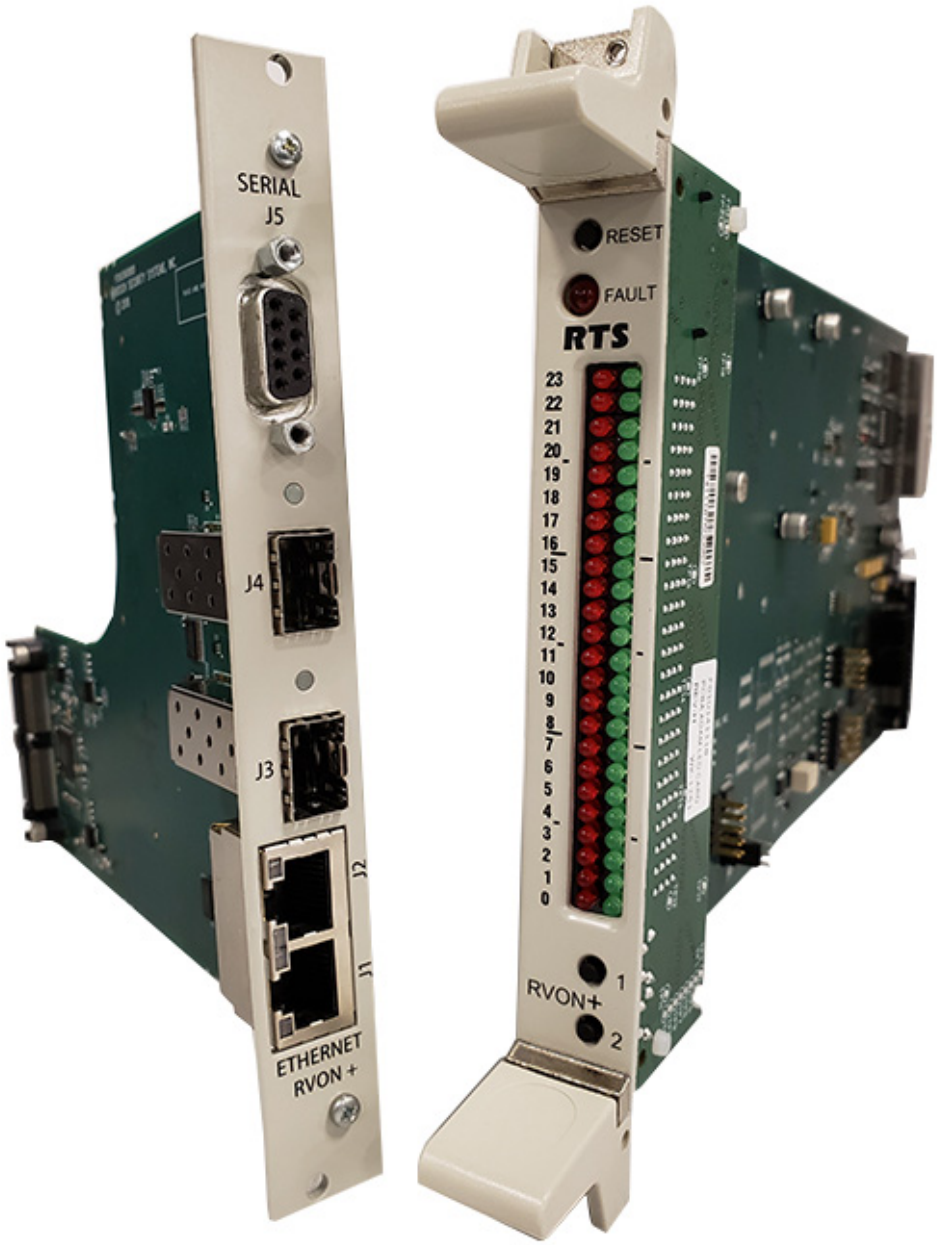
RVON+
RTS Voice Over Network



PROPRIETARY NOTICE

COPYRIGHT NOTICE

WARRANTY AND SERVICE INFORMATION

For warranty and service information, refer to the appropriate web site below:

RTS Intercoms ..... www.rtsintercoms.com/warranty
RTS Digital
RTSTW
AudioCom
RadioCom
Intercom Headsets

CUSTOMER SUPPORT

Technical questions should be directed to:

Customer Service Department
Bosch Security Systems, Inc.
http://www.rtsintercoms.com/us/rts/contact

TECHNICAL QUESTIONS EMEA

Bosch Security Systems Technical Support EMEA

http://www.rtsintercoms.com/contact_main.php

DISCLAIMER

The manufacturer of the equipment described herein makes no expressed or implied warranty with respect to anything contained in this manual and shall not be held liable for any implied warranties of fitness for a particular application or for any indirect, special, or consequential damages. The information contained herein is subject to change without prior notice and shall not be construed as an expressed or implied commitment on the part of the manufacturer.

 THE LIGHTNING FLASH AND ARROWHEAD WITHIN THE TRIANGLE IS A WARNING SIGN ALERTING YOU OF "DANGEROUS VOLTAGE" INSIDE THE PRODUCT.	 CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.	 THE EXCLAMATION POINT WITHIN THE TRIANGLE IS A WARNING SIGN ALERTING YOU OF IMPORTANT INSTRUCTIONS ACCOMPANYING THE PRODUCT.
SEE MARKING ON BOTTOM/BACK OF PRODUCT.		

WARNING: APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING AND NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.

WARNING: THE MAIN POWER PLUG MUST REMAIN READILY OPERABLE.

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, GROUNDING OF THE CENTER PIN OF THIS PLUG MUST BE MAINTAINED.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.

WARNING: TO PREVENT INJURY, THIS APPARATUS MUST BE SECURELY ATTACHED TO THE FLOOR/WALL/RACK IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS.

~	This product is AC only.

CE	

WARNING: THIS IS A CLASS A PRODUCT. IN A DOMESTIC ENVIRONMENT THIS PRODUCT MAY CAUSE RADIO INTERFERENCE, IN WHICH CASE THE USER MAY BE REQUIRED TO TAKE ADEQUATE MEASURES.

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Table of Contents

CHAPTER 1

Introduction

Description of the RVON+ Voice Over Network Card

The RVON+ provides VoIP (Voice Over Internet Protocol) communications for the RTS ADAM Intercom product family. The RVON+ is an integrated solution for connecting keypanels to the Intercom matrix over standard IP networks by supporting up to 32 channels of bi-directional audio, as well as keypanel data.

The RVON+ is a hot swappable card which supports all configurable options through RTS' IPedit VoIP configuration software.

The RVON+ supports remote keypanels, audio connections between matrix frames via ODIN, RVON+, RVON-16, RVON-8, or RVON-I/O, as well as virtual keypanels via VoIP.

A DB-9 serial connection is available for RS-232 or RS-485 pass-through port connections.

IMPORTANT: The RVON+ front card can only be used with the new RVON+ back card. It is not backward compatible with the legacy RVON-16 back card. Similarly, the legacy RVON-16 front card is not compatible with the new RVON+ back card.

Requirements

IMPORTANT: All legacy RVON devices (RVON-16, RVON-8, RVON-1, RVON-IO, RVON-C) running v 2.1.0 or higher are capable of connecting to an RVON-16. Configuring these devices to connect to an RVON-16 allows them to connect to an RVON+. All legacy RVON devices running v 2.7.0 (or higher) recognize the RVON+.

Any KP Series RVON running v 1.2.1 or higher are capable of connecting to an RVON-16. Configuring these devices to connect to an RVON-16 allows them to connect to an RVON+. Any earlier version of KP-Series RVON can still connect (to channels 1-16) of an RVON+ if the KP-Series RVON thinks it is connecting to an RVON-16.

When legacy RVON devices and KP-Series RVON are configured to connect to an RVON-16, the devices are limited to channels 1 through 16. This means you cannot access channels 17 through 32 of the RVON+ unless you upgrade the legacy device or keypanel firmware.

Application	Version
RVON-Keypanel	v 2.1.0 or higher
RVON-8	v 2.1.0 or higher
RVON-16	v 2.1.2 or higher
RVON-C	v 2.1.0 or higher
RVON-IO	v 2.1.0 or higher
KP-Series RVON	v 1.2.2 or higher
AZedit	v 5.4.0 or higher
IPedit	v 3.6.0 or higher
VKP	v 2.0.0 or higher
ODIN	v 1.1.0 or higher
MCII-e	v 3.5.0 or higher

Features

- 16 channels of bi-directional audio expands the connectivity of the ADAM Intercom and RVON+ card. Each channel has configurable network bandwidth parameters to accommodate individual network functions, as well as ancillary data for keypanels and trunking control. A purchasable upgrade option is available to expand from 16 channels to 32 channels.
- Expanded RVON capacity for ADAM and ADAM M deployments. New maximum RVON port capacity for ADAM is 480 ports (prior 240). New maximum RVON port capacity for ADAM M is 256 (prior 128).
- The RVON+ card supports two fiber connections.
- Multiple RVON devices can be viewed simultaneously and independently of the frame in which they are located using the IPedit software.
- Provides a virtual serial connection via an IP connection.

Specifications

Codecs

COMPRESSION	BIT RATE	CODING DELAY	PLAYOUT DELAY	BANDWIDTH	SAMPLE RATE
G.711	64 k	125 µs	20-60 ms	160-224 kbps	8 k
G.729AB	8 k	10 ms	20-120 ms	32-112 kbps	8 k
G.722	64 k	4 ms	20-60 ms	160-224 kbps	16 k
*Data Rate depends on Codec Selection					

NOTE: The Playout Delay and Bandwidth depends on the configured amount of audio per packet.

Connections

1- DB-9 Serial Port via backcard
2- Fiber SFP
2- RJ-45 Ethernet via backcard

Power .....9.0 Watts when running 32 ports

Physical ..... 144.53 mm W x 279.91 mm L (5.69 in. x 11.02 in.) (new front card)

172.26 mm W x 170.01 mm L (6.78 in. x 6.69 in.) (new backcard)

Agency Approvals

Emissions (Class A):

KN 32 NRRA Notice 2017-19 (2017.12.28)
EN 55032: 2012/AC: 2013
AS/NZS CISPR 32: 2015
VCCI CISPR 32:2016
ICES-003: 2016 upd Apr 2017
FCC 15.107:2018, FCC 15. 109(g):2018

Immunity:

EN 55024: 2010
EN 55035: 2017
KN 35

Safety:

UL 60950-1, 2nd ED, 2014-10-14
CAN/CSA C22.2 No. 60950-1-07, 2nd Ed, 2014-10
EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013
IEC 60950-1:2005 2nd Ed; Am1:2009/Am2:2013

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 need to open the following ports in your network to allow WAN connections to and from a Network Interface Device. See Table 1 for the ports that need to be opened for the RVON cards to operate properly.

TABLE 1. 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	UDP Pass Through Serial
2100	IPedit

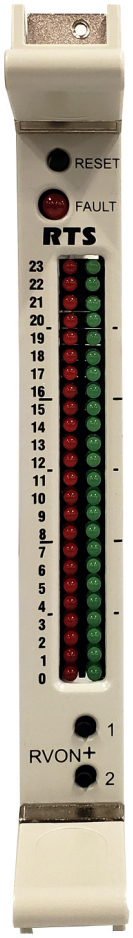
TABLE 2. Well-known TCP Port Numbers

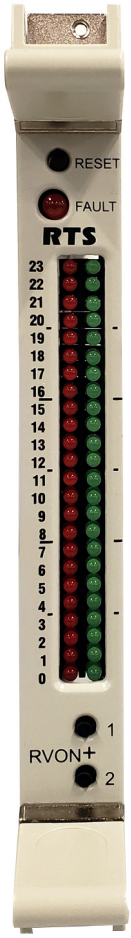
Port Number	Description
1	TCP Port Service Multiplexer (TCPMUX)
5	Remote Job Entry (RJE)
7	ECHO
18	Message Send Protocol (MSP)
20	FTP-Data
21	FTP- Control
23	Telnet
25	Simple Mail Transfer Protocol (SMTP)
29	MSG ICP
37	Time
42	Host Name Server (Nameserv)
43	Whols
49	Login Host Protocol (Login)
53	Domain 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

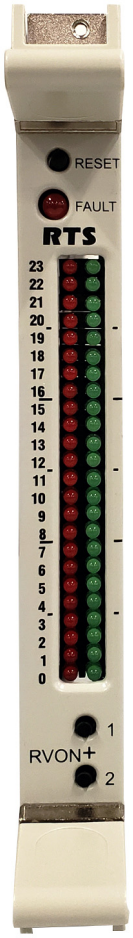
TABLE 2. Well-known TCP Port Numbers

Port Number	Description
118	SQL Services
119	Newsgroup (NNTP)
137	NetBIOS Name Service
139	NetBIOS Datagram Service
143	Interim Mail Access Protocol (IMAP)
150	NetBIOS Session Service
156	SQL Server
161	SNMP
179	Border Gateway Protocol (BGP)
190	Gateway Access Control Protocol (GACP)
194	Internet Relay Chat (IRC)
197	Directory Location Services (DLS)
389	Lightweight Directory Access Protocol (LDAP)
396	Novell Netware over IP
443	HTTPS
444	Simple Network Paging Protocol (SNPP)
445	Microsoft-DS
458	Apple Quick Time
546	DHCP Client
547	DHCP Server
563	SNEWS
569	MSN
1080	Socks

RVON+ Front Card LEDs

PAGE 1			
	Red LED	**Green LED**	
23	VOIP not connected - Channel 1	VOIP connected - Channel 1	
22	VOIP not connected - Channel 2	VOIP connected - Channel 2	
21	VOIP not connected - Channel 3	VOIP connected - Channel 3	
20	VOIP not connected - Channel 4	VOIP connected - Channel 4	
19	VOIP not connected - Channel 5	VOIP connected - Channel 5	
18	VOIP not connected - Channel 6	VOIP connected - Channel 6	
17	VOIP not connected - Channel 7	VOIP connected - Channel 7	
16	VOIP not connected - Channel 8	VOIP connected - Channel 8	
15	VOIP not connected - Channel 9	VOIP connected - Channel 9	
14	VOIP not connected - Channel 10	VOIP connected - Channel 10	
13	VOIP not connected - Channel 11	VOIP connected - Channel 11	
12	VOIP not connected - Channel 12	VOIP connected - Channel 12	
11	VOIP not connected - Channel 13	VOIP connected - Channel 13	
10	VOIP not connected - Channel 14	VOIP connected - Channel 14	
9	VOIP not connected - Channel 15	VOIP connected - Channel 15	
8	VOIP not connected - Channel 16	VOIP connected - Channel 16	
7		J4 Ethernet link up	
6		J3 Ethernet link up	
5	Backcard not present	J2 Ethernet link up	
4		J1 Ethernet link up	
3	No backplane clock	Driving backplane clock	
2		Serial pass-through = RS-232	
1	Pass-through serial Tx	Pass-through serial Rx	
0	Control bus Tx	Control bus Rx	

PAGE 2			
	Red LED	**Green LED**	
23	VOIP not connected - Channel 17	VOIP connected - Channel 17	
22	VOIP not connected - Channel 18	VOIP connected - Channel 18	
21	VOIP not connected - Channel 19	VOIP connected - Channel 19	
20	VOIP not connected - Channel 20	VOIP connected - Channel 20	
19	VOIP not connected - Channel 21	VOIP connected - Channel 21	
18	VOIP not connected - Channel 22	VOIP connected - Channel 22	
17	VOIP not connected - Channel 23	VOIP connected - Channel 23	
16	VOIP not connected - Channel 24	VOIP connected - Channel 24	
15	VOIP not connected - Channel 25	VOIP connected - Channel 25	
14	VOIP not connected - Channel 26	VOIP connected - Channel 26	
13	VOIP not connected - Channel 27	VOIP connected - Channel 27	
12	VOIP not connected - Channel 28	VOIP connected - Channel 28	
11	VOIP not connected - Channel 29	VOIP connected - Channel 29	
10	VOIP not connected - Channel 30	VOIP connected - Channel 30	
9	VOIP not connected - Channel 31	VOIP connected - Channel 31	
8	VOIP not connected - Channel 32	VOIP connected - Channel 32	
7		J4 Ethernet link up	
6		J3 Ethernet link up	
5	Backcard not present	J2 Ethernet link up	
4		J1 Ethernet link up	
3	No backplane clock	Driving backplane clock	
2		Serial pass-through = RS-232	
1	Pass-through serial Tx	Pass-through serial Rx	
0	Control bus Tx	Control bus Rx	

PAGE 3			
	Red LED	**Green LED**	
23			
22			
21			
20			
19			
18			
17			
16			
15			
14	J4 Ethernet half duplex	J4 Ethernet full duplex	
13		J4 Ethernet speed 1 Gbps	
12		J4 Ethernet link up	
11			
10	J3 Ethernet half duplex	J3 Ethernet full duplex	
9		J3 Ethernet speed 1 Gbps	
8		J3 Ethernet link up	
7			
6	J2 Ethernet half duplex	J2 Ethernet full duplex	
5		J2 Ethernet speed 1 Gbps	
4		J4 Ethernet link up	
3			
2	J1 Ethernet half duplex	J4 Ethernet full duplex	
1		J4 Ethernet speed 1 Gbps	
0		J4 Ethernet link up	

RVON+ Backcard Pinouts

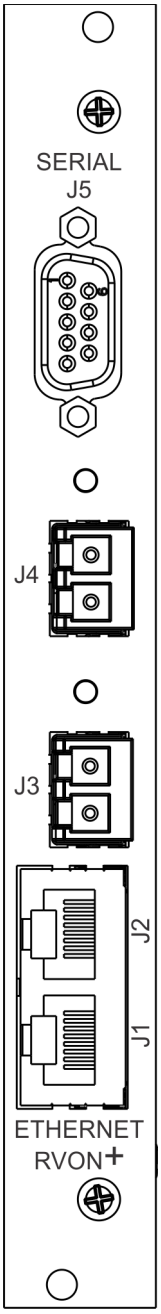


FIGURE 1. RVON+ Backcard

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

DB-9 PIN	*Function*
1	N/A
2	RXD (RS-232) Data - (RS-485
3	TXD (RS-232) Data + (RS-485
4	N/A
5	GND
6	N/A
7	N/A
8	N/A
9	N/A

Default Ethernet IP Addresses

TABLE 3. Default Address 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-Keypanel	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
RVON+	192.168.0.9	255.255.0.0
ODIN-RVON	192.168.0.10	255.255.0.0

CHAPTER 2

RVON+ Port Allocation

Port Allocation

The **PAT** (Port Allocation Table) is used to support I/O cards with more than 16 ports. Use the table to select which card types occupy which intercom slots and which ports are allocated to each card. Ports can be allocated in groups of 8 or 16. A single frame system holds up to 880 ports.

IMPORTANT: Check power limitations of each frame before building large intercom systems.

Requirements:

The Port Allocation Table requires the following minimum firmware versions:

- AZedit V5.4.0 or later
- MCII-e V3.5.0 or later
- TBX V1.0.1 or later

To **assign ports to the RVON+ card in AZedit**, do the following:

1. From the Options menu, select **Port Allocation Table**.
   The Port Allocation Table Window appears.
2. Along the left-side of the Port Allocation Table Window, find the **card slot** in which the RVON+ card is installed in the Matrix frame.
3. Select the **type of RVON+ card** installed from the Type column drop down menu.
4. Select the **channel scheme** for the selected RVON+ card from the Allocated column drop down menu.
5. Select the **range of ports you want to allocate** from the Ports column drop down menu.
   Multiple columns may be used to allocate ports.
6. Verify there are **no warnings** in the Warning column.

NOTE: The Ports column only becomes active for the number of ports you are allocating. For example, if you have 32 ports, only the first two (2) Ports columns are active.

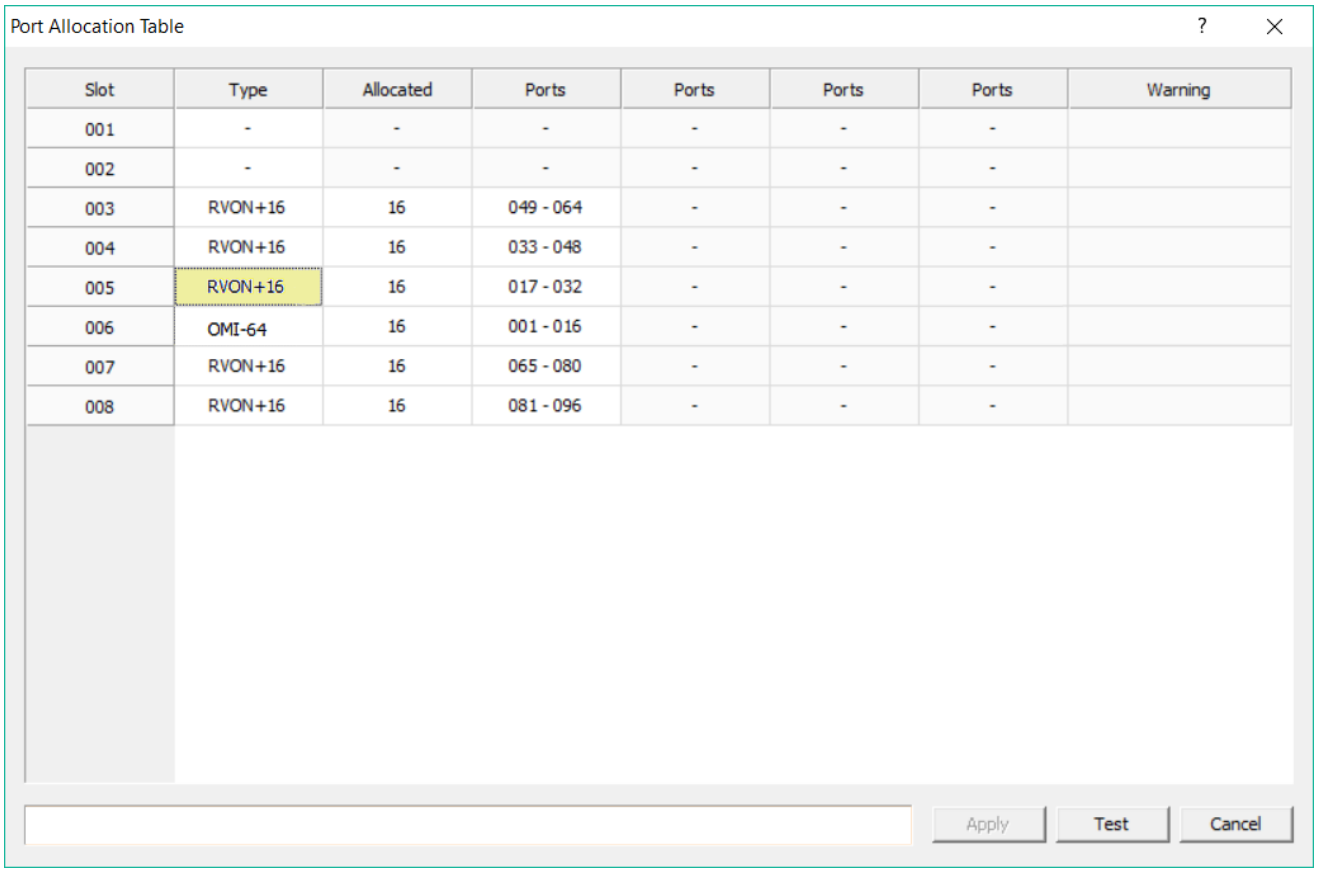


FIGURE 2. Port Allocation Table

NOTE: When *Port is unlicensed* is seen in the port allocation table, the port is not licensed for use and cannot be configured.

Slot Column

The **Slot** column displays the number of the slot where the card resides.

This field is not editable.

Type Column

The **Type** column is used to select the type of card in the slot. Use the drop down menu to select the type of card in the slot.

Available options are: AIO-8, AIO-16, RVON-8, RVON-16, RVON+16, RVON+32, MADI-16, MADI-32, MADI-48, MADI-64, AES-3, OMI-16, OMI-32, OMI-48, and OMI-64.

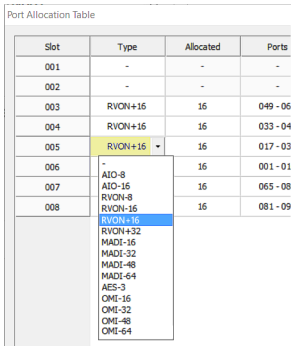


FIGURE 3. PAT – Type Column

Allocated Column

The **Allocated** column is used to select the number of ports to allocate. Use the drop down menu to select the number of ports wanting to allocate.

Available choices for this field are *8, 8+8, 16,* and *32*.

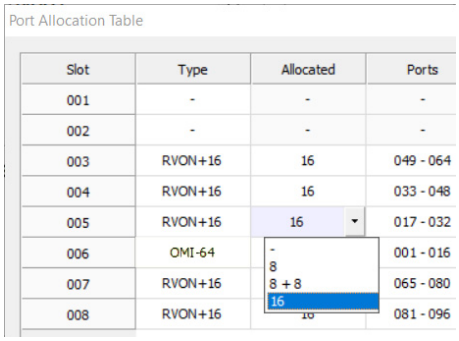


FIGURE 4. PAT – Allocate Column

Ports Column

The **Ports** column is used to select the block of ports to assign to the RVON card. These are in blocks of 8 or 16.

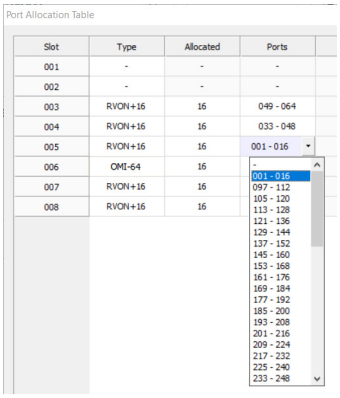


FIGURE 5. PAT – Ports Column

CHAPTER 3

Installation

Installation of the RVON+ Card into the ADAM and ADAM-M

When inserting the RVON+ in the ADAM system, the following considerations need to be made:

- Gently insert the RVON+ card into the correct slot. If the card is forced or twisted while inserting, a pin on the backplane could short or break causing the card to become inoperable.
- When inserting the RVON+ into the system, make sure to insert it into a compatible backcard. If the card is inserted into an incompatible backcard, undesirable results can occur.
- DO NOT FORCE MATING CARDS

Jumpers and Configuration

J1 Configuration File Save Location

The RVON+ has only one jumper that can be configured. The J1 jumper controls where the RVON+ configuration file is stored; either on the master controller card or on the RVON+ card. In both AZedit and IPedit, this option is seen as a status only (grayed out) check box.

IMPORTANT: You must remove the card from the frame in order to make changes to the jumper setting.

If the J1 pins are shorted, the RVON+ card uses the configuration stored in its local Flash EPROM.

If the J1 pins are clear, the RVON+ card uses the configuration received from the MCII-e.

NOTE: Jumper J5 has no functionality. Cards ship from the factory with a jumper installed on J5. If a jumper is needed for J1, then the J5 jumper can be used. Once the J1 jumper isn't needed, the jumper can be stored at J5.

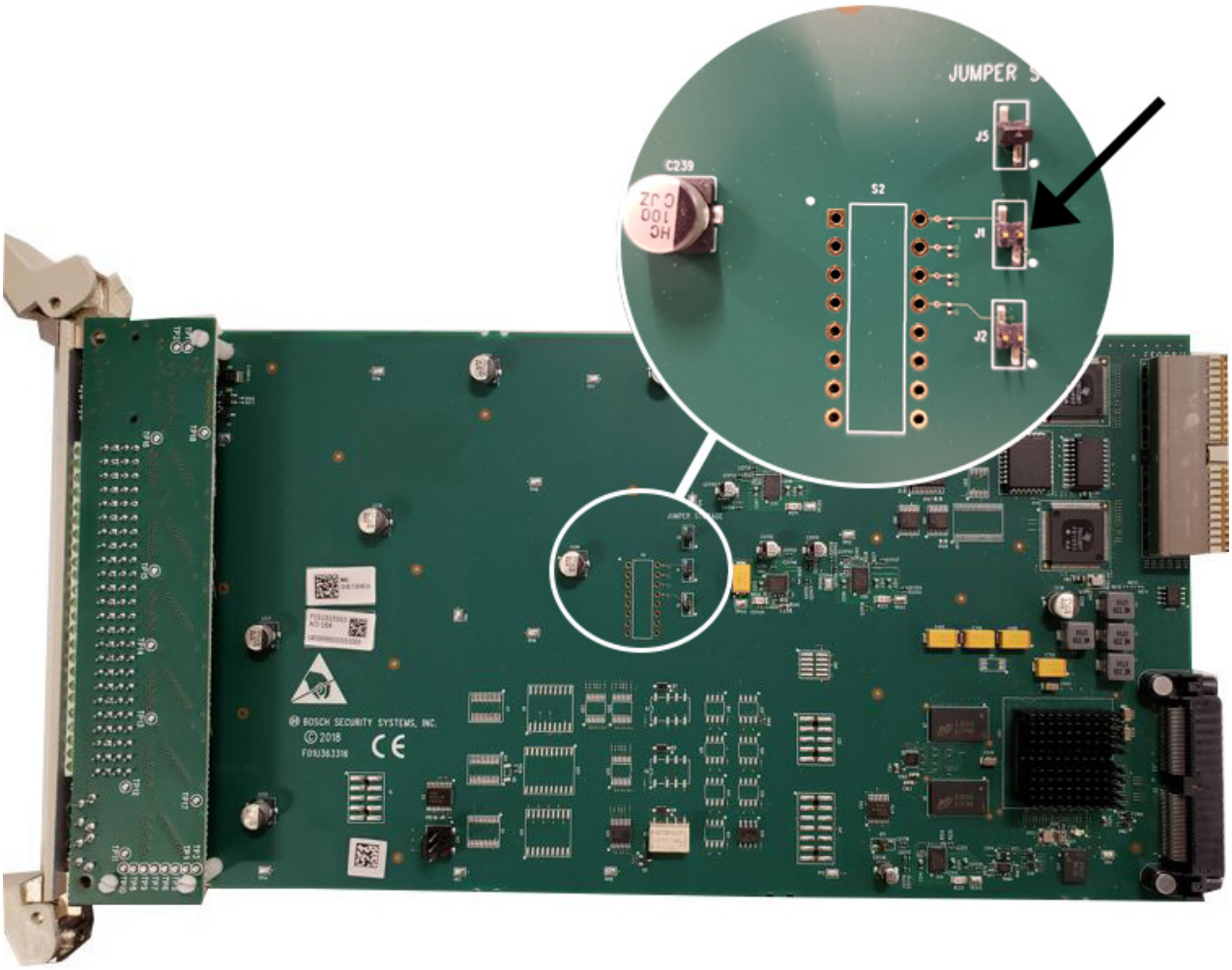


FIGURE 6. J1 Jumper

Configuration Options

Disable Changes from AZedit Check Box (IPedit Only)

The **Disable Changes from AZedit** check box determines whether or not to accept changes to the RVON+ card from AZedit. This means only modifications made in IPedit are accepted.

If this option is selected, AZedit still allows the card's configuration to be viewed, but all controls will be grayed out and disabled.

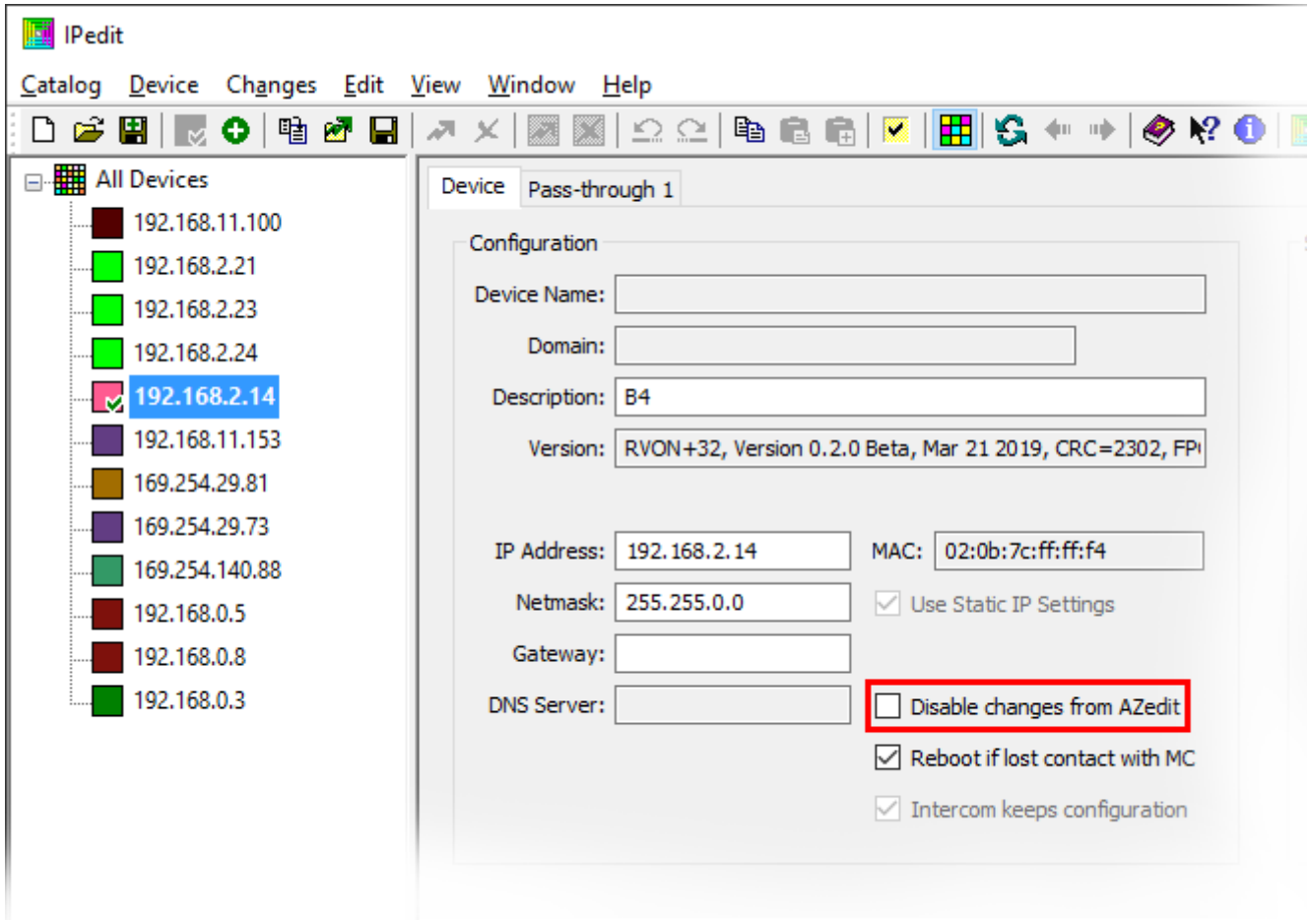


FIGURE 7. IPedit - Disable Changes from AZedit Check Box

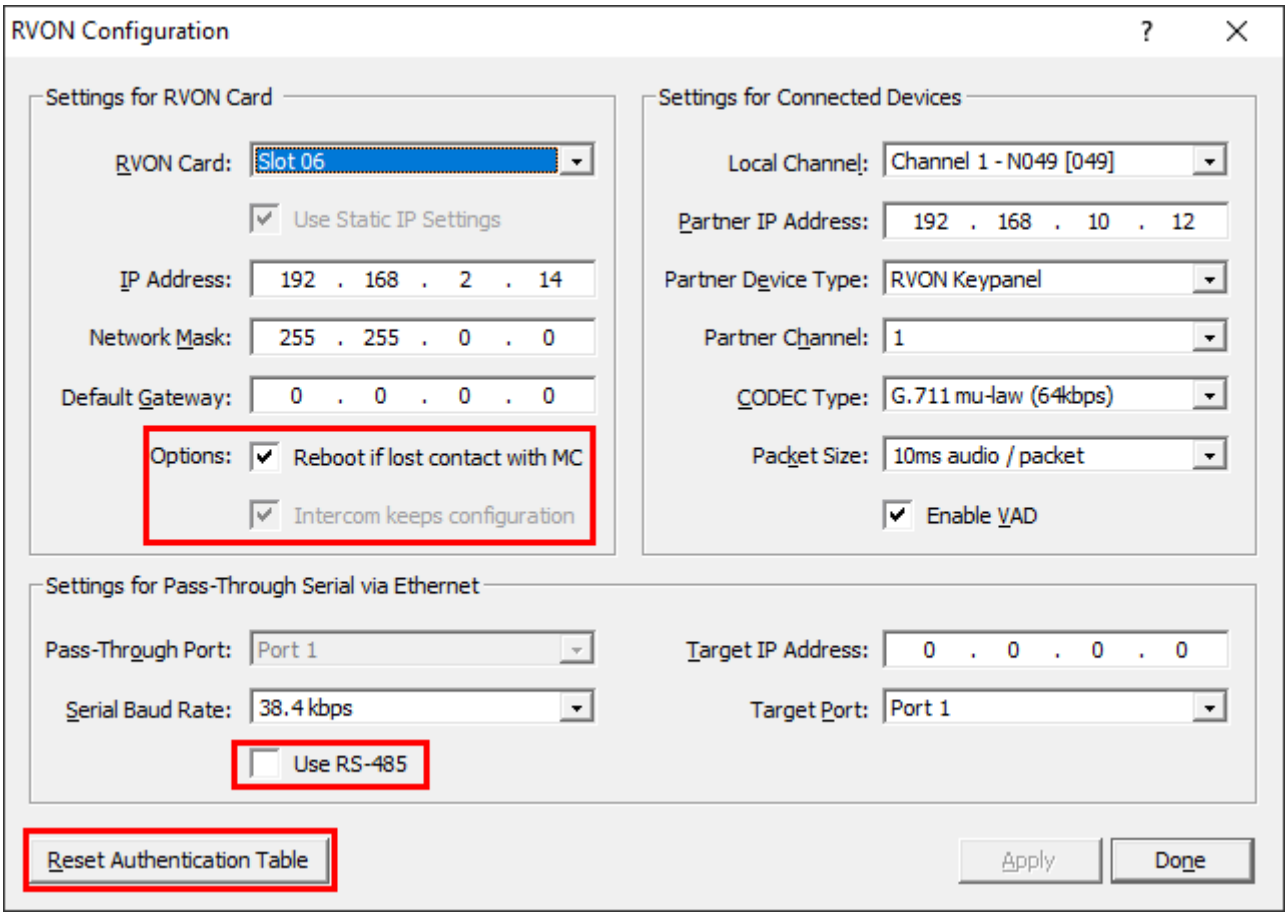


FIGURE 8. AZedit - RVON Configuration Options

Reboot if lost contact with MC check box

The **Reboot if lost contact with MC** check box determines if the RVON+ card reboots after 30 seconds of no communication with the Master Controller.

When this option is not selected, pass-through serial data continues when the intercom is otherwise down (for example, when upgrades are being made).

NOTE: This option can be configured in AZedit or IPedit.

Intercom keeps configuration check box (Read Only)

The **Intercom keeps configuration** check box displays the state of the J1 jumper physically located on the RVON+ front card. In AZedit, this option is greyed out and used for status purposes only. For more information on the J1, see “J1 Configuration File Save Location” on page 18.

Use RS-485 check box

The **Use RS-485** check box indicates the card is running RS-485 serial operation on the debug/serial pass through port. When the check box is not populated, the card is running RS-232 serial operation. On legacy RVON devices (RVON-16 and earlier) this configuration is controlled by a dip switch.

Reset Authentication Table Button (AZedit Only)

The **Reset Authentication Table** button (see Figure 8 on page 20) is used to reset the authentication to the RVON+ card. By clicking this button, the authentication table for IPedit is reset to the two default user profiles and passwords. Use this function when the password for IPedit cannot be remembered.

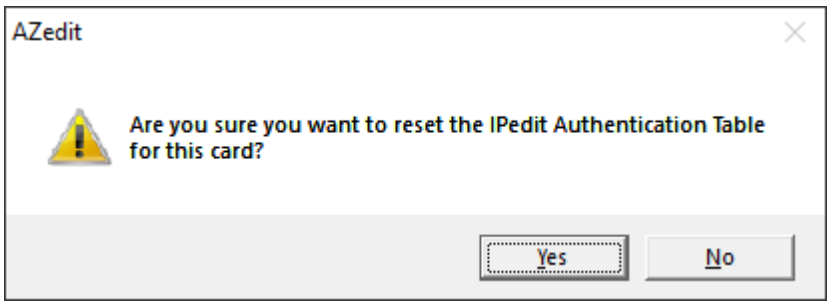
The default user profiles are:

telex – password

admin – password

To **reset the authentication table to its default profiles**, do the following:

1. From the System menu, select **Miscellaneous|RVON Configuration**.
   The RVON Configuration window appears.
2. From the Slot drop down menu, select the **slot** of the RVON+ card.
3. Click the **Reset Authentication Table button**.
   A verification message appears.



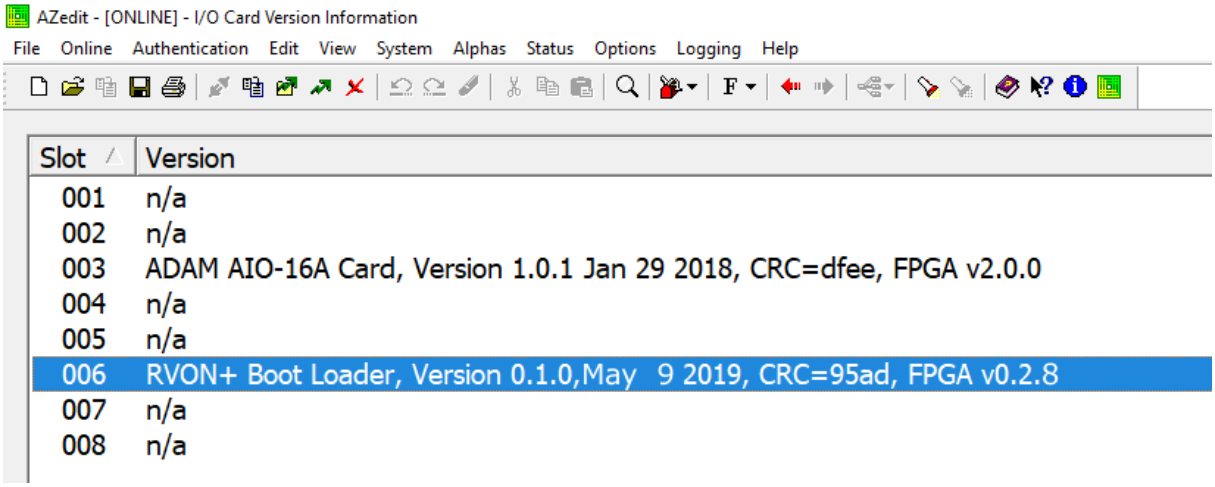
Enter Boot loader Mode

The RVON+ card is shipped with current firmware pre-installed from the factory. The firmware includes a boot loader, which is used if the application program becomes corrupt (for example, if the card is reset while it is reprogramming the flash).

To **force the card into boot loader mode**, do the following:

1. On the RVON+ front card, press and hold the two **front card buttons**.
2. Press the **Reset button**.
   The card starts the reset process.
3. Once the green LEDs start tracking back and forth, release the **1** and **2 buttons**.
   The card is in boot loader mode.

NOTE: To verify the RVON+ card is in boot loader mode, open the AZedit I/O Card Version dialog (Status | Software Versions | I/O Cards).



Configuring the RVON+ Card with AZedit

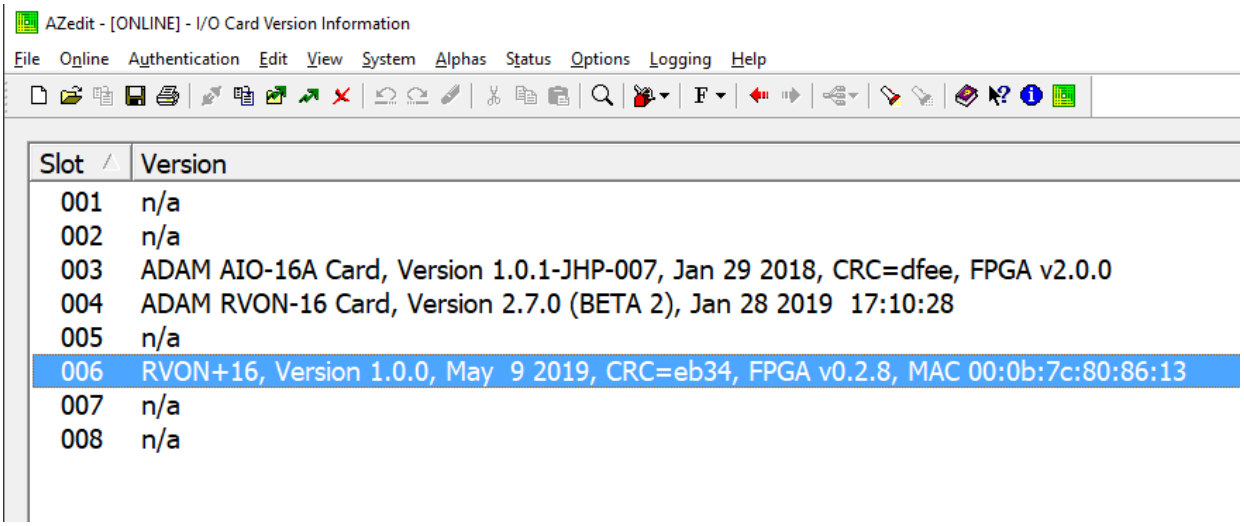
NOTE: IPedit version 3.6.0 has more extensive configuration options for the RVON+ card.

Once the RVON+ card is inserted into the intercom, AZedit automatically recognizes the card.

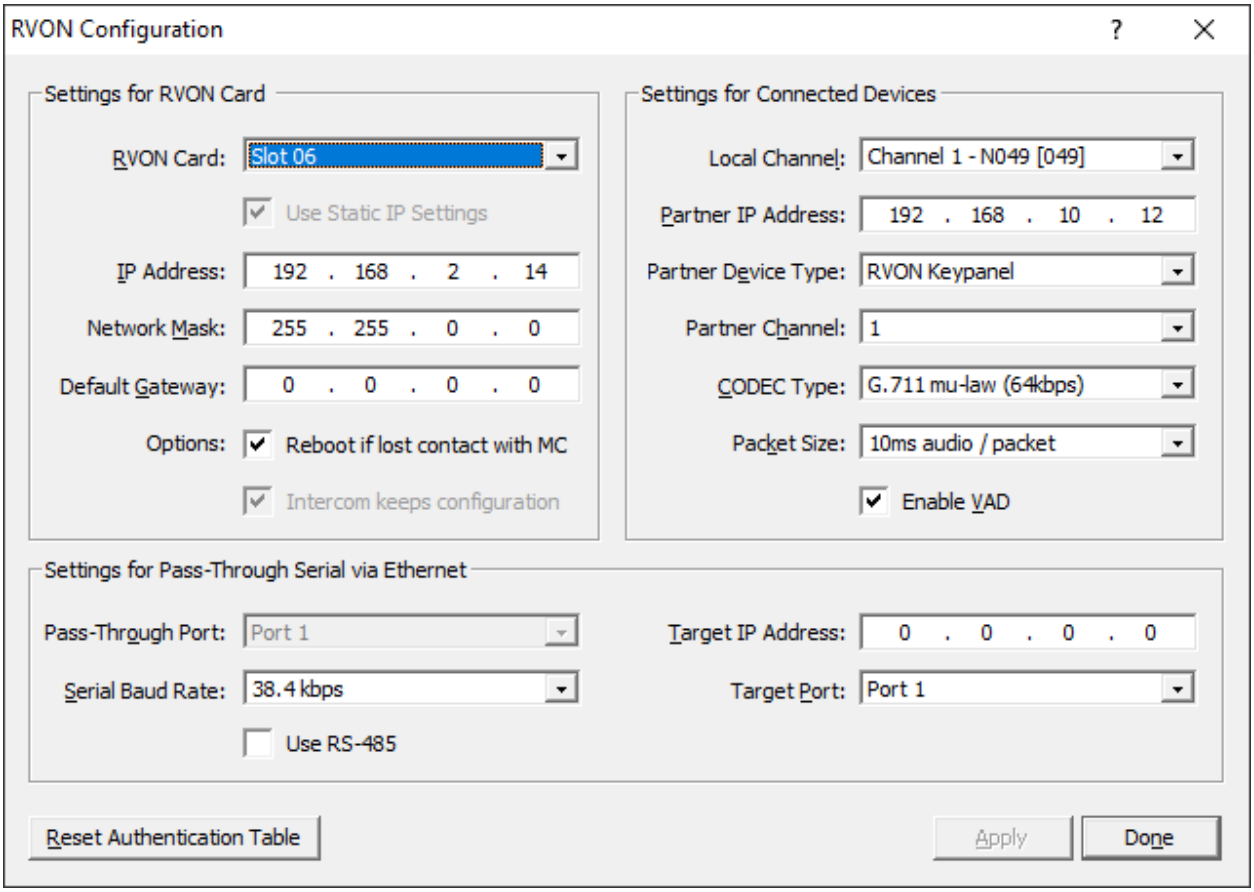
NOTE: Requires intercom firmware and AZedit software that supports RVON cards.

To **configure the RVON+ card settings**, do the following:

1. From the Status menu, select **I/O Cards**.
   The I/O Card Status screen appears showing a list of installed cards.



2. Right click an **RVON+ card**, and select **RVON Configuration**.
   The RVON Configuration screen appears.



3. In the IP Address field, enter the **IP Address** you have assigned to the RVON+.
4. In the Network Mask field, enter the **Network Mask** of the network to which the RVON+ is connected.
5. In the Default Gateway field, enter the **Default Gateway Address**, if applicable, of the network to which the RVON+ card is connected.

To **configure the pass-through serial connection**, do the following:

NOTE: The RVON+ card can also send and receive pass-through data to OMI cards.

1. In the Target IP Addr field, enter the **Target IP Address** of the device you want to connect to over Ethernet.
2. From the Serial Baud Rate drop down list, select the **baud rate** for the serial port.

   NOTE:

   - The baud rates for the two ends of the pass-through serial connection do not have to match.
3. Select the **Use RS-485 check box** to configure the card for RS-485 serial operation. Leave this check box empty to configure the card for RS-232 serial operation.

To **configure audio channels**, do the following:

1. From the Local Channel drop down list, select the **channel** you want to configure.
2. In the Partner IP Address field, enter the **IP Address** of the device to which you want to connect.
3. From the Partner Device Type drop down list, select the **type of device** to which the RVON+ card is connecting.
4. From the Partner Channel drop down list, select the **channel** on the device to which the RVON+ communicates.
5. From the CODEC type drop down list, select the **CODEC type** you want to use for this channel.
6. From the Packet Size drop down list, select the **size** of each audio packet.

   NOTE: A CODEC is an algorithm used to compress audio. There are 5 Codices supported by Telex: G.711 μs law, G.711A, G.729AB, and G.722. G.722 is currently only supported by RVON+ and ODIN. The CODEC dictates the quality of audio you hear and the network bandwidth used. The packet size determines how much audio is carried across the network in each transmitted packet. The CODEC type and packet size chosen requires different amounts of bandwidth, see “Specifications” on page 5. The larger the audio packet you choose to use, the lower the bandwidth used. However, the larger packet size results 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 Administrator may want to work together in choosing the CODEC type and packet size suitable for the size of the network, so degradation of the network resources does not happen.
7. Select **Enable VAD** (Voice Activity Detection), if you want to conserve bandwidth when the audio level is below a given threshold.
   Voice activity detection saves network bandwidth by stopping the flow of audio packets when silence is detected. VAD is similar to VOX.

   NOTE: At this point you may choose another channel to configure or choose another card to configure.
8. Once you are completely finished, click **Apply**.
   Apply sends all of the changes to all the cards in the intercom, or click Cancel to discard all changes you have made.

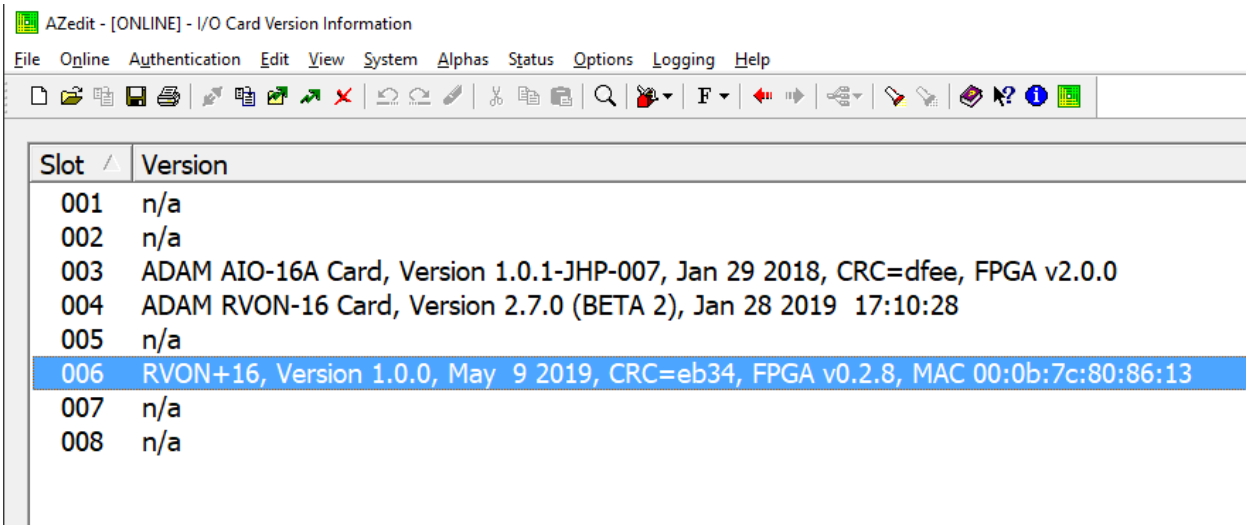
RVON Connection Status Screen

The RVON+ connection status screen displays information pertaining to RVON channel connections. You can only show statistics for one channel on a card at a time.

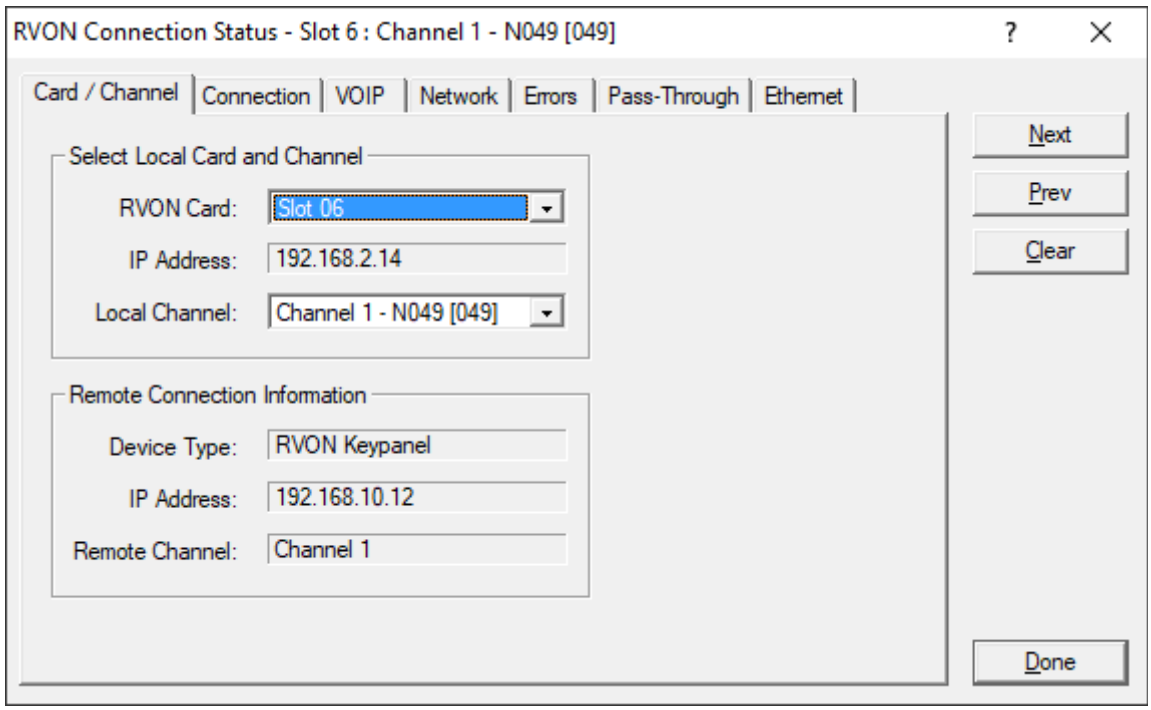
NOTE:To view the RVON Connection Status screens, make sure both AZedit and the RVON+ card are on the same Ethernet network. The reason this is important is because the statistics are updated once per second. At this rate of dynamic update, a serial port could not pass the data effectively.

To **view the RVON Connection Status screen**, do the following:

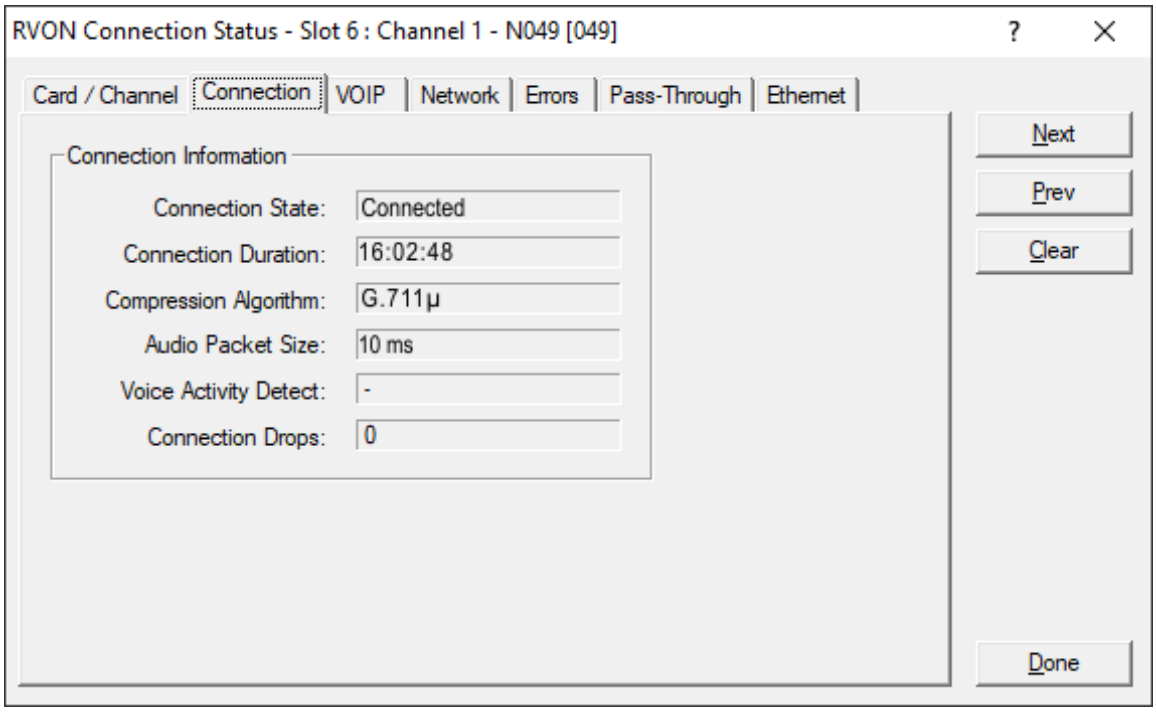
1. From the Status menu, select **I/O Cards**.
   The I/O Card Status screen appears showing the types of installed cards.



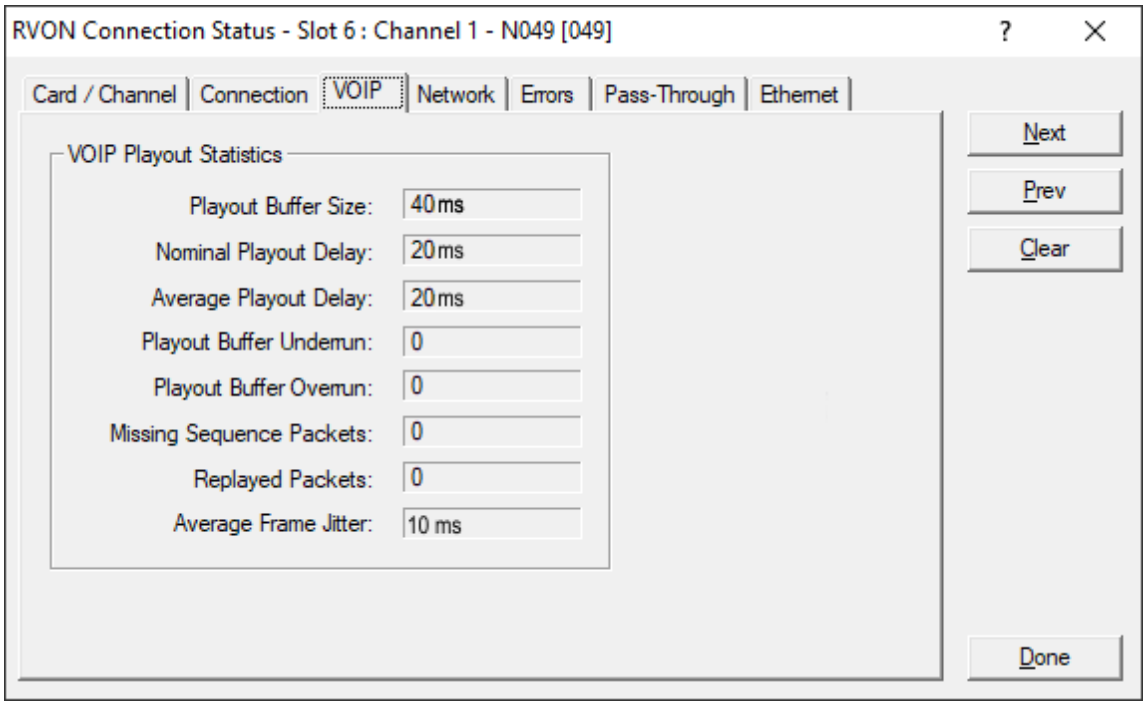
2. Right click the **card** with which you want to work.
   A context menu appears.
3. Select **RVON Connection Status**.
   The RVON Connection Status screen appears. The connection screen contains multiple pages of information about the selected card and are described in detail on the following pages.



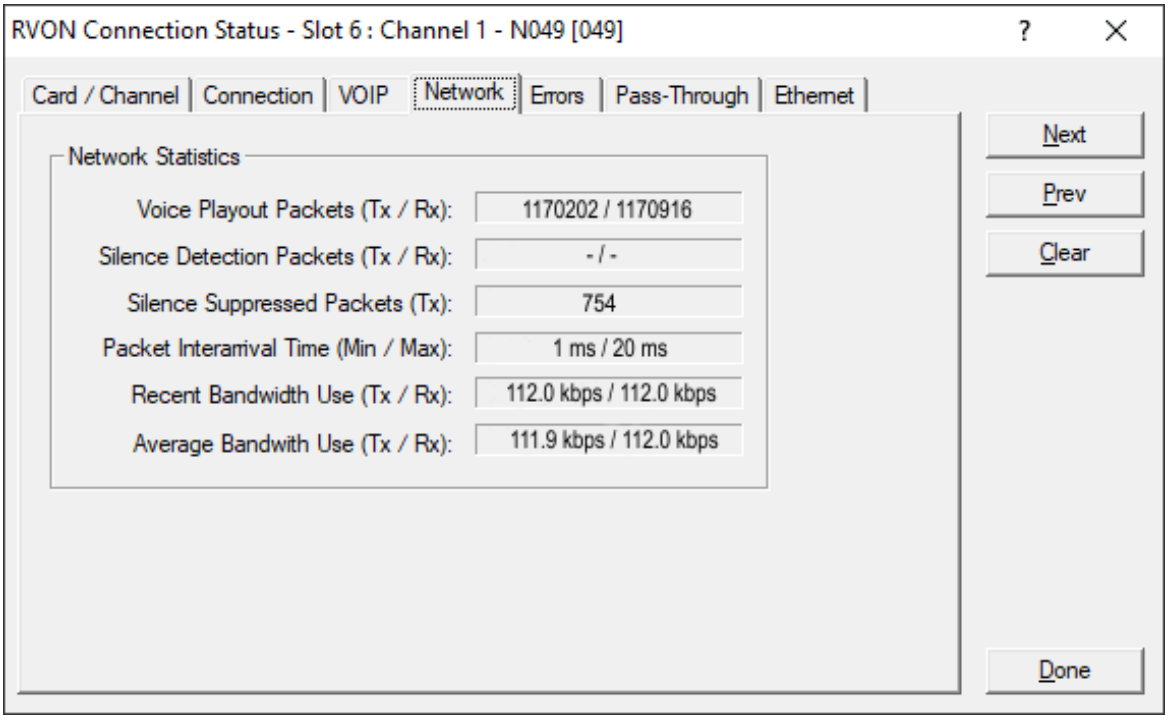
Screen Item	Description
Select Local Card and Channel	
RVON Card	The card for which you want to view the status From the RVON drop down list, select the **card** you want to view.
IP Address	Displays the IP (Internet Protocol) Address of the card you select
Local Channel	The channel to view the status. From the Channel drop down list, select the **channel** for which you want to view the status
Remote Connection Information	
Device Type	Displays the device type to which the selected channel is configured to connect.
IP Address	Displays the IP Address to which the selected channel is configured to connect.
Remote Channel	Displays the channel to which the selected channel is configured to connect.



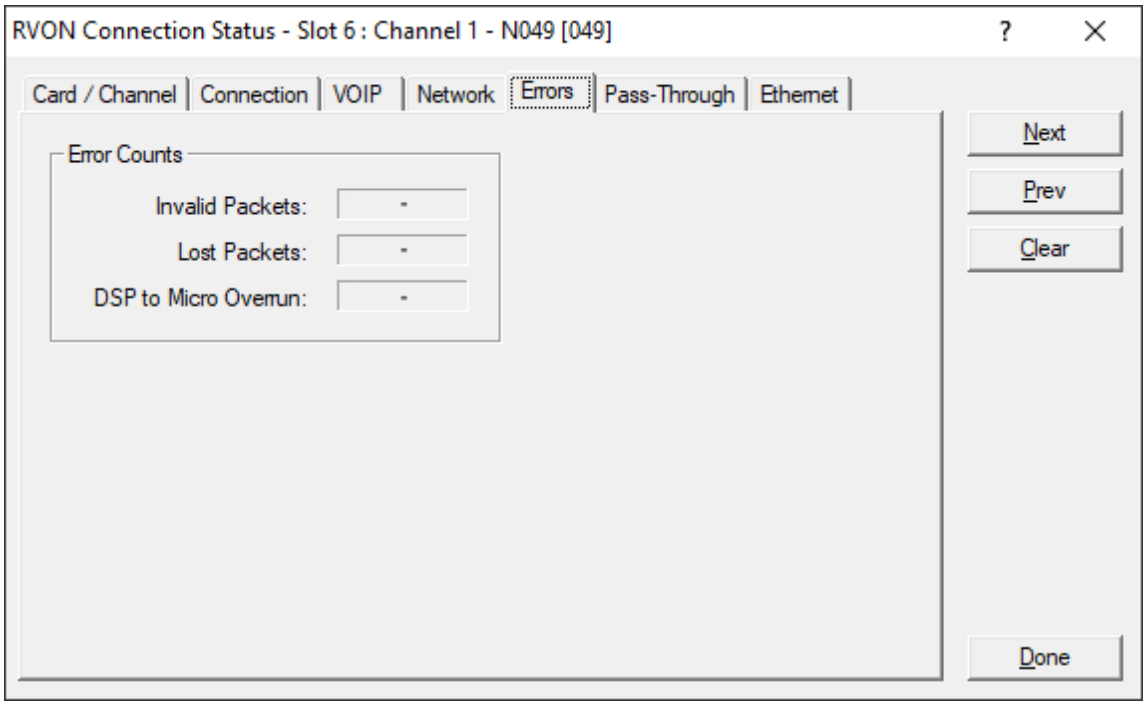
Screen Item	Description
Connection State	The state of the connection. Available connection states are IN USE, SEIZED, SETUP, PROGRESS, CONNECTED, TEAR DOWN or IDLE. CONNECTED and IDLE are stable states, while the other states are transitory.
Connection Duration	Displays the duration of the connection. This is shown in hh/mm/ss.
Compression Algorithm Audio Packet Size Voice Activity Detect (VAD)	Displays what codec the connection is using. This can be different than the original configuration if the two ends of the channel are configured differently. For each field, if the actual value is different from the configured value, it is shown in red.
Connection Drops	Displays the number of times the connection is dropped.



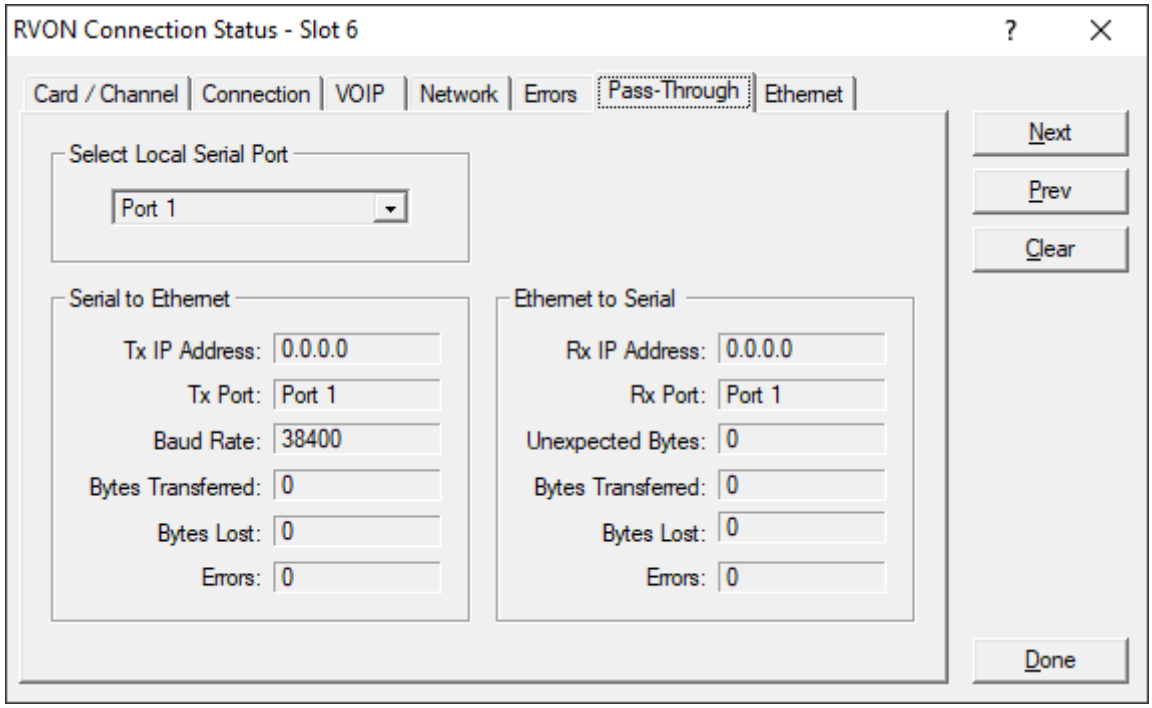
Screen Item	Description
	VOIP Playout Statistics
Playout Buffer Size	Displays how much audio can be received from the network before packets are lost. This is four times bigger than configured packet size. This is a static system setting.
Nominal Playout Delay	Displays how much audio is collected before playout begins. Playout begins at half the Playout Buffer Size, which is two times the configured packet size. This is a static system setting.
Average Playout Delay	Displays the actual average audio collected before packets are played out. This is measured over the length of the connection.
Playout Buffer Underrun	Displays the number of times that packets were not played because the Playout Buffer was empty. **NOTE:** If VAD is enabled, there are playout buffer underruns whenever there are no packets being received during silence.
Playout Buffer Overrun	Displays the number of packets that were discarded because the Playout Buffer was full.
Missing Sequence Packet	Displays how many audio packets were missed in the sequence.
Replaced Packets	Displays how many audio packets were replayed. If a playout underrun occurs, the latest packet is replayed once; after this, if no more audio packets have been received, silence is played.
Average Frame Jitter	Displays the measure of consistency of packet arrival times. Lower jitter is better.



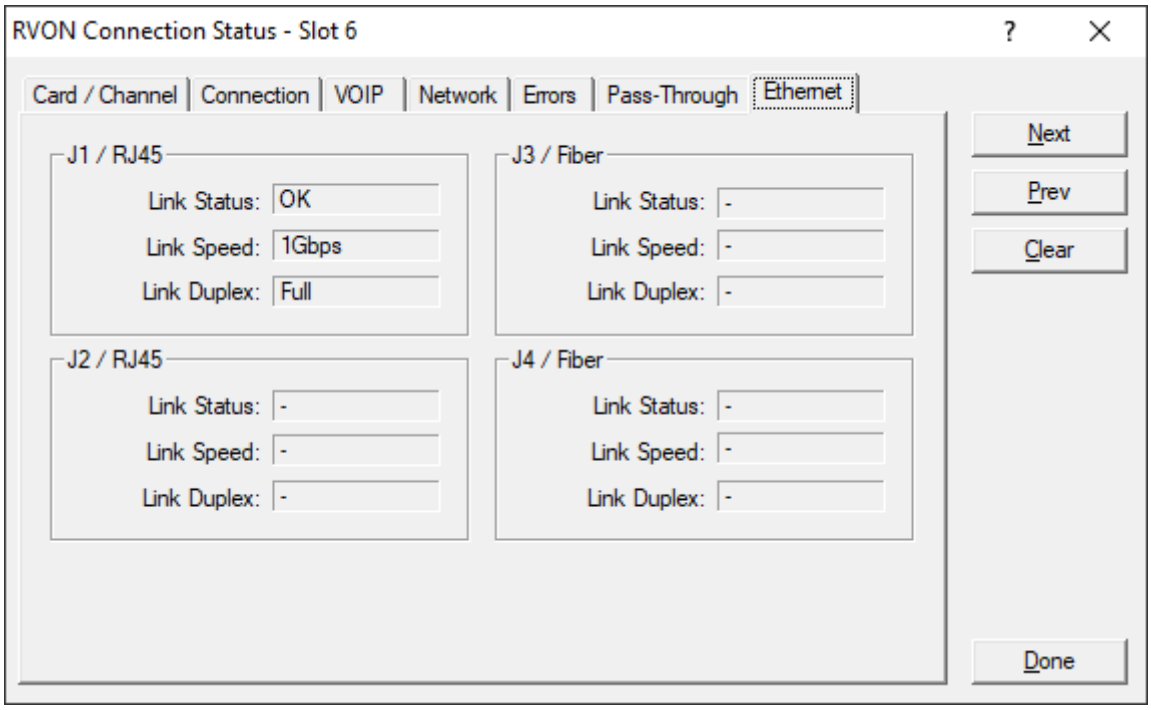
Screen Item	Description
	Network Statistics
Voice Playout Packets (Tx/Rx)	Displays the number of voice packets transmitted and received from the other side of the connection.
Silence Detection Packets (Tx/Rx)	Displays the number of times a silence detection packet has been sent or received. VAD (voice activity detection) must be enabled.
Silence Suppressed Packets (Tx)	Displays the number of packets never sent because the packets contained silence.
Packet Interarrival Time (Min/Max)	Displays the minimum and maximum time elapsed between packets being received.
Recent Bandwidth Use (Tx/Rx)	Displays the amount of bandwidth used in Kbytes/sec over the length of the call. This is calculated by the number of voice packets transmitted and received over the last 10 seconds.
Average Bandwidth Use (Tx/Rx)	Displays the amount of bandwidth used in Kbytes/sec over the length of the call. This is calculated by the number of voice packets transmitted and received and the length of the connection.



Screen Item	Description
	Error Counts
Invalid Headers	Displays how many IP packets could not be parsed.
Lost Packets	Displays how many packets were lost.
DSP to Micro Overrun	Displays the number of packets that were lost because the Micro was too busy to receive.



Screen Item	Description
SERIAL TO ETHERNET	The Serial to Ethernet information shows the serial data that is received on the serial pass-through serial port and sent via Ethernet to the partner card.
Bytes Transferred	Displays the number of bytes transferred from the serial connection to Ethernet.
Bytes Lost	Displays the number of bytes that could not be transferred.
Errors	Displays the number of errors that occurred during transfer.
Tx IP Address	Displays the IP Address of the card to which the serial data is sent.
Baud Rate	Displays the baud rate of the serial connection.
ETHERNET TO SERIAL	The Ethernet to Serial information shows the serial data that is received on the Ethernet connection via Ethernet and transferred to the serial connection.
Bytes Transferred	Displays the number of bytes that have been transferred to the serial port.
Bytes Lost	Displays the number of bytes that could not be transferred.
Errors	Displays the number of errors that occurred during transfer.
Rx IP Address	Displays the IP Address from which data was last received via Ethernet (this address should match the Tx IP Address).
Unexpected Bytes	Displays the number of unexpected bytes of data. Unexpected bytes is data that has come from any IP address that is not the Tx IP Address. The bytes of data are considered unexpected bytes and are not sent out on the serial port.

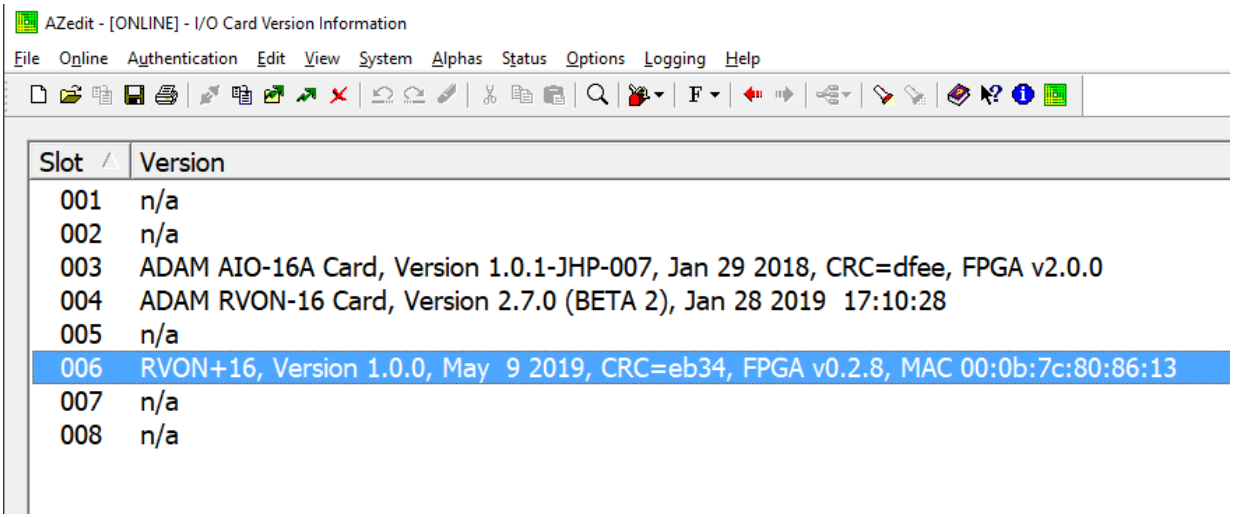


Screen Item	Description
J1/RJ45, J2/RJ45, J3/Fiber, J4/ Fiber	
Link Status	Displays the status of links on the port. Available status: *OK* *– No IP Address is defined*
Link Speed	Displays the transmission speed. Available speeds: *10 Mbps* *100 Mbps* *1 Gbps* **NOTE:** 100 Mbps or better is strongly recommended, and is required for proper operation of 32 channels.
Link Duplex	Displays the current transmit mode – Half or Full Duplex. Almost all Ethernet interfaces auto-negotiate to Full Duplex mode. If the interface displays Half Duplex mode, this typically signifies the auto-negotiate failed, resulting in network collisions and errors. Available options: *Half-Duplex – can either transmit or receive, but not both simultaneously.* *Full-Duplex – can transmit and receive simultaneously.*

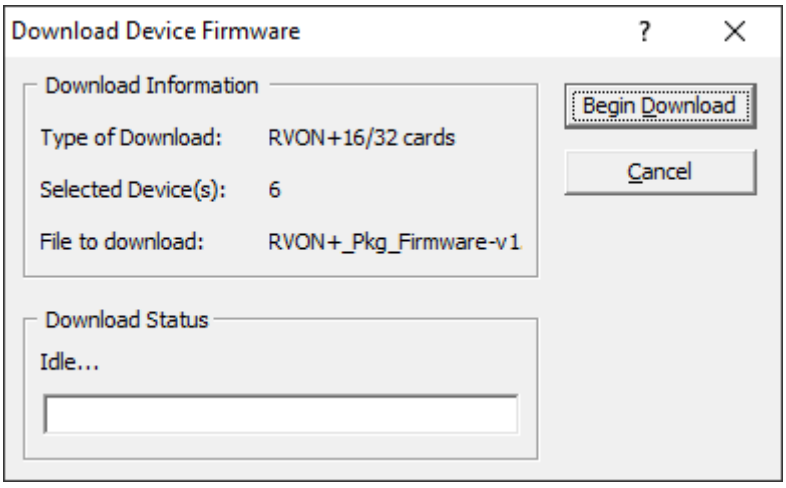
Download RVON+ Firmware through AZedit

To **download firmware to the RVON+ card from AZedit**, do the following:

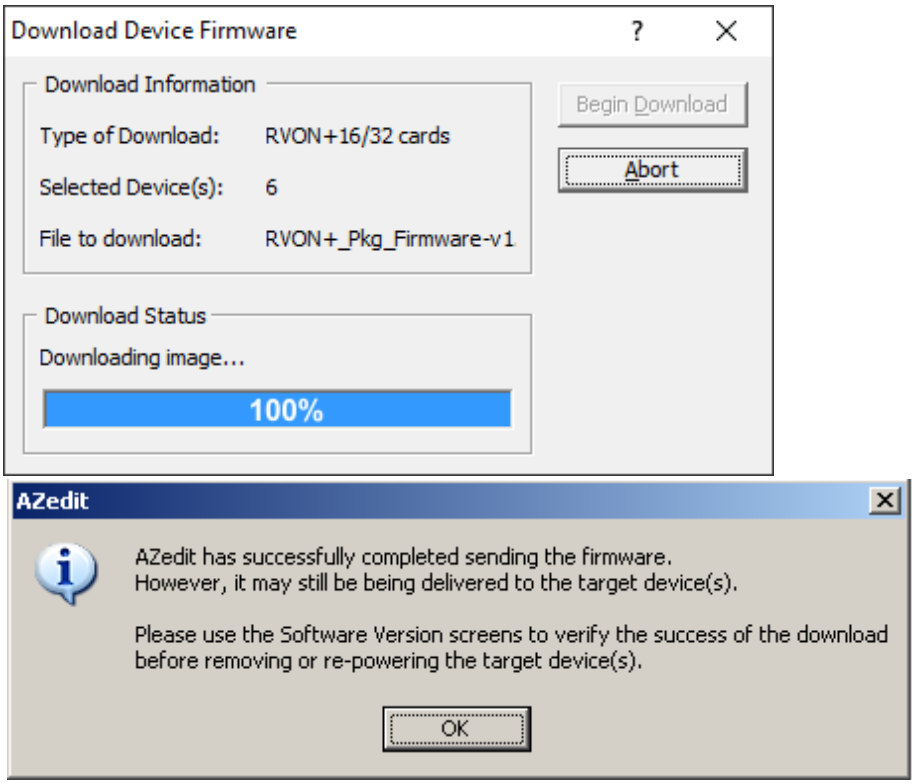
1. Open **AZedit**.
2. From the Status menu, select **Software Versions**, then **I/O Cards**.
   The I/O Card Version Information screen appears showing the occupied slots in the system.



3. Highlight the **card** to be updated.
   You may select more than one card at a time by holding the Ctrl key down while you select.
4. Right click the **highlighted selections** and select **Download Firmware**.
   The Firmware Download window appears.
5. Using the browse feature, browse to the **file** to be downloaded.
6. Click **Open**.
   The Download Device Firmware window appears.



7. Click **Begin Download**.
   The download begins. Once the download shows 100% a message (shown below) appears.



8. Click **OK**.
   The RVON+ firmware download is complete. This takes a minute or two to occur.
9. Verify the **version upgrade** in the I/O Card Version Information Window.

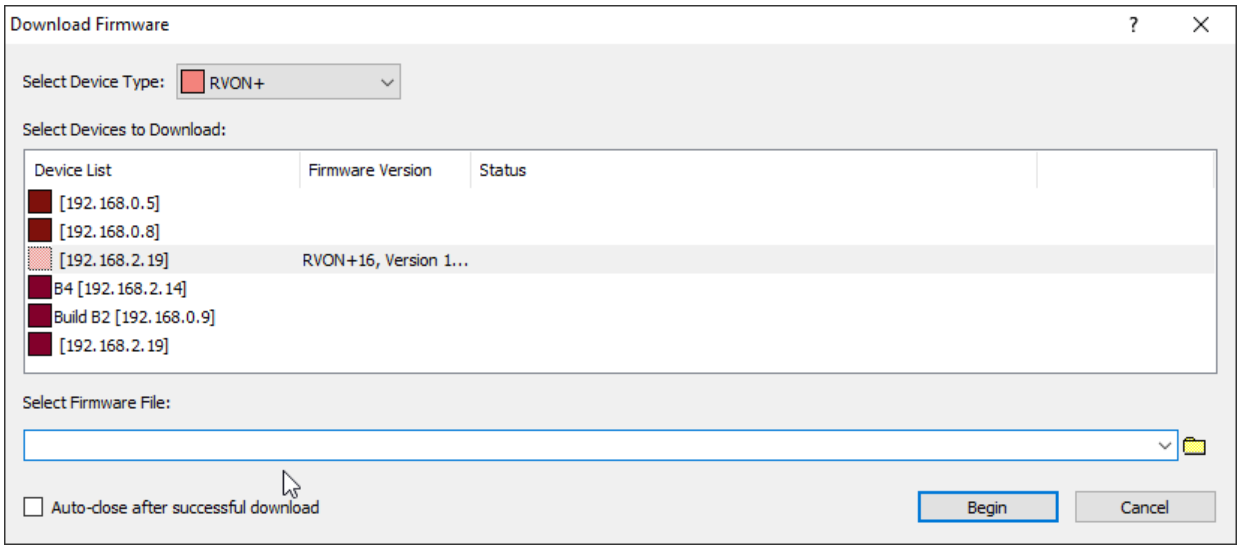
CAUTION: Do not power down the frame or pull the RVON+ card (s) from the frame until you have verified the new version information from AZedit.

Download RVON+ Firmware through IPedit

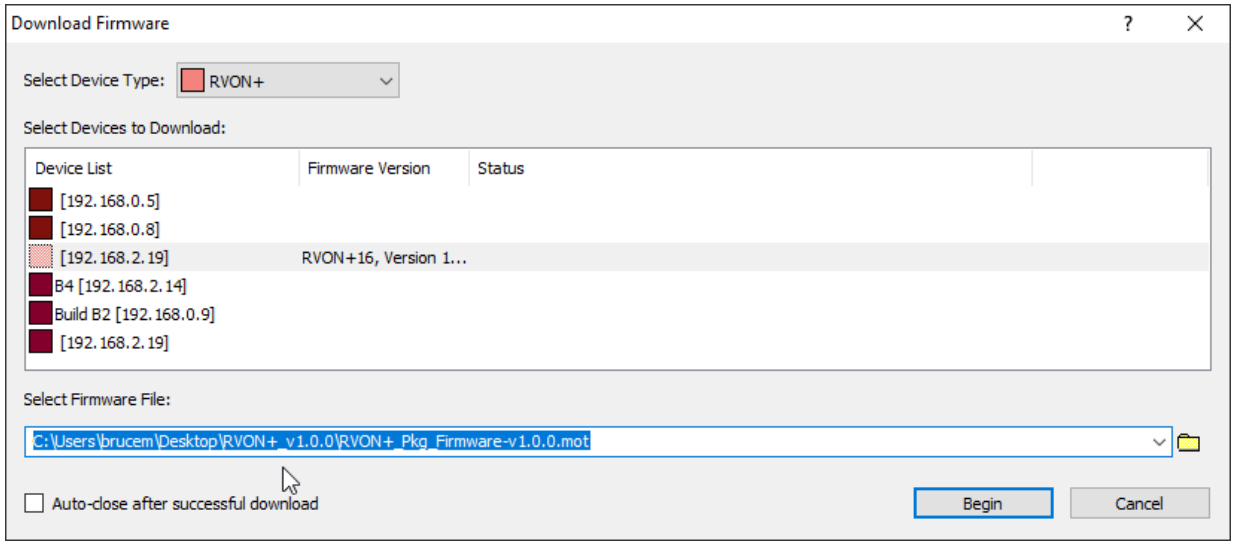
NOTE: If you are using RVON+ with IPedit, you must use IPedit version 3.6.0 or later.

To **download firmware to the RVON+ card from IPedit**, do the following:

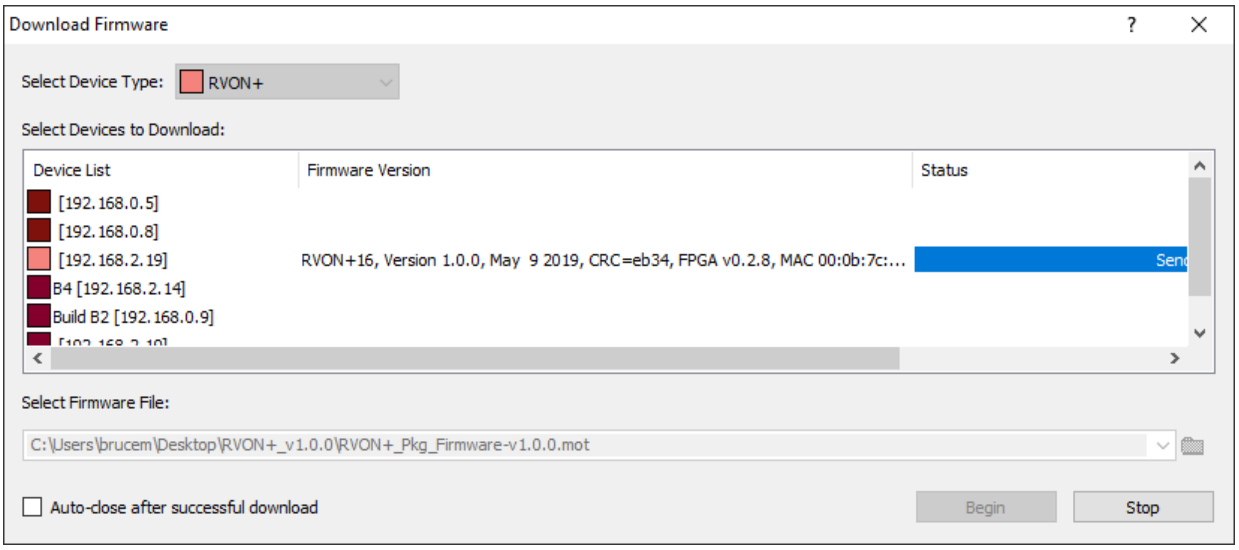
1. Open **IPedit**.
2. From the Device catalog, right-click the **RVON+ card** for which the new firmware is to be downloaded.
   The Download Firmware dialog appears with the RVON+ highlighted.



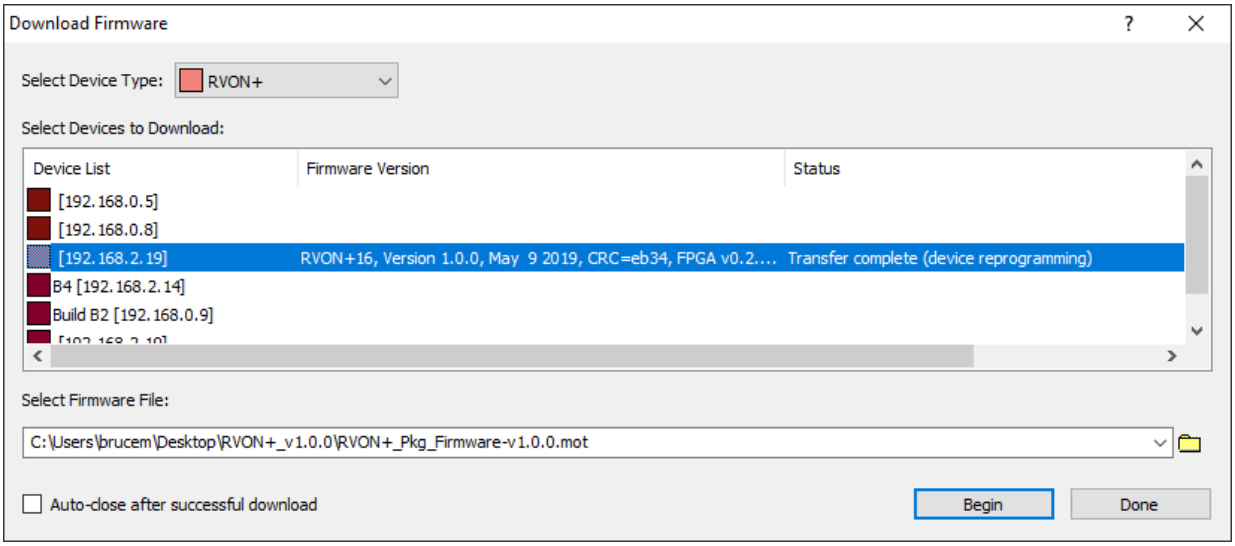
3. Using the browse feature, browse to the **file** to be downloaded.
4. Click **Open**.
   The Select Firmware File field populates.



5. Click **Begin**.
The download begins.



Once the download is complete, a message (shown below) appears



6. Click **Done**.
The RVON+ firmware download is complete. This takes a minute or two to occur.
7. Verify the **version upgrade** in the I/O Card Version Information Window.

APPENDIX A

RVON Trunking Connections

In this chapter, find the following drawings:

- ADAM/ADAM M Trunking Via RVON+
- Cronus Trunking Via RVON-I/O To RVON+
- RVON-16 Trunking to RVON+

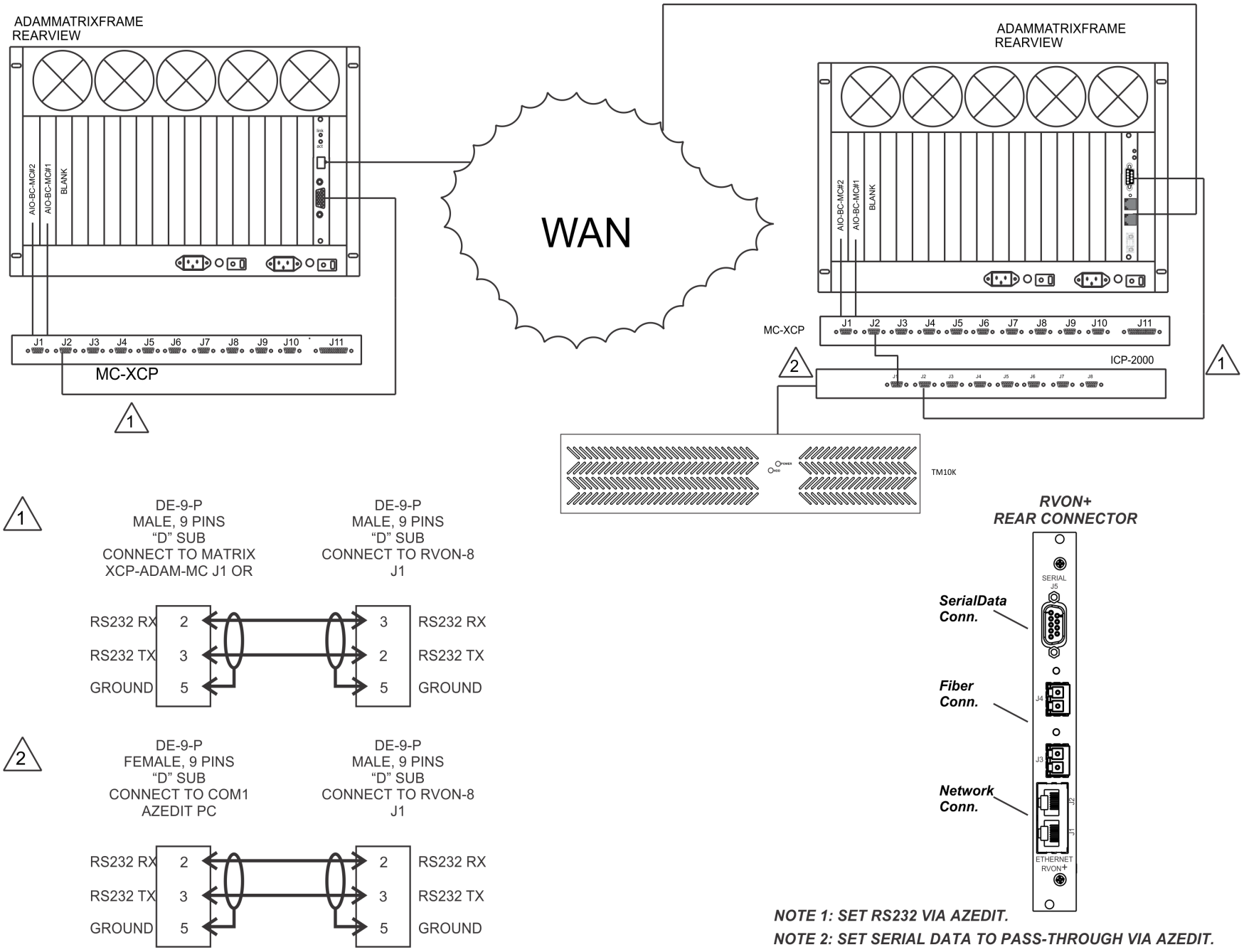


FIGURE 9. ADAM/ADAM M Trunking Via RVON+

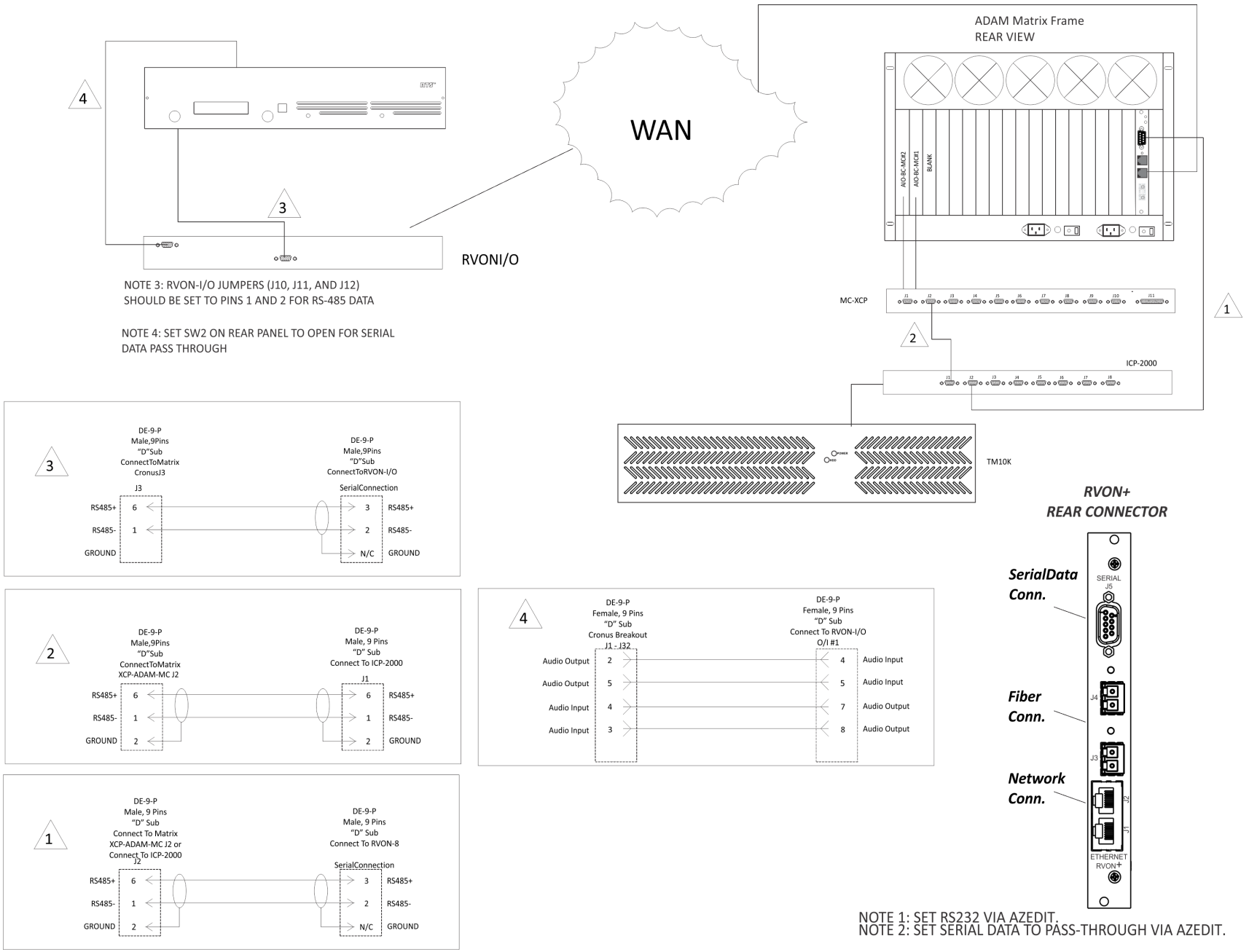


FIGURE 10. Cronus Trunking Via RVON-I/O To RVON+

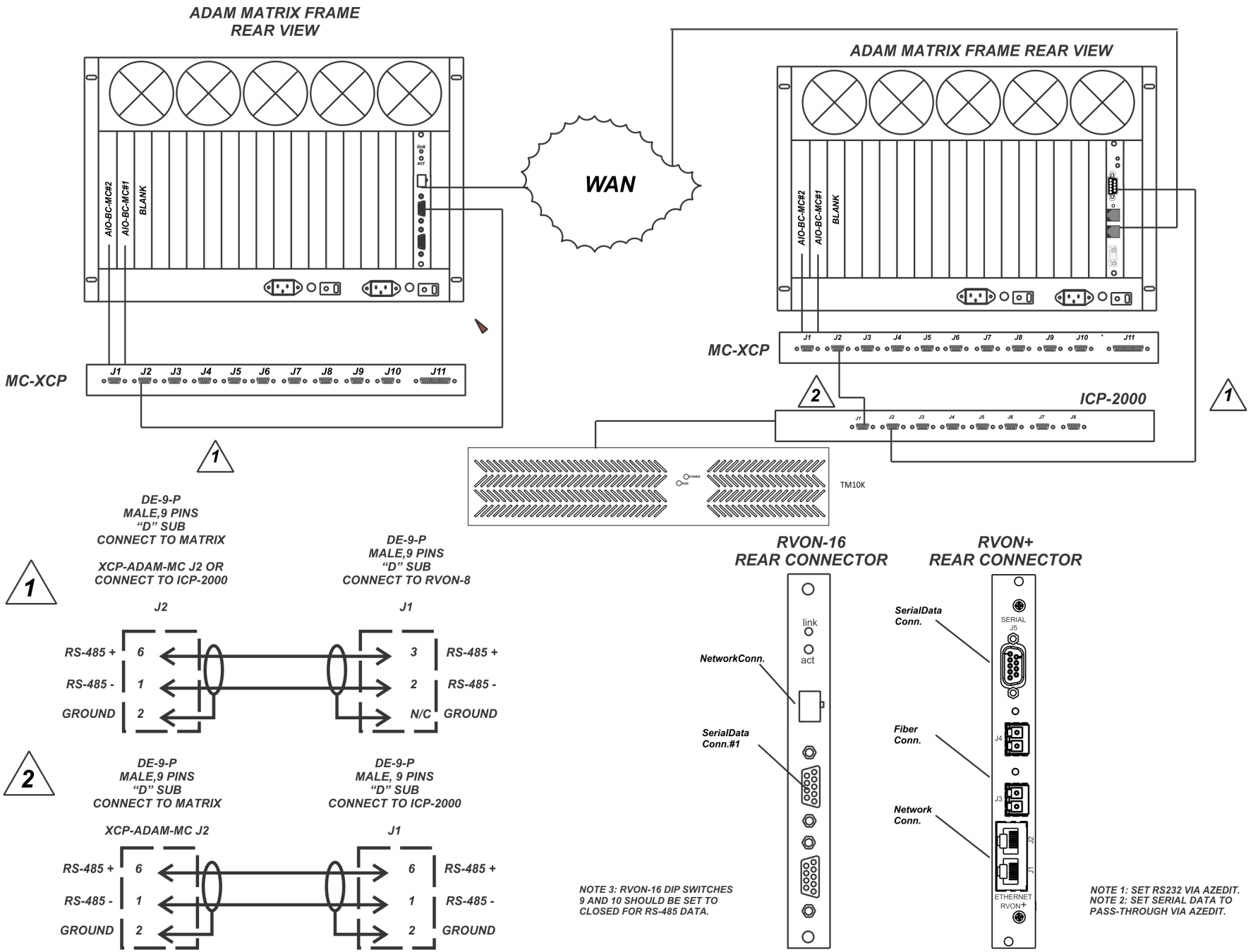


FIGURE 11. RVON-16 Trunking to RVON+

Bosch Security Systems, Inc.
12000 Portland Avenue South
Burnsville, MN 55337 U.S.A.
www.boschcommunications.com