entry Field

The **Manual Entry** field is used to enter the VoIP hardware's IP Address to add to the left navigation pane.

Login Group Box

Username Field

The **Username** field is used to enter the administrator's username.

This field can contain up to *16 lowercase characters*.

NOTE: When updating firmware, *admin* is the only user who can update the firmware.

Password Field

The **Password** field is used to enter the administrator's password, if one is required.

Write Firmware Button

The **Write Firmware** button is used to begin the upload process. Once the button is selected, the file specified in the File field is uploaded to the VoIP hardware.

Close Button

The **Close** button is used to close the window.

Upload VoIP Hardware Firmware

Once TSM is installed and your new .tfb file is downloaded, you are ready to upload the VoIP hardware's firmware.

To **upload the VoIP hardware's firmware**, do the following:

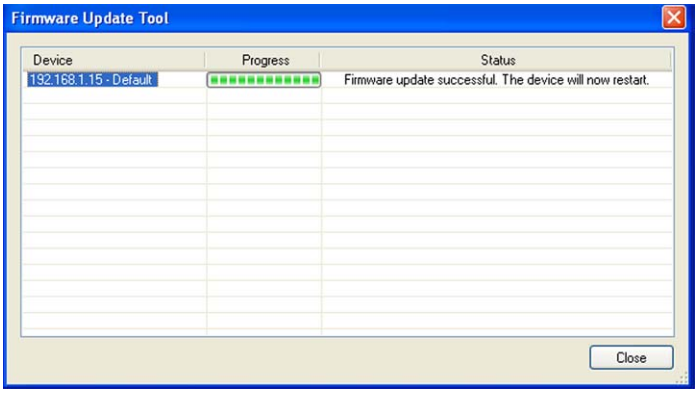
1. Click the **TSM shortcut** on your desktop.
   OR
   From your taskbar, click **Start|Programs|Telex Communications|Telex System Manager**.
   The Telex System Manager window opens.
2. Click **Tools|Firmware Update**
   The Firmware Update Tool opens.
3. To locate the .tfb file for upload, click the **folder icon**  .
   The Open window appears.
4. Select the.**tfb file** you want to upload.
   The file is highlighted.
5. Click **Open**.
   The selected file appears in the File field.

NOTE: If the device does not appear in the list, enter the **VoIP hardware's IP Address** in the Manual Entry field and click the **Add** button. *The IP Address appears in the left navigation pane.*

6. In the left navigation pane, select the device's **IP Address**.
   The Write Firmware button is active.
7. Click the **Write Firmware** button.
   Firmware update messages are shown in the Status column which provides feedback on the firmware update progress. Once the progress reaches 100%, the firmware is updated.

   NOTE: If an error occurs, the Progress column is reset and an error message appears in the Status column.

   NOTE: Once the firmware is uploaded, the device resets.



8. Click **Close**.
   The Firmware Update Complete window closes.
9. Click **Close**.
   The Firmware Update Tool window closes.

To **access the webpage directly from the Firmware Update Tool window**, do the following:

1. Right-click the device's **entry**.
   The Flyout menu appears.
2. From the context menu, click **Webpage**.
   The Connect To window opens.
3. In the User Name field, enter a **user name**.
4. In the Password field, enter a **password**.
5. Click **OK**.
   The Web Browser's Configuration Welcome window opens.

APPENDIX A

D, T, R Table

D, T, R Table

TABLE 5. D, T, R Binary Reference

Precedence Field					**D, T, and R bits**				
Binary				**Traffic Type**	**Binary**				
0	0	0	(0)	Best Effort	D	T	R		
0	0	1	(1)	Background	0	0	0	(0)	Normal (Best Effort), minimal cost
0	1	0	(2)	Standard	0	0	1	(1)	Maximize Reliability
0	1	1	(3)	Excellent Load	0	1	0	(2)	Maximize Throughput
1	0	0	(4)	Controlled Load	1	0	0	(4)	Minimize Delay
1	0	1	(5)	Video					
1	1	0	(6)	Voice					
1	1	1	(7)	Network Control					

APPENDIX B

UTC Offset Table

UTC Offset Tables

TABLE 6. Summer Time UTC Offset Values

Time/Location:	**Offset:**	**Time/Location:**	**Offset:**
		Kiribati	14
		Phoenix Islands, Tonga	12.5
		Chatham Islands	12.75
Baker Islands, Howland Islands, Marshall Islands, (International Date Line)	-12	Norfolk Island Time NFT, Fuji, Kiribati, Marshall Islands, Nauru, New Zealand, Russia (zone 11), Tuvalu, Wake Island, Wallis and Futuna	12
	-11.5		11.5
American Samoa, Jarvis Island, Kingman Reef, Midway Islands, Niue, Palmyra Atoll, Samoa	-11	Eastern Daylight Time EDT (Eastern Australia), Micronesia, New Caledonia, Russia (zone 10), Solomon Islands, Vanuatu	11
	-10.5	Central Daylight Time CDT (Central Australia)	10.5
Cook Islands, French Polynesia, Johnston Atoll, Tokelau	-10	Guam, Micronesia, Northern Mariana Islands, Papua New Guinea, Russia (zone 9)	10
French Polynesia (Marquesas Islands)	-9.5		9.5
Hawaii-Aleutian Daylight Time HADT, French Polynesia (Gambier Islands)	-9	Western Daylight Time WDT (Western Australia), East Timor, Indonesia, Japan, N. Korea, S. Korea, Palau, Russia (zone 8)	9
Alaska Daylight Time AKDT (Alaska), Mexico	-8	China (Beijing, Shanghai), Hong Kong, Indonesia, Macau, Malaysia, Mongolia, Philippines, Russia (zone 7), Singapore, Taiwan	8
Pacific Daylight Time PDT (US, Canada), Mexico	-7	Christmas Island Time CXT	7
Mountain Daylight Time MDT (US-Canada), Mexico	-6		6
Central Daylight Time CDT (US-Canada),	-5		5
Eastern Daylight Time EDT (US, Canada), Caribbean, Argentina, Brazil, Uruguay	-4		4

TABLE 6. Summer Time UTC Offset Values

	-3.5		3.5
Atlantic Daylight Time ASDT (Canada), Greenland	-3	Eastern European Summer Time EEST	3
Newfoundland Daylight Time NST	-2.5		2.5
Brazil, South Sandwich Islands	-2	Central European Summer Time CEST	2
	-1	Western European Summer Time WEST, Irish Summer Time IST, British Summer Time BST (United Kingdom)	1
Coordinated Universal Time, UTC Greenwich Meantime, GMT (United Kingdom and Ireland), Canary Islands, Ghana, Iceland, Liberia, Morocco, Portugal, Senegal, Sierra Leone, Western Sahara	0		0

TABLE 7. Winter Time UTC Offset Values

Time/Location:	Offset:	Time/Location:	Offset:
Baker Islands, Howland Islands, Marshall Islands, (International Date Line)	-12	Norfolk Island Time, NFT	12
American Samoa, Jarvis Island, Kingman Reef, Midway Islands, Niue, Palmyra Atoll, Samoa	-11	Micronesia, New Caledonia, Russia (zone 10), Solomon Islands, Vanuatu	11
	-10.5		10.5
Hawaii-Aleutian Standard Time, HASK, Cook Islands, French Polynesia, Johnston Atoll, Tokelau	-10	Eastern Standard Time, AEST (Eastern Australia)	10
	-9.5	Central Standard Time, CST (Central Australia)	9.5
Alaska Standard Time, AKST	-9	East Timor, Indonesia, Japan, N. Korea, S. Korea, Palau, Russia (zone 8)	9
Pacific Standard Time, PST (US, Canada,) Mexico	-8	Western Standard Time, WST (Western Australia) China (Beijing, Shanghai), Hong Kong, Indonesia, Macau, Malaysia, Mongolia, Philippines, Russia (zone 7), Singapore, Taiwan	8
Mountain Standard Time, MST (US, Canada)	-7	Cambodia, Christmas Island Time, Indonesia, Laos, Russia (zone 6), Thailand, Vietnam	7
		Cocos, Burma	6.5
Central Standard Time, CDT (US, Canada)	-6	Bangladesh, Bhutan, Kazakhstan, Russia (zone 5)	6
		India, Sri Lanka, Nepal (+5.75)	5.5
Eastern Standard Time, EST (US, Canada)	-5	Kazakhstan, Maldives, Pakistan, Russia (zone 4), Tajikistan, Turkmenistan, Uzbekistan	5
	-4.5	Afghanistan	4.5
Atlantic Standard Time, AST, (US-Canada) Puerto Rico	-4	Armenia, Azerbaijan, Georgia, Mauritius, Oman, Reunion, Russia (zone 3), Seychelles, UAE	4
Newfoundland Standard Time, NST	-.3.5	Iran	3.5
Atlantic Daylight Time Argentina, Brazil, Uruguay, Greenland	-3	Bahrain, Comoros, Djibouti, Ethiopia, Eritrea, Iraq, Kenya, Kuwait, Madagascar, Mayotte, Katar, Russia, Saudi Arabia Somalia, Sudan, Tanzania, Uganda, Yemen	3
	-2.5		2.5
Brazil, South Sandwich Islands	-2	Eastern European Time, EET	2
Cape Verde, Greenland, Azores	-1	Central European Time, CET	1
Coordinated Universal Time, UTC Western European Time, WET Greenwich meantime, GMT (United Kingdom and Ireland) Canary Islands, Ghana, Iceland, Liberia, Morocco, Portugal, Senegal, Sierra Leone, Western Sahara	0		0

APPENDIX C

Tone Group Frequency and Paging Tables

Tone Group Frequencies

TABLE 8. Tone Group Frequencies 1–7

Tone Groups No.	1	2	3	4	5	6	7
Tone Group	**Mot 1**	**Mot 2**	**Mot 3**	**Mot 4**	**Mot 5**	**Mot 6**	**Mot 7**
0	330.5	569.31	1092.4	321.7	553.9	122.5	358.9
1	349.0	600.9	288.5	339.6	584.8	1153.4	398.1
2	368.5	634.5	296.5	358.6	617.4	1185.2	441.6
3	389.0	669.9	304.7	378.6	651.9	1217.8	489.8
4	410.8	707.3	313.0	399.8	688.3	1251.4	543.3
5	433.7	746.8	953.7	422.1	726.8	1285.8	602.6
6	457.9	788.5	979.9	445.7	767.4	1321.2	668.3
7	483.5	832.5	1006.9	470.5	810.2	1357.6	741.3
8	510.5	879.0	1034.7	496.8	855.5	1395.0	822.2
9	539.0	928.1	1063.2	524.6	903.2	1433.4	912.0
Diagonal	569.1	979.9	569.1	569.1	979.9	979.9	979.9

TABLE 9. Tone Group Frequencies 8–16

Tone Group No.	8	9	10	11	12	13	14
Tone Groups	**Mot B**	**Mot Z**	**GE A'**	**GE B'**	**GE C'**	**Mot 10**	**Mot 11**
0	371.5	346.7	682.5	652.5	667.5	1472.9	1930.2
1	412.1	384.6	592.5	607.5	712.5	1513.5	1989.0
2	457.1	426.6	757.5	787.5	772.5	1555.2	2043.8
3	507.0	473.2	802.5	832.5	817.5	1598.0	2094.5
4	562.3	524.8	847.5	877.5	862.5	1642.0	2155.6
5	623.7	582.1	892.5	922.5	907.5	1687.2	2212.2
6	691.8	645.7	937.5	967.5	952.5	1733.7	2271.7
7	767.4	716.1	547.5	517.5	532.5	1781.5	2334.6

TABLE 9. Tone Group Frequencies 8–16

Tone Group No.	8	9	10	11	12	13	14
Tone Groups	**Mot B**	**Mot Z**	**GE A'**	**GE B'**	**GE C'**	**Mot 10**	**Mot 11**
8	851.1	794.3	727.5	562.5	577.5	1830.5	2401.0
9	944.1	881.0	637.5	697.5	622.5	1881.0	2468.2
Diagonal	979.9	979.9	742.5	742.5	742.5	None	None

Paging Plan Table

TABLE 10. Standard Paging Plans

Tone #1 (ms)	Gap (ms)	Tone #2 (ms)	Group Call (ms)	Type
1000	-	3000	8000	GE std, Mot std Tone and Voice
400	0	800	8000	Mot Tone Only
1000	0	3000	6000	NEC-B
1000	300	3000	6000	NEC-A
1000	0	1000	4000	NEC-C
400	0	800	4000	NEC-M
500	0	500	3000	NEC-L
400	0	400	3000	NEC-D

APPENDIX D

Code Plan and Pager Capcodes Tables

Code Plan Numbers and Pager Capcode Tables

TABLE 11. Telex Group Numbers (1–9)

Telex Code Plan #	1	2	3	4	5	6	7	8	9
Pager Capcodes	**Mot A**	**Mot C**	**Mot D**	**Mot E**	**Mot F**	**Mot G**	**Mot H**	**Mot J**	**Mot K**
0xx	2+4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1xx	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1
2xx	2+2	2+2	2+2	2+2	1+3	1+3	1+3	1+4	1+4
3xx	3+3	1+2	1+2	1+2	3+3	3+3	3+3	4+1	4+1
4xx	1+2	4+4	1+5	2+1	4+4	3+1	3+1	4+4	4+4
5xx	1+3	1+4	5+5	1+6	3+1	5+5	1+6	5+5	1+6
6xx	2+1	2+1	2+1	6+6	1+4	1+5	6+6	1+5	6+6
7xx	3+1	4+1	5+1	6+1	4+1	5+1	6+1	4+5	6+1
8xx	2+3	2+4	2+5	2+6	3+4	3+5	3+6	5+4	4+6
9xx	3+2	4+2	5+2	6+2	4+3	5+3	6+3	5+1	6+4

TABLE 12. Telex Group Numbers (10–17)

Telex Code Plan #	10	11	12	13	14	15	16	17
Pager Capcodes	**Mot L**	**Mot M**	**Mot N**	**Mot P**	**Mot Q**	**Mot R**	**Mot S**	**Mot T**
0xx	N/A	4+2	4+2	4+2	4+2	4+2	4+2	4+2
1xx	1+1	2+3	2+3	2+3	2+4	2+4	2+5	3+4
2xx	1+5	2+2	2+2	2+2	2+2	2+2	2+2	4+3
3xx	5+1	3+3	3+3	3+3	4+2	4+2	5+2	3+3

TABLE 12. Telex Group Numbers (10–17)

Telex Code Plan #	10	11	12	13	14	15	16	17
Pager Capcodes	**Mot L**	**Mot M**	**Mot N**	**Mot P**	**Mot Q**	**Mot R**	**Mot S**	**Mot T**
4xx	1+6	4+4	3+2	3+2	4+4	4+4	2+6	4+4
5xx	5+5	3+2	5+5	2+6	5+5	2+6	5+5	5+5
6xx	6+6	2+4	2+5	6+6	2+5	6+6	6+6	3+5
7xx	6+1	4+2	5+2	6+2	4+5	6+2	6+2	4+5
8xx	5+6	3+4	3+5	3+6	5+4	4+6	5+6	5+4
9xx	6+5	4+3	5+3	6+3	5+2	6+4	6+5	5+3

TABLE 13. Telex Group Numbers (18–25)

Telex Code Plan #	18	19	20	21	22	23 GE X	24 GE Y	25 GE Z*
Pager Capcodes	**Mot U**	**Mot V**	**Mot W**	**Mot Y**	**Mot MT**	**GE X**	**GE Y**	**GE Z**
0xx	4+2	4+2	4+2	N/A	4+2	10+10	11+11	10+10
1xx	3+4	3+5	4+6	7+7	1+1	11+10	12+11	12+10
2xx	4+3	5+3	6+4	8+8	2+2	11+11	12+12	12+12
3xx	3+3	3+3	5+6	9+9	1+2	10+11	11+12	10+12
4xx	4+4	3+6	4+4	7+8	4+4	12+12	N/A	N/A
5xx	3+6	5+5	5+5	7+9	5+5	12+10	N/A	N/A
6xx	6+6	6+6	6+6	8+7	2+1	12+11	N/A	N/A
7xx	6+3	6+3	4+5	9+7	4+5	10+12	N/A	N/A
8xx	4+6	5+6	5+4	8+9	5+4	11+12	N/A	N/A
9xx	6+4	6+5	6+5	9+8	2+4	N/A	N/A	N/A

Notes

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