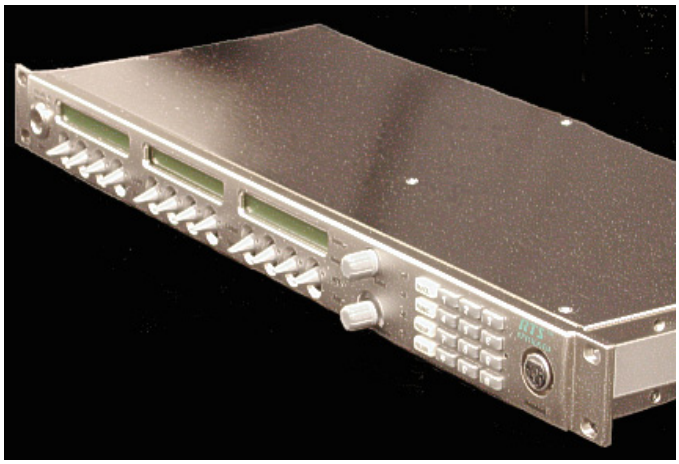
KP-812 Keypanel
Desktop with Handset, Desktop, Rack Mount and Lever Key

User Manual



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UNPACKING AND INSPECTION

Immediately upon receipt of the equipment, inspect the shipping container and contents carefully for any discrepancies or damage. Should there be any, notify the freight company and the dealer at once.

CUSTOMER SUPPORT

Technical questions should be directed to:

Customer Service Department
RTS/Telex
12000 Portland Avenue South
Burnsville, MN 55337 USA
Telephone: (800) 392-3497
Fax: (800) 323-0498

RETURN SHIPPING INSTRUCTIONS PROCEDURE FOR RETURNS

If a repair is necessary, contact the dealer where this unit was purchased.

If repair through the dealer is not possible, obtain a RETURN AUTHORIZATION from:

Customer Service Department
Telex Communications, Inc.
Telephone: (800) 382-3497
Fax: (800)323-0498

DO NOT RETURN ANY EQUIPMENT DIRECTLY TO THE FACTORY WITHOUT FIRST OBTAINING A RETURN AUTHORIZATION.

Be prepared to provide the company name, address, phone number, a person to contact regarding the repair, the type and quantity of equipment, a description of the problem and the serial number(s).

SHIPPING TO MANUFACTURER FOR REPAIR OR ADJUSTMENT

All shipments of RTS products should be made via United Parcel Service or the best available shipper, prepaid. The equipment should be shipped in the original packing carton; if that is not available, use any suitable container that is rigid and of adequate size. If a substitute container is used, the equipment should be wrapped in paper and surrounded with at least four inches of excelsior or similar shock-absorbing material. All shipments must be sent to the following address and must include the Return Authorization

Factory Service Department
Telex Communications, Inc.
1930 West 1st Street
Blue Earth, MN 56013 U.S.A
Attn: Service

Upon completion of any repair the equipment will be returned via United Parcel Service or specified shipper collect.

Table of Contents

Chapter 1

Introduction

General Description

The RTS ™ KP-812 keypanel fits in a standard 19” rack and is one rack space high. It has 12 keys (one listen button and one talk button make up a key): 10 keys are for intercom talk and listen, two keys are for call waiting response.

In addition, there are two encoders. One encoder is used for headset, microphone, auxilliary input, and matrix in volume adjustment. The other encoder knob is used for menu selection. The KP-812 keypanel has a standard numerical keypad with four extra keys: Mic Mute, User Assignable, Page Up, and Page Down.

The KP-812 keypanels add significant new features such as digital signal processing.

KP-812 keypanels also offer a custom design LCD display with support for 16x16 Kanji, Katakana, Hiragana, and English characters.

The KP-812 keypanels are made of pressed aluminum / metal and feature state of the art audio processors and drivers. There are three different models of keypanel to choose between - Desktop, Desktop with Handset and Rackmount.

Features

- ***Talk / Listen Configuration***: 12 keys, with 10 keys available for full talk/listen configuration. Keys support both latching (hands-free) and momentary (push-to-talk) operation. Plus an extensive scrollable menu system (accessed using an encoder). Menus include helpful prompts to walk the user through setup.

- ***Call Waiting Window***: The 11th and 12th display positions are used as a call waiting windows (CWW), while the 12th key is used for menu displays. The CWW is configured through the menu. The user has three assignable options from the menu, as follows:
  1) No CWW
  2) One CWW (12th key only)
  3) Two CWW (11th and 12th key)

- ***Character Display***: The LCD display is custom designed to show 16x16 size Japanese or Kanji characters. Each LCD will show two rows of 16 characters for a total of 32 characters. Each display area shows eight-character alphas per key (Talk/Listen).

  Note: The KP-812 Keypanels have four keys per display area.

- ***Hands-Free Button (Handset Version Only)***: The front panel of the handset version has a hands-free button. When this button is active, the user is able to talk through a gooseneck mic and listen through the front speaker.

- ***Connections***: The back of each key panel has one DB-9 connector, one RJ-12 connector, and one BNC for the matrix connection. On the rack mount model only, there is one RJ-12 connector for Expansion Panels and one RJ-12 connector for LCP. There are two mechanical pots for Mic level control, one for headset mic and one for panel mic gain.

  Note: Only one Matrix connection can be used at a time.

- ***Firmware***: Every keypanel has an in-system downloadable firmware feature, where firmware is downloaded through AZedit application to the keypanels.

- ***Configuration***: With the appropriate configuration, the KP-812 keypanel can be used as a digital keypanel (sending and receiving digital audio from the matrix) or as an analog key panel. Digital operation is used when coaxial cables are used and for future technology enhancements.

- ***Remote Applications***: The KP-812 keypanel can be used in remote applications. The front panel can be mounted separately and connected to the keypanel using up to a maximum of 50 feet of cable.

- ***Digital Signal Processing (DSP)***: Improves microphone voice activation and limiting. Adds new mixing, metering, and filtering capabilities.

Options

EKP-816: Provides additional 12 or 16 intercom keys.

LCP-12 or 16: Provides easy adjustment of point to point and party line listen levels for individual intercom keys. One LCP-12 or 16 controls volumes for one row of keys.

KP-812 Keypanel with Handset

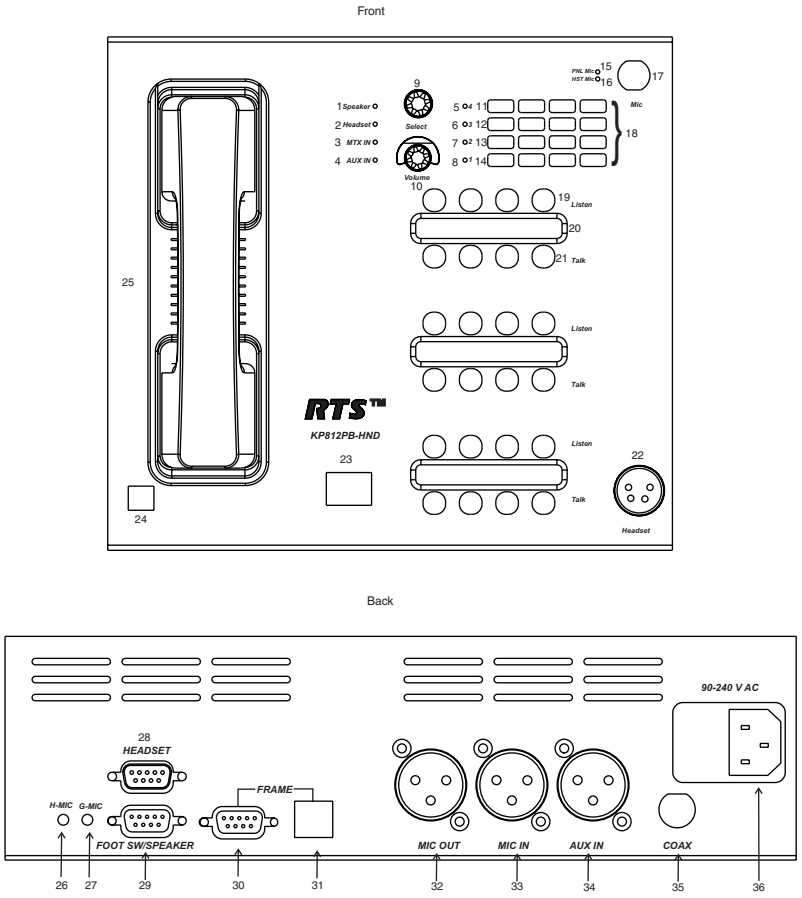


Figure 1. KP-812 Keypanel - Handset Model

FRONT

1. Speaker LED
2. Headset LED
3. Matrix LED
4. AUX In LED
5. Page 4 LED
6. Page 3 LED
7. Page 2 LED
8. Page 1 LED
9. Select / Menu Encoder
10. Volume Control
11. Mic Mute
12. Func
13. Page Up
14. Page Down
15. Panel Mic LED
16. Headset Mic LED
17. Panel Mic Connector
18. Standard Numerical Keypad
19. Listen Keys
20. Display Panel
21. Talk Keys
22. Headset Connector
23. Hands-Free Switch
24. Handset RJ-11 Connector
25. Handset/Speaker

BACK

26. Headset Mic Gain
27. Mic MicGain
28. External Headset Connector
29. Speaker / Footswitch Connection
30. DB-9 Connection for Matrix(frame)
31. RJ-12 Connection for Matrix(frame)
32. MIC Out
33. MIC In
34. AUX In
35. Coax Connection
36. AC

KP-812 Keypanel - Desktop

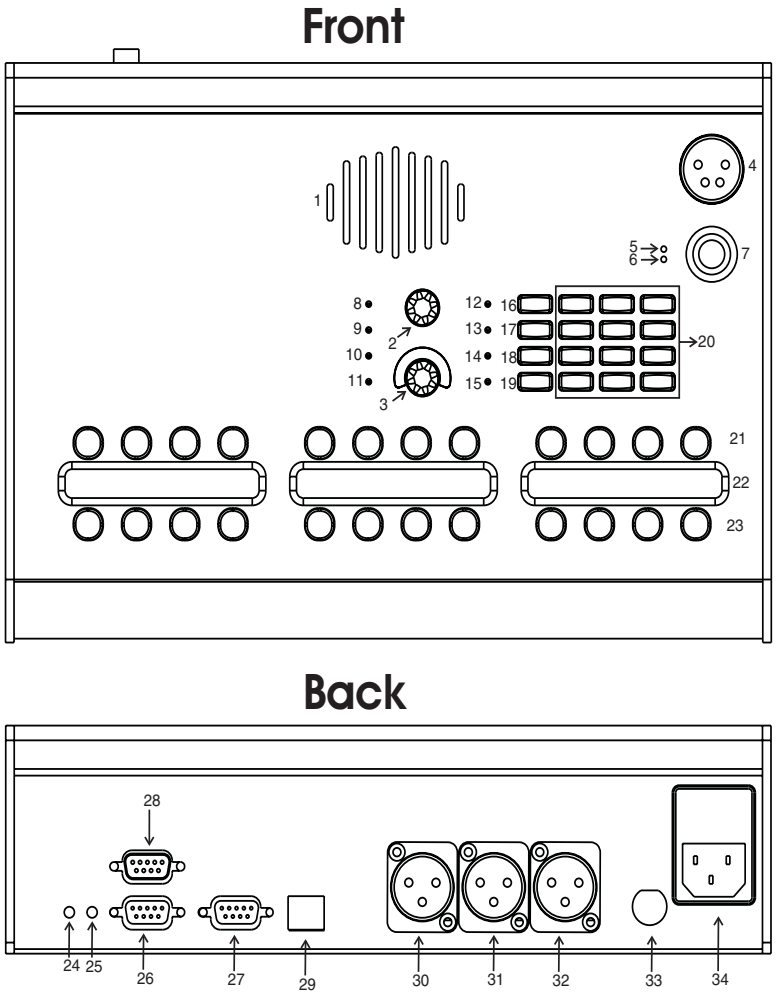


Figure 2. KP-812 Keypanel - Desktop Model

FRONT

1. Speaker
2. Select / Menu Encoder
3. Volume Control
4. Headset Connector
5. Panel Mic LED
6. Headset Mic LED
7. Panel Mic Connector
8. Speaker LED
9. Headset LED
10. Matrix LED
11. Aux In LED
12. Page 4 LED
13. Page 3 LED
14. Page 2 LED
15. Page 1 LED
16. Mic Mute
17. Func
18. Page Up
19. Page Down
20. Standard Numerical Keypad
21. Listen Keys
22. Display Panel
23. Talk Keys

BACK

24. Headset Mic Gain
25. Panel Mic Gain
26. Speaker / Footswitch Connection
27. DB-9 Connection for Matrix
28. External Headset Connector
29. RJ-12 Connection for Matrix
30. MIC Out
31. MIC In
32. AUX In
33. Coaxial Connection
34. AC

KP-812 Keypanel - Rack Mount

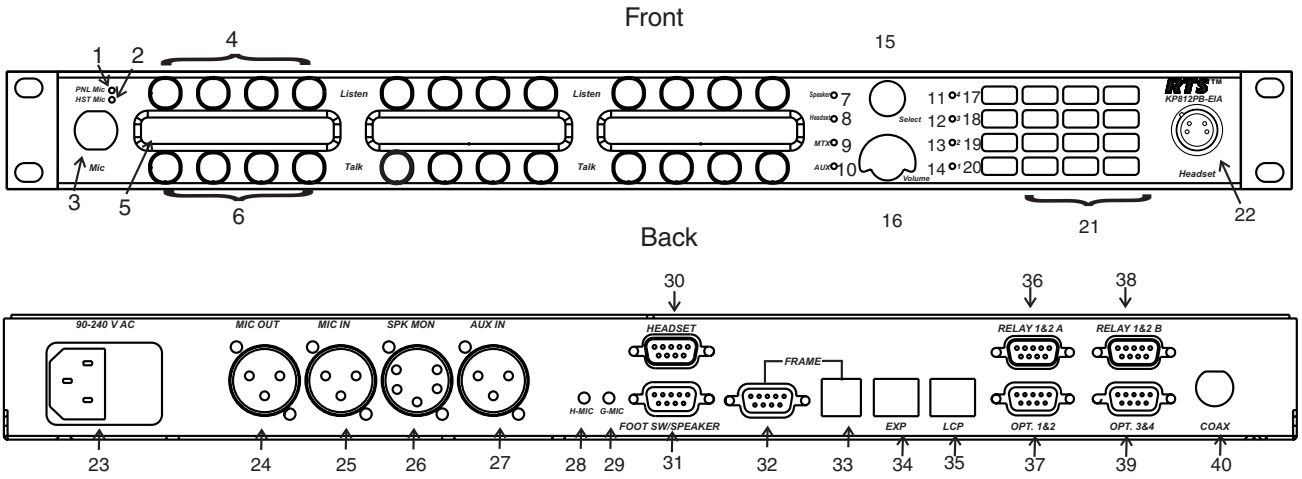


Figure 3. KP-812 Keypanel - Rackmount Model

FRONT

1. Panel Mic LED
2. Headset Mic LED
3. Panel Mic Connector
4. Listen Keys
5. Panel Display
6. Talk Keys
7. Speaker LED
8. Headset LED
9. Matrix LED
10. AUX LED
11. Page 4 LED
12. Page 3 LED
13. Page 2 LED
14. Page 1 LED
15. Select / Menu Encoder
16. Volume Control
17. Mic Mute
18. Func
19. Page Up
20. Page Down
21. Standard Numerical Keypad
22. Headset Connector

BACK

23. AC
24. MIC Out
25. MIC In
26. Speaker /Monitor
27. AUX In
28. Headset Gain
29. Mic Gain
30. External Headset Connector
31. Speaker / Footswitch Connection
32. DB-9 Connection for Matrix
33. RJ-11 Matrix Connection
34. RJ-45 EXP Connection
35. RJ-45 LCP Connection
36. Relay 1&2A
37. Opto-Isolate Input 1&2
    Open Collector 1&2
38. Relay 1&2B
39. Opto-Isolate Input 3&4
    Open Collector 3&4
40. Coaxial Connection

Controls Descriptions

SPEAKER LED:	Indicates the user can adjust the Speaker levels.
HEADSET LED:	Indicates the user can adjust the Headset levels.
MATRIX IN LED:	Indicates the user can adjust the audio levels from the Matrix to the keypanel.
AUX IN LED:	Indicates the user can adjust the audio levels from the Aux In to the keypanel.
PAGE 4 LED:	When the Page 4 LED is lit, this indicates that setup page four is assigned to the main panel.
PAGE 3 LED:	When the Page 3 LED is lit, this indicates that setup page three is assigned to the main panel.
PAGE 2 LED:	When the Page 2 LED is lit, this indicates that setup page two is assigned to the main panel.
PAGE 1 LED:	When the Page 1 LED is lit, this indicates that setup page one is assigned to the main panel.
MENU ENCODER:	The menu encoder knob turns clockwise and counterclockwise to scroll through menu options. To select an option, tap the encoder key once. To go back one step, double-tap the encoder knob. Press and hold for one second to exit.
VOLUME CONTROL:	The volume control knob controls the volume of the selected source or destination as indicated by the lit LED.
MIC MUTE:	The Mic Mute button mutes whichever microphone is active so no audio can be transmitted through the microphone.
FUNC KEY:	The Func key is a user assignable key or soft key that can be programmed to perform an action that is used frequently or is difficult to access, such as a lower level menu item. It can also be programmed to operate a local GPI output.
PAGE UP AND DOWN:	The Page Up button changes that active page assigned to the main panel.
PANEL MIC CONNECTOR:	Accepts an electret gooseneck microphone, such as the Telex model MCP-90-XX. The model MCP-90 series panel mic connector is a 1/4” stereo plug, with a threaded shaft for easy installation.
PANEL MIC LED:	When the Panel Mic LED is lit green, the Panel Mic is active. This is the default setting for the KP-812 Keypanel.
HEADSET MIC LED:	When the Headset Mic LED is lit green, the headset mic is active. This automatically when a headset is plugged in.
STANDARD NUMERICAL KEYPAD:	Use the Keypad to enter auto dial numbers, as well as dial outside numbers for TIF operation.
LISTEN BUTTONS:	The listen buttons allow the user to listen to audio coming into the keypanel. To listen, press an upper button. A green LED will light the button.

DISPLAY PANEL: The 11th and 12th display positions are used as call waiting windows (CWW) and menu display. The CWW is configured through the menu. The user has three assignable options from the menu, as follows:

1) No CWW
2) One CWW (12th key only)
3) Two CWW (11th and 12th key)

TALK KEYS: The talk buttons allow the user to talk to other keypanels. To talk, press a lower button. A red LED will light the button.

HEADSET CONNECTOR 812 headset: The headset connector is a 4-pin XLR connector, which when plugged into the KP-keypanel, turns the panel mic off and audio is sent to the headset and the mic is activated.

HANDS-FREE SWITCH (KP-812 KEYPANEL WITH HANDSET ONLY) : When hands-free is activated, the panel mic is selected and audio is heard through the speaker.

HANDSET RJ-45 CONNECTOR (KP-812 KEYPANEL WITH HANDSET ONLY) : Connects the handset to the KP-812 keypanel so telephone style operation is available.

HANDSET (RECEIVER) (KP-812 KEYPANEL WITH HANDSET ONLY) : The handset, or receiver, allows telephone style operation from the KP-812 keypanel. The listen audio as well as the talk audio are sent through the microphone and speaker within the handset.

Specifications

Microphone Preamplifier

Electret Mic Input Level @ 1 kHz	-42 dB, 150ohms
Dynamic Mic Input Level @ 1kHz	-50 dBm, 150 ohms
Output Level (to matrix)	0 dBu, ± 0.2 dBu
Max Voltage Gain, Mic to Line	70 dB, ± 2 dB
Frequency Response	100 Hz to 10 kHz, ± 2 dB
Limiter	10 dB above nominal

Tone Generator

Output Level (to matrix)	0 dBu ± 2 dBu
Output Frequency	500 Hz

Headphone Amplifier

Maximum Voltage Gain	200 dB
Frequency Response	100 Hz to 10 kHz, ± 2 dB
Headphone Impedance	8 to 600 ohms
Output Power	1 W to 50 ohms
Output Voltage Level	8 volts peak-to-peak (max.)
Sidetone Range	25 dB

Speaker Amplifier and Speaker

Frequency Response	100 Hz to 10 kHz, ± 2 dB
Output Power (per amplifier)	2 watt into 8 ohms
Output Voltage Level	12 volts peak-to-peak (max.)
Volume Control Range	30 dB

Intercom Input/Output

Input	Nominal: 0 dBu, Peak +20 dBu max.
Output	0 dBu, ± 2 dBu nominal

External Line Input (Program Input)

Input Level	+ 8 dBu nominal

General

AC SUPPLY

Internal switching type, 100-240 VAC, 50/60 Hz with universal IEC connector for connection to various AC main cords.

Environment

Storeage: -40°C (-40°F) to 70°C (158°C)

Operating: -20°C (-4°F) to 60°C (140°F)

DIMENSIONS:

Desktop	11.3 (W) x 7.623 (D) x3.1 (H)
Handset	11.3 (W) x 11 (D) x 3.75 (H)
Rackmount	19 (W) x 7.5 (D) x 1.75 (H)

Approvals

UL, CSA, VDE, CE

Panel Microphone Connector

Type:	3-circuit, 1/4” phone jack with threaded metal bushing, compatible with RTS MCP-90	
Pin Out:	Tip :	+ Audio and DC bias
	Ring:	Common
	Sleeve:	Chassis ground

Headset Connector:

Type:	XLR-4 Female	
	Pin 1	Mic low
	Pin 2	Mic high
	Pin 3	Headphone low
	Pin 4	Headphone high

Intercom Connectors: Parallel-wired DE9S and RJ-12 Connectors

Type:	DE9S	
Pin Out:	Pin 1	Data +
	Pin 2	Data -
	Pin 3	Audio in (from matrix) shield
	Pin 4	Audio out (to matrix) +
	Pin 5	Audio out (to matrix) -
	Pin 6	Data shield
	Pin 7	Audio in (from matrix) -
	Pin 8	Audio in (from matrix) +
	Pin 9	Audio out (to matrix) shield

Type:	RJ12	
Pin Out:	Pin 1	Data -
	Pin 2	Audio in (from matrix) +
	Pin 3	Audio out (to matrix) +
	Pin 4	Audio out (to matrix) -
	Pin 5	Audio in (from matrix) -
	Pin 6	Data +

Expansion Connector

Type:	RJ45

LCP Connector

Type:	RJ45

Speaker / Monitor Output

Type:	5-pin XLR Male	
Pin out:	Pin 1	Line Out (GND)
	Pin 2	Line Out (+)
	Pin 3	Line Out (-)
	Pin 4	SPK Out (+)
	Pin 5	SPK Out (-)

Aux 1 In (Auxiliary Program Input)

Type:	3-pin XLR Female	
Pin out:	Pin 1	Ground
	Pin 2	Input +
	Pin 3	Input -

Note: Balance input, + 8 dBu nominal

Relay 1 & 2 Out

Type:	9-pin male, D-Sub	
Pin out	Pin 1	NC contact 1
	Pin 2	COM contact 1
	Pin 3	NO contact 1
	Pin 4	NC contact 2
	Pin 5	COM contact 2
	Pin 6	NO contact 2
	Pin 7	+3.3 VDC
	Pin 8	Ground
	Pin 9	+3.3 VDC

Relay 3 & 4 Out

Type:	9-pin male D-Sub	
Pin out:	Pin 1	NC contact 3
	Pin 2	COM contact 3
	Pin 3	NO contact 3
	Pin 4	NC contact 4
	Pin 5	COM contact 4
	Pin 6	NO contact 4
	Pin 7	+3.3 VDC
	Pin 8	Ground
	Pin 9	+3.3 VDC

Note: The relay 1 and 3 contacts are electrically separate, but operate in unison. The relay 2 and 4 contacts are electrically separate, but operate in unison. The +3.3 VDC pins are connected internally through 1K resistors to +3.3 VDC and can source 3 mA. This voltage can be used with the relay contacts to create an active high output for some devices that require a +3.3 VDC signal to activate. For example, connecting pin 7 to pin 3 of the Relay 1 & 2 connec tor will result in +3.3 VDC on pin 2 when the relay is activated.

Opto 1-2 In (Opto-isolated control inputs) / OC 1-2 (J11)

Type:	9-pin male D-Sub	
Pin-out	Pin 1	3.3 VDC
	Pin 2	Emitter OC 2
	Pin 3	Emitter OC 1
	Pin 4	Ground
	Pin 5	Ground
	Pin 6	Collector OC 1
	Pin 7	Collector OC 2
	Pin 8	Opto-Out 2
	Pin 9	Opto-Out 1

Note: A contact closure between any switch input and ground will activate that input. The switch contact inputs are also connected internally through 1K resistors to internal +3.3 VDC and can source 3 mA for use with an external transistor switch circuit.

Opto 3-4 In (Opto-isolated control inputs) / OC 3-4 (J12)

Type:	9-pin male D-Sub	
Pin-out:	Pin 1	3.3 VDC
	Pin 2	Emitter OC 4
	Pin 3	Emitter OC 3
	Pin 4	Ground
	Pin 5	Ground
	Pin 6	Collector OC 3
	Pin 7	Collector OC 4
	Pin 8	Opto-Out 4
	Pin 9	Opto-Out 3

Note: A contact closure between any switch input and ground will activate that input. The switch contact inputs are also connected internally through 1K resistors to internal +3.3 VDC and can source 3 mA for use with an external transistor switch circuit.

Headset (External headset connector)

Type:	9-pin male D-Sub	
Pin-out	Pin 1	Ground
	Pin 2	External headset PTT
	Pin 3	External headset PTT enable
	Pin 4	External headset enable
	Pin 5	Balanced dynamic mic input +
	Pin 6	Ground
	Pin 7	Left Speaker
	Pin 8	Right Speaker
	Pin 9	Balanced dynamic mic input -

Note: Mic input -50 dBu nominal. Headset out 0.325 watts into 8 ohms.

Foot Switch / Speaker

Type:	9-pin male D-Sub	
Pin-out:	Pin 1	Ground
	Pin 2	Speaker Plus (+)
	Pin 3	Ground
	Pin 4	No Connection
	Pin 5	Foot Switch
	Pin 6	Speaker Minus (-)
	Pin 7	No Connection
	Pin 8	No Connection
	Pin 9	Ground

Note: A switch contact closure from the footswitch input to ground will activate the footswitch input.

MIC In Unbalanced Panel Microphone Input

Type:	3-pin XLR Female	
Pin-out:	Pin 1	Ground
	Pin 2	DC bias and Audio Plus (+)
	Pin 3	Shield (circuit common)

Note: Input level -42.5 dBu nominal.

MIC Out Balanced Microphone Output

Type:	3-pin XLR Male	
Pin-out:	Pin 1	Shield (circuit common)
	Pin 2	Audio output +
	Pin 3	Audio output -

Note: Output level 0 dBu nominal (balanced).

Chapter 2

Installation

Note: To see where the DIP Switch is on the circuit board, see Figure 4, page 20.

DIP Switch Settings

Switch 1: Latch Enable/Disable

Default Setting: Open (Enable)
Description: An intercom key can always be turned on for momentary conversation by pressing and holding the key during the conversation. There is also an electronic latching feature that lets you tap intercom keys to turn them on or off. This permits convenient hands-free conversation. However, it can also result in a talk circuit being left on unintentionally. For example, A key that talks to a public address system could be accidentally left on. Or, an IFB key (a type of key assignment often used by a director or producer to give instructions to a listener, such as a news anchor during a television broadcast) could accidently be left on, causing confusion for the IFB listener. To prevent such accidents, the latching feature can be turned off.

NOTE: DIP Switch 1 disables latching for the entire keypanel. If you just need to disable latching for selected keys, leave DIP Switch 1 in the “open” position. Then, disable latching for the desired keys using the “D” check boxes in the Keypanels/Ports setup screen in AZedit.

Switch 2: Enable/ Disable the adjustment of listen volumes.

Default Setting: Open (Enable)
Description: Enables or disables the Key Gain item in the Key Assign menu.

Switch 3: Unused

Default Setting: Open (Enable)

Switch 4: Call Flash Time-out

Default Setting: Closed (Infinite Tally)
Description: Whenever there is an incoming call and there is a talk key assigned to the caller, the talk LED next to that key will flash. If this DIP switch is closed the flashing light goes off as the callers talk key is closed. Otherwise, flash time can be set for 15 second time-out, or until the caller's talk key is released. Call Flash Time-out can be set to 5 sec, 10 sec, and 15 sec.

Switch 5: Footswitch Enable/Disable

Default: Open (Disabled)
Description: The optional Connector Module has a footswitch (GRP CALL) input. If the footswitch is enabled (DIP switch 5 set to the "Closed" position), then keys that are latched on will not activate until the footswitch is closed. Latched keys are indicated by winking amber talk LEDs (on time less than off time), and when the footswitch is activated, the LEDs provide normal talk-on indication.

NOTE:
1. If the talk key is held down in the Footswitch mode, the channel will be activated until the user releases the key. The use of this function does not require the footswitch to be used.

2. If DIP switch 1 is set to the "Closed" position, nothing will latch.

3. Individual keys can be set to non-latching via AZedit. If this is done, the footswitch has no effect on the keys that have been set to non-latching.

Switch 6: Reserved

Switch 7: Reserved. Must be left in the Open position.

Switch 8: Reserved, Must be left in the Open position.

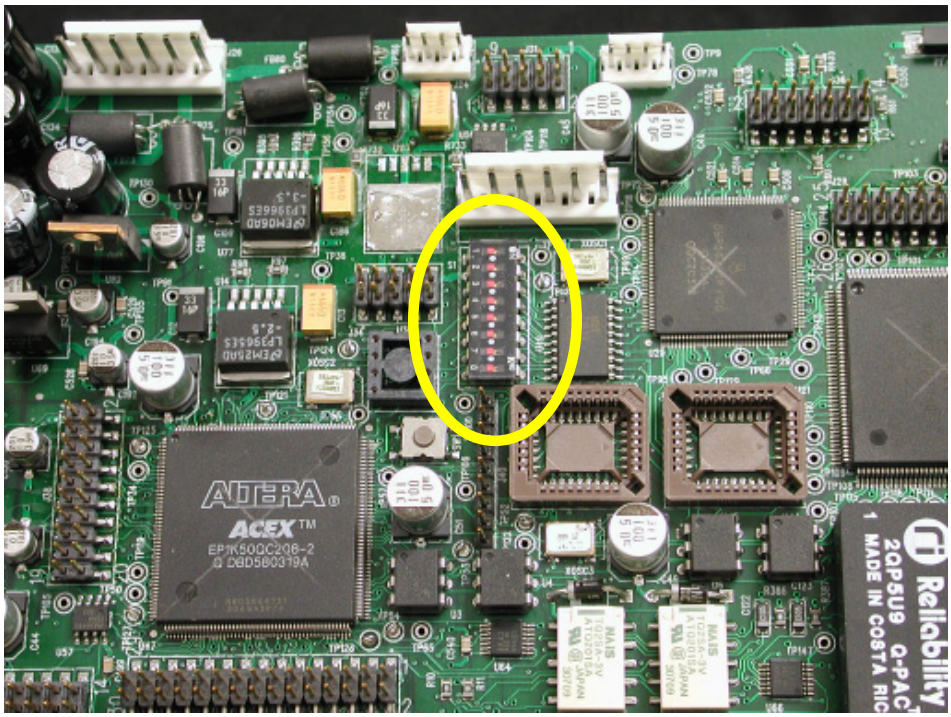


Figure 4. KP-812 Keypanel board, DIP switch placement.

EXP. and LCP. Connectors

Connect from the EXP connector on the back of the KP-812 keypanel to the Expansion 1 connector of an optional EKP-812 Expansion Panel. Use the interconnect cable supplied with the Expansion Panel.

Note: JP1 must have pins 1 and 2 shorted to use the LCP connection.

Each LCP adjusts the listen levels for up to 16 keypanel keys, and you can connect as many LCP panels as required to adjust all keys on the KP-812 keypanel and on an EKP-812 Expansion panel. An interconnect cable is supplied with each LCP. Connect the first LCP to the LCP connector on the KP-812. Connect the second LCP to the first LCP, and so forth.

Note: When arranging LCP panels in an equipment rack, you should put them directly above or below the keys they will be used to adjust.

Frame Connector

Use either of the Frame connectors (but not both) to connect to an intercom port of the intercom system. The intercom port you connect to should agree with the address that you set previously (for more information on addressing, see page 29). Use the following cable diagrams to help you connect your system.

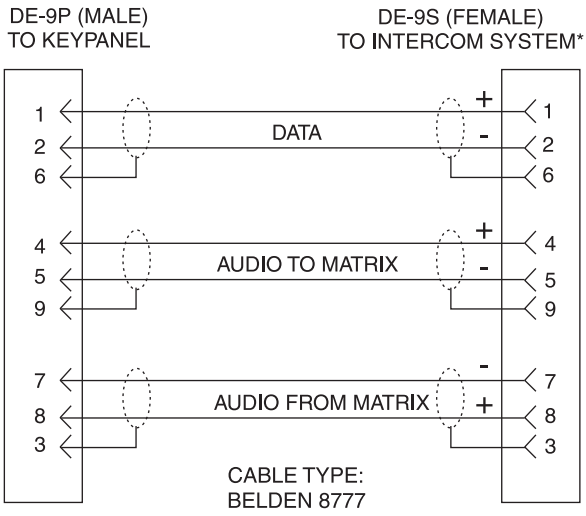


Figure 5. DE9S Intercom Cable Wiring

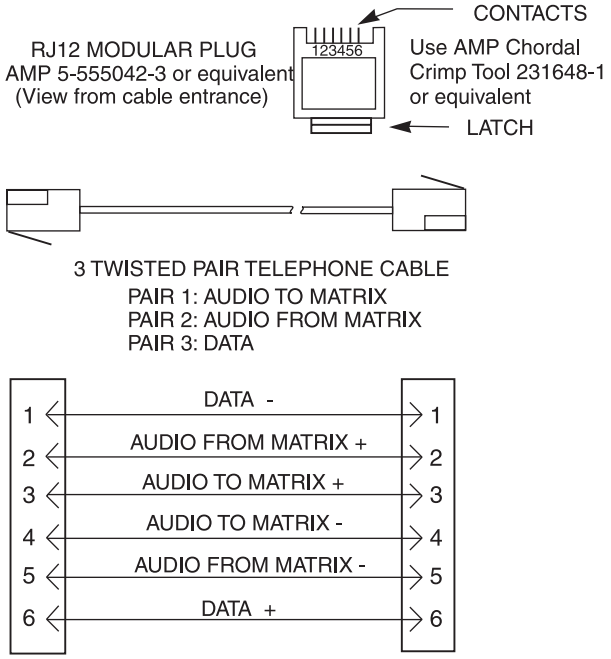


Figure 6. RJ12 Intercom Cable Wiring

Headset Connector

A duel-sided, mono headset may be connected for use along with or in place of the front panel speaker and a separate microphone. Headphones may be connected for use with a separate microphone.

Headset Microphone Gain Adjustment
The gain of the headset microphone preamp can be adjusted via the recessed trim pot located on the back panel (see figures, 1, 2, and 3, on pages 10,11, and 12). Turn the pot clockwise to increase gain and counterclockwise to decrease gain. The limits are ±20 dB from nominal.

Panel Microphone Connector

A panel microphone may be connected for talking with either the front panel speaker or headphones used for listening. The connector accepts MCP5, MCP6, or MCP90 Panel Microphones. Insert the microphone and rotate the entire microphone body several turns to lock in place.

Panel Microphone Gain Adjustment
The gain of the panel microphone preamp can be adjusted via the recessed trim pot located on the back panel. Turn the pot clockwise to increase gain and counterclockwise to decrease gain. The limits are ±20 dB from nominal.Aux IN

Aux In

Provides a connector for a line-level audio input (program 1).

Microphone Preamplifier

Provides an unswitched, balanced, microphone preamplifier output.

External Headset, Speaker Output, and Footswitch Input

Provides one DB-9 Headset Connection, one DB-9 Speaker Output/Footswitch Connection.

GPIO

Opto-Isolate Input 1-4 → Four general purpose input lines.
Open Collector 1-4 → Four general purpose output lines.

Relay 1 & 2 (A&B)

Includes two SPDT relay outputs.

Coaxial Connection (CS-100 Coaxial System Interface)

Provides the ability to link the unit to the matrix using a single 75 ohm coaxial cable. The interface converts all audio and data streams to a single transmission path. Perfect for systems where there are existing, but unused 75 ohm video cable. Requires CSI-200 interface unit at the intercom matrix end.

To convert an existing KP-812 keypanel to use the coaxial connection, do the following:

Requirements:
You will need to upgrade the KP-812(9030-7761-000 [rackmount unit] 9030-7761-001 [desktop unit]) board to Rev J.

Flash Cards to Upgrade the Firmware Version to 2.0 or later

Flash Chip	Old Part Number	New Part Number
U21		9015-7761-021
U22		9015-7761-022

1. On the KP-812 board, find **U21** and **U22** flash cards.
2. Using IC pullers, remove **both flash cards**.
3. Replace the existing flash cards with the **new flash cards** (see above for part numbers). Carefully snap the flash cards in place.

Cable the CSI-200, KP-812 and Frame

1. Connect a DB-9 connection to Frame A or Frame B (depending upon the channel being used) on the CSI-200.
2. Connect the opposite end of the DB-9 cable to the Frame you want to use (ADAM, ADAM CS, Zeus, or Cronus).
3. Connect the coaxial calbe (up to 1000 ft) to Coax A or Coax B on the CSI-200 (depending upon the channel being used).
4. Connect the opposite end of the coaxial cable to the KP-812 COAX connect on the back of the unit.
5. Using AZedit, add 5 ms to the Panel Poll Delay (Keypanels>Edit button> Advanced).
6. Click Apply.
7. Send changes to the frame.

NOTE: Panel Poll Delay must be set for each CSI-200 connected to the frame.

8. **Power ON** the CSI-200.
9. **Power ON** the KP-812.

NOTE: On the CSI-200, the Frame LED is solid green for the channel that is connected and active. The Transfer (TX) and Receive (RX) LEDs for the specified channel flash rapidly to signify the connection is active. On the KP-812, dashes or panel assignments on the port are displayed in the panel window.

Chapter 3

Basic Operation

Selecting Headset or Speaker

By default, the panel mic is active. When a headset is used via the 4-pin XLR connector on the keypanel, the Headset Mic LED indicator activates and the headset mic is used.

Listen Volume Adjustments

By default, the **Vol.** control adjusts the listen volume for the speaker, headset,intercom input, or or AUX In as indicated by the lit LED. The level of auxiliary program input 1 (if Aux inputs are enabled) and the level of incoming audio from the intercom matrix can be adjusted. Use the **Vol.** control to adjust the listen volume. The Vol. control defaults back to the speaker or headset after about one minute of inactivity of the control. The minimum volume level for either the keypanel speaker or headset may be adjusted. See, *Service Menu, Min Vol*.
Note: You can save the volume adjustments to be the power-up defaults using *Service Menu, Save Cfg*.

Listen Source Selection LED

There are four LED indicators for Listen Source selection. (Default is speaker LED on, rest of them off).

- Internal Speaker
- Headset/Handset
- Matrix Audio In
- Auxilliary 1 In

On power-up MATRIX IN audio is routed to speaker. This is indicated by the following:

Table 1

Speaker Selected	Handset/Headset Selected
Speaker	Speaker
Headset/Handset	Headset/Handset
MATRIX IN	MATRIX IN
AUXIN 1	AUXIN1
The audio being heard on the speaker will be changed through the volume encoder.	The audio being heard on headset is from MATRIX IN. Audio level on headset will be changed through the volume encoder.

If the encoder were pushed once, it would select between Headset/Handset and Speaker volume. If it is pushed twice from either headset or speaker it will jump to MATRIX IN, if enabled.

Table 2

Matrix In Selected
Speaker
Headset/Handset
MATRIX IN
AUXIN 1
The above LEDs indicate that Level of audio being adjusted through the encoder is **not of speaker** but it is of MATRIX IN.

In order to move between MATRIX IN or AUX IN 1, tap the encoder once is required.

AUX IN Selected
Speaker
Headset/Handset
MATRIX IN
AUXIN 1
The above LEDs indicate that Level of audio being adjusted through the encoder is **not of speaker** but it is of AUX IN 1.

If the encoder is pushed twice it will go back to the previously selected item in table 1.

Intercom Keys and Displays

Alphanumeric Display Indications for Intercom Keys

Upper Case Letters: Upper case letters indicate keys that have any kind of talk assignment, with or without a corresponding listen assignment. Example, DIR1.

Lower Case Letters: Lower case letters indicate keys that have only a listen assignment. Example, dir1.

Dashes ---- : Dashes indicate a key that has no talk or listen assignment.

Note: The flashing alphanumeric display for the TIF keys, remote IFB keys, and remote ISO keys can be disabled by placing a check mark next to "Don't generate tallies for TIF and trunk use" in AZedit (Options menu, Intercom Configuration, Options tab).

LED Indications for Intercom Keys

Note: For the Japanese model KP-812 keypanel, the talk ON LED will appear red and the Listen ON LED will appear green.

Talk LED Indications

Each button is back lit with a Bi-colorLED as an indicator. The talk LED is the button below the display panel. The talk LED indications are as follows:

Continuous Red

Talk is on and the keypanel operator can be heard at the destination.

Continuous Green Talk LED & Flashing Display Alpha ("in-use")

The key is off, but someone is talking to the destination. This indication is provided for any local PL, IFB, ISO, or TIF key. It does not apply to remote IFB or ISO keys. This indication is provided so keypanel operators know when critical director communications are occurring. If you activate the key, either of two things will happen:

- If you activate the key and the talk LED turns continuous red, this indicates you and the other keypanel operator are both talk to the destination.
- IFB keys only: If the talk LED flashes green when an IFB key is activated, this indicates the other keypanel has a higher IFB priority and you cannot talk at this time.

Note: The green "in-use" indication for TIF keys can be disabled in AZedit. In the AZedit Options menu, select Intercom Configuration, then click on the Options tab. Place a check mark next to "Don't generate tallies for TIF and trunk use". Be sure to send the change to the intercom system.

Flashing Green Talk LED

You cannot talk at this time. This indication occurs when you activate a local IFB key that is already in use by a keypanel with a higher IFB priority. It also occurs when you activate any key assigned to a remote destination, but there are currently no trunks available.

Flashing Red Talk LED

There is an incoming call from the destination assigned to the key. Activate the key to talk back.

Note: The duration of incoming call flash is controlled by DIP switch 4 on the KP-812 keypanels. See *Option Switch Settings*, for further information.

Amber Talk LED (on time less than off time)

This indicates that a key is ready to talk (key is on), but requires external footswitch activation to talk or the key has been selected but the handset is still on the receiver.

Listen LED Indication

Each button is back lit with a bi-color LED as an indicator. The listen LED is the button above the display panel.

Intercom Key Operation

Basic Intercom Key Operation

The upper button of an intercom key is on continuously (if assigned). The lower button activates the talk (if assigned). If there is no talk assignment for an intercom key, the talk button will not activate. If there is no listen assignment, the listen button will not activate.

For momentary activation of a key, press and hold the key. Then, release it when finished.

For latching operation (if enabled), tap the button; it will turn on and remain on. Tap the button again to turn it off when finished.

Note: Latching may be turned off for the entire keypanel by setting DIP switch 1 on the keypanel to the "closed" position. Latching may be disabled for individual keys on a keypanel using AZedit or the latching menu (Menu>KeyOption>Latching). Click the KP button in the AZedit toolbar to open the Keypanels / Ports setup screen. Select the intercom port where the keypanel is connected. Place a check mark in the check box marked "D" for any keys where you want to disable latching. Be sure to send your changes to the intercom system.

Operation of Intercom Keys with Auto Functions

Note: Assignment of keys with auto functions is described in the programming sections that follow. Descriptions of the auto functions are also contained in the Glossary.

Operation of keys with auto functions is as follows:

Talk + auto follow
Talk and listen can be activated separately. The listen assignment listens to whatever is assigned to the talk key.
Talk + auto listen
Both talk and listen will activate when talk is activated.
Talk + auto mute
Listen will turn off when talk is activated.
Talk + auto reciprocal
Listen will always be on, and talk may be turned on or off.
Talk + auto table
If an IFB talk key has an auto-table listen assignment, talk and listen can be independently activated. The listen key listens to whatever is defined as the IFB Listen Source for the IFB that is assigned to the talk key. For an assignment other than IFB, auto-table acts like auto-follow.

Note: A full explanation of the auto-table feature is beyond the scope of this manual. For further information, search for IFB in AZedit help, then read the topics *IFB Auto-Table Description* and *IFB Setup Procedures*.

All Call Key
Activating the key will also activate all keys to the left of it (up to, but not including another all call key).
Talk + DIM
If a point-to-point key has the DIM function as a level 2 talk assignment, activating the key will cause the crosspoint levels to diminish for any other intercom ports that are currently listening to the same destination and that are in the same DIM table.

Note: A full explanation of DIM tables is beyond the scope of this manual. For further information, search for "dim table" in AZedit help.

Operation of Intercom Keys with Options

Group Option Keys
Activating the master key in a key group will activate all keys in that group according to each key's individual key assignment. Activating a slave key will not affect any other keys in the group.

Solo Key
Activating a key that has the solo option will cause all other keys to turn off until the solo key is again turned off.

Exclusive Key
Activating a key that has the exclusive option will cause all other keys to turn off and stay off after the exclusive key is turned off.

Operation of Intercom Talk Keys with the Speaker DIM Setting
Activating any talk key will cause the speaker or headphone volume at this keypanel to diminish by the amount specified in the Dim menu item on the Service menu.

Note: Do not confuse this with the Talk+DIM auto function previously described. Talk+DIM affects the speaker or headphones on the other keypanels when a particular talk key is activated on this keypanel. Speaker DIM affects the speaker or headphone level on this keypanel when any talk key on this keypanel is activated.

Operation of Intercom Keys assigned to TIF Ports
If an intercom key is assigned to talk to an intercom port that is designated as a TIF port in AZedit, tapping the talk button will activate the KP-812's dialing menu. See *Telephone Operation*.

Note: You designate an intercom port as a TIF port by checking the **Port is TIF** check box in AZedit. In AZedit, click the KP button on the toolbar to access Keypanels / Ports setup. Select the intercom port where the TIF is connected, then click Edit. Select the Advanced tab. Select the **Port is TIF** check box. Remember to send the changes to the intercom system.

Muting the Microphone

Tap the Mic Mute key to turn the microphone muting ON or OFF. The Mic Mute LED indicator activates with a blinking green light.

Note: While muting is on, you cannot be heard on the intercom, by anyone on the telephone, or by any device connected to the mic preamp output of the optional connector module.

Call Waiting Operation

Occasionally, a keypanel may call, and there will not be a key assigned to talk back to that caller. In this case, the caller's name appears in the *Call Waiting Window*. Press the appropriate key to talk back.

To clear a name from a Call Waiting Window, tap the listen key above the assignment.

If two call waiting windows are configured on the keypanel, the first call will display in the left window. If a second call comes into the keypanel, it will display in the right call waiting window. Once the first call is complete the call in the right call waiting window moves to the left call waiting window. However, if the first call waiting window key is latched on and a call is waiting in the second call waiting window and a third call comes in, then the second call is dropped and the third call displays in the right call waiting window.

Note: By default, only the names of callers who are not currently assigned to intercom keys will appear in the Call Waiting Window. This is a configuration option in the Master Controller.

Addressing

Note: SET ADDR must be used during installation or whenever the keypanel is reset or moved to a new port.

Determining the Keypanel Address, ADAM and ADAM CS Intercoms
See Table 1 on page 9.

Determining the Keypanel Address, Zeus Intercom Systems
The address is the number (1-8) printed next to the connector on the back panel of the Zeus Frame. (This number repeats for each group of 8 connectors. The intercom system is able to distinguish between to keypanels set to the same address by the group where each one is connected.)

Setting the Keypanel Address

1. Turn the the encoder knob and scroll to **Menu**, tap the knob once.
2. Turn the encoder knob and scroll to **Service**, tap the knob once.
3. Turn the encoder knob and scroll to **Set Address**, tap the knob once.
4. Turn the encoder knob and scroll to **Address X**, tap the knob once.
5. Tap on the selected address.
   The CWW will display Save Config?
6. Tap the encoder knob to save.
   *The displays will show "*******" and change to " xxxxxx", where xxx is the address.*

Table 1. Correspondence between ADDR numbers and Intercom port numbers for ADAM and ADAM CS Intercom Systems.

SETTINGS FOR ADDR	INTERCOM PORT NUMBERS																							
1	1	9	17	25	33	41	49	57	65	73	81	89	97	105	113	121	129	137	145	153	161	169	177	185	193
2	2	10	18	26	34	42	50	58	66	74	82	90	98	106	114	122	130	138	146	154	162	170	178	186	194
3	3	11	19	27	35	43	50	59	67	75	83	91	99	107	115	123	131	139	147	155	163	171	179	187	195
4	4	12	20	28	36	44	51	60	68	76	84	92	100	108	116	124	132	140	148	156	164	172	180	188	196
5	5	13	21	29	37	45	52	61	69	77	85	93	101	109	117	125	133	141	149	157	165	173	181	189	197
6	6	14	22	30	38	46	53	62	70	78	86	94	102	110	118	126	134	142	150	158	166	174	182	190	198
7	7	15	23	31	39	47	54	63	71	79	87	95	103	111	119	127	135	143	151	159	167	175	183	191	199
8	8	16	24	32	40	48	55	64	72	80	88	96	104	112	120	128	136	144	152	160	168	176	184	192	200
1	201	209	217	225	233	241	249	257	265	273	281	289	297	305	313	321	329	337	345	353	361	369	377	385	393
2	202	210	218	226	234	242	250	258	266	274	282	290	298	306	314	322	330	338	346	354	362	370	378	386	394
3	203	211	219	227	235	243	251	259	267	275	283	291	299	307	315	323	331	339	347	355	363	371	379	387	395
4	204	212	220	228	236	244	252	260	268	276	284	292	300	308	316	324	332	340	348	356	364	372	380	388	396
5	205	213	221	229	237	245	253	261	269	277	285	293	301	309	317	325	333	341	349	357	365	373	381	389	397
6	206	214	222	230	238	246	254	262	270	278	286	294	302	310	318	326	334	342	350	358	366	374	382	390	398
7	207	215	223	231	239	247	255	263	271	279	287	295	303	311	319	327	335	343	351	359	367	375	383	391	399
8	208	216	224	232	240	248	256	264	272	280	288	296	304	312	320	328	336	344	352	360	368	376	384	392	400
1	401	409	417	426	433	441	449	457	465	473	481	489	497	505	513	521	529	537	545	553	561	569	577	585	593
2	402	410	418	426	434	442	450	458	466	474	482	490	498	506	514	522	530	538	546	554	562	570	578	586	594
3	403	411	419	427	435	443	451	459	467	475	483	491	499	507	515	523	531	539	547	555	563	571	579	587	595
4	404	412	420	428	436	444	452	460	468	476	484	492	500	508	516	524	532	540	548	556	564	572	580	588	596
5	405	413	421	429	437	445	453	461	469	477	485	493	501	509	517	525	533	541	549	557	565	573	581	589	597
6	406	414	422	430	438	446	454	462	470	478	486	494	502	510	518	526	534	542	550	558	566	574	582	590	598
7	407	415	423	431	439	447	455	463	471	479	487	495	503	511	519	527	535	543	551	559	567	575	583	591	599
8	408	416	424	432	440	448	456	464	472	480	488	496	504	512	520	528	536	544	552	560	568	576	584	592	600
1	601	609	617	625	633	641	649	657	665	674	682	689	697	705	713	721	729	737	746	754	762	769	777	785	793
2	602	610	618	626	634	642	650	658	666	675	683	690	698	706	714	722	730	738	747	755	763	770	778	786	794
3	603	611	619	627	635	643	651	659	667	676	684	691	699	707	715	723	731	739	748	756	764	771	779	787	795
4	604	612	620	628	636	642	652	660	668	677	685	692	700	708	716	724	732	740	749	757	765	772	780	788	796
5	605	613	621	629	637	643	653	661	669	678	686	693	701	709	717	725	733	741	750	758	766	773	781	789	797
6	606	614	622	630	638	644	654	662	670	679	687	694	702	710	718	726	734	742	751	789	767	774	782	790	798
7	607	615	623	631	639	645	655	663	671	680	688	695	703	711	719	727	735	743	752	790	768	775	783	791	799
8	608	616	624	632	640	646	659	664	672	682	689	696	704	712	720	728	736	744	753	791	769	776	784	792	800
1	801	809	817	825	833	841	849	857	865	873	881	889	897	905	913	921	929	937	945	953	961	969	977	985	993
2	802	810	818	826	834	842	850	858	866	874	882	890	898	906	914	922	930	938	946	954	962	970	978	986	994
3	803	811	819	827	835	843	851	859	867	875	883	891	899	907	915	923	931	939	947	955	963	971	979	987	995
4	804	812	820	828	836	844	852	860	868	876	884	892	900	908	916	924	932	940	948	956	964	972	980	988	996
5	805	813	821	829	837	845	853	861	869	877	885	893	901	909	917	925	933	941	949	957	965	973	981	989	997
6	806	814	822	830	838	846	854	862	870	878	886	894	902	910	918	926	934	942	950	958	966	974	982	990	998
7	807	815	823	831	839	847	855	863	871	879	887	895	903	911	919	927	935	943	951	959	967	975	983	991	999
8	808	816	824	832	840	848	856	864	873	880	888	896	904	912	920	928	936	944	952	960	968	976	984	992	1000

Chapter 4

Telephone Operation

Note: Telephone operations require an optional TIF-2000 Telephone Interface. Also, you must first assign an intercom key to talk/listen to the TIF. We recommend a talk+auto listen assignment.

Receiving a Phone Call

When there is an incoming telephone call, the talk LED will flash green on the selected key assigned to the TIF.

Note: The green flash for incoming TIF call is the default operation. Alternatively, a continuous-green talk LED indication can be provided. This is accomplished by checking the check box "Don't generate tallies for TIF or trunk use" in AZedit (Options menu, Intercom Configuration, Options tab). Note, this check box also affects other tally indications. For further information, see the AZedit User Manual.

Dialing and Hanging Up Using the KP-812 Keypanel Dialing Menu

The dialing menu will only activate when talking to an intercom port that has the "Port is TIF" check box activated in AZedit.

Manual Dialing

1. Turn ON the TIF talk key.
   Manual Dial displays in the call waiting window.

2. Tap the menu encoder.
   Dial#? appears and a dial tone should be audible in your speaker or headset.

   Note: To hang up at any time after this point, tap the encoder knob. Hang Up will display. Tap the encoder knob again.

3. Dial the phone number.
   Digits appear in the Call Waiting Window as you dial. Dialing tones are audible in the speaker or headset.

4. If the far end answers, begin your conversation.

   Note: After the far end answers, you may dial additional digits (to retrieve voice mail, log

5. If there is no answer, or to hang up when finished talking, verify the CWW window clear.

6. Hold encoder for 1 second.
   Hang Up TIF displays
7. Continue holding the encoder knob, and tap the Talk key assigned to the TIF.

When the encoder is released the CWW window will be cleared.

Note: Occasionally you may receive intercom caller namesin the Call Waiting Window while you are talking on the phone. In this case, the dialing menu options will be cleared from the Call Waiting Window, and the Hang Up option will not be available.

Redial

1. Rotate the encoder knob until **ManualDial** display in the Call Waiting Window.

2. Tap the encoder knob.

3. Rotate the encoder knob until **Redial** displays.

4. Tap the encoder knob.

5. If the far end answers, beging your conversation.

Note: After the far end answers, you may dial additional digits (to retrieve voice mail, log onto an automated answering system, etc.). Or, refer to the above hang up instuctions in the manual dial section.

Note: Occasionally you may receive intercom caller namesin the Call Waiting Window while you are talking on the phone. In this case, the dialing menu options will be cleared from the Call Waiting Window, and the Hang Up option will not be available.

Autodial

Note: Autodial is only available after you have saved autodial numbers.

1. Turn on the TIF talk key.
   ManualDial appears in the Call Waiting Window.

2. Rotate the encoder knob until AutoDial appears.

3. Tap the encoder knob.

4. Rotate the encoder knob until the desired number to autodial appears.

5. Tap the encoder knob.

6. If the far end answers, begin your conversation.

Note: After the far end answers, you may dial additional digits (to retrieve voice mail, log onto an automated answering system, etc.). Or refer to the hang up instructions in the manual hang up section.

Note: Occasionally you may receive intercom caller namesin the Call Waiting Window while you are talking on the phone. In this case, the dialing menu options will be cleared from the Call Waiting Window, and the Hang Up option will not be available.

Chapter 5

KP-812 Keypanel Menu System

Note: A menu system quick reference is located at the back of this manual (page 59).

MENU SYSTEM, MENU ACCESS

1) On the front panel of the KP-812 keypanel, turn the encoder knob to scroll to the menu.
2) Tap the encoder to select the menu.
3) Turn the encoder knob clockwise to scroll forward, and counterclockwise to scroll backward through a list of menus.
4) Tap the encoder knob to enter a menu.

Within a menu:

1) Turn the encoder knob clockwise to scroll forward, and counterclockwise to scroll backward through a list of menus.
2) Tap the encoder knob to enter a menu.
3) Tap the encoder knob twice to exit a menu or press the encoder knob for 1 second to exit the menu system.

Menu System, Display Menu

Use this menu to display information about the keypanel configuration

Display Menu, Assign Type

Displays the talk level 1 assignment types for all keys. Abbreviations for the key assignment types appear in the alphanumeric displays as follows:

P-P:	Point-to-Point
PL:	Party line talk key
IFB:	IFB talk key
SPCL:	Special list talk key
RLY (System relay):	The key activates a GPI output at the intercom frame, or a relay output at a UIO-256 or FR9528 frame.
ISO:	Camera ISO talk key
UPL:	UPL resource key
AC:	All Call key

Display Menu, Chan ON

Displays an alpha list, in the *Call waiting* window, of all intercom ports that currently have talk crosspoints closed to this keypanel. Chans On is typically used to locate an open mic or other open audio source that needs to be shut off. The most likely cause is typically a talk key that has been left on at some keypanel. In this case, turn the encoder knob to scroll through the list of names. Then use the call waiting button to ask the user at the other end to turn off the talk button.

Display Menu, Key Groups

Turn the encoder knob to select Group 1, Group 2, etc. Then, tap the encoder button to display the group. The talk and listen LEDs of the master key will be lit red and the talk and listen LEDs for the slave keys will be lit green.

Display Menu, Key List

Displays and allows access to all the other assignments on the other keypanel pages that are not currently showing in the keypanel display.

Display Menu, Level 2

Displays the talk level 2 assignments for all keys.

Display Menu, Listen

Displays the listen assignments for all keys

Display Menu, Matrix

Displays the intercom system name for all talk level 1 key assignments. In non-trunked intercom systems, the intercom system name is always LOCL (local). In trunked intercom systems, intercom system names are created in TrunkEdit (Intercoms menu, Names).

Display Menu, Panel ID

Panel ID displays the calculated port number that the keypanel is connect to. The calculation is based on the data group that the keypanel is connected to, along with the Address switch setting on the keypanel. If the Address switch is incorrectly set, the wrong Panel ID will display. If available, the entire alpha can be seen by rotating the encoder knob.

Display Menu, Version

Displays the firmware version of the keypanel.

Note: For Firmware upgrades, contact your intercom system dealer. The KP-812 Keypanel firmware can be upgraded throughout AZedit. See KP-812 Keypanel Download on page 55.

Menu System, Key Assign Menu

Use this menu to assign intercom keys, to adjust listen levels for point-to-point keys and party line keys, to assign setup pages, to configure quick assign and reset all volumes.

General Procedure to use the Key Assign Menu

1. Using the encoder knob, rotate to Key Assign.
2. Tap the encoder button to enter the menu.

Note: If you do not have a trunking intercom system, skip to step 3.

Remote key assignment only (trunking systems only): If your intercom is trunked, *Matrix* displays in the *Call waiting* window. You must select a remote intercom matrix before assigning intercom keys to destinations in that matrix. You do not need to select an intercom matrix if you are assigning keys in your own intercom system. Also, do not select an intercom matrix if you are assigning auto functions or setup pages, or if you are changing listen gains for remote point-to-point keys or remote party line keys. Select a matrix as follows:

- Tap the encoder key once to access the Matrix list.
- Turn the encoder knob clockwise to scroll forward, to locate the desired matrix.
- Once you have found the matrix, tap the encoder knob once to select it. "Wait" may display while the scroll lists for that matrix are loading.

Pt-to-Pt should now display in the Call Waiting window (both for local and remote key assign ment). This is the list of available point-to-point key assignments.

3. Turn the knob to select a different list as follows:

Pt-to-Pt:	Assign a key to talk/listen to another intercom port.
Party Line:	Assign a key to talk/listen to a party line.
IFB:	Assign a key to talk/listen to an IFB.
Spcl List:	Assign a key to talk/listen to a special list.
Sys Relay:	Assign a key to activate a relay or GPI output.
Camera ISO:	Assign a key to talk/listen to an ISO.
Groups:	Assign a key to a group of ports.
UPL Resrc:	Assign a key to activate a UPL resource
Quick Assign:	Configure the Quick Assign key with Talk/Listen options
Reset Vols:	Restore the default listen level for keys that have a point-to-point or party line assignment. (If you select this item, skip the rest of this procedure and go to "Key Assign Menu, Key Gain".)

4. Tap the encoder once to select a list.
   In some cases, "Wait" may display while the requested list is uploaded from the intercom system.

5. When the requested list is displayed, turn the encoder knob to scroll through to the desired assignment.
6. Once you come to the desired list, tap the encoder to select it.
   Talk Lvl 1 should now display in the Call waiting window.
7. Turn the encoder knob if necessary to select a different option.
   Options are as follows:

   Talk Lvl 1: Assigns only talk level 1. Leaves the listen assignment as is
   Listen: Assigns only listen. Leaves the talk assignment as is
   Talk + AF: Assigns talk level 1, with auto-follow listen
   Talk + AL: Assigns talk level 1, with auto-listen
   Talk + AM: Assigns talk level 1, with auto-mute listen.
   Talk + AR: Assigns talk level 1, with auto-reciprocal listen
   Talk + AT: Assigns talk + auto-table.
   Talk Lvl 2: Assigns talk level 2

   - If you attempt to assign talk level 2 to a key and there is no talk level 1 assignment, the assignment will go on talk level 1.
   - If you change the talk level 1 assignment for a key that also has a talk level 2 assignment, the talk level 2 assignment will be erased.

8. Once you have selected an option, tap the encoder knob.
   Tap Key should now display
9. Tap an available keypanel key. The top button is for listen and the bottom button is for talk.
   - If you assign any type of talk key, the assignment name will appear in the alphanumeric display above the key.
   - If you add a listen assignment to an existing talk assignment, the listen assignment will appear briefly in the alphanumeric display to confirm the assignment. Then, the talk assignment will reappear.
   - If you assign a key that is listen only, the assignment name will appear briefly in uppercase letters, then will change to lowercase letters.

This completes the key assignment procedure. Refer to any notes below regarding the various key assignment types.

Note: When reassigning keys remember to remove any Chime, Solo, or Key Group options if they will not be needed for the new key assignments.

Key Assign, Pt-to-Pt

Assigns a key that talks or listens to another intercom port. Note, some pt-to-pt destinations may be non-keypanel devices that cannot activate talk and listen paths. Therefore, if you want full communications, you may need to assign both talk and listen on the key.

Key Assign Menu, Party Line

Assigns a key that talks and/or listens to a party line. Note, party line members are usually non-keypanel devices that cannot activate talk and listen paths. Therefore, if you want full communication with the party line, you will need to assign both talk and listen on the key. If all communications will normally be 2-way, you may wish to assign the key as Talk+ Auto Listen.

Key Assign Menu, IFB

By default, all IFBs are restricted and you see a *Not Avail* when you attempt to select this item. To see IFBs, you must check the appropriate Scroll Enable check boxes in AZedit.

Key Assign Menu, Spcl List

Assigns a key that talks and/or listens to a special list. The will have no effect until members have been assigned to the special list in AZedit. Note, some or all special list members may be non-keypanel devices that cannot themselves activate talk and listen paths. Therefore, if you want full communication with all members of the special list, you may need to assign both talk and listen on the key.

Key Assign Menu, Sys Relay

Sys Relay refers to any of several types of control devices that can exist in the intercom system, including:
The 8 GPI outputs from an ADAM Frame (J11 on the XCP-ADAM-MC Breakout Panel).
The 8 GPI outputs of an ADAM CS frame (J903 on the ADAM CS back panel).
The relay outputs of an FR9528 Relay Frame (RELAY OUTPUTS connector on the FR9528 back panel).
The 16 GPI outputs of a UIO-256 Universal Input/Output Frame (J5 on the UIO-256 back panel).

Key Assign Menu, Camera ISO

By default, all ISOs are restricted and you will see *Not Avail* when you attempt to select this item. To see ISOs, you must check the appropriate Scroll Enable check boxes in AZedit.

Key Assign Menu, UPL Resrc

By default, all UPL resources are restricted and you will see *Not Avail* when you attempt to select this item. To see UPL resources, you must check the appropriate Scroll Enable check boxes in AZedit. In the AZedit System menu, select UPL Resources. Select the appropriate Scroll Enable check boxes.

Key Assign Menu, Quick Assign:

The Quick Assign menu is used to configure what talk/listen function is assigned when a Quick Assignment is made. The Options are
Party Line
Point -to-Point
Group
Special List

Also, from this menu, special functions can be individually assigned to a talk/listent assignment. For the different special assignments, see page 38.

Use this menu item to simultaneously reset gains for all point-to-point or party line keys.

1. Turn the encoder knob until **Reset Vols** displays.
2. Tap the encoder knob to select.
   Done displays. All key gains are now reset to the default level.
3. Hold the encoder knob for 1 second to exit.

Note: You do not need to run Save Cfg after resetting key gains. These settings are stored in the intercom system.

Menus

Menu, Auto Dial

Use this menu item to store auto dial numbers.

1. Select **Auto Dial**, then tap the encoder knob.
   Phone # displays.

2. Enter the phone number on the keypad.
   The numbers will scroll in the Call Waiting window.

Note: To insert a pause or space at any time, tap * 9 9. For example, you may have to insert a pause after dialing 9 to get an outside line.

3. Tap the Encoder knob.
   A-Dial #1 displays (store auto dial number 1).

4. To store a different auto dial number, turn and tap the encoder knob to display and select the desired auto dial number.
   #XX saved displays (where XX=the auto dial number you selected.)

5. Run **Service Menu, Save Cfg** to store auto dial numbers.

Menu, Key Option Chime

You can add a chime tone to any key for incoming call announcement. The chime tone will activate for about 5 seconds after a call is received.

1. Select **Chime**, then tap the encoder knob.

2. Tap any buttons on the keypanel where you want to add a chime tone.

3. Hold the encoder knob for 1 second to exit.

4. Run **Service Menu, Save Cfg** to store Chime settings.

Note: The chime option will continue on a key even if you change the key assignment.

Removing the chime option from a key

Repeat the procedure to add chime, but tap any keys where the LEDs are lit red to turn them off. Run Save Cfg to store the changes.

You can set up a key group, so that when you activate one key (the master key) all keys in the group will activate. Up to four key groups can be set. The Master LED is indicated by red, while the Slave LED is indicated by green.

1. Select **Key Groups**, then tap the encoder knob to select.
   Group 1 displays.

2. Tap the encoder knob.
   Tap Master displays. The master key is the key that you will press to activate the group.

Note: Tap the encoder knob once to bypass the master. You can define the slaves without the master. For example, using a GPI Input to trigger a group.

3. Tap the intercom key that you want to use as the master.

4. Once you have assigned the master, turn the encoder knob to display Slaves and tap the encoder knob.
   Tap Slaves displays. Slave keys are the keys that will activate along with the master key.

5. Tap one or more intercom keys to select them as slave keys. Tap the key again to remove it from the key group.

6. Once you are finished, hold the encoder knob for 1 second to exit.

   Activating the master key should now cause it and all slave keys to activate. The LEDs for each key will activate according to the current key assignment for that call.

7. Run **Service Menu, Save Cfg** to store Key Group Settings.

Note: Key group settings will continue on keys even if you change the key assignments.

Clearing a Key Group

1. Select **Key Groups**, then tap the encoder knob.
   Group 1 displays.

2. Tap the encoder knob.
   Tap Master displays.

3. Tap the encoder knob to clear the master key assignment. The LED turns off.

4. After tap the encoder knob, *Tap Slaves* displays.

5. Tap all the keys where the LEDs are lit green. This will turn the LEDs off.

6. Hold the encoder knob for 1 second to exit.
   The key group is now cleared.

7. Run **Service Menu, Save Cfg** to store the cleared key group setting.

Menu, Key Option, Solo

A solo key will cause all other keys to turn off when activated. You can assign one solo key.

1. Select **Solo**, then tap the encoder knob.
   Tap Key displays

2. Tap an intercom key. Both LEDs for the key will light red to confirm the assignment. Tap the key again if you want to remove the assignment.

3. Hold the encoder knob for 1 second to exit.

Activating the solo key should now cause all other activated keys to turn off. The keys will turn back on when you turn off the solo key.

4. Run **Service Menu, Save Cfg** to store the Solo setting

Note: The Solo option will continue on a key even if you change key assignments.

Removing the Solo Key Option

1. Select **Solo**, then tap the encoder knob.
2. Tap the solo key to turn off the LEDs.
3. Hold the encoder knob for 1 second to exit.
   The solo key is now cleared.
4. Run **Service Menu, Save Cfg** to store the Solo setting

Menu, Key Option, Exclusive

An exclusive key will cause all other keys to turn off when activated. You can assign one exclusive key.

1. Select **Exclusive**, then tap the encoder knob.
   Tap Key displays

2. Tap a key. Both LEDs for the key will light red to confirm the assignment. Tap the key again if you want to remove the assignment.

3. Hold the encoder knob for 1 second to exit.

Activating the exclusive key should now cause all other activated keys to turn off. The keys will NOT turn back on when you turn off the exclusive key.

4. Run **Service Menu, Save Cfg** to store the Exclusive setting

Note: The Exclusive option will continue on a key even if you change key assignments.

Removing the Exclusive Key Option

1. Select **Exclusive**, then tap the encoder knob.
2. Tap the exclusive key to turn off the LEDs.
3. Hold the encoder knob for 1 second to exit.
   The exclusive key is now cleared.
4. Run **Service Menu, Save Cfg** to store the Exclusive setting

Service Menu

Service Menu, Aux Inputs

Controls what input levels can be adjusted by the volume knob.

1. Select **Aux Inputs**, then tap the encoder knob.
   Intercom displays.
2. Tap the encoder knob.
   Turn the encoder knob and then tap to either Aux In and Intercom. Tap the encoder knob to enable or disable that item. The arrow indicates that the input is enabled. This allows the sources volume to be adjusted.
3. Hold the encoder knob for 1 second to exit.
   The new Aux In assignment is now set.
4. Run **Service Menu, Save Cfg** to store the Aux Inputs setting.

To assign the destination of the Aux Inputs, see the Mixing entry for “Service Menu, DSP Func”.

Service Menu, Baud Rate

1. Select **Baud Rate**, then tap the encoder knob.
   Auto Baud displays.
2. Turn the encoder knob to select Auto Baud, 9600 Baud, or 76.8 Baud.
3. Tap the encoder knob once to select the baud rate.
4. Hold the encoder knob for 1 second to exit.
   The new baud rate is now set.
5. Run **Service Menu, Save Cfg** to store the Baud setting.

Service Menu, Dim

This item causes the speaker or headphone level to diminish by a specified amount whenever a talk key is activated.

1. Select **Dim**, then tap the encoder knob.
   Speaker displays. Turn the encoder knob to select headset.

Note: By default, -8dB displays for speaker and 0dB displays for headset. This is the default amount of dimming.

3. Turn the encoder knob clockwise to increase the Dim or counterclockwise to reduce the Dim.
4. Hold the encoder knob for 1 second to exit.
   The new dimming level is now set.
5. Run **Service Menu, Save Cfg** to store the Dim setting.

Service Menu, LCD Bright

This item adjusts the alphanumeric display settings.

1. Select **LCD Bright**, then tap the encoder knob.
   An option for mods 1 through 8 or All appears.
2. Turn the encoder knob clockwise to increase the brightness and counterclockwise to reduce the brightness.

Note: The brightness scale ranges from 0 to 100, with 100 being the brightest.

3. Run **Service Menu, Save Cfg** to store the LCD Bright setting.

This service menu item accesses the digital signal processing feature.

1. Select DSP Func, then tap the encoder knob.
   Filtering displays. Turn the encoder knob to see the other DSP options: Filtering, Gating, Metering, Mixing.

Refer to one of the following paragraphs for further information on each of these options:

Filtering
Filtering lets you add a 9.6 kHz notch filter to one or more audio sources. This can be useful in a few cases when the keypanel data port signal is being heard in the audio line due to cable routing problems.

1. Select **Filtering**, then tap the encoder knob.
   Microphone displays. Turn the encoder knob to display other options for filtering.

2. Once you have chosen the **source to filter**, tap the encoder knob.
   →None displays to indicate that no filtering is selected.

3. Turn the encoder knob to display *Notch*.
   Notch displays

4. Tap the encoder knob.
   →Notch displays. The arrow indicates that the notch filter is now selected.

5. Hold the encoder knob for 1 second to exit.

6. Run **Service Menu, Save Cfg** to save the change.

Gating
Gating minimizes or eliminates background noise problems by shutting off an audio source when the sound level drops below a certain threshold.

1. Select **Gating**, then tap the encoder knob.
   Microphone displays. Turn the encoder knob to display other options for filtering.
   Microphone, Matrix, Aux 1

2. Once you have chosen the **source to gate**, tap the encoder knob.
   Gating displays to indicate that no filtering is selected.

3. Tap the encoder knob.
   →Gating displays. The arrow incidates that gating is now selected.

4. Hold the encoder knob for 1 second to exit.

5. Run **Service Menu, Save Cfg** to save the change.

Metering
Metering lets you use the Vol. display as an LED bar graph meter to monitor an audio signal for about 1 minute.

1. Select **Metering**, then tap the encoder knob.
   Microphone displays. Turn the encoder knob to display other options for metering.
   Microphone, Matrix, Aux1

2. Once you have chosen the **source to meter**, tap the encoder knob.
   Meter: Mic displays to indicate that no filtering is selected. Turn the encoder knob to display other options:
   Meter: Mic
   Meter: Mtx
   Meter: Aux1

3. Tap the encoder knob.
   The Vol. bar graph is now monitoring the selected audio source.

4. Hold the encoder knob for 1 second to exit metering or allow the metering function to time-out after about 1 minute.

5. Run **Service Menu, Save Cfg** to save the change.

Mixing
Mixing lets you route selected audio signals to the intercom system, to the speaker, or to the left headphone when using the headset. By default, the microphone signal is routed to the matrix, and the matrix signal is routed to the speaker and to the left headphone.

1. Select **Mixing**, then tap the encoder knob.
   Aux In displays.

2. Tap the encoder knob.
   To Matrix displays. Turn the encoder knob to display other options for mixing.
   To Speaker. An arrow appears to indicate if AUX In audio is being fed to that destination.
3. Tap the encoder to select if the audio should be activated to the destination.

4. Hold the encoder knob for 1 second to exit the mixing selections.

5. Run **Service Menu, Save Cfg** to save the change Service Menu, Hdst Sel

Service Menu, Handset

This item gives the user the ability to configure the operation of the handset, if present.

1. Select **Handset Sel**, then tap the encoder knob.
   →mode displays. Turn the encoder knob to toggle between mode and speaker mute.

Note: If there is not a handset present, *None* must be selected.

2. To change the selection in the mode submenu, turn the encoder knob clockwise.
   The options are: None, Manual, Manual PTT, Auto, Auto PTT.

   For speaker mute, the options are normal and no mute.

3. Tap the encoder knob
   An arrow appears to indicate this item is selected.

4. Hold the encoder knob 1 second to exit.

5. Run **Service Menu, Save Cfg** to store the new setting.

Service Menu, LCP-16

By default, each LCP-16 that you connect to the KP-812 Keypanel takes control of level adjustment for the first available group of 16 physical keys that it finds. The first LCP-16 adjusts keys 1-16, which corresponds to the bottom row of keys on the KP-812 Keypanel; the second LCP-16 adjusts keys 17-32, and so forth.

If you do not want to use an LCP-16 with certain keys, you must program the KP-812 Keypanel to skip those keys. For example, you may not want to use the LCP-16 with the KP-812 Keypanel but do want to use it with an EKP KP-816. In this case, you must turn off LCP usage for keys 1-16 as follows:

1. Select **LCP-16**, then tap the encoder knob.
   1-16: Yes displays. This indicates that the first connected LCP-16 will attach to keys 1-16. If you select this option, skip to step 3.

2. Turn the encoder knob to see other options:
   1-16: Skip displays. This indicates that the first connected LCP-16 will skip keys 1-16 and will attach to the next available row of keys.

3. Tap the encoder knob.
   17-32: Yes displays.

4. Turn the encoder knob to see other options:
   17-32: Skip displays. This indicates that the first connected LCP-16 will skip keys 1-16 and will attach to the next available row of keys.

5. Hold the encoder knob for 1 second to exit.

6. Run **Service Menu, Save Cfg** to store the new LCP-16 settings.

Service Menu, Local GPIO

Use this menu item to assign the GPIO inputs and outputs. Inputs can be assigned to activate intercom keys (including group master keys and a solo key). Outputs can be activated by intercom keys. Set up inputs and outputs as follows:

Assigning an Input to Activate a Key

1. Select **Local GPIO**, then tap the encoder knob.
   Input displays.

2. Tap the encoder knob.
   GPI Inp #1 displays.

3. Turn the encoder knob to display *different GPI Input*.

4. Tap the encoder knob to select a **GPI Input**.

5. Turn the encoder knob to display *Talk Key*.

6. Tap the encoder knob.
   Tap Key displays

7. Tap the intercom key that you want to assign. This is the key that will activate when the GPI Input activates.

8. Hold the encoder knob for 1 second to *exit*, or tap the encoder knob twice to *back up* and make more assignments.

9. Run **Service Menu, Save Cfg** to store local GPIO settings.

Assigning an Input to Activate a Key Group

1. Select **Local GPIO**, then tap the encoder knob.
   Input displays.

2. Tap the encoder knob.
   GPI Inp #1 displays.

3. Turn the encoder knob to display *different GPI Input*.

4. Tap the encoder knob to select a **GPI Input**.

5. Turn the encoder knob to select **Group**.

6. Tap the encoder knob.
   By default, Group 1 displays. Turn the encoder knob to select a different group.

7. Tap the intercom key that you want to assign. This is the key that will activate when the GPI Input activates.

8. Hold the encoder knob for second to *exit*, or tap the encoder knob twice to *back up* and make more assignments.

9. Run **Service Menu, Save Cfg** to store local GPIO settings.

Removing an Input Assignment

1. Select **GPIO**, then tap the encoder knob.

2. Turn the encoder knob to scroll to **Input**.

3. Tap the encoder knob to select **Input**.

4. Turn the encoder knob to display the *GPI input* you want to remove.

5. Tap the encoder knob to select the **GPI input**.

6. Turn the encoder knob until *Not Asgnd* appears.

7. Tap the encoder knob to select **Not Asgnd**.
   →Not Asgnd displays. The arrow indicates that "Not Assigned" is the new selection.

8. Press the encoder knob for 1 second to exit.

9. Run **Service Menu, Save Cfg** to store local GPIO settings.

Adding or Removing a GPI Ouput Key Assignment

1. Select **Local GPIO**, then tap the encoder knob.
   Input displays.

2. Turn the encoder knob until *Output* appears.

3. Tap the encoder knob to select **Output**.
   GPI Out #1 displays.

4. Turn the encoder knob to display a different *GPI Output*.

5. Tap the encoder knob to select a **GPI output**.
   Tap Key displays.

Note: If there is a key currently assigned to activate the selected GPI output, both LEDs for that key will be lit red. If there is no assignment, no LEDs will be lit red.

6. Tap an intercom button or user assignable key to **add** or **remove** the GPI output assignment.

7. Press the encoder knob for 1 second to *exit* or tap the encoder knob twice to *back up* and make more assignments.

8. Run **Service Menu, Save Cfg** to store local GPIO settings.

Service Menu, Matrix Out

This menu item allows the user to select between Normal or Hot Mic. In the Normal (default) setting audio from the Mic goes out to the Matrix when the talk key is latched. In the Hot Mic setting, audio from the Mic goes out to the Matrix without regard to the talk key's state.

1. Turn the encoder knob until **Matrix Out** displays.
2. Tap the encoder knob.
   Normal displays.
3. Turn the encoder knob to display either *Normal* or *Hot Mic*.
4. Tap the encoder knob to select **Normal** or **Hot Mic**.
5. Press the encoder knob for 1 second to exit.
6. Run **Service Menu, Save Cfg** to store Matrix Out settings.

Service Menu, Mic Select

This menu item allows the user to select between the Panel Mic and External Mic Input. In the Panel Mic (default) setting, audio from the Panel Mic is used. In the Hdst Only setting, audio from the Headset Mic is used. This is used to force the use of the headset microphone even when the keypanel's speaker is being used.

1. Turn the encoder knob until **Mic Select** displays.
2. Tap the encoder knob.
   Normal displays.
3. Turn the encoder knob to display either **Normal** or **Extern**.
4. Tap the encoder knob to select **Normal** or **Extern**.
5. Press the encoder knob for 1 second to exit.
6. Run **Service Menu, Save Cfg** to store Mic Select settings.

Service Menu, Min Volume

This menu item allows the user to set the minimum volume level for both the keypanel speaker and the headset speaker(s). This is the minimum volume level available on the volume control located on the front of the KP-812.

1. Turn the encoder knob until **Min Volume** displays. Tap the encoder knob.
2. Turn the encoder knob to **increase or decrease the minimum volume level**. The range is -1dB to -60dB or full Mute.
3. Tap the encoder knob to select the **volume level**.
4. Press the encoder knob for 1 second to exit.
5. Run **Service Menu, Save Cfg** to store Min Volume settings.

Service Menu, Speaker

This menu item allows the user to select the volume level for either the keypanel speaker and the headset speaker(s). The default level is -30dB and the range goes from 0 - -60dB.

1. Turn the encoder knob until **Speaker** displays. Tap the encoder knob.

2. Turn the encoder knob to select either **Headset** or **Speaker**. Tap the encoder knob.

3. Turn the encoder knob toincrease or decrease the **minimum volume level**. The range is -1dB to -60dB or full Mute.

3. Tap the encoder knob to select the **volume level**.

4. Press the encoder knob for 1 second to exit.

5. Run **Service Menu, Save Cfg** to store Speaker settings.

Service Menu, Mod Assign

Note: Normally, this is a service adjustment that is required only when replacing a key and display module. It may also be required if for some reason, the key assignments, as displayed in AZedit, appear to be in the wrong position on the keypanel or expansion panel.

The KP-812 keypanel and EKP-816 use Module ID numbers (Mod ID Numbers) to define the address of each key and display module. See Figure 7.

1. Turn the encoder knob to display **Mod Assign**.
   All modules go into Select module ID. To exit this procedure without making changes, tap the encoder once.

All of the alphanumeric displays, appear as shown in figure 7. Assign the Mod IDs as shown in the figure. Repeat the procedure for each module.

Note: You do not need to run **Service Menu, Save Cfg** after changing Mod assignments.

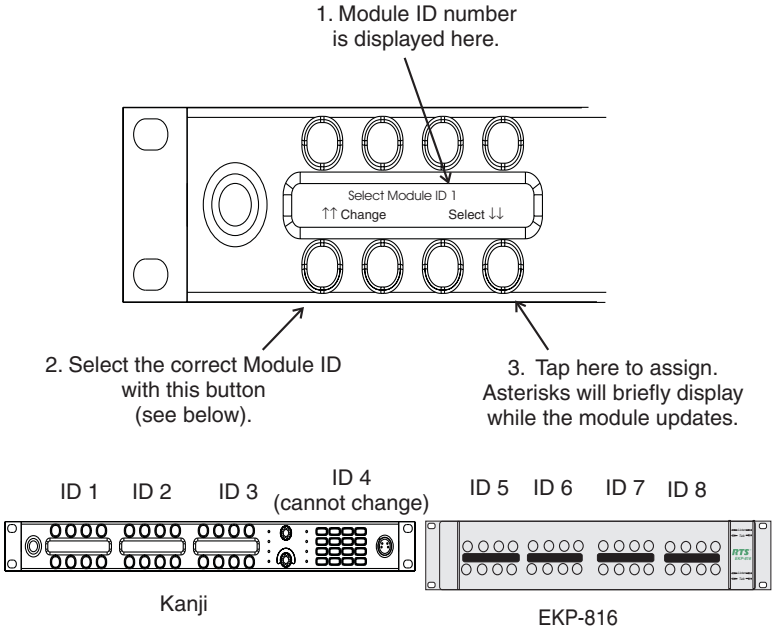


Figure 7. Module Assignment Example.

Service Menu, Output Level

Allows the adjustment of the nominal audio output level to the matrix from 0 dBu to +8 dBu.

1. Turn the encoder knob until **Outp Level** displays
2. Tap the encoder knob.
   0 dBu displays
3. Turn the encoder knob clockwise to increase the output level or turn the encoder knob counterclockwise to decrease the output level.
4. Tap the encoder knob to select the **output level**.
5. Press the encoder knob for 1 second to exit.
6. Run **Service Menu, Save Cfg** to store the Output Level settings.

Service Menu, Preamp Out

Allows the user to choose how audio is routed to the Preamp Out connector. When Switched is chosen, keypanel audio is routed to the Preamp Out connected when a talk key is latched. When Hot Mic is chosen, audio is always available at the Preamp Out connector. When Disable is chosen, keypanel audio is isolated from the USM connector.

Note: The default setting is 0 dBu.

1. Turn the encoder knob until **Preamp Out** displays.
2. Tap the encoder knob to select **Preamp Out**.
   →Switch displays
3. Turn the encoder knob to toggle between *Switchd, Hot Mic, Inverted, and Disabld.*
4. Tap the encoder knob to select the **Preamp Out option** you chose.
5. Press the encoder knob for 1 second to exit.
6. Run **Service Menu, Save Cfg** to store the USM settings.

Service Menu, Reset Cfg

Reset Cfg restores all custom settings to the defaults and erases all stored auto dial numbers.

Service Menu, Save Cfg

Save Cfg saves custom settings that you have made in the Key Option or Service menus. After customizing settings in the Key Option and Service menus, run Save Cfg to store your custom settings in nonvolatile memory. This will assure protection of your settings when the keypanel is powered down. To erase all custom settings, run Service Menu, Reset Cfg.

Service Menu, Sidetone

Sidetone lets you adjust the level of your own voice heard in the headphones when using a headset. Most people prefer some amount of sidetone to overcome the muffled sensation when talking, especially when wearing a full-muff headset. The maximum level is 0dB.

Service Menu, Test Panel

Test Panel lets you check the operation of all key and displays.

All alphanumeric displays show a % symbol. Pressing down on any key will cause OK to display. This verifies operation of the key. Tapping up or down on the Headset/Vol. Sel. key will cause the display to cycle through the available selections.

Tapping either the listen or talk button, or the Call Waiting button will cause the corresponding red LED to light. This verifies latching operation and also that each red LED is **OK**.

Holding any button will cause the corresponding green LED to light. This verifies operation of the green LEDs.

Service Menu, Tone Gen

Tone Gen turns the Internal tone generator on or off. You can use the tone generator to check the audio path from the keypanel to the matrix and back.

Note: The microphone is muted when the tone generator is active.

Service Menu, Tally Duration

1. Turn the encoder knob until **Tally Duration** displays.
2. Tap the encoder knob to select.
3. Turn the encoder knob to toggle between *5 sec, 10 sec, and 15 sec.*
4. Tap the encoder knob to select the **Tally Duration** you chose.
5. Press the encoder knob for 1 second to exit.
6. Run **Service Menu, Save Cfg** to store the Tally Duration settings.

Note: If DIP switch four is closed the tally lasts for as long as the caller's talk key is closed.

Quick Assign
This menu function allows the user to assign key assignments to any key on the keypanel. This is only used for top level assignments.

1. Tap the encoder knob once to access the Quick Assign menu.
   Turn the encoder knob to select between Assign and Clear Assign.

2. When Assign is selected, the key assign list becomes available. Turn the encoder knob to scroll through the different assignments.

3. Once you have made your selection, tap the encoder knob once.
   Tap Key appears.

4. Tap the talk button of the key you want to assign.

Note: When in a Quick Assign list and the FUNC key is tapped, it displays the next Quick Assign List.

User Assignable Key
This key allows you to assign lower level menu items that are frequently used to operate a single key on the keypanel.

1. Turn the encoder knob to scroll to a menu item you wish to assign to the key. The assignment should appear in the Call Waiting Window.

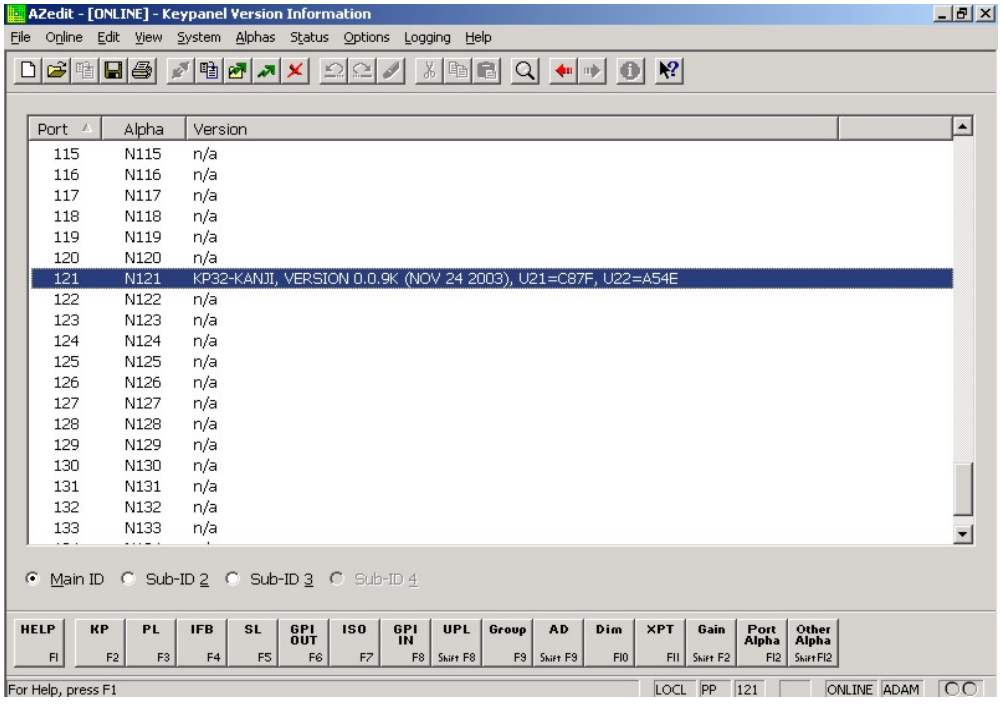
2. Hold the user assignable key until the LED behind the key turns a constant green for two seconds. This verifies the assignments have been made

Chapter 6

KP-812 Keypanel Firmware Download

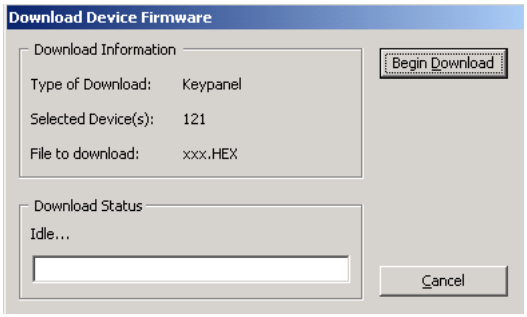
Download Keypanel Firmware through AZedit

1. Open **AZedit**.
2. From the Status menu, select **Software Versions**, then **Keypanels**.
   The Keypanel Version Information screen appears.

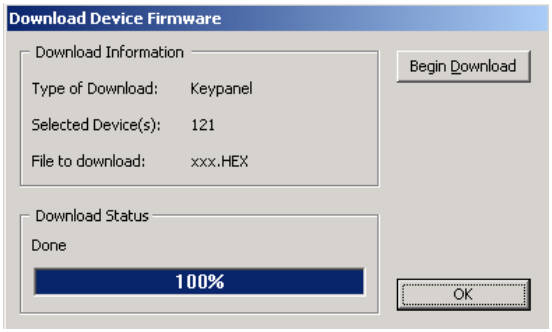


3. Highlight the port of the keypanel to be updated.
   *You may select more than one port at a time by holding **CTRL** key down while you select.*
4. Right-click the highlighted selections and select **Download Firmware**.
   The Firmware Download Window appears.
5. Using the browse feature, browse to the file to be downloaded (*XXX*.hex)

6. Click **Open**.
   The Download Device Firmware window appears.

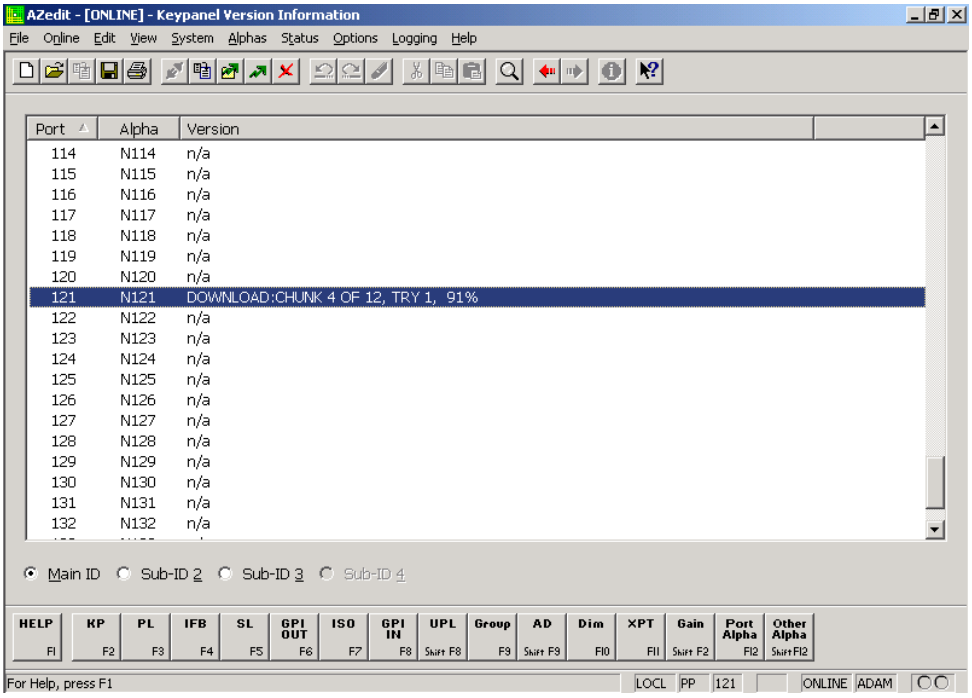


7. Click **Begin Download**.
   The download begins.



8. Click **OK**.
   The firmware download to the master is complete. This may take a few minutes to occur. It will take 10 minutes or more to download to the keypanel.

Note: The Keypanel Version Information window shows the progress download.



9. Verify the version upgrade in the Keypanel Version Information Window is correct.

Chapter 7

KP-812 Keypanel Menu System Quick Reference

Menu Access

1) On the front panel of the KP-812 keypanel, turn the encoder knob to scroll to the menu.
2) Tap the encoder to select the menu.
3) Turn the encoder knob clockwise to scroll forward, and counterclockwise to scroll backward through a list of menus.
4) Tap the encoder knob to enter a menu.

Within a menu:

1) Turn the encoder knob clockwise to scroll forward, and counterclockwise to scroll backward through a list of menus.
2) Tap the encoder knob to enter a menu.
3) Tap the encoder knob twice to exit a menu or press the encoder knob for 1 second to exit the menu system.

Menu List

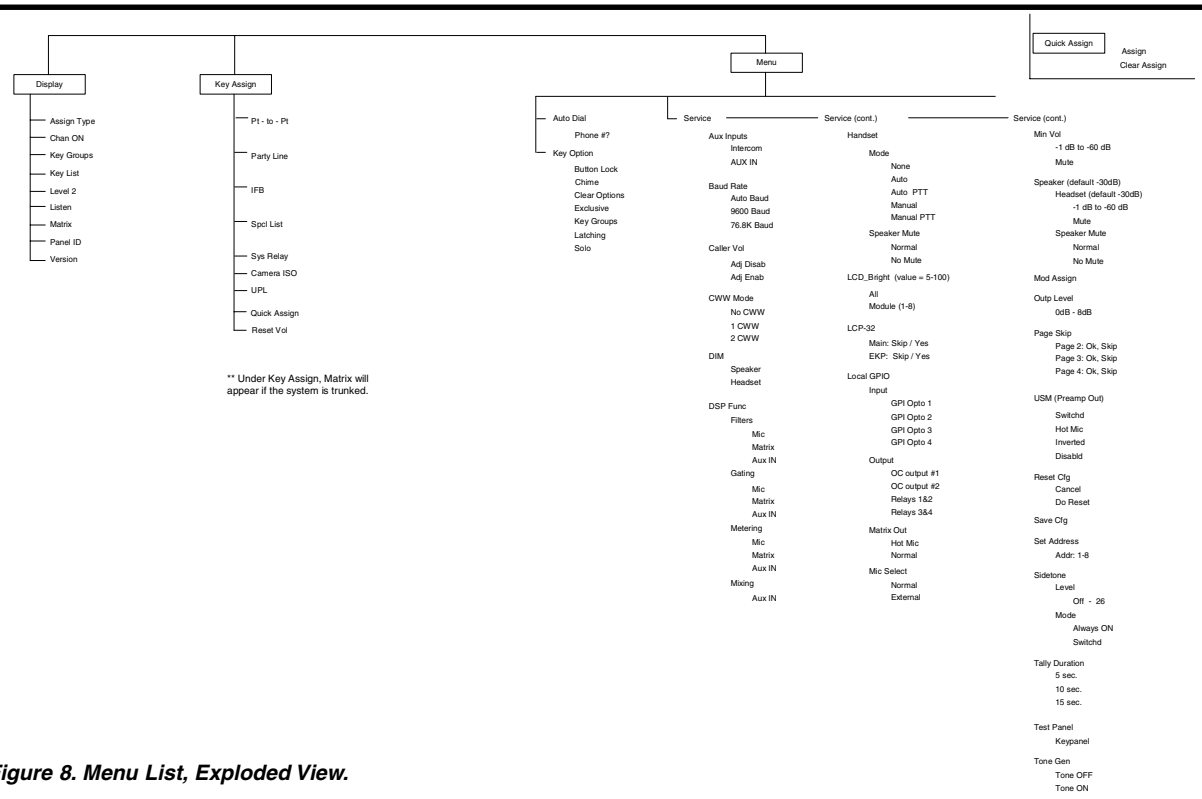


Figure 8. Menu List, Exploded View.

Glossary

A

All Call	For talk key assignment only. Activating an All Call key will also activate all talk keys to the left of the All Call key (up to, but not including another All Call key).
Alpha	Alphas are the user-changeable names which identify destinations (intercom ports, party lines, etc.). Change Alpha names for intercom ports using the Port Alpha button in AZedit. Change alpha names for everything else using the Other Alphas button. When you assign a destination to a talk key, the alpha name will appear in the alpha-numeric display for that key (on keypanels so equipped).
Auto Follow (AF)	A key assignment for listkeys only. Auto follow causes a key's listen assignment to always be the same as the talk assignment. Thus, if you change the talk assignment, you do not also have to change the listen assignment. You can manually activate an auto-follow listen key independently of the talk key. If you want auto-activation (or deactivation of listen during talk, use one of the other auto key assignments, such as auto listen or auto mute.
Auto Functions	Auto functions are special key assignments that work with other key assignments. For further information, see the glossary descriptions of individual auto functions: auto-follow, auto-listen, auto-reciprocal, auto-mute, auto-table, all-call, DIM.
Auto Listen (AL)	A key assignment for listen keys only. This assignment works like auto follow, except that listen automatically activates during talk. Auto listen is sometimes a good assign-ment for use with party lines or other non-keypanel devices that do not have talk-back control of matrix crosspoints.
Auto Mute (AM)	A key assignment for listen keys only. This assignment works like auto follow, except that listen automatically mutes during talk. Auto mute can help prevent feedback or echo when talking to certain destinations. In some cases, you may find it works better to disable talk latching for this type of key, because if you accidentally leave talk latched on you will never be able to hear the destination. To disable latching, in the Keypanels / Ports menu of AZedit, check the "D" check box for any talk key that has auto mute selected as the listen assignment.
Auto Reciprocal (AR)	A key assignment for listen keys only. This assignment forces you to continuously listen ton whatever is assigned to the talk key. It is used commonly on keypanels which are not equipped with listen keys, to allow listening to party lines. It is also useful to force listening when it is desirable to have an operator continuously hear a party line or other source.

Auto Table (AT)

A key assignment for listen keys only, when the corresponding talk key is assigned to an IFB. Auto Table causes a listen key's assignment to always be the same as the Listen Source for whatever IFB is currently assigned to the talk key. (You define the Listen Source in AZedit during IFB setup.) Auto Table is convenient in a broadcast environment when a director needs 2-way communication with the IFB talent, AND the IFB keys are frequently reassigned during the course of a program to talk to new talent locations. Using AZedit, several IFBs can be set up in advance, and their Listen Sources can also be defined during setup. Then every time an IFB talk key is reassigned on a keypanel, the Listen Source for each new IFB will automatically become the listen key assignment for that key.

C

Crosspoint

The term "Crosspoint", like the term "Matrix" is inherited from intercom systems, such as the RTS™ CS9500, CS9600, and CS9700, that use a switching matrix to route intercom audio. In those systems, the crosspoints are the actual switches that close or open to connect or disconnect talk and listen paths. RTS™ ADAM, ADAM CS, and Zeus Intercom Systems do not actually use crosspoint switches, but use a technique called time division multiplexing (TDM), in which communications are routed as digital packets. However, use of the term "crosspoint" persists since packet routing basically accomplishes the same thing as conventional crosspoints: namely, connecting distinct talkers and listeners. In this sense, a crosspoint can be thought of simply as a communication link between any two points in the intercom system.

D

Destination

A destination is anything that a talk key talks to or a listen key listens to. A destination can therefore be any port, party line, IFB, etc.

Dim

"Dim" occurs in two contexts in RTS™Digital Matrix Intercom Systems. First, the Dim Table feature. Dim tables are used to correct a feedback problem that can occur between two keypanels operating in close proximity that have keys assigned to talk / listen to a common destination. Dim tables are setup in AZedit (search for keyword "dim" in AZedit help). Once a dim table is setup, it can be assigned as a level 2 talk assignment for those keys that are causing the feedback problem. For information about how to make this assignment from a programmable keypanel, search for "Dim Table" in the keypanel manual index. Second, the adjustable speaker dim available of the KP-32 Keypanel. This causes the speaker or headphone volume to diminish by a preset amount whenever a talk key is activated. This can help to prevent occasional feeback between the speaker and microphone due to volume settings, microphone placement, etc. For setup and usage, search for "Speaker Dim" in the keypanel manual index.

G

GPIO

General Purpose Input / Output. (You may also see this referred simply as “GPI”.) GPIO is a means of controlling devices using switch contact closures, DC voltages, or similar methods. For example, you can control a lighting system from keypanel keys, or key a transmitter from a talk key during transmit. Or, simply operate a light or buzzer for cueing. In ADAM, ADAM CS, and Zeus intercom systems, you can also control intercom events from external switches. For example, you can activate key assignments, close or open crosspoints, activate GPI outputs, etc. In CS9000 Series intercom systems, general purpose control outputs are provided by optional FR9528 Relay Frames (8 relays each). In those systems, a relay may be assigned to an intercom key on a keypanel using the Relay key assignment type. Pressing the intercom button activates the relay. ADAM, ADAM CS, and Zeus intercom systems all have a dedicated GPIO connector (J27 on a Zeus Frame, J903 on an ADAM CS frame, and J11 on the XCP-ADAM-MC Master Controller Breakout Panel in an ADAM Intercom System). This connector supports 8 control inputs and 8 control outputs. Additionally, one or more UIO-256 Universal Input/Output frames may be connected to the intercom system. Each UIO-256 provides another 16 control inputs and no control outputs. Control Outputs may be assigned to intercom keys using the Relay key assignment type, and the intercom keys can then control external devices the same as the FR9528. Control inputs can be assigned to activate “virtual” key assignments. (A virtual key assignment is a key assignment at an intercom port where there is not actually any keypanel connected. Basically, you use an external switch to act like a talk or listen key.) The control inputs and outputs can also be used as conditions for UPL statements in AZedit. Finally, there is a GPIO option available for the KP-12 keypanel, and a connector module option for the KP-32, which includes GPIO. These are referred to as “Local” GPIO, since they are assigned and used locally at the keypanel. Each local GPIO includes 4 control inputs and 4 control outputs.

I

IFB

(Interrupt Foldback) is a special type of communication in which a listener at a particular intercom output port normally hears an audio program source connected to a particular intercom port. A keypanel operator can activate a key to interrupt the audio program source and then talk to the listener. Normal operation resumes when the keypanel operator releases the key. IFB is typically used to cue on-air-talent. For example, the news anchor during a news broadcast typically listens to the broadcast audio mix in an earset (except that the news anchor’s own voice audio is removed from the mix). A director at a keypanel can interrupt the broadcast audio to the news anchor’s earset and provide new information to the news anchor. IFB could also be used with a PA (public address) system that normally broadcasts background music. The background music can be interrupted while someone is talking over the PA. IFBs are set up by defining the IFB inputs and outputs using the intercom system configuration software. The intercom output port is called the IFB output and the program input port is called the IFB input. IFBs can also be given names which are meaningful to keypanel operators. Once an IFB has been set up and named, it can be assigned to any keypanel key (provided that IFB assignment has not been restricted or disabled in the intercom system configuration software). For further information about IFBs, search “IFB” in AZedit user manual.

ISO (Camera ISO)

ISO is a means for a keypanel operator to isolate a particular intercom port for private communication. While the intercom port is isolated, it can only hear audio from the keypanel operator. ISO is frequently used in television broadcasting to temporarily isolate a member of a camera party line. The isolated camera operator can then receive directions without interference from other audio traffic on the party line. ISOs are setup using the intercom system configuration software. Each ISO can also be given a name which is meaningful to keypanel operators. Once an ISO has been set up and named, it can be assigned to any keypanel key (provided that ISO assignment has not been restricted or disabled in the intercom system configuration software). For further information about ISOs, see the AZedit user manual.

M

Matrix

"Matrix" is a term inherited from earlier point-to-point intercom systems, where all point-to-point communication was accomplished by closing specific switches in a switching matrix. Examples include the RTS™ CS9500, CS9600, and CS9700 Intercom Systems. In many instances, "Matrix" is used interchangeably with "Intercom Systems". RTS™ ADAM, ADAM CS, and Zeus Intercom Systems, on the other hand, do not use a switching matrix, but use a method called Time Division Multiplexing (TDM), in which communications are routed as digital packets. However, use of the term "matrix" persists since packet routing basically accomplishes the same thing as a conventional switching matrix: namely, connecting distinct talkers and listeners.

P

Party Line (PL)

A party line (also called a conference line) is a group of intercom ports which can always talk and/or listen to each other. Party lines have default names PL01, PL02 etc. These names can be changed to more meaningful names using Other Alpha setup in AZedit. Members are assigned to a party line using Party Line setup in AZedit. Once a party line has been set up, it can also be assigned to a keypanel key either from the configuration software or at a programmable keypanel. This allows the keypanel operator to talk and/or listen to the party line without being a member. IMPORTANT: Do not confuse special lists and party lines. A special list is used when a keypanel operator needs to occasionally talk or listen to a group of intercom ports that are otherwise unrelated. A party line is typically used when several users of non-keypanel devices (such as belt packs or camera intercoms) are engaged in a specific common activity and they need to talk and/or listen to each other all the time. Keypanels are almost never members of party lines (although they can be). However, a keypanel key can be assigned to occasionally talk or listen to a party line, if desired. Remember, party lines are primarily set up for party line members, with occasional access by keypanel operators, while special lists are set up exclusively for keypanel operators to talk or listen to several unrelated intercom ports. For specific information about party line setup, see the AZedit User Manual.

Port

The ports are the individual channels that devices are connected to. Devices include: 2-way communication devices, such as keypanels, belt packs, etc.; Audio sources, such as broadcast feeds or background music; Miscellaneous audio output devices, such as powered loudspeakers, PA systems, etc. The audio signal from any input port can be routed to any output port. For example, during keypanel setup, you assign keypanel keys so that keypanel operators can talk and listen to other intercom ports. Communication of this type is called point-to-point communication. You can also route signals between intercom ports without keypanels. One way to do this is to force crosspoints in the Crosspoint Status screen of AZedit. Another way to do this is to with a GPI Input. Intercom ports have identification numbers 001,002, etc. These numbers cannot be changed, but may not be commonly known to intercom system users. Each intercom port also has a default name, called an "alpha", because this

keys for talking and listening. The default alpha names are N001, N002, etc. These default alpha names can be changed to ones that are meaningful to keypanel operators using Port Alpha setup in AZedit.

For data routing purposes, port numbers are arranged in groups of eight sequential intercom ports. In an ADAM or ADAM CS Intercom System, each Audio I/O card comprises one data group. In a Zeus Intercom System, each group of eight port connectors comprises a data group. Within each data group, each keypanel is uniquely identified by is address setting. Whenever you display the Panel ID, the intercom system determines which data group the keypanel is connected to, and also the address setting. It then reports the calculated address. For example, suppose a keypanel is connected to data group 3 and the keypanel address is set to 5. Since each data group consists of eight sequential intercom ports, the calculated port number for this keypanel will be (2*8) + 5, or 21. This is the total of all intercom port numbers on the first two data groups, plus the offset of five ports into the third data group.

RTS™ keypanels are calibrated to send and receive audio at the standard operating levels of the intercom system. No audio gain adjustment is normally required when connecting these. However, many other types of devices may not operate at the standard intercom system levels. To assure signal level compatibility between the various types of audio devices connected to the intercom system there are separate analog input and output gain adjustments for each intercom port. It is also possible to adjust the listen gain for any specific intercom port when listening to any other specific intercom port. This is called the point-to-point listen gain, or crosspoint gain. For example, a keypanel operator might want to monitor a music source connected at some intercom port, but at a reduced audio level so that it does not interfere with normal intercom communications. The crosspoint gain can be reduced for the keypanel port listening to the port where the music source is connected. Analog gain adjustment is only available using AZedit. Crosspoint gains can be adjusted either within AZedit or from a programmable keypanel. For further information, see the AZedit User Manual.

R

Relay

Relay is used interchangeably with GPI output. The relay feature works with the 16 GPI outputs of an optional UIO-256 Universal Input/Output Frame and with the relay outputs of an FR9528 Relay Frame. The relay feature also works with the eight GPI outputs of an ADAM, ADAM CS, or Zeus intercom system (J27 on a Zeus frame, J903 on an ADAM CS frame, and J11 on the XCP-ADAM-MC Master Controller Breakout Panel in and ADAM Intercom System). You can assigned a keypanel key to control a GPI output from any of these devices, and then use that key and output to control an external device. For example, you could use a keypanel key to control lighting. Or you could assign a relay as a level 2 talk key assignment in a stacked talk key arrangement to both send audio and key a device, such as a paging amplifier or a 2-way radio.

S

Special List

A special list is a means for a keypanel operator to talk and/or listen to several unrelated destinations using a single key. Special lists are useful for group call or zone paging. Special list members are defined in AZedit. Once a special list has been configured, it can be assigned to a keypanel key. A special list is a group of intercom ports that a keypanel operator can talk or listen to by activating a single key. A special list is a group of intercom ports that a keypanel operator can talk or listen to by activating a single key. Special Lists are typically used for paging, all call, group call, etc. Special Lists have default names SL01, SL02, etc. These names can be changed using Other Alpha setup. You define the members of the special lists using Special List setup. Once a special list has been setup, you typically assign it to a keypanel key using Keypanel setup. The keypanel operator can then activate the special list key to talk or listen to all members of the special list. IMPORTANT: Do NOT confuse special lists and party lines. A special list is used when a keypanel operator needs to occasionally talk or listen to a group of intercom ports that are otherwise unrelated. A party line is typically used when several users of non-keypanel device (such as belt packs or camera intercoms) are engaged in a specific common activity and they need to talk and/or listen to each other all the time. Keypanels are almost never members of party lines (although they can be). However, a keypanel key can be assigned to occasionally talk or listen to a party line if desired. Remember, party lines are primarily set up for party line members, with occasional access by keypanel operators, while special lists are set up exclusively for keypanel operators to talk or listen to several unrelated intercom ports. For more information, see the AZedit User Manual.

Stacked Key

See Talk Level 1 and Talk Level 2 descriptions.

T

Talk Level 1

Talk Level 1 is the normal talk key assignment. This is the assignment that normally appears in the alphanumeric display (on keypanels so equipped). You may add a talk level 2 assignment to activate a second device along with talk level 2.

Talk Level 2

Talk Level 2 is used with stacked talk keys. A stacked talk key activates two types of communication at once. For example, a stacked talk key could simultaneously activate audio output to a transmitter using a relay. The audio output is call the level 1 assignment and the relay is the called the level 2 assignment.

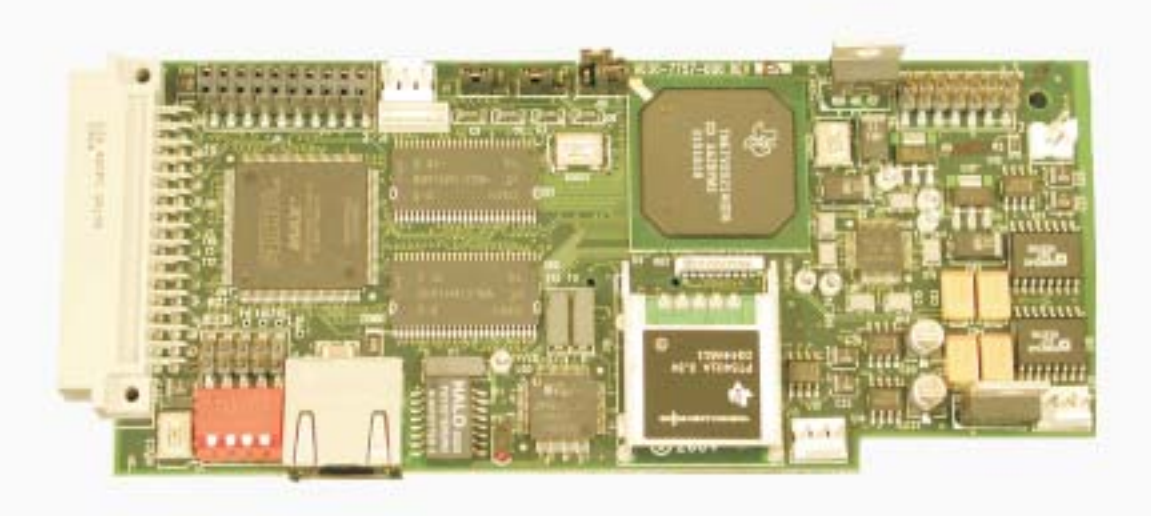
Trunking

Trunking is a method of interconnecting two or more independent intercom systems. The connection is accomplished by reserving one or more audio ports in each of the intercom systems for use as audio links between the systems. A special device, called a Trunking Master Controller, is required to control access and usage for the trunked intercom ports. A configuration utility, called CSTrunk, is used to set up the Trunking Master Controller.

RVON 1

RTS Voice Over Network Interface Card for the KP-32 and KP-812 Family of Keypanels

ADDENDUM



RTS™

Proprietary Notice
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Copyright Notice

Unpacking and Inspection
Immediately upon receipt of the equipment, inspect the shipping container and the contents carefully for any discrepancies or damage. Should there be any, notify the freight company and the dealer at once.

Package Contents

Product	Part Number
RVON-1 P.C. Board Assembly	9030-7757-000
Mounting Block, RVON-1	701854-000
Screw, Plastite, 4-20x3/8" LG.	51886-005
RVON-1 User Manual	9350-7757-000
Rear Panel, KP-32, RVON-1 Ready (Optional - if you need to convert an older KP-32 back panel)	9080-7656-002
Standard Flash Software	
KP-32	90157656-002 (U2)
	90157656-003 (U3)
KP-32 (Japan)	9015-7656-042 (U2)
	9015-7656-043 (U3)
KP-632	90157656-202 (U2)
	90157686-203 (U3)
KP-832	90157656-302 (U2)
	90157656-303 (U3)
Note: You will only 1 set of Flash Software for the version of keypanel you have.	

Warranty Information
See the enclosed Warranty card.

Customer Support
Technical questions should be directed to:

Customer Service Department
RTS/Telex
12000 Portland Avenue South
Burnsville, MN 55337 U.S.A.
Telephone: 800-392-3497
Fax: 800-323-0498

Return Shipping Instructions Procedure for Returns
If a repair is necessary, contact the dealer where this unit was purchased.

If repair through the dealer is not possible, obtain a Return Authorization from:

Customer Service Department
Telex Communications, Inc.
Telephone: 800-392-3497
Fax: 800-323-0498

DO NOT RETURN ANY EQUIPMENT DIRECTLY TO THE FACTORY WITHOUT FIRST OBTAINING A RETURN AUTHORIZATION.

Be prepared to provide the company name, address, phone number, a person to contact regarding the repair, the type and quantity of equipment, a description of the problem and the serial number(s).

Shipping to Manufacturer for Repair or Adjustment.
All shipments of RTS products should be made via United Parcel Service or the best available shipper, prepaid. The equipment should be shipped in the original packing carton; if that is not available, use any suitable container that is rigid and of adequate size. If a substitute container is used, the equipment should be wrapped in paper and surrounded with at least four inches of excelsior or similar shock absorbing material. The unit should also be sent in the original Anti-Static bag or a similar anti-static method. All shipments must be sent to the following address:

Factory Service Department
Telex Communications, Inc.
8601 East Cornhusker Hwy
Lincoln, NE 68507
Attn: Service Dept.

Upon completion of any repair the equipment will be returned via United Parcel Service or specified shipper collect.

Contents

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Chapter 1 Introduction

General Description of the RVON-1 Voice Over Network Card

Installed directly into KP-32 or KP-812 keypanels, the RVON-1 provides voice over IP (Internet Protocol) communications for the RTS™ ADAM intercom family. In general, voice over IP means sending voice information in digital form using discrete packets rather than the traditional hardwire connection. The RVON-1 delivers an integrated solution for connecting keypanels to the Intercom matrix over standard IP networks.

The RVON-1 is compatible with any RTS™ Matrix Intercom system equipped with a suitable RVON interface. In conjunction with any new or existing KP-32 or KP-812 keypanel, the RVON-1 brings a new level of enterprise-wide and remote access functionality to your RTS™ Matrix Intercom.

The RVON-1 card is configurable through the keypanel service menu and Telex's AZedit configuration software. It is also fully compatible with internationally recognized standards and supports the following protocols: G.711, G.729 AB, and G.723 (2 bit rates).

The RVON-1 reaffirms RTS' history of providing support for the latest technology in a fully supported backward compatible manner to all its RTS™ products.

Features

Installation:	The RVON-1 provides a single RJ-45 Ethernet connection for use with a 10 BASE-T or 100 BASE-TX network.
1 Channel of Audio In and Out:	The RVON-1 card supports one channel in and out and has configurable network and bandwidth parameters that can be tailored to individual network functions.
Ethernet Compatible:	The RVON-1 card uses standard Ethernet protocols and is compatible with 10 BASE-T and 100 BASE-TX Ethernet compliant devices and networks.
AZedit Configurations:	Users have the ability to adjust the audio parameters of the RVON-1 channel to optimize the available bandwidth.
Swappable Between Ethernet and AIO Connection:	When connected to an Ethernet LAN, audio comes from the RVON 1 card; and, when an Ethernet link is not present, the audio comes from the AIO connection. Note, the user does not need to remove the RVON-1 card to switch to AIO mode.

Specifications

Digital

Compression	Audio Bit Rate	Coding Delay	Playout Delay	IP Bandwidth
G.711	64k	125μs	20-60ms	160-224 kbps
G.729AB	8k	10ms	20-120ms	32-112 kbps
G.723	5.3k/6.3k	30ms	60-120ms	29-45 kbps

* Data depends on CODEC selection

Note: The Playout Delay and Bandwidth depend on the configured amount of audio per packet.

Connections

- RJ-45 Ethernet via backcard
- 14-pin KP Compatible Expansion Connector

Pin 1 ..... 5 Volt Analog
Pin 2 ..... -12 Volt
Pin 3 ..... +12 Volt
Pin 4 ..... 5 Volt Digital
Pin 5 ..... Analog GND
Pin 6 ..... Digital GND
Pin 7 ..... To Matrix Audio L
Pin 8 ..... NC
Pin 9 ..... From Matrix Audio L
Pin 10 ..... RS485L
Pin 11 ..... From Matrix Audio H
Pin 12 ..... NC
Pin 13 ..... To Matrix Audio H
Pin 14 ..... RS485H

Power ..... Powered internally from keypanel motherboard

Physical ..... 2.5”W x 5.75”L (63.5mm W X 146.05mm L)

Dip Switches

Switch 1: Reserved

Switch 2: Disable Telnet Shell

Default Setting: OFF (Telnet Enabled)

Description: The Telnet shell allows you to access configuration options through the use of Telnet. When DIP switch 2 is OFF, you can use Telnet to access configuration options on the RVON-1 card. Turn DIP switch 2 ON to disable the Telnet shell.

Switch 3: Enable Boot Downloader

Default Setting: OFF (Boot Downloader Disabled)

Description: The purpose of the boot downloader is to allow you to recover from having your main application image corrupted (either by bad flash programming or by downloading an invalid image). Turn DIP switch 3 ON to enable the boot downloader.

Switch 4: Debug Only!

Default Setting: OFF

Description: DIP switch 4 should always be left in the OFF position. It is reserved for debugging and can have unintended consequences.

Firmware Compatibility Requirements for the RVON-1 Card

Description	Version
Master Controller	9.19.0 or later
Peripheral Controller	10.10.0 or later
DBX	1.10.1 or later
AZedit	2.06.06 or later
RVON-8	1.1.0 or later
KP-32	2.0.0 or later

Table 1. Compatibility Requirements for the RVON-1 Card

Flash Chip Replacement

The KP32, KP-32J , KP-632, and KP-832 must upgraded to 4MB flash chips that are programmed in the factory. Note, there are two chips for each model (see figure 1). Table 2 shows the respective part numbers for each type of keypanel.

Keypanel	Flash Chip Replacement
KP-32 Standard	9015-7656-002 (U2)
	9015-7656-003 (U3)
KP-32 (Japan)	9015-7656-042 (U2)
	9015-7656-043 (U3)
KP-632	9015-7656-202 (U2)
	9015-7656-203 (U3)
KP-832	9015-7656-302 (U2)
	9015-7656-303 (U3)

Table 2. Flash Chip replacement part numbers.

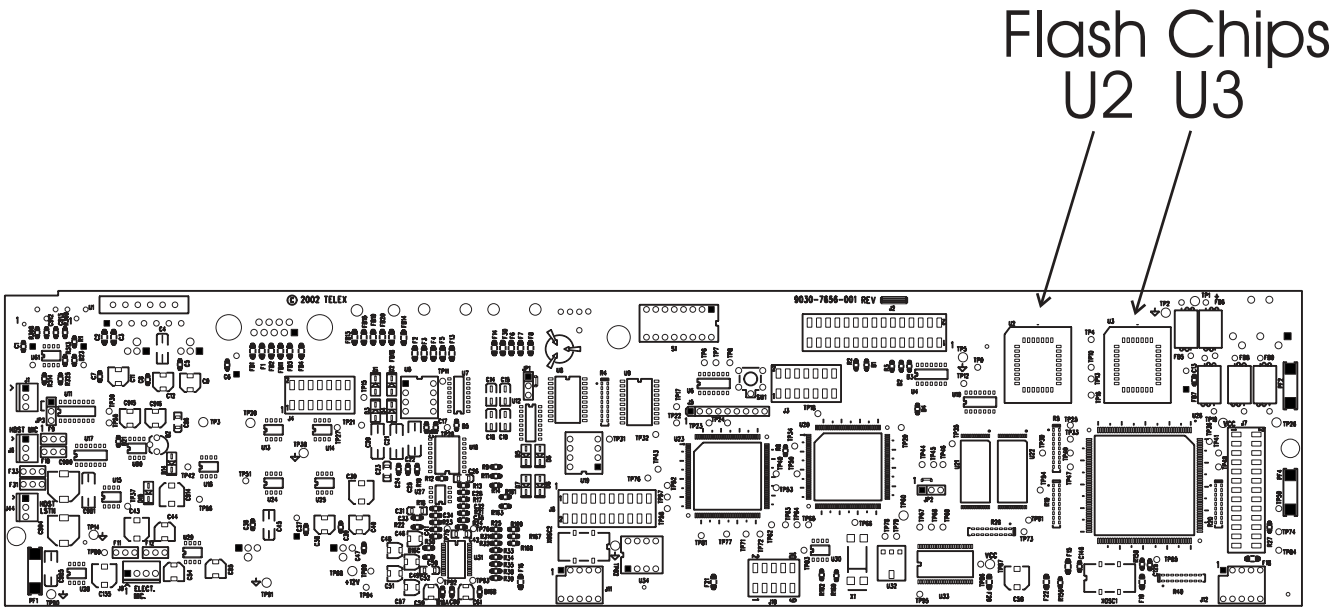


Figure 1. Flash Chip placement on the KP-32 motherboard.

Installation of the RVON-1 Card

Before using the RVON-1 card with the KP-32, a few modifications need to be made to the keypanel. If the serial number on your KP-32 keypanel is **61170**, you will need to update your backpanel with the Ethernet RJ-45 connection (*part number - 9080-7656-00*2) knockout present. Also, the KP-32 flash chips need to be replaced with larger flash chips (4MB) (see the chart on page 9 for the flash chip part numbers.

To Install the RVON-1 Card in the KP-32 series family, do the following:

1. Remove the cover from the KP-32 keypanel.
2. If present, remove the GPI/O board.
   The GPI/O board contains the general purpose input and output connections located on the back cover.
3. Using a chip extractor, carefully remove and replace the flash chips located at U2 and U3 on the KP-32 Motherboard. See Figure 1.
4. Using a hammer and screwdriver, remove the specified knockout pieces. See Figure 2.
5. Mount the supplied spacer on the RVON-1 card on the corner of the card near the DIP switch. See figure 3. For more resources concerning the RVON-1 Installation, see Installation of the RVON-1 Card (cont.) on page 11.
6. Securely connect the RVON-1 card to the KP-32 mother board, see page 11 for connector specifics.
7. Replace the GPI/O board.
8. Re-attach the backplate to the KP-32 keypanel. Be sure to secure the spacer with a screw in the back plate. See figure 2 and figure 3.
9. Replace the cover on the KP-32 keypanel.

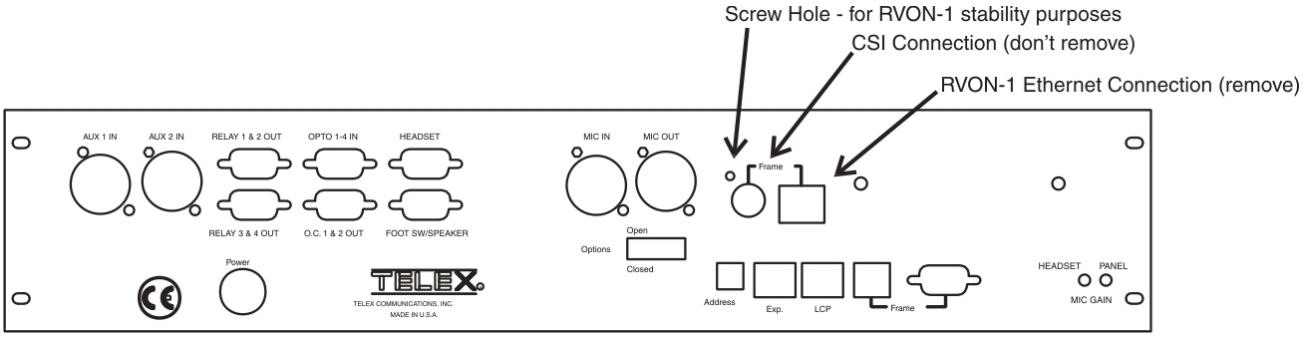


Figure 2. Knock out positions for the RVON-1 card on the KP-32.

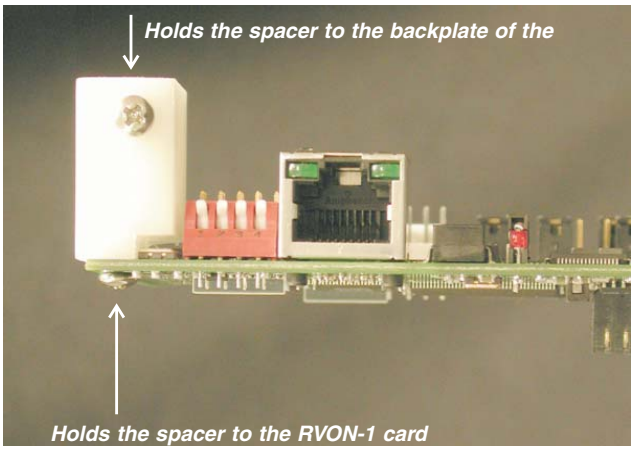


Figure 3. The placement of the spacer and screw position on the RVON-1 card for KP-32 series keypanels.

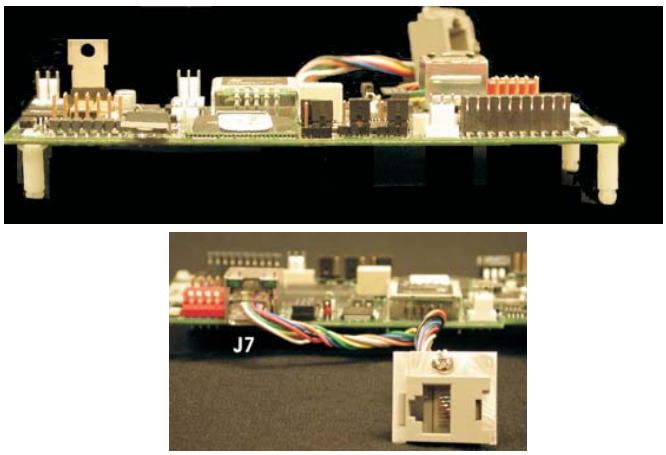


Figure 4. The placement of the spacer and screw position on the RVON-1 card for the KP-812 series keypanels.

To install the RVON-1 card into the KP-812 keypanel, do the following:

1. Remove the cover from the KP-812 keypanel.
2. Mount the supplied spacers (there are three) on the RVON-1 card. See figure 4.
4. Securely connect the RVON-1 card to the KP-812 mother board, see figure 6 for connector specifics.
5. Using a screwdriver, attach the Ethernet connector cable mount to the backplane on the KP-812. See Figure 2.
6. Connect the Ethernet connector to the RVON-1 card, see figure 4.
7. Replace the cover on the keypanel.

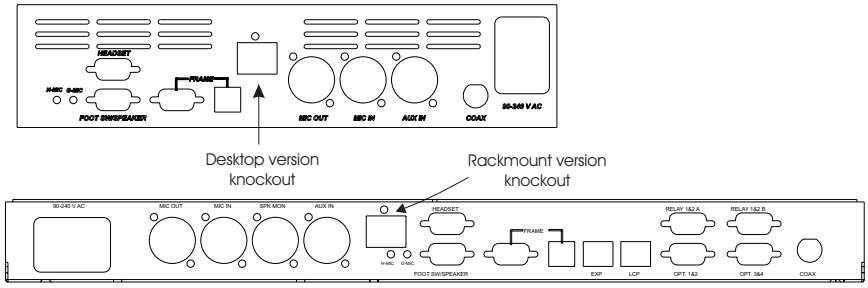


Figure 5. The KP-812 series Ethernet knockout placement.

In the KP-32 keypanel, the RVON-1 card connects to the KP-32 by way of the J2 connector on the RVON-1 attached to J4 on the KP-32 header. Gently secure the board in place. See Figure 6.

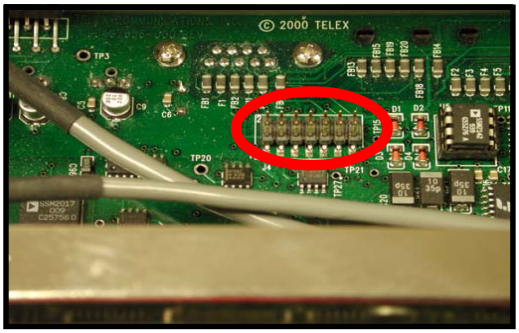


Figure 6. The J4 connector on the KP-32 board.

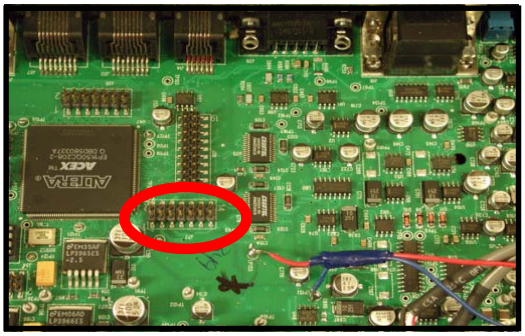


Figure 7. The J37 connector on the KP-812 board.

In the KP-812, the RVON-1 card connects to the KP-812 by way of the J2 connector on the RVON-1 attached to J37 on the KP-812 header. Gently secure the board in place. See Figure 7.

NOTE: Be sure the orientation of the board is correct, otherwise undesirable effects may occur. Make sure the RJ-45 connection is positioned so it will fit through the specified knockout on the back cover. When installing the RVON-1 card in an existing KP-32 or KP-812, each keypanel needs to be upgraded to include the following:

KP-32

- A backplate that allows for the RJ-45 connection (Ethernet).
- Larger flash chips.

KP-812

- A backplate that allows for the RJ-45 connection (Ethernet).
- Extension for the RJ-45 connector.

RVON-1 Relay

When connected to an Ethernet LAN, audio comes from the RVON 1 card; and, when Ethernet is not plugged in, the audio comes from the AIO connection. Note, the user does not need to remove the RVON-1 card to switch to AIO mode.

WARNING!: You cannot have both an Ethernet connection and an AIO connection simultaneously. If the Ethernet and AIO are connected simultaneously, no audio communication will occur.

Addresses and the RVON-1

Because the RVON-1 has an Ethernet interface, it is required to have a MAC (Media Access Control) address. This is a low level address that contains 48 bits. Do not confuse this address with an IP (Internet Protocol) address. In order to be IP compliant, all cards must have a unique MAC ID when shipped from the manufacturer. Typically, the MAC ID of a piece of hardware, such as the RVON-1 card, has a fixed or static address. Where as the RVON-1 card's IP address can change over time.

The MAC address uniquely identifies each node of a network and interfaces directly with the network media. The RVON-1 card has a small 8-pin serial device on the board that the processor can read the unique MAC address from. For more information on MAC IDs, contact technical support.

NOTE: Each RVON-1 Card needs to be programmed with its own IP Address.

Configure the RVON-1 from the KP-32

To use the RVON-1 with the KP-32, the KP-32 firmware must be at V 2.0.0 or higher. In turn, the firmware requires that larger flash chips be used as well. For more information, see page 9.

TOP LEVEL MENU, SERVICE, RVON SETUP

Set the IP Address from the Service Level Menu

The RVON-1 card, when shipped has a default IP Address already configured. This must be changed in order for the RVON-1 card to function properly because the pre-configured IP Address may not work with your network.

To set the IP Address, do the following:

1. On the KP-32, press **Menu**.
   The top level menu appears .
2. Using the ↓↓, scroll to **Service**.
3. Press **PGM**.
   The Service menu appears.
4. Using the ↓↓, scroll to **RVON Setup**.
5. Press **PGM**.
   The IP Address menu item appears.
6. Press **PGM**.
   The actual IP Address appears.
7. Enter the **first number** in the IP Address.
   This activates the first octet of the IP Address and clears the rest of the IP Address.
8. Press **PGM**.
   This confirms the first octet in the IP Address and moves you to the second octet.

NOTE: Press PGM to skip over any octet that does not need modifications.

9. Repeat steps **7** and **8** until the entire IP Address is entered.
10. Press **PGM**.
    The Netmask menu item appears.

NOTE: Once you have entered the IP Address, you will then enter the Netmask. The Netmask is a string of numbers similar to an IP Address, except that it masks or screens out the network part of an IP Address so that only the host computer part of the address remains (for example, 255.255.255.0).

11. Press **PGM**.
    The actual Netmask appears.
12. Enter the **first number** in the Netmask.
    This activates the first octet of the Netmask and clears the rest of the Netmask.
13. Press **PGM**.
    This confirms the first octet in the Netmask and moves you to the second octet.

NOTE: Press **PGM** to skip over any octet that does not need modifications.

14. Repeat steps **13** and **14** until the entire Netmask is entered.
15. Press **PGM**.
    The Gateway IP Address menu item appears.

NOTE: Once you have entered the Netmask, you may need to enter the Gateway IP Address. A **Gateway** is a node (for example, a computer) on a network that serves as an entrance to another network.

16. Press **PGM**.
    The actual Gateway IP Address appears.
17. Enter the **first number** in the Gateway IP Address.
    This activates the first octet of the Gateway IP Address and clears the rest of the address.
18. Press **PGM**.
    This confirms the first octet in the Gateway IP Address and moves you to the second octet.

NOTE: Press **PGM** to skip over any octet that does not need modifications.

19. Repeat steps **19** and **20** until the entire Gateway is entered.
20. Press **PGM**.
21. Press **CLR** to exit the menu.
    The changes are now enabled.

NOTE: You can still set the IP Address without being connected to an Ethernet LAN. Once you have entered the IP information, you will be prompted to perform a **Save Cfg**. The address is saved in the keypanel until the RVON-1 is connected to an Ethernet LAN.

TOP LEVEL MENU, RVON CONN.

Select an RVON Connection from the Top Level Menu

The RVON Conn menu contains a list of connection offers from intercoms. This menu allows the keypanel to dynamically select an intercom and port to which it will connect.

To select a connection offer, do the following:

1. On the KP-32, press **Menu**.
   The top level menu appears in the CWW window.
2. Using the ↓↓, scroll to **RVON Conn**.
3. Press **PGM**.
   The currently selected intercom port appears in the CWW window. If you have not previously selected a connection, you will see "none".
4. Using the ↓↓, scroll to the connection offer that you want to accept.
5. Press **PGM**.
   → *<connection offer> appears. The arrow to left of the connection offer designates which connection offer was chosen.*
6. Press **CLR** to exit.
   The keypanel will now connect to the selected intercom port.

Configure the RVON-1 from the KP-812

TOP LEVEL MENU, SERVICE, RVON SETUP

Set the IP Address from the Service Level Menu

The RVON-1 card, when shipped has a default IP Address already configured. This must be changed in order for the RVON-1 card to function properly because the pre-configured IP Address may not work with your network.

To set the IP Address, do the following:

1. On the KP-812, scroll to **Menu**.
   The top level menu appears .
2. Using the encoder knob, scroll to **Service**.
3. Tap the encoder knob.
   The Service menu appears.
4. Using the encoder knob, scroll to **RVON Setup**.
5. Tap the encoder knob.
   The IP Address menu item appears.
6. Tap the encoder knob.
   The actual IP Address appears.
7. Enter the **first number** in the IP Address.
   This activates the first octet of the IP Address and clears the rest of the IP Address.
8. Tap the encoder knob.
   This confirms the first octet in the IP Address and moves you to the second octet.

NOTE: Tap the encoder knob to skip over any octet that does not need modifications.

9. Repeat steps **7** and **8** until the entire IP Address is entered.
10. Tap the encoder knob.
    The Netmask menu item appears.

NOTE: Once you have entered the IP Address, you will then enter the Netmask. The Netmask is a string of number similar to an IP Address, except that it masks or screens out the network part of an IP Address so that only the host computer part of the address remains (for example, 255.255.255.0).

11. Tap the encoder knob.
    The actual Netmask appears.
12. Enter the **first number** in the Netmask.
    This activates the first octet of the Netmask and clears the rest of the Netmask.
13. Tap the encoder knob.
    This confirms the first octet in the Netmask and moves you to the second octet.

NOTE: Tap the encoder knob to skip over any octet that does not need modifications.

14. Repeat steps **13** and **14** until the entire Netmask is entered.
15. Tap the encoder knob.
    The Gateway IP Address menu item appears.

NOTE: Once you have entered the Netmask, you may need to enter the Gateway IP Address. A **Gateway** is a node (for example, a computer) on a network that serves as an entrance to another network.

16. Tap the encoder knob.
    The actual Gateway IP Address appears.
17. Enter the **first number** in the Gateway IP Address.
    This activates the first octet of the Gateway IP Address and clears the rest of the address.
18. Tap the encoder knob.
    This confirms the first octet in the Gateway IP Address and moves you to the second octet.

NOTE: Tap the encoder knob to skip over any octet that does not need modifications.

19. Repeat steps **19** and **20** until the entire Gateway is entered.
20. Tap the encoder knob.
21. Press and hold the encoder knob to exit the menu.
    The changes are now enabled.

NOTE: You can still set the IP Address without being connected to an Ethernet LAN. Once you have entered the IP information, you will be prompted to perform a **Save Cfg**. The address is saved in the keypanel until the RVON-1 is connected to an Ethernet LAN.

TOP LEVEL MENU, RVON CONN.

Select an RVON Connection from the Top Level Menu

The RVON Conn. menu is a list of connection offers from other intercoms. This menu allows the keypanel to dynamically select an intercom and port to which it will connect.

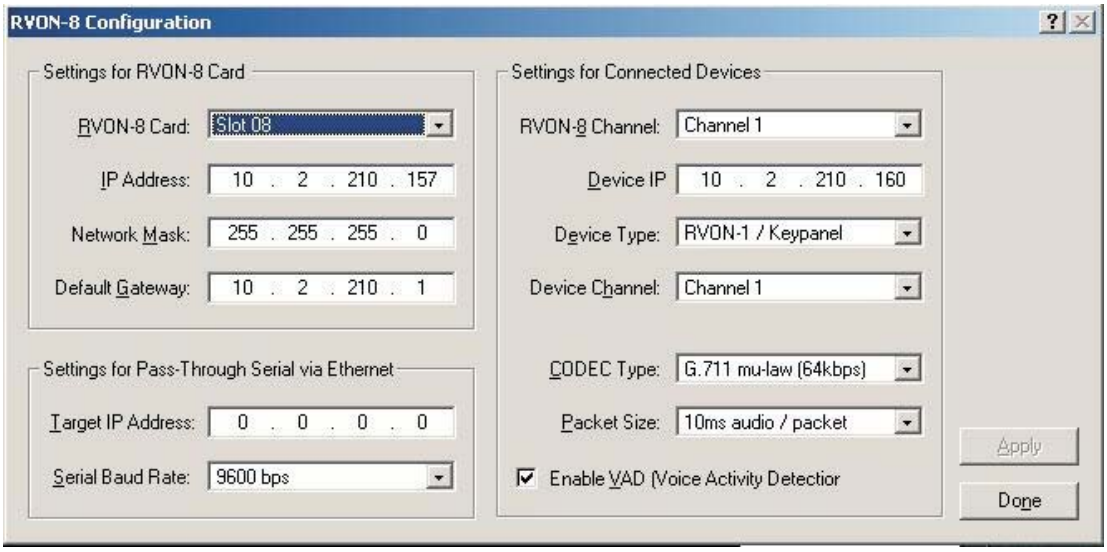
To select the connection offer, do the following:

1. On the KP-812, scroll to **RVON Conn.**, then tap the encoder knob.
   The currently selected connection offer appears in the CWW window. If you have not previously selected the connection, you will see "none".
2. Scroll to the connection offer to which you want to connect, then tap the encoder knob.
   The connection offer begins to flash indicating that it has been selected.
3. Press and hold the encoder knob to exit the menu.
   The keypanel will now connect to the selected port

Configure the RVON-8 using AZedit to contact the RVON-1

To configure the RVON-1 card, do the following:

1. From the Status menu, select **I/O Cards**.
   The I/O Card Status screen appears showing the types of installed cards.
2. Right click on an RVON-8 card and select **RVON-8 Configuration**.
   The RVON-8 Configuration screen appears.



NOTE: The RVON-8 you use should be already configured. If it is not configured, refer to your RVON-8 Card User Manual.

Remember, the RVON-1 has only one channel that can be configured.

3. In the RVON-8 Channel drop down list, select the **channel** that will be used to communicate to the RVON-1 card across the network.
4. In the Device IP field, enter the **IP Address** for the RVON-1 card.
5. From the Device Type drop down list, select **RVON-1/Keypanel**.

6. From the Device Channel drop down list, select **Channel 1**. There may be two channels listed, but the connection can only be made through channel 1.
7. From the CODEC Type drop down list, select the **CODEC type**.
8. From the Packet Size drop down list, select the **size** of each audio packet.

NOTE: A CODEC is an algorithm used to compress audio. Codecs dictate the quality of audio you hear and the network bandwidth used. The packet size determines how much audio data is carried across the network in each transmitted packet. The CODEC type and packet size chosen require different amounts of bandwidth from the network. As with the CODEC type, the packet size you choose for the audio transfer will affect the audio you hear and the bandwidth you use over the network. The larger the audio packet you choose to use, the lower the bandwidth used. However, the larger packet size can result in a higher delay and longer gaps if the packet is lost. On the other hand, smaller packet sizes result in larger bandwidth use, but lower delays and smaller gaps if the packet is lost. The Intercom System Engineer and the Network Designer may want to work together in choosing the CODEC type and packet size suitable for the size of the network, so degradation of network resources does not occur.

9. Select **Enable VAD (Voice Activity Detection)**, if you want to conserve bandwidth when the audio level is below a given threshold.

NOTE: VAD saves network bandwidth by stopping the flow of audio packets when silence is detected. VAD is similar to VOX.

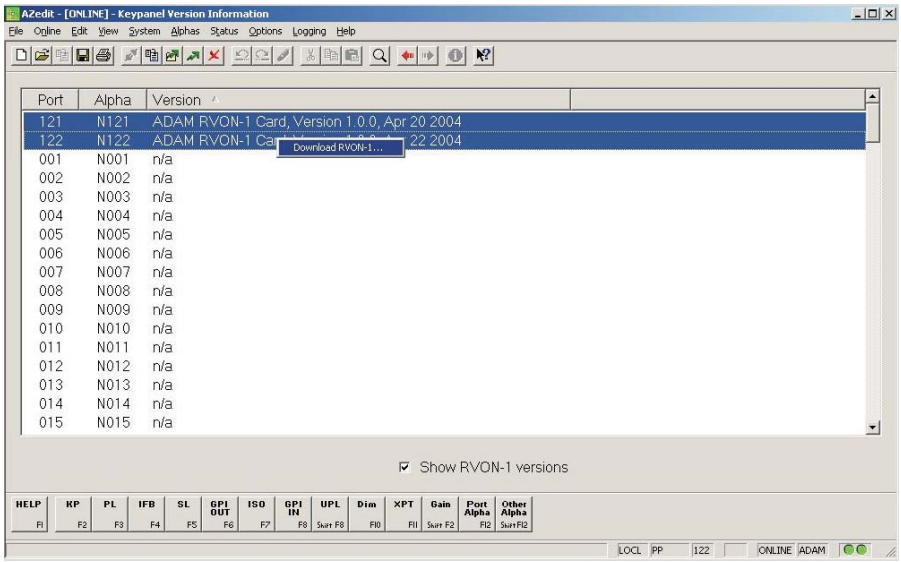
10. Once you are completely finished, click **Apply**.

Download RVON-1 Firmware Through AZedit

NOTE: AZedit sends firmware directly to the RVON-1 card over Ethernet. This is different from other I/O cards (except the RVON-8) that receive the firmware from the Master Controller. For this reason, verify the PC running AZedit is able to contact the RVON-1 card via the network, or is configured with a Gateway IP Address that can contact the RVON card. If it is not, AZedit will not be able to find the RVON-8 card. To test the connection, ping the RVON card from a command line. For more information on how to test for a connection, see Appendix A.

To download the RVON-1 Firmware, do the following:

1. Open **AZedit**.
2. From the Status menu, select **Software Versions** and then **Keypanels**.
   The Keypanel Version screen appears.

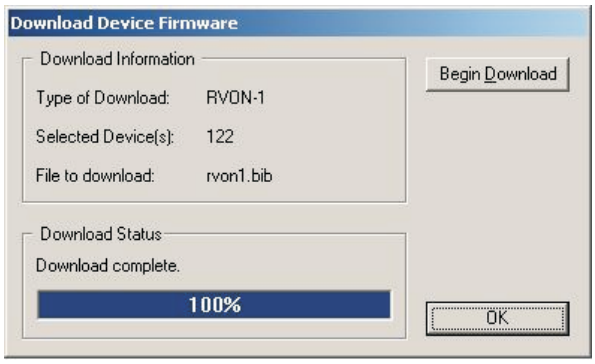


3. On the Keypanel Version screen, select the **Show RVON-1 Versions** check box.
4. Select and right click the **keypanel** which has the RVON-1 installed, and then select **Download RVON-1**.
   The Download Device Firmware screen appears.

5. Using the Browse feature, browse to the file to be downloaded.

6. Click **Open**.
The Download Device Firmware screen appears.

7. Click **Begin Download**.
The download begins.



8. Click **OK**.
The RVON-1 firmware download is complete. This takes a minute or two to occur.

WARNING! - Do **NOT** power down the keypanel until you have verified the new version information from AZedit. If the card loses power while reprogramming the on-board flash memory, the card may become unbootable and may need to have its flash chips reprogrammed at the factory.

9. Verify the correct version is shown on the keypanel version screen.

NOTE: You can also download the RVON-1 firmware through **Status>Ports**. You will not be able to check the version once the download is completed from the Port Status screen.

Appendix A
Basic Network Configuration

This section covers basic network configuration set up and testing. Also covered are basic concepts and operations, including the difference between LAN and WAN networks and how IP Addressing is used.

In a networked environment, such as a company, typically there are many computers connected together using a router or a switch (for more information router or switch in the definitions section). In larger companies, there may be several different routers distributed in buildings and plant locations. A router allows any LAN-side computer to communicate with computers and devices outside the LAN (local area network). Routers send data packets from one place to another place on a network. Routers use network addresses to route packets to the correct destination. For example, in a TCP/IP network, the IP (internet protocol) address of the network interface is used to direct router destinations.

Because routers help computers inside the LAN “talk” with computers outside the LAN, the security of a company’s LAN may be compromised by gaps of open ports in the router. Security measures may have been instituted to compensate for these vulnerabilities. Consult your network administrator to learn more about the security measures taken to protect your network. VPN, or virtual private network, is one such security measure to protect the intelligence of the LAN. A computer outside the LAN must have an address of key known by the VPN to allow access to the LAN. Many companies use a VPN to connect two different LANs, thus allowing the transfer of data between the two networks.

LAN (local area network) vs. WAN (wide area network)

Local Area Network
Simply put, a LAN is a computer network that connects a relatively small area (a single building or group of buildings). Most LANs connect workstations and computers to each other. Each computer (also known as a “node”), has its own processing unit and executes its own programs; however, it can also access data and devices anywhere on the LAN. This means that many users can access and share the same information and devices. A good example of a LAN device is a network printer. Most companies cannot afford the budgetary or hardware expense of providing printers for each of its users. Therefore, one printer (i.e., device) is placed on the LAN where every user can access the same printer.

The LAN users IP addresses to route data to different destinations on the network. An IP Address is a 32-bit numerical address written as four numbers separated by periods (for example, 1.160.10.240).

NOTE: For more information on IP Addresses, consult your local network administrator.

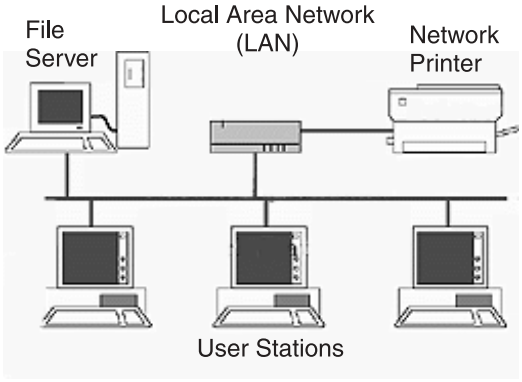


Figure 1. Local Area Network Diagram

Wide Area Network

A wide area network connects two or more LANs and can span a relatively large geographical area. For example, Telex Headquarters in Burnsville, MN is connected to several branch offices in Nebraska and Arkansas over the wide area network. The largest WAN in existence is the Internet.

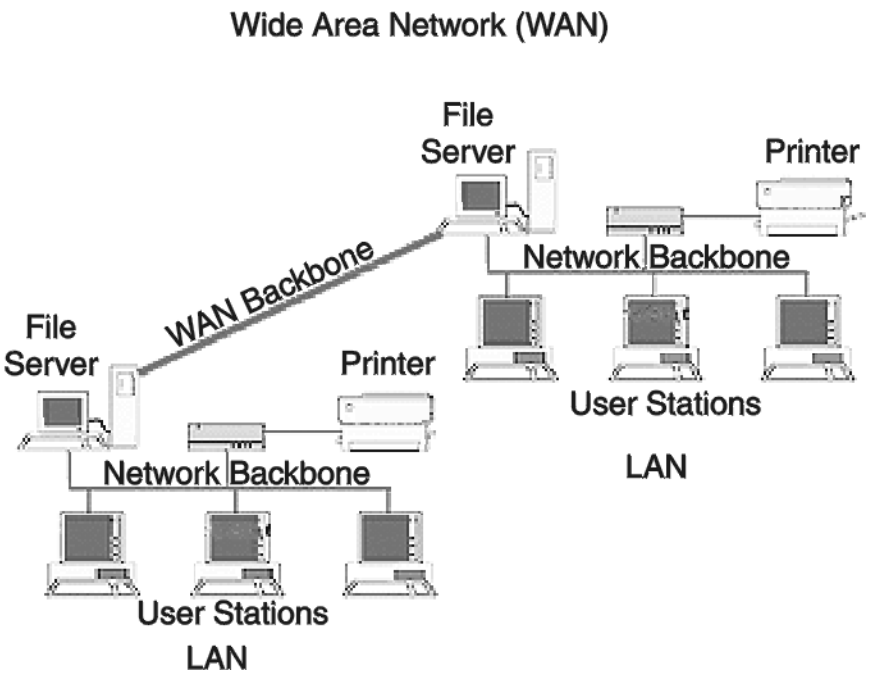


Figure 2. Wide area network diagram

Accessing the Wide Area Network (WAN)

Figure 3 shows LAN IP addresses using a common IP address, 10.2.100.x (192.168.x.x is another common address). Most devices are shipped with these addresses as its default. It is recommended to use these addresses for LANs.

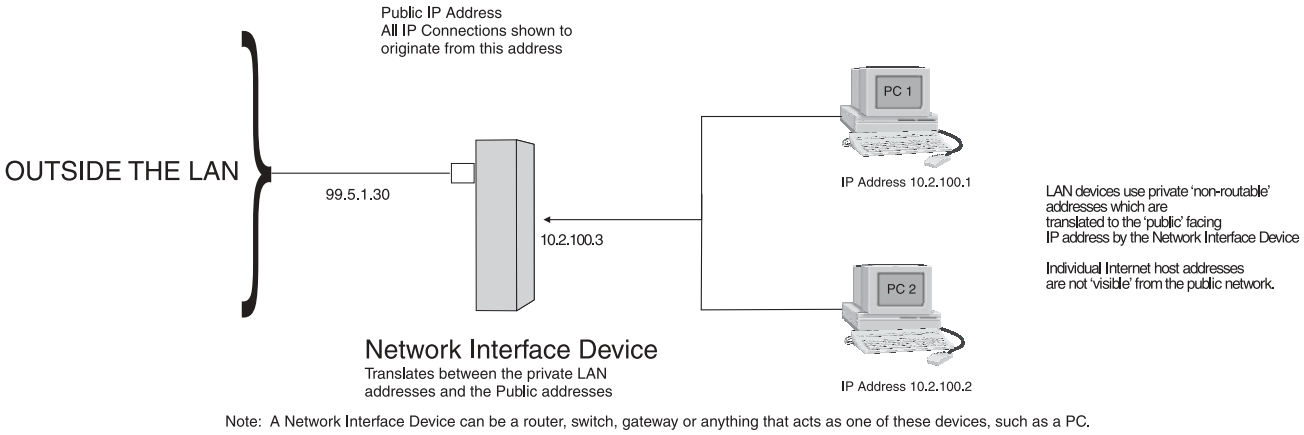


Figure 3. Network Address Translation

Network Address Translating (NAT)

Using the initial IP address, then converting it to a valid WAN IP address is how the network address translation works in theory. Once the IP address is changed, it is up to the network interface device (such as a router, gateway, switch, etc.) to keep track of which computers are talking on which ports. For example, if two local devices (PC1 and PC2 in Figure 3) both wanted to talk via port 1031, then the network interface device would have to change one of the port requests to the next available port, 1032.

Ports

In general, a network port is an endpoint to a logical connection. The port number identifies what type of port it is. For example, port 80 is used for HTTP traffic. When you type an address into the address bar of a web browser, you computer goes to find an IP address for the URL you are requesting (http://www.telex.com). To obtain this address, the computer contact a DNS server (Domain Name Server). Once the IP address is found, it tries to connect to the http port of the network device (port 80). See Table 1 for a list of the more well-known port numbers.

Each network device can be set up to respond or not respond to the various ports. The function of responding or “hosting a service” is called “serving”.

	Packet Before Translation				Packet After Translation			
	Source		Destination		Source		Destination	
	IP Address	Port Number	IP Address	Port Number	IP Address	Port Number	IP Address	Port Number
To Internet	10.2.100.2	1031	192.156.136.22	80	99.5.1.30	1031	192.156.136.22	80
From Internet	192.156.136.22	80	99.5.1.30	1031	192.156.136.22	80	10.2.100.2	1031

Table 1. Packet Translation

If a second work station on the LAN wants to communicate to the same server, and happens to use the same source port number, then the LAN Modem will translate the source port number as well as the source IP address. In Table 2, a second computer wants to access a web page. The NAT device now uses port 1032 for this connection where it used port 1031 in Table 1.

	Packet Before Translation				Packet After Translation			
	Source		Destination		Source		Destination	
	IP Address	Port Number	IP Address	Port Number	IP Address	Port Number	IP Address	Port Number
To Internet	10.2.100.1	1031	192.156.136.22	80	99.5.1.30	1032	192.156.136.22	80
From Internet	192.156.136.22	80	99.5.1.30	1032	192.156.136.22	80	10.2.1001	1031

Table 2. Packet Translation

Amazingly, all the address translation that occurs take place automatically in order to make web browsing and other functions easier. This is also a way for large web hosting services to speed up the network by having different devices perform different functions.

Port Number	Description
1	TCP Port Service Multiplier
5	Remote Job Entry
7	ECHO
18	Message Send Protocol (MSP)
20	FTP-Data
21	FTP - Control
23	Telnet
25	Simple Mail Transfer Protocol (SMTP)
29	MSG ICP
37	Time
42	Host Name Server (Nameserv)
43	Whols
49	Login Host Protocol (Login)
53	Domain Name Server (DNS)
69	Trivial File Transfer Protocol (TFTP)
70	Gopher Service
79	Finger
80	HTTP
103	X.400 Standard
108	SNA Gateway Access Server
109	POP2
110	POP3
115	Simple File Transfer Protocol
118	SQL Services
119	Newsgroup (NNTP)
137	NetBIOS Name Service
139	NetBIOS Datagram Service
143	Interim Mail Access Protocol (IMAP)
150	NetBios Session Service
156	SQL Server
161	SNMP
179	Border Gateway Protocol BGP)
190	Gateway Access Control Protocol (GACP)
194	Internet Relay Chat (IRC)
197	Directory Location Services(DLS)
389	Lightweight Directory Access Protocol (LDAP)
396	Novell Netware over IP
443	HTTPS
444	Simple Network Paging Protocol (SNPP)
445	Microsoft-DS
458	Apple QuickTime
546	DHCP Client
547	DHCP Server
563	SNEWS
569	MSN
1080	SOCKS

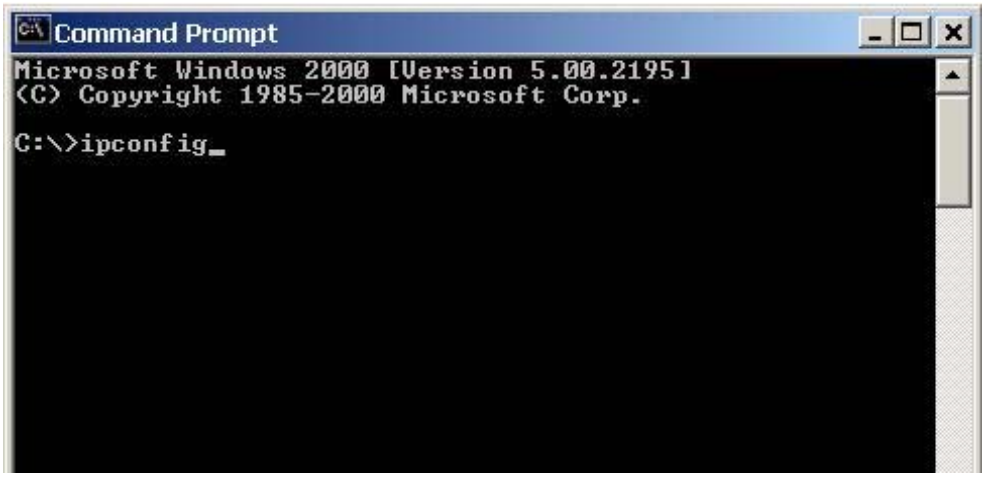
Table 3. Well-Known TCP Port Numbers

IP Addresses

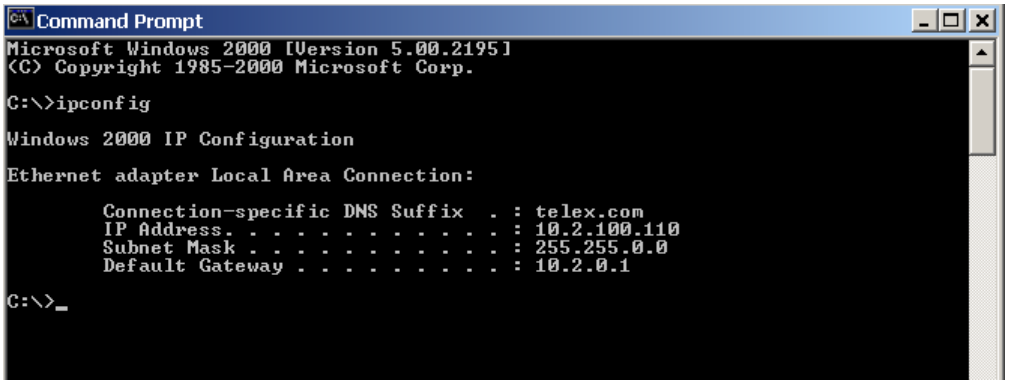
If you do not know your IP Address, you can open a DOS screen in Windows®- based environment and bring up the ipconfig screen.

To find your IP Address using ipconfig, do the following:

1. From the Start Menu, open a **Command Prompt** window.



2. At the prompt, type **ipconfig**, then press **Enter**.
   The IP configurations appear for your machine, such as the DNS suffix, IP Address, Subnet Mask, and Default Gateway.



3. At the prompt, type **Exit** to close the screen.

Note: If you want more detailed parameters for your machine, type **ipconfig/All**. This screen shows the computers network configuration settings.

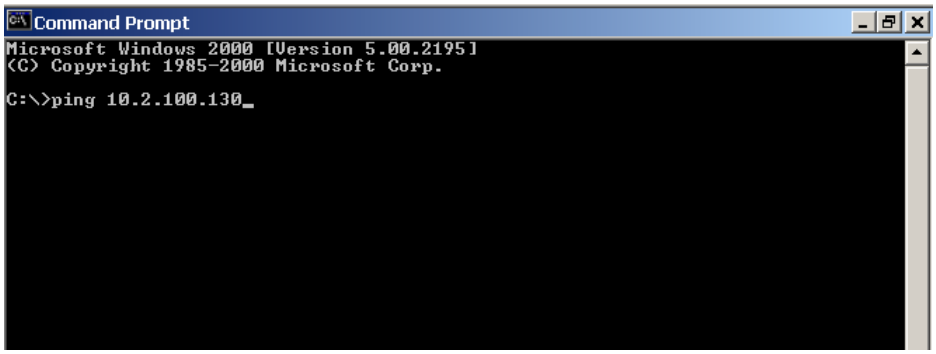
Ping a Computer

Pinging a computer on the network makes sure it is able to be “seen” and receive messages on the network.

> **Note**: You can also ping your RVON-8 card to verify that it is responding over the network by putting the cards IP address in place of the computer IP address.

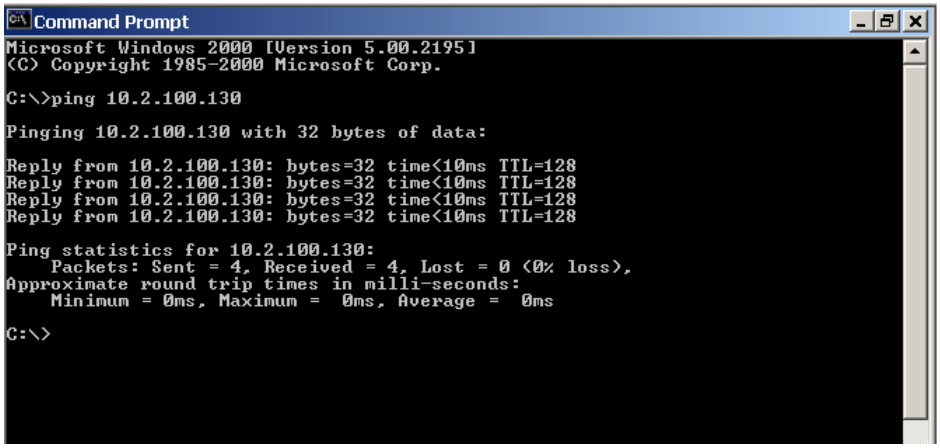
To ping a computer on the network, do the following,

1. From the Start Menu, open a Command Prompt window.



2. At the prompt, type the **IP Address** of the computer you want to ping (for example, 10.2.100.130).

3. Press **Enter**.



Note: If the computer you are pinging is not responding to the ping, you will receive a time out message in the command prompt screen.

Possible Pitfall with Routers, Gateways, and Switches

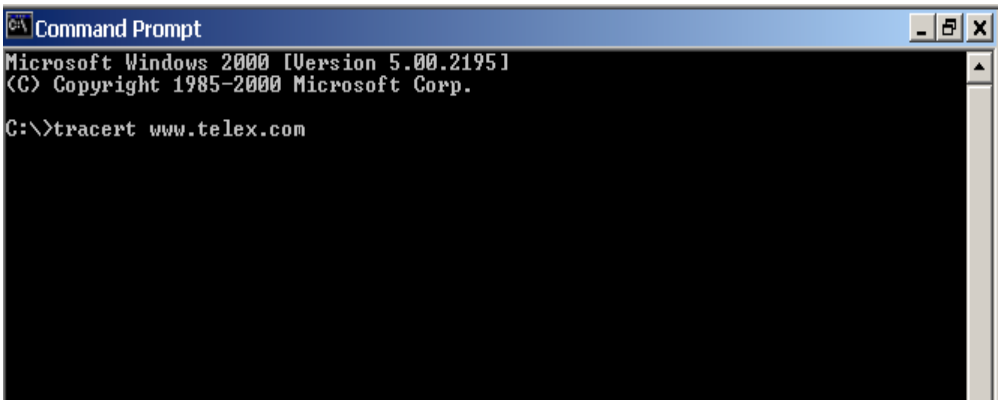
Anytime computers communicate through routers, gateways, and switches, they may be allowed or denied the connection. Network interface devices can be configured to block specific outgoing requests, as well as incoming requests, based on the IP address and/or port. This is one of the security mechanisms of a router. This also happens when broadcast messages are sent and received.

To view the path an IP address takes to retrieve information you can execute a *tracert* from the Command Prompt screen.

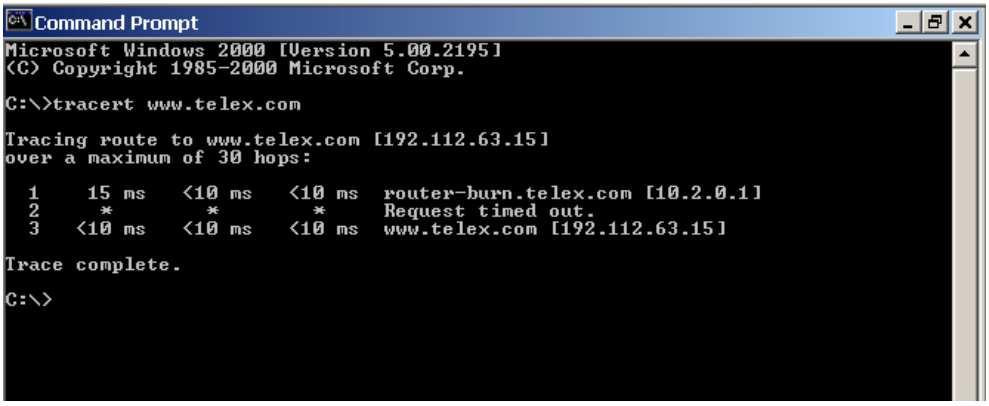
To run tracert, do the following:

1. From the Start Menu, open a **Command Prompt** window.

2. At the prompt, type **tracert** and type the **url** or **IP address** you want to trace.



3. Press **Enter**.
   The details of the tracer route are displayed.



Note: You will see the message “request timed out” if the IP address/port in or out is denied to the outgoing or incoming message.

4. When you are finished, type **exit** to close the Command Prompt window.

RVON-1 Specific Configuration

RVON-1 cards use ports for communication of audio and control packets. Because routers can be configured to block certain incoming and outgoing requests, you will need to open the following ports in your network to allow WAN connections to and from a Network Interface Device. See Table 4 for the ports that need to be opened for the RVON-1 card to operate properly.

Port	Port Description
2076	UDP Call Control Signalling
2077	UDP Audio Packets
2079	UDP Telex Proprietary Signalling
2080	TCP Telex Keypanel Protocol
2081	UDP Pass Through Serial
2082	TCP Firmware Download
2100	Remote Administration
2102	Authentication Server

Table 4. Ports necessary for RVON-1 Card functionality.

Figure 4 is an example of a router configuration screen. Not all routers are configured the same way and may not look exactly like this figure.

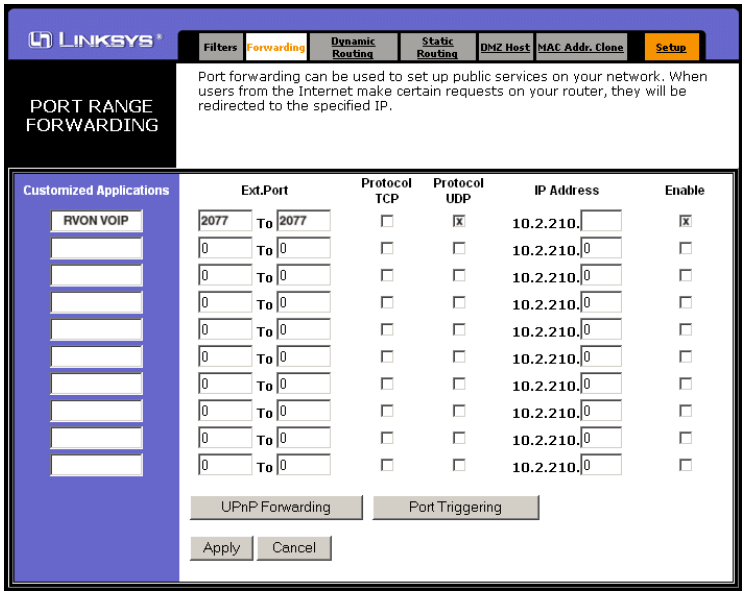


Figure 4. An example of a router configuration screen.

Note: Linksys™ only supports up to 253 nodes on a router. This is why it is called a Router/Switch, because there are WAN functions like a router as well as having a 4-port LAN switch. It also does not support simultaneous forward and DHCP.

Bridges - A **bridge** is a device that connects two LANs, or two segments of the same LAN that use the same protocol. Sometimes called “transparent bridges”, they work at the OSI model Layer 2. Simply put, they are not concerned with protocols. Their main job is to pass data to a destination address that is predetermined in the data packet.

With a bridge, all you computers are on the same network subnet (see Subnet). This means your computers can communicate with each other and have their own Internet connection. If you assign your own IP Addresses be sure to use the same first 3 “octets” of the IP Address (for example, 192.168.0.X).

Domain Name Server - A **DNS Server** is an Internet service that translates domain names (for example, in the URL http://www.telex.com, the domain name is telex.com) into IP Addresses. The Internet is based on IP Addresses which are numeric and since domain names are alphabetic, they are easier to remember. Everytime a domain name is used it must go through the DNS server to be translated into an IP Address.

Gateway - A gateway is a node on a network that serves as an entrance to another network. The gateway routes traffic from a computer to an outside network that is serving the web pages. For example, the gateway for a home computer is the ISP provider that connects the user to the Internet.

In a corporate environment, the gateway often acts as a proxy server and a firewall. Gateways are similar to routers and switches in that they forward data to the destination and provide the path for which the data will travel to the destination.

Hub - A **hub** is a common connection point for devices in a network. A hub has multiple ports. When a data packet arrives at a hub it is copied and distributed to all of its ports so that all nodes on the LAN can see the packets.

These are three types of hubs:

passive hub: this hub serves as a conduit for the data, enabling it to go from one device to another.

intelligent hub (also known as manageable hubs): this hub includes additional fea tures that enable administrators to monitor traffic through the hub.

switching hub: this hub reads the destination address of each packet and then forwards the data packet to the appropriate port.

IP Address (Internet Protocol) - An **IP Address** is an identifier or numerical name for a computer or device on a network. Data between computers is routed over the network using these addresses to identify the computer the message is being sent to and from.

The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. For example, an IP Address looks like 10.100.1.1.

Important: When working within an isolated network (meaning there is no Internet access), IP addresses can be assigned at random just as long as they are unique to each computer and device.

The four numbers in an IP address are used in different ways to identify a particular network and host on that network. There are three classes of Internet addresses:

Class A - supports 16 million hosts on each of 127 networks.
Class B - supports 65,000 hosts on each of 16,000 networks.
Class C - supports 254 hosts on each of 2 million networks.

LAN - A **LAN** is a computer network that connects a relatively small area (a single building or group of buildings). Most LANs connect workstations and computers to each other. Each computer (also know as a “node”), has its own processing unit and executes its own programs; however, it can also access data and devices on the LAN. This means that many users can access and share the same information and devices. A good example of a LAN device is a network printer. Most companies cannot afford the budgetary or hardware expense of providing printers for each of its users. Therefore, one printer (i.e., device) is placed on the LAN where every user can access the same printer.

The LAN uses IP addresses to route data to different destinations on the network. An IP Address is a 32-bit numeric address written as four numbers separated by periods (For example, 1.160.10.240.

Port - A **port**, when referring to TCP and UDP networks, is an endpoint in a logical connection. The port number identifies the type of port it is. For example, port 80 is used for HTTP traffic.

Routers - A **router** is a device that forwards data packets over networks. Most commonly, a router is connected to at least two networks (normally LANs or WANs). Routers are located at gateways, the place where two networks are connected. Routers do little data filtering, they mainly deliver the data.

Subnet - A **subnet** is a portion of a network that shares a common address component. On a TCP/IP network, a subnet is described as all computers or devices whose IP Address have the same prefix.

Switches - A **switch** is a device that filters and forwards data packets between networks. Switches operate at the data layer, and sometimes at the network layer.

WAN - A wide area network connects two or more LANs and can span a relatively large geographical area. For example, Telex Headquarters in Burnsville, MN is connected to several of its branch offices in Nebraska and Arkansas over the wide area network. The largest WAN in existence is the Internet.

Appendix B
Telnet & Serial Port Programming of the RVON-1 Card

RVON Serial and Telnet Commands

RVON-1 card programming can also be done via a direct serial or Telnet connection. There are two physical connections to an RVON-1 board:

- Direct serial through a custom debug cable (J3 6-pin bottom front)
  The custom debug cable always functions as the general-purpose debug tool.

- Backcard RJ-45 J7 (Telnet only)

Setup:

Serial Port:	38,400 baud, No-Flow control
Telnet:	IP Address, port 23

Configure the RVON-1 Using Telnet and Serial Port

IMPORTANT: Because the RVON-1 card is shipped with a default IP Address it may not be accessible on the network. The IP Address should already be configured before attempting to try to connect through TELNET. To set the IP Address, use the keypanel display menu, see pages 10 - 14.

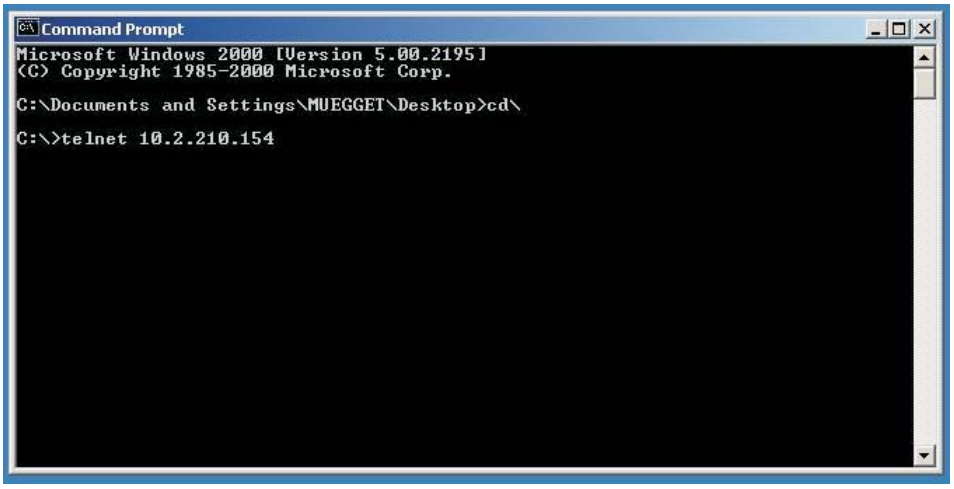
Without access to the physical KP-32 or KP-812 where the RVON-1 is installed, you can still configure the card through the use of Telnet. The following instructions will show you how to access the Telnet screens and show you some of the information you can display and edit.

NOTE: These instructions are intended to help you get to the Telnet screens and give you an overview of what can be done.

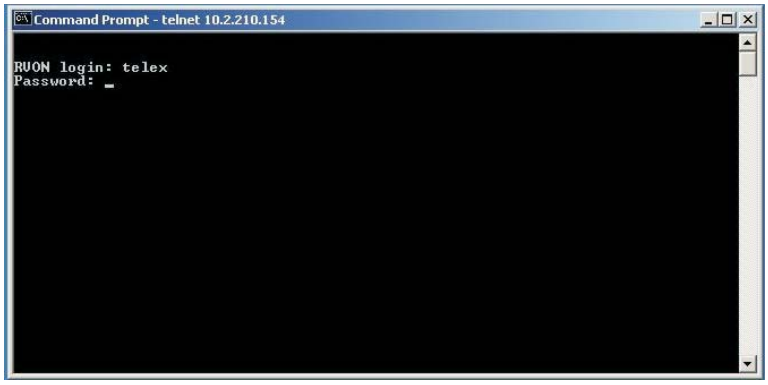
To Display settings for the RVON-1 Card, do the following:

1. Open a command prompt.

2. At the prompt type ***TELNET <IP Address>*** (The IP Address is the IP address assigned to the RVON-1 card.



3. Press **Enter**.
   The RVON login screen appears.



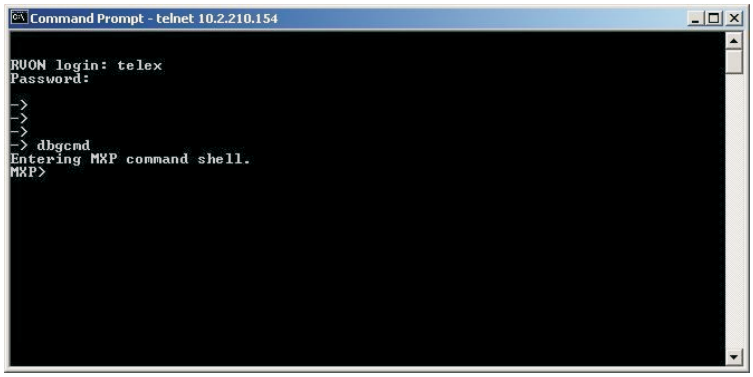
4. In the logon field, type the RVON login (default = Telex).

5. Press **Enter**.

6. In the password field, type the **RVON password** (default = password).

7. Press **Enter**.
   A prompt appears.

8. Type **dbgcmd** to access the debug command screens.



9. Press **Enter**.
   An MXP prompt appears.

Table 1 is a list of commands support from the MXP Shell Prompt.

Command	Parameter 1	Parameter 2	Description
set rvon			Help screen which lists all "set rvon" commands
set rvon	ip_addr	X.X.X.X	Set the IP address for the RVON-1 card
set rvon	netmask	X.X.X.X	Set the Network Mask for the RVON-1 card
set rvon	gateway	X.X.X.X	Set the Gateway IP Address for the RVON-1 card
set rvon	user	abcdefg	Set the RVON-1 user name for Telnet access Default "telex"
set rvon	password	abcdefg	Set the RVON-1 password for Telnet access (8-40 characters) Default "password"
set rvon	vad_threshold	[adaptive | #]	Set the VAD threshold (silence detection) Adaptive refers to autoselect. The # can be -20 to +10 dBm.
set channel [chan]			Help screen which lists all "set chan" commands (CHAN 0-1)
set channel [chan]	dest_ip	X.X.X.X	Set the destination IP address for this particular RVON channel
set channel [chan]	dest_type	X	dest_type X = 0(rvon-8), 1(rvon-1), 2(rvon-I/O)
set channel [chan]	dest_chan	X	Set the destination channel - what port of far-end (0-7)
set channel [chan]	chan_codec	X	Set the profile to use which includes the compression codec, see below (0-27)
activate			Must do an activate command to cause changes to take effect.
set channel [chan]	onhook		Force the channel to disconnect
set channel [chan]	offhook		Force the channel to connect
show rvon			Display current settings
show channel [chan]			Display current settings

Examples:
1. Set RVON ip_addr to 10.3.210.12.

At the command prompt type: **set rvon ip_address 10.3.210.12**

2. Set the destination channel type to RVON-1.

At the command prompt type: **set chan dest_type 0**

3. Set the RVON user to Telex

At the command prompt type: **set rvon user Telex**

Coding Profiles	Codec	Codec Rate	Audio (ms) / Packet	Packets / Second	Encoded Audio (bytes)	IP Overhead (bytes)	Total Packet Size (bytes)	Bandwidth (Bytes/sec)	Bandwidth (kbps/side)	Bandwidth (kbps/channel)
0, 3, 6, 9	G.711	64k	10	100.00	80	60	140	14000	112	224
1, 4, 7, 10	G.711	64k	20	50.00	160	60	220	11000	88	176
2, 3, 8, 11	G.711	64k	30	33.33	240	60	300	10000	80	160
12, 16	G.729	8k	10	100.00	10	60	70	7000	56	112
13, 17	G.729	8k	20	50.00	20	60	80	4000	32	64
14, 18	G.729	8k	40	25.00	40	60	100	2500	20	40
15, 19	G.729	8k	60	16.67	60	60	120	2000	16	32
20, 22	G.723	5.3k	30	33.33	24	60	84	2800	22.4	44.8
24, 26	G.723	6.3k	30	33.33	24	60	84	2800	22.4	44.8
21, 23	G.723	5.3k	60	16.67	48	60	108	1800	14.4	28.8
25, 27	G.723	6.3k	60	16.67	48	60	108	1800	14.4	28.8
NOTE: A channel consists of a transmitting and a receiving side, so the bandwidth is double for a bi-directional audio stream.										
NOTE: Bandwidth values are approximate maximums, actual bandwidth used could be considerably lower with VAD enabled.										

Codec: Determines how the audio is compressed/decompressed and the name given to the defined algorithm.

Codec Rate: Actual bits per second of the audio in compressed form. This is sent over the network through various data packets. Network efficiency can be calculated with an IP header for each packet of X ms of audio.

DEFAULT SETUP

Every attempt is made to ensure the board is shipped from the factory containing the following:

All are "**set rvon**" commands

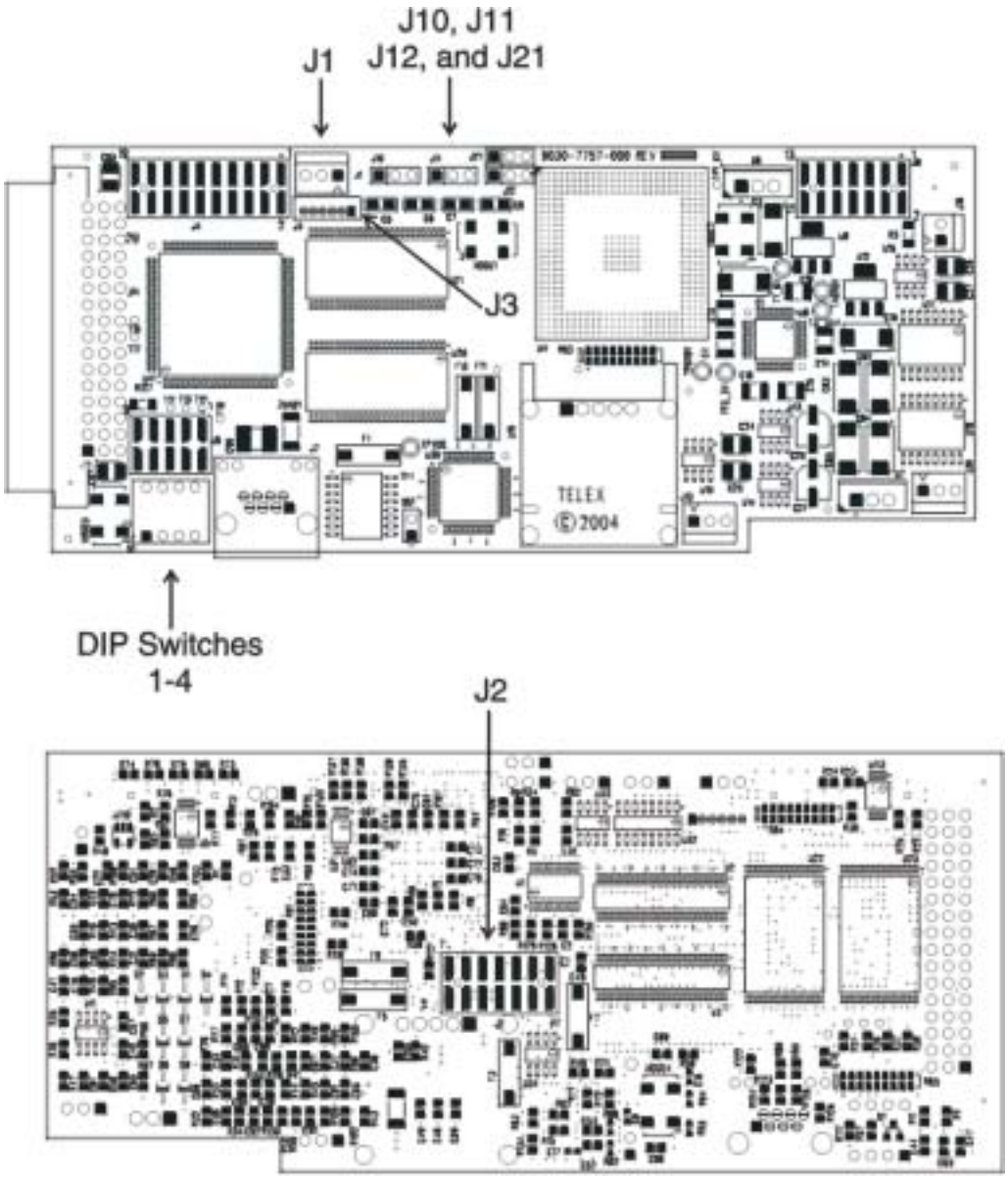
COMMAND	ENVIRONMENT VARIABLE NAME	DEFAULT VALUE	DESCRIPTION
ip_addr	EMACA_IPADDR	192.168.1.1	IP address for the RVON-1 Card
netmask	EMACA_NETMASK	255.255.255.0	Network mask for the RVON-1 Card
gateway	EMACA_GW	none	Gateway IP address for the RVON-1 Card
user	RVON_USER	telex	RVON-1 user name for Telnet access
password	RVON_PASSWORD	password	RVON-1 password for telnet access (8-40 characters)
vad_threshold	RVON_THRESHOLD	adaptive	VAD Threshold

There are more parameters the software will auto-configure if they have not been previously setup.

All are “**set channel #**” commands because they are for each audio channel.

COMMAND	ENVIRONMENT VARIABLE NAME	VALUE	DESCRIPTION
dest_ip	RVON_DEST_IP_# (0,1)	X.X.X.X	Destination IP Address for this particular Channel
dest_type	RVON_DEST_TYPE_# (0,1)	X	Destination Type X = 0 (rvon-8), 1(rvon-1), 2(rvon-I/O)
dest_chan	RVON_DEST_CHAN_# (0,1)	X	Destination Channel - what port of far-end (0-7)
chan_codec	RVON_CHAN_CODEC_# (0,1)	X	Profile to use (previous coding table)

Typing, “sys_printenv” from the “MXP” Debug system prompt shows these settings.



Jumpers and Connections

A selectable RS232/485 serial port is at connector J1. Jumper connections on J10, J11, and J12 select the signal mode on J1.

- When J10, J11, and J12 are jumped from pins 1 to 2 - J1 is configured for RS485.
- When J10, J11, and J12 are jumped from pins 2 to 3 - J1 is configured for RS232.

J21 must be jumped from pins 1 to 2 to select UART B for RS485 RVON-1 keypanel operation.

J2 Connector

The RVON-1 card is designed to be used with either a keypanel or an RVON-IO card. The J2 connector mounts the RVON-1 card onto a keypanel.

RS232 debug serial port via Connector J3.

J3 is a 6-pin header that connects to RS-232 compatible serial ports of the TNETV2020.