RTS® Digital Matrix Series
Intercom Systems

# *RVON-I/O User Manual*


9350-7772-000 Rev E 6/2006

## PROPRIETARY NOTICE



## COPYRIGHT NOTICE



## WARRANTY NOTICE

See the enclosed warranty card for further details.

## UNPACKING AND INSPECTION

Immediately upon receipt of the equipment, inspect the shipping container and the contents carefully for any discrepancies or damage. Should there be any discrepancies, notify factory service immediately. Notify the freight company and factory service of any shipping damage.

## CUSTOMER SUPPORT

Technical questions should be directed to:

Customer Service Department
Telex Communications, Inc.
12000 Portland Avenue South
Burnsville, MN 55337 U.S.A.
Telephone: (800) 392-3497
Fax: (800) 323-0498
Factory Service: (800) 553-5992 (Lincoln, NE)

## RETURN SHIPPING INSTRUCTIONS

Customer Service Department
Telex Communications, Inc.
12000 Portland Avenue South
Burnsville, MN 55337 U.S.A.
Telephone: (800) 392-3497
Fax: (800) 323-0498
Factory Service: (800) 553-5992 (Lincoln, NE)

Please include a note in the box which supplies the company name, address, phone number, contact person regarding the repair, the type and quantity of equipment, a description of the problem and the serial number(s)

## SHIPPING TO THE MANUFACTURER

All shipments of product should be made via UPS Ground, prepaid (you may request a different shipping method from Factory Service). Any shipment upgrades will be paid by the customer. The equipment should be shipped in the original packing carton. If the original carton is not available, use any suitable container that is rigid and of adequate size. If a substitute container is used, the equipment should be wrapped in paper and surrounded by 4 (four) inches of excelsior or similar shock absorbing material. All shipments must be sent to the following address and must include the Proof of Purchase for warranty repair. Upon completion of any repair, the equipment will be returned via United Parcel Service or specified shipper, collect.

Factory Service Department
Telex Communications, Inc.
8601 Cornhusker Hwy.
Lincoln, NE 68507 U.S.A.
Attn: Service

This package should include:

| Components | Description | Qty |
|---|---|---|
| 90107772000 | RVON-I/O Final Assembly | 1 |
| 38110387 | RTS Warranty Card | 1 |
| 93507772000 | RVON-I/O User Manual | 1 |
| 8800102668 | A/C Cord/ Conn 18 GA SVT (7ft) Belden #17250, Kent | 1 |

# *Table of Contents*

CHAPTER 1

# *Introduction*

## *Description*

Coupled with the same VOIP technology used with the RVON-8, the RVON-I/O can take legacy analog audio and convert it to digital VOIP audio. Being able to convert analog audio systems to digital VOIP audio, the RVON-I/O expands the boundaries of digital audio to include analog conversion. There are many applications in which the RVON-I/O can be used, such as:

- ADAM Matrix AIO to RVON-I/O to RVON-1, RVON-8, RVON-I/O or VOIP Virtual Keypanel.
- Zeus to RVON-I/O to RVON-1, RVON-8, RVON-I/O or VOIP Virtual Keypanel.
- ADAM to RVON-I/O to Zeus
- Cronus to RVON-I/O to RVON-1, RVON-8, RVON-I/O or VOIP Virtual Keypanel.
- McCurdy 9500 to RVON-I/O to RVON-1, RVON-8, RVON-I/O or VOIP Virtual Keypanel.

RVON-I/O is fully compatible with the following internationally recognized standards and protocols; G.711, G.729AB, G.723.

## *Features*

| | |
|---|---|
| **8 Channels of Bidirectional Audio plus Keypanel Data** | The RVON-I/O supports 8 channels IN and OUT and has configurable network bandwidth parameters that can be tailored to individual network conditions. Supports local and remote keypanels. |
| **Addressing** | Eight individually addressable audio channels. The RVON-I/O can feed simultaneously VOIP (voice over internet protocol)-capable keypanels, as well as, various other matrix intercom systems. |
| **Ethernet Capabilities** | The RVON-I/O uses standard Ethernet protocols and is compatible with 10 BASE-T and 100 BASE-TX Ethernet compliant devices and networks. |

## *Reference View*

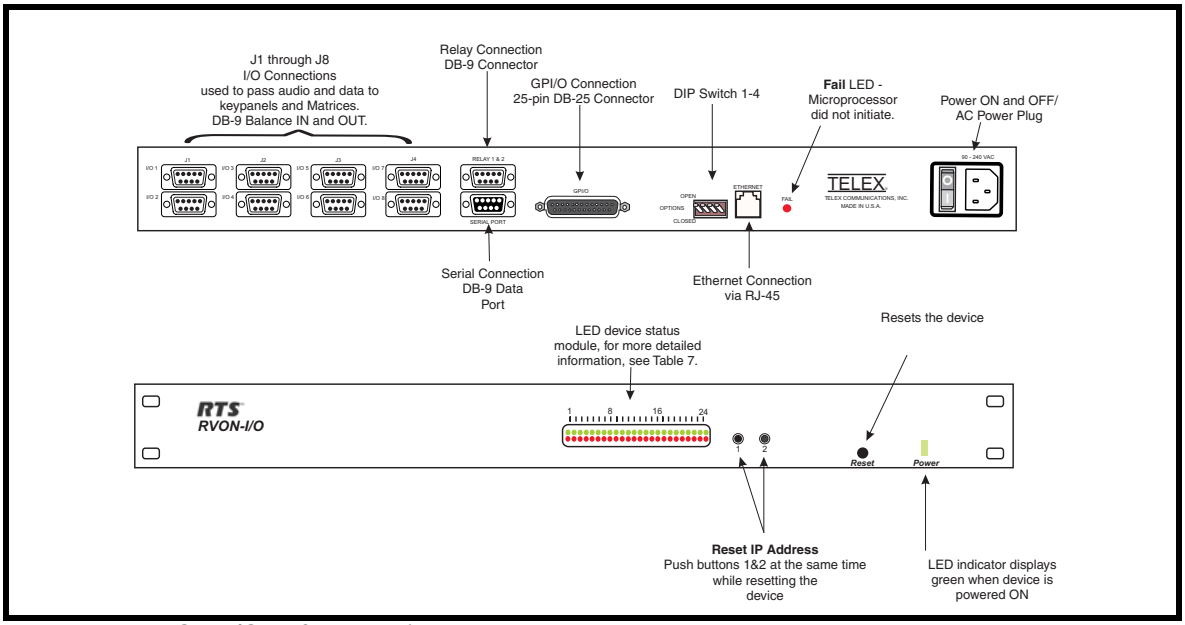



**FIGURE 1. RVON-I/O Reference View**

### LED Explanation of the LED device status module

| # | Red LED | Green LED |
|---|---|---|
| 1 | VOIP not connected channel 1 | VOIP connected Channel 1* |
| 2 | VOIP not connected channel 2 | VOIP connected Channel 2* |
| 3 | VOIP not connected channel 3 | VOIP connected Channel 3* |
| 4 | VOIP not connected channel 4 | VOIP connected Channel 4* |
| 5 | VOIP not connected channel 5 | VOIP connected Channel 5* |
| 6 | VOIP not connected channel 6 | VOIP connected Channel 6* |
| 7 | VOIP not connected channel 7 | VOIP connected Channel 7* |
| 8 | VOIP not connected channel 8 | VOIP connected Channel 8* |
| 9 | GPO 1 asserted | GPI 1 asserted |
| 10 | GPO 2 asserted | GPI 2 asserted |
| 11 | GPO 3 asserted | GPI 3 asserted |
| 12 | GPO 4 asserted | GPI 4 asserted |
| 13 | GPO 5 asserted | GPI 5 asserted |
| 14 | GPO 6 asserted | GPI 6 asserted |
| 15 | GPO 7 asserted | GPI 7 asserted |
| 16 | GPO 8 asserted | GPI 8 asserted |
| 17 | | |
| 18 | Pass-Through Serial TX Activity | Pass-Through Serial RX Activity |
| 19 | | |
| 20 | Shell Log Message (TX) Activity | |
| 21 | Ethernet Half Duplex | Ethernet Full Duplex |
| 22 | Ethernet 10 Mbps | Ethernet 100 Mbps |
| 23 | Ethernet Not ‘AUTO’ | Ethernet Link Good |
| 24 | Remote Mode | Processor Good |

*Green LED wink periodically when a keypanel is connected.

** If both LEDs are OFF or not lit, the channel is NOT configured (this only applies to LEDs 23-16).

# *Specifications*

### Connections

RJ-45 Ethernet
DB-9 I/O Port (8 bidirectional audio and keypanel data; Male)
DB-25 GPI/O Connection (Female)
DB-9 Relay Port (Female)
DB-9 Serial Port

### Power

90-240 VAC

### Physical

1 RU (height)
19 inches (482.6 mm) wide X 8 inches (203.2 mm) deep

### Digital

**TABLE 1.** Digital Specifications

| Codec | Bit Rate | Coding Delay | Playout Delay | Bandwidth | MOS* |
|---|---|---|---|---|---|
| G.711 | 64 | 125 µs | 20-60 ms | 160-224 kbps | 4.3 |
| G.729AB | 8 | 10 ms | 20-120 ms | 32-112 kbps | 3.95 |
| G.723 | 5.3, 6.3 | 30 ms | 60-120 ms | 29-45 kbps | 3.5, 3.9 |

*MOS (Mean Option Score or ACR (Absolute Category Rating) is a widely known voice quality measuring method. The scale ranges from 5 (excellent) to 0 (unacceptable). The typical desirable range for VOIP transmission is from 3.5 to 4.2.

**NOTE**: The Playout Delay and Bandwidth depend on the configured amount of audio per packet. The bandwidth values are for bidirectional audio without VAD (Voice Activity Detection) enabled.

### Analog Audio Specifications

Signal Type: Fully differential (balanced)
Nominal Level: 8dBu
Maximum Level: 20dBu
Input Impedance: High (22K Ω)
Output Impendance: Low (600 Ω)

### A/D and D/A Specifications

Sampling Rate: 8 KHz
Resolution: 8 bits
Converter Architecture: 128x Over-sampling Σ - Δ Modulator

## *Pin Outs for Connections*

| RJ-45 Pin | Function Ethernet |
|---|---|
| 1 | Ethernet TPO+ |
| 2 | Ethernet TPO- |
| 3 | Ethernet TPI+ |
| 4 | TPO+ |
| 5 | TPO- |
| 6 | Ethernet TPI- |
| 7 | TPI+ |
| 8 | TPI- |

| DB-9 Pin | Function I/O |
|---|---|
| 1 | RS485+ |
| 2 | RS485- |
| 3 | N/A |
| 4 | RVON-I/O Audio IN+ |
| 5 | RVON-I/O Audio IN- |
| 6 | N/A |
| 7 | RVON-I/O Audio OUT- |
| 8 | RVON-I/O Audio OUT+ |
| 9 | N/A |
| See page Figure 2, “DB-9 Crossover Cable Connection Diagram,” on page 6. | |

| DB-9 | Function Serial Port |
|---|---|
| 1 | N/A |
| 2 | RXD, RVON-I/O Received Data |
| 3 | TXD, RVON-I/O Transmitted Data |
| 4 | N/A |
| 5 | GND |
| 6 | N/A |
| 7 | N/A |
| 8 | N/A |
| 9 | N/A |

| DB-9 Pin | Function Relay 1&2 |
|---|---|
| 1 | Closed 0 |
| 2 | Open 0 |
| 3 | +12V Through 300 Ohm Resistor |
| 4 | Closed 1 |
| 5 | Open 1 |
| 6 | Common 0 |
| 7 | GND |

| DB-9 Pin | Function Relay 1&2 |
|---|---|
| 8 | GND |
| 9 | Common 1 |

| DB-25 Pin | Function GPI/O |
|---|---|
| 1 | GPO 1 |
| 2 | GPO 2 |
| 3 | GPO 3 |
| 4 | GPO 4 |
| 5 | GPO 5 |
| 6 | GPO 6 |
| 7 | GPO 7 |
| 8 | GPO 8 |
| 9 | GND |
| 10 | GND |
| 11 | GND |
| 12 | GND |
| 13 | GND |
| 14 | GPI 1 |
| 15 | GPI 2 |
| 16 | GPI 3 |
| 17 | GPI 4 |
| 18 | GPI 5 |
| 19 | GPI 6 |
| 20 | GPI 7 |
| 21 | GPI 8 |
| 22 | GND |
| 23 | GND |
| 24 | GND |
| 25 | GND |

**NOTE**: The DB-25 pin GPI/O connector can be directly connected to the Zeus, Zeus II, ADAM CS, and ADAM

** Connection to a Cronus Intercom requires a customer cable assembly.

# *DIP Switches*

| | |
|---|---|
| **DIP Switch 1:** | **RVON-I/O Mode** |
| **Default Position:** | OPEN |
| **Switch Position:** | OPEN - Local Mode<br>CLOSED - Remote Mode |
| **Description:** | There are two modes in which the RVON-I/O can run: LOCAL and REMOTE mode<br>In **LOCAL** mode, keypanels are directly connected to the RVON-I/O. For example, a KP-32 is connected serially to the RVON-I/O which is connected via Ethernet to the RVON-8 in the ADAM system. The connection between the KP-32 and the RVON-I/O is LOCAL.<br>In **REMOTE** mode, a digital keypanel (such as a KP-32 with RVON-1) is connected to an RVON-I/O, which is then connected to an ADAM CS, Zeus, Cronus or an ADAM with AIO cards.<br>**NOTE**: To see system drawing scenarios of both local and remote mode, see "System Diagrams" on page 12 |

| | |
|---|---|
| **DIP Switch 2:** | **Serial Debug Shell** |
| **Default Position:** | OPEN |
| **Switch Position:** | OPEN - Pass-through port enabled<br>CLOSED - Serial Debug Shell enabled; IP configuration on Audio Port 8. |
| **Description** | When the DIP Switch is CLOSED, Serial Debug is enabled. When the DIP switch is OPEN, the Pass-through Port is enabled.<br>The **Pass-through Port** is used to send serial port data over Ethernet.<br>The **Serial Debug Shell** provides the user access to a command shell (this is similar to Telnet, except the connection is made through a serial cable).<br>The IP configuration on I/O Port 8 allows users to connect and configure the IP Address of the RVON-I/O using a compatible keypanel (KP-32, KP-632, KP-832, and KP-812) connected serially to I/O Port 8 on the back of the RVON-I/O. IP Configurations are made from the keypanel service menu. Note, you must have keypanel firmware version 2.02 or higher to configure the IP Address. |

| | |
|---|---|
| **DIP Switch 3:** | **Telnet Shell** |
| **Default Position:** | OPEN |
| **Switch Position:** | OPEN - Telnet Shell is enabled<br>CLOSED - Disabled, user name and password are set to default |
| **Description** | Using telnet, you can set permissions and configurations within the RVON-I/O application. See Table , "RVON-I/O Command Table," on page 25. |

| | |
|---|---|
| **DIP Switch 4:** | **Boot Downloader** |
| **Default Position:** | OPEN |
| **Switch Position:** | OPEN - Boot Downloader is disabled (runs the native flash program)<br>CLOSED - Boot Downloader is enabled (runs the boot downloader) |
| **Description:** | Switches to the boot downloader flash program. This program is sent with the RVON-I/O in case the native flash program becomes corrupt. |

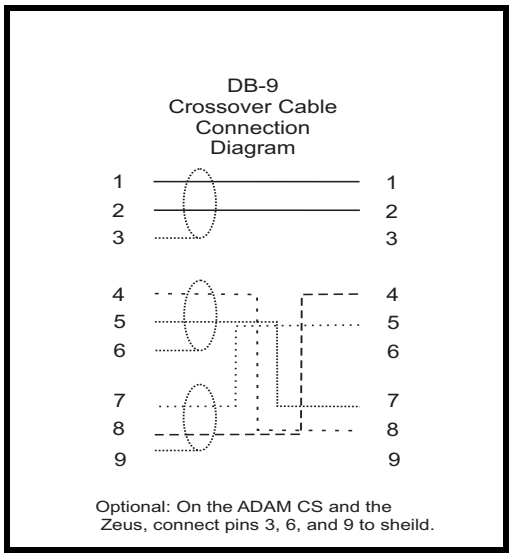



**FIGURE 2. DB-9 Crossover Cable Connection Diagram**

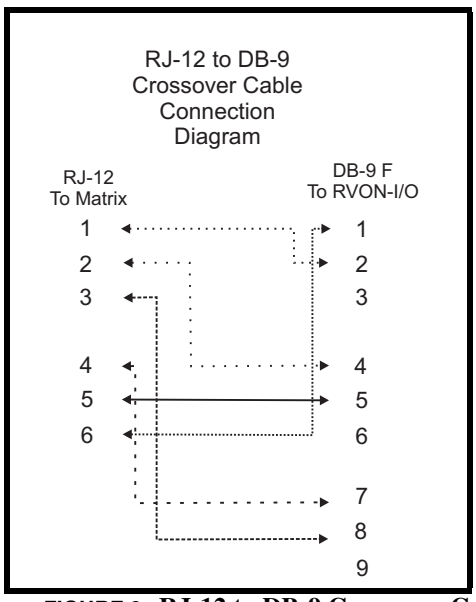



**FIGURE 3. RJ-12 to DB-9 Crossover Cable Connection Diagram**

CHAPTER 2

# *Installation*

The RVON-I/O can operate in one of two modes, LOCAL mode or REMOTE mode. When operating in **LOCAL** mode, keypanels are directly connected to the RVON-I/O. For example, a KP-32 is connected serially to the RVON-I/O, which is connected via Ethernet to the RVON-8. The KP-32 RVON-I/O is in LOCAL mode. When operating in **REMOTE** mode, a digital keypanel (such as KP-32 with RVON-1) is connected via Ethernet to an RVON-I/O, which is then connected to an intercom.

## *System Requirements*

Before you install the RVON-I/O, verify the following items are updated:

| Product | Firmware |
|---|---|
| RVON-I/O | 1.0.0 or higher |
| RVON-1 | 1.1.0 or higher |
| RVON-8 | 1.2.0 or higher |
| Master Controller | 9.22.0 or higher |
| KP-32 | 2.0.2 or higher |
| AZedit | 2.08.0 or higher |
| VKP | 1.0.1 or higher |

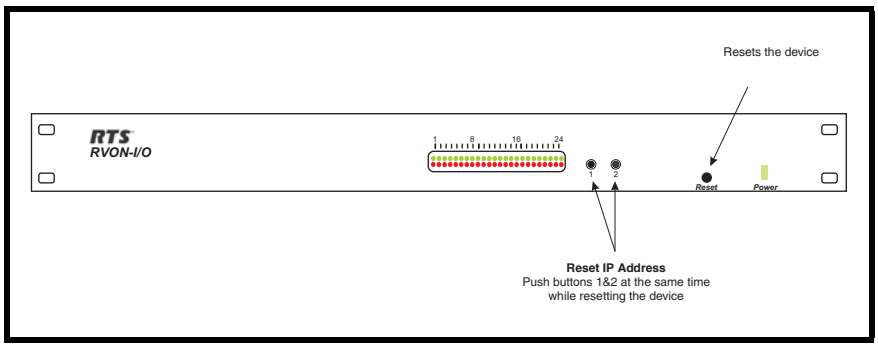
## *Reset the Current IP Address to the Default RVON-I/O IP Address*

The RVON-I/O is shipped with a default IP Address already configured on the unit. The **default IP Address is 192.168.0.1**, the default **Netmask is 255.255.0.0**, the default **Gateway is set to zero**. This feature is useful when using an RVON-I/O in the field (i.e.; a mobile truck) where the IP Address is constantly changing from on destination network to the next. By being able to reset the IP Address to a default address, you will be able to connect to the RVON-I/O without having to remember the IP Address of the previous location. For more information on configuring the IP Address, see "Reset the Current IP Address to the Default RVON-I/O IP Address" on page 8.

To reset the IP Address to default on the RVON-I/O, do the following:

1. On the front of the RVON-I/O unit, push and hold buttons **1** and **2**, then push the **RESET** button. Hold the buttons in for 15 seconds or until all the LED lights blink rapidly.
   When all the LED lights blink rapidly, the RVON-I/O IP Address has been reset to the default.

**NOTE**: If buttons 1 and 2 are pressed during power ON, the unit will reset the IP Address.




## *Basic Installations*

On the following pages, installation for *Basic Local Mode*, *Basic Remote Mode*, and *Basic Trunked* systems will be explained.

**NOTE**: When using Zeus with RVON-I/O GPI/O you must uncheck the "Configure onboard GPI/Os in FR9528 mode" ***BEFORE*** you configure your system. If you set this after you configure your panels, it will cause the Zeus configuration to be reset.

## *Basic Local Mode Setup*

**NOTE**: Keypanel version is not relevant in Local Mode.

In LOCAL mode, the keypanel is directly connected to the RVON-I/O through the use of a DB-9 serial cable.

To setup an RVON-IO local mode system, do the following

1. On the back of the RVON-I/O, put DIP switch 1 in the **OPEN** position (LOCAL mode).
2. **Power ON** the RVON-I/O unit.
3. Connect **keypanels to the RVON-I/O** (I/O ports), using a straight DB-9 (serial cable). See page 6
4. Connect the **RVON-I/O to the Ethernet**.
5. Set the **IP Address** for the RVON-I/O (see "Setup IP Addresses" on page 17).
6. Using Telnet or Serial programming (see "RVON-I/O Command Table" on page 25), configure the RVON-I/O as follows:

**NOTE**: To see actual Telnet commands, see "RVON-I/O Command Table" on page 25

*set channel [chan]*
*dest ip_addr (IP Address of the RVON-1, RVON-8, or RVON-I/O that is connected to the RVON-I/O)*
*dest_type (the type of device, either an RVON-1, RVON-8, or RVON-I/O)*
*dest_chan*
*dest_codec (optional)*

7. Once you are finished configuring the RVON-I/O, type **ACTIVATE** into the command prompt to activate the configuration setup on the RVON-I/O

## *Basic Remote Mode Setup*

In Remote Mode, the keypanel with RVON-1 installed is directly connected to the RVON-I/O via Ethernet.

To setup a basic remote mode system, do the following:

1. On the back of the RVON-I/O, put DIP switch 1 in the **CLOSED** position (Remote Mode).
2. Power **ON** the RVON-I/O unit.
3. Connect the **matrix system to the RVON-I/O** (I/O ports), using a DB-9 crossover cable. See page 6 for the different connection diagrams.
4. Connect the **RVON-I/O to Ethernet**.
5. Set the IP Address for the **RVON-I/O** (see "Setup IP Addresses" on page 17).
6. Using Telnet or Serial programming (see "RVON-I/O Command Table" on page 25), configure the RVON-I/O as follows.

**NOTE**: To see actual Telnet commands, see "RVON-I/O Command Table" on page 25.

***set channel [chan]***
*dest ip_addr (IP Address of the RVON-1, RVON-8, or RVON-I/O that is connected to the RVON-I/O)*
*dest_type (the type of device, either an RVON-1, RVON-8, or RVON-I/O)*
*dest_chan*
*dest_codec (optional)*
***set panel [panel]***
*poll_id (see "Set Panel" on page 30)*
*baud*

7. Once you are finished configuring the RVON-I/O, type **ACTIVATE** into the command prompt to activate the configuration setup on the RVON-I/O.

**NOTE**: If you do not have a RVON-1 pre-installed, the KP-32 or the KP-812 must have the RVON-1 component installed prior to Remote setup (See the RVON-1 User Manual for details).

## *RVON-I/O Trunk Setup*

When trunking two intercom systems over Ethernet using RVON-I/O, you can setup the RVON-I/O on both ends of the trunks in either **LOCAL** or **REMOTE** mode. However, a **REMOTE to REMOTE** mode system is the preferred way of trunking.

To setup remote mode in a trunked system, do the following:

1. On the back of the RVON-I/O, put DIP switch 1 in the **CLOSED** position (Remote Mode).
2. Power **ON** the RVON-I/O unit.
3. Connect the **Matrix to the RVON-I/O** (via I/O ports), using a DB-9 crossover cable. See page 6 for the different connection diagrams.
4. Connect the **RVON-I/O to Ethernet**.
5. Set the **IP Address** for the RVON-I/O (see “Setup IP Addresses” on page 17).
6. Using Telnet or Serial programming, configure the RVON-I/O as follows:

   ***set channel [chan]***

   *dest ip_addr (IP Address of the RVON-1, RVON-8, or RVON-I/O that is connected to the RVON-I/O)*
   *dest_type (the type of device, either an RVON-1, RVON-8, or RVON-I/O)*
   *dest_chan*
   *dest_codec*

   ***set panel [panel]***

   *poll_id (see “Set Panel” on page 30)*
   *NOTE: If the RVON-I/O is in Remote Mode, set the Panel Poll ID to 0, so it will not be seen as keypanel.*
   *baud*

**NOTE**: To see actual Telnet commands, see “RVON-I/O Command Table” on page 25.

7. Once you are finished configuring the RVON-I/O, type **ACTIVATE** into the command prompt to activate the configuration setup on the RVON-I/O

**NOTE**: To set up the other side of the trunk system, repeat steps 1 through 7.

## *RVON Serial Pass-through Setup*

The Serial Pass through is the path in which data is sent and received

1. Verify the correct port is selected - on J1 see “Pin Outs for Connections” on page 4.
2. Verify the serial connections are correct.
3. Verify Pass Through Port is enabled (DIP Switch 2 OPEN), see “DIP Switches” on page 5.
4. Verify the RVON-I/O baud rate matches the baud rate of the device it is connecting with.
5. Using Telnet or Serial programming, configure the RVON-I/O as follows:

   ***set serial***

   *mode*

   *ip_addr*

   *baud*

**NOTE**: To see actual Telnet commands, see “RVON-I/O Command Table” on page 25.

6. Once you are finished configuring the RVON-I/O, type ACTIVATE into the command prompt to activate the configuration setup on the RVON-I/O

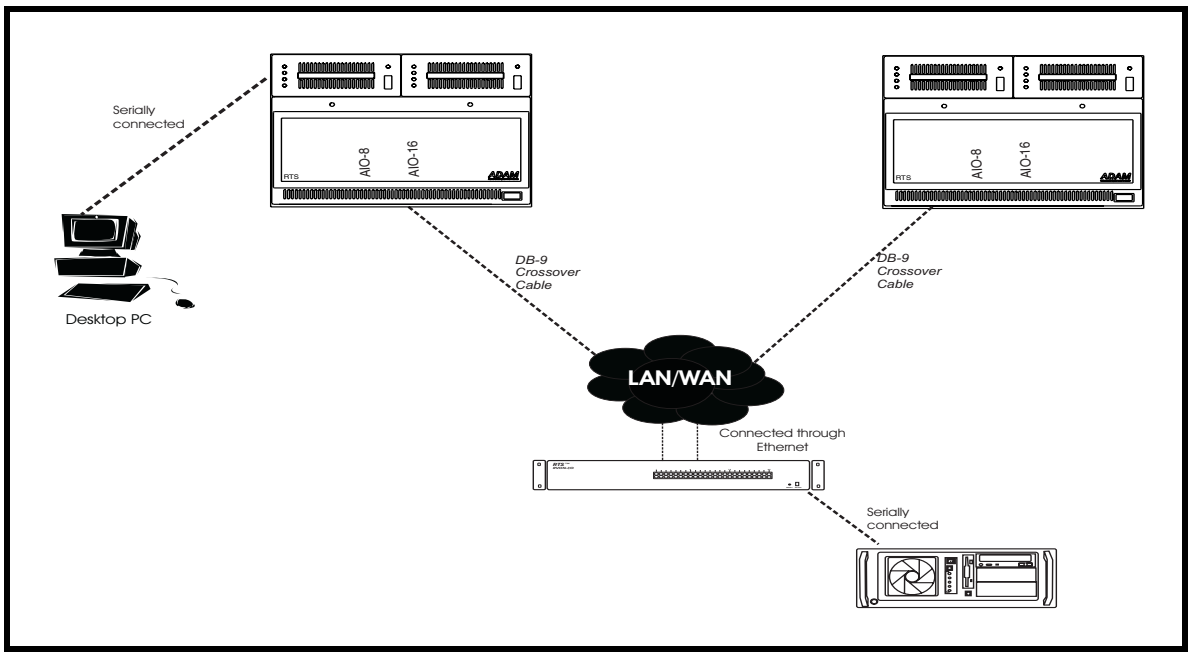



**FIGURE 4. Serial Pass-Through system diagram**

## *System Diagrams*

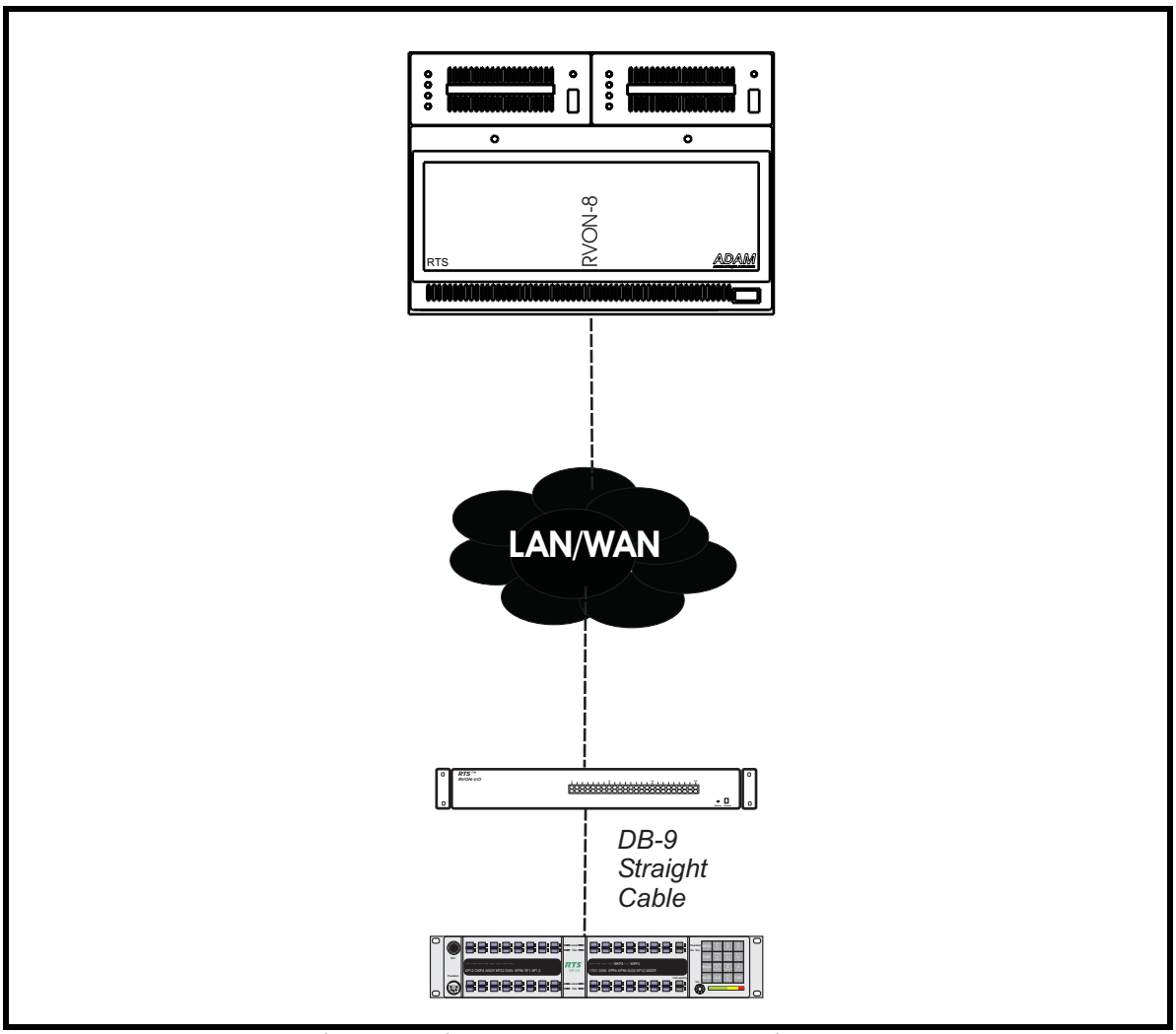



**FIGURE 5. Local Mode - This system diagram shows Local mode. It is called local mode because the keypanel is connected directly to the RVON-I/O.**

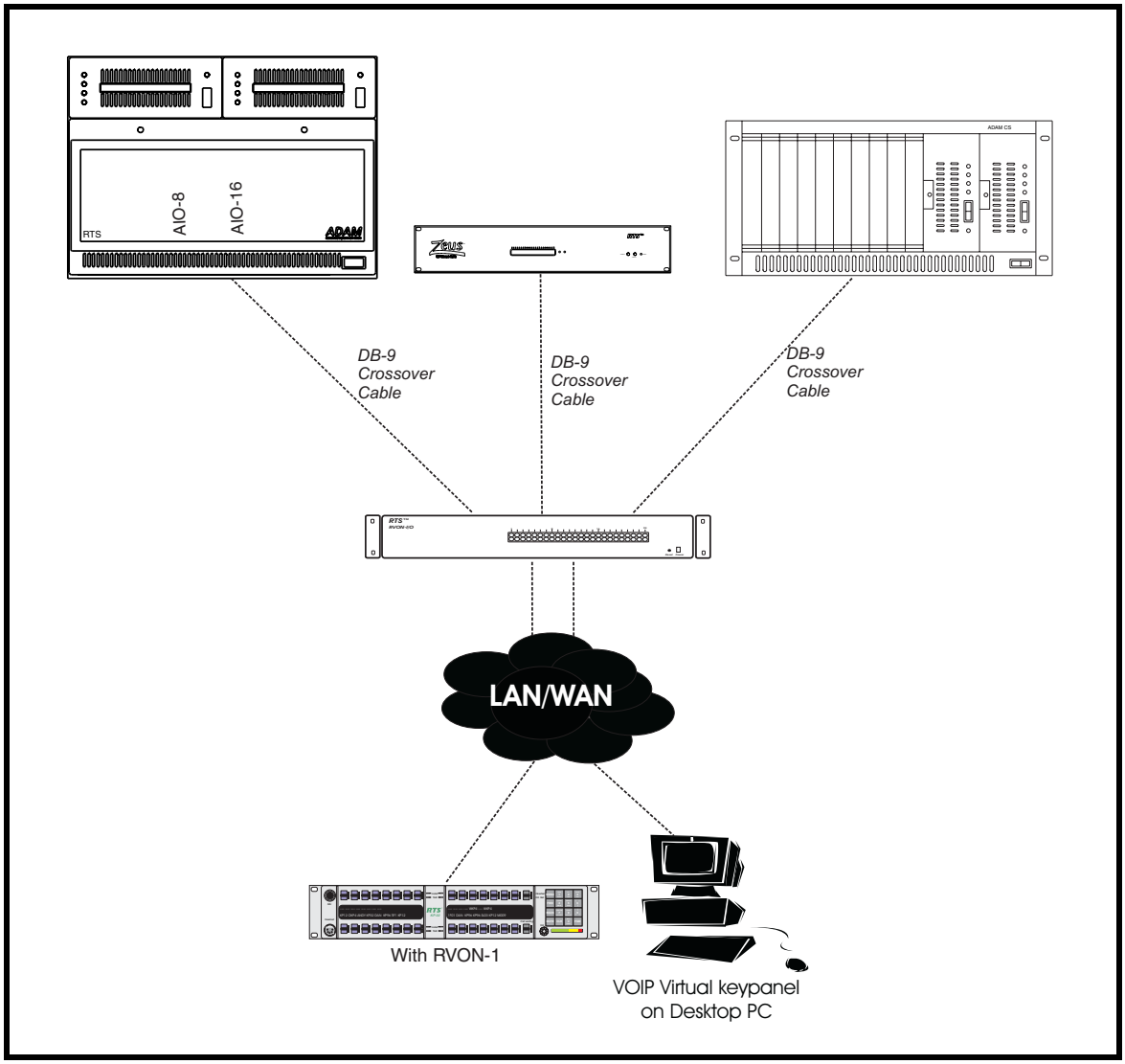



**FIGURE 6. Remote Mode - Remote Mode means the keypanels are not connected to the RVON-I/O directly. In the example, the KP-32 with RVON-1 or the VKP has to pass through the LAN/WAN before connecting to the RVON-I/O.**

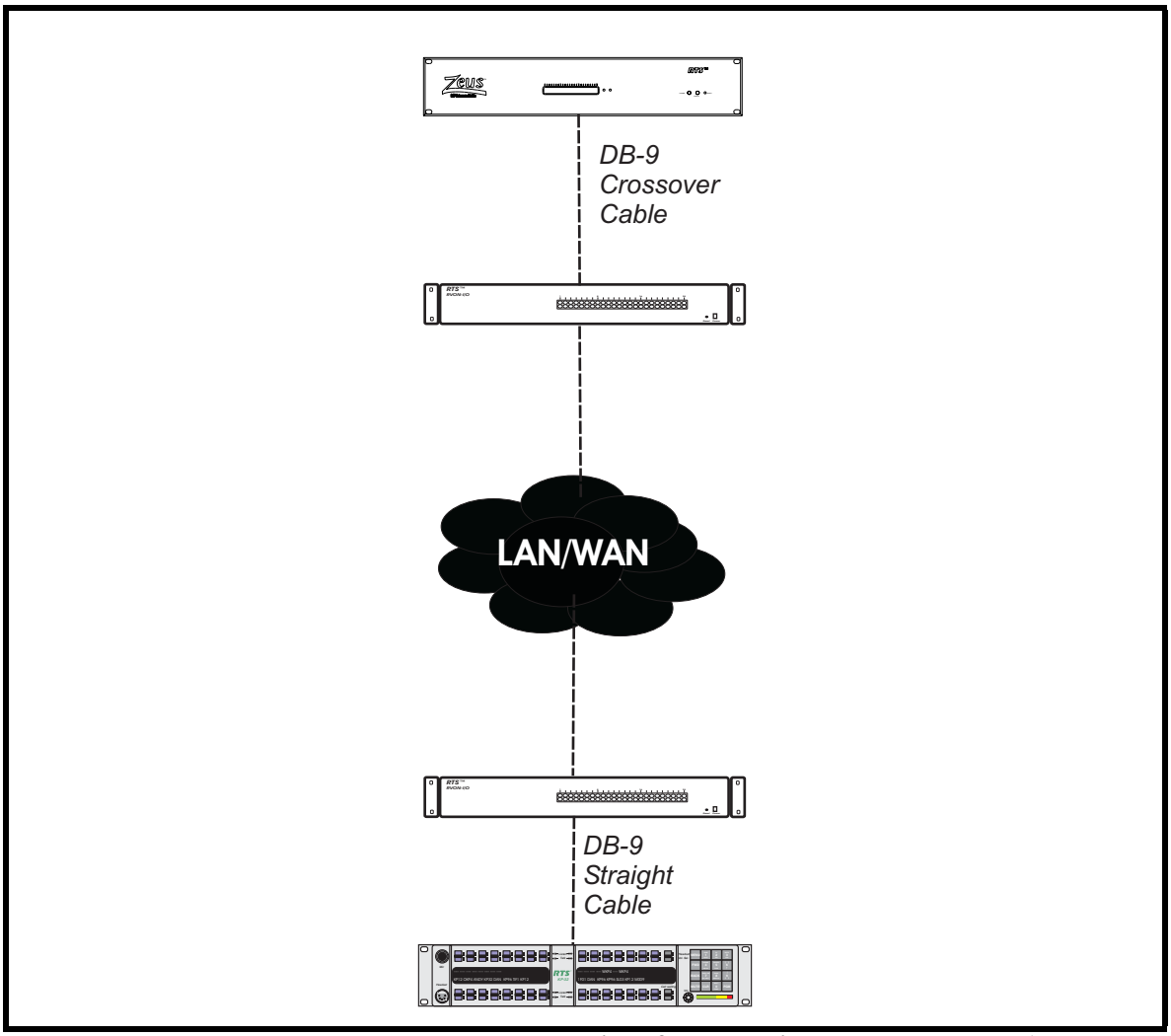



**FIGURE 7. Local and Remote Mode - The lower portion of the graphic shows a local setup (the keypanel is directly connected to the RVON-I/O), while the upper portion of the graphic shows a remote setup. The RVON-I/O works similar to an audio converter box. In the lower portion of the graphic, the audio coming from the KP-32 going towards the TVON-I/O will be changed from analog to digital audio (and vice versa). The same holds true for the upper portion of the graphic, where the audio coming from the RVON-I/O going towards the Zeus is converted to analog.**

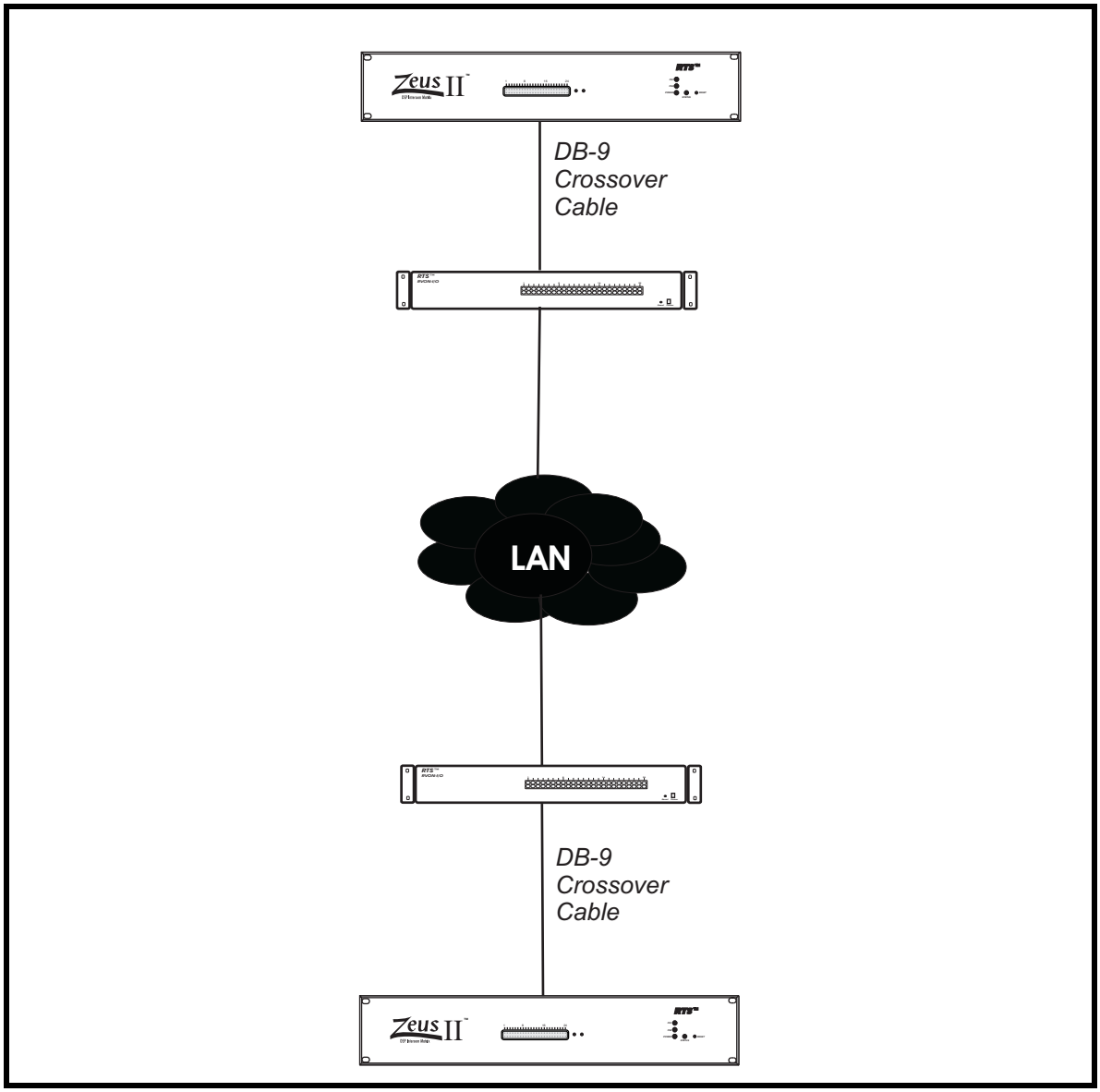



**FIGURE 8. Trunking with RVON-I/O - When you trunk two intercom systems together using two RVON-I/O's, you can configure one as Remote and the other as Local. However, remote to remote setup is the preferred system setup for trunking.**

## *RVON-1 Jumpers and Connections*

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

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

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

J2 Connector

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

RS232 debug serial port via Connector J3. J3 is a 6-pin heater that connects to RS-232 compatible serial ports of the TNETV2020.

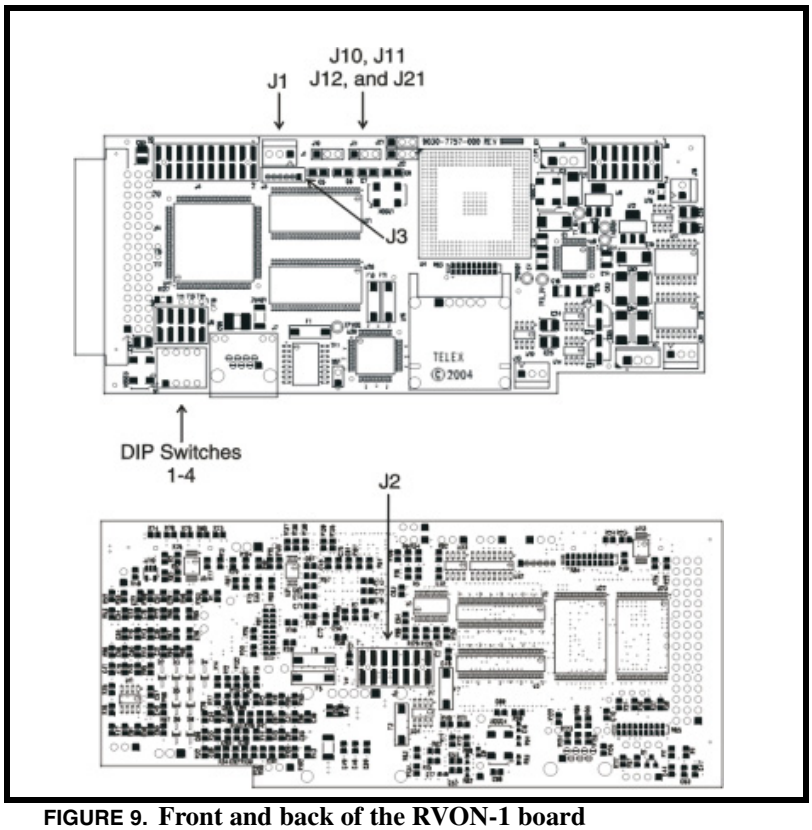



**FIGURE 9. Front and back of the RVON-1 board**

**NOTE**: Pin 1 of a jumper is shown as a black square.

CHAPTER 3

# Configuration

## Setup IP Addresses

There are three ways in which the IP Address can be set on the RVON-I/O; via a **keypanel**, through **Telnet**, or using the **Serial Debug Port**.

If you are using a keypanel to set the IP Address of the RVON-I/O, you must use a KP-32, KP-632, KP-832, or a KP-812. There are two sets of instructions to configure the IP Address from a KP-32, KP-632, KP-832 and a KP-812. This is because the KP-812 uses encoder knobs to navigate its menu system. For instructions on how to use the KP-812 to configure the IP Address, see "Configure the IP Address from a KP-812" on page 18.

### Configure the IP Address from a KP-32, KP-632, or a KP-832

**NOTE**: Make sure DIP switch 1 is in the OPEN position (LOCAL mode - LED 24 RED is NOT lit). Also, make sure DIP switch 2 is in the CLOSED position (configuration via IO port 8 enabled).

To configure the IP Address from a KP-32, KP-632, KP-832 keypanel, do the following:

1. Connect the **RVON-I/O** using serial cable from the IO port 8 on the unit to the FRAME connector on the KP-32, KP-632, or KP-832.

**NOTE**: The firmware on the KP-32, KP-632, KP-832 keypanels needs to be at version 2.0.2 or higher.

2. On the KP-32, KP-632, and KP-832, press **Menu**.
   *The Display menu item appears.*
3. Press the **up arrows** or **down arrows** to scroll to Service.
4. Press **PGM**.
   *The Aux Inputs menu item appears.*
5. Press the **up arrows** or **down arrows** to scroll to RVON Setup.
6. Press **PGM**.
   *The IP Address menu item appears.*
7. Press **PGM**.
   *The current IP Address appears.*
8. 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.*
9. 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 modification.

10. Repeat steps **8** and **9** until the entire IP Address is entered.
11. 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 port of an IP Address so that only the host computer part of the address remains (for example, 255.255.255.0).

12. Press **PGM**.
    *The current Netmask appears*.
13. Enter the **first number** in the Netmask.
    *This activates the first octet in the Netmask and clears the rest of the Netmask.*
14. 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 modification.

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

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

17. Press **PGM**.
    *The current Gateway IP Address appears.*
18. 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*.
19. 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 modification.

20. Repeat steps **18** and **19** until the entire Gateway in entered.
21. Press **PGM**.
22. Press **CLR** to exit the menu.
    *The changes are now enabled*.

### Configure the IP Address from a KP-812

To configure the IP Address from a KP-812 keypanel, do the following:

**NOTE**: The firmware must be at 1.1.1 or higher.

1. On the KP-812 turn the **Select** knob to scroll to Menu.
2. Tap the **Select** knob.
   *The top level menu appears*.
3. Turn the **Select** knob to scroll to the Service menu item.
4. Tap the **Select** knob.
   *The Service menu appears.*
5. Turn the **Select** knob to scroll to the RVON Setup menu item.

6. Tap the **Select** knob.
   *The IP Address menu item appears*.
7. Tap the **Select** knob.
   *The current IP Address appears*.
8. 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**.
9. Tap the **Select** knob.
   *This confirms the first octet in the IP Address and moves you to the second octet*.

**NOTE**: Tap the Select knob to skip over any octet that does not need modification.

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

**NOTE**: Once you have entered the IP Address, you will then enter the Netmask. The Netmask is a string of 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).

12. Tap the **Select** knob.
    *The current Netmask appears*.
13. Enter the **first number** in the Netmask.
    *This activates the first octet in the Netmask and clears the rest of the Netmask.*
14. Tap the **Select** knob.
    *This confirms the first octet in the Netmask and move you to the second octet.*

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

15. Repeat steps **13** and **14** until the entire Netmask is entered.
16. Tap the **Select** 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.

17. Tap the **Select** knob.
    *The current Gateway IP Address appears*.
18. 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.*
19. Tap the **Select** knob.
    *This confirms the first octet in the Gateway IP Address and moves you to the second octet*.

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

20. Repeat steps **18** and **19** until the entire Gateway is entered.
21. Tap the **Select** knob.
22. Press and hold the **Select** knob to exit the menu.
    *The changes are now enabled*.

### Configure the IP Address Using Telnet

**NOTE**: In order to use Telnet to set a new IP Address for you RVON-I/O, you must know the existing IP Address. If you do not know the existing IP Address, you can reset the IP Address. See “Configure the IP Address Using Telnet” on page 19. Also, you must make sure Telnet is enabled (DIP Switch 3 OPEN).

The following instructions will show you how to access the Telnet screens and show you some of the information you can display and edit.

To Display settings for the RVON-I/O, do the following:

1. Open a **Command Prompt** application session.
2. At the prompt type **TELNET <**IP Address**>** (The IP Address is the existing IP Address assigned to the RVON-I/O).

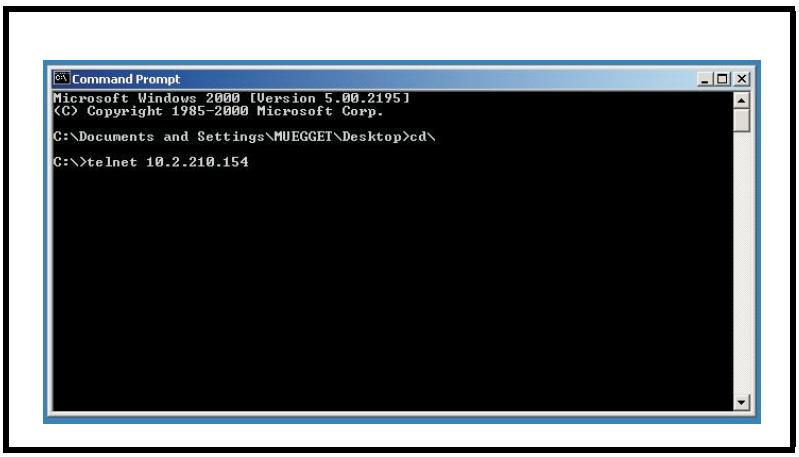



**Figure 2.**

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

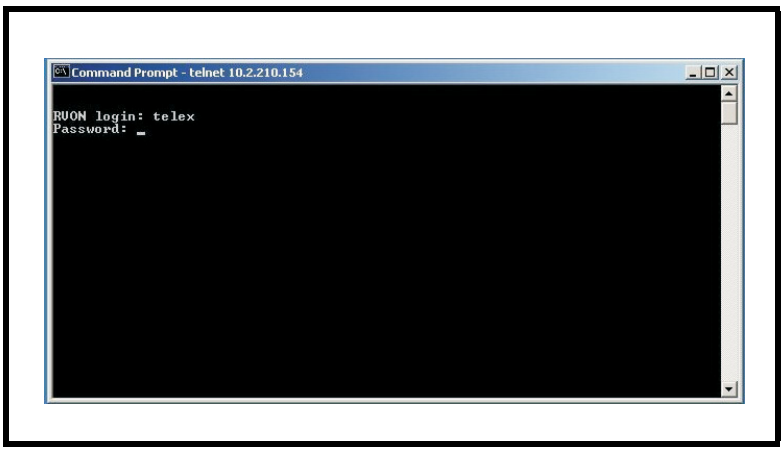



**Figure 3.**

4. In the logon field, type the **RVON login** (default = telex).
5. Press **Enter**.
6. In the password field, type the **RVON password** (default = password).
7. Press **Enter**.
   *An arrow prompt appears.*

8. At the prompt, type **dbgcmd** to access the debug command screens.

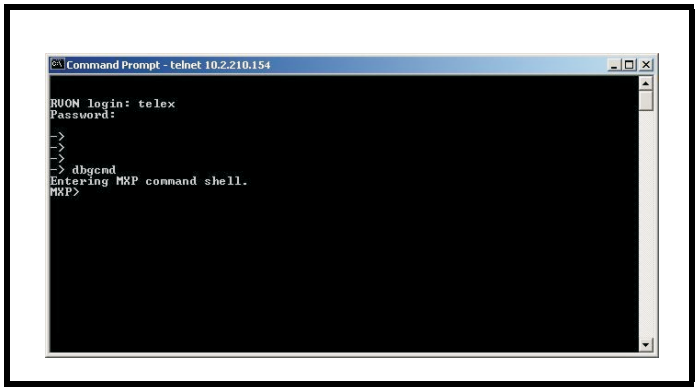



**Figure 4.**

9. Press **Enter**.
   *An MXP prompt appears.*
10. At the MXP prompt, type **set rvon ip_addr 10.3.210.12** (this IP Address is for example purposes only).
11. Press **Enter**.
    *The IP Address is set for the RVON-I/O.*
12. Set the **Netmask**.
13. At the MXP prompt, type **Activate**.
    *RVON-I/O will reset itself to the new IP Address. The current telnet session becomes invalid.*

## Configure the IP Address Using the Serial Debug Port

**NOTE**: In order to use the Serial Debug Port to set the IP Address for your RVON-I/O, you must know the intended IP Address. Also, you must make sure DIP switch 2 is not enabled (CLOSED).

The following instructions will show you how to access the Serial Debug Port screens and show you how to configure the IP Address for the RVON-I/O

To configure the IP Address for the RVON-I/O, do the following:

1. Connect the PC's COM port to the RVON-I/O's serial connector.
2. Run a **HyperTerminal** program.
   *The window provided Hyper Terminal is located at Start Programs>Accessories>Communications >HyperTerminal.*
3. At the prompt, type **dbgcmd**.

4. At the MXP prompt, **set rvon ip_addr 10.3.210.20** (this IP Address is for example purposes only).

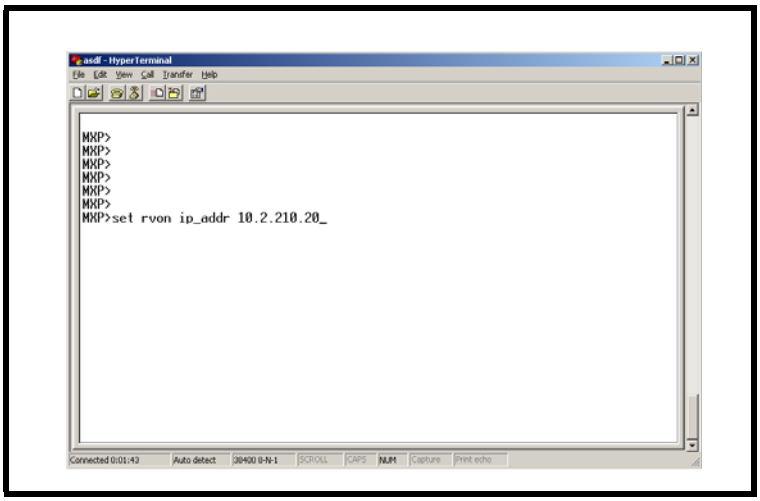



**Figure 5.**

5. Press **Enter**.
   *An MXP prompt appears*.
6. Press **Enter**.
   *The IP Address is set for the RVON-I/O*.
7. Set the **Netmask**.
8. At the MXP prompt, type **Activate**.
   *RVON-I/O will reset itself to the new IP Address. The current telnet session becomes invalid.*

## Configure the RVON-I/O Using Telnet or a Serial Port

RVON-I/O programming can be done using a direct serial connect to or a Telnet connection. There are two physical connections to an RVON-I/O:

Direct serial through a custom serial cable (connected on the back of the RVON-I/O at SERIAL)
Ethernet (Telnet Only)

Setup

Serial Port: 38,4000 baud, 8 data bits, 1 stop bit, No Parity, NO-Flow control
Telnet: IP Address, port 23

## Configure RVON-I/O Using Telnet and Serial Port

**IMPORTANT**: Because the RVON-I/O is shipped with a default IP Address it may not be accessible on the network. The IP Address should already be configured before attempting to try to connect through Telnet. To set the IP Address, see “Setup IP Addresses” on page 17.

If the RVON-I/O already has an IP Address compatible with your network, you can configure the RVON-I/O thr4ough the use of Telnet. The following instructions will show you how to access the Telnet screens and show you some of the information you can display and edit.

To display the settings for an RVON-I/O, 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-I/O).

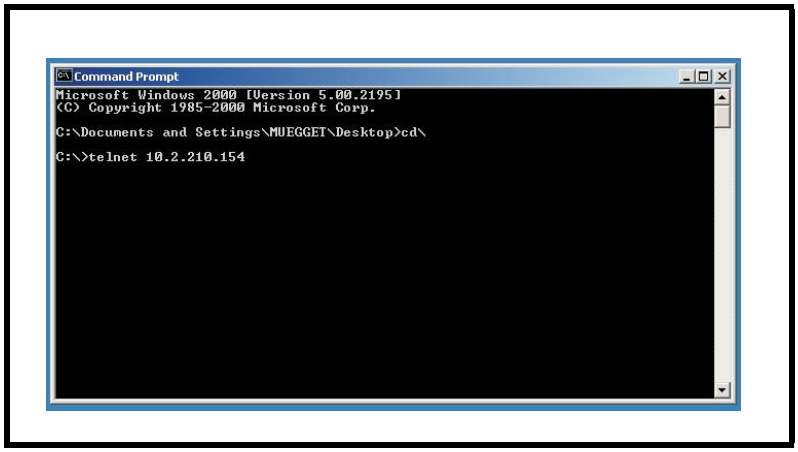



**Figure 6.**

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

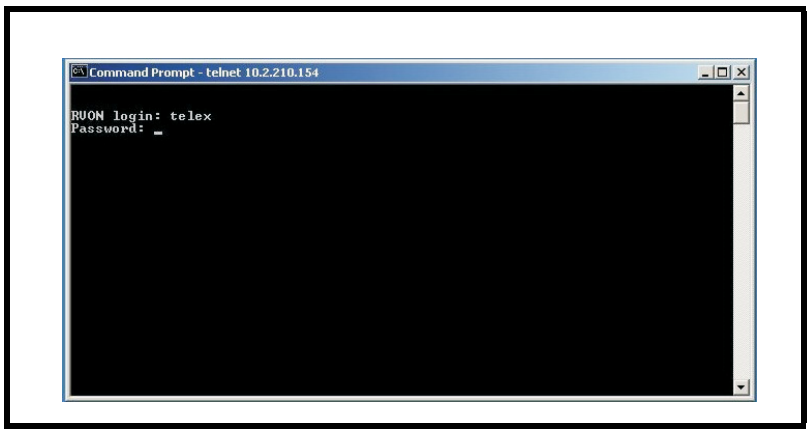



**Figure 7.**

4. In the login field, type the **RVON login** (default = telex).
5. Press **Enter**.
6. In the password field, type the **RVON password** (default = password).
7. Press **Enter**.
   *A prompt appears.*

8. At the prompt, type **dbgcmd** to access the debug command screens.

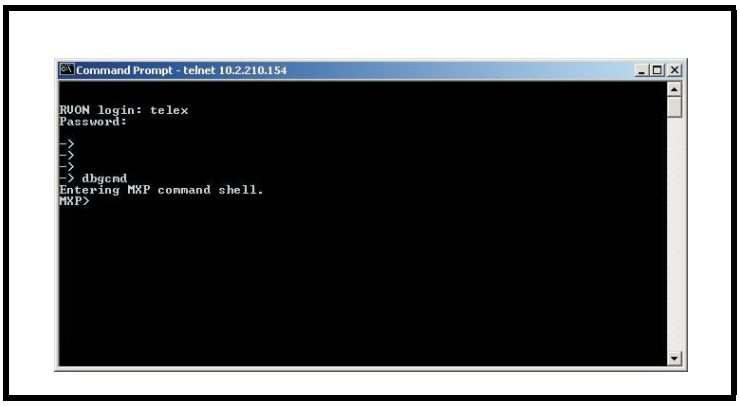



**Figure 8.**

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

# *RVON-I/O Command Table*

**TABLE 9.** RVON-I/O Command Table

| Command | Parameter 1 | Parameter 2 | Description |
|---|---|---|---|
| show rvon | | | Shows RVON-I/O IP Address and other general information. |
| show channel | | | Shows destination address and connection information. |
| show serial | | | Shows serial port setting. |
| show gpio | | | Shows gpio settings. |
| show panel | | | Shows the channel control settings (poll id and baud rate). |
| show emac | | | Shows Ethernet settings. |
| | | | |
| set rvon | | | Help screen which lists all “set rvon” commands. |
| set rvon | ip_addr | X.X.X.X | Set the IP Address for the RVON-I/O. |
| set rvon | net mask | X.X.X.X | Set the Network Mask for the RVON-I/O. |
| set rvon | gateway | X.X.X.X | Set the Gateway IP Address for the RVON-I/O. |
| set rvon | user | username | Set the RVON-I/O user name for Telnet access.<br>*Default = telex* |
| set rvon | password | password | Set the RVON-I/O password for Telnet access (8-40 characters).<br>*Default = password* |
| set rvon | vad_threshold | adaptive (#) | Set the VAD threshold (silence detection). Adaptive refers to autoselect. The # can be -20 to +10 dBm. |
| | | | |
| set channel [chan] | | | Help screen, which lists all “set chan” commands (0-7). This refers to VOIP channel setting. |
| set channel [chan] | dest_ip | X.X.X.X | Set the destination IP Address for this particular RVON channel. |
| set channel [chan] | dest_type | X | X = 0 (rvon-8), 1 (rvon-1, 2 (rvon-I/O |
| set channel [chan] | dest_chan | X | Set the destination channel - the port on the far end (0-7). |
| set channel [chan] | chan_codec | X | Set the profile to use which includes the compression codec (0-27) (see Table 11 on page 27). |
| set channel [chan] | input_gain | X | Set the input gain for the specified channel -14 to +14dB |
| set channel [chan] | output_gain | X | Set the output gain for the specified channel -14 to +14 dB. |
| set channel [chan] | onhook | | force the channel to disconnect. |
| set channel [chan] | offhook | | force the channel to connect. |
| | | | |
| set serial | | | Help screen, which lists all “set serial” commands. |
| set serial | mode | X | Set the serial mode.<br>0 = Pass Through mode |
| set serial | ip_addr | X.X.X.X | Set the destination IP Address for this serial pass-through port. |
| set serial | ip_addr_2 | X.X.X.X | Not Available |

**TABLE 9.** RVON-I/O Command Table

| Command | Parameter 1 | Parameter 2 | Description |
|---|---|---|---|
| set serial | baud | X | Set the baud rate to use:<br>50 through 115000. |
| | | | |
| set gpio | | | Help screen, which lists all “set gpio” commands. |
| set gpio | mode | X | Set the gpio mode.<br>0 = Pass Through<br>1 = 1 Keypanel<br>2 = All Keypanels |
| set gpio | ip_addr | X.X.X.X | Set the destination IP Address for pass-through mode. |
| set gpio | panel | X | Set the IO port the gpio are associated with on the RVON-I/O. |
| | | | |
| set panel | | | Help screen, which lists all “set panel” commands. |
| set panel [pnl] | poll_id | X | Make sure the panel poll_id corresponds to the source of the audio it is connected to.<br>0-10<br>0= do not respond to polls |
| set panel [pnl] | baud | X | Set the baud rate for the panel.<br>9600 or 76800 |

Examples:

Set RVON ip_addr to 10.3.210.12.

1. At the command prompt, type
   **set rvon ip_addr 10.3.210.12**

Set the destination channel type to RVON-I/O.

1. At the command prompt, type:
   **set channel [chan_dest num_type 2**

Set the RVON login user name to Keypanel

1. At the command prompt, type:
   **set rvon user Keypanel**

**NOTE**: For more information on Set Serial, Set GPIO, and Set Panel see, “Set Serial” , “Set GPIO” and “Set Panel” on page 30.

**TABLE 10.** Codec Specifications.

| Coding Profile | Codec | Codec Rate | Audio (ms) / Packet | Packets/Second | Encoded Audio (bytes) | IP Overhead (bytes) | Total Packet Size (bytes) | Bandwidth (Bytes/sec) | Bandwidth (kbps/side) | Bandwidth (kbps/channel) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0,3,6,9 | G.711 | 64k | 10 | 100.00 | 80 | 60 | 140 | 14000 | 112 | 224 |
| 1,4,7,10 | G.711 | 64k | 20 | 50.00 | 160 | 60 | 220 | 11000 | 88 | 176 |
| 2,5,8,11 | G.711 | 64k | 30 | 33.33 | 240 | 60 | 300 | 10000 | 80 | 160 |
| 12,16 | G.729 | 8k | 10 | 100.00 | 10 | 60 | 70 | 7000 | 56 | 112 |
| 13,17 | G.729 | 8k | 20 | 50.00 | 20 | 60 | 80 | 4000 | 32 | 64 |
| 14,18 | G.729 | 8k | 40 | 25.00 | 40 | 60 | 100 | 2500 | 20 | 40 |
| 15,19 | G.729 | 8k | 60 | 16.67 | 60 | 60 | 120 | 2000 | 16 | 32 |
| 20,22 | G.723 | 5.3k | 30 | 33.33 | 24 | 60 | 84 | 2800 | 22.4 | 44.8 |
| 24,26 | G.723 | 6.3k | 30 | 33.33 | 24 | 60 | 84 | 2800 | 22.4 | 44.8 |
| 21,23 | G.723 | 5.3k | 60 | 16.67 | 48 | 60 | 108 | 1800 | 14.4 | 28.8 |
| 25,27 | G.723 | 6.3k | 60 | 16.67 | 48 | 60 | 108 | 1800 | 14.4 | 28.8 |

**NOTE**: A channel consists of a transmitting and a receiving side, so the bandwidth is double for a bi-directional audio stream.

**NOTE**: Bandwidth values are approximate maximums, actual bandwidth could be considerably lower with VAD enabled.

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

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

**Size**:Amount of audio in each IP Packet, milliseconds (ms)

**VAD**:Voice Activity Detection, when enabled and only when audio is above a certain threshold, will send packets. Otherwise, a silence packet is sent once, and not again until audio is above the threshold. Enabling this will result in a more efficient network, but care must be taken to because of the mother's day phenomenon. If there is ever a need to have all audio paths open and active, a network designer must account for this scenario.

**TABLE 11.** Supplemental Coding Table

| Coding | Codec | Codec Rate | Size | VAD |
|---|---|---|---|---|
| 0 | 711u | 64k | 10 | Y |
| 1 | 711u | 64k | 20 | Y |
| 2 | 711u | 64k | 30 | Y |
| 3 | 711u | 64k | 10 | N |
| 4 | 711u | 64k | 20 | N |
| 5 | 711u | 64k | 30 | N |
| 6 | 711A | 64k | 10 | Y |

**TABLE 11.** Supplemental Coding Table

| Coding | Codec | Codec Rate | Size | VAD |
|---|---|---|---|---|
| 7 | 711A | 64k | 20 | Y |
| 8 | 711A | 64k | 30 | Y |
| 9 | 711A | 64k | 10 | N |
| 10 | 711A | 64k | 20 | N |
| 11 | 711A | 64k | 30 | N |
| 12 | 729AB | 8k | 10 | Y |
| 13 | 729AB | 8k | 20 | Y |
| 14 | 729AB | 8k | 40 | Y |
| 15 | 729AB | 8k | 60 | Y |
| 16 | 729AB | 8k | 10 | N |
| 17 | 729AB | 8k | 20 | N |
| 18 | 729AB | 8k | 40 | N |
| 19 | 729AB | 8k | 60 | N |
| 20 | 723 | 5.3k | 30 | Y |
| 21 | 723 | 5.3k | 60 | Y |
| 22 | 723 | 5.3k | 30 | N |
| 23 | 723 | 5.3k | 60 | N |
| 24 | 723 | 6.3k | 30 | Y |
| 25 | 723 | 6.3k | 60 | Y |
| 26 | 723 | 6.3k | 30 | N |
| 27 | 723 | 6.3k | 60 | N |

Default Setup

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

All are "**set rvon**" commands

| COMMAND | DEFAULT VALUE | DESCRIPTION |
|---|---|---|
| ip_addr | 192.168.0.1 | IP address for the RVON-I/O |
| netmask | 255.255.0.0 | Network mask for the RVON-I/O |
| gateway | none | Gateway IP address for the RVON-I/O |
| user | telex | RVON-I/O username for Telnet access. |
| password | password | RVON-I/O password for Telnet access (8-40 characters). |
| vad_threshold | 10 | VAD Threshold |

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

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

| COMMAND | DEFAULT VALUE | DESCRIPTION |
|---|---|---|
| dest_ip | 0.0.0.0 | Destination IP Address for this particular channel. |
| dest_type | 0 | Destination type X = 0 (rvon-8), 1 (rvon-1), 2 (rvon-I/O) |
| dest_chan | 0 | Destination channel - the port on the far end (0-7) |
| chan_codec | 0 | Profile to use (previous coding table). |

## Set Serial

When using Serial Pass-Through Mode, you must set the serial port you will use with the IP Address for the destination serial pass-through port you are going to use. You must also set the baud rate at which data will be transmitted over the serial port (DIP Switch 2 OPEN). For more information on DIP switches, see “DIP Switches” on page 5.

## Set GPIO

When configuring the GPI/O on the RVON-I/O, there are three different mode options you may choose:

*Pass-Through Mode for GPI/O:*In Pass-Through mode, GPI/O status is sent over Ethernet, therefore you must set the IP Address of the destination GPI/O pass-through port.

*1 Keypanel (Single Port) Mode*:In 1 Keypanel mode, also referred to as single port mode, all GPI/O on the RVON-I/O are associated with only one keypanel. Associating the GPI/O with a keypanel allows you to access/address the GPI/O in UPL Statements. Use the Set Panel parameter to designate which RVON-I/O port is associated with all the GPI/O’s on the unit.

### 1 KEYPANEL MODE EXAMPLE

The GPI/O is associated with Port 0. This means that Port 0 will have eight GPI/O’s mapped to it. Connected to Port 0 is a keypanel with the keypanel ID of 33 in AZedit. To use the GPI/O, you can create UPL statements. But be careful to assign the correct Output Action parameters.

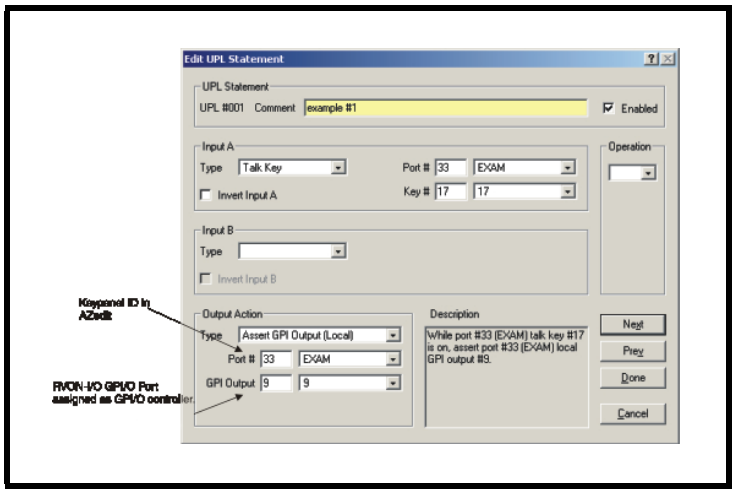



**Table 12.**

**TABLE 13.** 1 Keypanel Mode GPI/O assignments

| LOCAL GPI/O | RVON-I/O GPI/O HARDWARE PORT |
|---|---|
| GPI/O 9 | DB-25 Port 1 |
| GPI/O 10 | DB-25 Port 2 |
| GPI/O 11 | DB-25 Port 3 |
| GPI/O 12 | DB-25 Port 4 |
| GPI/O 13 | DB-25 Port 5 |
| GPI/O 14 | DB-25 Port 6 |
| GPI/O 15 | DB-25 Port 7 |
| GPI/O 16 | DB-25 Port 8 |

- **GPI/O 1 through 4** are assigned as local GPI/O's on keypanels (for example, a KP-32 with an optional GPI/O card.
- **GPI/O 5 through 8** are reserved and not used at this time.
- **GPI/O 9 through 16** are assigned as local GPI/O on RVON-I/O

All Keypanel (Multiple Port) Mode:In All Keypanel mode, also referred to as multiple port mode, each keypanel is associated to its corresponding GPI/O. For example, if keypanel 1 is connected to GPI/O 1, it is associate with the corresponding GPI/O port. When using All Keypanel mode, an additional GPI/O is available. This means that each keypanel has 4 GPI/O and then a GPI/O associated with port 9.

**NOTE**: The extra port 9 only is currently applicable to the ADAM Intercom System setup.

**TABLE 14.** All Keypanel Mode GPI/O assignments

| LOCAL GPI/O | RVON-I/O GPI/O HARDWARE PORT |
|---|---|
| GPI/O 9 | DB-25 Port 1 |
| GPI/O 9 | DB-25 Port 2 |
| GPI/O 9 | DB-25 Port 3 |
| GPI/O 9 | DB-25 Port 4 |
| GPI/O 9 | DB-25 Port 5 |
| GPI/O 9 | DB-25 Port 6 |
| GPI/O 9 | DB-25 Port 7 |
| GPI/O 9 | DB-25 Port 8 |

## Set Panel

**Set Panel** sets the address at which the RVON-I/O will respond to polls sent by the Intercom. If the RVON-I/O is connecting to a Zeus or AIO-8, you must set a Panel Poll ID. The **panel poll ID** is the data port address from which it communicates. Also, the panel poll ID is only used in remote mode.

Because the Zeus and AIO-8 share their data across 8 ports, they need to differentiate ports by using addresses. Therefore, to communicate with the right port you need to communicate with the specified address.

**EXAMPLE**:

2 RVON-I/O units are connected to the same Zeus System (RVON-I/O A and RVON-I/O B)

RVON-I/O A is connected to Zeus ports 1 and 2 on RVON-I/O ports 1 and 2.

RVON-I/O B is connected to Zeus ports 3 and 4 on RVON-I/O ports 1 and 2.

Because the Zeus cannot differentiate either of the RVON-I/O ports 1 and 2, it is necessary to adding an address to the ports:

| | |
|---|---|
| RVON-I/O A | port 1 set to 1 (set panel 0, poll ID 1) |
| | port 2 set to 2 (set panel 1, poll ID 2) |
| RVON-I/O B | port 1 set to 3 (set panel 0, poll ID 3) |
| | port 2 set to 4 (set panel 1, poll ID 4) |

If you are using Cronus or AIO-16 with RVON-I/0 in Remote mode for keypanels, you will still have to set a panel poll ID. This is because the RVON-I/O has a default panel poll ID of 0 (zero). This must be changed to a non-zero number.

**NOTE**: Make sure to set the panel poll ID to 0 when trunking in Remote Mode. Doing this will ensure the RVON-I/O will not respond to polls as a keypanel.

If the RVON-I/O in local mode is directly connected to a keypanel, the panel poll ID does not have to be set. The RVON-I/O through polling will discover the address of the keypanel.

**NOTE**: If you are getting audio, but cannot see the alphas on the keypanels, verify the set panel ID is set correctly.

If you connect an RVON-I/O in Local mode to an intercom serially, you must NOT connect the data lines.

Appendix A

# *RVON-I/O Quick Start*

## *Setting Channel Information of an RVON-I/O for a Local Keypanel*

**NOTE**: In this example, the RVON-I/O is directly connected to the ADAM Intercom System with an RVON-8 installed.

This example installs a keypanel on the first port of an RVON-I/O that connects back to the first channel of the RVON-8.

**RVON-I/O Unit Settings**

- All four DIP switches need to be in the OPEN position (Up).
- RVON-I/O IP Address should be set to 192.168.0.1
- Running version 1.0.0 firmware or higher

**RVON-8 Unit settings (done in AZedit)**

- RVON-8 IP Address should be set to 192.168.0.10
- Running version 1.2.0 firmware or higher

To set the channel information, do the following:

1. Connect a keypanel to the **J1 I/O 1** (Ethernet) connector on the RVON-I/O.
   *Addressing the keypanel is not needed*.
2. Open a Telnet session.
3. At the prompt, type **telnet 192.168.0.1** (default RVON-I/O IP Address).
   The RVON login screen appears.
4. In the logon field, type **telex** (default user logon for the unit).
5. Press **Enter**.
6. In the password field, enter **password** (default password for the unit).
7. Press **Enter**.
8. At the prompt, type **dbgcmd** and press **Enter** to access the MXP programming shell.
9. At the prompt, type set channel.
10. Press **Enter**.
    *The Set Channel menu list appears.*

11. At the prompt, type **set channel 0 dest_ip 192.168.0.10** (the address of the RVON-8 you want to connect with).
12. Press **Enter**.
13. At the prompt, type **set channel 0 dest_type 0** (this tells the RVON-I/O it is connecting to an RVON-8).
14. Press **Enter**.
15. At the prompt, type **set channel 0 dest_chan 0** (this tells the RVON-I/O it is connecting to channel 0 of the RVON-8).
16. Press **Enter**.
17. At the prompt, type **set channel 0 chan_codec 2**.
    *This tells the RVON-I/O to use Codec G.711u, 64k 30ms packtes, VAD ON connecting back to the RVON-8. To use a different codec, see Table 11, "Supplemental Coding Table," on page 27.*
18. Once finished, type **activate**.
19. Press **Enter**.
20. Configure the RVON-8 via AZedit to connect to the RVON-I/O.
    *The panel connected should be passing data and audio within a few moments.*

The front panel Green LED for the first channel should be flashing, instead of solid, from the data.

## *Setting Channel Information of an RVON-I/O for a Remote Keypanel*

**NOTE**: In this example, the first port of Zeus (J1) is connected to the I/O connector of the RVON-I/O, then connected via Ethernet back to the first channel of an RVON-1 card installed in a KP-32.

**RVON-I/O Unit Settings**

- DIP switches two through four need to be in the OPEN position (Up).
- DIP Switch 1 should be in the "Down" position (Remote)
- RVON-I/O IP Address should be set to 192.168.0.1
- Running version 1.0.0 firmware or higher

**KP-32 Unit settings**

- The KP-32 with RVON-1 IP Address should be set to 192.168.0.10
- Running version 1.1.0 firmware or higher on the RVON-1 card

To find the RVON-1 version of the KP-32, do the following:

1. Open a **Telnet Session**.
2. Type **telnet 192.168.0.10** (default).
3. Press **Enter**.
   *RVON login appears.*
4. Type **telex**, and press **Enter**.
   *RVON password appears*.
5. Type **password**, and press **Enter**.
6. At the prompt, type **dbgcmd** and press **Enter**.
   *You have entered MXP programming shell.*
7. At the MXP prompt, type **show rvon** and press **Enter**.
   *A list of settings will appear which contains the RVON-1 version.*

**NOTE**: If the RVON-1 is not at Version 1.1.0 or higher, contact your RTS service engineer.

To set the channel information, do the following:

1. Connect the RVON-I/O Ethernet to the LAN.
2. Open a Telnet session.
3. At the prompt, type **telnet 192.168.0.1** (default RVON-I/O IP Address).
   The RVON login screen appears.
4. In the logon field, type **telex** (default user logon for the unit).
5. Press **Enter**.
6. In the password field, enter **password** (default password for the unit).
7. Press **Enter**.
8. At the prompt, type **dbgcmd** and press **Enter** to access the MXP programming shell.
9. At the prompt, type set channel.
10. Press **Enter**.
    *The Set Channel menu list appears.*
11. At the prompt, type **set channel 0 dest_ip 192.168.0.10** (the address of the RVON-1 you want to connect with).
12. Press **Enter**.
13. At the prompt, type **set channel 0 dest_type 1** (this tells the RVON-I/O it is connecting to an RVON-1).
14. Press **Enter**.
15. At the prompt, type **set channel 0 dest_chan 0** (this tells the RVON-I/O it is connecting to channel 0 of the RVON-1).
16. Press **Enter**.
17. At the prompt, type **set channel 0 chan_codec 3**.
    *This tells the RVON-I/O to use Codec G.711u, 64k 30ms packtes, VAD ON connecting back to the RVON-1 channel. To use a different codec, see X.*
18. Type the s**et panel 0 poll_id 1** and press **Enter**.
    *This tells the RVON-I/O channel that is connection back to a matrix port with a poll id address of 1, por 1,9,17,25, etc.).*
19. Type **set panel 0 baud 9600** and press **Enter**.
    *This tells the RVON-I/O that the data baud rate is 9600 bps for this channel.*
20. Once finished, type **activate**.
21. Press **Enter**.
22. Configure the RVON-1 tp accept the RVON-I/O connection.
    *The panel connected should be passing data and audio within a few moments. The front panel green LED for the first channel of the RVON-I/O should be flashing from the data instead of just solid when the keypanel is connected.*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