Automated Test & Verification System

ATV-25

User Guide
Version 1.9

Allied Analogic, Inc.

Table of Contents

1. Overview

The ATV-25 is a comprehensive test system designed to meet the daily testing needs for OSP (outside plant) applications. The ATV-25 provides single and bulk pair testing for applications including new construction, pair conditioning, and records verification. Innovative metering designs simplify completing DCV, Ohmmeter, and Open meter measurements.

The ATV-25 provides pair identification features including ID Tone and Automatic Pair Identification (tagging). Automatic Pair Identification using two or more ATV-25 units pair identification for up to 100 pairs and compares both DC and AC parameters to identify pairs.

The ATV-25 also features Automatic Pair Identification for 25 to 100 pairs using the ATV R/T remote tagger. The ATV-25 and the ATV R/T can tag any combination of the four 25 pair modules connected to the ATV R/T. The ATV-25 is deployed at the field location and issues commands to the ATV R/T during the testing. The identification process is enhanced by using both DC and AC voltage measurements on the pair. Simplex tone is applied to the pair during the identification. Simplex tone is balanced with respect to tip to ground and ring to ground to minimize any potential disturbance on the pair.

This reference provides step-by-step instruction for using the features and functions of the ATV-25 test set. The user should be familiar with normal OSP terminology. This guide does not describe in detail the internal operations of the test set or theory related to normal cable measurements and analysis.

2. Glossary of Terms

The following terms are used in describing the ATV-25 features and functions. These terms also explain many of the display and test results.

Term	Definition
Ω	Symbol for ohms, the unit of measure for resistance.
AC Charger Adapter	The AC to 12VDC charger adapter provided with the ATV-25. This charger should be used to charge the ATV-25 at the end of each work period or when the ATV-25 indicates a low battery condition.
ANAC	Automatic Number Announcement Circuit – Some central offices have this equipment installed. A DTMF ANAC can send the assigned number to the ATV-25 using DTMF digits. This is the most efficient way to automatically retrieve phone numbers. An ANAC can also voice-announce the assigned number. A DTMF digit is heard just before the voice announcement if the DTMF response is available.
ANI	Automatic Number Identification – Most offices have some form of ANI. An ANI may not be able to respond with DTMF digits as required for automatic ANAC assigned number retrieval.
ANR	Assigned Number Retrieval – an automatic process to retrieve the telephone number assigned to a telephone line. This is accomplished using Caller ID or a DTMF ANAC process.
ATV R/T	100 pair remote tagger used with an ATV-25. The ATV R/T permits tagging any combination of the four 25 pair modules and remote tone.
Auto Test	A test that automatically completes a series of measurements on 1 to 25 pairs. The test allows the user to review and re-test defective pairs and optionally save the test results.

Term	Definition
Aux Pair Cord	This cord is used for various test functions such as automatic number retrieval using caller ID. The cord has yellow and blue clips and a blue connector boot. This cord can also be used in place of the PR0 cord if needed.
Bridge Module	A modular connector, usually 25 pair, designed to make a permanent or temporary bridge connection to a splice module in a cable.
CALL	The CALL button accesses the Voice Monitor, DSL Monitor, and Talk Pair functions.
CFG	The CFG button displays the Configuration menu for System, CO, Location, User, Reference Pair, and retrieving the ATV R/T firmware version.
Cinch Connector	Industry standard connector 25 pair 50 pin connector located on the bottom of the ATV-25.
ColRev Busy	POTS busy voltage measured Tip to Ring, Tip to Ground, and Ring to Ground. The voltages are polarity reversed from normal busy POTS.
ColRev Busy TR	POTS busy voltage was measured Tip to Ring but the voltage is polarity reversed from normal busy POTS. Tip to Ground and/or Ring to Ground measurements do not match normal Busy POTS levels. This can indicate a Ground fault.
ColRev Idle	POTS idle conditions were measured Tip to Ring, Tip to Ground, and Ring to Ground. The voltages are polarity reversed from normal POTS.
ColRev Idle TR	POTS idle voltage was measured Tip to Ring but the voltage is polarity reversed from normal POTS. Tip to Ground and/or Ring to Ground measurements do not match normal Idle POTS levels. This can indicate a Ground fault.
Function Keys	The keys located below the LCD display labeled **[F1]** through **[F4]**. The functions of these keys are indicated on the bottom row of the display above the keys.
Ground Cord	This is a permanently attached cable with a green boot on the clip. This cord must be connected to the cable sheath and ground for all operations. Care should be taken to ensure that the sheath, cable ground, and ground cord are properly connected. **Always** check the ground immediately if unexpected results are obtained.
Idle	Measurements on the pair matched the POTS parameters.
Idle Ring	Measurements on the pair matched POTS idle voltage on the Ring to Ground but not Tip and Tip to Ring.
Idle Tip	Measurements on the pair matched POTS idle voltage on the Tip to Ground but not Ring and Tip to Ring. Idle POTS measurements on the Tip may indicate a polarity reversal.
Idle TR	Measurements on the pair matched POTS idle voltage on the Tip to Ring but not Tip to Ground and Ring to Ground. This condition may indicate a ground fault.
Jump Keys	Jump keys are the six blue keys in the upper right corner of the front panel. These keys are always active and allow the user to access the various features of the ATV-25 quickly.
Length Error	A balanced, vacant pair that exceeds the specified Length Deviation limit.
Loop Current Error	The measured loop current is less than 20 mA or is greater than 49 mA.

Term	Definition
Loss	The attenuation of a signal in a pair. The loss generally increases as the frequency increases and as the pair gets longer. Loss measurements require a signal source. The amplitude and source impedance of the signal must be known. The received amplitude is measured and the loss calculated. Loss is indicated in decibels (dBm).
Modular Connector	A connector used to make connections for multiple pairs, usually 25, in a cable. A modular connector may be in a splice or a cable termination such as the CO or cross connect box.
Open	The connected pair is less than 30 feet or no pair is connected.
PR0 Cord	This cord is used for single pair testing. The cord has red and black clips and has a red connector boot.
POTS Busy Voltage	POTS busy voltage is defined as -7VDC to -30VDC.
POTS Idle Voltage	POTS voltage is defined as -32VDC to -58VDC.
POTS Loss	POTS Loss refers to a measurement of the loss in a pair when connected to a 1004Hz, 600Ω, 1 mW (milliwatt) tone source. POTS Loss is measured by calling a number at the central office. The called number will answer and connect a 1004Hz tone at 1 mW to the line. The received amplitude is measured and the loss is calculated. POTS Loss is indicated in dBm.
POTS Noise	POTS Noise refers to a measurement of noise on a pair when connected to a *quiet termination* at the central office. POTS Noise is measured by calling a predefined number at the central office. The called number will answer the line and connect a quiet termination to the line. The noise is measured on the line for metallic and longitudinal (power influence or noise ground). Noise measurements may be indicated in dBm and should be a negative value such as -70 dBm.
Power Connector	A connector located on the left side of the ATV-25 used to connect an external 12VDC power source to charge the internal batteries.
Rapid Test	The Rapid Test is a pre-programmed test that quickly scans the selected pairs for DC voltage and, optionally, Open pair length. A Reference Pair is may be measured or entered and the test compares the length of the pair to the Reference Pair. Pairs are flagged as errors if the length varies by more than the Length Deviation limit or exceed the unbalance limit.
RCL	The RCL button Recalls previously stored test results.
Res Fault	Resistance Fault limit is used to indicate a Short or Ground. Any resistance measurement below this limit is considered a pair fault.
RG	Abbreviation for a measurement or connection between the Ring and Ground/Sheath of a pair.
RGnd	The measured resistance Ring to Ground is less than the Res Fault limit.
Ring Battery	DC voltage of ±2.0 volts or more was found from Ring to ground.
Ring Gnd	The measured resistance Ring to Ground is less than the Res Fault limit.
Ring Open	No connection was found on the Ring to ground or the length was less than 30 feet.
RMT	Accesses Remote Tagging features using the ATV R/T.

Term	Definition
Short	Resistance measured Tip to Ring that is less than the specified Resistance Fault Limit.
Smplx Battery	Simplex DC Voltage was detected on the Tip to Ground and Ring to Ground. The voltages were within ± 2VDC of each other.
Smplx Tone	Tone normally used to identify cable pairs using a tone probe. Simplex tone is applied from Tip to Ground and Ring to Ground simultaneously. The tone is in phase and equal amplitude to minimize disturbances on the pair.
Spectral Plot	The Spectral Plot scans frequencies from a selected start frequency and increments 255 steps by the selected step size. The maximum frequency is approximately 2.2 MHz.
Talk/Wait Cord	This cord allows the ATV-25 to provide a talk circuit. The cord has two black clips, a headset block, and a black connector boot.
Front Tap Shoe Cable	A cable designed to make a temporary connection from a distribution frame, terminal block, or splicing module for testing purposes. The cable has a female, 50 pin Chinch connector on one end and a custom connector on the other.
TG	Abbreviation for a measurement or connection between the Tip and ground/sheath of a pair.
TGnd	The measured resistance Tip to Ground is less than the Res Fault limit.
Tip Battery	DC voltage of ±2.0 volts or more was found from Tip to ground.
Tip Gnd	The measured resistance Tip to Ground is less than the Res Fault limit.
Tip Open	No connection was found on the Tip to ground or the length was less than 30 feet. A connection of at least 30 feet was found on the Ring.
TR	Abbreviation for a measurement or connection between the Tip and Ring of a pair.
TR Battery	DC voltage of ±2.0 volts or more was found from Tip to Ring.
TR Noise	The measured TR (metallic) noise exceeds the selected Noise TR limit.
Unbalanced	The Tip distance and Ring capacitive distances are not equal. The variance exceeds the selected Balance limit.
USB Cable (A/B)	This cord connects the ATV-25 to a standard PC USB connector. This is a standard USB cable.
USB Connector	This connector on the left side of the ATV-25 that connects to a PC using a USB cable.
User Test	An automatic test that is customized by the user to select the desired measurements.
Vacant	A non-working, capacitively balanced pair with 30 or more feet of length.
Vacant Pair Test	The Vacant pair test is a pre-programmed test for non-working pairs. The Vacant test does voltage tests, resistive tests, open length, capacitive balance, and optional reference pair comparison.
Working Pair Test	The Working pair test is a pre-programmed test for working and Vacant pairs. The test measures voltages, resistances, open length, loop current (loop current is measured for idle POTS pairs), capacitive balance, and optional reference pair comparison.

3. Document Conventions

The following conventions are used in this document.

Panel key names are bold and enclosed inside square brackets. For example, **[F1], [F2], [F3],** and **[F4]** refer to the four function keys located below the display screen.

ⓘ   Useful Tips

☑   Important checkpoints

<Idle> Refers to the startup screen. This is the initial screen on power up. You can usually return to the **<Idle>** screen by pressing the **[CLR]** key.

4. Getting Started

The ATV-25 provides most of the common test and measurement functions needed for testing copper cable. This section provides information for the initial use of the product. Some of the applications include:

- ✓ New Construction
- ✓ Pre-testing cable
- ✓ Post-testing cable
- ✓ Pair Identification
- ✓ Tone generation
- ✓ Bulk Pair Recovery

4.1   What is in the box?

The ATV-25 includes the following:

- ✓ ATV-25
- ✓ ATV-25 Soft Case
- ✓ PR0, Single Pair Test Cord
- ✓ AUX Test Cord
- ✓ Talk/Wait Cord
- ✓ AC Charger Adapter
- ✓ AC Power Cord
- ✓ USB A/B Cable
- ✓ CD – ATV Tools Software and Documentation

4.2   Before the First Use

The following steps must be completed when the ATV-25 is first placed in service.

4.2.1 Charging

The ATV-25 is fully charged at the factory but may have partially discharged during shipping and storage. Charging the ATV-25 for at least 10 hours is recommended before the first use and five hours at the end of each work period. This will ensure that the ATV-25 will have full charge. A full charge will operate the ATV-25 for approximately eight to ten hours.

The ATV-25 may need several full charge/discharge cycles to reach full capacity if it has been stored for an extended period of time.

Connect the AC charger to an appropriate outlet.

Ensure that the green LED on the charger is on. This is the indication that the charger is connected to the AC power correctly.

Connect the charger barrel plug to the power jack on the left side of the ATV-25.

The green Ext. Power and red Charge LED indicators in the lower right corner of the front should be on.

- ✓ Recheck the charger connections if the Ext. Power LED is not on.
- ✓ The unit is fully charged if the Ext. Power LED is on but the Charge LED is off.

    ☑ The Charge LED may not come on immediately or may come on briefly and go off if the battery has a very low charge. Leave the charger connected for at least one hour if you are unsure of the battery condition.

The battery indicator in the upper-left corner of the screen is displayed when the ATV-25 is operating from the internal battery. The indicator will have three bars when fully charged. The unit is approaching the recharge point when only one bar is remaining.

    ☑ The ATV-25 will automatically shut down when the battery is too low for correct operation. The ATV-25 should be recharged if it suddenly shuts down or if it shuts down immediately after power is turned on.

6

4.2.2 Date and Time Setting

The ATV-25 Date/Time should be set to the correct local date and time. To access the Date/Time function, press **[CFG]** + **[F1] System** + **[F2] DateTime**. Press **[5] Change** to change the Date and Time, then press **[ENT]** to save the changes. The ◀ and ▶ keys move between the date/tome fields. Pressing **[CLR]** returns the ATV-25 to the **<IDLE>** screen.
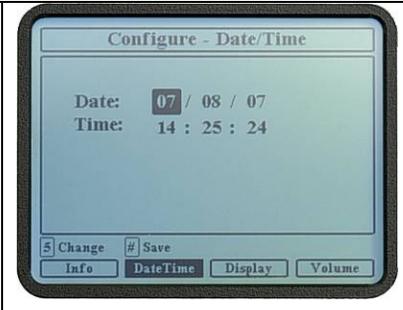
4.2.3 Display Adjustment

The display can be adjusted for the best readability in varying light conditions. The backlight and/or contrast may be adjusted.

4.2.3.1 Backlight

The backlight can be adjusted at the **<IDLE>** screen. Pressing ◀ decreases the backlight and ▶ increases the backlight.

The backlight can also be adjusted by pressing **[CFG]** + **[F1] System** + **[F3] Display** + **[F2] Backlight**.
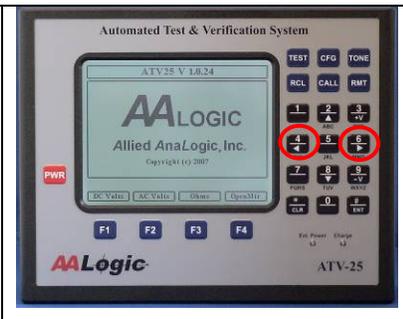
4.2.3.2 Contrast

The contrast can be adjusted at the **<IDLE>** screen. Pressing ▲ increases the contrast and ▼ decreases the contrast.

The contrast can also be adjusted by pressing **[CFG]** + **[F1] System** + **[F3] Display** + **[F1] Contrast**.

7
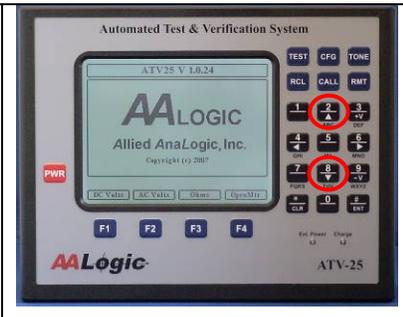
4.3 Front Panel

The following describes the front panel features of the ATV-25.

Item	Description
[0] through [9]	Data entry – some keys have additional functions
[CALL]	Select Call functions – Voice Monitor, DSL Monitor, and Talk Pair
[CFG]	View and/or change configurations for System, CO, Location, User, Reference Pair, and ATV *R/T* information.
[CLR]	Terminates the current function/test and returns the unit to the **<IDLE>** screen
[ENT]	Save data on some screens
[F1], [F2], [F3], and [F4]	Context screen keys – the function of the key is indicated by a label on the display above the key
GND, TALK, AUX, and PR 0	Indicates the position of the cord connectors located on the bottom of the ATV-25.
25 Pair Module	Indicates the position of the 25 connector on the bottom of the ATV-25.
[PWR]	Turn the power ON or OFF
[RCL]	View saved test results
[RMT]	Select the ATV *R/T* functions
[TEST]	Select automatic or manual test functions
[TONE]	Select tone functions – ID Tone, Tagging, and End-to-End
Charge LED	Red – Indicates the internal battery is charging when on
Display	320 x 240 backlit LCD
Ext. Power LED	Green – Indicates an external power source is connected when on

4.4 Display Regions

The following describes the information regions of the display.
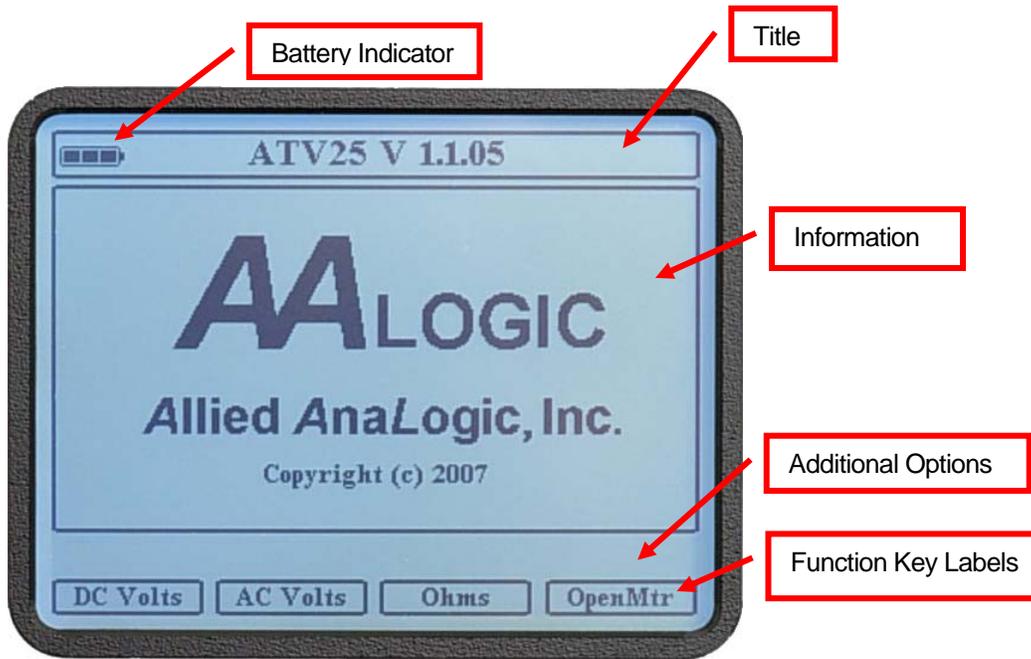
Item	Description
Battery Indicator	Indicates the charge on the internal battery. The battery is approaching discharge when only one bar is displayed.
Title	Contains the title of the current screen by function
Information	Contains menus, meters, and test results – this is the main display region
Additional Options	This line contains additional options for the function or instructions to the user
Function Key Labels	Identifies the current function assigned to **[F1]**, **[F2]**, **[F3]**, and **[F4]** keys.

4.5 Bottom Panel

The following describes the connectors located on the bottom of the ATV-25.

Talk/Wait   AUX   PR0   25 Pair Cinch Connector   Speaker   Ground Cord
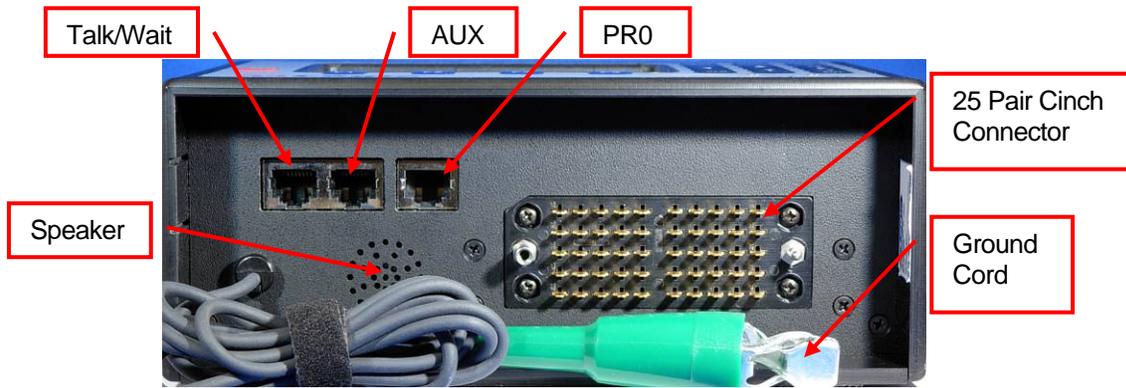
Item	Description
Speaker	Speaker – Speaker volume may be low if this area is blocked
Talk/Wait Cord	RJ 45 connector for the talk cord – the talk cord is used to set up a talk circuit on copper cable pairs
AUX Connector	RJ 45 connector for the AUX cord – the AUX cord is used in Tagging and Caller ID testing
PR 0 Connector	RJ 45 connector for the PR 0 cord – the PR 0 cord is used for single pair testing and pair tagging
25 Pair Cinch Connector	50 conductor (25 pair), male Cinch-type connector used for bulk pair testing
Ground Cord	Permanently connected cord that must be connected for all tests and measurements

4.6 Left Side

Two connectors are located on the left side of the ATV-25. There is a cover that must be pulled back to gain access to the connectors.

Power Connector   USB Connector
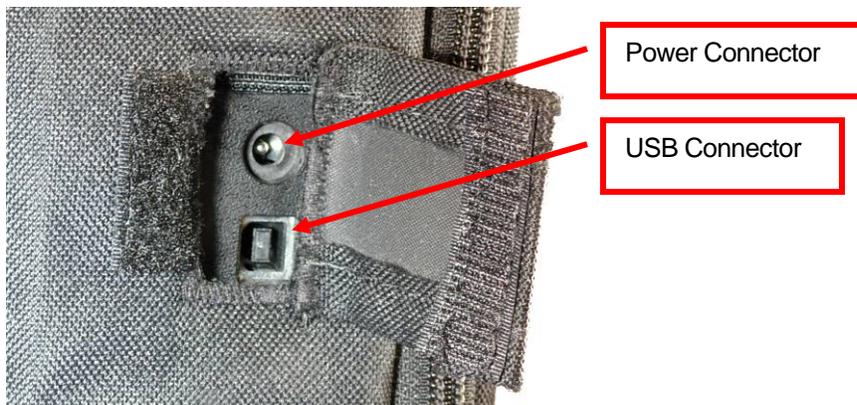
Item	Description
Power Connector	2.5 mm barrel jack, center positive, for connection of an external power source of 12VDC, 1.3A or greater
USB Connector	USB 2.0 B connector for connection to a PC using a USB A/B cable. A cable is provided with the ATV-25

4.7 Cords

The following cords are used with the ATV-25.

Cord	Description
	PR 0 cord – Used for single pair testing and Pair Tagging functions.
	AUX cord – Used for Tagging and Caller ID Assigned Number Retrieval.
	Talk Cord – Used with talk sets and/or headsets to setup a talk circuit over a vacant pair. The ATV-25 supplies the talk battery for the circuit.
	Charger and AC Power Cord – This charger supplies 12VDC at 1.3A to the ATV-25. Other external, well regulated, 12VDC sources with the correct plug can be used. The plug is a 2.5mm barrel connector with the center connector positive (+). External sources should be capable of 1A continuous current.

4.8 Maintenance

4.8.1 Cleaning

The ATV-25 can be cleaned with a damp cloth and mild cleaner such as a window cleaner. The screen area should not be cleaned with abrasives that could scratch the lens and make viewing the screen difficult. Paper towels and other coarse materials can scratch the lens. Clean the lens only with a soft cloth.

The soft case can be removed and laundered if needed in cold water and a mild detergent. The case should be thoroughly air dried before reinstalling the ATV-25. Care should be taken to avoid allowing water or chemicals from entering the case of the ATV-25.

4.8.2 Battery

The battery should last approximately two to three years in normal service. Replacement batteries can be ordered by contacting Allied Analogic, Inc. online at www.AALOGIC.com. The ATV-25 should be charged until the charge LED goes off before the first use. It should then be charged after each work period thereafter. The ATV-25 normally operates eight to ten hours on a full charge.

The ATV-25 automatically shuts down when the battery is too low for correct operation. The ATV-25 should be recharged if it suddenly shuts down or if it shuts down immediately after power is turned on.

The charge LED may not come on immediately or may come on for a short time and go off if the battery has a very low charge. Leave the charger connected for at least one hour before checking the charge if you are unsure of the battery condition.

4.8.3 Calibration

The ATV-25 does not require periodic calibration. The ATV-25 may be returned to the manufacturer for updates and recalibration if desired. Contact the local sales representative or Allied Analogic, Inc. for authorization and price information.

4.8.4 Repairs

The ATV-25 can be returned to the manufacturer for repairs. Contact the sales representative or Allied Analogic, Inc. directly to obtain a Return Authorization code.

4.8.5 Replacement Parts and Accessories

Replacements for damaged cords or charger are available from the manufacturer or sales representative.

5. General Testing Information

The following general information should be observed for all testing with the ATV-25. **Ensure safety precautions are used at all times.**

5.1 Test Connections

Ensure that tap shoes, test cords, and the attached ground cord are in good condition and free of contaminants or debris. Contaminants and debris can affect most test measurements, especially capacitive and resistance.

Test leads and tap shoes should be as short as practical. Extending the test leads, long tap shoes, and extending the ground cord can have adverse effects on readings, especially noise measurements.

Inspect the test cords for damaged conductors, bent/broken needles, or damaged RJ45 connectors. The PR0 and AUX cords are interchangeable. Replacement cords can be ordered from the manufacturer.

The figure below illustrates a typical single pair connection.
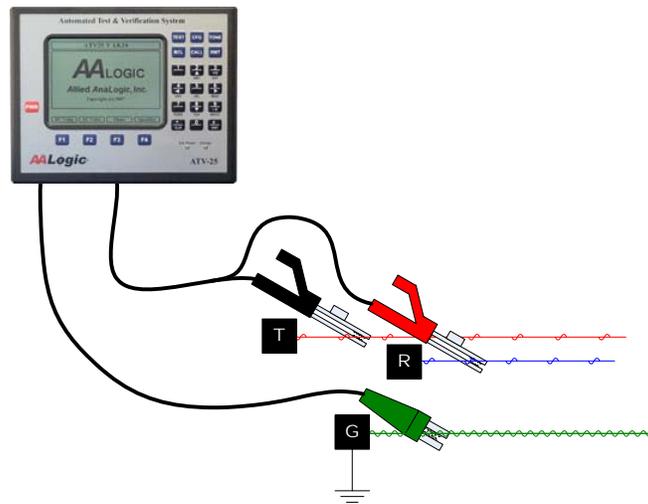
A 25 pair connection is usually made by using a tap shoe or a bridging module.

Tap shoe Connected to a Module

Cinch Connector Connects to ATV-25

The following figure illustrates typical 25 pair connections.
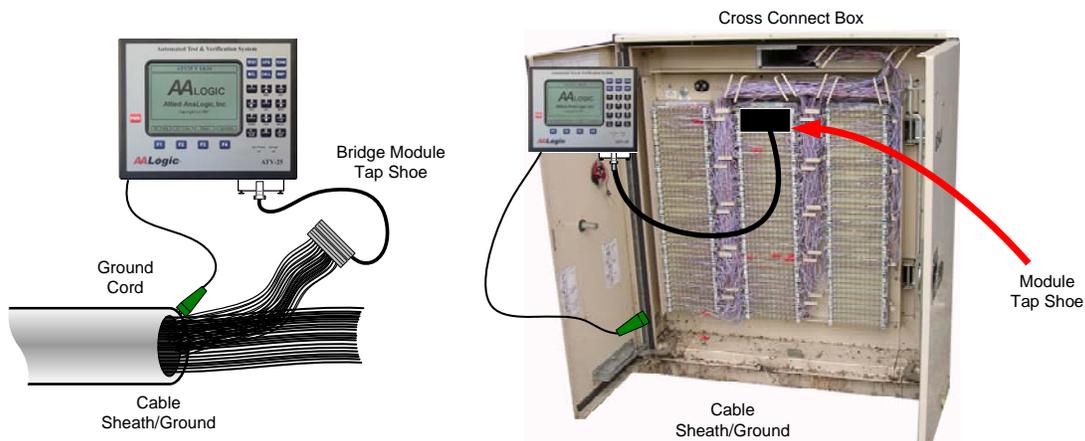
Typical 25 Pair Connections

5.2 Ground Connection

All Tests require good ground and sheath continuity for correct results. Care should be taken to ensure that the green ground clip is connected directly to the cable sheath/ground or to a ground as close as practical to the sheath. Connect to ground bars in central offices.

Always conduct preliminary tests to ensure the ground connection is satisfactory before starting bulk pair tests. The effects of poor ground and/or poor bonding include:

DC Voltage	✓ Missing or incorrect voltages referenced to ground
	✓ Erratic voltage measurements
AC Voltage	✓ High AC noise readings
	✓ Erratic voltage measurements
Ohm Meter	✓ Missed ground faults
	✓ High ground resistance values
	✓ Erratic ground resistance measurements
Open Meter	✓ Incorrect balance readings
	✓ Incorrect open length referenced to ground
	✓ Erratic distance measurements
Other Tests	✓ All tests may be affected to varying degrees

5.3 Pair Selection

The ATV-25 allows for testing a single pair at a time or groups of pairs. The Automatic tests automatically test one or more pairs up to 25 pairs. Manual testing can be conducted on any one of 26 pairs – PR0, single pair cord, of a series of pairs within a 25 group through the Cinch connector.

5.3.1 Automatic Pair Testing

Pair selections for automatic tests are entered at the time the test is run. The start pair number is entered and the stop pair is calculated as the end of the 25 pair group by the ATV-25 and entered as a default value. The stop pair number can be modified to test less than 25 pairs.

> ⓘ The pair number entered can be the actual pair count number. The ATV-25 automatically calculates the correct pair number within the 25 pair count.
>
> **Example 1:** Enter start pair 1026, the ATV-25 calculates the starting pair number as pair 1 of the Cinch connector.
>
> **Example 2:** Enter the pair 278, the ATV-25 calculates the starting pair number as pair 3 of the Cinch connector.

Test results can be stored in memory for automatic tests. An automatic test must be used to save the results. To test a single pair, the same pair number is entered for the start pair and the stop pair.

Example: A test is to be run on a pair connected to PR0 and the results of the test need to be stored and uploaded later. An automatic test must be used. The start pair number is set to 0 and the stop pair is set to 0.

5.3.1.1.1   PR 0 Mode
The ATV-25 allows automatic testing of 25 pair counts using the PR0 cord. This is beneficial when a tap shoe is not available. The PR0 Mode is selected before starting the test. The test waits for the user to connect the PR0 cord and press **Start** for each pair.

5.3.2 Manual Pair Testing

Manual testing performs one test or measurement on any one of 26 pairs, the PR0 cord or one of the 25 pairs through the Cinch connector. The pair to test can be selected in one of two ways, select the previous or next pair or direct entry of the pair number.

Use ◀ to select the next lower pair number and ▶ to select the next higher pair number. The ATV-25 will wrap to pair 25 when the ◀ key is pressed and the current pair is 0. The ATV-25 will wrap to PR0 when the ▶ key is pressed and the current pair is 25.

Press the 0 **PairSel** key on most screens to enter a pair number directly. 0 PairSel will be displayed on the screen when this option is available. Pressing the 0 **PairSel** key will place the cursor in the pair number area of the screen and allow entry of the pair number.

> ⓘ A shortcut to enter PR0 is to press the 0 PairSel key then press **[ENTER]**.

6. ATV-25 Configuration

Configuration allows frequently used information and settings to be stored for automatic recall and use. The configuration information can be entered from the ATV-25 keypad or entered in to a computer using ATV Tools and downloaded to the ATV-25 using a USB cable.

6.1 System Configuration Options

System configuration is used to display system information and to adjust the Date/Time, display, and volume. The display settings can be changed from the idle screen. Refer to 4.2 above to review these steps.

The Date/Time should only need to be adjusted when the ATV-25 is first placed in service, for daylight savings time changes, when the battery is changed, or the battery charge reaches a very low level.

The system configuration also includes information about the test set including the internal serial number, hardware version, and software version.

6.2 Test Configuration Options

The ATV-25 test configuration settings apply to the Manual and Automatic tests. These settings permit the user to save information that is frequently used in tests and identify CO (central office), location, user data, and reference pair data for stored tests.

The test related configuration items are summarized in the table below.

CFG Item	Parameter	Purpose
CO	Office	Refers to the name or ID of the central office for this set of parameters.
	Caller ID	Telephone number to dial for number retrieval using Caller ID
	ANAC	DTMF ANAC telephone number to dial for number retrieval using ANAC
	POTS Noise	Telephone number to dial to access a quiet termination for noise measurements
	POTS Loss	Telephone number to dial to access a 1004Hz, mW reference for loss measurements
Location	Location Address	The name or ID of the location where testing is completed. This field may also be used to identify the job if preferred.
User	User ID	Name or ID for the user conducting tests.
Ref Pair	Ref Pair ID	Name given to a reference pair configuration
	Cable	The cable id of the reference pair.
	Pair	Number of the pair used when measuring a reference pair. The pair number must be 0 when using the PR0 cord to connect to the reference pair.
	Length	The reference pair length. The length can be entered manually or a pair can be measured.

6.3 Configure, System Step-by-Step

Press **[CFG]** – Configure The ATV-25 displays the currently selected configuration for CO, Location, User, and Ref Pair ID. These entries will be blank if data has not been entered or a blank entry has been selected.	
Press **[F1] System** The Info screen is automatically displayed. This is read-only information about the ATV-25. The serial number is an internal. The hardware version identifies the hardware version. The firmware version identifies the version of firmware currently loaded in the ATV-25. The version number is also in the title of the <**Idle**> screen. The latest firmware version can be downloaded from www.aalogic.com.	

|	
Press **[F2] DateTime** The internal clock is used to date and time stamp stored test reports. Pressing ▣5 **Change** allows the date and time to be changed. Use ◀ and ▶ keys to select the data field to be changed. Use ▲ and ▼ keys to change the value. Press the **[ENT]** (#) key to save the updated date and time.	Configure - Date/Time Date: 07 / 08 / 07 Time: 14 : 25 : 24 5 Change # Save Info DateTime Display Volume
Press **[F3] Display** The **[F1] Contrast** and **[F2] BackLight** can be adjusted on the display screen by pressing the appropriate key. Use ▲ and ▼ keys to adjust the setting. Press **[CFG]** + **[F1] System** to return to the System Configuration screen.	Configure - Display Max Max Min Min # Save Contrast BackLight
Press **[F4] Volume** The **[F1] Modem**, **[F2] Line**, and **[F3] KeyPush** volumes can be adjusted on the volume screen by pressing the appropriate key. Use ▲ and ▼ keys to adjust the setting. ⓘ This configuration is normally used only to adjust the KeyPush volume. Other volumes can normally be adjusted using the **[3] +V** and **[9] -V** keys within the functions that allow monitoring the test pair. Press **[CFG]** + **[F1] System** to return to the System Configuration screen.	Configure - Volume Max Max Max Min Min Min # Save Modem Line KeyPush
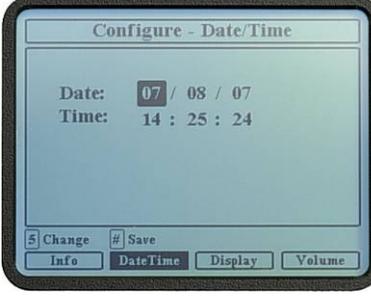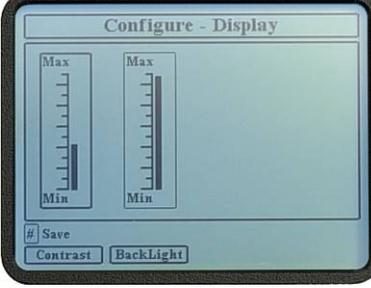
6.4   Configure, CO Step-by-Step

Press **[CFG] Configure** The ATV-25 displays the currently selected configuration for CO, Location, User, and Reference Pair ID. These entries will be blank if data has not been entered or a blank entry has been selected.	Configure - System Current CO: 1 WFD Location: 1 MAIN User: 1 JD001 Ref Pair ID: A 1 More System CO Location User
Press **[F2] CO** Four CO configurations can be stored in the ATV-25 memory. This allows a user to work in a region as large as four central offices without needing to re-enter CO data for each test. The CO configuration number is in the upper left corner of the information panel. Pressing the **[F1] Next** key switches to the next CO configuration. The keys ◀ and ▶ can also be used to select the previous or next CO configuration. A configuration is selected for use when the configuration number is a black box. The **[F4] Select** key is used to select a	Configure - C.O. 1 Office: WFD Caller ID: 10 ANAC: 970 POTS Noise: 15 POTS Loss: 14 Navigate with ARROW keys 5 Change Next Delete Select CO configuration 1 is selected for use.
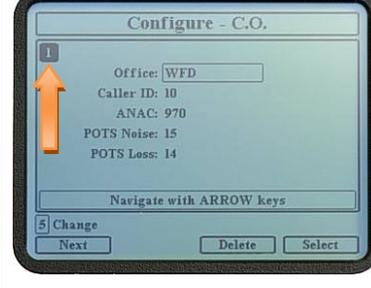
configuration. Use **[F1] Next** key to display the desired configuration and press the **[F4] Select** key to select it for use.

The keys ▲ and ▼ move the highlight box to the individual parameters. Move the highlight to a parameter and press **5 Change** key to change the value.

A configuration can be deleted by pressing **[F3] Delete**. This clears all the data for the configuration. The configuration can then be used to save new data.

6.5   Configure, Location Step-by-Step

Press **[CFG] Configure**

The ATV-25 displays the currently selected configuration for CO, Location, User, and Reference Pair ID. These entries will be blank if data has not been entered or a blank entry has been selected.

Press **[F3] Location**

The ATV-25 allows up to 30 locations to be stored. These are actual test site identifications. The ATV-25 Tools program can be used to manage the large number of potential locations for a given operational region.

The location field can also be used to enter job numbers to trace test results to a specific job.

The location list consists of six pages of location slots. Slots are numbered from 1 to 30. Pressing the **[F1] Next** key switches to the next page. The ▲ and ▼ keys move the highlight box to location slots. Move the highlight to a location slot and press **5 Change** key to change the value.

A location is selected for use when the slot number is a black box. The **[F4] Select** key is used to select the currently highlighted slot for use.

Location slot information can be deleted by pressing **[F3] Delete**. The slot can then be used save new information.

Configure location initial screen. Location 1, Main, is selected for use. There are 30 location slots. Any of the 30 may have information stored. Press the **[F1] Next** key to see the other slots.

6.6   Configure, User Step-by-Step

Press **[CFG] Configure**

The ATV-25 displays the currently selected configuration for CO, Location, User, and Reference Pair ID. These entries will be blank if data has not been entered or a blank entry has been selected.

Press **[F4] User**

The ATV-25 allows up to four Users to be stored. The selected user id is included as part of the stored test information for future reference.

The User list consists of four slots. The ▲ and ▼ keys move the highlight box to a user id slot. Move the highlight to a user id slot and press **5 Change** key to change the value.

A user id slot is selected for use when the slot number is a black box. The **[F4] Select** key is used to select the currently highlighted slot for use.

A User slot can be deleted by pressing **[F3] Delete**. This clears the data for the slot. The slot can then be used save new data.

6.7 Configure, Reference Pair Step-by-Step

Press **[CFG] Configure**

The ATV-25 displays the currently selected configuration for CO, Location, User, and Reference Pair ID. These entries will be blank if data has not been entered or a blank entry has been selected.

The Configure main screen has a **1 More** key. This is an indication that additional options are available.
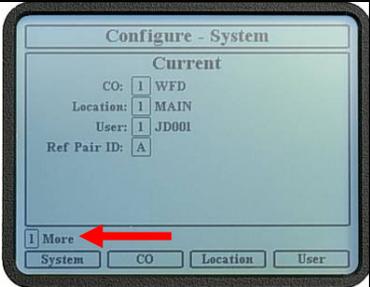
Press **1 More**

The second Configure page is displayed. Pressing **1 More** again will return to the main page.

Press **[F1] Ref Pair**

Four reference pair configurations can be stored in the ATV-25 memory. This allows for storing reference pair information for more than one test site or storing reference pairs for the CO and field sides of a job.

The reference pair configuration letter is in the upper left corner of the information panel. Pressing the **[F1] Next** key switches to the next reference pair configuration. The ◄ and ► keys can also be used to select the previous or next reference pair configuration.

A configuration is selected for use when the configuration letter is a black box. The **[F4] Select** key is used to select a configuration. Use **[F1] Next** key to display the desired configuration and press the **[F4] Select** key to select it for use.

The ▲ and ▼ keys move the highlight box to the individual parameters. Move the highlight to a parameter and press the **5 Change** key to change the value.

Reference Pair configuration A, selected for use.

A reference pair can be deleted by pressing **[F3] Delete**. This clears all the data for the reference pair. The reference pair can then be used save new data.	
The reference pair length can be entered manually or by measuring a pair connected to PR0 or the 25 pair module. The Cable and Pair number should be entered when measuring a pair. This identifies the pair to measure and records the reference pair cable and pair number, which is stored with tests that use reference pair comparison. The cable and pair may be left blank when manually entering a length. Highlight the length parameter and press 7 **Measure**. The ATV-25 will test the pair and return the length of the pair. ☑ The pair must be vacant and balanced. Any other conditions will be reported as an error. PR0 can be used to measure a pair for the reference length. Enter a 0 for the pair number. Correct the cable and pair numbers after the measurement is completed if desired.	
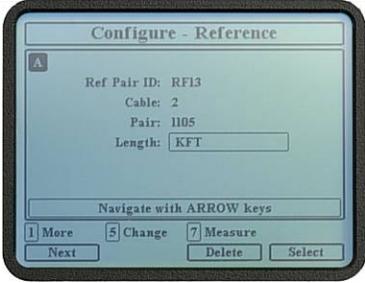
6.8   Configure, ATV R/T Information Step-by-Step

1. The ATV R/T must have power applied and turned on. 2. Connect the ATV R/T COMM port to the ATV-25 AUX port. This is normally done with the blue AUX cords but the red PR0 cord can also be used. 3. Connect the ground cord to the ATV R/T then connect the clip to the ground cord of the ATV-25. 4. Turn on the ATV-25. Connect a power supply to the ATV-25 if the battery is low.	
Press the **[CFG]** key on the ATV-25. The Configure main screen is displayed.	
Press the **[1] More** key. The second Configure screen is displayed.	
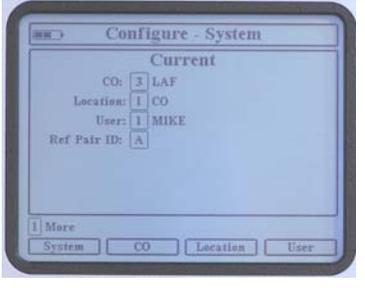
Press the **[F2] RT Info** key. The "Waiting for Remote Unit" and "Connecting" messages will be displayed as the ATV-25 and the ATV R/T connect.	
The ATV R/T version is displayed on the ATV-25 screen, 1.0.28 in this case. A firmware update is needed if the version is not the same as the current version available on the web site at http://aalogic.com/download.html .	
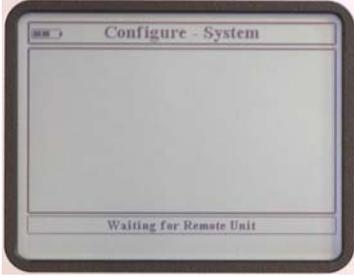
7. Meter Functions

The ATV-25 provides metering functions for DC Volts, AC Volts, Ohms, and Opens. These meters are located on the **<Idle>** screen.

> ⓘ The **<Idle>** screen is displayed when the ATV-25 is first turned on. It can be displayed at any time by pressing the **[CLR]** key.

7.1 DC Voltmeter

The DC Voltmeter continuously measures the DC voltage TR, TG, and RG on the selected pair. The ATV-25 places a small ■ symbol in the upper left corner of the value box each time the reading is updated.

Refer 5.3.2 Manual Pair Testing for information on changing the selected pair.

7.1.1 DC Voltmeter Step-by-Step

Press **[CLR]** if necessary to get to the <**Idle**> screen then press **[F1] DC Volts**. The readings are continuous and will update as a new pair is selected or the PR0 cord, if used, is moved to another pair. ☑ Tip to Ground and Ring to Ground measurements will be 0 VDC or incorrect if the ATV-25 ground cord is not connected or if the cable ground/cable sheath is faulty.	 ATV-25 <Idle> Screen.

The DC Voltmeter. The readings indicate -34.5VDC TR, 0VDC TG, and -34.5VDC RG.

7.2   AC Voltmeter

The AC Voltmeter continuously measures the AC voltage TR, TG, and RG on the selected pair. The ATV-25 places a small ■ symbol in the upper left corner of the value box each time the reading is updated.

Refer 5.3.2 Manual Pair Testing for information on changing the selected pair.

The ATV-25 has two measurement modes for AC Volts. RMS is the default mode and measures larger AC voltages. The dBm mode increases the AC Voltmeter sensitivity and displays the measurements in dBm (decibels, milliwatt reference). The dBm mode is useful when measuring noise and other small voltages in real-time.

7.2.1 AC Voltmeter Step-by-Step

Press **[CLR]** if necessary to get to the **<Idle>** screen then press **[F2] AC Volts**.

The readings are continuous and will update as a new pair is selected or the PR0 cord is moved to another pair.

The **7 Mode** key toggles the meter from RMS between dBm. The selected mode is displayed in the lower left corner of the information region of the screen.

ⓘ Expect some varying readings when the ATV-25 AC Voltmeter is in dBm mode and no pair or the ground cord are connected. This is normal.

☑ All measurements may be affected if the ATV-25 ground cord is not connected or if the cable ground/sheath is defective.

☑ dBm readings can be converted to dBrn by adding 90 to the value. For example, -40dBm is equal to 50dBrn.
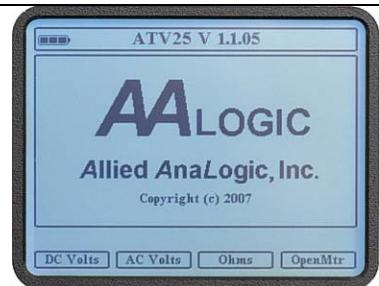
ATV-25 <Idle> Screen.
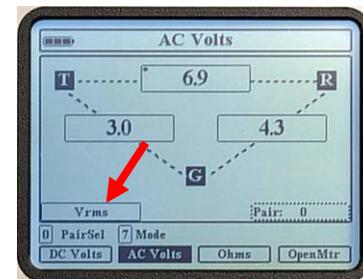
The AC Voltmeter in RMS mode. The readings indicate 6.9Vrms TR, 3.0Vrms TG, and 4.3Vrms RG.
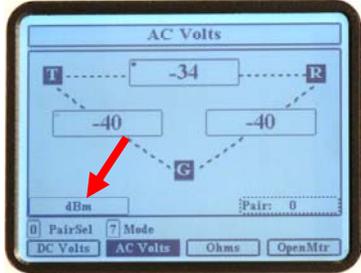
The AC Voltmeter in dBm mode. The readings indicate -34dBm TR, and -40dBm TG and RG.

7.3 Ohmmeter

The Ohmmeter continuously measures the resistance from TR, TG, and RG on the selected pair. The ATV-25 places a small ■ symbol in the upper left corner of the value box each time the reading is updated.

Refer 5.3.2 Manual Pair Testing for information on changing the selected pair.

The ATV-25 ohmmeter is a unique, dual-function meter. The display will indicate resistance in ohms or DC Voltage if present. Each of the measurements (TR, TG, and RG) is independent and will indicate Ohms or DC Volts when the voltage is $\geq \pm 2VDC$.

Real-time ohms to distance conversions are provided for standard wire gauges of 19, 22, 24, and 26. The length is estimated based on the ohms measurement and not compensated for temperature. Further testing may be required for precise fault location, especially for buried faults.

7.3.1 Ohmmeter Step-by-Step

Press **[CLR]** if necessary to get to the **<Idle>** screen then press **[F3] Ohms** – The readings are continuous and will update as a new pair is selected or the PR0 cord, if used, is moved to another pair.

Readings are in Ohms, Kilohms, or Megohms. The Ω is the symbol for Ohms.

Reading	Value
586	586 Ω
5.86 k	5,860 Ω
5.86 M	5,860,000 Ω

☑ Tip to Ground and Ring to Ground measurements are affected if the ATV-25 ground cord is not connected or if the cable ground/sheath is faulty.

DC Voltage measurements are indicated with a black background. This highlights the values and alerts the user to non-resistive results.
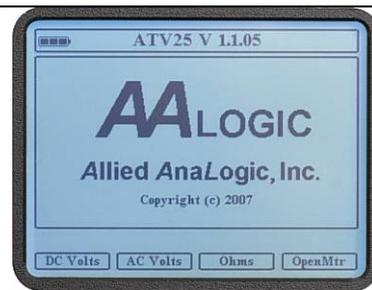
ATV-25 <Idle> Screen.
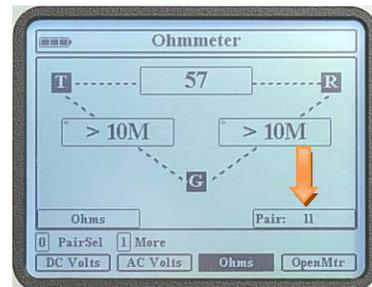
Ohmmeter indicating a 57 ohm short on pair 11.

These readings indicate -35.4VDC TR, 558 Ω TG, and -34.5VDC RG on pair 13.

|	
Press **1 More** – The meter toggles to the distance conversion screen. The readings are continuous and will update if the resistance changes or a pair is changed.	 The Ohmmeter **1 More** screen. The reading indicates a 57 ohm short.
Press **[F2] Distance** – The readings are converted to distance for the selected wire gauge. All values are converted to distance. **OverRng** is displayed for any readings that exceed the maximum distance for conversion. The default wire gauge is 24ga. The gauge is changed by pressing **[F3] Gauge**. The **[F1] Ohms** key can be pressed to toggle back to the Ohms readings. Distance readings are in KFT, or thousands of feet. A reading of 1.1 = 1,100 feet Note the display indicates the distance is an estimated value.	 The ohmmeter is converting a 57 ohm short measurement to distance. The indicated distance is 1.1KFT (1,100 feet) at 24ga.
Press **[F3] Gauge** three times **–** The gauge is now changed to 26ga wire. The gauge is changed for each press of the **[F3] Gauge** key.	 The 57 ohm short reading is now 0.7KFT (700 feet) at 26ga.
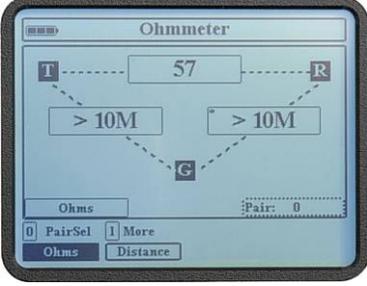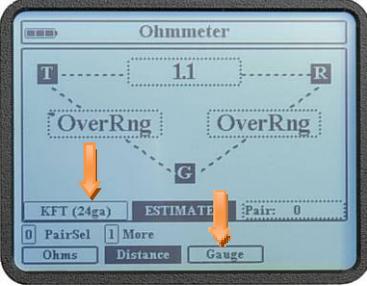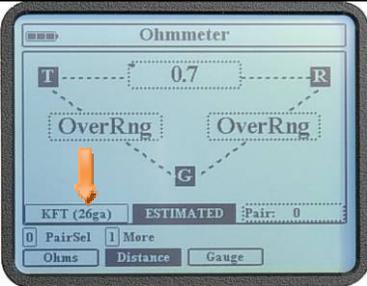
Press **1 More** – The meter toggles back to the main Ohmmeter screen. Press any jump key or function key to select a new feature.	Ohmmeter T - - - - - - - 57 - - - - - - - R > 10M > 10M G Ohms Pair: 11 0 PairSel 1 More DC Volts AC Volts **Ohms** OpenMtr
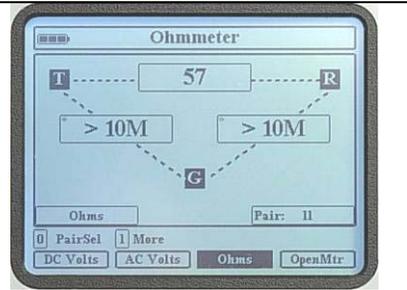
7.4 Open Meter

The Open Meter continuously measures the capacitive distance for TR, TG, and RG on the selected pair. The maximum Open Meter distance is approximately 125,000 feet. The ATV-25 places a small ■ symbol in the upper left corner of the value box each time the reading is updated.

Refer 5.3.2 Manual Pair Testing for information on changing the selected pair.

The ATV-25 Open Meter is a unique, three-function meter. The display indicates Open distance, Resistance, or DC Voltage if present. Each of the measurements; TR, TG, and RG; is independent and will indicate KFT (1,000s feet), Ohms (less than 500KΩ), or DC Volts ($\geq \pm 2V$) as appropriate.

The Open Meter is a capacitance meter that displays the value in feet. The distance is based on a standard TR capacitance of .083µf per mile of cable. The TG and RG values are based on .124µf per mile of cable. The capacitive variance, TR for cable is typically 3% of the measured value.

Capacitance to ground measurements are sensitive to problems with sheath continuity (bonding) and grounding. Ground and bond problems should be suspected if Open meter readings are inconsistent or not stable (readings fluctuate).

7.4.1 Open Meter Step-by-Step

|	
Press **[CLR]** if necessary to get to the **<Idle>** screen then press **[F4] OpenMtr** – The readings are continuous and will update as a new pair is selected or the PR0 cord is moved to another pair. ☑ All measurements may be affected if the ATV-25 ground cord is not connected or if the cable ground/cable sheath is faulty.	ATV25 V 1.1.05 **AA**LOGIC *Allied AnaLogic,* Inc. Copyright (c) 2007 DC Volts AC Volts Ohms OpenMtr **ATV-25 <Idle>** Screen. Open Meter T - - - - - - 1.79 - - - - - - R 1.79 1.79 G KFT Pair: 1 0 PairSel DC Volts AC Volts Ohms **OpenMtr** The reading is a typical vacant cable pair the indicated length is 1.79KFT (1,790 feet). The pair is balanced as indicated by the matching TG and RG readings. The selected pair is pair 1.
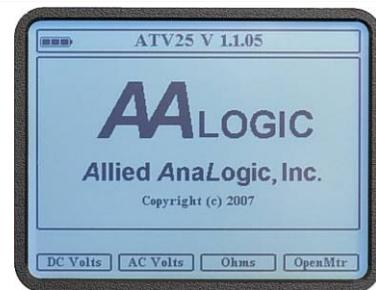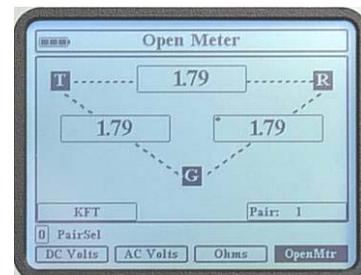
25

These readings indicate a Ring open condition on pair 9. The Open message indicates that the reading is less than the minimum value of approximately 30 feet.

The ATV-25 Open Meter is capable of displaying open distance, resistance, and DC voltage simultaneously. This is a time saver in that a complete picture of the pair status can be viewed without switching to various meters.

Voltage is displayed if the measured voltage is $\geq \pm 2VDC$.
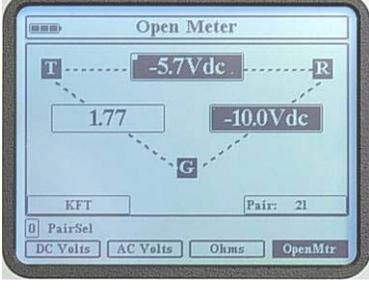
Open meter indicating capacitive distance TG and DC voltages TR and RG.

The Open Meter can be the first meter mode chosen when beginning to test a cable pair. The tri-mode feature permits the user to perform voltage, resistance, and capacitive measurements in a single meter mode.
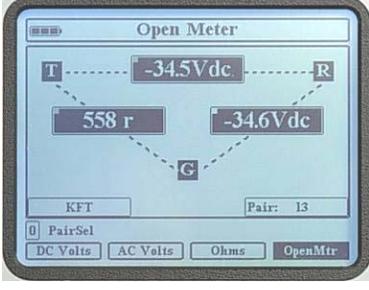
Line voltage is indicated TR and RG. A TG resistance of 558Ω.

Any non-capacitive measurements are indicated with a black background. This highlights the values and alerts the user to non-capacitive results.
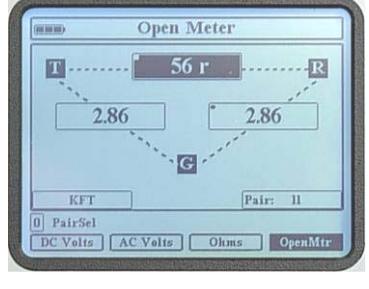
A shorted pair with 56Ω TR and open indications of 2,860 feet TG and RG.

8. Manual Tests

ATV-25 manual testing is used to test a single pair and view the results. This is often part of a diagnostic process. The test pair can be one of the 25 pairs connected through the Cinch connector or a pair connected to the PR0 cord. Each manual test is explained in this section.

Refer 5.3.2 Manual Pair Testing for information on changing the selected pair.

The results of manual tests are not saved in internal memory. An Automatic test must be used for tests that must be saved. Refer to section 9, Automatic Tests below for more details.

The figure below shows a typical connection for manual testing using the Cinch connector.

Manual Test
Press Keys:

TEST

F2 Manual

Cross Connect Box
Or
Other Connection Point

Test Options

- Load Coil Detection
- Noise (Vacants)
- Special Circuit ID
- Spectral Plot
- Loop Current
- Number Retrieval (ANAC)
- Number Retrieval (CID)
- POTS Noise
- POTS Loss

25 Pair
Tap Shoe

Cable
Sheath/
Ground
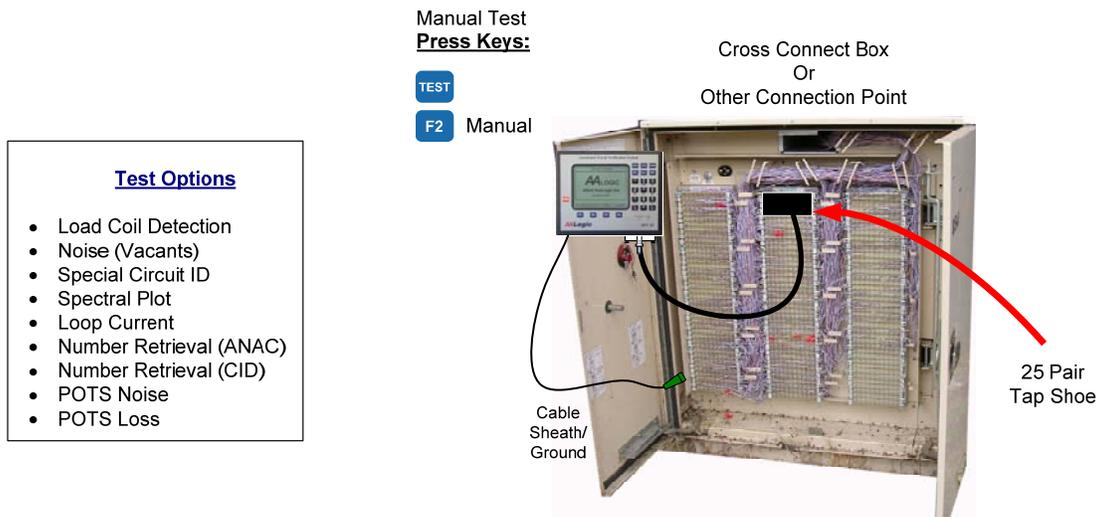
ATV-25
Manual Tests

8.1 Load Coil Detection

Load coil detection scans a vacant pair to determine if one or more loads are present in the line. The test can detect up to five loads ± one load. Loads may not be detected if there is less than 500 feet on either side of the load. The test displays a message if the line is not suitable for load coil detection.

8.1.1 Load Coil Detection Step-by-Step
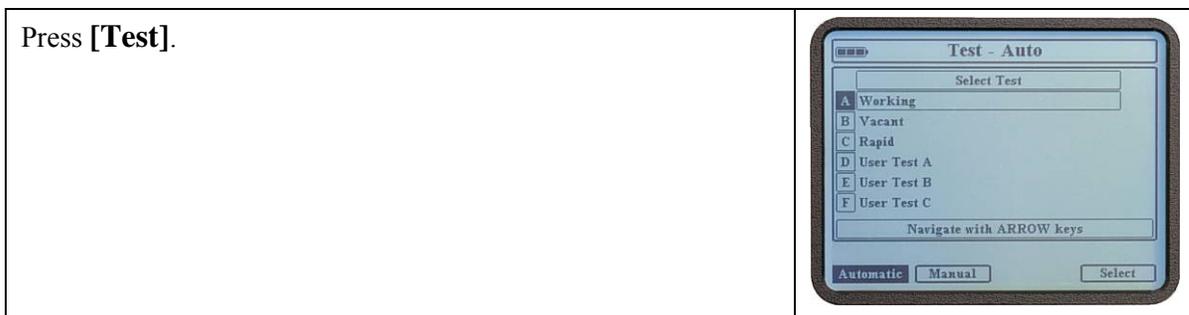
| Press **[Test]**.	Test - Auto
	Select Test
	A Working
	B Vacant
	C Rapid
	D User Test A
	E User Test B
	F User Test C
	Navigate with ARROW keys
	Automatic Manual Select

ALLIED ANALOGIC, INC.

|	
Press **[F2] Manual** This selects the first manual test page. The manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use ▲ and ▼ keys to highlight the Load Coil Detection test.	 Manual Test Page 1 Manual Test Page 2
Press **[F4] Select** Select the pair to be tested. Refer 5.3.2 Manual Pair Testing for information on changing the selected pair.	
Press **[F1] Start** A trace is drawn on the screen as the ATV-25 scans the pair for load coils. A load coil will cause a peak (pole) and dip (zero) in the trace image. The ATV-25 counts these pairs of poles and zeros and indicates the number of loads below the graph. A smooth line is displayed if no loads are detected. A new test can be run by selecting a new pair in the 25 pair module to test or moving the PR0 cord and pressing **[F1] Start**. The **[F4] Back** key can be used to return to the Manual test list.	 Two loads detected One load detected
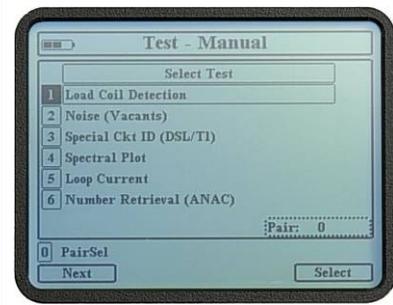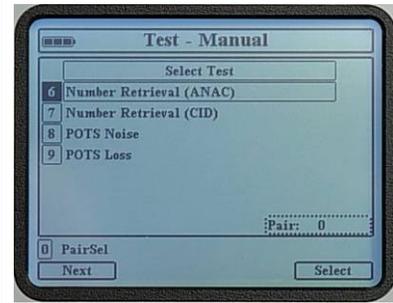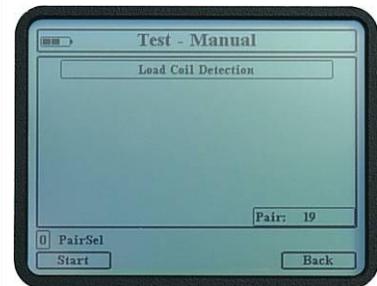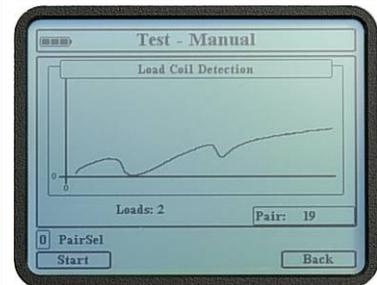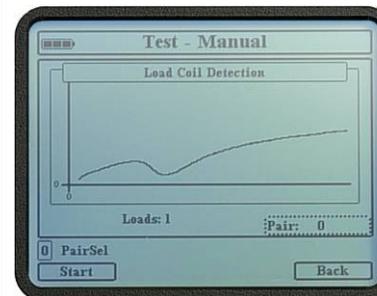
	Test - Manual
	Load Coil Detection
	No loads detected
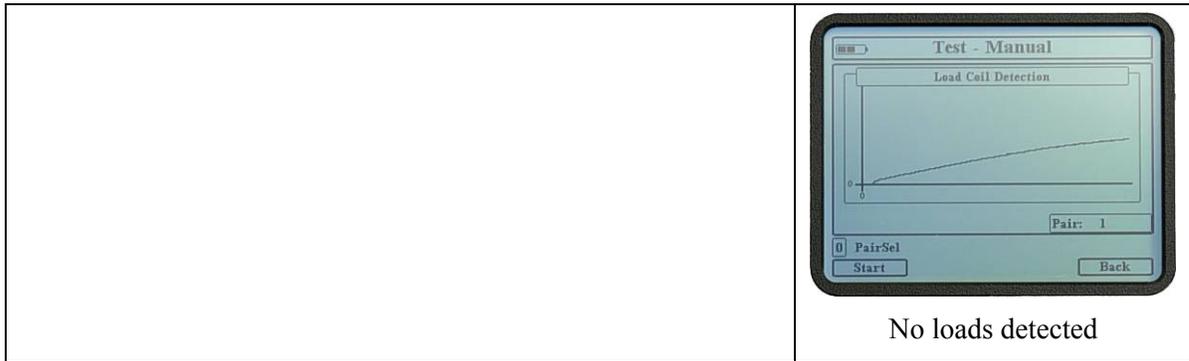
8.2 Noise (Vacants)

The Noise (Vacants) test measures the TR (metallic) and Longitudinal (ground) noise on vacant pairs. TR noise is noise that is heard on a line. Longitudinal noise is noise that is present between the conductors of a pair and the sheath/ground of the cable.

8.2.1 Noise (Vacants) Step-by-Step

Press **[Test]**	Test - Auto
Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use ▲ and ▼ keys to highlight the desired test. Highlight the **Noise (Vacants)** test.	Manual Test Page 1 Manual Test Page 2

|	
Press **[F4] Select** Select the pair to be tested. Refer 5.3.2 Manual Pair Testing for information on changing the selected pair.	
Press **[F1] Start**. The Noise TR and Noise Gnd are displayed in dBm. Local standards should be used when considering acceptable levels of noise. Noise on vacant pairs can be significantly higher than in working pairs due to the lack of termination of the pairs. A new test is run by selecting the pair to test or moving the PR0 cord and pressing **[F1] Start**. Use **[F4] Back** key to return to the Manual test list.	
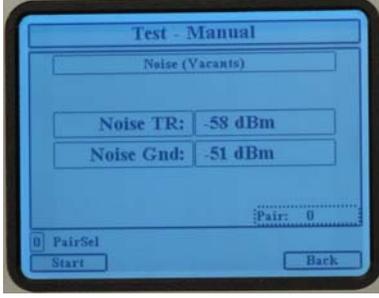
8.3   Special Circuit Identification -- Special Ckt ID (DSL/T1)

Special circuit identification allows the user to identify T1, HDSL, and xDSL circuits. The ATV-25 samples the energy on the pair at specific frequencies to detect digital services that may be on the line.

8.3.1   Special Ckt ID (DSL/T1) Step-by-Step

Press **[Test]**	
Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use ▲ and ▼ keys to highlight the desired test. Highlight the **Special Ckt ID (DSL/T1)** test.	Manual Test Page 1

Manual Test Page 2

Special Ckt ID (DSL/T1)
highlighted

Press **[F4] Select**

Select the pair to be tested. Refer 5.3.2 Manual Pair Testing for information on changing the selected pair.
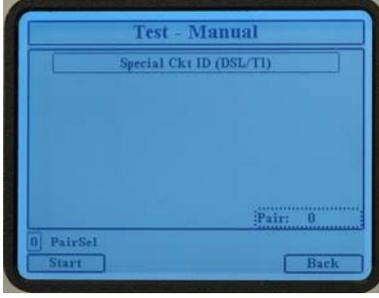

Press **[F1] Start**

The ATV-25 can display None, xDSL, HDSL, or T-1. xDSL is indicated for all DSL circuits that cannot be classified as T-1 or HDSL.

A new test can be run by selecting the pair to test or moving the PR0 cord and pressing **[F1] Start**.

The **[F4] Back** key can be used to return to the Manual test list.
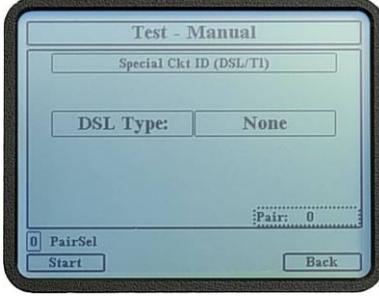
No special circuit found

DSL service found
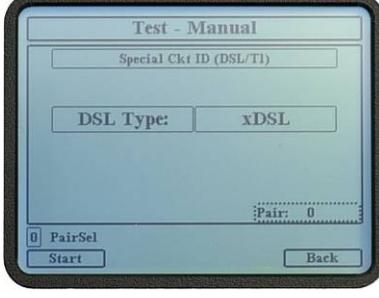
HDSL service found

T1 service found
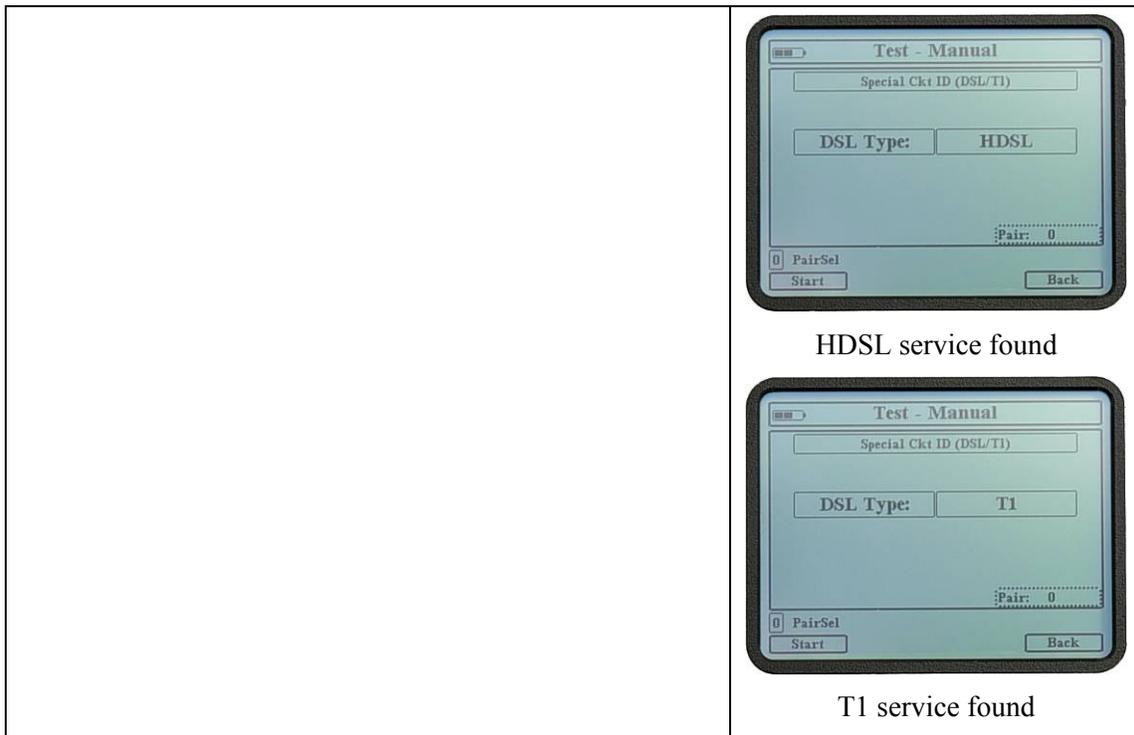
8.4   Spectral Plot

The Spectral Plot is an advanced diagnostic test that plots a graph of line signal amplitudes sampled from a starting frequency and increasing using a defined step increment. The ATV-25 makes 256 measurements or samples. The start frequency and the step increment determine the upper limit of the plot.

The spectral plot is useful when examining broadband data signals such as DSL. The plot can also be used to examine signals in the voice band. The plot shows the magnitude of the signals that occur at the step frequency. These signals may be data signals or interference such as a nearby radio station.

8.4.1   Spectral Plot Step-by-Step

Press **[Test]**	
Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use ▲ and ▼ keys to highlight the desired test. Highlight the **Spectral Plot** test	Manual Test Page 1

|	
	 Manual Test Page 2
Press **[F4] Select** Select the pair to be tested. Refer 5.3.2 Manual Pair Testing for information on changing the selected pair.	 Spectral Plot highlighted
Five options are available for the Spectral Plot. Four pre-defined plots are displayed on the screen with xDSL being the default. The screen shows the Fs (start frequency), Step (step size), and the Fe (ending frequency). The ending frequency is calculated based on 256 samples starting at Fs and incrementing by Step size. The pre-defined start and step frequencies are updated for each of the available options. 	Option	Fs	Step	Fe
---	---	---	---
T1	30.0kHz	6.0kHz	1.56MHz
HDSL	20.0kHz	3.0kHz	785.0kHz
xDSL	25.9kHz	4.3kHz	1.13MHz
Voice	50Hz	10Hz	2600Hz | Custom plots can also be entered. Press **[F2] Start_kHz** and enter a starting value from 1 to 999. Then press **[F3] Step** and enter a step size from 1 to 9. The Start and Step values are both in kHz. The Fe is calculated and displayed.	 xDSL selection showing Fs = 25.9kHz, Step = 4.3kHz, and Fe = 1.13MHz. This custom plot configuration shows the Fs set to 990.0kHz and the Step is set to 2.0kHz. The calculated Fe is 1.50Mhz.
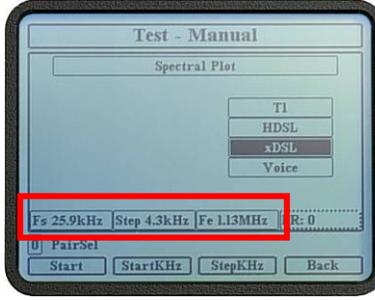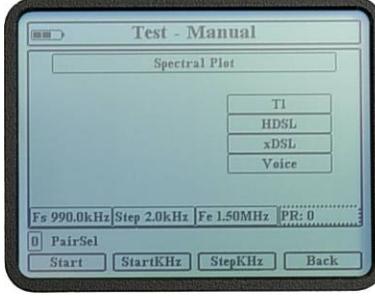
Press **[F1] Start**

The ATV-25 creates a plot of the signals on the selected line.

A cursor is available when the plot is completed. The ◀ and ▶ keys are used to move the cursor. The cursor frequency and the magnitude of the signal in dB are displayed just below the plot.

The **[F4] Back** key can be used to return to the Manual test list.
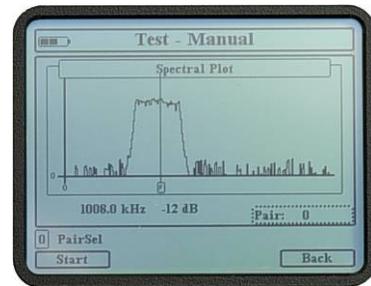
Plot showing an FM signal centered around 1008kHz. Smaller signal spikes are also seen.
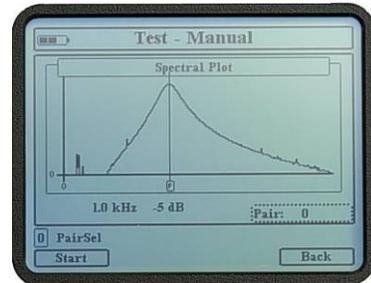
This voice frequency plot shows a wide signal centered atound 1.0kHz.
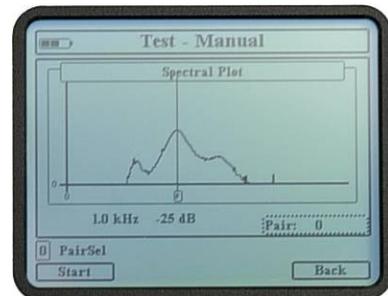
Another plot of a signal centered at 1.0kHz.

8.5 Loop Current

Loop current testing is typically performed on lines with POTS service. Minimum loop current is essential to ensure proper operation of CPE (customer premise equipment). The standard minimum loop current for POTS lines is 20mA.

8.5.1 Loop Current Step-by-Step

Press **[Test]**	
Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use ▲ and ▼ keys to highlight the desired test. Highlight the Loop Current test.	 Manual Test Page 1 Manual Test Page 2 Loop Current highlighted

|	
Press **[F4] Select** Select the pair to be tested. Refer 5.3.2 Manual Pair Testing for information on changing the selected pair.	*[Test - Manual screen: Loop Current, Pair: 22, PairSel, Start, Back]*
Press **[F1] Start** The ATV-25 determines if the line is POTS and Idle. The line is made busy and the loop current is measured and displayed. The line status will be displayed and no current measurement is displayed for lines other than Idle POTS. A new test can be run by selecting the pair to test or moving the PR0 cord and pressing **[F1] Start**. The [F4] Back key can be used to return to the Manual test list.	*[Test - Manual screen: Loop Current -8 mA, Pair: 22, PairSel, Start, Back]* The measured loop current is 8mA. This current is lower than the standard 20mA requirement.
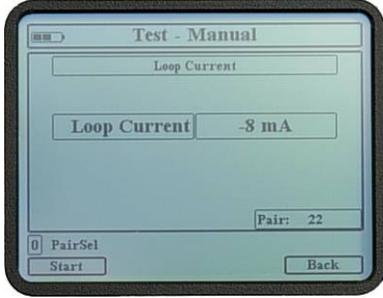
8.6 Number Retrieval (ANAC)

ANAC stands for Automatic Number Announcement Circuit. Many of these ANAC systems announce the caller's assigned telephone number using speech. Some areas are equipped with DTMF ANAC capabilities. These systems first send a DTMF digit. The assigned telephone number is provided using speech if no answer to the DTMF digit is received. The assigned number is sent using DTMF digits if the caller properly responds to initial DTMF digit.

The ATV-25 is compatible with this type of DTMF ANAC. The advantage to this system is that a number is returned for all idle POTS lines and the process is faster than Caller ID identification. The ANAC method should be used for number retrieval when it is available. Consult the appropriate central office to determine if DTMF ANAC is available and the assigned telephone number.

Always ensure the proper CO configuration is selected before attempting ANAC number retrieval. Refer to 6.4 above, **Configure, CO Step-by-Step** above for details on CO configurations.

## 8.6.1 Number Retrieval (ANAC) Step-by-Step

|	
Press **[Test]**	*[Test - Auto screen: Select Test; A Working, B Vacant, C Rapid, D User Test A, E User Test B, F User Test C; Navigate with ARROW keys; Automatic, Manual, Select]*

|	
Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use ▲ and ▼ keys to highlight the desired test. Highlight the Number Retrieval (ANAC).	 Manual Test Page 1 Manual Test Page 2, Number Retrieval (ANAC) highlighted
Press **[F4] Select** Select the pair to be tested. Refer 5.3.2 Manual Pair Testing for information on changing the selected pair.	
Press **[F1] Start** The ATV-25 determines if the line is POTS and Idle. The line status will be displayed and the ANR is not attempted for lines other than Idle POTS. The ATV-25 dials the ANAC number in the currently selected CO configuration. The ANAC response is displayed as the ANAC_TN (ANAC Telephone Number). A new test can be run by selecting the pair to test or moving the PR0 cord and pressing **[F1] Start**. The **[F4] Back** key can be used to return to the Manual test list.	
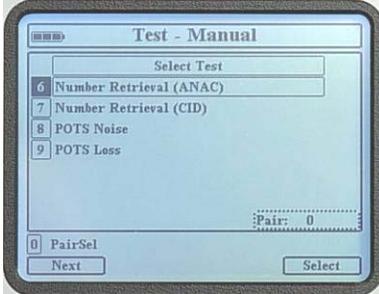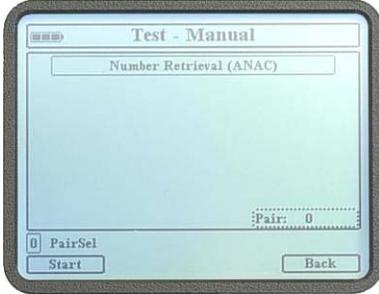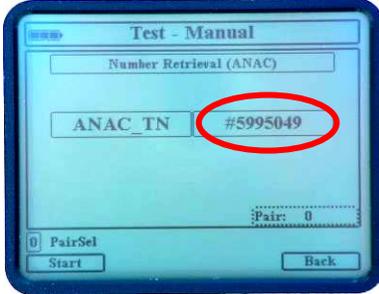
8.7 Number Retrieval (CID)

The CID (Caller ID) automatic number retrieval process allows the ATV-25 to obtain telephone numbers from working POTS lines. This process takes advantage of the caller information sent to a called line between the first and second rings. The test results depend on the data available in the CID information.

The setup for CID requires the connection of the AUX cord to a POTS line. The assigned telephone number of this line must be saved in a CO Configuration as the Caller ID number. Refer to 6.4 above for details on CO configurations.

The POTS CID line used for number retrieval should not be a customer line. The line will ring repeatedly for every line tested. The ideal option is to have a number assigned to a vacant pair for testing. The same line is used until all the testing is complete. The number of this line must be stored in one of the four CO slots. Always ensure the proper CO configuration is selected before attempting CID number retrieval. Refer to 6.4 above, **Configure, CO Step-by-Step** above for details on CO configurations.

The figure below illustrates the Number Retrieval (CID) process. The ATV-25 dials the CID number on the POTS pair being tested. The ATV-25 monitors the AUX cord and retrieves the CID information. The collected data is displayed on the screen.

ATV-25
Automatic Number Retrieval
Caller ID Process
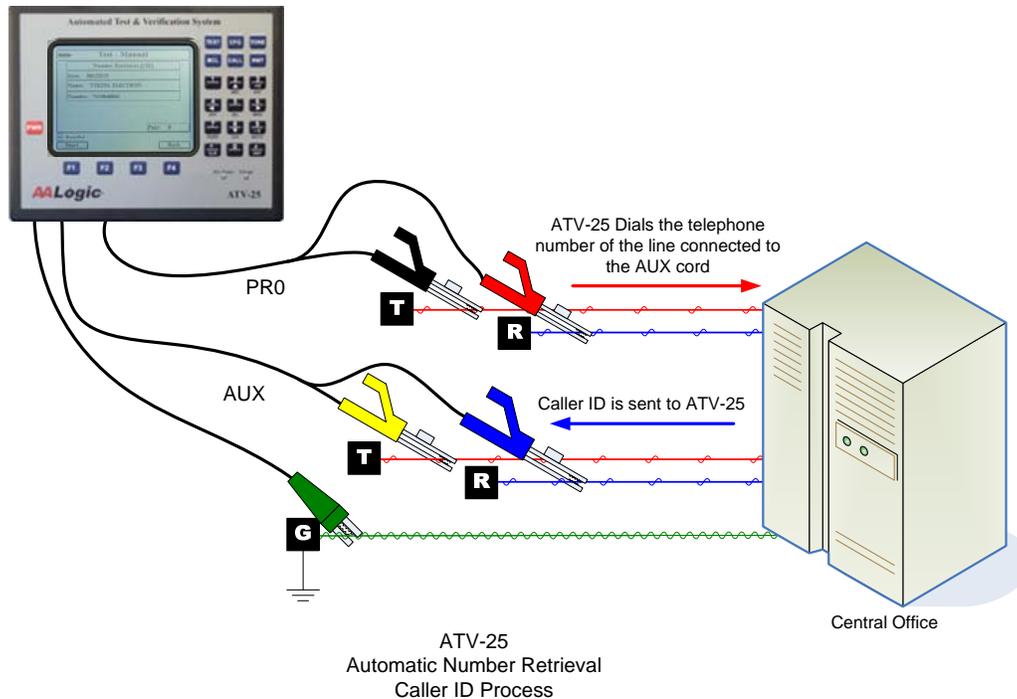
8.7.1 Number Retrieval (CID) Step-by-Step

| Press **[Test]**	
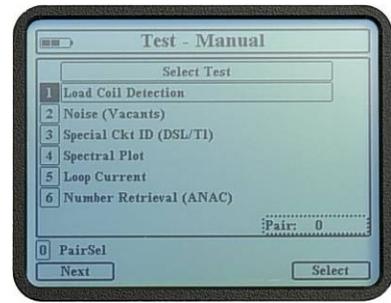
|	
Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use ▲ and ▼ keys to highlight the desired test. Highlight the Number Retrieval (CID) test.	Manual Test Page 1 Manual Test Page 2, Number Retrieval (CID) highlighted
Press **[F4] Select** Select the pair to be tested. Refer 5.3.2 Manual Pair Testing for information on changing the selected pair.	
Press **[F1] Start** The ATV-25 determines if the line is POTS and Idle. The line status will be displayed and the ANR is not attempted for lines other than Idle POTS. The ATV-25 dials the CID number in the currently selected CO configuration and displays the CID information received, A new test is run by selecting the pair to test or moving the PR0 cord and pressing **[F1] Start**. The **[F4] Back** key can be used to return to the Manual test list.	
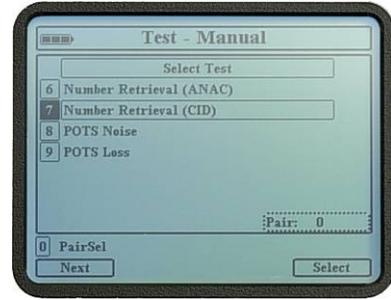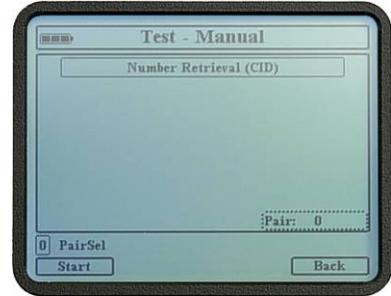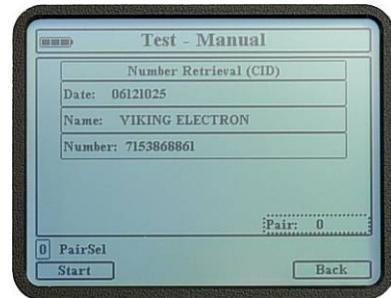
8.8 POTS Noise

POTS noise test allows the ATV-25 to dial a number for a quiet termination and measure metallic and longitudinal noise on a pair. The telephone number for POTS noise must be stored in the currently selected CO configuration. Refer to 6.4 above for details on CO configurations.

> ⓘ The ATV-25 is compatible with lines that combine quiet termination and mW reference tone. The ATV-25 dials the number and monitors the line until silence is detected or the allowed time expires.

8.8.1 POTS Noise Step-by-Step

Press **[Test]**	
Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use [2]▲ and [8]▼ keys to highlight the desired test. Highlight the POTS Noise.	 Manual Test Page 1 Manual Test Page 2, Loop Current highlighted
Press **[F4] Select** Select the pair to be tested. Refer 5.3.2 Manual Pair Testing for information on changing the selected pair.	
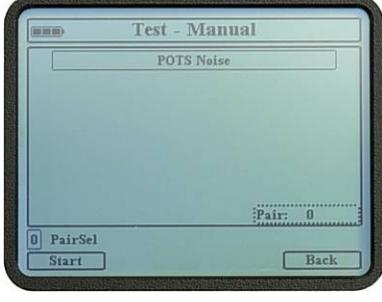
|	
Press **[F1] Start** The ATV-25 determines if the line is POTS and Idle. The ATV-25 dials the POTS noise number and completes the noise measurements. The line status will be displayed and no measurement is displayed for lines other than Idle POTS or if a quiet termination is not detected. A new test can be run by selecting the pair to test or moving the PR0 cord and pressing **[F1] Start**. The **[F4] Back** key can be used to return to the Manual test list.	
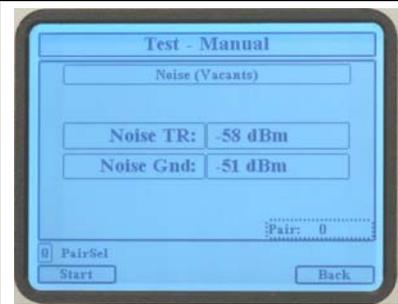
8.9 POTS Loss

POTS Loss test allows the ATV-25 to dial a number for a 1004Hz, mW reference tone and measures the loss. The telephone number for POTS Loss must be stored in the currently selected CO configuration. Refer to 6.4 above for details on CO configurations.

> ⓘ The ATV-25 is compatible with lines that combine quiet termination and mW reference tone. The ATV-25 dials the number and monitors the line until 1004Hz tone is detected or the allowed time expires.

8.9.1 POTS Loss Step-by-Step
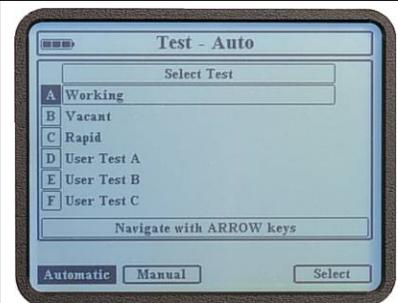
Press **[Test]**	
Press **[F2] Manual** This selects the first Manual test page. The Manual tests are organized on two pages. The **[F1] Next** key toggles between the pages and tests available. Use [2]▲ and [8] ▼ keys to highlight the desired test. Highlight the POTS Loss.	 Manual Test Page 1

	Manual Test Page 2, Loop Current highlighted
Press **[F4] Select** Select the pair to be tested. Refer 5.3.2 Manual Pair Testing for information on changing the selected pair.	
Press **[F1] Start** The ATV-25 determines if the line is POTS and Idle. The ATV-25 dials the POTS Loss number and completes the loss measurements. The line status will be displayed and no measurement is displayed for lines other than Idle POTS. A new test can be run by selecting the pair to test or moving the PR0 cord and pressing **[F1] Start**. The **[F4] Back** key can be used to return to the Manual test list.	
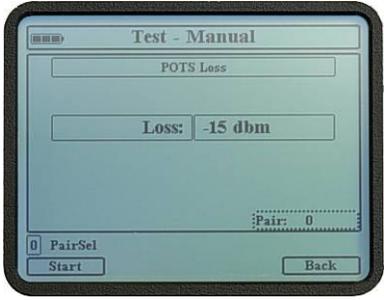
9. Automatic Tests

The ATV-25 automatic tests are the most efficient method of bulk testing pairs. The automatic tests results can be saved to internal memory and later uploaded to a PC using the included ATV Tools software. Only Auto tests can be saved in internal memory and recalled or uploaded.

The figure below shows a typical connection for automatic tests.

Test Options

- DC Voltage
- Resistance
- Open Meter
- Load Coil Detection
- Special Circuit ID
- Spectral Plot
- Automatic Number Retrieval
- Loop Current
- Vacant Pair Noise Metallic
- Vacant Pair Noise to Ground
- POTS Noise
- POTS Loss
- Reference Pair Comparison
- Customized Test Limits
- Internal Memory Storage
- Test 1 to 25 pairs per test

TEST

1 Working
2 Vacant
3 Rapid
4 User Test A
5 User Test B
6 User Test C

Cross Connect Box Or
Other Connection Point

25 Pair
Tap Shoe

Cable
Sheath/
Ground

ATV-25
Automatic Tests

9.1 Default Tests

Three automatic tests are pre-programmed. The tests make it easy to select and run typical tests. The pre-programmed tests conduct the following tests.

Test	DC Volts	Ohmmeter	Capacitance Meter	Capacitive Balance	Loop Current	Reference Pair Check
Working	X	X	X	X	X	O
Vacant	X	X	X	X		O
Rapid	X		X	X[1]		O

X=Included   O = Optional

[1] Balance measurements are completed if the reference pair comparison is ON and the comparison fails.

9.2 Custom Tests

The ATV-25 provides three customizable tests labeled User Test A, User Test B, and User Test C. Each of the tests allows the user to select any of the available test options. The ATV-25 performs each of the selected options when the custom test is executed. The ATV-25 custom test options are:

- ✓ DC Volts (always ON) [1]
- ✓ Resistance
- ✓ Open Meter
- ✓ Load Coil Detection
- ✓ Noise (Vacants)
- ✓ Special Circuit Identification (DSL/T1)

- ✓ Spectral Plot
- ✓ Loop Current
- ✓ Number Retrieval (ANAC) [2]
- ✓ Number Retrieval (CID) [2]
- ✓ POTS Noise
- ✓ POTS Loss

[1] The DC Voltage is always measured to ensure that potentially damaging voltages or voltages that may invalidate other measurements are not present.

[2] Either ANAC or CID may be selected for a test, not both.

9.3 Test Limits

The ATV-25 provides custom limit options for each of the six automatic tests. The mid-point is the default value for these limits. The limits are the values used to determine if a measurement is acceptable or classified as a fault. The following limits are configurable.

Limit	Limit 1	Limit 2	Limit 3	Limit 4
Resistance Fault Measurements below this value are classified as a Ground or Short.	1M	3M	10M	N/A
Capacitive Balance The pair is classified Unbalanced if the TG and RG capacitances vary by more than this limit.	10%	5%	3%	N/A
Length Deviation The pair is classified as a Length Error if the measured length varies from the selected reference pair length by more than this limit.	10%	5%	3%	OFF
Noise TR The measured TR noise must be lower than this limit.	-50 dBm	-60 dBm	-70 dBm	N/A
Noise Ground (longitudinal) The measure noise to ground must be lower than this limit.	0 dBm	-20 dBm	-30 dBm	N/A
Loss The measured loss must be less than this limit compared to the known source level.	6 dBm	3 dBm	1 dBm	N/A

Other, non-configurable limits that apply to tests are:

Limit	Value
Loop Current	20mA ≤ Loop Current ≤ 49 mA
Open	≤ 30 feet
POTS Busy	-7.0 VDC ≤ TR DCV ≤ -30 VDC
POTS Idle	-32 VDC ≤ RG DCV ≤ -58 VDC
Color Reversed POTS Busy	7.0 VDC ≤ TR DCV ≤ 30 VDC
Color Reversed POTS Idle	-32 VDC ≤ TG DCV ≤ -58 VDC
Battery (BAT)	-2.0 VDC ≤ DCV ≤ 2.0 VDC

☑ Changes to the limits for one test do not affect the limits for any of the other tests. It is always a good idea to check the limit settings at the beginning of a series of tests.

9.4 Automatic Tests Step-by-Step

The steps that follow are the same for the pre-defined tests and the custom tests are the same with one exception. The custom tests have a setup option to select the test options. There are no test options for the pre-defined tests. The limits are configurable for both the pre-defined tests and the custom tests.

Press **[Test]**. Use ▲ and ▼ keys to highlight the desired test.	**TEST** main screen
	User Test A highlighted
Press **[F4] Select** The screen shows the currently selected CO, Location, User, and Reference Pair. The ATV-25 retains the last information entered for cable, start pair, and stop pair until the recall function is used which resets these values to the defaults. Use ▲ and ▼ keys to highlight a parameter to change. Use ◄ or ► to change the CO, Location, User, or Ref Pair ID to one of the stored slots. Press **[CFG]** to edit or enter new information.	User Test A – The CO is WFD,

Press 5 **Change** to enter new information for the Cable, Start Pair, or Stop Pair. The cable and start pair should be entered as the actual pair for the 25 pair group. This information is included in the test when test results are uploaded.	Location is Main, User is JD001, the Ref Pair ID is RF1300, Cable is 1, Start Pair is 1, and the Stop Pair is 25.
An automatic test can test 1pair or up to 25 pairs. A single pair can be tested by entering the same pair number for the Start Pair and Stop Pair numbers.	
ⓘ The PR0 cord can also be used for automatic testing. The Start Pair and Stop Pair numbers must be set to 0. ⓘ The Stop Pair will automatically be calculated and entered as the last pair in the 25 pair group when a pair number is entered for the Start Pair. This value can be changed if desired. ⓘ A shortcut to enter PR0 is to press 5 then press [ENT].	
User Test A, User Test B, and User Test C Only Press **[F2] Setup** The user test options are arranged on three pages. Press the **[F1] Next** key to select then next page of options. Each option can be On or Off with the exception of DC Volts. Use ▲ and ▼ keys to highlight an option to change and press the 5 **Change** key to toggle the selection between On/Off. Customizing the user tests maximizes test time by only completing the desired measurements. Press the # / [ENT] **Save** key to store the options and return to the test start screen.	
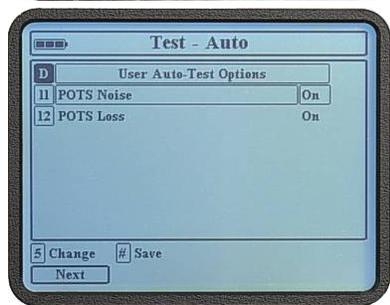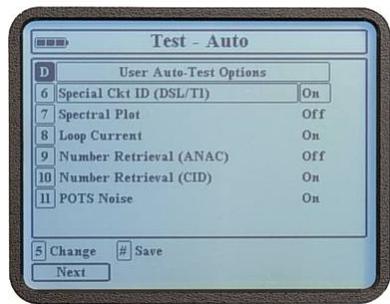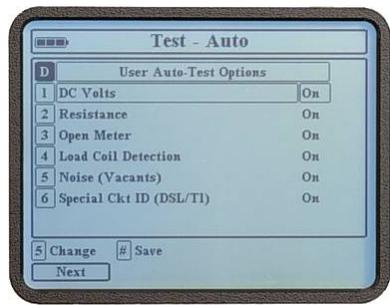
Press **[F3] Limits** from the test select screen to view/change the limits. This screen allows selection of limits for the test. Each limit has three possible values except the Length Deviation, which has four. Use ▲ and ▼ keys to highlight an option to change and press **[F1]**, **[F2]**, **[F3]**, or **[F4]** to select the desired limit. Press the # / **[ENT] Save** key to save the options and return to the test start screen.	
Verify the test information. The **Setup** should be completed for custom tests and the **Limits** set for the test.	
Press **[F1] Start** The test starts running beginning at the Start Pair and ending at the Stop Pair. The ATV-25 automatically calculates the correct Cinch pair number for the selected pair group. The ATV-25 displays each pair number and the result as it is tested. Pairs with one or more faults appear as a black square.	
The review screen is displayed at the end of the test. The ▲, ▼, ◀, and ▶ keys are used to move the highlight (square box) to different pairs. The numbers on the review screen are labeled 1 through 25 and are the Cinch/Tap Shoe connector pair numbers. The actual pair count number and result summary are indicated at the lower part of the information region of the screen.	 Auto test review screen with pair 1 highlighted. The actual pair count number and result are pair 1, TR Noise.
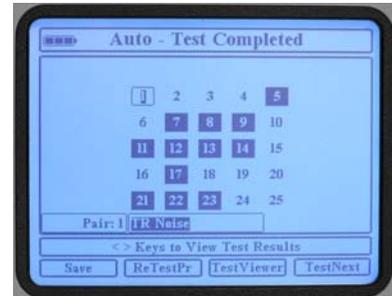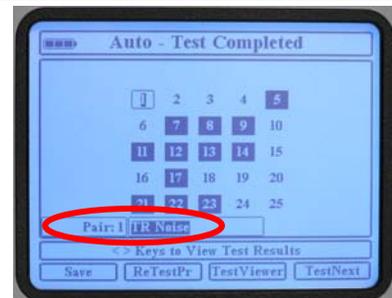
The details of the tests on a pair can be reviewed by highlighting the pair and pressing **[F3] Test Viewer**.

Example 1: This example shows pair 7 highlighted. The test result is Unbalanced. Unbalanced indicates that the TG and RG are not the same length and the difference exceeds balance limit set for the test.

The Test Viewer shows the tests completed on the pair.

✓ DC Voltages – None found

✓ Resistance – No faults detected

✓ Open Meter – TR = 50 ft., TG = 1,380 ft., and RG = 40ft.

✓ Noise TR = < -70 dBm

✓ Noise Power Influence = -45 dBm

✓ No special circuit was detected.

✓ Load coil detection was not performed due to the Unbalance condition.

> ⓘ The Test viewer allows the previous or next test pair to be viewed by using the ◄ and ▶ keys respectively.

Auto Test Review with pair 7 highlighted and the result summary is Unbalanced.

Test Viewer information for pair 7.

Example 2: This example shows pair 19 highlighted. The test result is 2 loads detected. Load coil detection is only completed on pairs that are Vacant. Vacant is defined as no DC voltage, no resistive faults, and capacitively balanced.

The Test Viewer shows the tests completed on the pair.

✓ DC Voltages – None found

✓ Resistance – No faults detected

✓ Open Meter – TR = 13,320 ft., TG = 12,920 ft., and RG = 12,800 ft. The difference is approximately 0.93%. This is well within the 5% balance limit.

✓ Two load coils were detected

✓ Noise TR = -62 dBm

✓ Noise Power Influence = < -70 dBm

✓ No special circuit was detected.

Load coil detection identified two load coils. Pressing the **[F4] Back** key returns to the review screen.

Auto Test Review with pair 19 highlighted and the result summary is 2 loads detected.

Test Viewer information for pair 19.

A pair can be retested without repeating the entire test. This allows the user to correct potential connection problems, problems with a splice, or repeat testing for a line. The ▲ , ▼ , ◀ , and ▶ keys are used to move the cursor (square box) to a pair for viewing or retesting. Press **[F1] ReTestPr** to start the retest. All the selected test options are repeated for the pair and the results replace the previous results.	
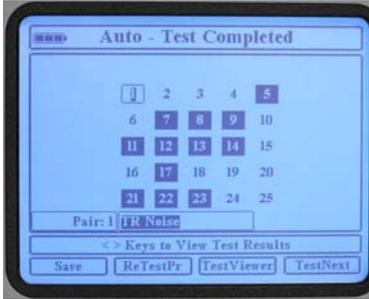
The results of an Auto Test can be saved in internal memory. The ATV-25 displays a confirmation message if the **[CLR]** key or a jump key is pressed without saving the test results. Pressing **[F1] YES** executes the key press and discards the test results. Press **[F3] NO** to return to the review screen.
 	
                      ☑ Test results cannot be recovered if the Save
                            option is not used at the review screen.	
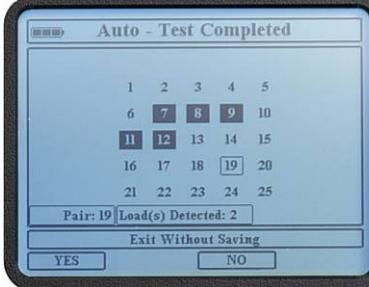
Press **[F2] Save** to save the test results in internal memory. The test results are now available for recall and review on the ATV-25 and for upload to a PC using ATV Tools software. Press the **[F4] TestNext** to discard the current results and test the next 25 pairs.	
The ATV-25 returns to the test start screen after saving. Start and end pair numbers are incremented for the next 25 pair group. This allows the user to move the tap shoe to the next group and press **[F1] Start** to test the next 25 pair group.	
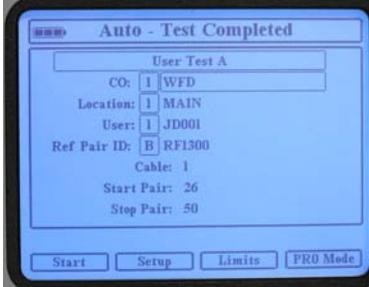
9.4.1 PR0 Mode Testing

The PR0 Mode is provided to allow testing multiple pairs when a tap shoe is not available. The user moves the PR0 cord from pair to pair and presses **[F1] Start** for each pair. The ATV-25 keeps track of the pair numbers and creates a 25 pair test result as though a tap shoe was used.

The PR0 Mode is enabled by pressing the **[F4] PR0 Mode** key prior pressing **[F1] Start** to begin the test.	PR0 Mode is enabled by pressing [F4] PR0 Mode
The PR0 Mode label is displayed with a black background when it is selected. It will stay selected for multiple tests for convenience.	
The initial test screen displays the first pair for the test and the **[F1] Start** key is enabled. The user connects the first pair to the PR0 cord. The test adapter on the door of cross connect boxes make this step easier,	The user connects the indicated pair to the PR0 cord and presses **[F1] Start**.
The same pair can be re-tested by pressing **[F2] ReTestPr** if there was a connection error or the next pair can be tested. The user moves the PR0 connection to the next pair and presses **[F1] TestNext** to test the next pair. This process is repeated for each pair.	The first pair is tested. It can be retested by pressing **[F2] ReTestPr**.
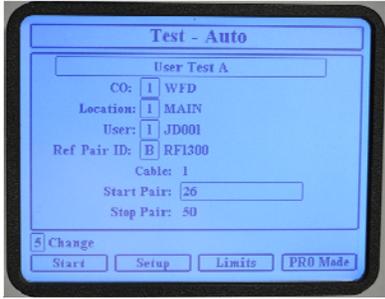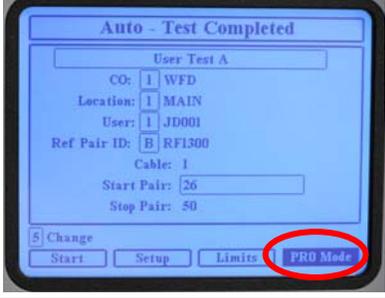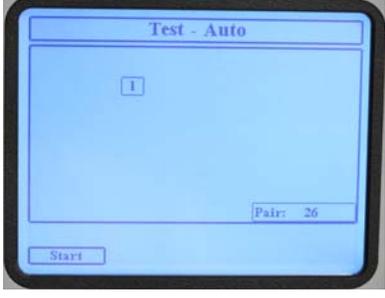
	The next pair is tested. Again the same pair, 27, can be retested or the PR0 cord moved and **press [F1] TestNext** to test pair 28.
The user can review all the test results once all pairs have been tested. This includes using the TestViewer. NOTE: The PR0 cord must be reconnected to the pair before the **[F2] ReTestPr** function can be used. The **[F1] Save** key cycles the test set for the next 25 pairs in sequence.	Review screen is displayed after all selected pairs are tested. The ATV-25 cycles to the next 25 pair after **[F1] Save** is pressed.
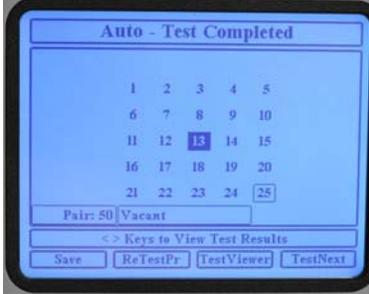
10.   Recall Stored Test Results

The Recall (RCL) feature allows the user to recall and review previously stored test results. Only saved Auto and End2End tests can be recalled. The ATV-25 internal memory is capable of storing the test results for up to 4,000 pairs. This space is typically adequate for saving several days' work.

The test results can be uploaded to a PC using the ATV-25 Tools software provided with the test set. The number of pairs that can be saved to a PC is only limited by the disk storage space available.

The RCL feature also allows test results to be deleted when they are no longer needed or to make space available for additional test results. The memory used by deleted test results is automatically reclaimed and available for storing test results.

☑ Test results cannot be recovered once they are deleted in the **[RCL]** function. It is important to upload to a PC any results that should be retained prior to using the Delete option of the Recall function.

10.1 Recall Stored Test Results Step-by-Step

Press **[RCL]**. Use ▲ and ▼ keys to highlight the desired test results. The test result list is sorted so that the last test is on top. The **[F1] Next** option will be displayed if there is more than one page of test results available. The **[F2] Delete** key deletes the currently selected test result. ☑ There is no confirmation prompt before deleting the test record. Ensure you really want to delete the test results before pressing **[F3] Delete**. It is easier to delete test results using ATV-25 Tools after uploading stored data.	
Press **[F4] Select** The test results are displayed in the same manner as the review screen at the end of a test. The ▲, ▼, ◀, and ▶ keys are used to move the highlight (square box) to different pairs. The numbers in the review are labeled 1 through 25 and are the Cinch connector pair numbers. The actual pair count number and result summary are indicated at the lower part of the information region of the screen	
Press **[F4] TestViewer** The Test Viewer is identical to the Test Viewer function at the end of a test. The test values are read-only and cannot be altered. The ◀ and ▶ keys can be used to view the previous and next pair respectively. The **[F4] Back** key returns to the test result screen.	
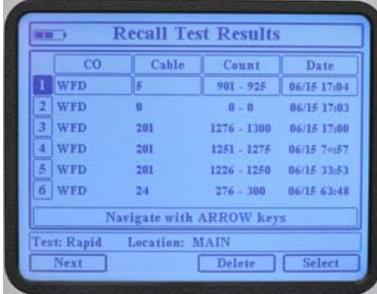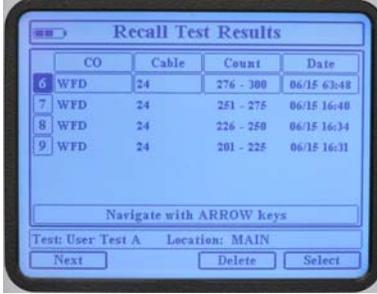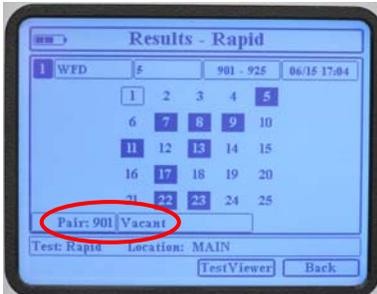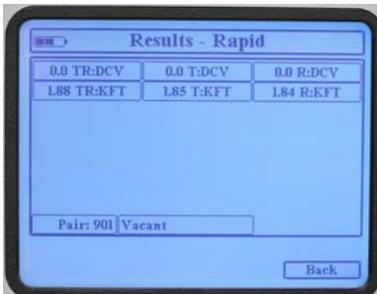
11. Cable Pair Identification

The ATV-25 provides functions to aid in the identification of cable pairs. These functions are:

Feature	Description
ID Tone	Send tone on a selected pair with short detection.
Remote Tone	Send tone from an ATV R/T on one of 100 pairs with short detection and pair test option.
Automatic Pair Identification ATV-25 to ATV-25	Pair identification using two to five ATV-25 test sets. This test compares AC and DC values to improve pair identification. The ATV-25 units communicate using a spare pair.
Automatic Pair Identification ATV-25 to ATV R/T	Pair identification using an ATV-25 test set and an ATV R/T. This test compares AC and DC values to improve pair identification. The ATV-25 and ATV R/T units communicate using a spare pair.
End-to-End Verification	Tests 25 pair to 25 pair using two ATV-25 test sets. The test verifies the Tip to Tip and Ring to Ring continuity between the local and remote ATV-25s.

11.1 ID Tone

ID tone is normally sent on cable pairs from one location to another for identification purposes. The ATV-25 can send tone in one of five modes as illustrated below.

Simplex Tone

Tip Tone

MetallicTone

Ring Tone

Triplex Tone
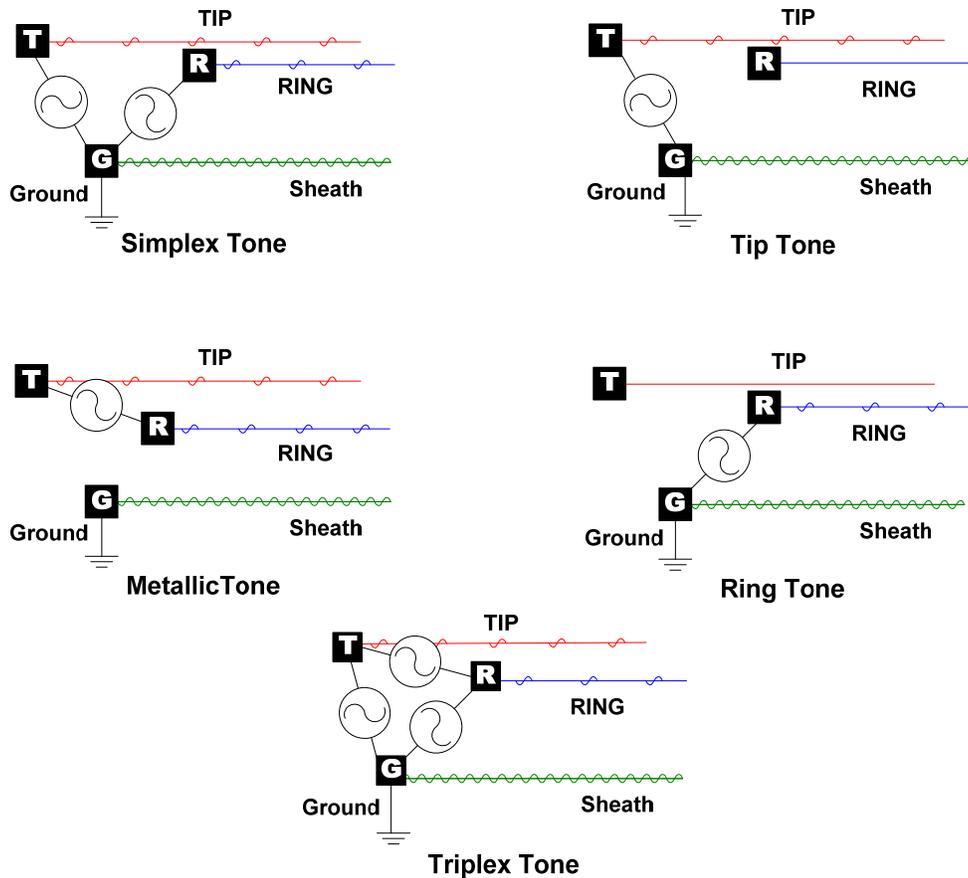
ID Tone Modes

The ATV-25 can send both 577Hz and 1004Hz tone. The following table shows the frequencies and modes available.

Mode	577 Hz	1004 Hz
Simplex	✓	
Metallic (TR)	✓	✓
Tip to Ground (TG)	✓	✓
Ring to Ground (RG)	✓	✓
TRI-PLX	✓	✓

11.1.1   Tone Mode Usage

The Tone modes are provided for specific pair conditions. The table below describes some typical usages for the tone modes.

Mode	Usage
Simplex	Tone is balanced on the TG and RG. A customer would generally not hear the tone on a good working pair. Simplex tone is a good choice even if a pair is shorted, one side is open, or one side of the pair is grounded.
Metallic (TR)	Tone is applied Tip to Ring. Many tone sources only have two leads and this is the typical mode for those devices. Metallic tone is also useful when sheath continuity is poor. Metallic tone should not be used if the pair is shorted or one side is open.
Tip to Ground (TG)	This mode can be used when there is a short or a ground on the Ring.
Ring to Ground (RG)	This mode can be used when there is a short or a ground on the Tip.
TRI-PLX	This mode is a combination of Simplex and Metallic. Tone is applied Tip to Ground and Ring to Ground in a way that provides a Metallic tone and minimizes cross coupling to adjacent pairs.

11.1.2   ID Tone Step-by-Step

Press **[TONE]** This screen shows the available Tone Test functions of the ATV-25. This figure shows **[F1] ID Tone**, **[F2] Tagging,** and **[F4] End2End**.	
Press **[F1] ID Tone** **[F1] Start**, starts sending tone on the selected pair. ⓘ Sending tone is automatically stopped if the pair, mode, or frequency is changed. **7 Mode**, changes the selection of Simplex, TR (Metallic), Ring (RG), or Tip (TG). **9 FreqSel** changes the selection of either 577Hz or 1004Hz. Simplex mode only allows 577Hz and the **9 FreqSel** option will not be shown. **[0] PairSel, a**llows direct entry of a pair number. PR0 is	 Initial ID Tone Screen
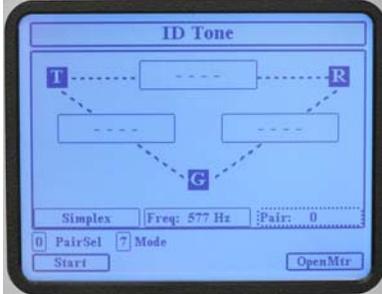
the single pair test cord.
Sending tone TR (metallic), the **9 FreqSel** allows frequency selection
Press **[F1] Start**
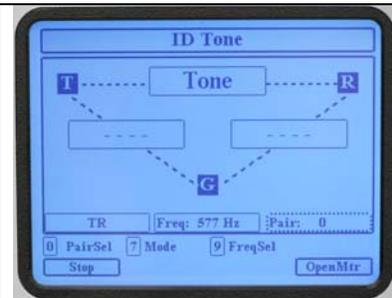
The label Tone appears indicating how tone is being applied. The lower portion of the screen information area displays the **Mode**, **Frequency**, and **Pair:**.

The ATV-25 displays BUZZ indications for pair verification. It is common practice to apply a short or ground after locating a pair with a tone probe. This confirms the identification of the correct pair. The BUZZ feature allows the user to verify the pair without additional steps to select the ohmmeter.

> Note: The ATV-25 may indicate a BUZZ on a defective pair that has a short or ground. |
The ATV-25 is sending 577Hz, TR Tone on PR0.
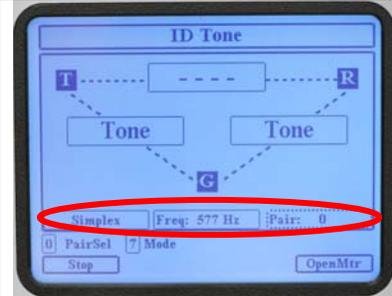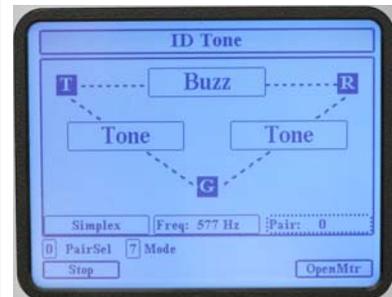
The ATV-25 is sending simplex tone as indicated by the Tone indication on TG and RG. The frequency is 577Hz on PR0. The TR BUZZ confirms a SHORT identification of the correct pair.
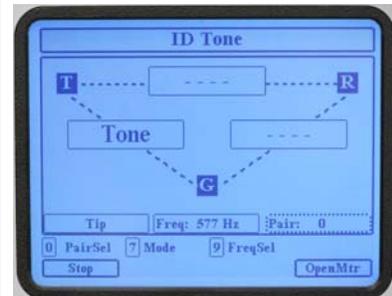
The ATV-25 is sending TG tone on PR0. |

The BUZZ indication is
confirmation the Tip is connected
to ground.

11.2 Pair Tagging ATV-25 to ATV-25

Pair tagging uses two to five ATV-25 sets to identify cable pairs. One to four ATV-25s are used at locations with access to 25 pairs at a time. These ATV-25 units are called Remotes. At least one ATV-25 is used at the pair identification location. This ATV-25 is called the Local unit.

The ATV-25 units use a common communication pair connected to the AUX cord at each ATV-25. The communication pair is used for sending data between the Local and the Remote ATV-25s. The figure below shows a typical tagging configuration using two ATV-25s.
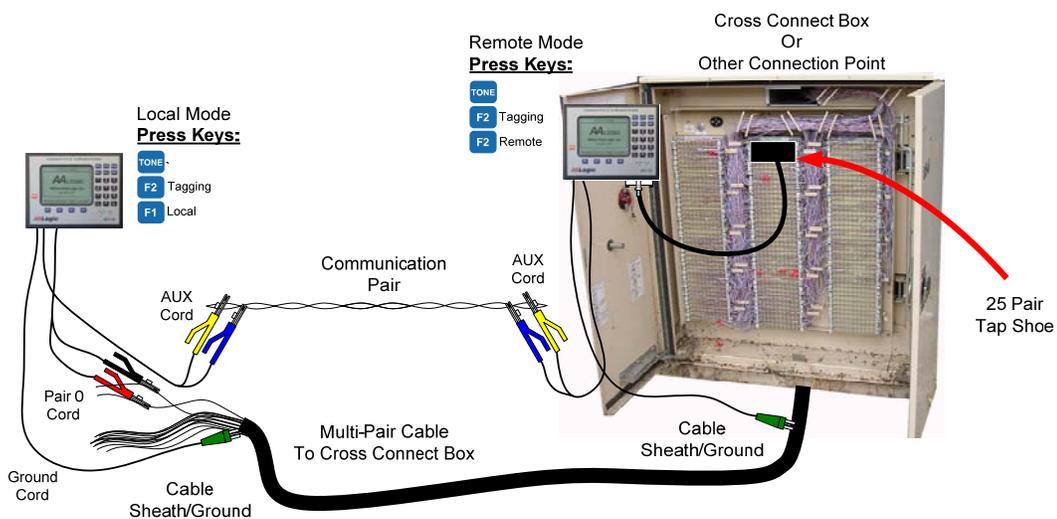
ATV-25 to ATV-25
Cable Pair Tagging

11.2.1 Connecting ATV-25 Units for Tagging

The ATV-25 to ATV-25 tagging requires a local ATV-25 at the point where the pairs need to be identified. One to four ATV-25 units are placed at one or more locations where the count is known and can be accessed with modular connections.

A communication pair is used to connect all the ATV-25 units together. The local machine controls all the remote units on this pair. The pair must be a vacant pair and should not be one of the pairs being tagged if possible. An ATV-25 can be used to send tone on this pair to allow location using a tone probe.

As indicated in the figure above, the AUX cord is used at each ATV-25 to connect to the communication pair. The AUX cord has a blue boot on the connector and is plugged into the AUX jack on the ATV-25.

The AUX cord is electrically compatible with the PR0 cord. The PR0 cord can be plugged into the AUX jack and connected to the communication pair if the AUX cord is defective or not available.

Grounding is very important. Tagging involves numerous measurements of AC and DC values on the pair. Each ATV-25 must have a good connection to sheath/ground for the cable. Poor grounding can result in communications problems and problems finding pairs.

Each remote ATV-25 is connected to 25 pairs through the 25 pair connector and a tap shoe. The tap shoe has one Cinch connector for connecting to the ATV-25 and the other end has a connector to attach to a CO vertical frame, cross connect box, or modular splice. The tap shoe should be inspected for any damage to the connectors. Damaged connectors can prevent the affected pair from being identified.

The local machine uses the PR0 cord to connect to the unknown pair. The local ATV-25 and remotes communicate when the Start button is pressed and the remotes search for a pair with the same AC and DC values on the pair as measured by the local ATV-25.

11.2.2   Pair Tagging ATV-25 to ATV-25 Step-by-Step

Local ATV-25	Remote ATV-25s
Press **[TONE]** This screens show the available Tone Test functions of the ATV-25. This figure shows **[F1] ID Tone**, **[F2] Tagging**, and **[F4] End2End**.	
Press **[F2] Tagging** The tagging process requires one Local ATV-25 and one to four Remote ATV-25 units. The remote ATV-25 units can be located anywhere as long as all the ATV-25 units are connected to the same communication pair. There must always be one remote designated as 1 – 25. The user selects [F1] Local on the unit where the tagging is to be done and [F2] Remote on the others.	

Local ATV-25	Remote ATV-25s
The local machine must know the number of ATV-25 remote units to expect. Even if additional remote ATV-25 units are connected, they will not be used for tagging unless they are selected in this step. Use the **[F1]** through **[F4]** keys to make the selection.	Each remote must be designated one of the four 25 pair counts. At least one remote must be designated 1-25. Use the **[F1]** through **[F4]** keys to make the selection.

Press **[F1] Local**

The Local ATV-25 is ready to establish connection to the Remote ATV-25. The user locates the communication pair and connects the AUX cord. The pair should have tone from the 1-25 Remote. A tone probe can be used to locate the pair.

Press the **[ENT]** key to connect to the Remote. The Local will attempt to communicate with the 1-25 Remote. The Local will not continue until the connection is complete.

Check the pair and the AUX cord connections at the Local and Remote if communications is not established.

The Ground cords should be properly connected at each ATV-25.

Press **[F2] Remote**

The 1-25 Remote ATV-25 begins sending 577Hz simplex tone on the AUX pair. The pair is used to communicate between the Local and Remotes. The Remotes are ready to establish communication and tagging. No other key presses are required at the remotes.

The communication pair can be located using an amplifier probe at each remote. The 1-25 Remote sends 577Hz simplex tone until the local unit is started.

The Remotes should have 25 pairs connected to the Cinch connector and the green Ground cord must be properly connected to sheath/ground.

☑ The communication pair must be a vacant pair without shorts or grounds. Test the pair with the Open Meter before attempting to communicate with the local unit.

The communications can be confirmed to all the remotes by attempting a pair search without the PR0 cord connected. Each Remote

Remotes will respond to search commands from the Local ATV-25. If no pair is found, the Pair

Local ATV-25	Remote ATV-25s
should respond with four dashes (- - - -) indicating no pair was found. Remotes that are not communicating will have No Response displayed.	NOT Found! message is displayed and the result sent to the Local ATV-25. Recheck the communication pair, AUX cord, and ground if a remote is not communicating with the local machine.
  Connect the PR0 cord to the pair to be tagged. This can be any pair connected to one of the Remotes.	 The Remotes are waiting for a tagging command from the Local.
  Press **[F1] Start** The Local sends messages to the Remotes with the AC and DC voltages for the pair being tagged. The Local displays "Searching" while the Remote locates the pair.	 The Remotes receive the tagging commands and searches for the pair. The Remotes return the pair number if the pair is found or "Pair Not Found" if a pair match is not located.
  Pair 8 was found by the 1 – 25 Remote. The PR0 cord is then moved to another pair and **[F1] Start** is pressed to start the tagging process again. Only one Remote was selected in this example.	 Pair 8 was found and returned to the Local. The Remote may find more than one pair in some cases. The pair with the best AC and DC match is returned to the Local.

Local ATV-25	Remote ATV-25s

Some pairs can be difficult to tag. Check the following:
 	
✓ The PR0 is properly connected and the clips are not shorted.
✓ The ground cord is properly connected to the cable sheath.
✓ Use the [F4] OpenMtr to check the pair for defects.
 	
Press **[F1] Start** to restart the tagging process after resolving any issues or move on to the next pair.
 	
Pairs that will not tag due to defects can be identified using the ID Tone feature.
	Possible faults that may cause tagging problems:
	
	✓ Missing bonds or other sheath continuity problem between the Local and Remotes.
	
	  This problem may be solved by bonding several vacant pairs together and connecting them to the ground clips at the Local and Remote(s). Ideally, the pairs should also be connected to the cable sheath.
	
	  A sheath continuity problem is a high probability if many pairs cannot be tagged.
	
	✓ Pair Faults
	
	  Pair faults such as grounds and opens on the pair can prevent tagging in some cases. An example is a pair that has grounds on the Tip, Ring, or both. This will prevent the tone from being detected by the Remote.

11.3 Pair Identification ATV-25 to ATV R/T

Pair Identification ATV-25 to ATV R/T requires one ATV-25 and one ATV R/T to identify cable pairs. The ATV R/T placed at a known location with access to pairs using tap shoe cables. The ATV R/T is referred to as the Remote. The ATV-25 is used at the pair identification location and referred to as the Local.

The Remote Tagging feature is similar to the ATV-25 to ATV-25 tagging feature. The ATV R/T is a more cost effective approach when tagging more than one 25 pair group at a time.

This system identifies the Tip and the Ring on working or vacant pairs and reports the identified pair number. The Tip and Ring can be straight or color reversed.

Some pair faults such as open and grounds may prevent the pair from being identified. Split pairs will not report a pair number. The Remote Tone mode can be used to locate these pairs. More than one pair may be reported in some cases such as 4-wire circuits.

The ATV R/T user's guide contains detailed instructions on setup for ATV-25 to ATV R/T tagging.

The ATV-25 and ATV R/T use a communication pair connected to the AUX cord at each end. The figure below shows a typical pair identification configuration.

Four 25 Pair
Tap Shoes

ATV-25
Field Unit

ATV R/T
100 Pair
Remote Tagger

COMM Pair

AUX
Cord

Pair 0
Cord

Ground
Cord

Cable
Sheath/Ground

Sheath
Ground
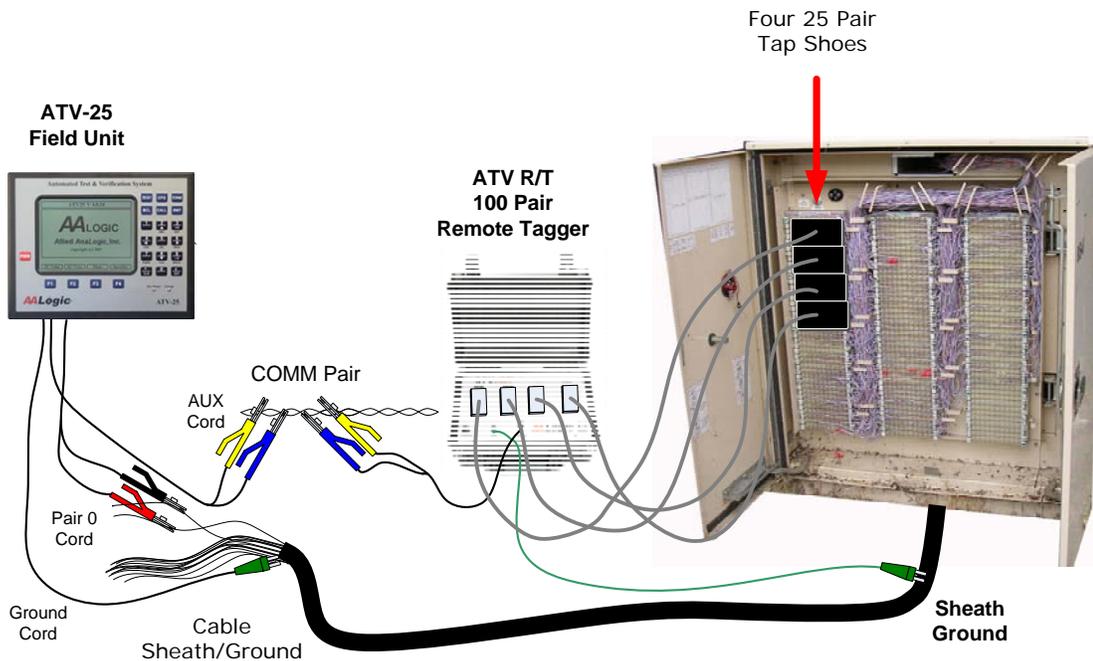
ATV-25
100 Pair Tagging with
ATV *R/T*

11.3.1 Pair Identification RMT, Tagging Step-by-Step

One ATV-25, One ATV R/T, and one to four tap shoe cables are required. The steps below provide the steps and displays for the ATV-25 and the ATV R/T.

Identify a vacant pair between the local and remote locations for use as a communications pair. This can be any balanced, vacant pair. The ATV-25 meters are useful in identifying the pair.

At the remote location:

- Connect one or more tap shoe cables, up to four, to the ATV R/T.
- Connect the ATV R/T power supply to the ATV R/T and 110Vac supply.
- Connect the ground cable to the ATV R/T and to the ground of the cable being tested.
- Connect the COMM cord to the ATV R/T and the communication pair previously identified.
- Secure the cords and cables, if needed, to avoid accidental removal.
- Connect the tap shoe cables to the pairs to be identified.

Press **[RMT]**

This screen allows the user to select the module(s) to search during tagging. Any combination of the four 25 pair groups can be enabled to search.

When tagging, pairs identified in Group 1 will be reported as pairs 1 to 25, Group 2 as 26 to 50, Group 3 as 51 to 75, and Group 4 as 76 to 100.

Group 1 is selected

	 The selection shown would search 75 pairs, Groups 1 through 3.
Press **[F1] Start** when the desired groups are selected. The ATV-25 may display the message "Searching for Remote" repeatedly if it is unable to detect the tone from the ATV R/T. This means there is an issue with the ground connections, the ATV R/T is not turned on or connected properly, or there is a problem with the communication pair. The ATV-25 connects to the ATV R/T and displays the main tagging screen. The selected groups are indicated at the top of the screen. The Scan Mode is also displayed at the top of the information area.	 Initial tagging screen with all groups selected and Normal Scan Mode
Connect the PR0 cord to a pair and press **[F1] Start**. The ATV-25 displays a table with one row for each selected group. The identified pair number is displayed in the row for the group. Dashes indicate no pair was found for that group.	 Pair 59 identified
Normally only one pair is located. In some cases more than one pair may be reported. This may be in the same group or in a different group. This could be due to cable faults or special circuits.	 Multiple pairs found, 30 and 35, probably a 4-wire circuit.
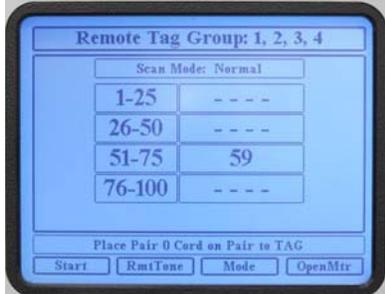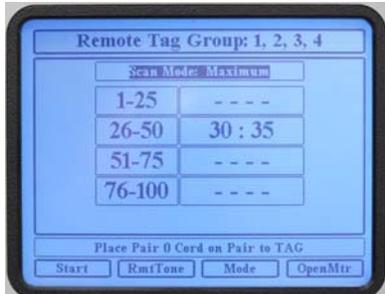
When all rows have dashes the message "**Pair NOT Found!"** is displayed indicating no pair match is found. An error tone is also heard.

Check the PR0 cord and press **[F1] Start** to retest. If the pair is still not found, press **[F4] OpenMtr** to select the open meter and check for defects on the pair or move on to another pair.

It is not possible to identify pairs with grounds or opens in some cases.

The Tagging program requires the Tip *and* Ring be located before displaying a pair number. Split pairs will not be located using the Tagging program.

Remote tone assists users in identifying pairs with problems.
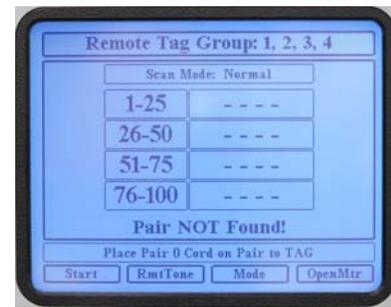
Pair Not Found
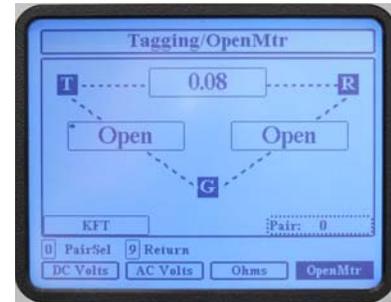
Open meter indicates a missing ground, press 9 to return to tagging

Some cable conditions may cause the tagging tone sent by the ATV-25 to be decreased to a level below the normal minimum at the ATV R/T.

Pressing **[F3] Mode** allows the user to change the Scan Mode from Normal to High or Maximum. High and Maximum lower the minimum tone required for the ATV R/T to find a match. Changing the mode is useful when the ATV R/T is located in an office or near equipment that has a low resistance to ground on Tip or Ring or applies battery to the pair with low impedance.
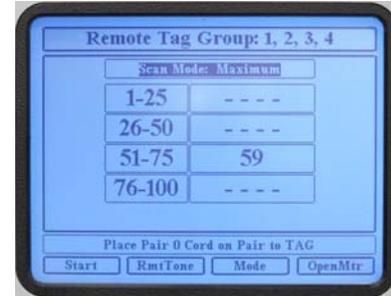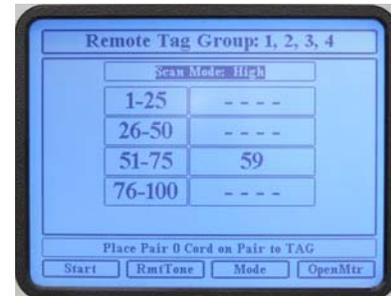
11.3.2 Pair Identification RMT, Remote Tone Step-by-Step

Remote tone is used to send tone on a pair from the ATV R/T. This mode is used to:

- Identify pairs that are not identified using the Tagging feature
- Identify pairs in cables where 100 pair groups are not identifiable. This can occur with random splices for example
- Identify pairs at more than one location at the same time

Press **[F2] RmtTone** to switch to the remote tone mode from the main tagging screen. This mode allows the user to request tone from the ATV R/T on a specified pair. Remote tone is used to identify pairs that were not found during tagging. It may also be used when the cable does not allow for identification of 100 pair groups or to identify pairs at multiple locations at the same time. The user selects the tone mode, frequency, and pair at the ATV-25. The ATV-25 sends instructions to the ATV R/T over the communication pair to apply the tone to the pair.	The default tone mode is Simplex, 577Hz, on pair 1. Tone is off, **[F1] Start** is used to turn the tone on
The mode options are Simplex, Metallic (TR), Ring to Ground, Tip to Ground, and TRI-PLX. The mode is selected by pressing 7 Mode until the desired tone mode is displayed on the screen.	The current tone mode is Simplex
The frequency options are 577Hz or 1004Hz. The 577Hz is the most common frequency for toning pairs and it is the default frequency. Press 9 FreqSel to toggle the frequency between 577Hz and 1004Hz. Note: Simplex only allows 577Hz and the 9 FreqSel is not displayed when in Simplex mode.	577Hz tone 1004Hz tone
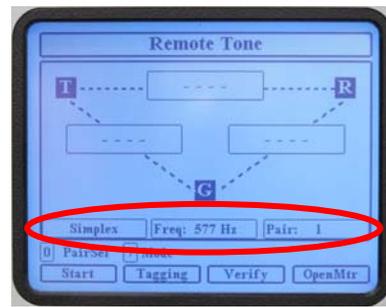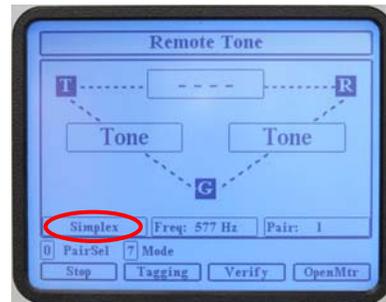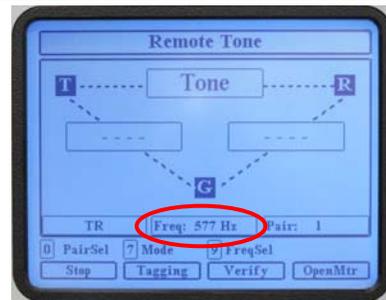
64
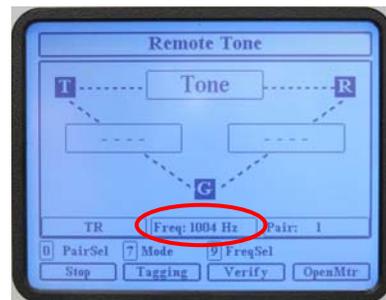
|	
The **[F1]** key is used to **Start** and **Stop** the tone. The word **Tone** is placed in the boxes to indicate how tone is applied to the pair. Dashes (- - - -) are displayed in boxes where tone is not applied. The 7 Mode and 9 FreqSel keys can be pressed at any time. It is not necessary to turn the tone off.	 577Hz Simplex tone applied to pair 1. No tone is applied Tip to Ring. 1004Hz TRI-PLX tone applied Tip to Ring, Tip to Ground and Ring to Ground.
The pair can be changed by pressing the ▶ key to switch to the next higher pair and the ◀ key to switch to the next lower pair. The actual cable pair number can be used when selecting pairs. Refer to 5.3 above for details on entering pair numbers.	 Tone on pair 601 Tone on pair 602
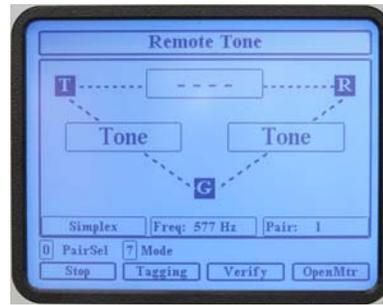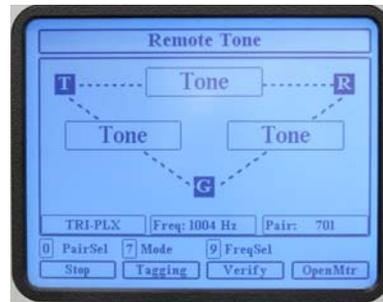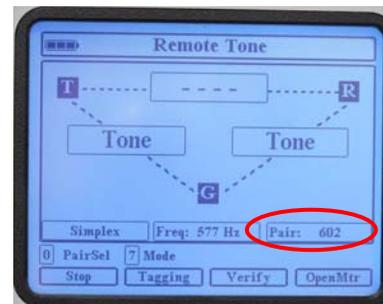
The pair number can also be entered using the keypad. Press **0 PairSel** and the cursor is placed in the pair number field. Enter the number of the desired pair and press **[F1] Save**. The ATV-25 allows entry of the actual pair numbers.
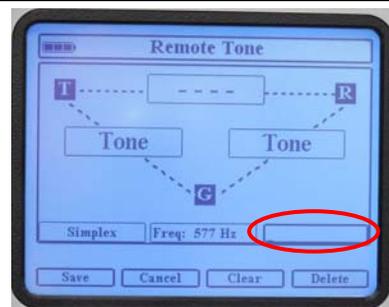
ATV-25 is ready for the pair number to be entered.
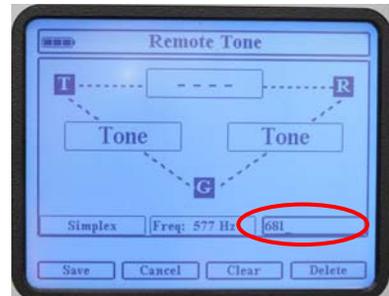
Pair number 681 has been entered, Press **[F1] Save** to complete the entry.
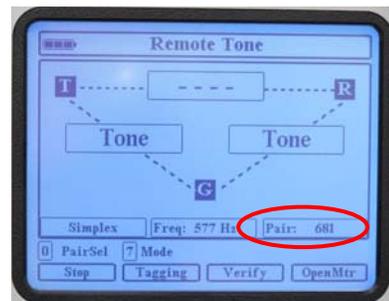
Tone is on pair 681 at the ATV R/T

11.3.2.1 Pair Identification RMT, Pair Verification, Remote Tone Step-by-Step

The ATV R/T Remote Tone mode includes short/ground detection and pair verification features. Once a pair is located using tone, verification allows the ATV R/T to confirm the correct pair as would normally be done by using another person at the remote site.

Select Remote Tone mode. Select a tone mode, frequency, and pair.

1. Press **[F1] Start** for the ATV R/T to send the selected tone.
2. Use a probe to locate the pair.

The pair may be shorted or grounded to confirm the pair depending on the tone mode as indicated in the table below.

When the ATV R/T detects a short or ground on the pair, the ATV-25 displays the word BUZZ and a tone is heard.
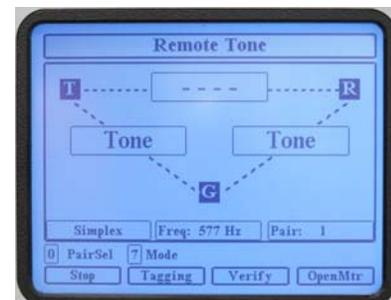
577Hz Simplex tone on pair 1

66

Tone Mode	Short	Ground
Simplex	✘	
Metallic (TR)	✘	
Ring Ground		✘
Tip Ground		✘
TRI-PLEX	✘	✘

The ATV R/T measures the existing levels on the line when the tone is applied. It then monitors the line for a change in the levels. A change is interpreted as a short or ground applied by the user. This feature is not available when a low value short or ground is already on the pair.
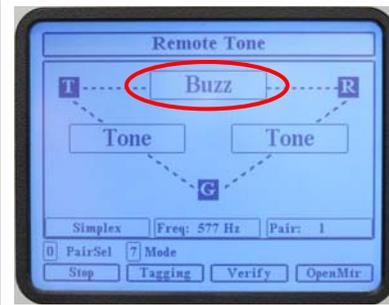
The word BUZZ indicates the ATV R/T has detected a short on the pair.

The pair can also be confirmed using the Verify function. This reduces the possibility of creating interference on the pair.

Use a probe to locate the pair with tone. Connect the PR0 cord to the pair. Press **[F3] Verify**.

The ATV-25 and the ATV R/T test from end-to-end to confirm the pair. This testing attempts to confirm the Tip and Ring of the pair. The results indicate the results of the testing.

The **[F4] OpenMtr** is available to test the pair for possible defects. The meter can indicate resistive defects, opens, and voltages on the pair. This can help the user determine the status of the pair and decide on a resolution.
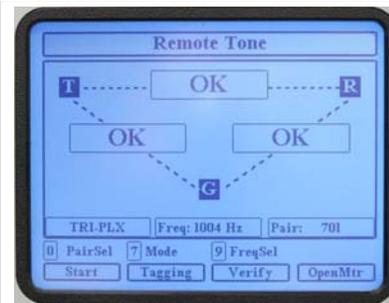
The pair was verified, the Tip and Ring were confirmed
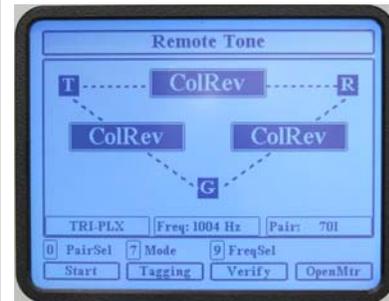
The pair was verified, the Tip and Ring were confirmed but ther is a polarity reversal between the ATV R/T and the ATV-25

The Tip was found but the ring was not Verified. Tone can be sent on the pair to locate the other side of the pair if the pair is split.
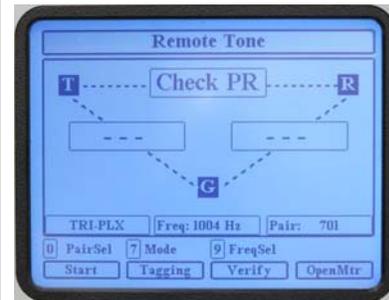
The Verify program was not able to confirm the Tip or Ring. The OpenMtr can be used to determine the status of the pair.
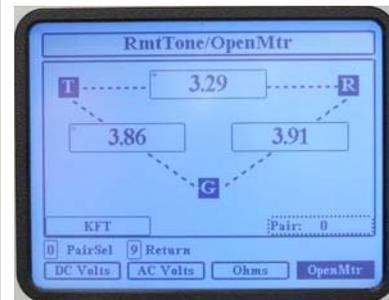
The image shows a vacant, balanced pair that is 3,290 feet long. The 9 Return key is used to return to the Remote Tone mode.

RmtTone/OpenMtr

T 12.54 R

80 r 8.51

G

KFT Pair: 0

0 PairSel 9 Return

DC Volts | AC Volts | Ohms | OpenMtr
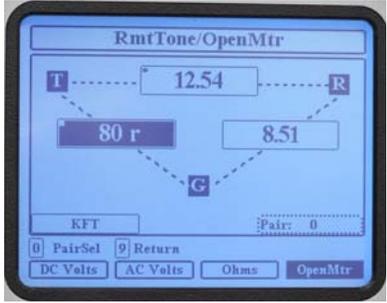
This image shows a defective pair with an 80 ohm ground on the tip. This defect can make the pair difficult to identify. The field side of the pair can be opened to complete verification in some cases.

11.4 End-to-End

End-to-End (End2End) testing uses two test sets to confirm Tip and Ring continuity between 25 local pairs and 25 remote pairs. The test specifically checks to ensure that pair X of the local is the same as pair X of the remote and that the pair is not color reversed. Working and Vacant pairs can be tested.

The test uses DC, AC, and resistive measurements to identify the pair and the polarity between the local and the remote. The process is different for Vacant and Working pairs in order to avoid disturbances on Working pairs.

The test also includes the loop resistance, tip to ground, and ring to ground measurements on Vacant pairs. These measurements are required in some completion test projects and they provide indications of poor splices when the tip to ground measurement is not the same as the ring to ground.

A vacant pair is used to communicate between the two units. The figure below shows a typical connection for the End2End test.

Cross Connect Box
Or
Other Connection Point

Remote Mode
Press Keys:

TONE
F4 End2End
F2 Remote

Local Mode
Press Keys:

TONE
F4 End2End
F1 Remote

25 Pair
Tap Shoe

Communication
Pair

AUX
Cord

AUX
Cord

Modular
Connection

Multi-Pair Cable
To Cross Connect Box

Cable
Sheath/Ground

Ground
Cord

Cable
Sheath/Ground
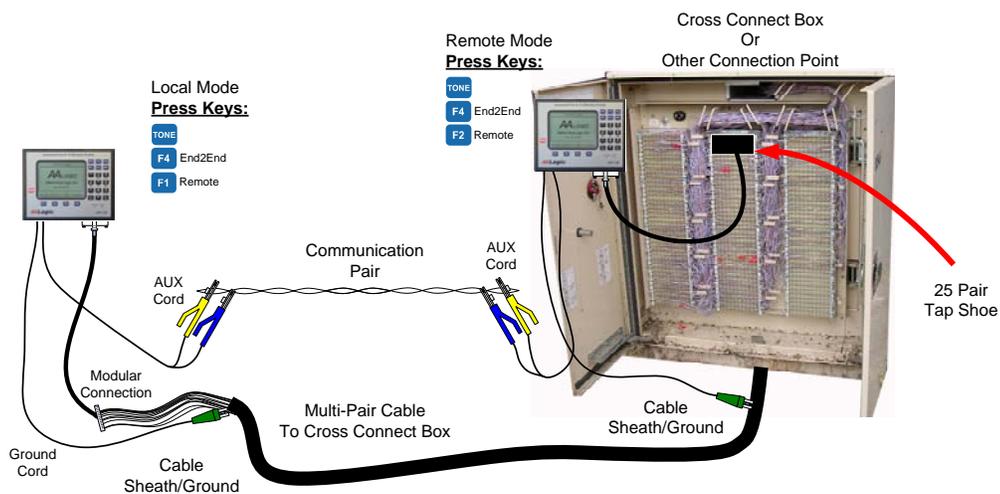
ATV-25
End-to-End Test
Configuration

11.4.1　　　Testing Conditions

The test may not be able to confirm the pair under all conditions. Low resistance values Tip to ground or Ring to ground can make it impossible for the test to verify the pair. The test can indicate a fault in these cases.

There may also be cases where an AC signal is highly attenuated. The test will indicate a fault if the attenuation prevents accurate verification.

A pre-test of the pairs can be used prior to an End2End test to identify pairs with faults that may prevent accurate end-to-end verification.

11.4.2　　　End2End Step-by-Step

Two ATV-25 units are required for End2End testing. The steps below provide the steps and displays for the Local and the Remote.

Local ATV-25	Remote ATV-25
Press **[TONE]** This screen shows the available Tone Test functions of the ATV-25. This figure shows **[F1] ID Tone**, **[F2] Tagging**, **and [F4] End2End**.	
Press **[F4] End2End** The End2End test requires one Local ATV-25 and one Remote ATV-25. One person can operate both ATV-25 sets by setting up the Remote and then moving to the Local unit. Two persons, one at the Remote and one at the Local, can make the End2End testing easier and faster when many groups of pairs need to be tested. A communication pair must be identified between the Local and Remote units. The AUX cord of the Local and Remote units must be connected to this pair. The pair must be a vacant pair without battery, ground, or short faults. The ID tone function may be used to aid in identifying a pair.	
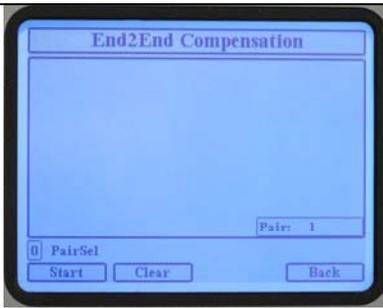
Press [F4] E2E Comp

The E2E Comp function should be run at least once when either of the ATV-25 units are changed or when the testing locations change.

The purpose of the compensation function is to adjust the measurements for line noise and calibrate the two ATV-25 units.

The test pair must be a vacant pair.

Press [F2] Remote

The AUX pair is used to communicate between the Local and Remote. The Remote is ready to establish communications with the Local Unit. No other key presses are required at the Remote unit.

The Remote should have 25 pairs connected to the Cinch connector and the green Ground cord must be properly connected.

> ☑ The communication pair must be a vacant pair without voltage, shorts, or grounds. Test the pair with the Open Meter before attempting to communicate with the local unit.

Select the appropriate desired pair and press **[F1] Start.** The **PR0** can be used for the compensation test. Connect the PR0 cords on each end and enter 0 for the pair on the E2E Comp screen.

The Local machine communicates with the Remote machine. The Local processes the results and displays the calculated compensation values.

> ☑ A Check Pair ! message indicates the tested pair may not be suitable for the compensation measurements. The user should determine if another pair should be used or to accept the compensation values.

The user can select:

[F1] Start	Retest the currently selected pair
[F2] Clear	Reset the comp values to 0.
[F3] Accept	The Local machine stores the calculated comp values.
[F4] Back	Return to the E2E initial screen.
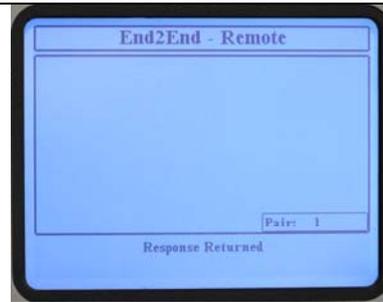
The remote ATV-25 display will show various messages during testing. This only indicates testing activity.

The rest of this section will not include additional screen shots of the Remote.

|	
Press **[F4] Back** The main E2E screen is displayed.	*End2End screen*
Press **[F1] Local** The Local establishes communication with the Remote and displays the E2E test setup screen is displayed. Messages on the screen will indicate if a problem exists in establishing communications. The CO, Location, User, and Ref Pair ID displayed are the currently selected values. These values can be changed by using the ▲ and ▼ keys to highlight the item and using the ◀ and ▶ to select other values. Use the [**CFG**] option if the desired value has not been stored in the ATV-25. The Ref Pair ID is not used by the E2E test. Enter the Cable and Start Pair by using the ▲ and ▼ keys to highlight the item and press **5 Change**. Enter the new value using the keypad and press **[F1] Save** when done. The Stop Pair is automatically calculated for a 25 pair group based on the start pair number. A different stop pair may be entered if desired.	*End2End - Local screen*
Press **[F1] Start** The Local begins testing and displays a 25 pair matrix. The pair being tested is indicated by a ☐ around the pair number. Pairs that fail are displayed as a black square.	*End2End - Local screen*
The results are displayed at the end of the test and the first pair of the group is highlighted. The user can use arrow keys (◀, ▶, ▲, and ▼) to move the highlight to any pair and view the result. This helps review pairs that have failed. The **[F3] TestViewer** allows the user to see the meter measurements taken during the test. The **[F1] ReTestPr** is used to retest a pair. This allows the user to correct and retest a defective pair before saving the results. The **[F2] Save** key saves the test results into internal memory and returns to the setup screen.	*End2End - Local screen* Testing is complete for pairs 226 through 250. Pair 5 is defective.
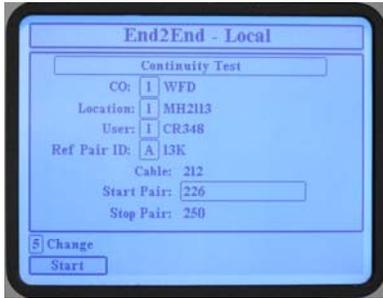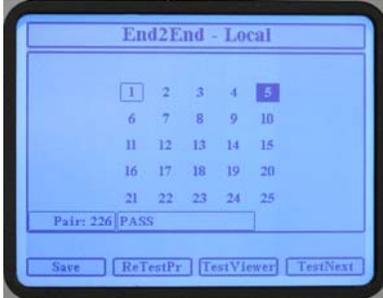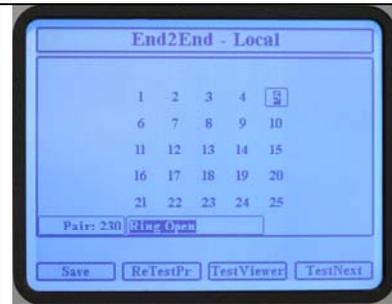
Pair 230 has a Ring side open.
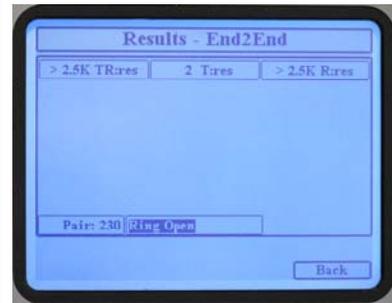
The measurements show a Tip to ground measurement of 2 ohms indicating Tip to Tip continuity. The loop resistance is greater than 2.5K ohms and the Ring to ground resistance is also greater than 2.5K ohms confirming the Ring side is open.
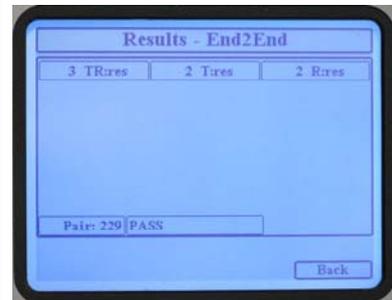

The left arrow, ◄ , is pressed in the test viewer to display pair 229. This pair passed. The loop resistance indicates continuity from the Tip at the Local unit through the Remote unit back to the Ring at the local unit.

The End2End test returns to the test setup screen after saving the results. The pair count is automatically incremented to the next 25 pair group. The user must move the tap shoe connections at the Local and Remote and press **[F1] Start** to begin testing the next 25 pair group.

Any of the information may be changed, if desired, before starting the next test.
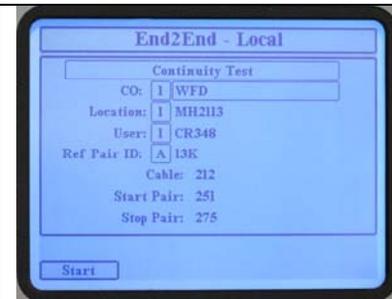
|	
Press **[RCL]** to review any saved test results.	 Test results are shown with the last test on top. The highlighted test is an End2End test for the WFD office, Cable 11, Pairs 375 through 400. The stored test results are displayed in the same format as the end of testing. This is a review only and the data cannot be changed.
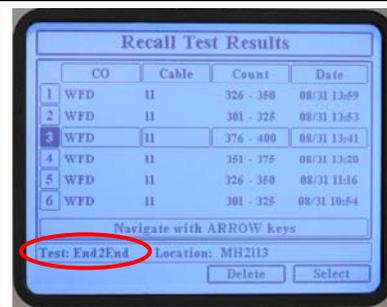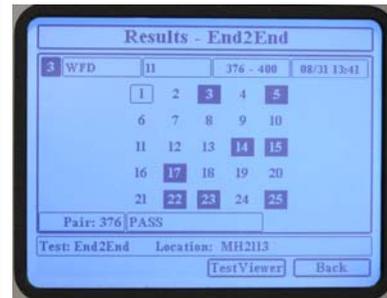
12. Call Functions

12.1 Voice Monitor

The Voice Monitor provides the functions of a talk set for monitoring a line, confirming dial tone, and calling ANI numbers.

> ☑ The Voice Monitor does not allow the user to talk on the line.

12.1.1   Voice Monitor Step-by-Step

Press **[CALL]**	

|	
Press **[F1] Voice** The Voice Monitor is displayed and the currently selected line is enabled. The ATV-25 is on hook. The meter in the center of the screen indicates the amount of audio signal, if any, on the line. The 7 **Monitor** key turns the speaker audio on or off. The Monitor label on the screen is a black box when the speaker is on. The **[+V]** and **[-V]** keys control the speaker volume. A voltage box, see the red arrow, indicates the Tip to Ring voltage on the selected pair. This provides an additional indication of the status of the line. ⓘ If the Monitor box is black but you cannot hear audio, look at the meter, if you see an indication of audio on the line, increase the speaker volume with the **[+V]** key.	Monitor mode is on, there is no DC voltage on the pair, and no audio as indicated by the 0 – 100 indicator in the middle.
The voice mode provides off hook and on hook functions to allow testing for dial tone and to dial stored numbers for ANI. The audio on the line is monitored both on hook and off hook. Press **[F2] Off Hook** to go off hook and **[F3] On Hook** to go on hook. The label above the keys indicates the current hook state. The label will be a black box when active.	Voice Monitor mode, PR0, Monitor is on, and ATV-25 is on-hook.
The ATV-25 can dial one of three stored numbers. The ▲ and ▼ keys move the highlight to the desired number location. The 5 Change key is used to enter a new number. The **[F1] Dial** key dials the selected number. The ATV-25 goes off hook, if necessary, and dials the number. Note: it is not necessary to press Off Hook before dialing.	
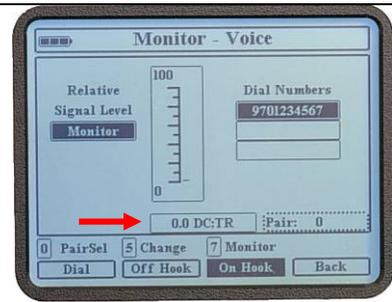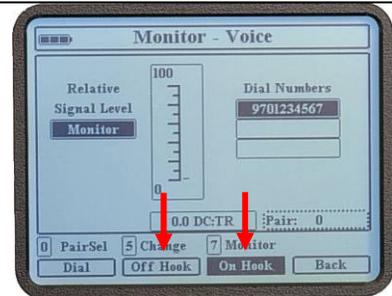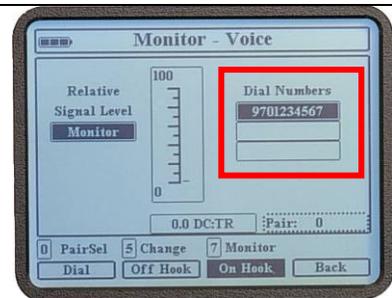
12.2 DSL Monitor

The DSL monitor feature provides an audible indication of digital data on the line. The feature allows monitoring of frequencies from 1 kHz to 1.99 MHz. The DSL Monitor is useful when troubleshooting potential interference within this frequency range. An example is monitoring a frequency for potential radio interference.

12.2.1　DSL Monitor Step-by-Step

Press **[CALL]**	
Press **[F2] DSL** The DSL Monitor is displayed and the currently selected line is enabled. The meter in the center of the screen indicates the relative magnitude, if any, of the digital signal on the line. The 7 **Monitor** key turns the speaker audio on or off. The Monitor label on the screen is a black box when the monitor is on. The [**+V**] and [**-V**] keys control the speaker volume. ⓘ If the Monitor box is black but you cannot hear any audio, look at the meter, if you see an indication of audio on the line, increase the speaker volume by pressing the **[+V]** key.	
The frequencies for T1, HDSL, and xDSL modes are pre-programmed for convenience. The ▲ and ▼ keys move the highlight to the desired mode.	
Press **[F1] FreqSel** to enter a specific frequency to monitor. The initial frequency is set to the current mode when the **[F1] FreqSel** key is pressed. The starting frequency is entered in 1 kHz increments up to 1.999 MHz. The step size is entered in 1 kHz increments up to 9 kHz. The ▲ and ▼ keys, respectively, increment or decrement the monitored frequency by the step size. The current frequency is displayed on the screen in the Freq box.	
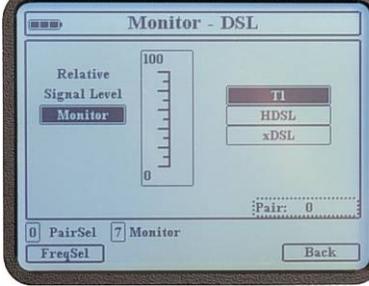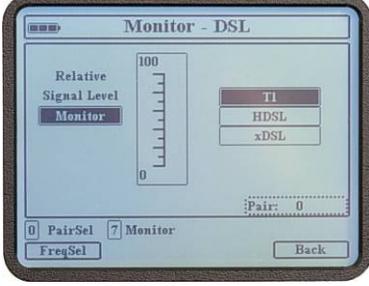
76
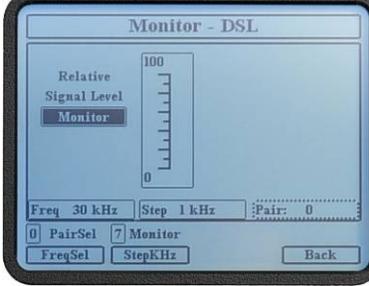
12.3 Talk/Wait Circuit

The ATV-25 includes a talk/wait feature for establishing communications between two locations on a vacant pair.

12.3.1 Completing Talk Circuit Connections

Connect the RJ45 connector of the optional talk/wait cord to the ATV-25.

Connect a butt set or headset to the terminals on the connector block. A butt set will have to be in the talk mode.

Connect the pair clips to a vacant pair that has been identified at both locations.

Connect a butt set or headset to the line at the far end. A butt set will have to be in the talk mode.

A call tone will be heard from the ATV-25 anytime any connection in the talk/wait circuit is disconnected or connected.

ⓘ The call tone is useful in signaling the ATV-25 from the far end. Briefly break or short the connection to the talk pair. The ATV-25 talk/wait tone will be heard.

Location of the talk/wait circuit jack.

The figure below shows a typical connection for a complete talk/wait circuit.

Talk/Wait
Press Keys:

CALL

F3 Talk

Talk
Cord

ATV-25
Talk/Wait Circuit
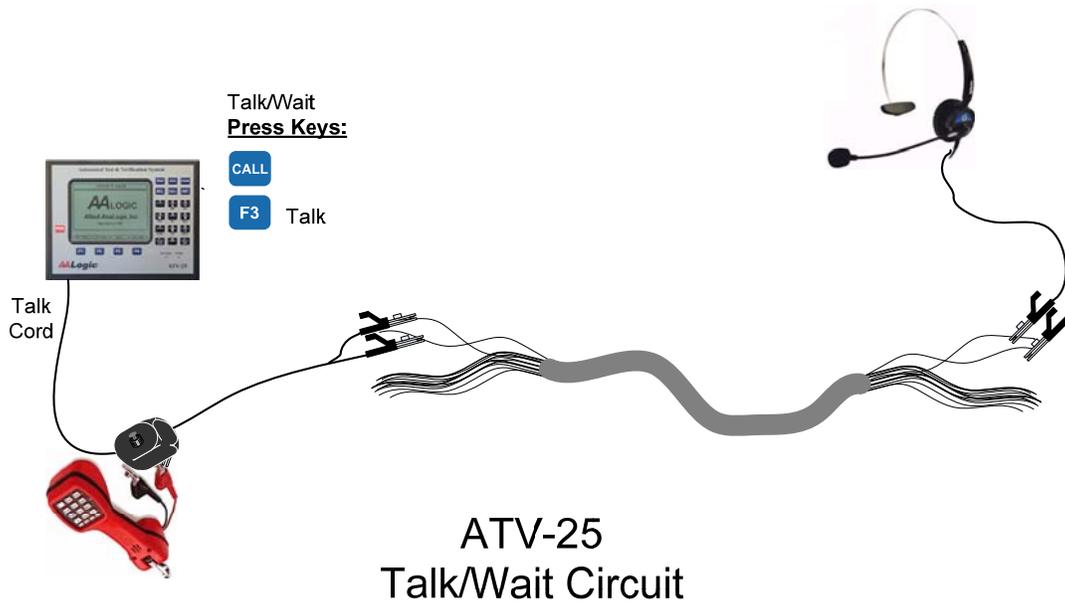
12.4 Talk/Wait Circuit Step-by-Step

Press **[CALL]**.	Call screen, Talk/Wait circuit off.
Press **[F3] TalkPr** **[F3] TalkPr** is used to toggle the Talk/Wait circuit on and off. The TALK indicator appears in the upper right corner of all screens when the talk/wait circuit is on. All the other test set features may be used with the Talk/Wait circuit on.	Call screen, Talk/Wait circuit ON.
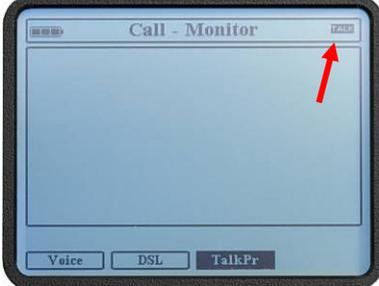
13.   PC Interface

The ATV-25 includes ATV Tools software. This software supports uploading test data from ATV-25 test sets, managing configurations for downloading to ATV-25 test sets, and updating ATV-25 firmware. Refer the ATV Tools documentation for software operation.

USB AB Cable

1. Install ATV Tools Software
2. Start ATV Tools Program
3. Turn On ATV-25
4. Connect provided USB cable from PC to ATV-25.

NOTE: The ATV-25 detects the USB connection and automatically enters USB Communications Mode.

ATV Tools Software
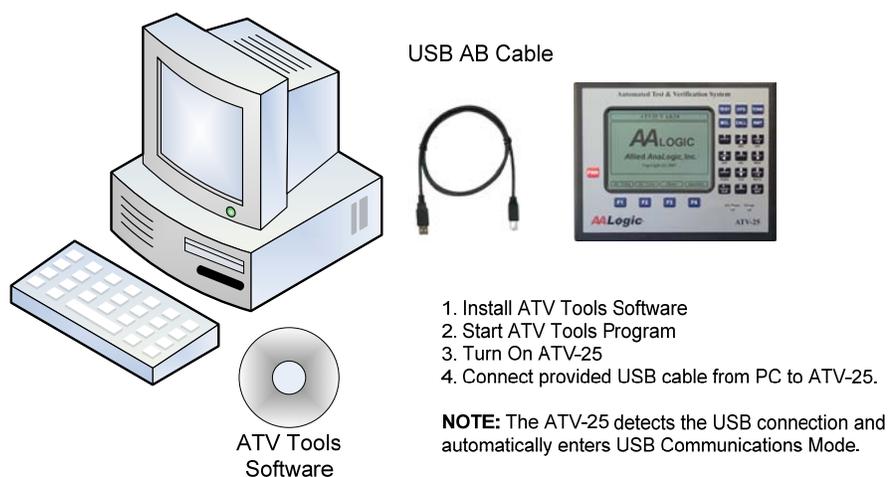
ATV-25
USB PC Interface

13.1 PC Connection Step-by-Step

✓ Connect one end of the provided USB connector to the PC. ✓ Ensure the ATV-25 is turned on and the idle screen displayed. ✓ Connect the provided USB Cable to the USB port on the left side of the ATV-25.	USB Connector
The ATV-25 automatically detects the USB connection and enters the USB Remote mode. They ATV Tools program can now be started to communicate to the ATV-25. ⓘThe ATV-25 can be at any state when the USB connection is completed. The ATV-25 will terminate the current activity and enter the USB mode.	USB REMOTE
Disconnect the USB cable to exit the USB Remote mode. The ATV-25 will restart and return to the **<Idle>** screen. More than one ATV-25 can be managed without stopping the ATV Tools program. Just unplug the current ATV-25, ensure the next ATV-25 is on, and plug the USB cord in.	ATV25 V 1.0.24 **AA**LOGIC Allied AnaLogic, Inc. Copyright (c) 2007 DC Volts AC Volts Ohms OpenMtr
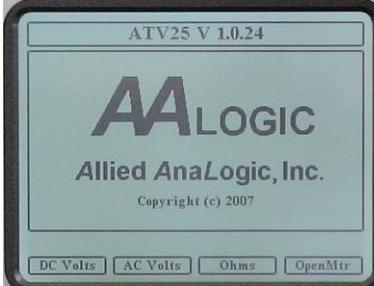
14.   Support

Support for the ATV-25 is available from the local representative or directly from the factory.

The manufacturer can be contacted by email at AALogic.Help@aalogic.com or by phone at (817) 599-0272 during normal business hours of 9am to 5pm Central time, Monday through Friday.

Current operating system, product documentation, and support documentation is available online at www.AALogic.com.

15.   Warranty

The ATV-25 is warranted against defects in materials and workmanship for a period of one year from the date of purchase. Contact your local sales representative or the manufacturer for a Return Authorization (RA) number and instructions on returning the product for service. Products cannot be processed unless accompanied by an RA number.

The user is responsible for determining the applicability of the product for any application. The manufacturer is not responsible for any damages, direct or consequential, resulting from the use of its products. Users are required to follow all work safety procedures when using this product.

Damages due to impact, battery failure, flooding, or normal wear are excluded.

The manufacturer will determine, exclusively at its own discretion, where repairs or replacement of the product is required for any warranty claim. In no case will the liability of the manufacturer exceed the original purchase price of the product.

16. Appendix A Quick Reference

The following table provides the key press sequence to access the functions of the ATV-25.

Function	Key Presses
AC Voltmeter	**<IDLE> + [F2] –** Press **[7]** for additional sensitivity and readings in dB
Assigned Number Retrieval, Caller ANAC	Automatic: **[TEST] + UserA/UserB/ UserC + [F2] Setup** Manual: **[TEST] + [F2] Manual +** select **Number Retrieval (ANAC)**
Assigned Number Retrieval, Caller ID	Automatic: **[TEST] + User Test A/User Test B/ User Test C + [F2] Setup** Manual: **[TEST] + [Manual] + [F1] Next +** select **Number Retrieval (CID)**
Automatic Test	**[TEST] –** Select one of the three standard test or the three User tests.
Automatic Test and Save Results	**[TEST] –** Select one of the six automatic tests and save at the end of the test. Only automatic test results can be saved.
Automatic Test Using PR0 Cord	**[Test] +** select any automatic test + **[F4] PR0 Mode**
Central Offices, Configure	**[CFG] + [F2] CO** – four CO configurations are available
Change Display Backlight	**<IDLE> +** Backlight use **[4] Decrease or [6] Increase or [CFG] + [F1] System + [F3] Display**
Change Display Contrast	**<IDLE> +** Contrast use **[2] Increase or [8] Decrease or [CFG] + [F1] System + [F3] Display**
Change Volume Settings	**[3] V+ or [9] V-** for function using the speaker or **[CFG] + [F1] System + [F4] Volume**
Charge ATV-25	Connect a 12VDC source to the Power connector on the left side of the ATV-25. The source may be a vehicle power cord, the provided charger adapter, or other suitable source. Note: The charger should not be used during noise measurements.
Connect to PC	Connect the USB connector on the left side of the ATV-25 to a USB cable connected to a PC running ATV Tools. No key presses are required.
Convert Resistance (Ohms) to Feet	**<IDLE> + [F3] Ohms + [1] More + [F2] Distance** – Press **[F3] Gauge** to change the wire gauge
DC Voltmeter	**<IDLE> + [F1] DC Volts**
Delete Test Results	**[RCL] +** select test result to delete + **[F3] Delete**
Idle Screen -- <IDLE>	**[CLR]** or **[PWR]** off + **[PWR]** on
Load Coil Detection	Automatic: **[TEST] + UserA/UserB/ UserC + [F2] Setup** Manual: **[TEST] + [F2] Manual +** select **Load Coil Detection**
Locations, Configure	**[CFG] + [F3] Locations –** 30 Location entries are available
Loop Current Test (POTS)	Automatic: **[TEST] + UserA/UserB/ UserC + [F2] Setup** Manual: **[TEST] + [F2] Manual +** select **Loop Current**
Loss, POTS	Automatic: **[TEST] + UserA/UserB/ UserC + [F2] Setup**

Function	Key Presses
	Manual: **[TEST] + [F2] Manual +** select **POTS Loss**
Manual Test on a Single Pair Without saving the results.	**[TEST] + [F2] Manual** – select a test, select a pair, and start the test.
Monitor Data Line	**[CALL] + [F2] DSL**
Monitor Voice Line (Butt Set Mode)	**[CALL] + [F1] Voice**
Noise, POTS	Automatic: **[TEST] + UserA/UserB/ UserC + [F2] Setup** Manual: **[TEST] + [F2] Manual +** select **POTS Noise**
Noise, Vacant Pairs	Automatic: **[TEST] + UserA/UserB/ UserC + [F2] Setup** Manual: **[TEST] + [F2] Manual +** select **Noise (Vacants)**
Ohmmeter (Resistance)	**<IDLE> + [F3] Ohms**
Open Meter (Capacitive Distance)	**<IDLE> + [F4] OpenMtr**
Pair Tagging, ATV-25 to ATV R/T	**[RMT] +** select Groups **+ [F1] Start**
Pair Tagging, ATV-25 to ATV-25	**[TONE] + [F2] Tagging** – This feature allows tagging between two or more ATV-25 s
Rapid Pair Automatic Test	**[TEST]** – Select **Rapid**
Recall Saved Test Results	**<IDLE> + [RCL] +** select the results to recall
Reference Pairs, Configure	**[CFG] + [1] More + [F1] Ref Pair** – four Reference Pair configurations are available
Remote Tone, ATV R/T	**[RMT] + [F1] Start + [F2] RmtTone**
Set Date/Time	**[CFG] + [F1] System + [F3] DateTime**
Set Test Limits	**[Test]** + select any automatic test + **[F3] Limits**
Special Circuit Id, T1, HDSL, xDSL	Automatic: **[TEST] + UserA/UserB/ UserC + [F2] Setup** Manual: **[TEST] + [F2] Manual** + select **Special Ckt ID (DSL/T1)**
Spectral Plot	Automatic: **[TEST] + UserA/UserB/ UserC + [F2] Setup** Manual: **[TEST] + [F2] Manual** + select + **Spectral Plot**
Talk/Wait Circuit	**[CALL] + [F3] TalkPr,** toggles the talk circuit on or off
Tone, Send ID Tone, 577Hz or 1004Hz	**[TONE] + [F1] ID Tone**
Users, Configure	**[CFG] + [F4] User** – four User configurations are available
Vacant Pair Automatic Test	**[TEST]** – Select **Vacant**
Working Pair Automatic Test	**[TEST]** – Select **Working**

17. Appendix: ATV-25 Firmware Update Overview

This document shows the steps to update an ATV-25 test set. The versions used in this example may change in future releases but the steps are the same.

You can use an existing version of ATV Tools or update to the latest version. To update your ATV Tools, first uninstall your current version.

17.1 Uninstall ATV-25 Tools (Optional)

Previous installations of ATV Tools must be uninstalled before a new version can be installed. Go to Start > All Programs > Allied Analogic and look for any versions of ATV Tools. Click on ATV Tools and then click the uninstall option as shown below.
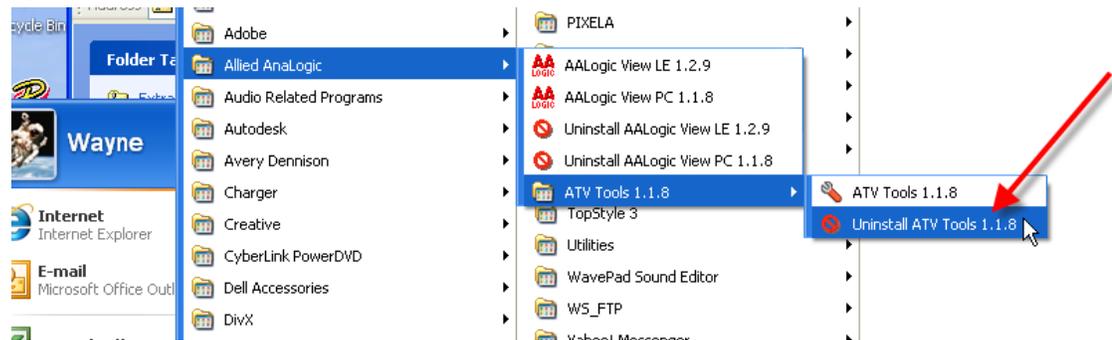
Click Yes when the confirmation dialog is displayed. The computer will now uninstall the existing program. You will not be prompted but it is a good idea to restart the computer when the uninstall is complete.
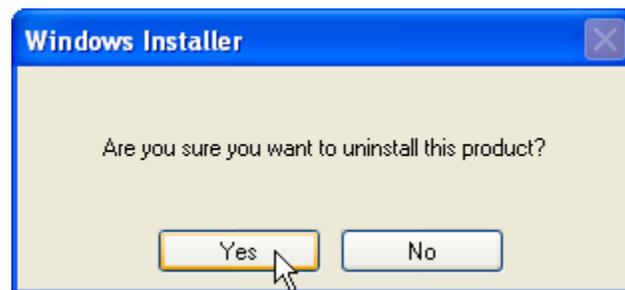
17.2 Downloading the Latest ATV-25 Tools

Download the latest version of ATV Tools from the Download page at http://www.aalogic.com .
Click the Download page button after the homepage is loaded.
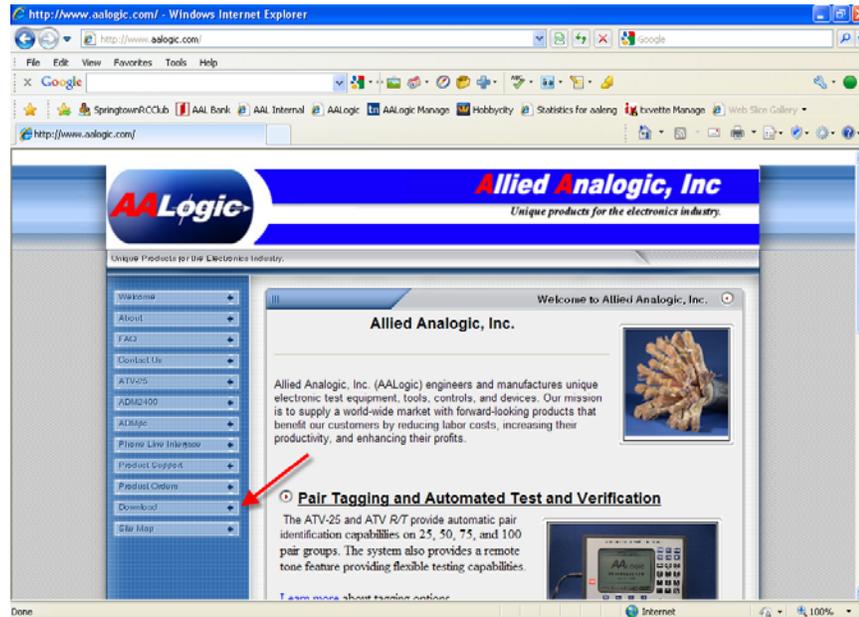
The Download page lists all the options available for our products. Scroll down the page and locate
the latest version of ATV Tools, Version 1.1.9 Beta in this example.
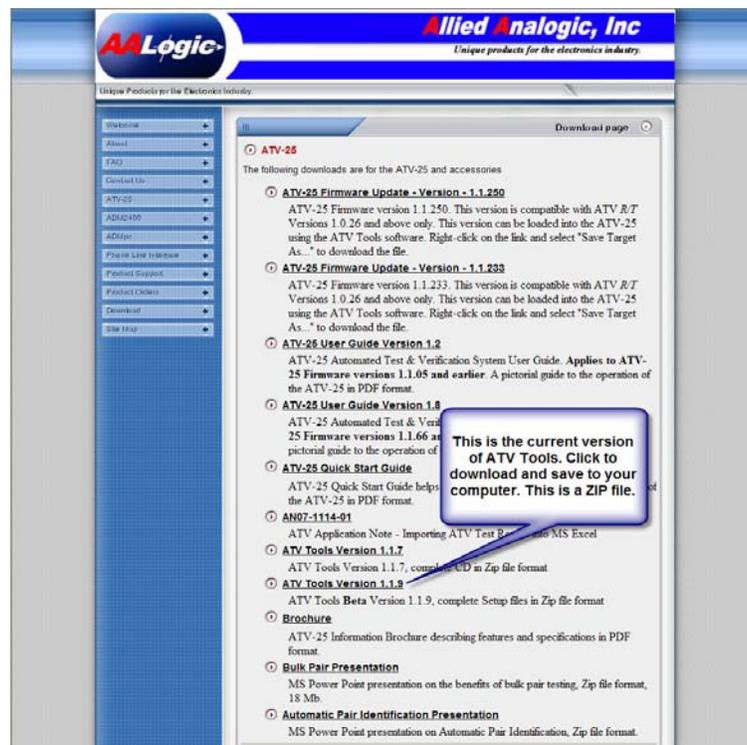
Click on the link and then click open. It is not necessary to save the file to your computer but you
may if you prefer.
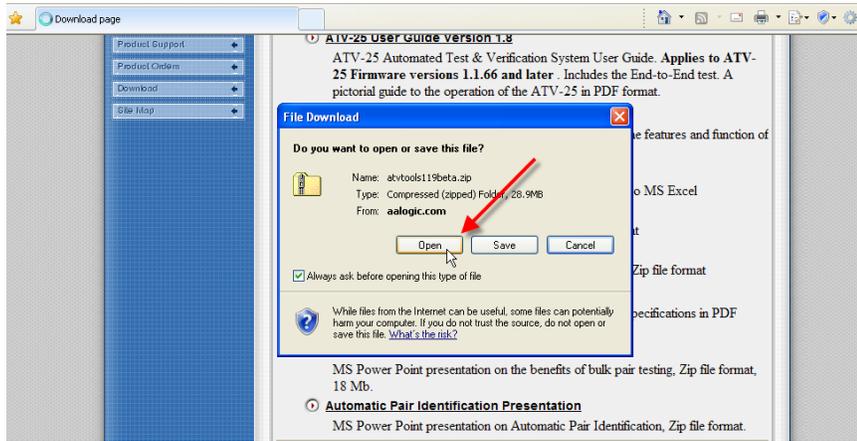
Wait for the link to open. Click on the Setup.exe file to start the installation process.
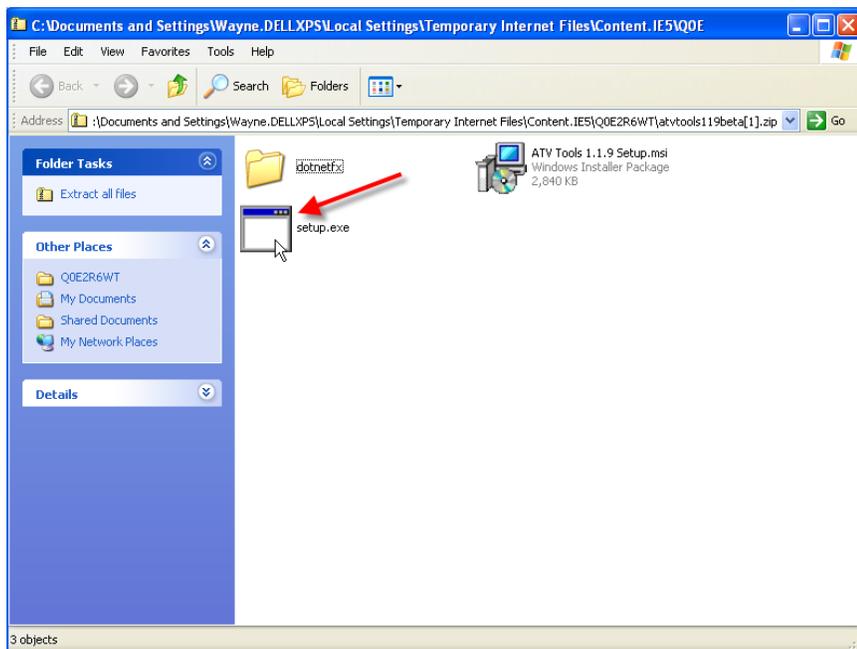
A download security warning may be displayed. Click Run to continue.
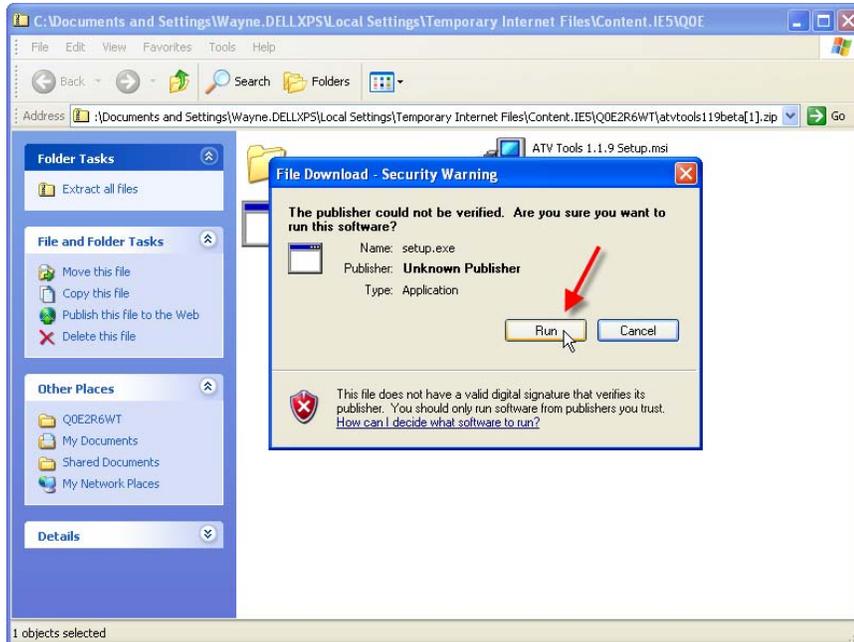
The installer program will start. You may not have removed a previous version if you see an error message. Click Next to continue the installation.
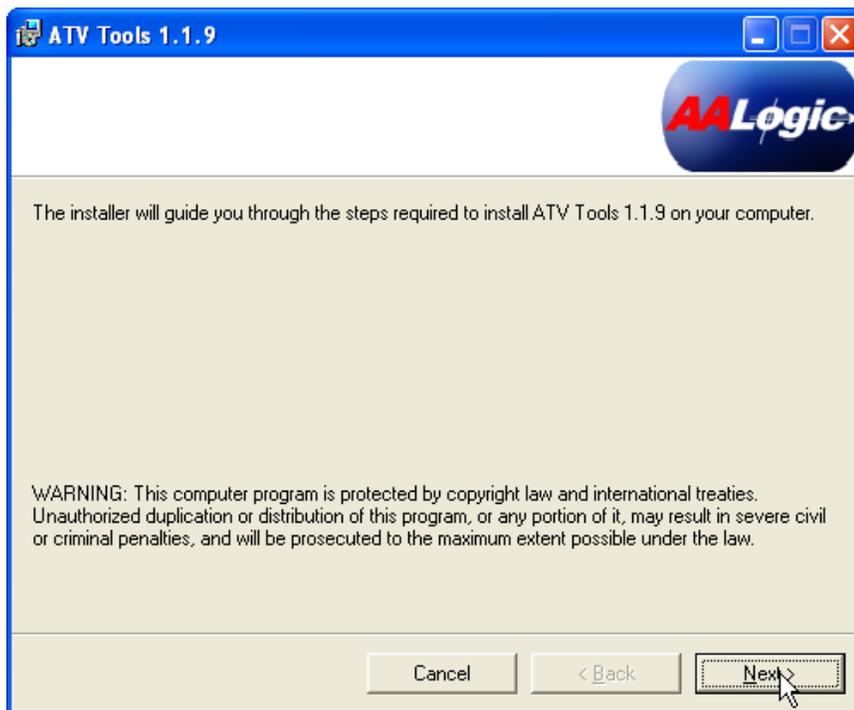
Select a location to install ATV Tools. We recommend using the default location as that is helpful should you need additional support. Click the Everyone option to ensure anyone using the computer will also be able to use ATV Tools.
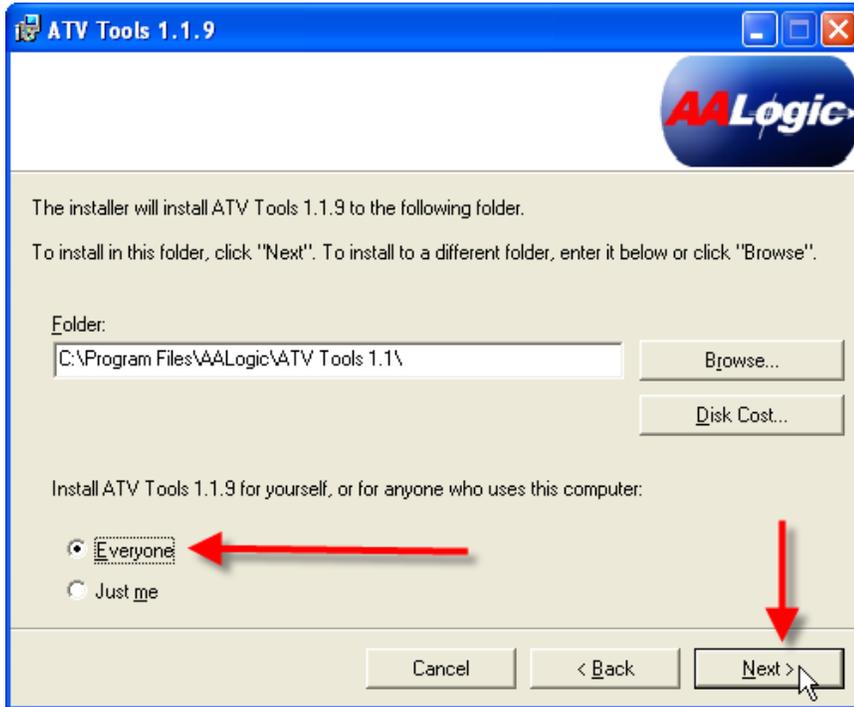
You may see a security warning. Click RUN to continue.
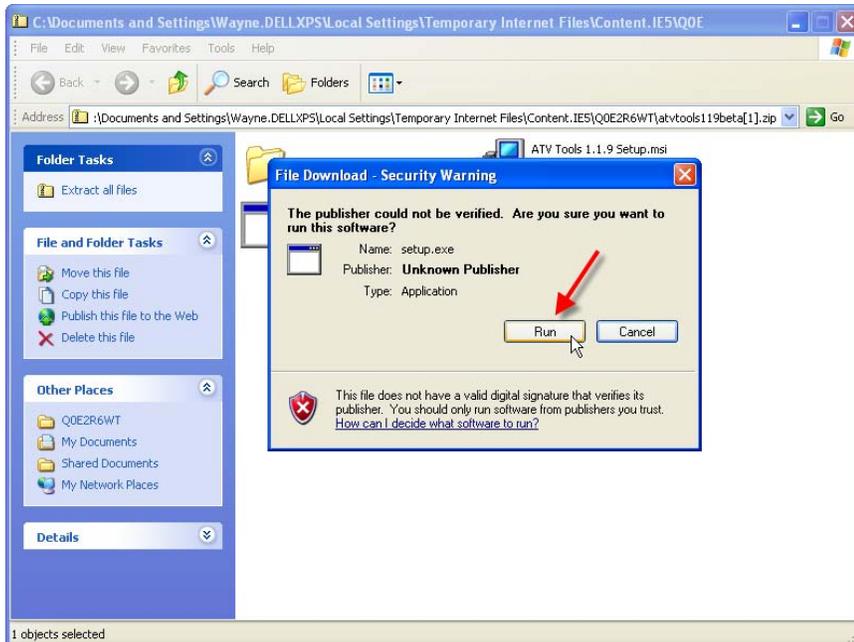
The installer is now ready to complete the installation. Click Next to Continue.
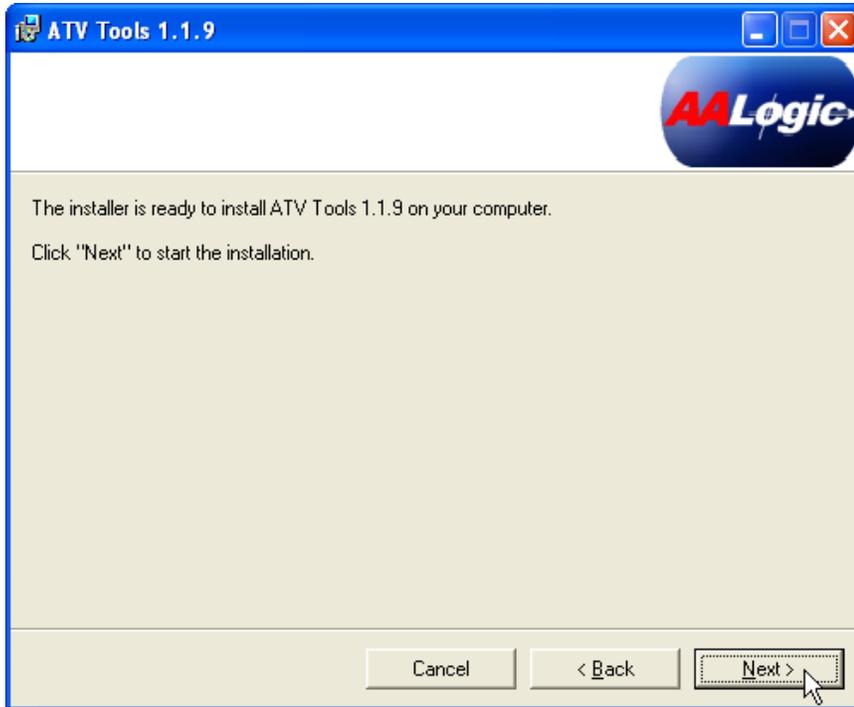
This installation will be completed and you will see an Installation Complete dialog. Click Close to finish the installation.
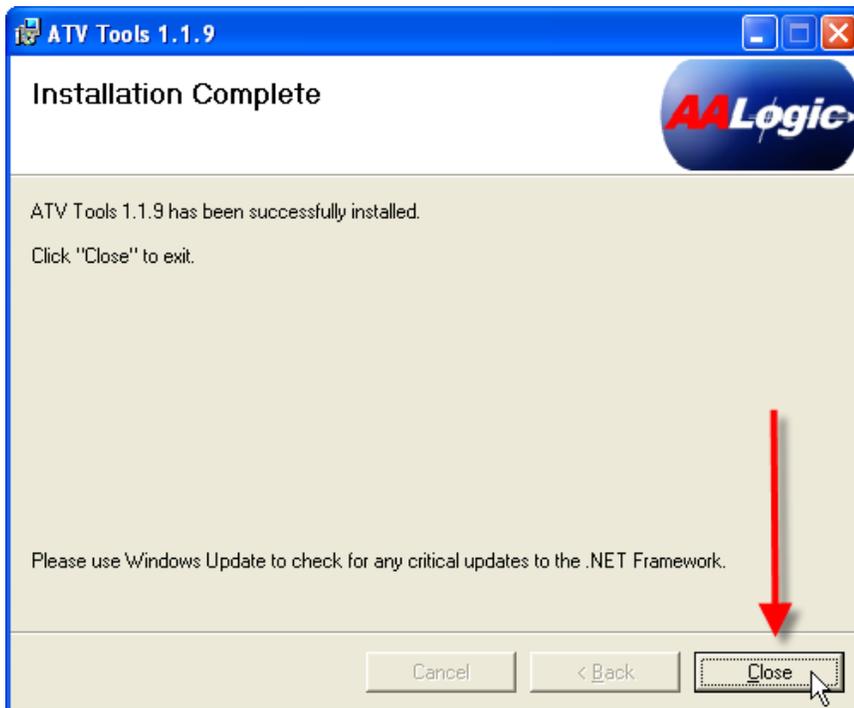
Your desktop will now have an ATV Tools Icon like the one in this picture.

17.3 ATV-25 Firmware File

The ATV-25 firmware update file can be downloaded from the Download page of the AALogic website or may be emailed to you. The file will have a .MOT file extension. The figure below shows the ATV-25 Update file for version 1.1.250. You must right-click and click Save As… to save the update file to a convenient location on your computer. We suggest you save it to the Desktop for convenience.
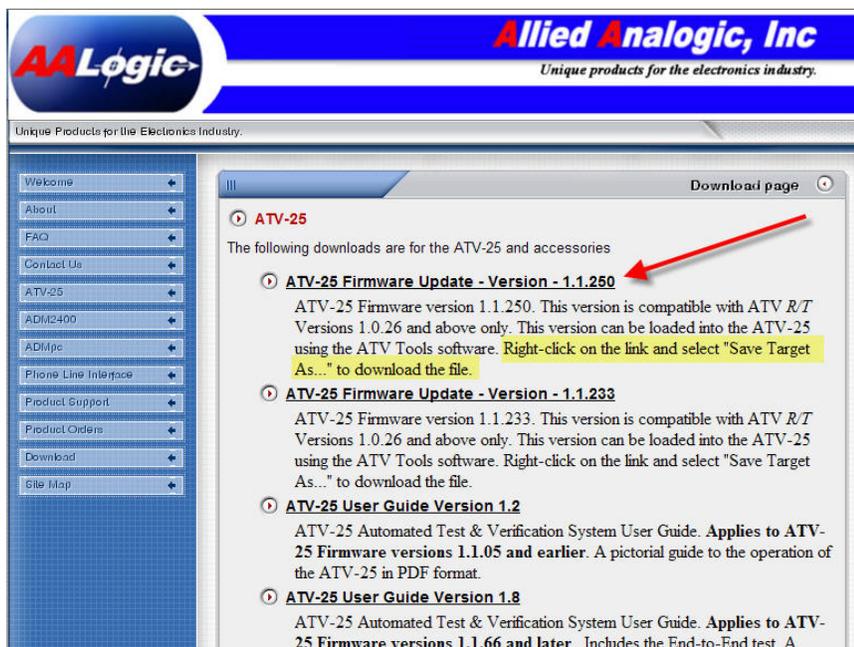
17.4 ATV-25 Firmware Update – ATV Tools Steps

17.4.1   Starting ATV Tools

Click the ATV Tools Icon to start the program. You can also go to Start > All Programs > Allied Analogic and select the program from there.

The ATV Tools program will load and display the main screen. The ATV-25 should not be connected at this time and the status will indicate Disconnected.

The connection status of the ATV-25 is initially Disconnected.
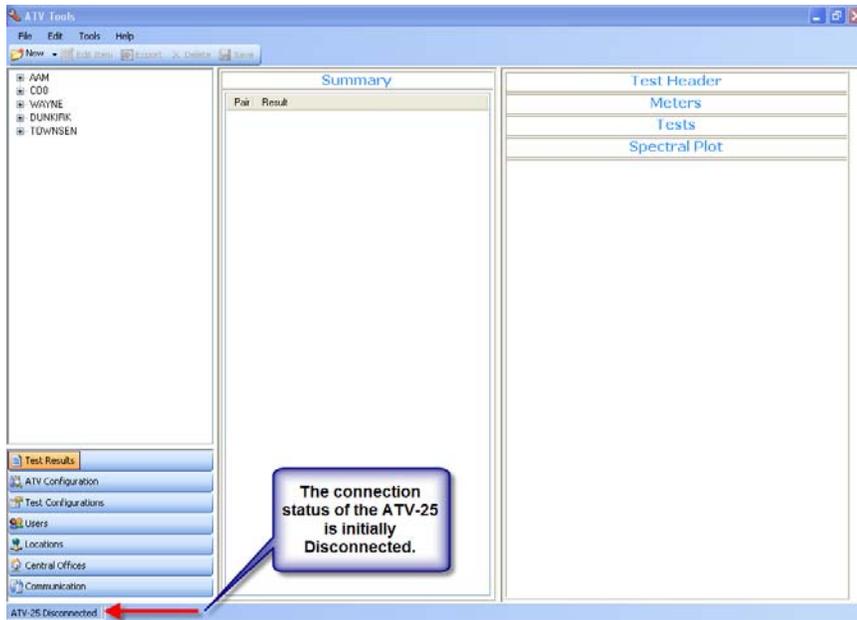
17.4.2   Connecting to the ATV-25

Click the Communication button to see the Communication screen.
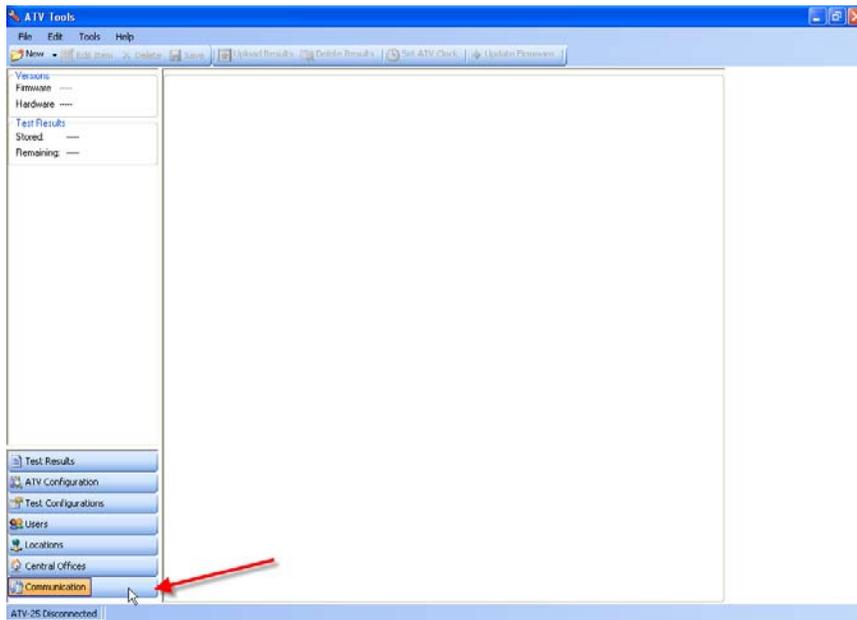
Turn on the power for the ATV-25 to be updated. Connect the power supply if needed. The ATV-25 displays the idle screen. It is not necessary to press any buttons on the ATV-25.
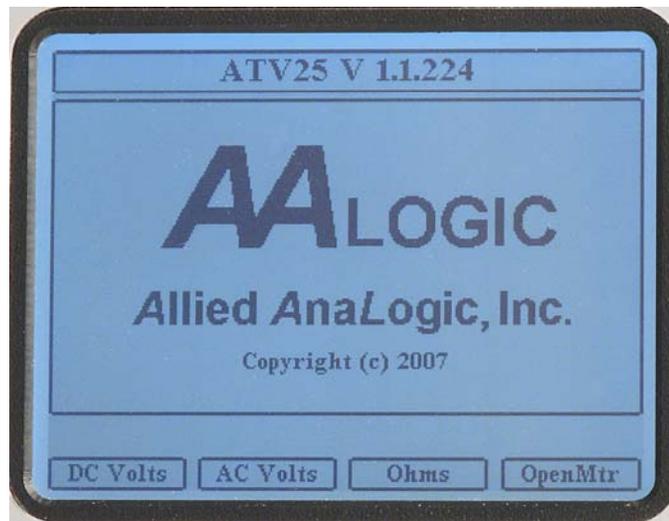

Connect a USB A-B cable from the PC to the ATV-25. A cable was provided with the ATV-25 for your convenience.


The ATV-25 automatically detects the USB connection and displays the USB Remote Mode Screen. The ATV Tools program will automatically connect to the ATV-25 and display the version and serial number. It will also display the Update Firmware button on the tool bar.

## 17.4.3   Updating the Firmware

Click on the Update Firmware button on the toolbar. The Open file dialog is displayed. Navigate to the MOT file you received in email or downloaded from the website. The Desktop is used in this example. Click on the file, ATV25v11250.mot in this example, and click Open.
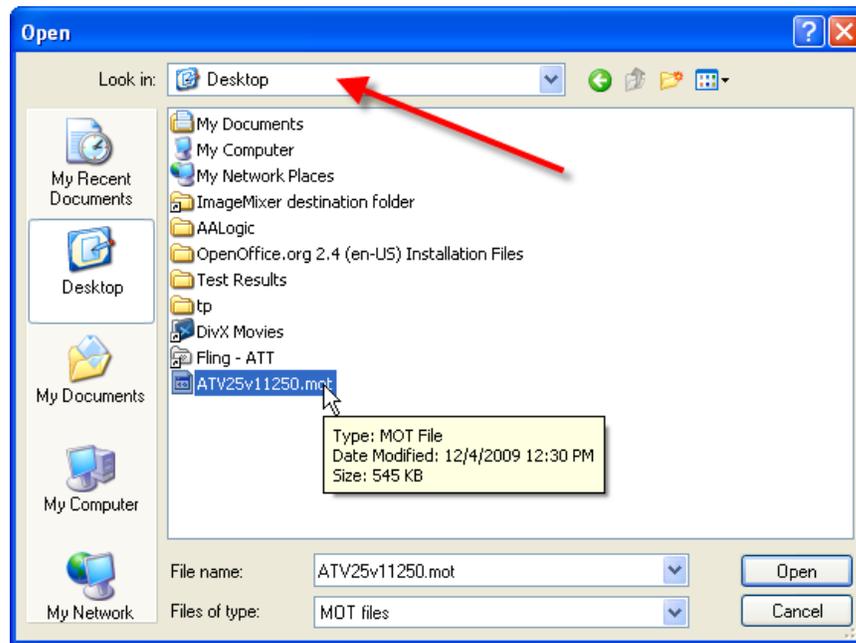

The Upgrade Confirmation dialog is displayed. It shows the current version and the new version. Click OK to continue the update.
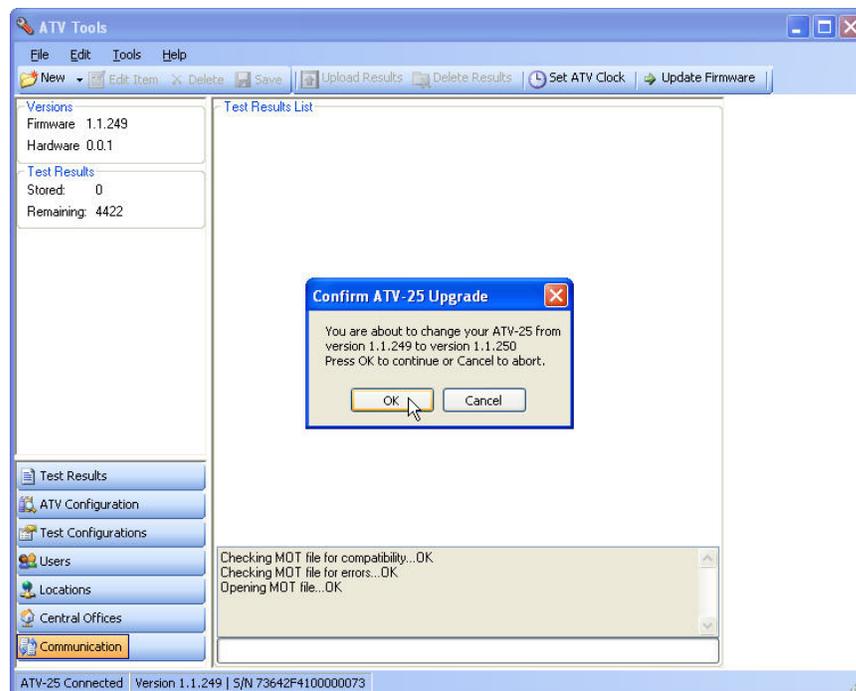
ATV Tools will communicate with the ATV-25 and update the firmware. Progress messages are displayed. The ATV-25 will reset at the end of the process. This is normal.
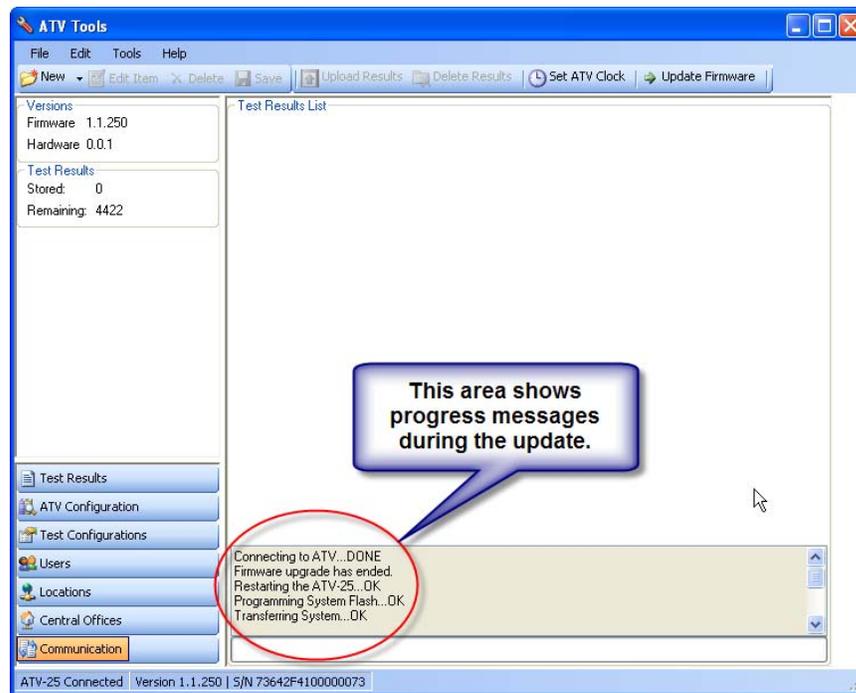
The new firmware version is now displayed in the ATV Tools program. A problem occurred if the version number does not match the new version and the update must be repeated.
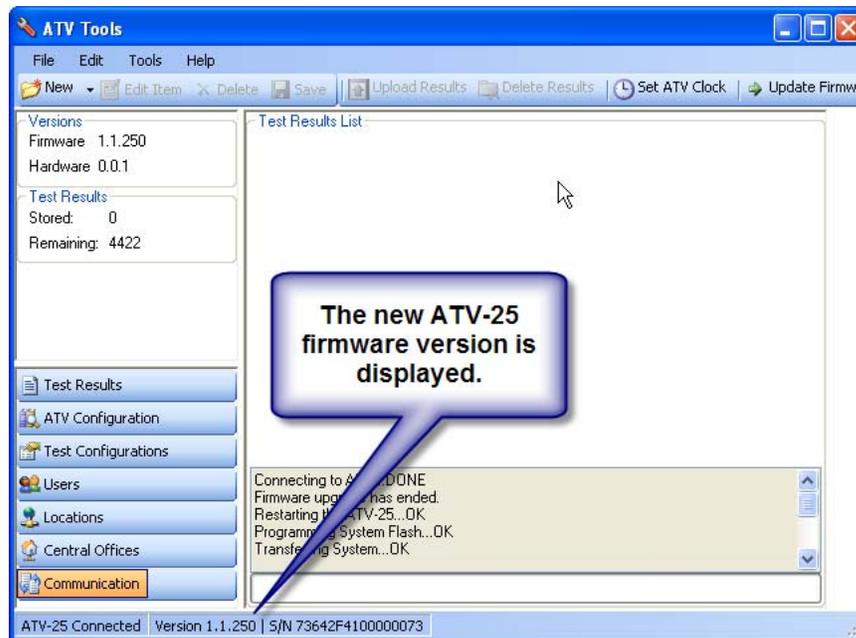
Unplug the USB cord from the ATV-25. The ATV-25 will reset and display the idle screen. The current firmware version is displayed at the top of the screen. This must match the version that was just loaded. Repeat the update if the version number is incorrect.
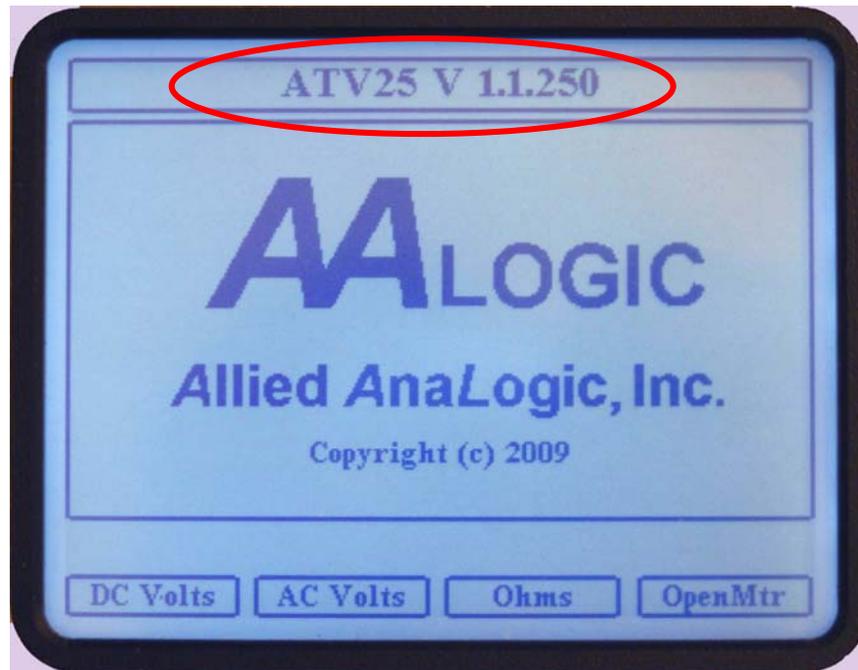
This completes the firmware update.