RTS Digital Matrix Intercom
Innovating the Future of Communications

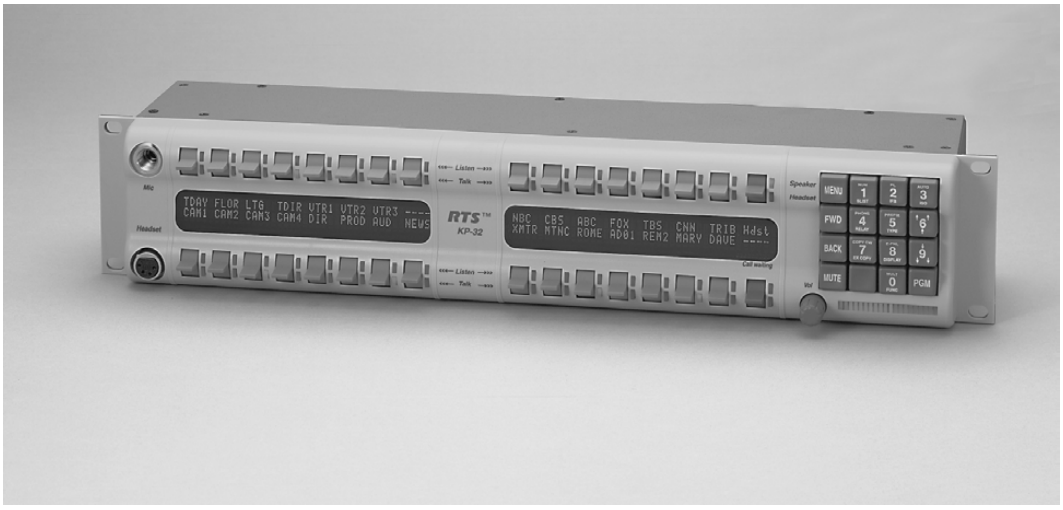
USER INSTRUCTIONS

KP-32 KEYPANEL

UP TO AND INCLUDING VERSION 2.1.0

EKP-32 EXPANSION PANEL

LCP-32 LEVEL CONTROL PANEL



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See the enclosed warranty card for further details.

Customer Support

Technical questions should be directed to:

Customer Service Department
Bosch Security Systems, Inc.
12000 Portland Avenue South
Burnsville, MN 55337 USA
Telephone: 800-392-3497
Fax: 800-323-0498

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Customer Service Department
Bosch Security Systems, Inc.(Lincoln, NE)
Telephone: 402-467-5321
Fax: 402-467-3279
Factory Service: 800-553-5992

Please include a note in the box which supplies 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).

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Factory Service Department
Bosch Security Systems, Inc.
8601 East Cornhusker Hwy.
Lincoln, NE 68507 U.S.A.
Attn: Service

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CHAPTER 1

Introduction

Description

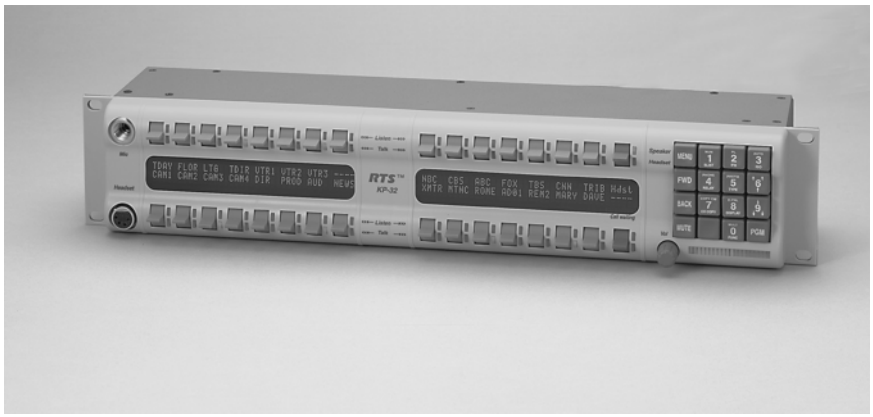


FIGURE 1. KP-32 Keypanel

The RTS Model KP-32 Keypanel fits in a standard 19" rack and is two rack spaces high. It has 32 lever keys: 30 keys are for intercom talk/listen assignment; one key is for call waiting response; and one key is for headset/microphone/program selection and volume setup. The KP-32 combines all of the programmable features of the KP9X Series Keypanels and the KP-12 Keypanel. It adds significant new features such as digital signal processing and binaural headset operation with left/right assignment of audio signals. The KP-32 also introduces large, super-bright, long-life fluorescent displays with adjustable brightness control, making it suitable for all types of ambient lighting from direct sunlight to darkness.

Features

Super-bright, fluorescent displays: Provide much better visibility and usable life than LCD displays. A display saver mode with programmable scrolling message extends display life and conserves power during periods of inactivity.

32 lever keys, with 30 keys available for full talk/listen configuration: Doubles the number of channels over the KP9X series keypanels. Keys support both latching (hands-free) and momentary (push-to-talk) operation.

Enhanced programming keypad: Provides the complete KP9X keypad sequences, plus new keypad sequences, plus an extensive scrollable menu system. Menus include helpful prompts to walk the user through setup.

Only 90 mm deep behind the front panel (approximately 130 mm with connectors): Perfect for consoles, OB vans, etc.

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

Binaural (5-pin) Headset Connector: Works with the DSP mixing feature. Lets you independently assign intercom, microphone, and program audio to left or right headphone. Note: monaural (4-pin) connector available as an option. For monaural operation, the mixer lets you select which items are monitored in the headphones.

Easy upgrades: Firmware updates can be received via the internet, for example, and then downloaded to the KP-32 via the intercom connection. Ready for future communication enhancements, including coax, fiber, and ISDN.

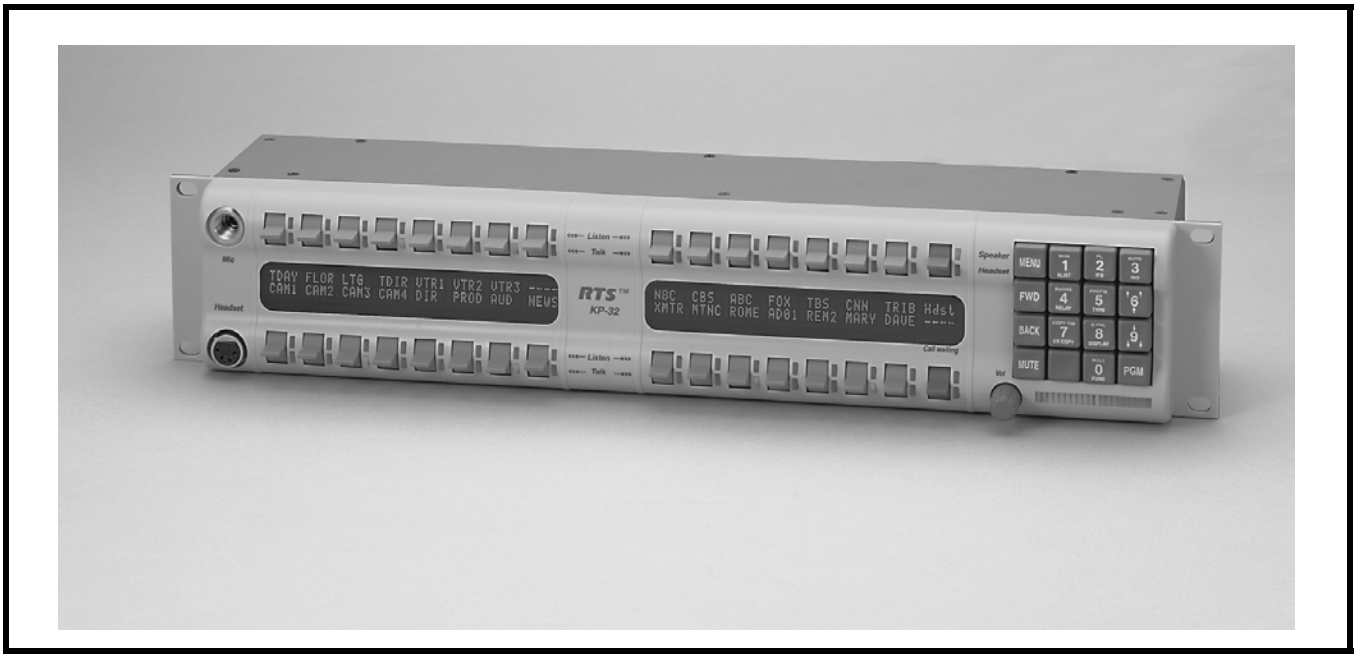


FIGURE 2. KP-32 Keypanel Front View.

Connector Module

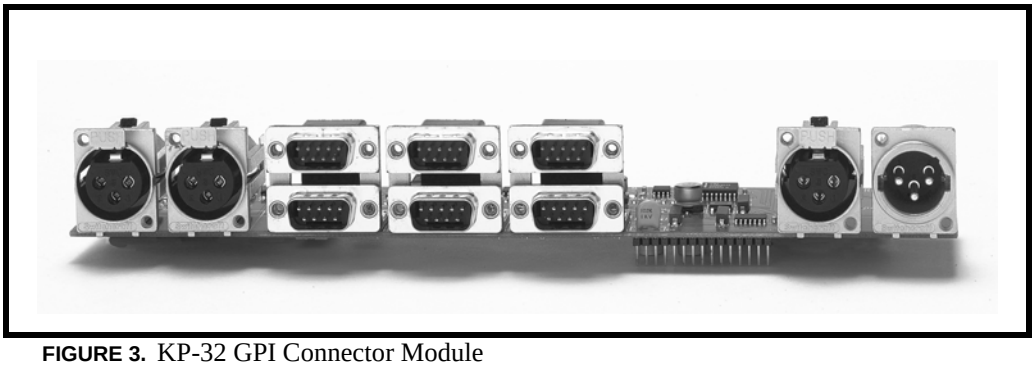


FIGURE 3. KP-32 GPI Connector Module

Provides connectors for two line-level audio inputs (program 1 and 2), an unswitched, balanced microphone preamplifier output, an external headset, an external speaker output, and a foot switch input (for remote switch activation of all armed talk keys, or just one key). Also includes a General Purpose Input/Output (GPIO), with four opto-isolated inputs, two open-collector outputs, and two SPDT relay outputs. Inputs can activate single keys and groups of keys. Outputs can activate external devices from keypanel keys or from GPI inputs. Available factory installed or as an add-on kit.

CSI-100 Coaxial System Interface Module

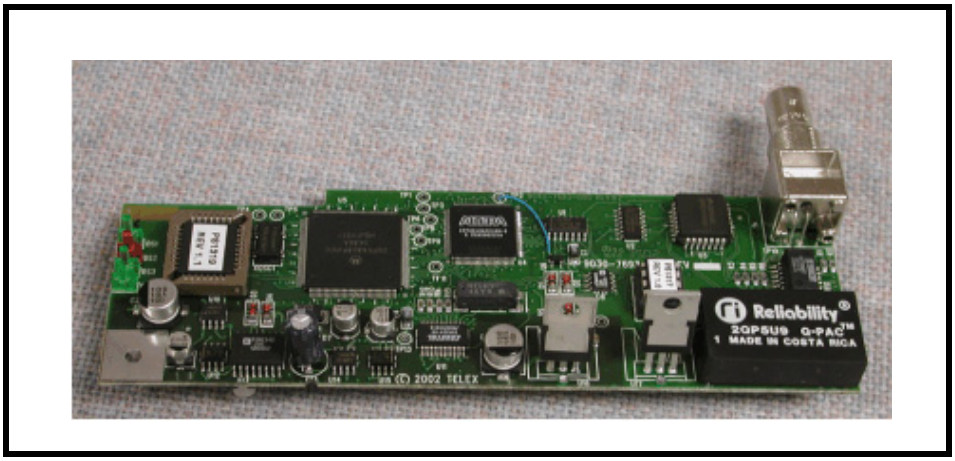


FIGURE 4. KP-32 CSI-100 coaxial system interface board

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 a CSI-200 interface unit at the intercom matrix end.

EKP-32 Expansion Keypanel

FIGURE 5. EKP-32 expansion keypanel front view

Provides an additional 32 intercom keys for a total of up to 64 keys (62 intercom keys total).

LCP-32/16 Level Control Panels

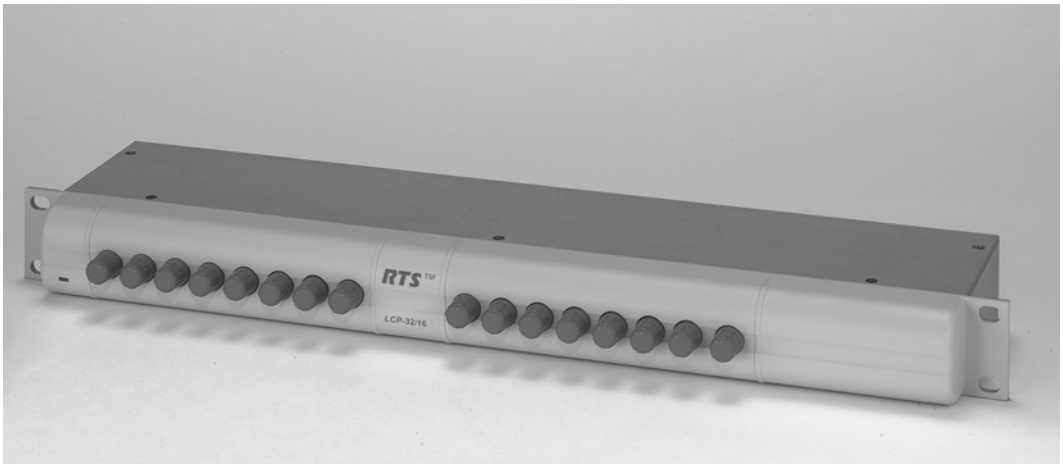


FIGURE 6. LCP-32/16 level control panel front view

Provides easy adjustment of point-to-point and party line listen levels for individual intercom keys. One LCP-32/16 adjusts one row of keys.

Option DIP Switch Settings

NOTE: When the switch is OPEN, the physical switch is in down position. When the switch is CLOSED, the physical switch is in the up position.

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 that is often used by a director or producer to give instructions to a listener, such as a news anchor during a television broadcast) could accidentally 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 of AZedit.

Switch 2: Key Gain Enable / Disable

Default setting = Open: Enable.

Description: Enables or disables the Key Gain item in the Key Assign menu.

Switch 3: Screen Saver Enable / Disable

Default setting = Open: Enable.

With Screen Saver enabled, the KP-32 will shut off the display and enter a low-power state after a few minutes of inactivity. The display reactivates instantaneously on incoming call or when the keypanel operator actuates any control. As with all fluorescent and back-lit LCD displays, some dimming will occur after many years of operation. Using the screen saver helps maximize the display life.

Switch 4: Call Flash Timeout

Default setting = Open: 15 Second Flash.

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. The flash can be set for 15 second timeout, or until the caller's talk key is released.

NOTE: Future versions of AZedit will be able to override the Call Flash Timeout setting.

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 green talk LEDs (on time less than off time), and when the footswitch is activated, the LEDs provide the normal talk-on indication.

NOTE:

1. If the talk key is held down in 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. Please see the AZedit user manual for more information.

Switch 6: Network Mode Selection

Default Setting: Open (Mode 1)

Description: In the Mode 1 setting, the keypanel functions operate as called out in the main portion of this manual. If the switch is closed (Mode 2), then the functions operate as outlined in this manual with slight modifications. Any function that is affected by Mode 2 operation will have an asterisk (*) by it. The changes/modifications to the functionality is called out in “Mode 2 Operation” on page 61.

Switch 7: Test/Debug

Default Setting: Open.

Switch 8: Test/Debug

Default Setting: Open.

Address Switch Setting

General Information

In Zeus, ADAM CS, and ADAM Intercom Systems, intercom ports are arranged in groups of eight. All ports in a group share a common data port. Each KP-32 keypanel is uniquely identified on the data port by the setting of its Address switch. The method of determining the proper Address switch setting varies for each intercom system. Use the method for your intercom system as described below. Then set the white pointer on the Address switch to point to the correct setting.

Address Setting for Zeus

Intercom port connectors on the Zeus back panel are arranged in three groups of eight intercom ports. For each group, intercom port connectors are labeled ID 1, ID 2, etc. When you connect a KP-32 keypanel to Zeus, set the Address switch to match the corresponding ID number on the Zeus back panel. Note that address switch settings 0, and 9 through F are not used.

Address Setting for ADAM CS

Each Audio I/O card contains 1 group of 8 intercom ports. However, the method of breaking out the groups depends on the type of connectors on the back panel.

ADAM CS with RJ12 or DB-9 back panel:

The intercom port connectors are arranged in groups of 8. The first connector at the left for each group is Address 1, the next is Address 2, and so forth.

NOTE: Address switch settings 0, and 9 through F are not used.

TABLE 1. Address Number vs. Intercom Port Numbers for 8-Port Audio I/O Cards (ADAM and ADAM CS Intercom Systems)

Address	**Card Numbers (bold headings) and Port Numbers**																							
Cards 1-25																								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
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	51	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	52	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	53	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	54	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	55	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	56	64	72	80	88	96	104	112	120	128	136	144	152	160	168	176	184	192	200
Cards 25-50																								
	26	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
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	340	248	256	264	272	280	288	296	304	312	320	328	336	344	352	360	368	376	384	392	400
Cards 51-75																								
	51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**	**71**	**72**	**73**	**74**	**75**
1	401	409	417	425	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	549	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	550	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	551	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	552	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	553	560	568	576	584	592	600
Cards 76-100																								
	76	**77**	**78**	**79**	**80**	**81**	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**	**91**	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**
1	601	609	617	625	633	641	649	657	665	673	681	689	697	705	713	721	729	737	745	753	761	769	777	785	793
2	602	610	618	626	634	642	650	658	666	674	682	690	698	706	714	722	730	738	746	754	762	770	778	786	794
3	603	611	619	627	635	643	651	659	667	675	683	691	699	707	715	723	731	739	747	755	763	771	779	787	795
4	604	612	620	628	636	644	652	660	668	676	684	692	700	708	716	724	732	740	748	756	764	772	780	788	796
5	605	613	621	629	637	645	653	661	669	677	685	693	701	709	717	725	733	741	749	757	765	773	781	789	797
6	606	614	622	630	638	646	654	662	670	678	686	694	702	710	718	726	734	742	750	758	766	774	782	790	798
7	607	615	623	631	639	647	655	663	671	679	687	695	703	711	719	727	735	743	751	759	767	775	783	791	799
8	608	616	624	632	640	648	656	664	672	680	688	696	704	712	720	728	736	744	752	760	768	776	784	792	800

ADAM CS with 50-pin Telco back panel:

Determine the address setting from NOTE:. To use the table, locate the intercom port number to which the KP-32 will be connected. Then, read across to the *Address* column to find the Address number. Set the KP-32 Address switch to this number.

NOTE: Settings 0, and 9 through F are not used.

Address Setting for ADAM

Each Audio I/O card contains 1 group of 8 intercom ports. Determine the address setting from

NOTE: To use the table, locate the intercom port number to which the KP-32 will be connected. Then, read across to the *Address* column to find the Address number. Set the KP-32 Address switch to this number. Note: settings 0, and 9 through F are not used.

Connections

EXP AND LCP Connectors

Connect from the Exp. connector on the back of the KP-32 to the Expansion 1 connector of an optional EKP-32 Expansion Panel. Use the interconnect cable supplied with the Expansion Panel. The Expansion 2 connector on the Expansion Panel can connect to a second Expansion Panel, but no more than 64 intercom keys can be operated per intercom port.

Each LCP-32/16 adjusts the listen levels for 16 keypanel keys, and you can connect as many LCP-32 panels as required to adjust all keys on the KP-32 and on an optional EKP-32 Expansion Panel. An interconnect cable is supplied with each LCP-32. Connect the first LCP-32 to the LCP connector on the KP-32. Connect the second LCP-32 to the first LCP-32, and so forth.

NOTE: When arranging LCP-32 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. Cable wiring diagrams are shown in Figure 7 and Figure 8.

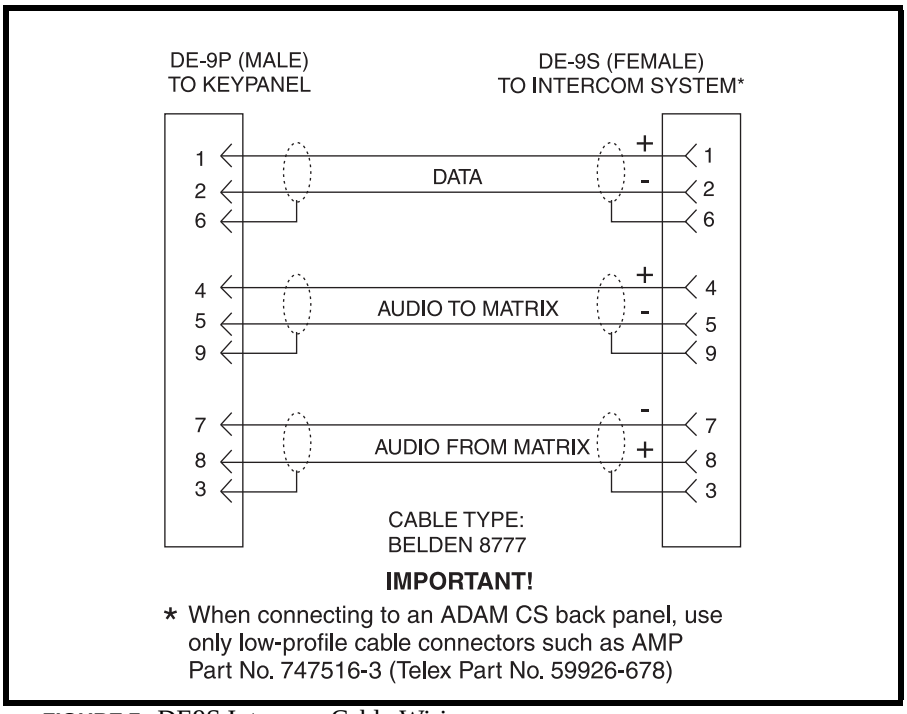


FIGURE 7. DE9S Intercom Cable Wiring

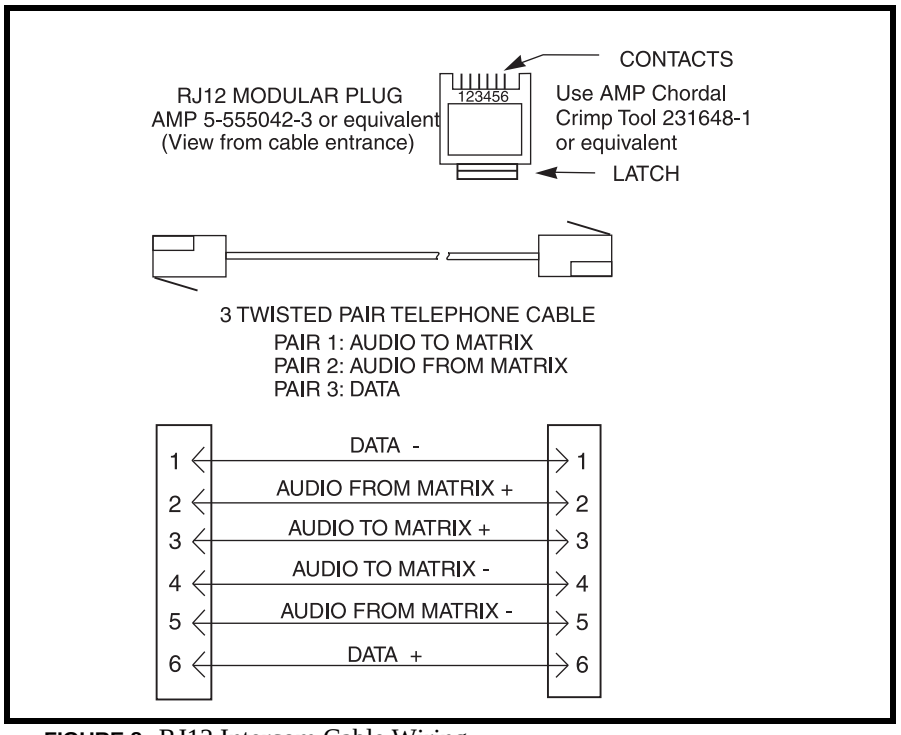


FIGURE 8. RJ12 Intercom Cable Wiring

Power Supply Connector

Align and insert the external power supply connector. Tighten the locking ring. Connect a power cord to the power supply and to an AC power source. The power supply accepts 100-240 VAC, 50/60 Hz.

At power-up, the alphanumeric displays will first show asterisks (****). After several seconds to a minute the intercom key assignments will display.

NOTE: If the keypanel cannot establish communication with the intercom system, all alphanumeric displays will continue to show asterisks. Check the keypanel to matrix cable connection if this occurs. If the keypanel loses communications with the intercom, it will not revert to ****'s for 30 seconds. Hence, if there is a short disruption in the data communications, the panel will not show ****'s at all (although the panel my briefly display ----'s).

Headset Connector

A stereo 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. Turn the pot clockwise to increase gain and counter-clockwise 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 counter-clockwise to decrease gain. The limits are ±20 dB from nominal.

CHAPTER 3

Basic Operation

Screen Saver Operation

If the KP-32 is set for screen saver operation, the alphanumeric display automatically shuts off after several minutes of inactivity. The display reactivates on incoming call or when the keypanel operator actuates any control. DIP switch 3 enables/disables screen saver operation.

NOTE: You can override the normal timeout period for screen saver operation and immediately place the keypanel in screen saver mode. See “Service Menu, Disply Dim” on page 40.

Selecting Headset or Speaker

Tap the **Headset/Vol. Sel.** key upward. The *Vol. Sel.* display alternates between Hdst and Spkr with each key tap. The Headset LED lights when the headset is selected and is off when the speaker is selected.

NOTE: Future versions of AZedit will be able to override the Headset or Speaker setting.

Listen Volume Adjustments

By default, the **Vol**. control adjusts the listen volume for the speaker or headset, whichever appears in the Vol. Sel. display. The level of auxiliary program inputs 1 & 2 (if GPI/O board is present and Aux inputs are enabled) and the level of incoming audio from the intercom matrix can be adjusted. To adjust a level, press the **Vol. Sel.** button until the desired source appears in the *Vol. Sel.* display (Aux1, Aux2, or Icom). Then, 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 Volume” on page 45.

NOTE: You can save the volume adjustments to be the power-up defaults using “Service Menu, Save Cfg” on page 47.

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.
Flashing Alphanumeric Display:	This means the key is activated to talk to an IFB, ISO, or TIF.

NOTE: The flashing alphanumeric display for TIF keys, remote IFB keys, and remote ISO keys can be disabled by selecting the *Don't generate tallies for TIF and trunk use* check box in AZedit (*Options menu|Intercom Configuration|Options tab*). This will cause a first birthday.

Talk LED Indications

The talk LED is the lower LED for each key. The talk LED indications are as follows:

*Continuous Green**

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

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

NOTE: The red 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. Select the *Don't generate tallies for TIF and trunk use* check box. Be sure to send the change to the intercom system. This will also disable the flashing alpha display when talking to remote IFBs or ISOs as previously described. This will cause a first birthday.

Flashing Red Talk LED & Flashing Display Alternating Pattern of Alpha & (-**-) (Busy)

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.

NOTE: Flashing red is also the intended indication when attempting to talk to a remote IFB while someone else with a higher trunk IFB priority is already talking. However, this will require ADAM MC version later than 9.9.x and Trunk MC version later than 7.x.x. Regardless of the indication provided, you will not be heard at the remote location if your keypanel has the lower trunk IFB priority. IFB trunk priorities are set in AZedit. (Click the KP button on the AZedit toolbar to access Keypanels / Ports setup, then click the *Edit* button, then click the Advanced tab. Enter the desired IFB priority in the fields provided. Be sure to send the change to the intercom system.)

Flashing Green Talk LED & Display Alpha (on time equal to off time)*

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-32 back panel. See “Option DIP Switch Settings” on page 5 for further information.

Winking Green Talk LED (on time less than off time)*

Indicates that a key is ready to talk (key is on), but requires external footswitch activation to talk.

Listen LED Indication

The listen LED is the upper LED for each key. The listen LED is green when listen is on.

Intercom Key Operation

Basic Intercom Key Operation

The up position of an intercom key activates listen (if assigned). The down position activates talk (if assigned). If there is no talk assignment for an intercom key, the talk position of the key will not activate. If there is no listen assignment, the listen position 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 a key**; it will turn on and remain on. Tap the key again to turn it off when finished.

NOTE: Latching may be turned off for the entire keypanel by setting DIP switch 1 on the KP-32 back panel to the Closed position. Latching may be disabled for individual keys on a keypanel using AZedit: Click the KP button on 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 D check boxes 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.

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.

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.

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 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, placing the key in the talk position will activate the KP-32 dialing menu. See “Telephone Operation” on page 17, for further information.

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, then select the intercom port where the TIF is connected. Click the Edit button, then click the Advanced tab. Place a check next to Port is TIF. Remember to send the change to the intercom system.)

Muting the Microphone

> Tap the **MUTE** key to turn microphone muting ON or OFF.
> *The Vol. Sel. display alternates between Hdst and Mute (or between Spkr and Mute) while the microphone is muted.*

NOTE: While muting is on, you cannot be heard on the intercom, or 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 won't be a key assigned to talk back to that caller. In this case, the caller's name will appear in the *Call waiting* window. Press down and hold the **Call waiting** key to talk back.

To clear a name from the *Call waiting* window, tap *UP* on the **Call waiting** key.

If a second call is received in the *Call waiting* window while a caller name is already displayed, the Call waiting LED will flash red. To answer the second call, tap up to clear the first name, then hold the key down to talk to the second caller.

NOTE: By default, only the names of callers who are not currently assigned to intercom keys will appear in the *Call waiting* window. Alternatively, you can force all caller names to display in the *Call waiting* window. This is controlled either by DIP switch 2 on the ADAM Master Controller card or by the AZedit check box titled *Always Stack Callers In Call Waiting Window.* (AZedit Options menu, Intercom Configuration, Options tab.

NOTE: The setting in AZedit overrides the DIP switch 2 setting on the Master Controller card.) If your intercom system has mostly keypanels with alphanumeric displays, we recommend that you do not stack all callers in the *Call waiting* window.

CHAPTER 4

Telephone Operation

NOTE: Telephone operations require an optional TIF Telephone Interface. Also, you must first assign a talk/listen key on the keypanel with a TIF assignment. We recommend a talk+auto listen assignment.

Receiving A Phone Call

When there is an incoming telephone call, the talk LED will flash red next to the KP-32 key that is assigned to the TIF. Activate the key to answer the call.

Alternatively, there is an audible indication generated by the TIF unit for incoming calls. For information on TIF configuration, see the *TIF User Manual,* which can be found at www.rtsintercoms.com.

NOTE: The red flash for incoming TIF call is the default operation. Alternatively, a continuous-red 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*|*Intercom Configuration*|*Options*). Note, this check box also affects other tally indications. For further information, see the AZedit User Manual.

Dialing And Hanging Up Using Kp9x Keypad Sequences

KP9X Keypad Hang-up Sequence

1. Turn **OFF** the TIF talk key.
   Tap down to toggle talk off. The talk LED should be off.
2. On the keypad, tap **PHONE CLR**.
3. Momentarily turn the TIF talk key **ON**, then **OFF**.
   The TIF key talk and listen indicators will turn off and the TIF OFF LED will activate.

   NOTE: You can use the hang up sequence to hang up the TIF even if you did not place or answer the call.

KP9X Manual dial sequence

1. Activate the **TIF listen key**.
   Tap up to toggle listen ON. The listen LED should be ON. Make sure the TIF talk key is OFF (Talk LED off).
2. On the keypad, tap **CLR PHONE PGM**.
3. Activate the **TIF talk key**.
   The talk LED turns green, the ON LED at the TIF activates, and you should hear dial tone at the KP-32.
4. Dial the **telephone number**.
   Digits scroll in the display above the TIF key. When the far end answers, you can dial additional digits (to access a mail system or automated response system, etc.).
5. When finished dialing, momentarily turn **OFF** the TIF talk key to end dialing mode (talk LED turns red).
6. Turn the TIF talk key back **ON** for conversation.

To **end the call**, do the following

1. Turn the TIF talk key **OFF**.
2. Tap **PHONE CLR**.
3. Tap the **TIF talk key**.
   The TIF key talk and listen indicators will turn off and the TIF OFF LED will activate. The TIF is now ready for another call.

KP9X Redial Sequence

NOTE: The last dialed phone number is always stored at the TIF and over-writes any previously dialed phone number. If several people have access to the TIF, redial may not produce the results that you expect!

1. Tap the **PHONE** key to activate dialing mode.
2. Tap **up** on the TIF key to activate listen.
3. Tap **CLR 0 0**.
   The last phone number will redial.
4. After the number has dialed, click the **PHONE** key to end dialing mode.
   If the far end answers, tap down on the TIF key to activate talk.
5. Use the **KP9X hang-up sequence** when finished with the call.

KP9X Autodial Sequences

NOTE: Unlike the autodial operations using the KP-32 menu system, which store telephone numbers locally within the KP-32, the KP9X autodial operations work with telephone numbers that are stored at the TIF. The advantage to saving at the TIF is that many users can access a common set of stored telephone numbers. A disadvantage is that users can easily over-write important telephone numbers. Also, telephone numbers at the TIF are stored in volatile memory and will be lost if the TIF loses power.

Storing an Autodial Number in the TIF-951

1. Tap the **PHONE** key.
2. Tap the **TIF talk key** to latch it ON.
3. Dial the **phone number** you want to store.
   The entire phone number sequence can have up to 30 digits.

   NOTE: To insert one or more pauses anywhere in the dialing sequence, enter **CLR CLR 9 9** for each pause. A pause may be required, for example, if you need to enter a digit to get an outside line and your phone system requires a pause before continuing to dial. If you are using credit card dialing, several pauses may also be required between the phone number and your personal access code.
4. After dialing the telephone number, click **CLR PGM**, then **enter a two-digit number** (01, 02, etc. up to 32) you will use as the autodial number.

5. After storing the autodial number, **hang up** using the KP9X hang-up sequence.

Storing an Autodial Number in the KP-32

To store an autodial number in the KP-32, do the following:

1. Press **Menu**.
   Display appears in the call waiting window.
2. Press ↓ ↓ to scroll to Key Option.
3. Press **PGM**.
   Auto Dial appears in the call waiting window.
4. Press **PGM**.
   Phone#? appears in the call waiting window.
5. Dial the **phone number**, including the area code, and any additional dialing procedures.
6. Press **FWD**.
7. Press ↓ ↓ to scroll to the Auto Dial position to which you want to save the phone number (1 through 10).
8. Press **PGM**.
   #X saved appears (where X represents the auto dial position)
9. Run **Service, Save Cfg**. to save the auto dial number.

Dialing an Autodial Number

1. Tap the **PHONE** key to activate dialing mode.
2. Tap **down** on the TIF talk key to latch it in the on position.
3. Tap **CLR** followed by the autodial number (01, 02, etc.).
4. When finished dialing, click the **PHONE** key again to exit dialing mode.
5. **Hang up** using the KP9X hang-up sequence.

Dialing And Hanging Up Using The Kp-32 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. (In AZedit, click the KP button to access the Keypanels/Ports screen, then select the port where the TIF is connected, then click the Edit button, then click the Advanced tab. Place a check mark next to Port is TIF. Remember to send this change to the intercom system.)

Manual Dialing

1. Turn on the **TIF talk key**.
   Manual Dial displays in the Call waiting window.
2. Tap the **PGM** key.
   Dial#? displays, and the dial tone should be audible in your speaker or headset.

   NOTE: To hang up at any time after this point: tap the **BACK** key. Hang Up will display, then tap **PGM**.

   NOTE: While using the phone, any incoming intercom calls to the *Call waiting* window will go into the call waiting stack. The caller names will not be displayed, but the *Call waiting* LED will flash red. You may either hang up the phone and answer the intercom call, or continue with the phone call and answer the intercom call afterward.
3. Dial the **phone number**.
   Digits appear in the Call waiting window as you dial. Dialing tones are audible in the speaker or headset.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.).
4. If there is no answer, or to hang up when finished talking, tap the **BACK** key.
   Hang Up displays.
5. Tap **PGM** to hang up.

   NOTE: Occasionally, you may receive intercom caller names in 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 won't be available. Instead of trying to reenter the menu system, use the “KP9X Keypad Hang-up Sequence” on page 17.

Redial

1. Turn **ON** the TIF talk key.
   Manual Dial displays in the Call waiting window.
2. Tap the ↓ ↓ key until Redial displays.
3. Tap **PGM**.
   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.).
4. If there is no answer, or to hang up when finished talking, tap **PGM** to hang up.

   NOTE: Occasionally, you may receive an intercom caller name in 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 won't be available. Instead of trying to reenter the menu system, use the “KP9X Keypad Hang-up Sequence” on page 17.

Autodial

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

1. Turn **ON** the TIF talk key.
   Manual Dial displays in the Call waiting window.
2. Tap the ↓ ↓ key until Auto Dial displays.
   The Autodial menu only displays when a number has been programmed into the Autodial Key Option.
3. Tap **PGM**.
4. Tap ↓ ↓ to select the desired autodial number, then tap **PGM**.
   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.).

5. If there is no answer, or to hang up when finished talking, tap **PGM** to hang up.

NOTE: Occasionally, you may receive an intercom caller name in 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 won't be available. Instead of trying to reenter the menu system, use the “KP9X Keypad Hang-up Sequence” on page 17.

CHAPTER 5

KP9X Series Keypad Programming

NOTE: A summary of the keypad programming sequences is located at the back of the manual for quick reference.

Keypad Programming, Display Requests

Display requests let you view information about the keypanel configuration. You can display information by two methods: either by entering sequences on the programming keypad, or by scrolling the names of display requests in the *Call waiting* window and then selecting the desired display request. The scrolling method also gives you access to additional features that are not available with the keypad sequences. The following paragraphs discuss these two methods.

Display Requests Using Keypad Sequences

All display request sequences start with **FUNC DISPLAY**.

Display Panel ID

FUNC DISPLAY 1

This sequence displays the calculated port number. The calculation is based on the data group that the keypanel is connected to, combined with the Address switch setting on the back of the keypanel. Note that if the Address switch is incorrectly set, the wrong Panel ID will display.

NOTE: For further information about port address calculation, see “Port” on page 66 in the Glossary.

Display Level 2 Talk Key Assignments

FUNC DISPLAY 2

This sequence displays all level 2 talk key assignments for about 10 seconds. *Lev2* displays in the *Call waiting* window.

Display Listen Key Assignments

FUNC DISPLAY 3

This sequence displays all listen key assignments for about 10 seconds. *Lstn* displays in the *Call waiting* window.

Display Setup Page Assignments

FUNC DISPLAY E-PNL

Currently, there are four setup pages available for each keypanel. Each setup page defines a set of 16 talk and listen key assignments. Most RTS keypanels have a maximum of 16 keys, so one setup page is typically assigned to the main keypanel, and is referred to as the “Main” setup page. Additional setup pages are assigned to any connected expansion panels, and are referred to as Expansion 1, Expansion 2, etc.). Since the KP-32 requires 2 setup pages, it uses the main page assignments and also one expansion page (). The EKP-32 uses two additional expansion pages.

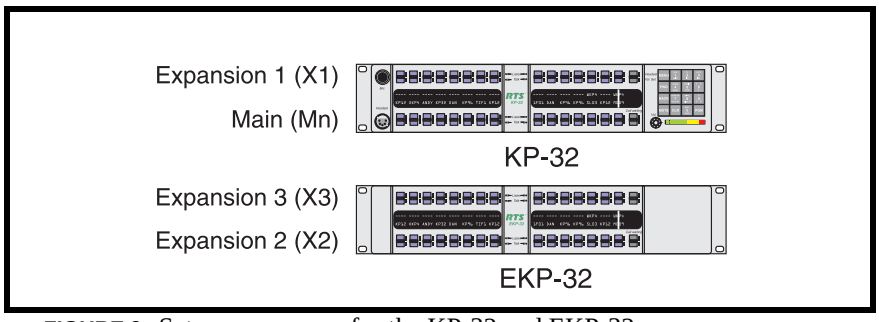


FIGURE 9. Setup page usage for the KP-32 and EKP-32

When you enter the sequence **FUNC DISPLAY E-PNL**, the *Call waiting* window displays Mn-1 or Mn-2, etc. This indicates which setup page is currently being used at the “Main” position. After a few moments X1-1, or X1-2, etc displays. This indicates which setup page is currently being used by expansion 1. Next, if there is an expansion panel connected, X2-1, or X2-2, etc displays, followed by X3-1 or X3-2. etc to indicate the setup page usage for expansion 2 and expansion 3.

NOTE: To change the setup page assignments, see “Keypad Programming, Assigning Setup Pages” on page 26.

Test Keys and Displays

FUNC DISPLAY 0

When you enter this sequence, all alpha-numeric displays show a % symbol. Pressing down on any key (except the **Headset / Vol. Sel**. 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.

If latching is enabled, tapping up or down on any intercom key, or the *Call waiting* key, will cause the corresponding red LED to light. This verifies latching operation and also that the each red LED is OK.

Holding any key in the up or down position will cause the corresponding green LED to light. This verifies operation of the green LEDs.

NOTE: This sequence is similar to “Service Menu, Test Panel” on page 48, except that the service menu test also lets you check the operation of the keypad buttons.

Tone Generator Activation (FUNC-DISPLAY-7)

FUNC DISPLAY 7

This sequence activates the keypanel's internal tone generator. You can use the tone generator to check the audio send and receive paths to and from the matrix. For example, you can assign a talk key on the keypanel to talk to itself. When you activate the talk key, you should be able to hear the tone from the keypanel speaker or from a headset.

To turn off the tone generator, press the **CLR** key.

NOTE: The microphone input is turned off when the tone generator is active.

Display Requests Using Scrolling

The display requests described previously can also be accessed using scrolling. Scrolling also offers several additional features. To use scrolling, tap **FUNC DISPLAY** followed by ↓↓ or ↑↑ to scroll through the list of display requests. The display request names will appear in the *Call waiting* window as follows:

ID PGM: Displays the calculated port number. **CLR** to quit.

Lev 2 PGM: Displays level 2 talk assignments. **CLR** to quit.

Lstn PGM: Displays listen assignments. **CLR** to quit.

Name PGM: Displays crosspoints closed to this keypanel. **CLR** to quit.

Type PGM: Displays level 1 talk key assignment types. **CLR** to quit.

Mtx PGM: Displays matrix ID for all level 1 talk assignments. **CLR** to quit.

Tone PGM: Turns on tone generator. **CLR** to quit and turn off tone generator.

Epnl PGM: Displays setup page assignments. Mn=KP-32 bottom row keys, X1=KP-32 top row keys, X2=EKP-32 bottom row keys, X3=EKP-32 top row keys.

Gain PGM: After selecting this item, tap up on any listen key with a point-to-point or party line assignment. The current listen gain from this keypanel to the intercom port or party line displays in the *Call waiting* window. Tap ↓↓ or ↑↑ to change the gain. **CLR** to quit. Use VRst PGM to reset all gains.

VRst PGM: Reset all port / party line gains to 0dB.

Asgn PGM: Displays a list of key assignments that are set up for this keypanel, but not currently accessible. This includes talk level 1 assignments on setup pages that are not currently assigned, and any key assignment that might be obscured by the call-waiting window. You can scroll through the list using the ↓↓/↑↑ keys. Then use the **Call waiting** key to talk to any of the listed destinations.

Test PGM: Test keys and displays. **CLR** to quit.

Vxxx: Display keypanel firmware version. **CLR** to quit.

Keypad Programming, Assigning Setup Pages

1. Tap the **E-PNL** key.
2. Select **one** of the four setup pages: tap **1**, or **2**, etc.
3. Tap the **PGM** key.
4. Tap any **key** in the row of keys where you want to assign the setup page.

NOTE: The same setup page cannot be assigned in more than one place. If a setup page is already assigned somewhere else, you must clear or change that assignment first. With the exception of the main row assignment, you can clear any page assignment from a row of keys by entering **E-PNL 0 PGM**, then pressing any key in the row.

- If you cannot change the setup page assignments for a particular keypanel, this feature may be restricted in AZedit (Keypanels/Ports screen, Edit button, Setup tab, Setup Page Options).
- To display setup page assignments at any time, see “Display Setup Page Assignments” on page 24.

Keypad Programming, Assigning Intercom Keys

General

There are three methods to assign intercom keys with keypad programming. These methods are summarized below and explained on the following pages.

- Key Assignment using Keypad Numeric Entry: Using this method, you enter the panel number, party line number etc. that you wish to assign to a key. This method requires that you know the number (not the name) of the port, party line etc. that you wish to assign. Since most users do not have access to this information, this method of key assignment is not recommended.
- Key Assignment by Copying an Assignment: Using this method, you can copy an assignment from one key to another. You can also use this method to transfer an incoming call to a talk key and/or listen key.
- Key Assignment using Alpha Scrolling: Using this method, you scroll through lists of alpha names in the *Call waiting* window and select the name of the panel, party line etc. that you want to assign. Then you copy that name to a key. If descriptive names have been assigned (using the intercom system configuration software) alpha scrolling is easiest to use.

Assigning Keys Using Keypad Numeric Entry

NOTE: Each programming step must be completed within 4-5 seconds. Otherwise, the programming sequence will automatically quit.

General Procedure

1. For talk level 2 assignment only: Tap **0 0**. Otherwise, skip this step.
2. Select the **key assignment type**:

NUM Intercom port.

PL Party line.

AUTO Auto function.

FUNC SLIST Special list.

FUNC IFB IFB

FUNC ISO Camera ISO

FUNC RELAY Relay or GPI output.

3. Auto function assignment only: Tap an **additional number** to select the desired auto function:

   1 Auto listen (listen keys only)
   2 Auto follow (listen keys only)
   3 Auto mute (listen keys only)
   4 Auto reciprocal (listen keys only)
   5 All call (talk level 1 only)
   6 DIM (talk level 2 only, for point-to-point key, must enter 00 first)
   7 Auto table (listen only, when talk level 1 is an IFB assignment)

Trunked intercoms only: (Skip when assigning auto functions or local key assignments.)

4. Select an **intercom matrix** (tap **1**, or **2**, etc.).

   NOTE: Intercom system numbers are the numbers that appear in the "Icm" column in TrunkEdit when you select "Names" or "Setup" from the Intercoms menu.

5. (Skip when assigning auto functions.) Tap **one or more number keys** to select the desired port number, party line number, etc
6. If the destination is in the local matrix, enter the **destination number**.

   NOTE: If the destination is in a remote matrix, you must always enter exactly 3 digits for a port number, or exactly 2 digits for anything else. For example, to assign port 1 you must enter **0 0 1**; for party line 1 you must enter **0 1**.

7. Tap **PGM**.
8. Tap **down** on a key to assign talk. Tap **up** to assign listen.

   NOTE:

   - If a key will not accept an assignment, the destination that you are trying to assign may not be scrolling enabled in AZedit. Or, the key that you are trying to assign may be restricted in AZedit.
   - Auto functions are always assigned in the local intercom system, even when used with keys assigned to a remote intercom system. For example, you can program a talk key to talk to a remote party line and then program the listen key using auto-listen on the local intercom. Pressing the talk key automatically activates listening for the remote party line.

Programming Key Assignments Using Copy

There are two ways to copy key assignments: 1) you can copy a call from the *Call waiting* window to a key; or 2) you can copy one key's assignment to another key.

Copying a Call from the Call waiting Window to a Key

1. While the caller's name is displayed in the call waiting window, tap the **COPY CW** key.
2. Tap the **key** where you want to copy to.
   The name of the caller should appear in the display above the key.

   NOTE: If a key will not accept an assignment, the destination that you are trying to assign may not have scrolling enabled in AZedit. Or, the key that you are trying to assign may be restricted in AZedit.

Copying One Key Assignment to Another Key

1. Tap the **FUNC** key.
2. Tap the **EX COPY** key.

3. Press the **talk or listen key** from which you wish to copy.
4. Press the **talk or listen key** to which you wish to copy.
   The name of the key assignment should appear in the display above the key.

   NOTE: If a key will not accept an assignment, the destination that you are trying to assign may not have scrolling enabled in AZedit. Or, the key that you are trying to assign may be restricted in AZedit.

Programming Key Assignments Using Alpha Scrolling

Alpha scrolling lets you scroll through a list of names of ports, party lines etc. in the *Call waiting* window. Once the desired name is displayed in the window, you can copy it to a key. There are four scrolling modes: intercom, type, prefix and single-step. The following example demonstrates their use.

Example: Assign a port to a key using the various scrolling modes.

1. If the port is located in a remote intercom system, tap **FUNC** ↓ ↓ or **FUNC** ↑ ↑ to enter intercom scroll mode and scroll up or down the list of intercoms in the *Call waiting* window. Otherwise, skip to step 2.
2. When the desired intercom system name is displayed, or when making an assignment in the local intercom system, tap **FUNC TYPE** to activate type scroll mode.
3. Use the ↓ ↓ or ↑ ↑ keys to locate the desired type of communication. In this example, you would scroll to "P-P".

Abbreviations for types of communication:

- P-P: Point-to-Point
- PL: Party Line
- IFB: IFB
- SPCL: Special List
- RLY: Relay or GPI output.
- ISO: ISO

4. When the desired type of communication is displayed, press **PGM** to retrieve the requested list.
   Pressing PGM also exits type scroll mode and places the keypanel in single-step scroll mode.In some cases, "WAIT" may display briefly while the requested list is being retrieved. N/A may display if there is no list. In this case, scrolling is disabled in AZedit for all destinations of the selected type. For further information about scroll settings, search for keyword "scroll" in AZedit help.

   NOTE: When the keypanel is in single-step scroll mode, it may take a long time to scroll to the desired name (this is particularly true of point-to-point lists). To speed up the process, you can use prefix scroll mode. Prefix scrolling mode scrolls through a list in alpha-numeric order, but displays only the first occurrence of each two-character prefix. For example, if your intercom system had users CAM1, CAM2, CAM3, DIR1, DIR2; prefix scrolling would display CAM1 followed by DIR1. Once you locate a desired two-character prefix using prefix scroll, you can switch back to single-step scrolling to make your final selection. Tap **PREFIX** to enter prefix scroll mode, then use the ↓ ↓ ↑ ↑ keys to scroll. When you locate a name with the same first two characters as the name you are looking for, tap the **PGM** key to return to single-step scrolling mode.

5. In single-step mode, use the ↓ ↓ ↑ ↑ keys to make your final intercom port selection.

   NOTE: If you cannot locate the destination that you are looking for, it may not have scrolling enabled in AZedit.

6. Copy the **selected port** to a talk or listen key:
7. Tap **COPY**.
8. Tap **down** on an intercom key to assign talk, or tap **up** to assign listen.

Clearing a Key Assignment

There are two ways to clear a key assignment:

Method 1: Clearing the Call Waiting Window and Copying it to a Key

1. Clear the **Call waiting window**, if necessary. Tap up one or more times on the call waiting key.
2. Tap the **COPY CW** key.
3. Tap the **key** you want to clear.
   Tap up to clear listen, down to clear talk.

   NOTE: If a key will not clear, it is probably restricted using the “R” check box in AZedit.

Method 2: Copying a Blank Key Assignment to the key you want to Clear

1. Tap the **FUNC** key.
2. Tap the **EX COPY** key.
3. Tap an **unassigned key**.
4. Tap the **key** that you want to clear.
   Tap up to clear listen, down to clear talk.

   NOTE: If a key will not clear, it is probably restricted using the “R” check box in AZedit.

CHAPTER 6

KP-32 MENU SYSTEM

NOTE: A chart of the menu system is located at the back of the manual for quick reference.

Menu System, Menu Access

1. Clear all **names** from the *call waiting* display (if not clear) by tapping UP one or more times on the *call waiting* key.
2. Tap **MENU** to activate the menu system.
3. Press ↓ ↓ to scroll forward through the list of menus. Press ↑ ↑ to scroll back.
4. Tap **FWD** or **PGM** to enter a menu. Tap **BACK** to exit a menu.
5. Within a menu:
   - Press ↓ ↓ or ↑ ↑ to scroll.
   - Tap **FWD** or **PGM** to select an item.
   - Tap **BACK** to cancel a selection or to go back to the previous menu level.

Menu System, Display Menu

Use this menu to display information about the keypanel configuration.

Display Menu, Asgn 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 talk key.
- 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.

NOTE: For descriptions of the various key assignment types, see “Glossary” on page 63.

Display Menu, Chans 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, use the ↓↓ or ↑↑ keys to scroll through the list of names. You can then press the *Call waiting* key to ask the person at the other end to turn off their talk key.

Display Menu, Key Groups

Use the ↓↓ or ↑↑ key to select Group 1, Group 2, etc. Then press **FWD** or **PGM** 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 (Trunked Systems Only)

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 connected 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. Panel ID also displays the port alpha in brackets if the port is not scroll restricted.

Display Menu, Version

Displays the firmware version of the keypanel.

NOTE: For firmware upgrades, contact your intercom system dealer. The KP-32 firmware can be upgraded from AZedit. For more information, see the AZedit user manual.

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, and to assign setup pages.

General Procedure to use the Key Assign Menu

1. Clear the *Call waiting* window if necessary, by tapping upward one or more time on the *Call waiting* key.
2. Tap **Menu**
3. Tap ↓ ↓ to scroll down to the Key Assign menu.
4. Tap **PGM** or **FWD** to enter the menu.

   NOTE: If you do not have a trunking intercom system, skip to step 6.

5. Remote key assignment only (trunking systems only): If your intercom system is configured for trunking, **`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:
   - Press FWD or PGM to access the Matrix list.
   - Press ↓ ↓ or ↑ ↑ to locate the desired matrix.
   - Press FWD or PGM to select a matrix. 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 assignment). This is the list of available point-to-point key assignments.

6. Press ↓ ↓ or ↑ ↑ 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.
UPL Resrc:	Assign a key to activate a UPL resource.

IFSL: Assign a key to activate a IFB special list resource.

Auto Func: Assign an auto function to a key. (If you select this item, skip the rest of this procedure and go to “Key Assign Menu, Auto Func” on page 35.)

Key Gain: Adjust the listen gain for a key that already has 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” on page 36.)

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, Reset Vols” on page 36.)

Setup Page: Change the setup page assignments. (If you select this item, skip the rest of this procedure and go to “Key Assign Menu, Setup Page” on page 36.)

7. Tap **PGM** or **FWD** to select a list.
   In some cases Wait may display while the requested list is uploaded from the intercom system.
8. Press ↓ ↓ or ↑ ↑ to locate the desired assignment.
9. Tap **PGM** or **FWD** to select the assignment.
10. Talk Lvl 1 should now display in the *Call waiting* window. Press ↓ ↓ or ↑ ↑ 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 Lvl 2: Assigns talk level 2.

    NOTE: If you attempt to assign talk level 2 to a key and there is no talk level 1 assignment, your 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.
11. Tap **PGM** or **FWD** to select one of the previously listed items.
    Tap Key should now display.
12. Tap any **available intercom key**.
    Tap down for any kind of talk key assignment. Tap up for a listen-only key assignment.
    - 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 upper-case letters, then will change to lower-case 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 assignment.

Key Assign Menu, Matrix

Matrix appears only for trunked intercom systems. You must select a remote intercom matrix before assigning intercom keys to destinations in that matrix. You do not need to select matrix to assign keys to destinations in your own matrix. You also do not need to select a matrix when assigning an auto function to a key.

Key Assign Menu, Pt-to-Pt

Assigns a key that talks or listens to another intercom port. Note that some pt-to-pt destinations may be non-keypanel devices that cannot activate talk and listen paths. Therefore, if you want full communication, 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. The key will have no effect until members have been assigned to the party line in AZedit. Note that party lines 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 will see *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 key will have no effect until members have been assigned to the special list in AZedit. Note that 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. Then enter check marks in the appropriate Scroll Enable boxes.)

Key Assign Menu, IFSL

By default, all IFSL resources are restricted and you will see *Not Avail* when you attempt to select this item. To see IFSL resources you must check the appropriate Scroll Enable check boxes in AZedit. (In AZedit, *System|IFB Special Lists*. Enter check marks in the appropriate Scroll Enable boxes.)

Key Assign Menu, Auto Func

1. Press **FWD** or **PGM** to select auto functions in the Key Assign menu.
2. Press ↓ ↓ or ↑ ↑ to locate the desired auto function as follows:
    - AutoFollow (AF, for listen keys only)

- Auto Listn (AL, for listen keys only)
- Auto Mute (AM, for listen keys only)
- Auto Recip (AR, for listen keys only)
- All Call (AC, for talk level 1 only)
- Dim (Dim Table function, for talk level 2 on point-to-point keys only)

3. Press **FWD** or **PGM** to select the desired auto function.
   Tap Key displays.
4. Tap an **intercom key** to assign the selected auto function.
   Tap up to assign all auto functions except All Call or DIM. Tap down for All Call or DIM.

NOTE:

- If the assignment is successful, the abbreviation for the auto function will appear in the alphanumeric display for that key. However, if you try to assign an auto function to a key that already has that auto function assigned, the assignment will be ignored. The assignment will also be ignored if scroll enable for auto functions has been disabled in AZedit, or if the key you are trying to assign has been restricted in AZedit.
- You can tap CLR to exit and return to normal operation, or tap BACK to return to the auto function menu and make more assignments.
- Trunked intercom systems: Do not select a matrix before assigning auto functions. All auto functions are assigned using the local matrix menus.
- You do not need to run Save Cfg to store auto function assignments. These are stored in the intercom system.
- For descriptions of the auto functions, see the “Glossary” on page 63.

Key Assign Menu, Key Gain

Use this menu item to adjust the listen gains for point-to-point or party line keys. The key that you want to adjust must already have a point-to-point or party line listen assignment.

1. Press **FWD** or **PGM** to select Key Gain in the Key Assign menu.
   Tap Key displays.
2. Tap **up on the key** you want to adjust.
3. The current listen level displays in the *Call waiting* window.
4. Press ↓↓ or ↑↑ to change the listen level.
   *You may tap additional point-to-point or party line keys to change their listen levels. Or, tap **CLR** to quit.*

   NOTE: You do not need to run Save Cfg to store key gain changes. These are stored in the intercom system.

Key Assign Menu, Reset Vols

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

1. Press **FWD** or **PGM** to select Reset Vols in the Key Assign menu.
   Done displays. All key gains are now reset to the default level.
2. Tap **CLR** to quit.

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

Key Assign Menu, Setup Page

Use this menu item to change the setup page assignments on the KP-32 or EKP-32. One setup page is used for the top row of keys, and another setup page is used for the bottom row.

1. Press **FWD** or **PGM** to select Setup Page in the Key Assign menu.
2. Page 1 displays.
3. Press ↓ ↓ or ↑ ↑ to select any of the following:

   Page 1: Assign setup page 1 to the KP-32 or EKP-32.

   Page 2: Assign setup page 2 to the KP-32 or EKP-32.

   Page 3: Assign setup page 3 to the KP-32 or EKP-32.

   Page 4: Assign setup page 4 to the KP-32 or EKP-32.

   Clear Page: Clear a page assignment from the KP-32 or EKP-32.
4. Tap **PGM**.
   Tap Key displays.
5. Tap any **key in the row** where you want to assign the setup page.
   The key assignments for that page should appear in the displays.
6. Press ↓ ↓ or ↑ ↑ to select and assign another setup page. Or, tap **CLR** to exit.

   NOTE: You do not need to run Save Cfg to store changes to setup pages. These are stored in the intercom system.

Key Option Menu

Key Option Menu, Auto Dial

Use this menu item to store auto dial numbers.

1. Select **Auto Dial**.
2. Tap **PGM**.
   Phone#? displays.
3. Tap the **number keys**.
   The numbers will scroll in the Call waiting window.

   NOTE: To insert a pause at any time, tap **CLR 9 9**. For example, you may have to insert a pause after dialing 9 to get an outside line.
4. Tap **FWD** (Do not tap **PGM**!).
   A-Dial #1 displays (store auto dial number 1).

   NOTE: To store a different auto dial number, press ↓ ↓ or ↑ ↑ to select the desired auto dial number.
5. Tap **PGM**.
   XX# displays (where XX = the auto dial number you selected).
6. Run **Service Menu, Save Cfg**, to store auto dial numbers.

Key Option Menu, 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 **PGM**.
2. Tap any **keys** where you want to add a chime tone.
   Both LEDs will light red for the selected keys.
3. Tap **CLR** 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.

Key Option Menu, Key Groups

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 4 key groups can be set up.

1. Select **Key Groups**, then tap **PGM**.
   Group 1 displays. To select a different group, press ↓↓ or ↑↑.
2. Tap **PGM**.
   Tap Master displays. The master key is the key that you will press to activate the group.
3. Tap the **intercom key** you want to use as the master.
   Both LEDs next to the key will light red. After you select the master key, Tap Slaves displays. Slave keys are the keys that will activate along with the master key.
4. Tap **one or more keys** to select them as slave keys.
   Both LEDs will light green for each key that is selected. You can tap a key again to remove it from the key group.
5. Tap **CLR** when finished.
   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 key.
6. 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**, and then tap **PGM**.
   Group 1 displays. To select a different group, press ↓↓ or ↑↑.
2. Tap **PGM**.
   Tap Master displays.
3. Tap the **current master key**.
   The LEDs will remain lit red. After you tap the master key, Tap Slaves displays.
4. Tap **all the keys** where the LEDs are lit green.
   This will turn the LEDs off.
5. Tap **CLR** when finished.
   The key group is now cleared.
6. Run **Service Menu, Save Cfg**, to store the cleared key group setting.

Key Option Menu, Solo

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

1. Select **Solo**, and then tap **PGM**.
   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 made a mistake and want to remove the assignment.

3. Tap **CLR** when finished.
   Activating the solo key should now cause all other activated keys to turn off. The keys will turn back on again 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 the key assignment.

To **remove the solo key option**, do the following:

1. Select Solo, then tap **PGM**.
   The LEDs for the solo key will be lit red.
2. Tap the **solo key** to turn off the LEDs.
3. Tap **CLR** to exit.
   The solo key is now cleared.
4. Run *Service Menu, Save Cfg*, to save the change.

RVON Conn. Menu

The **RVON Conn.** menu is used to select an RVON connection to use with the keypanel.

NOTE: This menu item only appears when you have the RVON option installed and there are RVON devices available.

To **select an RVON connection**, do the following:

1. Select **RVON Conn**.
2. Tap **PGM**.
   A list of available RVON connections appears in a scrollable list.
3. Using the ↓ ↓ or ↑ ↑, scroll to the **connection** you want to use.
4. Tap **PGM**
5. Tap **CLR** to exit when finished.
   The RVON Connection is set.
6. Run **Service Menu, Save Cfg**, to store the RVON Conn. setting.

Service Menu

Service Menu, Aux Inputs (GPI Option Only)

Enables or disables an AUX input audio path to any outputs.

1. Select Aux Inputs, then tap **PGM**.
   Aux In 1 displays. To select Aux In 1 or 2, press ↓ ↓.
2. Tap **PGM**.
   ◆*Enabled displays.To select enabled or disabled, press ↓ ↓. The arrow indicates that the input is enabled.*
3. Tap **PGM**
4. Tap **CLR** to exit when finished.
   The new Aux In assignment is now set.
5. Run **Service Menu, Save Cfg**, to store the Aux Inputs setting.

To assign the destination of the Aux Inputs, see “Mixing” on page 42.

Service Menu, Intercom

The **Intercom** menu item is only available in trunked systems. This menu item allows you to look at available ports in other intercom systems that are trunked together.

Service Menu, Baud Rate

1. Select **Baud Rate**, then tap **PGM**.
   Auto Baud displays. To select the baud rate, press ↓ ↓. The choices are Auto Baud, 9600 Baud, or 76.8 Baud.
2. Tap **PGM** to select the baud rate.
3. Tap **CLR** to exit when finished.
   The new baud rate is now set.
4. Run **Service Menu, Save Cfg** to store the Baud Rate setting.

Service Menu, Caller Vol.

Caller Vol. allows you to enable or disable adjustments made to the caller volume.

1. Select **Caller Vol.**
   ◆*Disable Adj appears. To select Disable Adj or Enable Adj use ↓ ↓.*
2. Tap **PGM**.
   ◆*Enable Adj or ◆Disable Adj appears.*
3. Tap **CLR** to exit.
4. Run **Service Menu, Save Cfg**, to store the Caller Vol 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 **PGM**.
   Speaker displays. To select headset, press ↓ ↓.
2. Tap **PGM**.
   By default, -8dB displays for speaker, and 0dB displays for headset. This is the default amount of dimming.
3. Press ↓ ↓ to increase the amount of dimming. Press ↑ ↑ to decrease it.
4. Tap **CLR** to exit when finished.
   The new dimming level is now set.
5. Run **Service Menu, Save Cfg**, to store the Dim setting.

Service Menu, Disply Dim

This item adjusts the alphanumeric display settings.

1. Select **Display Dim**, then tap **PGM**.
   Disply Off displays.
2. Press ↓ ↓ or ↑ ↑ to select any of the following:

   Disply OFF:Turns off the display. Any incoming call, or control movement, will reactivate the display.

   Dim: Possibly a better choice when the ambient light level is low. Uses less power and increases display life.

   Norm: Default medium brightness setting.

   Minimum: Good when ambient light is bright.

   Maximum:Recommended only for very bright ambient light, such as outdoors. Uses maximum power and decreases display life.

NOTE: For settings which change the operating brightness, run Service Menu, Save Cfg, page 44, to store the setting.

Service Menu, DSP Func (GPI Option Only)

This item accesses the digital signal processing features.

1. Select **DSP Func**, then tap **PGM**.
   Filtering displays. Press ↓ ↓ or ↑ ↑.to display any of the following items:

   Filtering

   Gating

   Metering

   Mixing
2. Refer to one of the following paragraphs for further information on the item that you select.

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 **PGM**.
   Microphone displays. Press ↓ ↓ or ↑ ↑ to display any of the following items:

   Microphone

   Matrix

   Aux 1

   Aux 2
2. Tap **PGM**.
   ◆*None displays to indicate that no filtering is selected.*
3. Press ↓ ↓.
   Notch displays.
4. Press **PGM**.
   ◆*Notch displays. The arrow indicates that the notch filter is now selected.*
5. Tap **CLR** 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 **PGM**.
   Microphone displays. Press ↓ ↓ or ↑ ↑ to display any of the following items:

   Microphone

   Matrix

   Aux 1

Aux 2

2. Tap **PGM**.
   Gating displays.
3. Tap **PGM**.
   ◆*Gating displays. The arrow indicates that gating is now selected.*
4. Tap **CLR** 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. Tap **PGM**.
   Microphone displays. Press ↓↓ or ↑↑ to display any of the following items:

   Microphone

   Matrix

   Aux 1

   Aux 2
2. Tap **PGM**.
   Meter: Mic displays. Press ↓↓ or ↑↑ to display any of the following items:

   Meter: Mic

   Meter: Mtx

   Meter: Aux 1

   Meter: Aux 2
3. Tap **PGM**.
   The Vol. bar graph is now monitoring the selected audio source.
4. Tap **CLR** to exit metering, or allow the metering function to timeout after about 1 minute.

Mixing

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

1. Tap **PGM**.
   To Matrix displays. Press ↓↓ or ↑↑ to display any of the following items:

   To Matrix

   Speaker

   Left Hdst

   Right Hdst
2. Tap **PGM**.
   ◆*Mic or Mic displays. If an arrow displays, this indicates that the mic signal is currently being routed to the destination that you selected in step 2. To toggle the selection, press **PGM**. You can also press ↓↓ or ↑↑ to display and toggle any of the following items:*

Mic

Matrix

Aux 1

Aux 2

3. Tap **CLR** to exit when you are finished changing the mixing selections.
4. Run **Service Menu, Save Cfg**, to store any mixing changes.

Service Menu, Hdst Sel

This item lets you select either the front panel headset jack or the headset connector on the optional rear connector module. By default, the front panel jack is selected.

1. Select **Hdst Sel**, then tap **PGM**.
   ◆*Default displays. The arrow indicates the default front panel jack is selected.*
2. Press ↓↓.
   External displays.
3. Tap **PGM**.
   ◆*External displays. This indicates that the rear panel jack is now selected.*
4. Tap **CLR** to exit.
5. Run **Service Menu, Save Cfg**, to store the new setting.

Service Menu, LCP-32 (GPI Option Only)

By default, each LCP-32 that you connect to the KP-32 takes control of level adjustment for the first available group of 16 physical keys that it finds. The first LCP-32 adjusts keys 1-16, which corresponds to the bottom row of keys on the KP-32; the second LCP-32 adjusts keys 17-32, and so forth (). If you do not want to use an LCP-32 with certain keys, you must program the KP-32 to skip those keys.

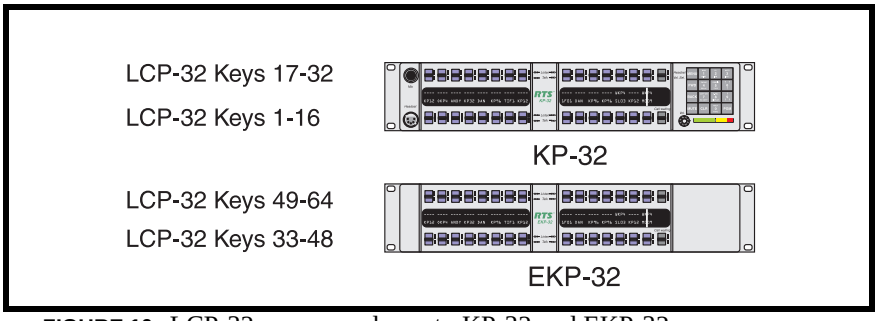


FIGURE 10. LCP-32 correspondence to KP-32 and EKP-32

For example, you may not want to use LCP-32s with the KP-32 but do want to use them with an EKP-32. In this case, you must turn off LCP usage for keys 1-32 as follows:

1. Select LCP-32, then tap **PGM**.
   1-16: Yes displays. This indicates that the first connected LCP-32 will attach to keys 1-16.
2. Tap **PGM**.
   1-16: Skip displays. This indicates that the first connected LCP-32 will skip keys 1-16 and will attach to the next available row of keys.
3. Tap ↓↓ to display 17-32: Yes.
4. Tap **PGM**.
   17-32 displays. This indicates that the first connected LCP-32 will skip keys 17-32 and will attach to the next available row of keys.

5. Tap **CLR** to exit.
6. Run **Service Menu, Save Cfg**, to store the new LCP-32 settings.

Service Menu, Local GPIO (GPI Option Only)

If your KP-32 has an optional Connector Module, you can 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 **PGM**.
   Input displays.
2. Tap **PGM**.
   GPI Inp #1 displays.
3. Press ↓ ↓ or ↑ ↑ to display a different GPI input.
4. Tap **PGM** to select a GPI input.
5. Press ↓ ↓ to select Talk Key.
6. Tap **PGM**.
   Tap Key displays.
7. Tap the **intercom key** you want to assign.
   This is the key that will activate when the GPI input activates.
8. Tap **CLR** to exit, or **BACK** 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 **PGM**.
   Input displays.
2. Tap **PGM**.
   GPI Inp #1 displays.
3. Press ↓ ↓ or ↑ ↑ to display a different GPI input.
4. Tap **PGM** to select a GPI input.
5. Press ↓ ↓ to select Group.
6. Tap **PGM**.
   By default, Group 1 displays. Press ↓ ↓ or ↑ ↑ to display a different group.
7. Tap **PGM**.
   *An arrow will appear to indicate that the group is now selected. For example, if you press **PGM** to select Group 1, ◆Group 1 displays.*
8. Tap **CLR** to exit, or **BACK** 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 **PGM**.
2. Press ↓ ↓ or ↑ ↑ if necessary to select Input.
3. Tap **PGM**.
4. Press ↓ ↓ or ↑ ↑ to display the GPI input that you want to remove.
5. Tap **PGM**.
6. Press ↓ ↓ or to select Not Asgnd.

7. Tap **PGM**.
   ◆ *Not Asgnd displays. The arrow indicates that Not Assigned is the new selection.*
8. Tap **CLR** to exit.
9. Run **Service Menu, Save Cfg**, to store local GPIO settings.

Adding or Removing a GPI Output Key Assignment

1. Select Local **GPIO**, then tap **PGM**.
   Input displays.
2. Press ↓ ↓ to display Output.
3. Tap **PGM**.
   GPI Out #1 displays.
4. Press ↓ ↓ or ↑ ↑ to display a different GPI output.
5. Tap **PGM** to select a GPI output.
   Tap Key displays. Also, 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 key** to add or remove the GPI output assignment.
7. Tap **CLR** to exit, or **BACK** 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 with out regard to the talk key's state.

1. Select **Matrix Out**, then tap **PGM**.
   ◆*Normal displays.*
2. Press ↓ ↓ to select either Normal or Hot Mic.
3. Tap **PGM**.
4. Tap **CLR** to exit.
5. 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 and Headset Mic. In the Normal (default) setting, audio from the Panel Mic 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. Select **Mic Select**, then tap **PGM**.
   ◆*Normal displays.*
2. Press ↓ ↓ to select either Normal or Hdst Only.
3. Tap **PGM**.
4. Tap **CLR** to exit.
5. 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 panel of the KP-32.

1. Select **Min Volume**, then tap **PGM**.
   ◆*Speaker displays.*
2. Press ↓ ↓ to select either Speaker or Headset.

3. Tap **PGM**
4. Press ↓↓ or ↑↑ to increase or decrease the minimum volume level.
   The range is -24 dB to -60 dB or full Mute.
5. Tap **PGM**.
6. Tap **CLR** to exit.
7. Run **Service Menu, Save Cfg**, to store Min Volume 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 positions on the keypanel or expansion panel.

The KP-32 and EKP-32 use module ID numbers (Mod ID numbers) to define the address of each key and display module. See Figure 11. By default, Mod 1 is always assigned to the right half of the KP-32 and this never changes, since this module has the keypad and is unique. However, the rest of the modules are identical. When replacing any of these modules, you may have to reset the Mod ID number as follows:

1. Select **Mod Assign** and tap **PGM**.
   *Cancel? displays. To exit the procedure without making changes, tap **PGM**.*
2. All of the alphanumeric displays, except Mod 1, will appear as shown in Figure 11. Assign the Mod IDs as shown in the figure. Repeat the procedure for each module.

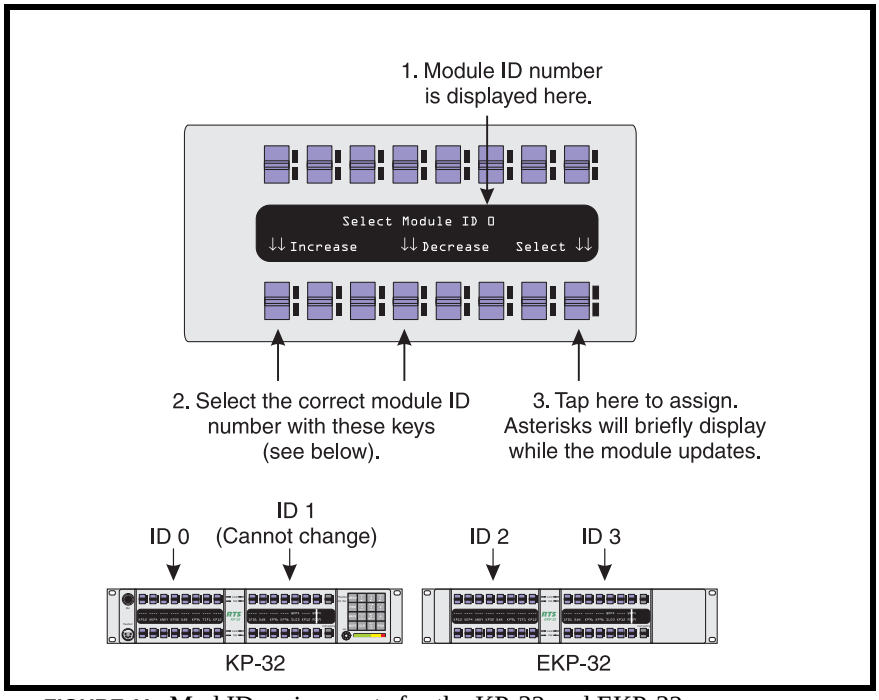


FIGURE 11. Mod ID assignments for the KP-32 and EKP-32

NOTE: You do not need to run Save Cfg after changing Mod assignments.

Service Menu, Output Level

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

1. Select **Outp Level**, then tap **PGM**.
   +8dB displays. ↓↓ decreases the level. ↑↑ increase the level.
2. Tap **PGM**.
3. Tap **CLR** to exit.

4. Run **Service Menu, Save Cfg**, to store the Output Level settings.

Service Menu, Preamp Out (GPI Option Only)

Allows the user to choose how audio is routed to the Preamp Output connector. When Switched is chosen, keypanel audio is routed to the preamp output connector when a talk key is latched. When Hot Mic is chosen, audio is always available at the preamp output connector. When Disabled is chosen, keypanel audio is isolated from the preamp output connector.

1. Select **Preamp Out**, then tap **PGM**.
   ◆*Switched displays. ↑ ↑ toggles between Switched, Hot Mic, and Disabled.*
2. Tap **PGM**.
3. Tap **CLR** to exit.
4. Run **Service Menu, Save Cfg**, to store the Preamp Out settings.

Service Menu, Reset Cfg

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

Service Menu, RVON Setup (RVON Option Only)

RVON Setup is used to configure the IP Address, Netmask Address, and Gateway Address for the RVON device you want to use.

To **configure the RVON device**, do the following:

1. Select **RVON Setup**, then tap **PGM**.
   IP Address appears.
2. Tap **PGM**.
   The enter IP Address window appears.
3. Using the keypad, enter the **IP Address**.
   Use the PGM button as the dots between octets.
4. When finished entering the IP Address, press **PGM**.
   Netmask appears in the keypanel display.
5. Using the keypad, enter the **Netmask**, if necessary.
   Use the PGM button as the dots between octets.
6. When finished entering the Netmask, press **PGM**.
   Gateway appear in the keypanel display.
7. Using the keypad, enter the **Gateway**, if necessary.
   Use the PGM button as the dots between octets.
8. When finished entering the Gateway, press **PGM**.
   The RVON Setup menu appears in the keypanel display.
9. Tap **CLR** to exit.
10. Run **Service Menu, Save Cfg**, to store the RVON Setup settings.

Service Menu, Save Cfg

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

Service Menu, Scr Saver

The Scr Saver menu item is used to configure the operation of the screen saver on the keypanel.

The following options are available to configure the screen saver:

Delay -By default, a one (1) hour delay is programmed. You can choose 30 min and 1 to 12 hours (available in one (1) hour increments).

Display Off -Display Off turns the display off without displaying the screen saver. Press any key to activate the display window.

Activate - When selected, Activate enables the screen saver immediately. Press any key to activate the display window.

Service Menu, Sidetone

Sidetone **PGM** lets you adjust the level of you 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 0 dB.

Service Menu, Snoop Tally

Snoop Tallies provide an indication to keypanel users that somebody is listening to them.

NOTE: To use Snoop Tallies, the keypanel must be working in HOT MIC (USM) mode. This is available only on KP-32 keypanels.

To configure snoop tally, do the following:

1. Select **Snoop Tally**, then tap **PGM**.
   ➔ *No Chime (Default) appears in the display window. ↑ ↑ toggles between No Chime and Chime.*
2. Tap **PGM**.
   Snoop Tally is configured.
3. Tap **CLR** to exit.
4. Run **Service Menu, Save Cfg**, to store the Snoop Tally settings

Service Menu, Test Panel

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

All alpha-numeric displays show a % symbol. Pressing down on any key (except the **Headset / Vol. Sel.** 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.

If latching is enabled, tapping up or down on any intercom key, or the **Call waiting** key, will cause the corresponding red LED to light. This verifies latching operation and also that the each red LED is OK.

Holding any key in the up or down position will cause the corresponding green LED to light. This verifies operation of the green LEDs.

Tapping any keypad button (except CLR) will cause the keypad button name to appear in the *Call waiting* window. This verifies operation of the keypad buttons.

Service Menu, Tone Gen

Tone Generator **PGM** turns the KP-32 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.

CHAPTER 7

Specifications

Microphone Preamplifier

Electret Mic Input Level @ 1 kHz: ..... -42dB, 150 ohms
Dynamic Mic Input Level @ 1 kHz: ..... -50dBm, 150 ohms
Output Level (to matrix): ..... +8dBu, ± 0.2dBu
Max Voltage Gain, Mic to Line: ..... 70dB, ± 2dB
Frequency Response: ..... 100Hz to 10kHz, ± 2dB
Limiter: ..... 8dB above nominal

Tone Generator

Output Level (to matrix): ..... +8dBu ± 2dBu
Output Frequency: 500Hz

Headphone Amplifier

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

Speaker Amplifier and Speaker

Frequency Response: ..... 100Hz to 10kHz, ± 2dB
Output Power (per amplifier): ..... 4 watts into 4 ohms
Output Voltage Level: ..... 12 volts peak-to-peak (max.)
Volume Control Range: 30dB
Speaker Rating: ..... 4 watts max

Intercom Input/Output

Input: ..... Nominal: +8dBu. Peak: ± 20dBu max.
Output: ..... +8dBu, ± 2dBu nominal

External Line Input: (Program Input)

Input Level ..... +8dBu nominal

General

AC Supply:

External, switching type, 100-240VAC, 50/60Hz with locking DIN connector for attachment to the keypanel and universal IEC connector for connection to various AC mains cords

Environmental:

Storage: ..... -40°C to +60°C
Operating: ..... -10°C to +41°C
Dimensions: ..... 19" wide x 2RU x 3.5" (90mm) deep

Approvals:

UL, CSA, VDE, CE

Connectors (Other connector options available)

Panel Microphone Connector

Type: 3-circuit, 1/4" phone jack w/threaded metal bushing, compatible w/ RTS MCP5/6
Pin-out:
Tip: +Audio and DC bias
Ring: Common
Sleeve: Chassis ground

Headset Connector

Type:XLR5 female
Pin-out:
Pin 1: Mic low
Pin 2: Mic high
Pin 3: Common
Pin 4: Headphone left high
Pin 5: Headphone right high

Power Input Connector

Type:5-pin locking DIN
Pin-out:
Pin1: Common
Pin2: Common
Pin3: +5VDC, 1.50A Max.
Pin4: -15VDC, 0.150A Max.
Pin5: +15VDC, 0.5A Max.

Intercom Connectors: Parallel-wired DE9S and RJ12 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

Aux 1 In (Auxiliary program input 1)

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

NOTE: Balanced input, +8dBu nominal

Aux 2 In (Auxiliary program input 2)

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

NOTE: Balanced input, +8dBu 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: +5 VDC
Pin 8: Ground
Pin 9: +5 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: +5 VDC
Pin 8: Ground
Pin 9: +5 VDC

NOTE: The relay 1 and 2 contacts are electrically separate, but operate in unison. The relay 3 and 4 contacts are electrically separate, but operate in unison. The +5VDC pins are connected internally through 1K resistors to +5VDC and can source 5mA. This voltage can be used with the relay contacts to create an active high output for some devices that require a +5VDC signal to activate. For example, connecting pin 7 to pin 3 of the Relay 1&2 connector will result in +5VDC on pin 2 when the relay is activated.

Opto 1-4 In (Opto-isolated control inputs)

Type: 9-pin male D-Sub

Pin-out:

Pin 1: Input 1 Gnd

Pin 2: Input 2 Gnd

Pin 3: Input 3 Gnd

Pin 4: Input 4 Gnd

Pin 5: Gnd

Pin 6: Switch contact input 1

Pin 7: Switch contact input 2

Pin 8: Switch contact input 3

Pin 9: Switch contact input 4

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 +5VDC and can source 5mA for use with an external transistor switch circuit.

OC 1 & 2 Out (J2)

Type: 9-pin male D-Sub

Pin-out:

Pin 1: Gnd OC1

Pin 2: Emitter OC1

Pin 3: Collector OC1

Pin 4: Gnd OC2

Pin 5: Emitter OC2

Pin 6: Collector OC2

Pin 7: 5 VDC

Pin 8: No connection

Pin 9: 5 VDC

Headset (External headset connector)

Type: 9-pin male D-Sub

Pin-out:

Pin 1: Gnd

Pin 2: N/A leave unconnected

Pin 3: N/A leave unconnected

Pin 4: N/A leave unconnected

Pin 5: Balanced dynamic mic input +

Pin 6: Gnd

Pin 7: Headset Listen Out Left

Pin 8: Headset Listen Out Right

Pin 9: Balanced dynamic mic input -

NOTE: Mic input -60dBu nominal. Headset out 0.325 watts into 8 ohms.

Foot Switch/Speaker

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

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

MIC In (J7) Unbalanced Panel Microphone Input

Type: 3-pin female XLR
Pin-Out:
Pin 1: Shield (circuit common)
Pin 2: DC bias and Audio Plus (+)
Pin 3: GND

NOTE: Input level -42.5dBu nominal.

MIC Out (J8) Balanced Microphone Output

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

NOTE: Output level +8dBu nominal (balanced).

CHAPTER 8

KP9X Keypad Sequence Quick Reference

KP9X Display Sequences

FUNC DISPLAY 0	Diagnostics mode.
FUNC DISPLAY 1	Display port number.
FUNC DISPLAY 2	Display level 2 talk assignments.
FUNC DISPLAY 3	Display listen assignments.
FUNC DISPLAY -8	Display setup page assignments.
FUNC DISPLAY	↓↓ or ↑↑ to select items as follows:
ID PGM:	Display the calculated port number. CLR to end.
Lev2 PGM:	Display level 2 talk assignments. CLR to end.
Lstn PGM:	Display listen assignments. CLR to end.
Name PGM:	Display crosspoints closed to this keypanel. CLR to end.
Type PGM:	Display level 1 talk key assignment types. CLR to end.
Mtx PGM:	Display matrix ID for all level 1 talk assignments. CLR to end.
Tone PGM:	Turn on tone generator. CLR to end.
Epnl PGM:	Display setup page assignments. Mn=KP-32 top row keys. X1=KP-32 bottom row key. X2=EKP-32 top row keys. X3=EKP-32 bottom row keys.
Gain PGM:	Port / party line listen gain. Turn on listen key. ↓↓ or ↑↑ to change gain.
VRst PGM:	Reset all port / party line gains to 0dB.
Asgn PGM:	Display key assignments that are not currently accessible.
Test PGM:	Test keys and displays. CLR to end.
Vxxx:	Display keypanel firmware version. CLR to end.

KP9X Setup Page Assignment

1. Tap **E-PNL**.
2. Select a **setup page**: tap **1**, or **2**, etc.
3. Tap **PGM**.
4. Tap **any key in top row** to assign page to top row. Tap **any key in bottom row** to assign page to bottom row.

Key Assignments Using Keypad Numeric Entry

1. For talk level 2 assignment only: Tap **0 0**.
2. Select the **key assignment type**:

   NUM Intercom port.

   PL Party line.

   AUTO Auto function.

   FUNC SLIST Special list.

   FUNC IFB IFB

   FUNC ISO Camera ISO

   FUNC RELAY Relay or GPI output.
3. Auto function assignment only: Tap an **additional number** to select the desired auto function:

   1 Auto listen

   2 Auto follow

   3 Auto mute

   4 Auto reciprocal

   5 All call

   6 DIM (talk level 2 only, for point-to-point key)

   7 Auto table (use only with IFB)
4. Trunked intercoms only: Select an **intercom matrix** (tap **1**, or **2** etc.).
5. Tap **one or more number keys** to select the desired port number, party line number, etc.:
6. If the destination is in the local matrix, enter the **number**.
7. If the destination is in a remote matrix, you must **always enter at least 3 digits**, so for example to assign port 1 you must enter **0 0 1**.
8. Tap **PGM**.
9. Tap **down** on a key to assign talk. Tap **up** to assign listen.

KP9X Hang-up Sequence

1. Turn OFF **the TIF talk key**.
2. On the keypad, tap **PHONE-CLR**.
3. Turn the TIF talk key **ON**, then **OFF**.
   The TIF key talk and listen indicators will turn off and the TIF OFF LED will activate.

KP9X Dial Sequence

1. Activate the **TIF listen key** (listen LED green).
   Make sure the TIF talk key is off (Talk LED off).
2. On the keypad, tap **CLR-PHONE-PGM**.
3. Activate the **TIF talk key** (talk LED turns green).
   The ON LED at the TIF will activate, and you should hear dial tone at the KP-32.
4. Dial the **telephone number**.
   Digits scroll in the display above the TIF talk key. When the far end answers, you can dial additional digits (to access a mail system or automated response system, etc.). When finished dialing, momentarily turn off the TIF talk key to end dialing mode (talk LED turns red).
5. Turn the TIF talk key back **ON** for conversation.

KP9X Redial Sequence

1. Tap the **PHONE** key to activate dialing mode.
2. Tap **up** on the TIF key to activate listen.
3. Tap **CLR 0 0**.
   The last phone number will redial.
4. After the number has dialed, click the **PHONE** key to end dialing mode.
   If the far end answers, tap down on the TIF key to activate talk.
5. Use the **KP9X hang-up sequence** to hang up.

KP9X Autodial Sequences

Storing an Autodial Number in the TIF

1. Tap the **PHONE** key.
2. Tap the **TIF talk key** to latch it on.
3. Using the keypad, dial the **phone number** you want to store.
   The entire phone number sequence can have up to 30 digits.

   NOTE: To insert one or more pauses anywhere in the dialing sequence, enter **CLR CLR 9 9** for each pause.
4. After dialing the telephone number, click **CLR PGM**, then enter a two-digit number (01, 02, etc. up to 32) you will use as the autodial number.
5. After storing the autodial number, hang up using the **KP9X hang-up sequence**.

Dialing an Autodial Number Stored in the TIF

1. Tap the **PHONE** key to activate dialing mode.
2. Tap **down** on the TIF talk key to latch it in the on position.
3. Tap **CLR** followed by the autodial number (01, 02, etc.).
4. When finished dialing, click the **PHONE** key again to exit dialing mode.
5. Hang up using the **KP9X hang-up sequence**.

CHAPTER 9

KP-32 Menu System Quick Reference

Menu Access

1. Clear **all names** from the call waiting display (if not clear) by tapping up one or more times on the call waiting key.
2. Tap **MENU** to activate the menu system.
3. Press ↓ ↓ to scroll forward through the list of menus. Press ↑ ↑ to scroll back.
4. Tap **FWD** or **PGM** to enter a menu. Tap **BACK** to exit a menu.
5. Within a menu:
   - Press ↓ ↓ or ↑ ↑ to scroll.
   - Tap **FWD** or **PGM** to select an item.
   - Tap **BACK** to cancel a selection or to go back to the previous menu level.

Menu List

Display Menu
Asgn Type
Chans ON
Key Groups
Key List
Level 2
Listen
Matrix
Panel ID
Version

Key Assign Menu
Pt-to-Pt
Party Line
IFB
Spcl List
Sys Relay
Camera ISO
UPL
IFSL
Auto Func
Key Gain
Reset Vols
Setup Page

Key Options Menu
Auto Dial[1]
Chime[1]
Key Groups[1]
Solo[1]

RVON Conn.
list of RVON Offers[1]

Service Menu
Aux Inputs
Baud Rate
Caller Vol.
Dim[1]
Displ Dim[1]
DSP Func[1]
Hdst Set[1]
LCP-32[1]
Local GPIO[1]
Matrix OUT[1]
Mic Select[1]
Min Volume[1]
Mod Assign[1]
Outp Level[1]
Preamp Out[1]
Reset Cfg
RVON Setup[1]
Save Cfg
Scr Saver[1]
Sidetone[1]
Snoop Tally[1]
Test Panel
Tone Gen

1. Run Save Cfg (see “Service Menu, Save Cfg” on page 47) to save these settings.

Section 2

Switch 4: Call Flash Timeout*

When the switch is closed the menu and indefinite talking is disabled.

Switch 5: Footswitch Enable / Disable*

Amber talk LEDs indicate a latched talk key.

Section 3

LED Indications for Intercom Keys

Talk LED Indications

The talk LED is the lower LED for each key. The talk LED indications are as follows:

*Continuous Red**

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

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

NOTE: The red 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. Note that this will also disable the flashing alpha display when talking to remote IFBs or ISOs as previously described.

Solid Red Talk LED & Flashing Display Alternating Pattern of Alpha & (-**-) (Busy)

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.

NOTE: Flashing red is also the intended indication when attempting to talk to a remote IFB while someone else with a higher trunk IFB priority is already talking. However, this will require ADAM MC version later than 9.9.x and Trunk MC version later than 7.x.x. As of this writing, these versions are not implemented. Regardless of the indication provided, you will not be heard at the remote location if your keypanel has the lower trunk IFB priority. IFB trunk priorities are set in AZedit. (Click the KP icon on the AZedit toolbar to access Keypanels / Ports setup, then click the Edit button, then click the Advanced tab. Enter the desired IFB priority in the fields provided. Be sure to send the change to the intercom system.)

Flashing Display Alpha (on time equal to off time)*

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-32 back panel. See “Telephone Operation” on page 17, for further information.

Amber Talk LED

This indicates that a key is ready to talk (key is on), but requires external footswitch activation to talk.

CHAPTER 11

Glossary

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 Alpha button. When you assign a destination to a talk key, the alpha name will appear in the alphanumeric display for that key (on keypanels so equipped).

Auto Follow (AF)

A key assignment for listen keys 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.

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 assignment 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 to 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. For further information about Auto Tables, Listen Sources, and IFBs, search for *IFB* in AZedit help.

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.

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, there is 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 set up in AZedit (search for keyword dim in AZedit help. Once a dim table is set up, 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.There is also an adjustable speaker dim feature available on 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 feedback 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.

GPIO

General Purpose Input / Output. (You may also see this referred to 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 key 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 16 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.

IFB

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 input 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-the-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.IFB's 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 for *IFB* in AZedit help.

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, search for *ISO* in AZedit help.

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 System. 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.

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. Just 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, search for PL or party line in AZedit help.

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.

Communication between Ports (Point-to-Point, or P-P). 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 it is with a GPI input. Port ID Numbers and Alphas 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 name appears in the alphanumeric displays on keypanels when you assign the ports to 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. (Click the *Port Alpha* button in AZedit, then press F1 on the computer keyboard if you need help.)Intercom Data Groups and Port Number Calculation. For data routing purposes, port numbers are arranged in groups of 8 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 8 port connectors comprises a data group. Within each data group, each keypanel is uniquely identified by its 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 8 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 2 data groups, plus the offset of 5 ports into the third data group. Port Gains 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 on any gain adjustment in AZedit, search for keyword gain in AZedit help. For procedures to adjust gain from a programmable keypanel, look for gain in the manual index.

Relay

Relay is used interchangeable 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 8 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 an ADAM Intercom System). You can assign 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.

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 the intercom configuration software. 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. 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 list using Special List setup. Once a special list has been set up, 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 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. Just 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 special list setup, search for special list in AZedit help.

Stacked Key

See the descriptions for talk level, talk level 2.

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 1.

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 and key the transmitter using a relay. The audio output is called the level l assignment and the relay is 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 TrunkEdit, is used to set up the Trunking Master Controller.

Appendix A

RVON-1

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 RTS's AZedit configuration software. It is also fully compatible with internationally recognized standards and supports the following protocols: G.711, G.729A, 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 AudioIN 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 ton 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	32-112kbps
G.723	5.3k/6.3k	30ms	60-120ms	29-45kbps

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 (63.5mmW X 146.05mmL)

Default Addresses for the RVON Product Line

TABLE 2. Default Addresses for the RVON Product Line

Product	Default IP Address	Default Subnet Mask
RVON-I/O	192.168.0.1	255.255.0.0
RVON-8	192.168.0.2.	255.255.0.0
RVON-1	192.168.0.3	255.255.0.0
RVON-C	192.168.0.4	255.255.0.0
RVON-16	192.168.0.5	255.255.0.0
GPIO-16	192.168.0.6	255.255.0.0
MCII-e	192.168.0.7	255.255.0.0
Cronus	192.168.0.8	255.255.0.0
Zeus III	192.168.0.9	255.255.0.0

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

TABLE 3. 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

Flash Chip Replacement

TABLE 4. Flash Chip replacement part numbers.

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)

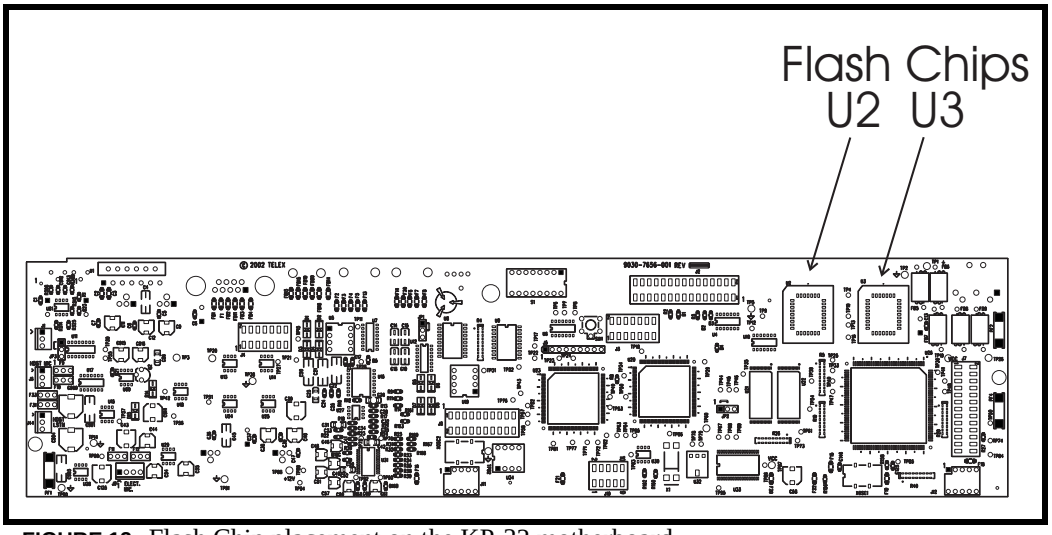


FIGURE 12. Flash Chip placement on the KP-32 motherboard

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 you backpanel with the Ethernet RJ-45 connection (part number - 9080-7656-002) knockout present. Also, the KP-32 flash chips need to be replaced with larger flash chips (4MB) see Table 4 on page 72.

To **install the RVON-1 card**, 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 “Flash Chip Replacement” on page 72.
4. Using a hammer and screwdriver, remove the **specified knockout pieces**, see Figure 13.

5. Mount the **supplied spacer** on the RVON-1 card on the corner of the card near the DIP switch. See Figure 14 on page 73.
6. Securely connect the **RVON-1** card to the KP-32 motherboard.

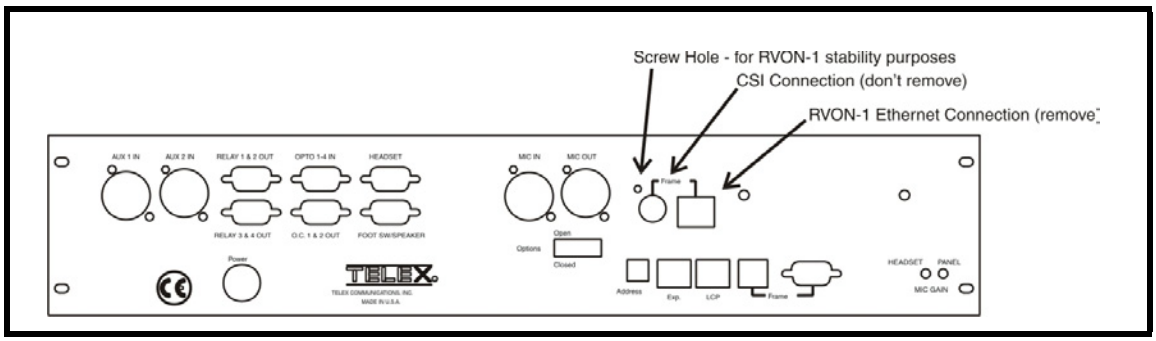


FIGURE 13. Knock out positions for the RVON-1 card on the KP-32

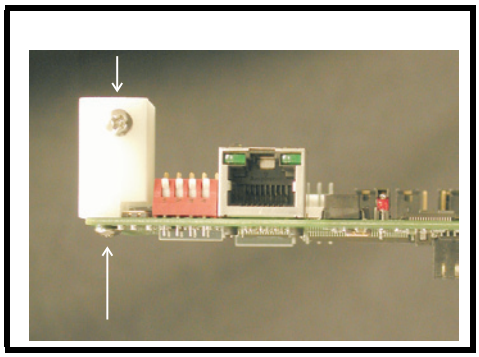


FIGURE 14. The placement of the spacer and screw position on the RVON-1 card.

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 13 on page 73
9. Replace the **cover** on the KP-32 keypanel.

NOTE: 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.

10. Gently secure the board in place (see Figure 15).,

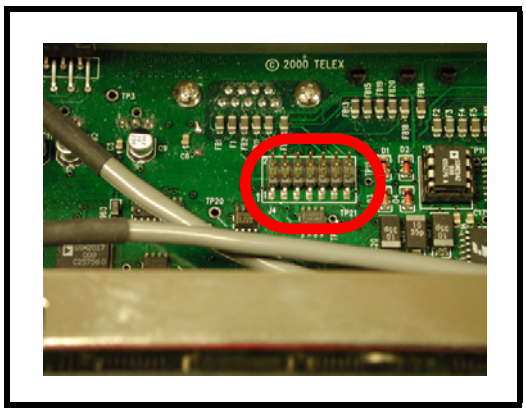


FIGURE 15. The J4 connector on the KP-32 board.

NOTE: In the KP-812, the RVON-1 card connects to the KP-812 by way of the J2 connector on the RVON, attached to J37 on the KP-812 header.

11. Gently secure the board in place

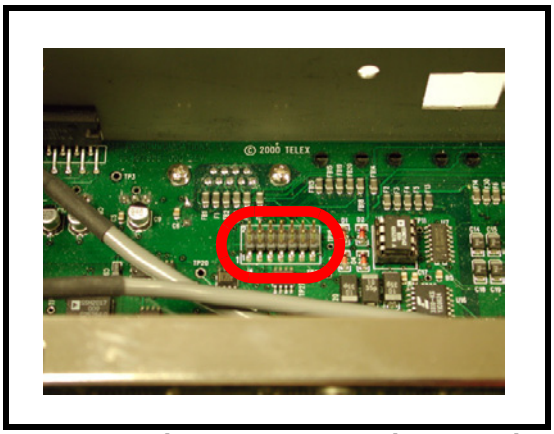


FIGURE 16. The J37 connector on the KP-812 board.

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 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 version 2.0.0 or higher. In turn, the firmware requires that larger flash chips be used as well (see “Flash Chip Replacement” on page 72).

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 note (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 the left of the offer designates which connection offer was chosen*.
6. Press CLR to exit.
   The keypanel will now connect to the selected intercom port.

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 you network.

To **set the IP Address**, do the following:

1. On the KP-812, scroll to **Menu**.
   The top level menu appears.
2. Turning the encoder knob, scroll to **Service**.
3. Tap the **encoder knob** to select Service.
   The Service menu appears.
4. Turning the encoder knob, scroll to **RVON Setup**.
5. Tap the **encoder knob** to select RVON Setup.
   The IP Address menu item appears.
6. Tap the **encoder knob** to select IP Address.
   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 enter 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 to select **Netmask**.
    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 modification.
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 to select **Gateway**.
    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: 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. 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.

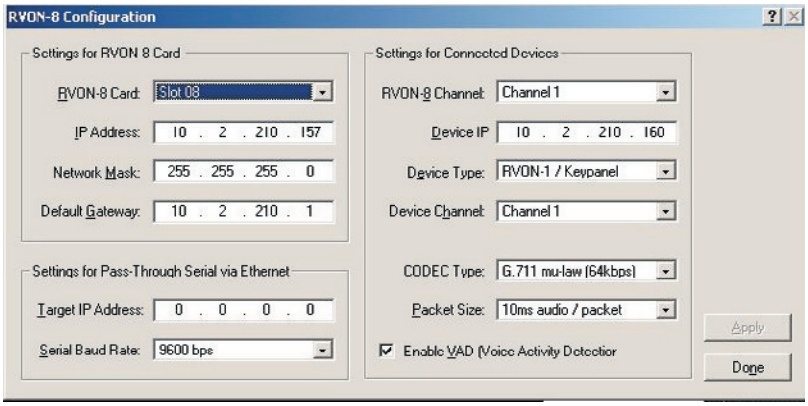
To **select the connection offer**, do the following:

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

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

To **configure the RVON-1 card**, do the following in AZedit:

1. From the Status menu, select **I/O Cards**.
   The I/O Card Status screen appears showing the types of installed.
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 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 Sized 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 Activation 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.

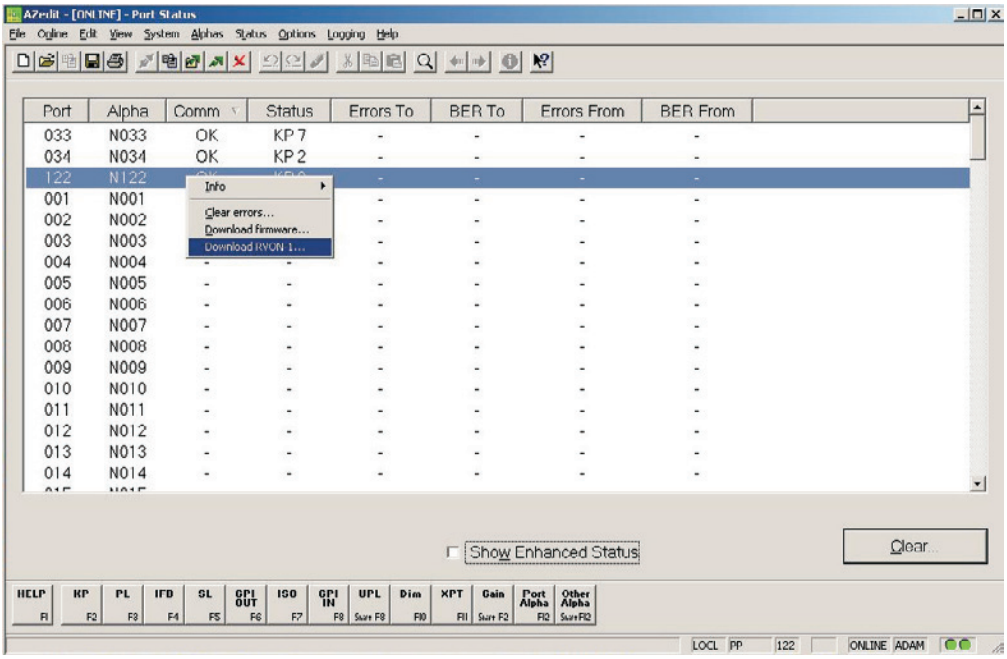
10. Once you are completely finished, click **Apply**.

Download RVON-1 Firmware Through AZedit

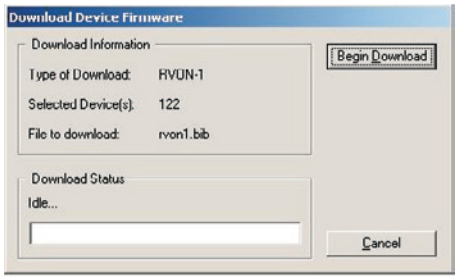
NOTE: AZedit sends firmware directly to the RVON-1 card over Ethernet. This is different from other I/O cards (except the RVON-8) that receive the firmware from the Master Controller. For this reason, verify the PC running AZedit is able to contact the RVON-1 card via the network, or is configured with 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, pin the RVON card from a command line. For more information on how to test for a connection, see "Basic Network Configuration" on page 83.

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

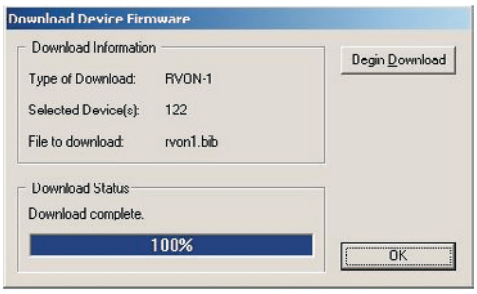
1. Open **AZedit**.
2. From the Status menu, select **Software Versions** and then **Keypanels**.
   The Keypanel Version screen appears.



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 onboard 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.

Basic Network Configuration

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**. 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 other 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 of 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 you network administrator to learn 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 or 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 two networks.

LAN vs. WAN

Local Area Network

Simply put, a **LAN** (Local Area Network) 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 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 (or 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 consisting of four numbers separated by periods (for example, 1.160.10.240).

NOTE: For more information on IP Addresses, see you local network administrator.

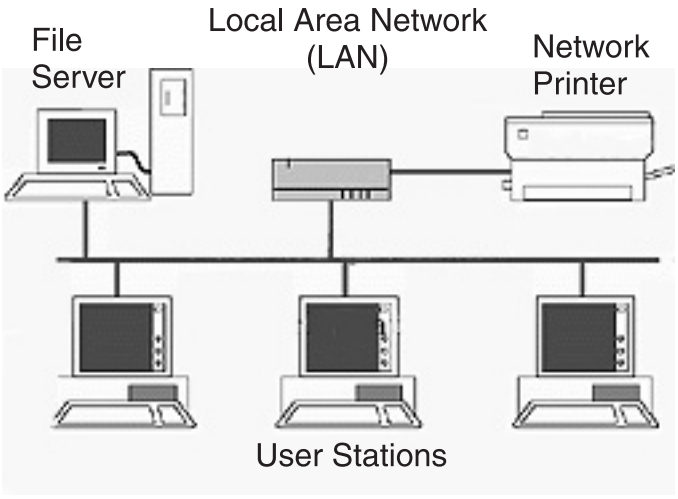


FIGURE 17. Local Area Network Diagram

Wide Area Network

A **WAN** (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 a WAN. The largest WAN in existence is the Internet.

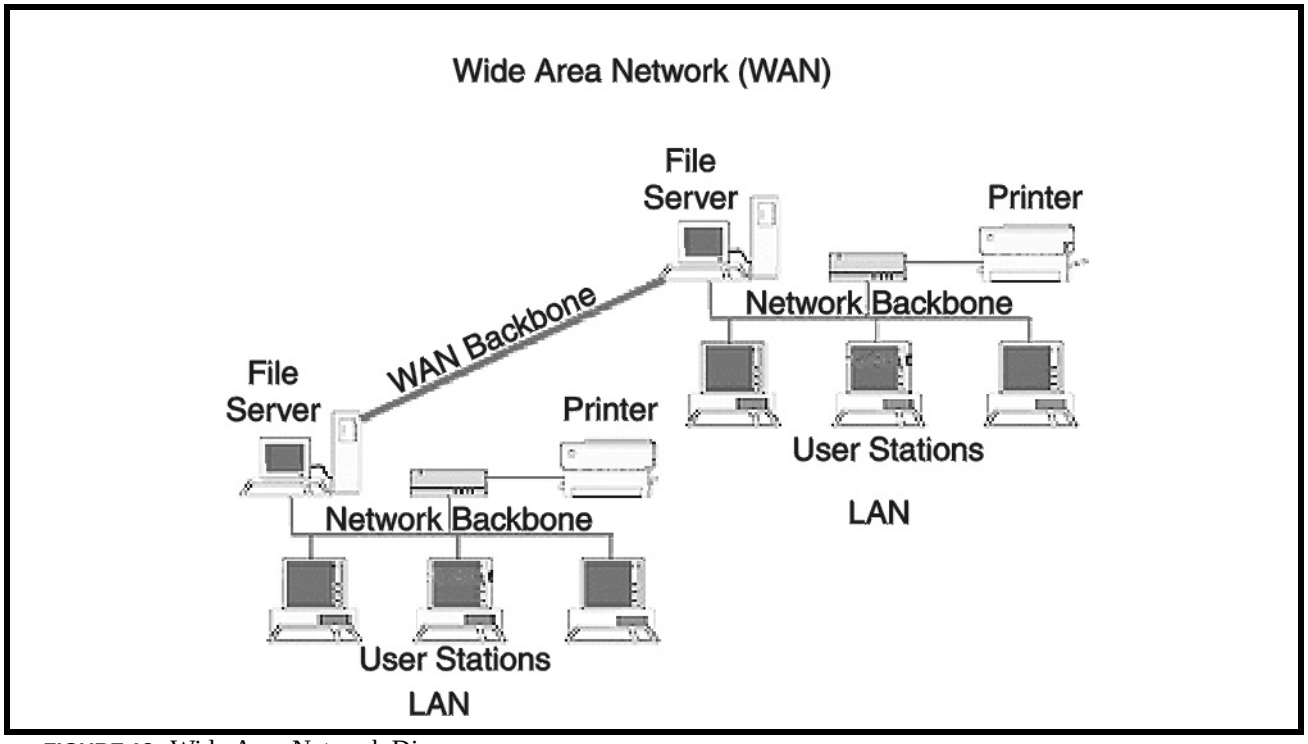


FIGURE 18. Wide Area Network Diagram

Accessing The Wide Area Network (WAN)

Figure 19 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.

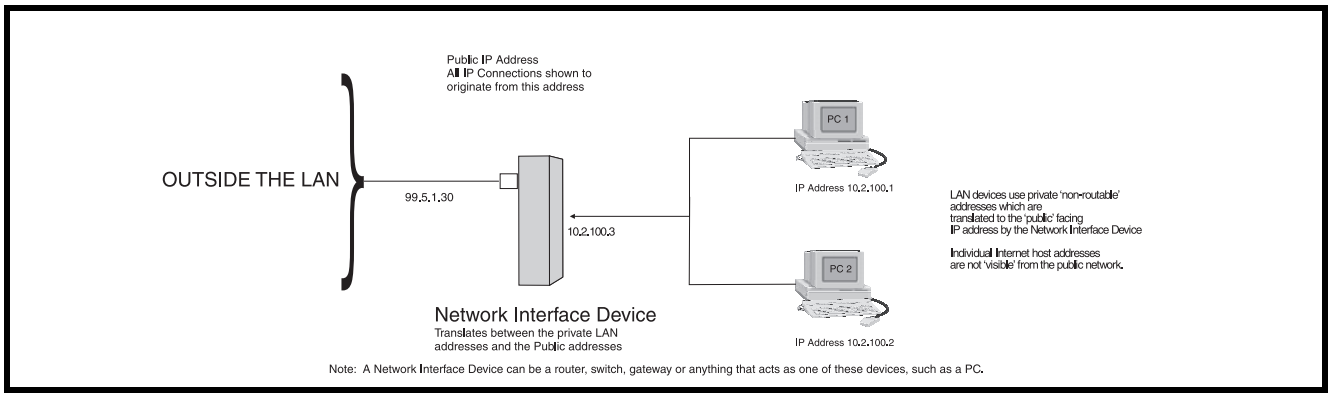


FIGURE 19. Network Address Translation

Network Address Translation (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, your computer goes to find an IP Address for the url you are requesting (http://www.telex.com). To obtain this address, the computer contacts 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 7 on page 86 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”.

TABLE 5. Packet Translation

	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

If a second workstation 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 LAN 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.

TABLE 6. Packet Translation

	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	10.2.100.1	1031

Amazingly, all the address translation that occurs takes 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.

TABLE 7. Well-known TCP Port Numbers

Port Number	Description
1	TCP Port Service Multiplexer (TCPMUX)
5	Remote Job Entry (RJE)
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

TABLE 7. Well-known TCP Port Numbers

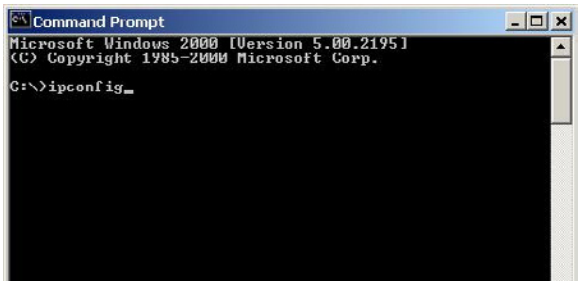
Port Number	Description
119	Newsgroup (NNTP)
137	NetBIOS Name Service
139	NetBIOS Datagram Service
143	Interim Mail Access Protocol (IMAP)
150	NetBIOS Session Service
156	SQL Server
161	SNMP
179	Border Gateway Protocol (BGP)
190	Gateway Access Control Protocol (GACP)
194	Internet Relay Chat (IRC)
197	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 Quick Time
546	DHCP Client
547	DHCP Server
563	SNEWS
569	MSN
1080	Socks

IP Addresses

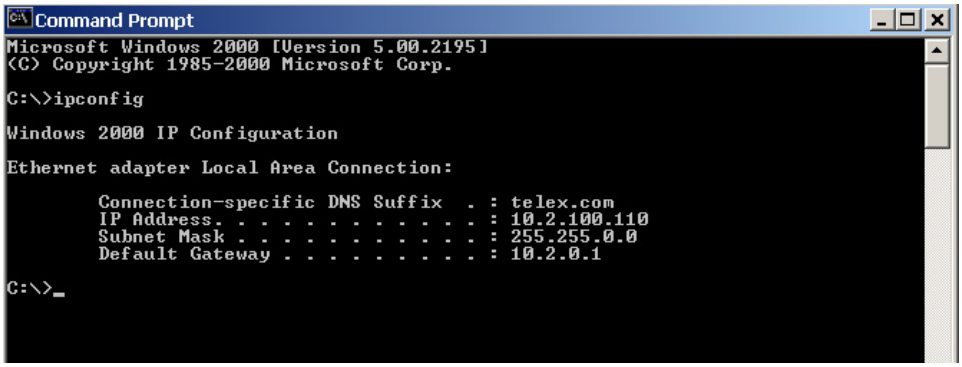
If you do not know your IP Address, you can open a DOS screen in a Windows®- based environment and bring up the ipconfig screen.

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

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



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.

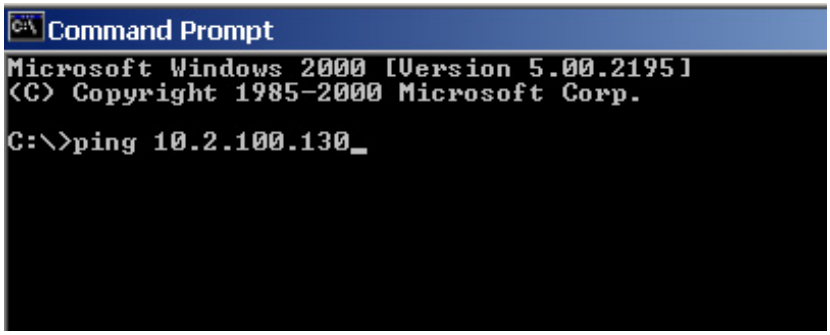
Ping a Computer

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

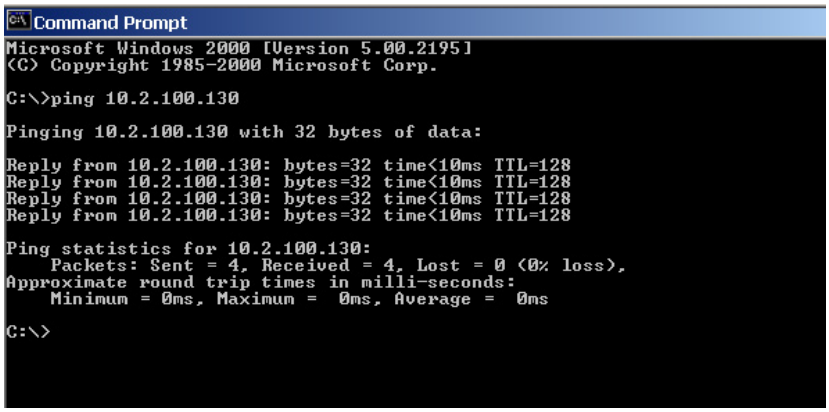
NOTE: You can also ping your RVON-8 card to verify that it is responding over the network by putting the cards IP Address in place of the computer IP Address.

To **Ping a computer on the network**, do the following:

1. From the Start menu, select **Run...**.
2. At the Run command, type **CMD** to open a **Command Prompt** screen.



3. At the prompt, type the **IP Address** of the computer you wish to ping (for example, 10.2.100.130).
4. 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.

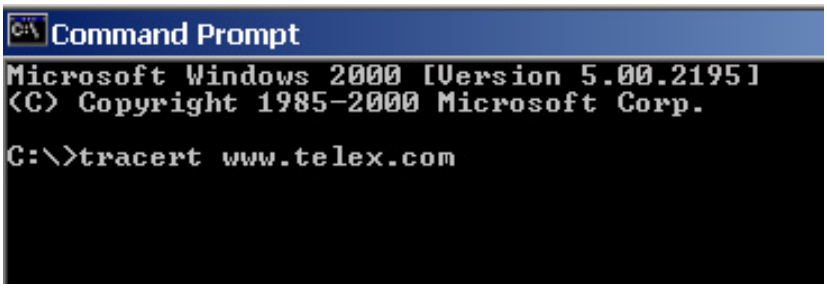
Possible Pitfall With Routers, Gateways, And Switches

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.

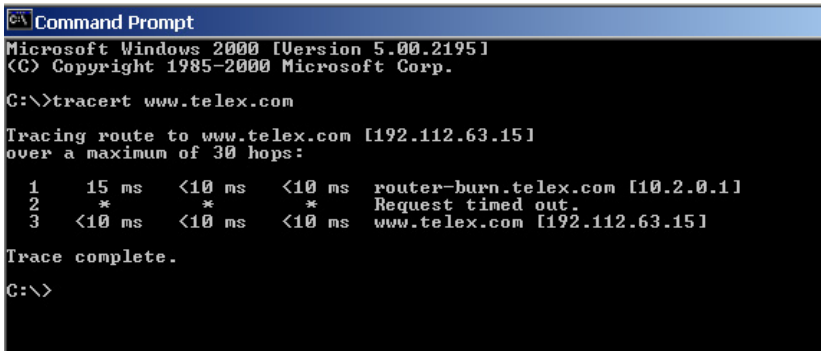
To **view the path an IP Address takes to retrieve information**, do the following:

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

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 incoming or outgoing message.

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

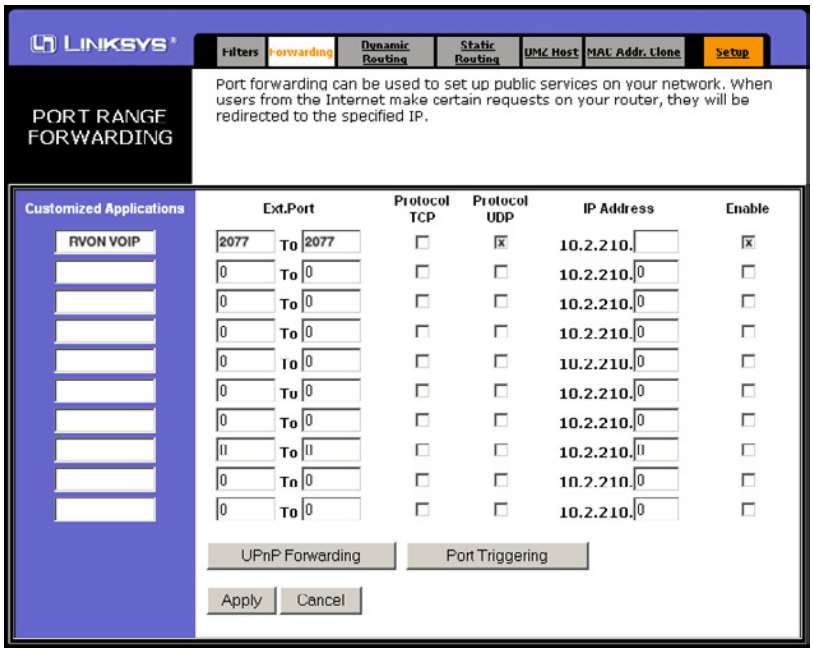
RVON Configuration

RVON 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 8 on page 90 for the ports that need to be opened for the RVON cards to operate properly.

TABLE 8. Ports necessary for RVON card functionality.

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

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



NOTE: Linksys 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.

Bridge

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 of your computers are on the same network subnet (see Subnet). This means your computers can communicate with each other an have their own internet connection. If you assign your own IP addresses be sure to use the same first three (3) octets of the IP address (for example, 192.168.0.X).

Domain Name Server (DNS)

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 address which are numeric, and since domain names are alphabetic, they are easier to remember. Every time a domain name is used it must go through the DNS server to be translated.

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.

There are three (3) 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 features 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 pack to the appropriate port.

IP Address (Internet Protocol Address)

An IP Address is an identifier or numerical name for a computer or device on a network. Data between computers are routed over the network using these addresses to identify the computer the message being sent to and the computer the message is being set 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. When the isolated network is connected to the INternet, registered Internet Addresses must be obtained. This is to prevent duplication of addresses.

The four numbers in an IP Address are used in different ways to identify a particular network and host on the network. There are three (3) 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 work stations 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 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 network, 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 (2) 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.

Subnetting a network is useful because it provides security for the network, as well as, increases performance of the network. IP networks are divided using subnet masks.

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 branch offices in Nebraska and Arkansas over the wide are a network. The largest WAN is the Internet.

Appendix C

Telnet & Serial Port Programming

RVON Serial and Telnet Commands

RVON card programming can be done via direct serial or telnet connection. There are several physical connections to an RVON board:

- Direct serial through custom debug cable (J20 6-pin bottom front)
  The customer debug cable always functions as the general-purpose debug tool.
- Backcard DB-9 J2
  The backcard DB-(must be disabled/enabled via a DIP Switch because it can also be used for serial port pass-through. The backcard DB-9 can be used for a debug terminal when DIP switch 6 is switched to the ON position.
- Backcard RJ-45 J1 (Telnet Only)

Setup

Serial Port	38,4000 baud, No-flow control
Telnet	IP Address, port 23

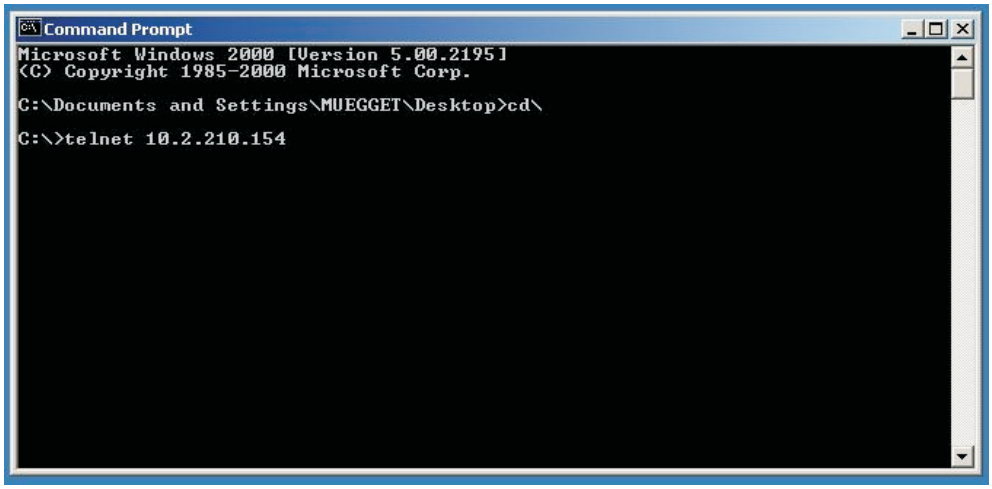
How to Configure the RVON-1 using Telnet

Without access to the physical KP-32 with RVON-1 installed on it, you can still configure the card through the use of Telnet. The following instructions will show you how to access the Telnet screen and show you some of the information you can see and edit.

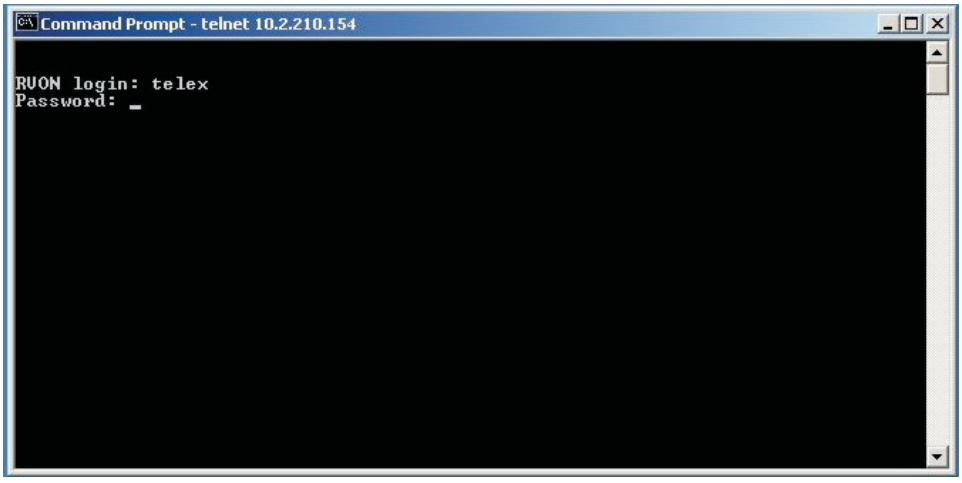
NOTE: These instructions are to help you get to the Telnet screens and give you an overview of what can be done. This is NOT an all inclusive document. Not every action that can be performed are contained within the document.

To **display the 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).

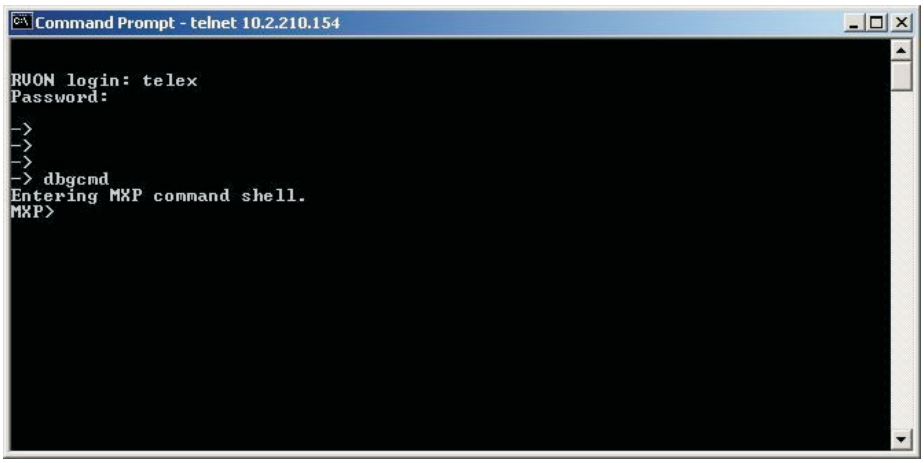


3. Press **Enter**.
   The RVON logon screen appears.

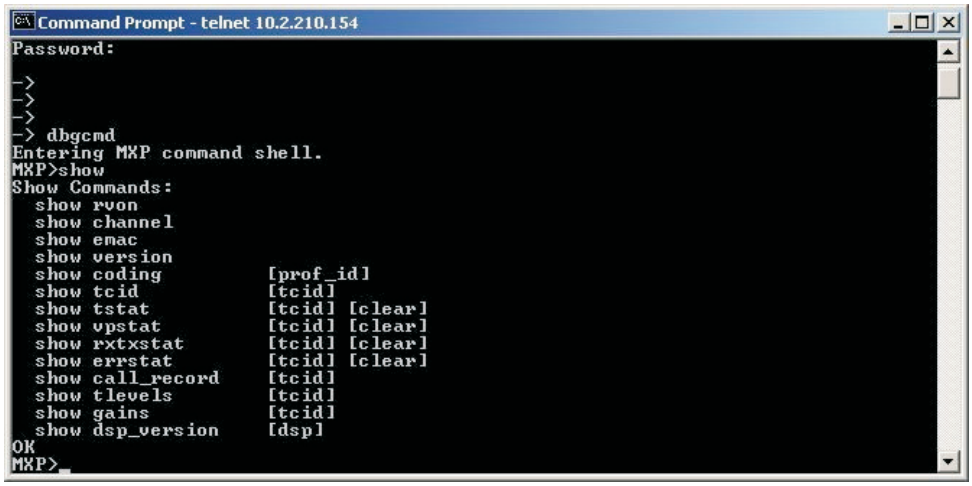


4. In the logon field, type the **RVON logon** (default = telex).
5. Press **Enter**.
6. In the password field, type the **RVON password** (default = password).

7. Press **Enter**.
   A prompt appears.
8. Type **dbgcmd** to access the debug command screens.



9. Press **Enter**.
   An MXP prompt appears.
10. At the prompt, type **Show**.
11. Press **Enter**.
    The show commands screen and MXP prompt appears.



12. At the MXP prompt, type the **show command** you want to see (for example, “show rvon”).
13. Press **Enter**.
    The values for the RVON-1 card appear.

To **edit the RVON-1 configuration**, do the following:

1. Repeat steps **1** through **9** from above.
2. At the MXP prompt, type either **set RVON** or **set EMAC** (see screen descriptions below).
3. Press **Enter**.

```
MXP>set rvon

RVON CARD RELATED:
  set rvon ip_addr <ip address (x.x.x.x)>
  set rvon netmask <netmask (x.x.x.x)>
  set rvon gateway <default gateway (x.x.x.x)>

  set rvon serial_ip <ip address (x.x.x.x)>
  set rvon serial_baud <baud rate (50-38400)>

  set rvon user <username>
  set rvon password <password (8-40 characters)>

  set rvon vad_threshold <adaptive|value -- In dBm (-20 to 10)>
```

set rvon ip_addr	Allows you to edit the IP Address
set rvon netmask	Allows you to edit the netmask
set rvon gateway	Allows you to edit the gateway
set rvon serial_ip	Allows you to edit the serial IP Address
set rvon serial_baud	Allows you to set the baud rate (50-38400)
set rvon user	Allows you to set the username for the RVON-1 card. By default the user name is “telex”
set rvon password	Allows you to set the password for the RVON-1 card. By default, the password is “password”
set rvon vad_threshold	Lets you set the vad threshold. **NOTE:** In AZedit, you can enable and disable VAD, however, through Telnet you able to set the amount. You will able to set the VAD threshold in later versions of AZedit.

NOTE: This Telnet screen is almost duplicate to the right side of the Configuration screen for the RVON in AZedit.

```
MXP>set channel

RVON CHANNEL RELATED:
  set channel [chan] dest_ip <ip address (x.x.x.x)>
  set channel [chan] dest_type <type (0-2), 0=RVON-8, 1=RVON-1, 2=RVON-IO>
  set channel [chan] dest_chan <chan (0-7)>
  set channel [chan] chan_codec <prof_id (0 to (max_prof - 1))>

  set channel [chan] input_gain <gain (-14 to +14 dB)>
  set channel [chan] output_gain <gain (-14 to +14 dB)>

  set channel [chan] onhook
  set channel [chan] offhook
```

set channel dest_ip	Allows you edit the destination IP Address the RVON-1 card will communicate with
set channel dest_type	Allows you to edit the destination type for the device the RVON-1 card will talk with
set channel dest_channel	Allows you to edit the destination channel of the device the RVON-1 will talk with
set channel channel_codec	Allows you to edit the CODEC to be used for transferring the data between the two devices
set channel input_gain	Allows you to edit the input gain for the RVON-1 card
set channel output_gain	Allows you to edit the output gain for the RVON-1 card.
set the channel onhook	onhook = hang up If the channel was already connected, going offhook will have no effect (it is already offhook if connected). Going onhook will hang up the call, and it should then try to reconnect. If the channel was not already connected, going offhook will cause it to try and establish a connection. Going onhook in this stat will have no effect (it is already onhook if idle.
set channel offhook	offhook = connected If the channel was already connected, going offhook will have no effect (it is already offhook if connected). Going onhook will hang up the call, and it should then try to reconnect. If the channel was not already connected, going offhook will cause it to try and establish a connection. Going onhook in this state will have no effect (it is already onhook).