

Analog Voice Adapter

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1. DESCRIPTION

The DCB Analog Voice Adapter (AVA) is used in pairs to provide a high quality compressed voice channel plus an asynchronous serial data channel through a single composite (network) data link. The network may be synchronous or asynchronous, using leased line modems, radio links, or digital data service. Asynchronous terminal devices may be terminals, printers, computer ports or other asynchronous devices. The voice channel may be connected to standard analog telephone sets, PBXs, key systems, radios, etc..

The asynchronous data port can be configured for speeds up to 57,600 bps.

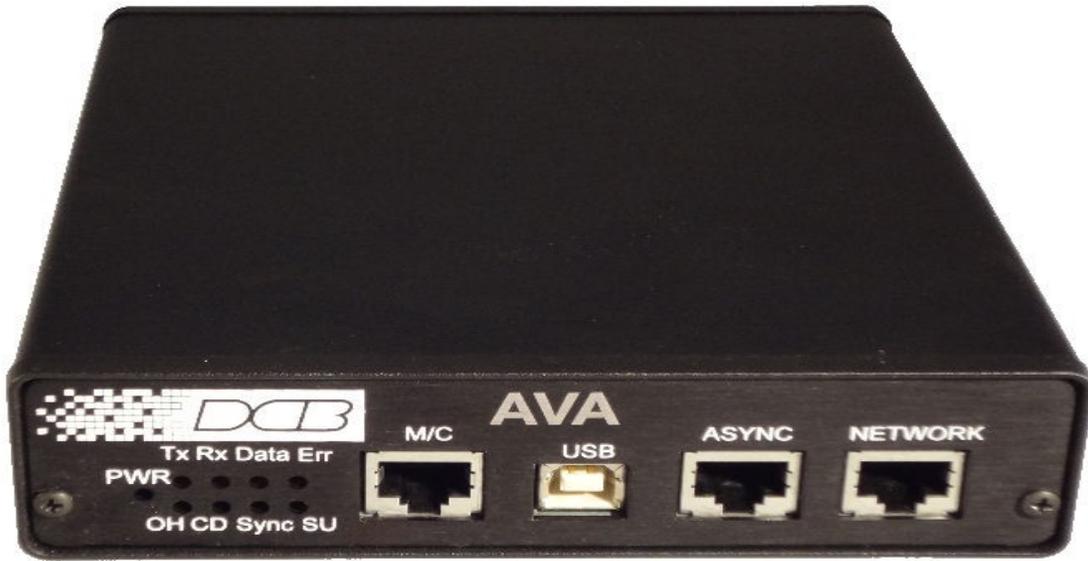
Network speeds may be as high as 230.4 Kbps asynchronous or 256 Kbps synchronous.

The voice channel can be configured for bit rates between 2250 and 9600 bps or ADPCM (32K), PCM (64K).

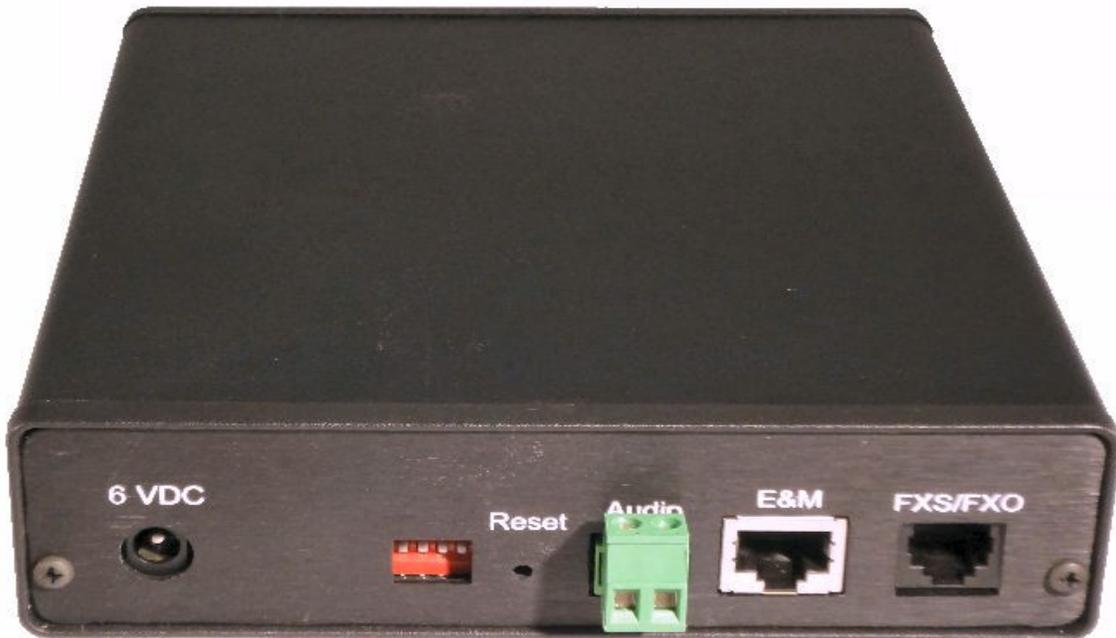
AVA is configured via a USB Setup port using a PC with terminal emulation software. Configuration settings are kept in non-volatile memory.

Some features of the AVA include:

- User configurable voice rate and jitter delay.
- Available with optional built-in 12 VDC, 24 VDC or 48 VDC power supply.
- Industrial temp rating of -40C to +85C
- Rack mount options available.



AVA Front Panel



AVA Rear Panel

2. SPECIFICATIONS

2.1 Data Port

Port Speeds

Asynchronous only

300, 1,200, 2,400, 4,800, 9,600, 19,200, 38,400 or 57,600 bps

Port Rate Selection

Selected through setup port.

Data Format

10 bits/character, 1 start, 1 stop, 8 data (including parity)

Interface

CCITT V.24, RS-232D, implemented in RJ-45, 8 position connectors. (RS-561 standard physical pin-out used on RJ-45 connectors)

2.2 Network Port

Full Duplex

Speed

Synchronous up to 256 Kbps

Asynchronous from 4800 to 230,400 bps

Interface

RS-232D, implemented in RJ-45, 8 position connector

2.3 Voice Interface

Type: FXS, FXO, E&M or Push-to-Talk

Rate: 2250 – 9600 bps

Preamp Gain: 0, +6, +12 or +24 dB

Input Gain: -9, -6, -3, 0 or +3dB

Output Gain: -9, -6, -3, 0 or +3dB

Jitter delay: 40 to 1000 ms (20ms increments)

2.4 Audio Interface

2-wire terminal block for connection of 8 ohm speaker

2.5 Setup Port Commands

- Show / Change Network Port Configuration
- Show / Change Data Port Configuration
- Show / Change Voice Channel Configuration
- Show AVA Configuration
- Show Voice Status
- Show/Zero Activity Counters
- Show / Change ID
- Type
- Reset AVA
- Load Default Settings
- Connect to Remote Unit
- Test Tools
 - Monitor Receive data (ASCII)
 - Monitor Transmit data (ASCII)
 - Monitor Receive data (HEX)
 - Monitor Transmit data (HEX)
 - Show RS232 control leads
 - Round Trip Delay
- Repeat Last Command
- Help

2.6 Environmental

- Operation: -40 to 85° C, non-condensing humidity
- Storage: -40 to 85° C, non-condensing humidity

2.7 Physical / Electrical

- 5.5" W x 7.25" D x 1.5" H
- 120/240 VAC external power supply (6 volt DC input to AVA)
- 4 Watts
- Optional 12 VDC, 24VDC or 48VDC powered units available

3. INSTALLATION

3.1 Unpacking

Remove the AVA from the shipping container and examine it carefully for external damage. If shipping damage is apparent, notify the shipper immediately.

The following accessories are included with each AVA:

- External 100-240VAC power supply
- Manual on CD
- Warranty, maintenance contract and repair information
- Modem to Composite cable (black) for connecting the AVA to an external modem or DSU/CSU
- USB cable for connecting the AVA setup port to a PC for configuration

3.2 Setup

The network port must be configured properly for the type of link used (Sync or Async). If required, the ASYNC data port and voice port must also be set correctly for the application. See the CN, CP and CV commands in Section 5.

3.3 Using Leased Line Modems

In this section, a reference to modem includes modems, digital radios or DSU/CSUs for leased line installations.

Connect the modems to the phone line and power ON the modems. Confirm the presence of carrier at each modem. If carrier is not detected at both ends, recheck the option settings. If carrier is still not present, check the cable from the telephone line to the modem. If everything is correct and still no carrier call the manufacturer of the modem or contact the telephone company for assistance.

Connect the AVA network port to the modem. A two foot RJ45 to DB-25 male cable connects the network port of the AVA to the data port of the modem (usually a DB-25 female connector). See Section 6 for cabling information.

Connect the AVAs to power.

Power and CD indicators on the front panel of the AVA must be ON indicating the on-line condition (see Section 4).

3.4 Cabling

Cabling between the AVA and the computer ports or terminal devices is a common source of installation problems. The AVA must have data from attached terminal devices or computer ports, as an input on position 6 of the RJ45 connector. Data from the AVA to any attached equipment will be transmitted on position 5 of the RJ45 connector. See Section 6 for pin position locations on the RJ45 connector and to determine the correct cables for your computer and terminal devices.

3.5 Parity Considerations

AVAs transfer all character bits whether it is 7 data bits plus parity or 8 data bits plus none, even or odd parity (7,N,1 is not supported). All 7 bit plus parity data should use the NONE setting. When 8E1 or 8O1 is enabled, parity is tested on the incoming data port characters, and the character is discarded if the parity is incorrect.

3.6 Voice Bandwidth Requirements

The following chart shows the bandwidth required for each voice rate setting. The maximum sustained data bandwidth is the network rate minus voice bandwidth.

Voice Rate (bps)	Bandwidth Required (bps)	Minimum Network Rate (bps)
2250	4375	4800
2400	4375	4800
3600	5875	9600
4800	7375	9600
6400	9375	9600
8000	11375	19200
9600	13375	19200
ADPCM (32K)	45500	57600
PCM (64K)	84500	115200

3.7 Voice Settings

Select the proper voice channel settings for your application based on the following chart. The voice interface is selected by the CV command and/or internal jumper settings.

Equipment		Voice Interface	
Local	Remote	Local	Remote
Analog Phone ¹	Analog Phone ¹	FXS ²	FXS
Analog PBX Ext.	Analog Phone	FXO ³	FXS
Analog PBX Ext.	Key System	FXO	FXS
Key System	Analog Phone	FXS	FXS
Key System	Key System	FXS	FXS
Analog Phone Line	Analog Phone	FXO	FXS
PBX 4-wire tie line	PBX 4-wire tie line	E&M	E&M
PTT Microphone	Speaker	MIC-PTT	E&M ⁴

- 1 – Digital or “feature” phones of the type used by some PBX systems are not supported.
- 2 – To set the FXS/FXO port for FXS, set the jumper on J6 to the left (see paragraph 4.2).
- 3 – To set the FXS/FXO port for FXO, set the jumper on J6 to the right (see paragraph 4.2).
- 4 – Set internal jumper J4 to position 2,3 to route audio output to rear panel audio connector (see paragraph 4.2).

FXS – In this mode, the AVA provides DC voltage and current (talk battery) for a local telephone instrument. By monitoring the presence or absence of current to the telephone instrument, the AVA detects whether the phone, or telephone equivalent, is idle (on hook) or busy (off hook). This information is then transmitted to the far end AVA. The on-hook or off-hook information is then relayed to the telephone switching equipment by the far end FXO unit. Tone dial DTMF tones are transferred transparently, pulse dialing is not supported.

In an FXS to FXS configuration automatic ring-down is enabled. When the telephone at one end is off-hook, the telephone at the other end rings automatically. If the always off hook option is enabled, no ringing occurs.

CAUTION

Excessive ringing loads on the voice circuits can cause damage to the units! Old style telephones with “bell” ringers will damage the equipment. Use newer phones with electronic ringers having a ringer equivalence of 1.0B or less.

FXO – The FXO mode is the inverse of the FXS mode. The FXO interface appears as a telephone instrument to the attached equipment. When in FXO mode, the AVA’s signaling circuits are conditioned to detect an incoming ring signal, representing an incoming call, and to provide a DC path (loop closure) to the PBX or central office switch to indicate on-hook/off-hook status. When ringing is detected, the FXO end will send an incoming call indication to the FXS unit at the far end, thus instructing it to ring its phone. When the far end FXS unit detects an off-hook condition, it sends an off-hook indication to the near end FXO which then provides an off-hook (loop closure) state to the telephone switching system. In this manner, the FXS/FXO pair together make the two AVA units at the two ends of the line appear “transparent” to the operation of a normal telephone line. Thus the user may establish the same type of telephone services over the circuit derived through the use of the AVA multiplexers that he or she could by direct connection over a normal telephone pair. In other words, the AVA multiplexer will not interfere, and will pass essentially unchanged, the signaling normally present in a standard telephone line connection. FXO to FXO connections are not allowed.

E&M – In this mode, the AVA interfaces to the tie trunk port of a PBX, and provides a Type I E&M signaling interface. This is a logic level type interface, where typically the PBX places battery voltage on the M-lead to indicate an off-hook condition to the AVA, and the AVA in return, places a ground on the E-lead to indicate a busy condition to the PBX. The E&M interface of the AVA is available on the eight wire modular jack marked “E&M”, and provides for four-wire voice operation.

MIC-PTT – In this mode a Push-to-Talk Microphone (available from DCB) is connected to the front panel MIC port. The audio output at the far end is controlled by internal jumper J4 (see paragraph 4.2).

3.8 Resetting Factory Defaults

The factory default settings for the AVA data and voice ports are as follows:

Network Port:

Modem type	Async
Rate	57.6 Kbps

Data Port:

Rate	9600 bps
Parity	None (8N1)
Flow Control	None
Transmit Timer	10ms
DCD to RxD holdoff	0 ms (DCD forced ON)
RxD to DCD holdover	- ms

Voice Port:

Preamp gain	+0 dB
Input gain	+0 dB
Output gain	+0 dB
Voice rate	3600 bps
Voice input	FXS/FXO (jumper selectable)
Voice jitter delay	140 ms

AVA ID: AVA1

To reset the unit to factory defaults use the !R command from the setup menu.

4. SWITCHES AND INDICATORS

4.1 Switches

Four DIP switches are accessible on the rear of the unit. Their functions are as follows:

Switch 1 – not used

Switch 2 – If up when unit is reset, the RS232 data port becomes the setup port.

Switch 3 – Factory use only.

Switch 4 – not used

There is also a RESET switch accessible through a small hole in the rear panel.

NOTE

The AVA is not operational while in switch 2 setup mode. If switch 2 is used for setup, connect the PC Com port to the AVA using the cable shown in paragraph 6.3.2 (To a PC Com Port). Set the PC terminal emulator for 9600, 8,N,1 and no flow control. Set switch 2 UP and press reset to enter setup mode. To exit setup, put switch 2 DOWN and press reset to resume normal operation.

4.2 Internal Jumpers

There are several internal jumpers in AVA. Only jumpers J4 and J6 are typically of interest to the AVA user. To access the jumpers, remove the two screws from the front panel and slide the enclosure cover forward about three inches. The jumper functions are noted below.

J3 – 1,2 - Ties signal ground to chassis ground.

J4 – 1,2 - Audio out to E&M interface.

J4 – 2,3 - Audio out to AUDIO connector.

J5 – 1,2 - Forces the unit to factory default if off when unit is reset.

J6 – When set to the left, sets interface to FXS.

J6 – When set to the right, sets interface to FXO.

4.3 Indicators

POWER – is ON when the AVA is connected to power.

Tx – Transmit Data is being sent out the network port.

Rx – Receive Data is being received on the network port.

Data – TX or RX Data is present on the data port.

Err(or) – Flashes for data port errors (framing, overrun, parity) and for network receive block checksum errors.

OH – Flashes when the voice port is active.

CD – On when DCD is present on network port.

Sync – On when network port is set for synchronous operation.

SU – Flashes when DIP switch 2 is up and unit is reset. This maps the setup functions to the ASYNC port on the front of the AVA.

5. USB SETUP PORT

5.1 Introduction

The USB Setup port is used to configure the AVA for proper operation. This connection must be used to configure the AVA network, voice and data ports.

5.2 Connections and Terminal Setup

Connection to the Setup port is through the USB port on the front of the AVA. Use the USB cable provided to connect to a PC USB port. When connected, the AVA will create a COM port on the PC. Use Hyper Terminal (or other terminal emulation software) to connect to this COM port. Set the PC for 57600, 8 data bits, no parity, one stop bit and no flow control. When connected, you should see:

Analog Voice Adapter (AVA) Vx.y

AT YOUR COMMAND >>

5.3 Using the Setup port

To activate the Setup port press the <Enter> key. When you see **AT YOUR COMMAND >>**, the Setup port is active and ready for your commands. Type H <Enter> to display the command set.

The following Error Messages may be displayed if an incorrect command is typed.

<u>Error Message</u>	<u>Meaning</u>
What?	Invalid command entered.
Not allowed!	Illegal remote command entered.
Remote AVA did not respond!	Network link is down.
ERROR: No FXS/FXO (J6) jumper detected!	J6 jumper removed. See paragraph 4.2.

5.4 Commands

5.4.1 Help (H or ?)

<u>COMMAND</u>	<u>LOCAL</u>	<u>PARAGRAPH</u>
----------------	--------------	------------------

Config/Show:

Network	CN/SN	5.4.2
Port	CP/SP	5.4.3
Voice	CV/SV	5.4.4
Show Config	SC	5.4.5
Show Status	SS	5.4.6
Activity/Zero	AC/Z	5.4.7
ID	ID	5.4.8
Type	TY	5.4.9
Reset	RE	5.4.10
Load Defaults	!R	5.4.11
Connect Remote	CR	5.4.12
Test Tools	TT	5.4.14
Repeat Last Cmd	*	5.4.13
Help	H,?	5.4.1

This Help screen shows the choice of commands available. The commands allow you to display selected options and configure the AVA. To leave a setting unchanged, press <Enter>. To return to AT YOUR COMMAND, press <Esc>.

5.4.2 Configure/Show Network (CN/SN)

Config Network

Network: ASYNC - 57,600 bps

New ASYNC or SYNC network? [A/S] >>

New rate? [4800 9600 19200 38400 57600 115200 230400] >>

To leave a setting unchanged, press <Enter>. Only the first two digits are required to select the rate. Use the SN command to display the settings without changing.

5.4.3 Configure/Show (Async) Port (CP/SP)

Config Port

Port rate: 9600 bps

Parity: NONE (8N1)

Flow control: NONE

Transmit timer: 10 ms

DCD to RXD on holdoff: 0 ms (DCD FORCED ON)

RXD to DCD off holdover: - ms

New Rate? [1200 2400 4800 9600 19200 38400 57600] >>

New Parity? [NONE EVEN ODD] >>

New Flow Control? [RTS XON NONE] >>

New Transmit Timer? [0 - 250 ms] >>

New DCD to RXD Holdoff? [1 - 250 ms; 0=DCD ON] >>

New RXD to DCD Holdover? [0 - 250 ms] >>

Only the first two digits are required to select the rate.

The parity setting is for data using 8 data bits plus parity only. All 7 bit plus parity data should use the NONE setting, (7,N,1 is not supported).

Flow control options are RTS/CTS, XON/XOFF and NONE.

The Transmit Timer setting delays network transmission until an entire block is received from the terminal device. This insures data integrity and prevents fragmented blocks. Settings are from 0 to 250 ms.

DCD to RXD Holdoff can be set from 2 to 250ms. This is the time between Port DCD being asserted and data being sent out the port to the attached device. For example, if you are using a 202T modem off the data port, you may want to set the RXD holdoff to match the modem RTS/CTS delay and use the AVA DCD signal to drive the modem RTS signal. When set to 0, DCD is forced ON.

RXD to DCD Holdover delay may be set to a value between 0 and 250ms. This will hold port DCD on for the designated time after the port buffer empties. This can help insure that all data gets to the attached device.

Use the SP command to display the settings without changing.

5.4.4 Configure/Show Voice (CV/SV)

Config Voice

```
-----  
Preamp gain:  +0 dB  
Input gain:   +0 dB  
Output gain:  +0 dB  
Voice rate:   3600 bps  
Voice input:  FXS  
Jitter delay: 140 ms  
  
New Preamp gain? [0 +6 +12 +24 dB] >>  
New Input gain? [-9 -6 -3 0 +3 dB] >>  
New Output gain? [-9 -6 -3 0 +3 dB] >>  
New Voice rate? [2250 2400 3600 4800 6400 8000 9600 ADPCM PCM] >>  
New Input? [1=FXS 2=MIC-PTT 3=E&M] >>  
Always off-hook on FXS interface? [Y/N] >>  
New Jitter delay? [40 - 1000 ms] >>
```

The input voice waveform is amplified by the sum of the preamp gain and the input gain. The preamp gain provides a coarse setting while the input gain supports a finer adjustment.

The output voice waveform is amplified by the output gain setting.

Only the first two digits are required to select the rate. If the network rate is too slow to support the selected voice rate, a WARNING message will be displayed. See chart on page 7.

NOTE

AVA will perform an automatic reset at the end of the CV command.

The always off-hook on FXS interface option provides a 2-wire E&M-like interface on the FXS port. That is, there is an open bi-directional audio channel at all times. No ringing is provided in this mode. This option is not available if the interface is strapped for FXO.

More jitter delay means more buffered voice packets and increased end to end voice delay. Less jitter delay raises the possibility that the buffer will empty due to network multiplexing or radio delays, and audio glitches may be heard. Jitter delay is set in 20ms increments.

Use the SV command to display the settings without changing.

5.4.5 Show Configuration (SC)

```
AVA Config
-----
Network: ASYNC - 57,600 bps

Port rate: 9600 bps
Parity: NONE (8N1)
Flow control: XON/XOFF
Transmit timer: 10 ms
DCD to RXD on holdoff: 0 ms (DCD FORCED ON)
RXD to DCD off holdover: - ms

Preamp gain: +0 dB
Input gain: +0 dB
Output gain: +0 dB
Voice rate: 3600 bps
Voice input: FXS
Jitter delay: 140 ms

AVA ID: AVA1
```

5.4.6 Show (Voice) Status (SS)

```
AVA Voice Status
-----
FXS interface enabled
FXS is on-hook

E&M input is on-hook
E&M output is on-hook
```

5.4.7 Activity(Counts)/Zero (AC/Z)

```
Activity Counts
-----
Network TX out = 0
Network RX in  = 0
  RX Errors    = 0

Data TX in    = 0
  TX Errors   = 0
  Overflow    = 0
Data RX out   = 0

Voice TX in   = 0
Voice RX out  = 0
  Underflow   = 0

Remote connects = 0
```

The Network TX out and RX in counts show the number of network blocks sent to the network and received from the network. RX Errors shows the number of network blocks received with a checksum error. If a block format error of some sort occurs before the checksum calculation, the block is discarded silently.

The Data TX in and RX out counts show the number of characters received from the DTE and sent to the DTE. TX Errors shows the number of TX characters with a framing error or overrun error. Framing errors may occur when the data port is set to the wrong serial data rate.

The Overflow count shows the number of times the serial input buffer has overflowed. Generally, overflow errors mean that the port is not set for the proper flow control or the DTE does not use flow control. When the buffer overflows, all buffered data is discarded.

Voice TX in and RX out shows the number of voice packets sent and received from the network.

The Underflow count is the number of times that the voice packet jitter buffer empties during an active voice session. This can occur if the network is interrupted or if network end to end delays vary widely. When the jitter buffer underflows, the AVA has no new voice packets to send to the decoder, and the result is a glitch in the recovered audio. When an underflow is detected, the AVA will stop sending voice packets to the decoder until the jitter buffer again fills above the jitter level.

Remote connects is the number of times remote control of the unit has been activated.

Use the Z command to zero the counters.

5.4.8 (Unit) ID

```
AVA ID: AVA1
New ID? [16 char max] >>
```

Unit ID does not affect operation of the AVA. It is provided for documentation purposes only.

5.4.9 Type (TY)

```
Type: Analog Voice Adapter (AVA)
Ver:  Vx.y mm/dd/yyyy
Boot: Vx.y
ID:   AVA1
```

5.4.10 Reset (RE)

```
Reset AVA? [Y/N] >> Y
Wait for reset...
```

```
Analog Voice Adapter (AVA) Vx.y
```

```
AT YOUR COMMAND >>
```

5.4.11 Load Defaults (!R)

```
Load AVA default config? [Y/N] >> Y
Restored AVA default config.
Wait for reset...
```

```
Analog Voice Adapter (AVA) Vx.y
```

```
AT YOUR COMMAND >>
```

5.4.12 Connect Remote (CR)

```
AT YOUR COMMAND >> CR
Connect to remote AVA...
```

```
CONNECTED to remote AVA
-----
```

```
Analog Voice Adapter (AVA) Vx.y
```

```
REMOTE COMMAND [EXIT to disconnect] >>
```

While this connection is active, the normal AT YOUR COMMAND prompt is replaced with the REMOTE COMMAND prompt. Most AVA commands can be entered and are transmitted to the remote AVA. This allows configuration and testing of the remote unit.

The following commands are not allowed in remote mode and, therefore, are not displayed on the remote Help menu: CR, CN, RTD and !R.

If the EXIT command is not issued, the connection will time out in 30 seconds and return to the local AT YOUR COMMAND prompt.

```
REMOTE COMMAND [EXIT to disconnect] >> EXIT
```

```
Disconnect remote AVA...
```

```
Remote AVA DISCONNECTED
```

```
AT YOUR COMMAND >>
```

5.4.13 Repeat Last Command (*)

To repeat the last command, simply press the * key. This is handy for repeating screens of constantly changing data.

5.4.14 Test Tools (TT)

<u>COMMAND</u>	<u>LOCAL</u>	<u>PARAGRAPH</u>
Monitor Data Port:		
RX/TX	MR/MT	5.4.15
RX/TX in HEX	MRH/MTH	5.4.16
Show RS232	SR	5.4.17
Round Trip Delay	RTD	5.4.18

5.4.15 Monitor Data Port RX/TX (MR/MT)

Monitor data port: RX - Press ESC-ESC to quit.MT

Monitor data port: RX TX - Press ESC-ESC to quit.

Stop port monitor

MR monitors data received on the network going out of the data port. MT monitors data coming into the data port being sent out the network port. Both commands can be active at the same time. The data on the screen will be tagged at [RX] or [TX] as it is displayed. Press the <Esc> key twice to exit the command.

5.4.16 Monitor Data Port in HEX (MRH/MTH)

MRH and MTH work the same as MR and MT except the data are displayed in HEX.

5.4.17 Show RS232 (SR)

Data Port RS232: RTS(8)-HI CTS(7)-HI DTR(3)-HI DCD(2)-HI DSR(1)-HI

This command displays the current state of the data port RS232 control leads.

5.4.18 Round Trip Delay (RTD)

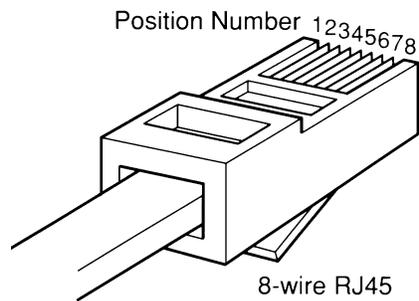
Measure Round Trip Delay...

Round Trip Delay is 2 ms.

This command measures the round trip delay between the local and remote AVAs. The delay is rounded to the nearest 1ms and cannot be 0.

6. INTERFACE SIGNALS AND CABLING

6.1 RJ45 Pin Reference



RJ45 Plug Positions

6.2 Port Interface

6.2.1 Network Port (RJ45)

<u>Pin</u>	<u>Signal</u>	<u>In/Out</u>
1	Receive Clock	IN
2	Transmit Clock	IN
3	Data Carrier Detect	IN
4	Signal Ground	
5	Transmit Data	OUT
6	Receive Data	IN
7	Request to Send	OUT
8	Clear to Send	IN

6.2.2 ASYNC Data Port (RJ45)

<u>Pin</u>	<u>Signal</u>	<u>In/Out</u>
1	Data Set Ready	OUT
2	Data Carrier Detect	OUT
3	Data Terminal Ready	IN
4	Signal Ground	
5	Receive Data	OUT
6	Transmit Data	IN
7	Clear to Send	OUT
8	Request to Send	IN

6.2.3 Voice Port Interfaces

FXS/FXO (RJ11 600 ohm)

<u>Pin</u>	<u>Signal</u>
3	Tip
4	Ring

E&M (Type I, Side A, RJ45 600 ohm)

<u>Pin</u>	<u>Signal</u>	<u>In/Out</u>
1	E&M Ground	
2	E lead	OUT
3	Audio	IN
4	Audio	OUT
5	Audio	OUT
6	Audio	IN
7	M lead	IN
8	E&M Ground	

MIC/PTT (RJ45)

<u>Pin</u>	<u>Signal</u>
1	Signal Ground
2	Signal Ground
3	Not Used
4	Audio Ground
5	Not Used
6	Mic Audio In
7	Not Used
8	PTT In

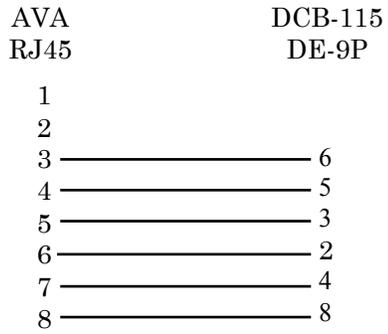
6.3 Cables

6.3.1 Network Port to Modem

A two foot composite to modem cable is included with each AVA. The pinout is as follows:

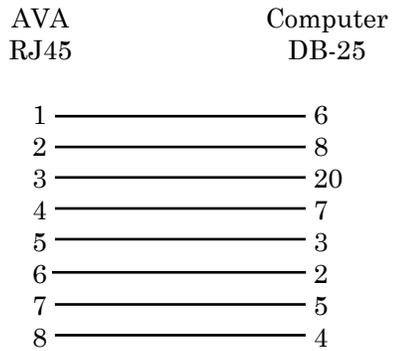
AVA RJ45	Modem DB-25P
1	17
2	15
3	8
4	7
5	2
6	3
7	4
	20
8	5

Network Port to DCB-115 Wireless Modem (9802040)

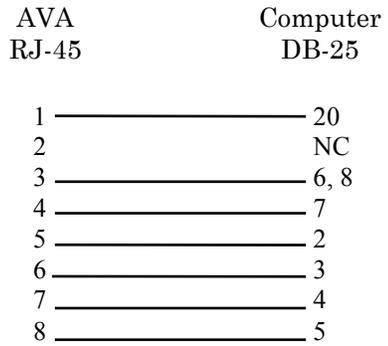


6.3.2 Data Port to Async Device

Configured as DTE



Configured as DCE



Data Port to a PC Com Port

AVA		PC
RJ-45		DB-25S DE-9S

1	—————	6	or	6
2	—————	8	or	1
3	—————	20	or	4
4	—————	7	or	5
5	—————	3	or	2
6	—————	2	or	3
7	—————	5	or	8
8	—————	4	or	7

6.3.3 Crossover Cable for Back-to-Back (ASYNC) Bench Testing

AVA Network		AVA Network
RJ-45		RJ-45

3	—————	7
4	—————	4
5	—————	6
6	—————	5
7	—————	3

7. TROUBLESHOOTING

When troubleshooting problems, a rational plan can save you many hours of frustration. The following is a brief outline of standard troubleshooting procedures.

1. Gather the facts to determine the exact nature of the problem.
2. Draw a picture of the system showing the equipment at both the host and remote ends and the phone lines or in-house wiring. Use this as a reference to note your observations, test steps and test results. A picture keeps you focused and often saves duplicate effort.
3. Record the front panel indications before changing anything. This is an important part of fact gathering
4. If you change anything, change only one thing at a time.

8. WARRANTY

DCB products are warranted to be free of defects in materials and workmanship for two years. Data Comm for Business will repair or replace any equipment proven to be defective within the warranty period. All warranty work is F.O.B. Dewey, IL. This warranty is exclusive of abuse, misuse, accidental damage, acts of God or consequential damages, etc. DCB liability shall not exceed the original purchase price.

All equipment returned for repair must be accompanied by a Returned Material Authorization (RMA) number. To receive an RMA number, call (217) 897-6600 between the hours of 8 AM and 5 PM central time. Equipment must be shipped prepaid to DCB and will be returned at DCB's expense.

Ship returned items to:

Data Comm for Business
2949 CR 1000E
Dewey, IL 61840
Attn: RMA number

Data Comm for Business, Inc.
PO Box 6329
Champaign, IL 61826-6329

Tel (217) 897-6600
Fax (217) 897-1331
Email support@dcbnet.com