
Automated Test & Verification System

ATV Remote Tagger - *R/T*

User Guide

Version 2.5.1



Allied Analogic, Inc

Allied Analogic, Inc.
132 Redtail Ct.
Weatherford, TX 76088
(817) 599-0272
www.AALogic.com

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Table of Contents

1. Overview	1
2. Document Conventions	2
3. Specifications	2
4. Glossary of Terms	2
5. Getting Started	3
5.1 Cords	3
5.2 Maintenance	4
5.2.1 Calibration.....	4
5.2.2 Repairs.....	4
5.2.3 Replacement Parts and Accessories.....	4
6. General Testing Information	4
6.1 Test Connections	4
6.2 Ground Connection	5
7. ATV R/T Setup	6
7.1 Remote Location	6
7.2 ATV R/T Setup	7
8. ATV-25 Setup	11
8.1 Field Operation	11
9. Automatic Pair Identification — Tagging Operation	14
9.1 Tagging Steps	14
9.2 Scan Mode	16
9.3 Openmeter	17
10. Remote Tone Operation	17
10.1 Remote Tone Steps	17
10.1.1 Send Tone.....	17
10.1.2 Verify Pair Test.....	21
10.2 Openmeter	22
11. Pair Identification Tips	23
11.1 Filtered Tone Probes	23
11.2 Tone Probe Headset	23
11.3 Bonds and Grounds	23
11.4 Working pairs	24
11.5 Cross-Coupled Tone	24
11.6 Using One of the Pairs as the Communication Pair – Tagging	24
12. Troubleshooting	25

12.1	Searching for Remote Message	25
12.2	Multiple Pairs Found When Tagging.....	26
12.3	No Pairs are Found Using the Tagger Function	26
12.4	Remote Tone is Not Present or Very Low	26
13.	<i>Support</i>	27
14.	<i>Warranty</i>.....	27

1. Overview

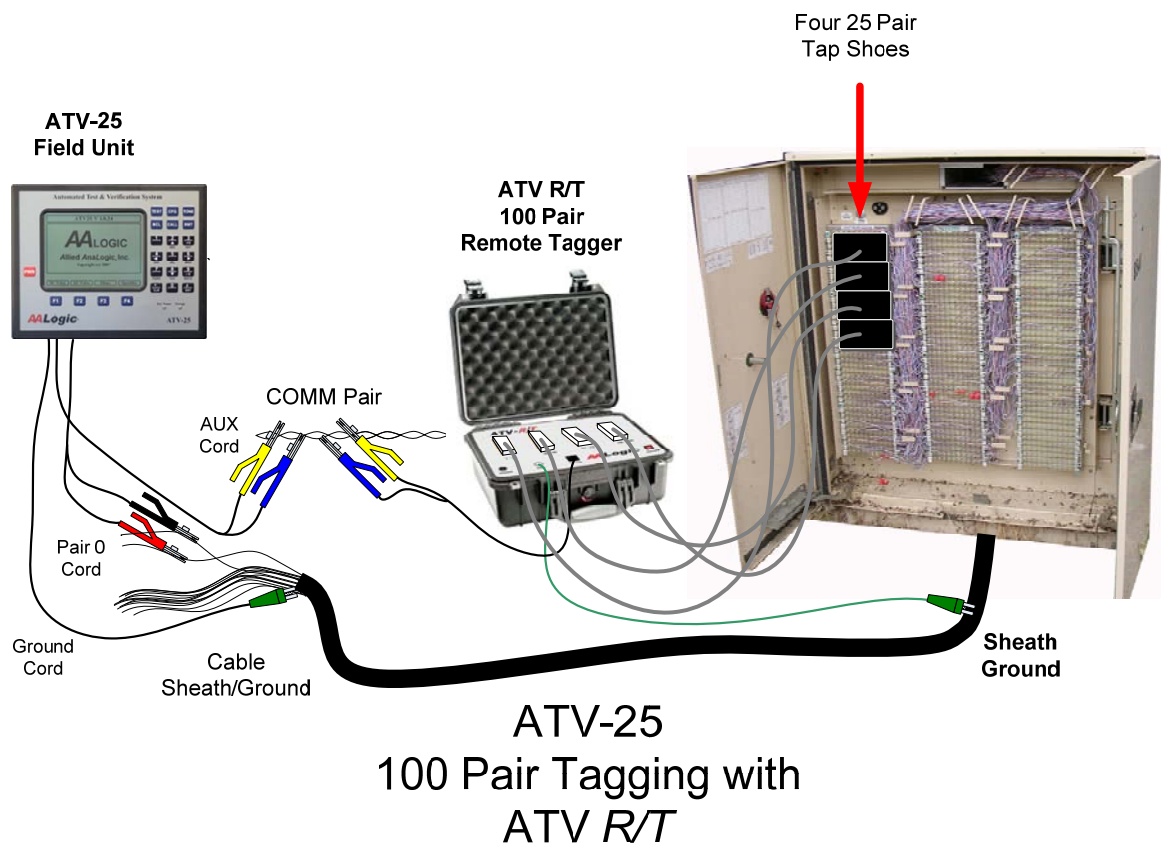
The ATV R/T is a remote tagging unit. The ATV R/T works with the ATV-25 test set to automatically identify pairs or send tone remotely. The system is capable of searching and identifying 25, 50, 75 or 100 cable pairs.

The ATV R/T connects to the pairs to be identified at a central office, cross box, modular splice, or another location where the pairs can be accessed using modular connectors or front-tap shoes. This is called the remote location. The ATV-25 is used at the site where the identity of the pairs is unknown. This is called the local location. The ATV-25 and the ATV R/T can both be at the same location for tagging a half-tap section.

The ATV-25 and the ATV R/T use a vacant pair to communicate with each other using internal modems. The AUX cords of the ATV-25 and the ATV R/T are connected to the communication pair. The ground cords of the ATV-25 and the ATV R/T must be connected to the cable sheath/ground and there must be sheath/ground continuity between the ATV-25 and the ATV R/T for proper operation.

The ATV R/T can operate in tagging mode (automatic pair identification) or in remote tone mode when tagging is not possible or desirable.

A typical connection is shown in the figure below.



2. Document Conventions

The following conventions are used in this document.

- ① Useful Tips
- ☑ Important checkpoints

3. Specifications

Dimensions:

Length	13”
Width	16.5”
Height	6.7”

Weight 12 lbs

Power Supply 12VDC @ 1.3A minimum

4. Glossary of Terms

The following terms describe the ATV R/T or 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 Power Adapter	The AC to 12VDC power adapter provided with the ATV-25 R/T. The power adapter is interchangeable with the power adapter for the ATV-25.
Aux Pair Cord	The cord has yellow and blue clips and a blue connector boot. This cord is connected to the vacant pair for communications with the ATV-25.
Cinch Connector	The four 25 pair (50 pin) connectors on the ATV R/T for connecting tap shoes.
Ground Cord	The cord connected to the ATV R/T and the cable sheath/ground. This cord must be connected for all operations. Care should be taken to ensure that the sheath/cable ground and the ground cord are properly connected. Always check the ground immediately if unexpected results are obtained.
Power Connector	The power connector is on the ATV R/T. The provided power adapter or other 12VDC source must be connected to the ATV R/T.
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 usually has one or more 25 pair (50 pin) Chinch connector(s) on one end and a custom connector on the other the connection to the cable pairs.
Vacant	A non-working, capacitively balanced pair with 30 or more feet of cable.

5. Getting Started

5.1 Cords

The following cords are provided with the ATV R/T.

Cord	Description
	<p>AUX cord – Used for Tagging and Caller ID Assigned Number Retrieval.</p>
	<p>PRO Access Cord – This cord is used on the ATV-25 for pair tagging and other testing operations with the ATV R/T. It is included with the ATV R/T accessories. The user should take this cord to the field location when using the ATV-25 and ATV R/T system.</p>
	<p>AC Power Cord – this charger supplies 12VDC at 1.3A to the ATV R/T. Other external, well regulated, 12VDC sources with the correct plug may be used. The plug is a 2.5 mm barrel connector with the center connector positive (+). External sources should be capable of 1A continuous current. Other 12VDC power sources may also be used. The connector polarity can be center positive or negative.</p>

Cord	Description
	<p>Ground cord – This must be connected to cable sheath /ground. The ground cord may have a banana connector or the round connector shown.</p>

5.2 Maintenance

The ATV R/T may be cleaned with a damp cloth and mild cleaner such as a window cleaner or alcohol wipes. The ATV R/T is only water resistant with the lid closed and latched. Avoid exposing the ATV R/T to rain or other sources of water and contamination when the lid is open. The ATV R/T can be placed inside a plastic bag when there is a possibility of it getting wet.

5.2.1 Calibration

The ATV R/T does not require periodic calibration.

5.2.2 Repairs

The ATV R/T must be returned to the manufacturer for repairs. Contact the sales representative or Allied Analogic, Inc. directly to obtain a Return Authorization code.

5.2.3 Replacement Parts and Accessories

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

6. General Testing Information

The following general information applies to all testing with the ATV R/T and ATV-25. Observe safety precautions at all times.

6.1 Test Connections

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

Inspect the test cords for damaged conductors, bent or broken needles, or damaged RJ45 connectors. Replacement cords may be ordered from the representative or the manufacturer.

A 25 pair connection is typically made by using a tap shoe or a bridging module. The ATV R/T supports one to four 25 pair connections using cinch type connectors.

Tap shoe Connected to a Block



Cinch Connector Connects to the ATV R/T



The 25 pair cinch cables are used to connect to central office frames, cross connect boxes, or modular bridge connectors. These cables usually vary from region to region. The cinch connector is commonly used for the test set connection. Cables are available from various vendors that are specific to the deployed equipment.

6.2 Ground Connection

All tests require good ground/sheath continuity for correct results. Care must 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.

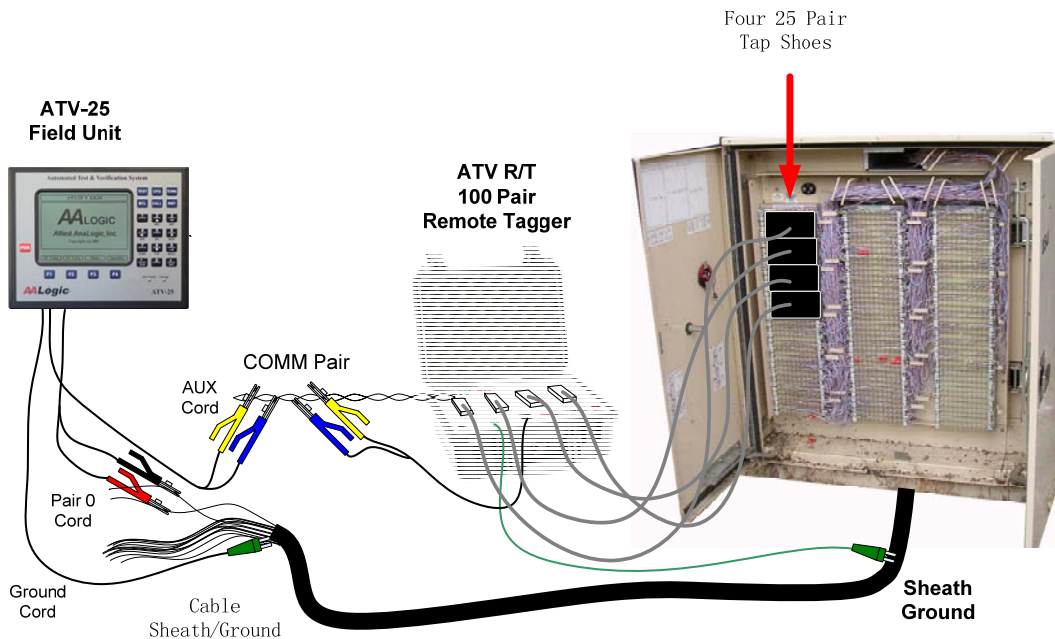
☑ Bonding vacant pairs to the sheath can improve the ground conditions when the sheath integrity is poor.

Always conduct preliminary tests to ensure the ground connection is satisfactory before starting tagging or remote tone by following the steps in this guide. The effects of poor ground and/or poor bonding include:

- Pairs not found
- Multiple pairs found
- High values of power influence noise
- Erratic or incorrect open distance readings, especially tip to ground and ring to ground
- Incorrect DC voltage measurements

7. ATV R/T Setup

The figure below shows a typical setup for automatic pair identification/tagging or remote tone using the ATV-25 and the ATV R/T.



ATV-RT Setup
Tagging or Remote Tone



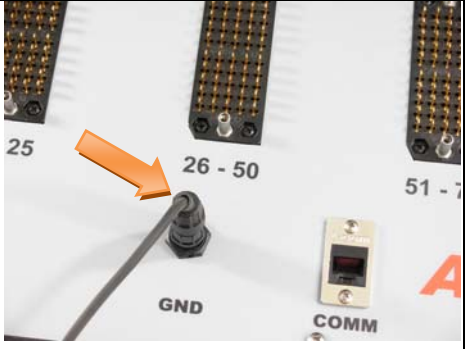
7.1 Remote Location

Determine the remote location. The remote location should meet these criteria:

1. Cables that connect from the cable pairs to the Cinch-25 connectors must be available.
2. Pairs can be accessed using tap shoes or bridging modules. The ATV-25 and ATV R/T support searching 25 pairs, 50 pairs, 75 pairs, or 100 pairs or sending tone on any of 100 pairs.
3. Access to ground and/or sheath is available. The sheath and ground bond should be confirmed for best results.
4. Access to 110Vac power or alternate DC power for the ATV R/T.

7.2 ATV R/T Setup

The following steps are used to connect the ATV R/T for remote tagging. Locate the ATV R/T so that it is within reach of the tap shoes and the power source.

<p>1. Connect the power source. The power source cord may be secured to the case to prevent accidental removal. The ATV R/T includes an ac power supply. The power supplies for the ATV-25 and ATV R/T are interchangeable.</p> <p>An alternative 12VDC power source can also be used if one is available.</p>	
<p>2. Turn the ATV R/T on. Ensure the power indicator light is on. This is a mechanical switch. The ATV R/T will remain in the on position if the power is temporarily interrupted.</p>	
<p>3. Connect the ground cord. A good ground/sheath connection is essential.</p>	

4. Identify the communication pair. The communication pair should be a non-working, balanced pair that is long enough to reach the field test location. The communication pair should not be in the count of the pairs when tagging will be used. The ATV-25 may be used to test the communication pair. **☑ Refer to 11.6 for information on using a pair within the count as the communication pair.**

- a. Connect the blue AUX cord to the red PRO connector on the ATV-25. This step will allow testing of the communication pair and verify the cord and the connection of the clips to the pair.



- b. Ensure the ATV-25 ground cord is connected to the same point used for the ATV R/T. This ensures the testing for the communication pair also verifies the ground connection on the ATV R/T is good.

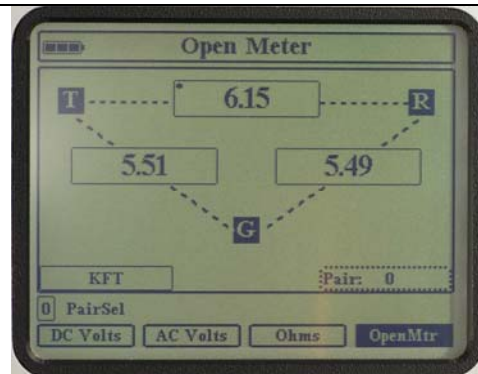
- c. Turn on the ATV-25, select pair 0, and use the [F4]OpenMtr to locate a vacant, balanced pair that goes to the field test site.

The pair measurement should be at least long enough to reach the field work site. The Tip to Ground and Ring to Ground readings should be approximately the same. Variances of 500 feet or more may indicate an open on one side of the pair.

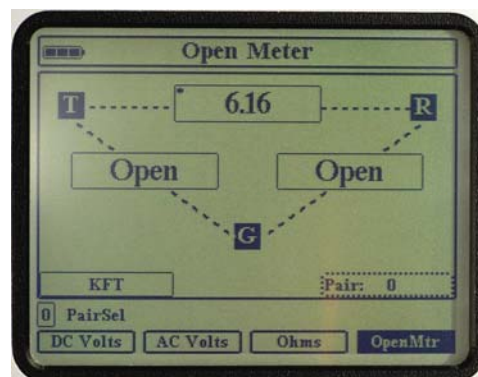
The Tip to Ground and Ring to Ground readings are typically not shorter than the Tip to Ring by more than 15%. Variances more than 15% may indicate a ground/bond problem.

The pair may be split if the Tip to Ring length is shorter than the Tip to Ground and Ring to Ground readings. This applies when the Tip to Ground and Ring to Ground readings are balanced.

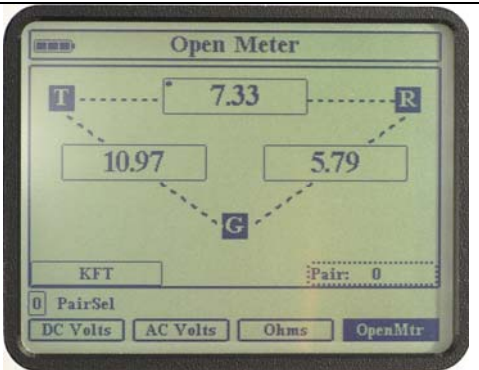
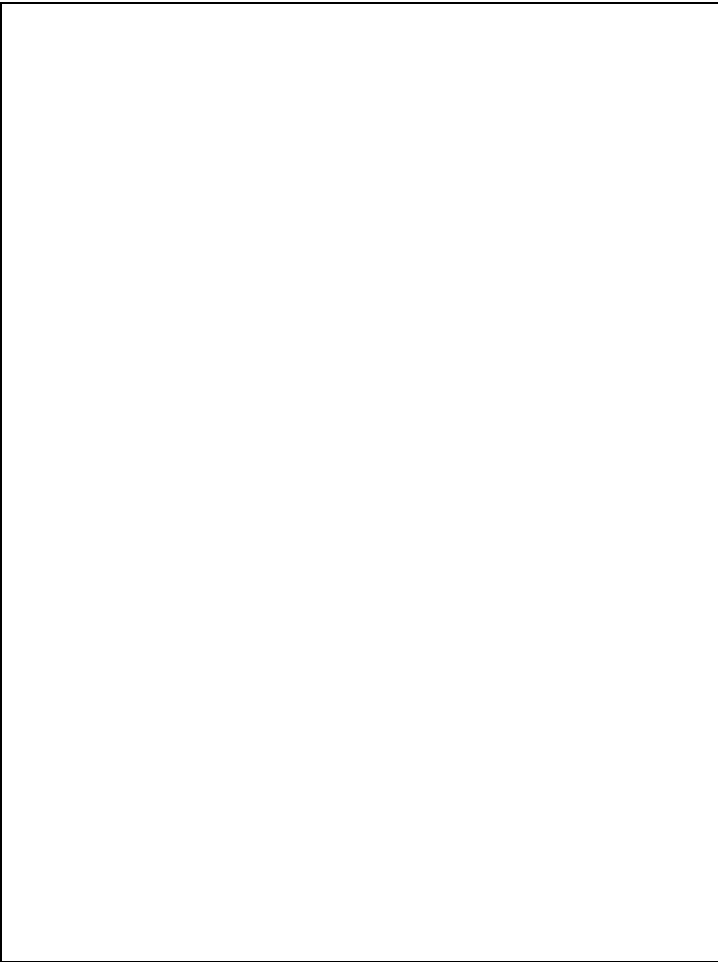
Any voltage or resistance readings using the OpenMtr indicate an unacceptable pair.



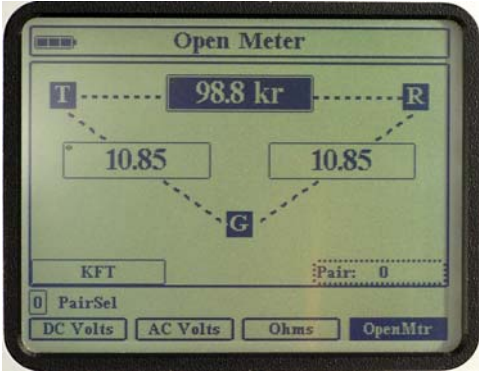
The example above shows a balanced pair that is 6,150 feet long.



The example above indicates a missing ground connection.

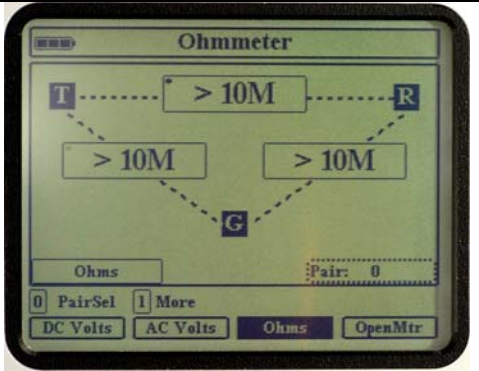


The example above shows an open on the Ring side. This is an unbalanced pair.

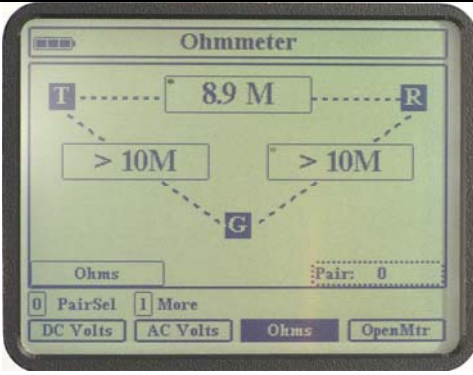
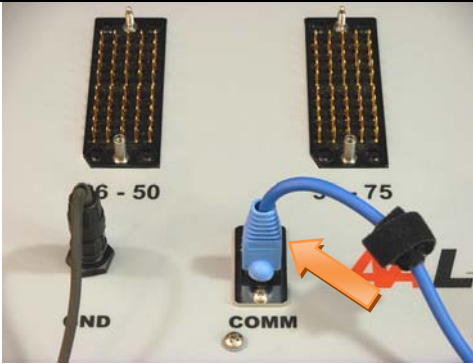
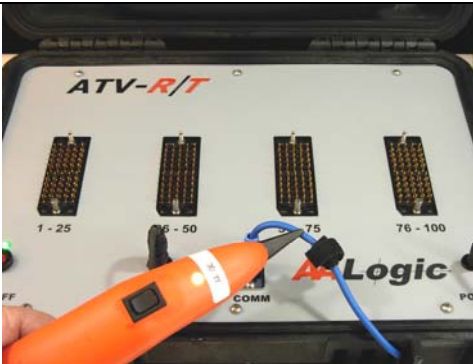



This example above shows a 98.8 KΩ short

d. Use the [F3]Ohms to check for resistive faults TR, TG, or RG. The communication pair should not have resistive faults less than 1M.



The example above indicates no grounds or shorts less than 10MΩ.

	 <p>The example above indicates an 8.9MΩ short on the pair.</p>
<p>e. Unplug the AUX cord from the ATV-25 PRO jack and connect it to the COMM connector on the ATV R/T.</p> <p>The communication pair, the AUX cord, the connection of the clips to the communication pair, and the ground connection have been tested.</p> <p>Do not move the AUX cord clips or ground connections.</p>	
<p>f. Use an amplifier probe and verify that the ATV R/T is sending 577Hz, simplex tone on the pair. This is an automatic feature to allow the technician to locate the communication pair at the field location.</p>	
<p>g. Disconnect the ATV-25 and turn it off.</p>	
<p>h. Connect the tap shoes to the ATV R/T and the cable pairs. One to four tap shoes may be connected at the same time. The number of shoes is selected in paragraph 8.1 below.</p> <p>Tap shoes for missing or damaged connections on each end. Defective tap shoes will look like a pair defect from the field location.</p>	

Setup of the ATV R/T is complete. This procedure ensures the AUX cord is good, the clips are connected to the communication pair properly, there is good ground, the pair is a suitable pair without faults, and the ATV R/T is operating properly.

The ATV R/T cords include a PR0 pair access cord with a pair clip which is useful in tagging operations at the field location. Refer to paragraph 5.1 above.

The ATV R/T is now ready for tagging and remote tone operations. The ATV R/T sends 577Hz, simplex tone on the communication pair to aid in locating the pair at the field test site. The ATV R/T will also start sending tone if the communication between the ATV-25 and ATV R/T is interrupted.

① The tap shoe connection(s) will have to be changed after the currently connected pairs have been identified. There is no need to move the communication pair.

☑ **The ground cord may need to be moved when moving the tap shoes from one cable to another to maintain ground continuity between the remote and local locations.**

☑ **Vacant pairs maybe tied to ground/sheath at the remote and local locations to improve the ground continuity.**

8. ATV-25 Setup

8.1 Field Operation

Follow these steps to setup the ATV-25 at the field test site.

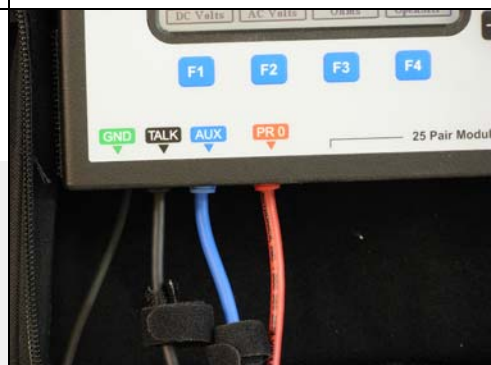
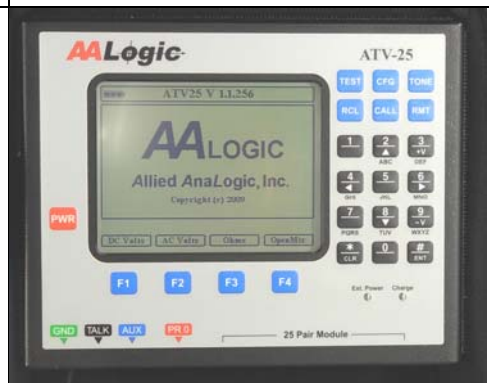
a. Connect the ATV-25 to the cable sheath/ground.

b. Turn on the ATV-25. The ATV-25 can operate on battery power for approximately 10 hours from a full charge. It may be operated with the AC power supply or other 12VDC source attached if necessary.

Attach the power supply, if necessary, before the ATV-25 reaches cut-off. The ATV-25 may need to be charged for 10 minutes after reaching cutoff before resuming operation.

c. Connect the blue AUX and red PR0 cords to the connectors on the ATV-25. A talk pair may be setup using the Talk/Wait cord if needed.

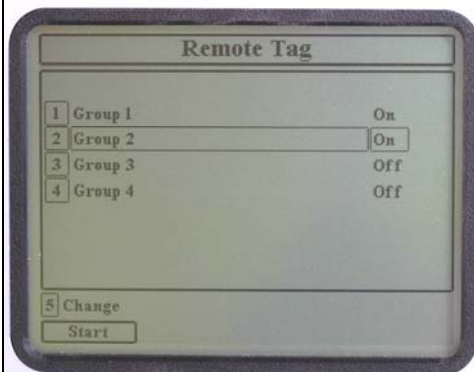
To use the talk battery, connect the talk cord to the ATV-25 and press [CALL], [F3]Talk. Verify the **Talk** indicator appears on the top right of the display. Connect the talk clips to the talk pair and the headset/butt set to the lugs on the block of the talk cord. The operator at the far end connects the headset/butt set directly to the talk pair. The talk circuit is complete.



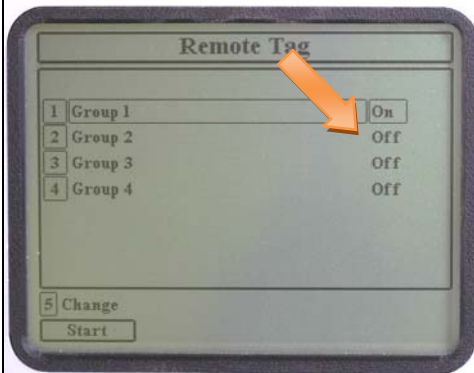
d. Use an amplifier probe to locate the communication pair. The ATV R/T automatically sends tone on the communication pair. Connect the clips of the AUX cord to the communication pair. Tip and Ring polarity is not important.

e. Press the [RMT] key.

Select the groups you want to tag. Use the [2] ▲ or [8] ▼ keys to select a group and use the [5] key to toggle the group on or off. This identifies which of the four modules are searched during tagging operations. It does not affect remote tone operations.

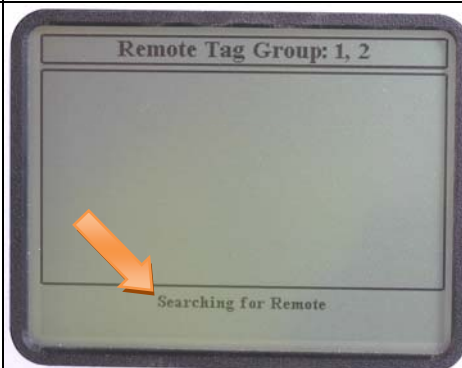


The above screen shows two Groups selected for tagging.

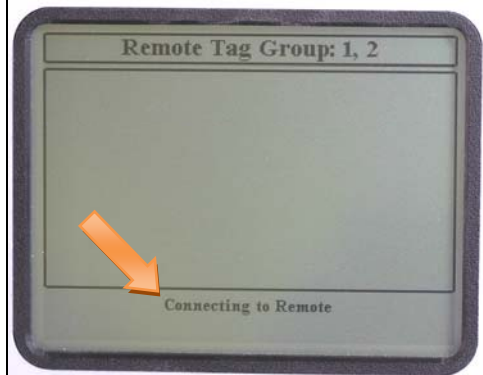


The above screen shows the second module turned off by pressing the [5] Change key.

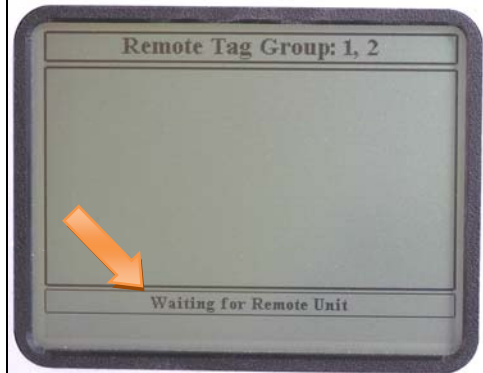
f. Press [F1]Start. Wait for the ATV-25 to connect to the ATV R/T. If the connection is not successful, verify the connections to the communication pair and the sheath/ground connection.



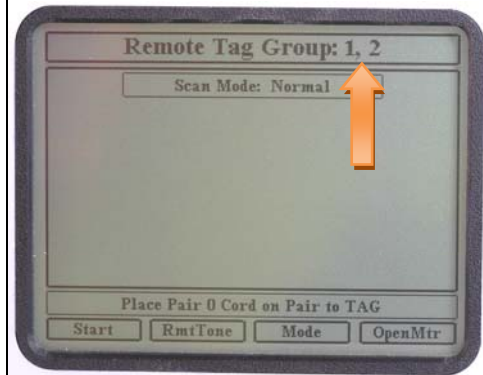
The above screen shows the Searching for Remote message indicating a problem with the grounds or the communication pair.



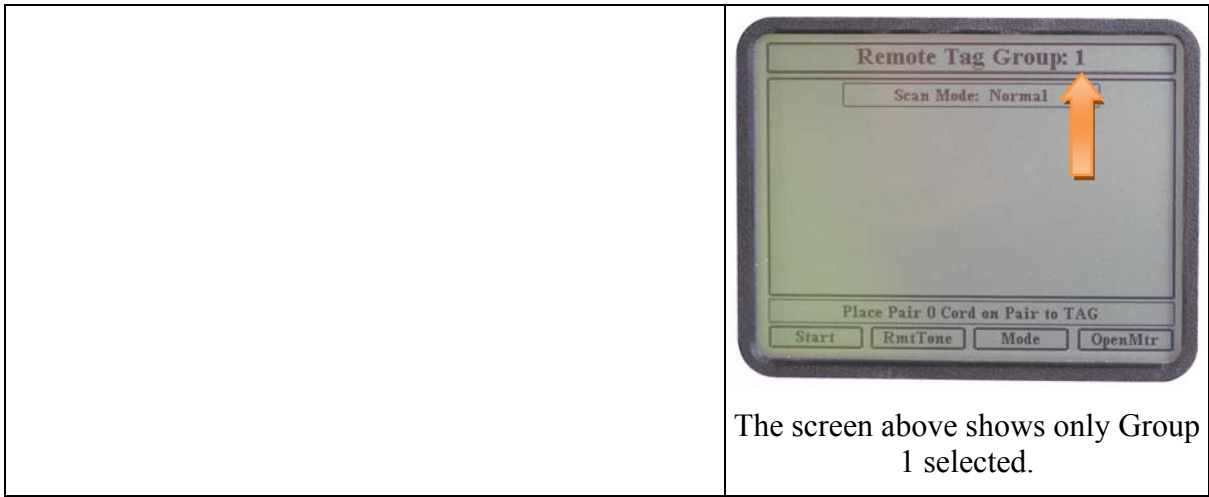
The screen above shows the Connecting to Remote message indication that the ATV-25 has detected the 577Hz tone on the communication pair.



The screen above indicates the ATV-25 is waiting for a response from the ATV R/T.



The ATV-25 and the ATV R/T have successfully connected and are in the TAGGING or SCAN mode. Also notice that this screen shows two groups, one and two, are enabled for tagging.

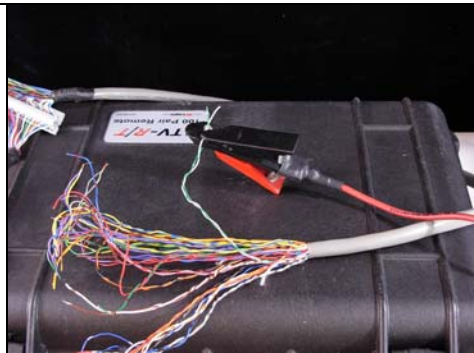


9. Automatic Pair Identification — Tagging Operation

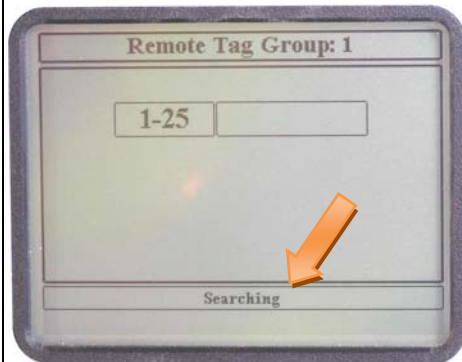
9.1 Tagging Steps

The following shows typical steps for tagging using the ATV-25 and ATV R/T.

- a. Place the PR0 clip(s) on the pair to identify and press [F1]Start. The pair number 1 through 100 will be displayed, depending on the modules selected, and a distinctive tone will be played.



The pair access cord makes it easy to connect to the pair being tagged.



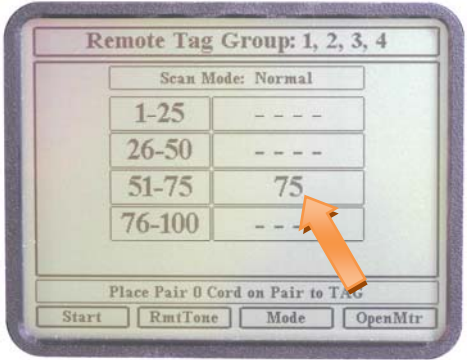
The screen above shows that the ATV R/T is searching for the pair connected to the pair access clip. Group 1, pairs 1 to 25, is being searched. There is one row for each of the selected groups.

An error tone is played and the message “Pair Not Found” is displayed if the Tip and Ring of the pair cannot be identified. Recheck the connection of the PR0 clip(s) to the pair and press [F1]Start.

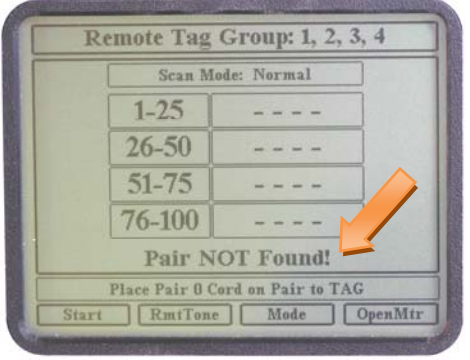
Note: The automatic pair identification (tagging) requires the identification of the both the Tip and Ring of the pair. The “Pair Not Found” message is displayed if either the Tip, Ring, or both are not identified. The Remote Tone features can be used to identify pairs with one side open or splits.



The screen above shows that pair 3 was found. Distinct tones are heard when the pair is found.



The screen above shows the result of a search with all four groups enabled and pair 75 was located.



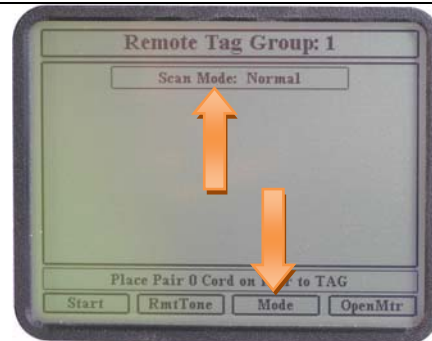
9.2 Scan Mode

Three Scan Modes are provided in Tagging. The default mode is Normal. This mode should be used in most cases.

The other two modes are High and Maximum. These modes are used when there are conditions on the pairs that prevent the ATV-25 and ATV R/T matching the Tip and the Ring at each end. Example: The Tip to Ground resistance on a POTS line at the Central Office is typically 400Ω or more. This resistance may be significantly lower in some cases. The ATV R/T may not see enough tone on the Tip side of the line when the resistance is very low and the pair may not be found. Changing the Scan mode to High or Maximum may allow the pair to be tagged.

The default Scan Mode is Normal. The [F3]Mode key is pressed to cycle through Normal, High, and Maximum.

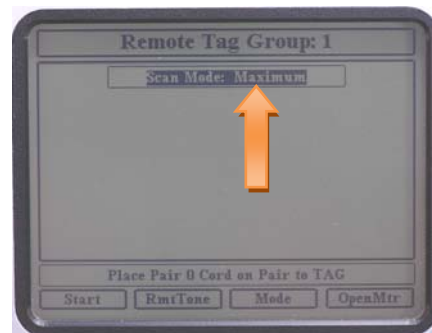
Begin by using the Normal Scan Mode. Use High or Maximum if searching for pairs does not find any pairs and the OpenMtr on the ATV-25 indicates the pairs have low resistance values on the Tip to Ground and/or the Ring to Ground.



Normal Scan Mode

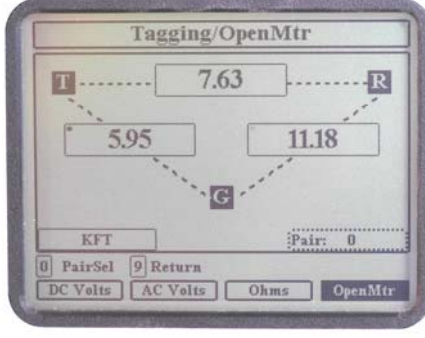



High Scan Mode



Maximum Scan Mode

9.3 Openmeter

<p>a. Press [F4]OpenMtr. The ATV-25 displays the voltage, resistance, and open length for the pair connected to the PR0 clips.</p>	 <p>The Openmeter can be used to determine the status of the pair such as open, open ring, open tip, resistive faults, etc. This is helpful in diagnosing pairs that do not tag.</p>
<p>b. Press [9]Return to return to the Tagging mode.</p>	

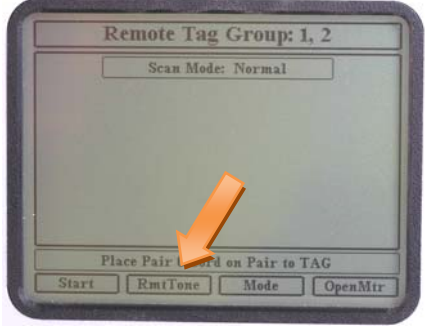
10. Remote Tone Operation

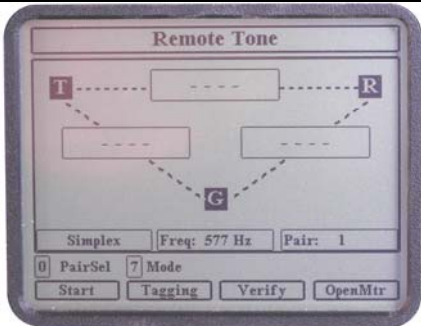
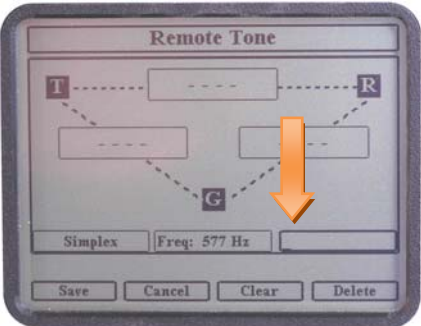
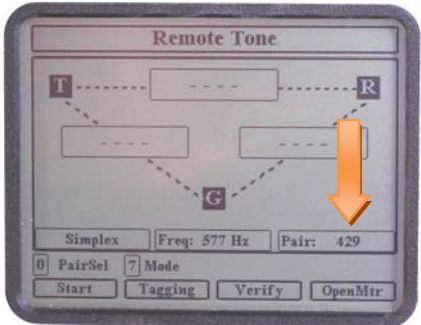
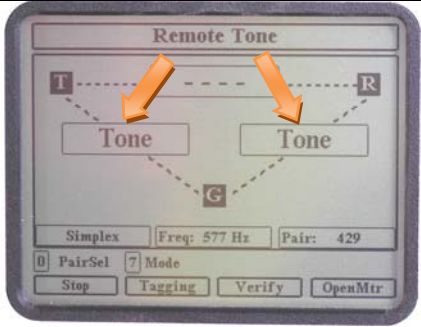
The following shows typical steps for remote tone using the ATV-25 and the ATV R/T.

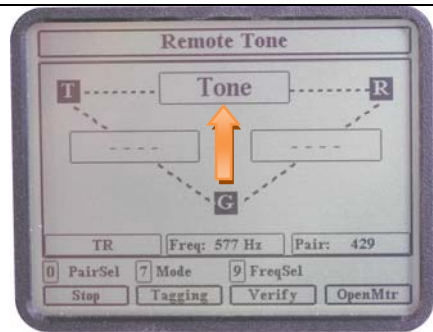
10.1 Remote Tone Steps

Follow these steps to start tagging at the field test site using the ATV-25.

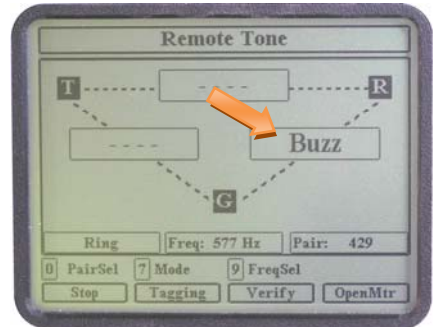
10.1.1 Send Tone

<p>a. Press [F2]RmtTone when the connection is completed.</p>	
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	 <p>The image shows the 'Remote Tone' main screen. At the top, there is a diagram with 'T' (Tip), 'R' (Ring), and 'G' (Ground) terminals connected by dashed lines. Below the diagram, there are fields for 'Simplex', 'Freq: 577 Hz', and 'Pair: 1'. At the bottom, there are buttons for 'Start', 'Tagging', 'Verify', and 'OpenMtr'.</p> <p>Remote Tone Main Screen</p>
<p>b. Press [0]PairSel, enter the pair number and press the [# / ENT] key or [F1]Save.</p> <p>The actual pair number can be entered to select a pair. The user may enter 429 to select pair 4 of the second module for example.</p>	 <p>The image shows the 'Remote Tone' screen in edit mode. The 'Pair' field is highlighted with a cursor. An orange arrow points to the 'Pair' field.</p> <p>Pair number in Edit mode</p>  <p>The image shows the 'Remote Tone' screen with the pair number '429' entered in the 'Pair' field. An orange arrow points to the 'Pair' field.</p> <p>Pair number 429 entered</p>
<p>c. Press [F1]Start. The ATV R/T will start sending tone on the selected pair.</p> <p>The ATV-25 display shows the tone as it is applied to the pair. Simplex tone applies tone on the Tip to Ground and the Ring to Ground at the same time. Other options are Tip to Ring (Metallic), Ring to Ground, Tip to Ground, and Tri-Plex (Tip to Ground, Ring to Ground, and Tip to Ring at the same time.)</p>	 <p>The image shows the 'Remote Tone' screen with the 'Pair' field set to '429'. Two orange arrows point to the 'T' and 'R' terminals in the diagram, indicating that tone is being applied to both. The 'Pair' field now shows '429'.</p> <p>The ATV <i>R/T</i> is now sending Simplex tone on pair 429.</p>



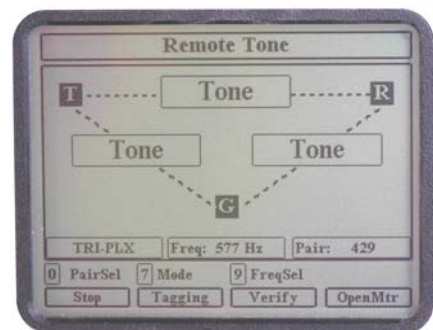
Metallic tone.



Ring to Ground tone with a ground applied to the Ring. The word BUZZ is displayed indicating the short.

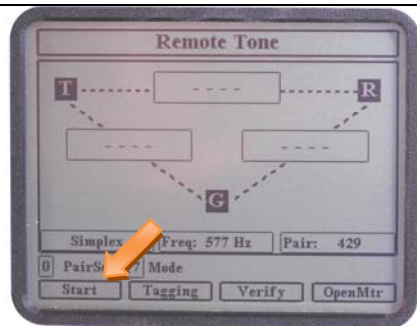


Tip to Ground tone.



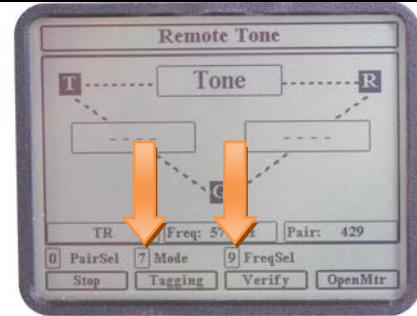
Tri-Plex, low cross-coupling tone.

d. Press [F1]Stop to stop sending tone. The [F1] label changes to Start.

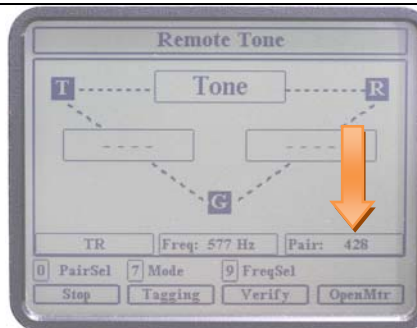


e. Press [7] to change the mode or [9] to change the frequency.

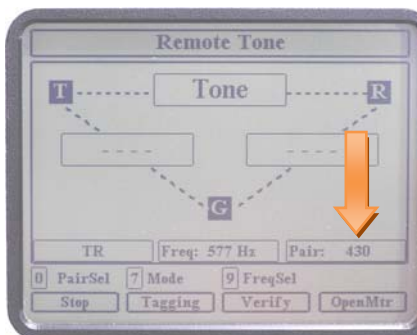
Note: 577Hz is the only frequency available for Simplex and Tri-Plex modes.



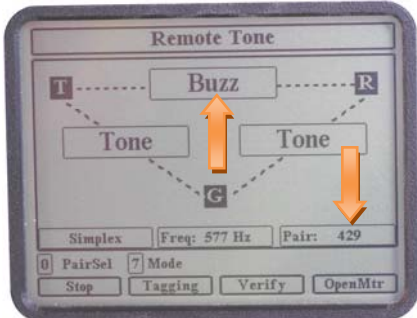
f. Press the left key, [4] ◀, to send tone on the next lower pair or the right key, [6] ▶, key for the next higher pair. Repeat step b above to enter a different pair number.



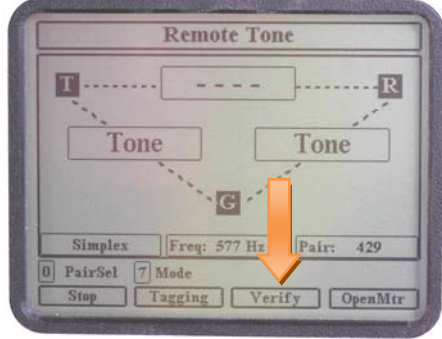
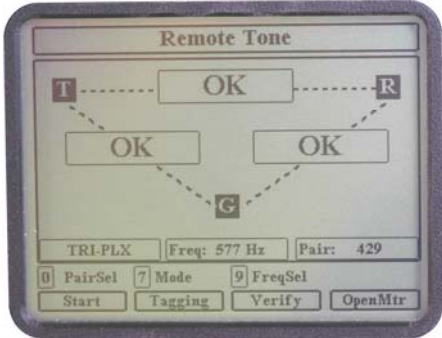
The left key decreases the pair number, 428 in this case.



The right arrow key increases the pair number, 430 in this case.

<p>g. The ATV <i>R/T</i> monitors the selected pair for a short. When a short is detected, the ATV <i>R/T</i> signals the ATV-25 which displays the word BUZZ and emits a tone.</p> <p>Note: A short on the pair or some special circuits may prevent the ATV <i>R/T</i> from detecting the short on the pair. In these cases you can use the following options:</p> <ul style="list-style-type: none"> • Change to Tip to Ring tone and try the short. • Connect the PR0 cord and use the OpenMtr to evaluate the pair. Ensure that one side of the pair is not Open. • Connect the PR0 cord and use the Verify function. • Connect the PR0 cord to the pair and attempt to TAG the pair. 	 <p>The screen above shows Simplex tone on pair 429 and a short has been applied to the pair.</p>
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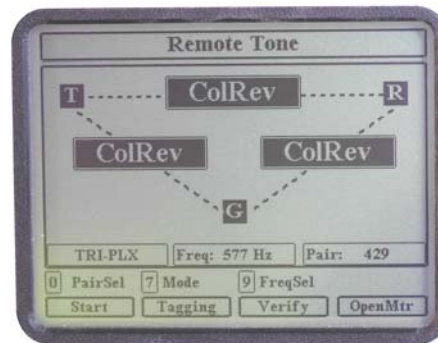
10.1.2 Verify Pair Test

<p>a. Connect the PR0 clips to the toned pair and press [F3]Verify to test the pair. Verify is an end-to-end test of the Tip and Ring of the pair. This allows verification of the pair when it is not desirable to short the pair or testing in cases of one side open.</p>	 <p>Press the [F3]Verify key.</p>
<p>b. The results will be displayed on the screen and an indication tone is played. The results indicate if the PR0 clips are connected to the selected pair at the ATV R/T. The results include OK, color reverse (reverse polarity), open (ring and tip), tip open, and ring open. Check PR may also be displayed if the condition of the pair will not allow the system to determine the continuity status.</p>	 <p>The screen above shows the ATV-25 and the ATV <i>R/T</i> verified both the Tip and the Ring for pair 429.</p>

- c. Correct any errors, if possible, and press [F3]Verify to retest the pair as needed.



The screen above indicates the Tip was not verified between the ATV-25 and the ATV R/T. This may be an open on the Tip, a split pair, or a poor connection on the tap shoe or the PR0 cord.

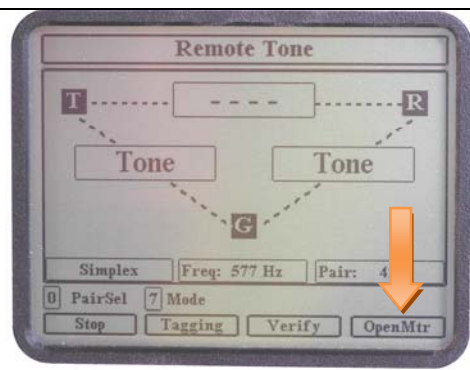


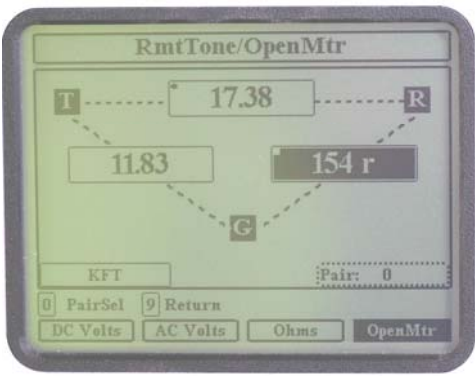
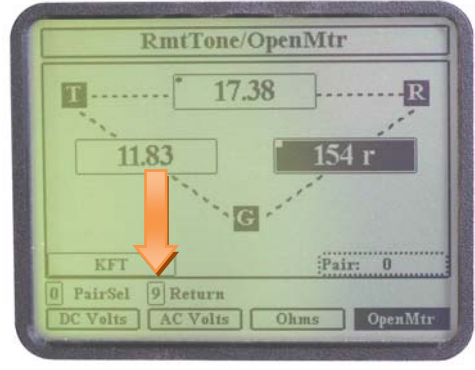
The screen above indicates the Tip and the Ring of Pair 429 have been verified but there is a polarity reversal between the ATV-25 and the ATV R/T.

10.2 Openmeter

The open meter can be used to determine the status of the pair such as open, open ring, open tip, resistive faults, etc.

- a. Connect the ATV-25 PR0 cord to the pair identified using tone.
- b. Press [F4]OpenMtr.



<p>c. The ATV-25 displays the voltage, resistance, and open length for the pair connected to the PRO cord.</p>	 <p>The screen above shows a 154Ω ground on the Ring. This ground may interfere with the ability to Verify the pair.</p>
<p>d. Press [9]Return to return to the Remote Tone mode.</p>	 <p>Press the [9] key to return to the Remote Tone mode.</p>

11. Pair Identification Tips

The following information is provided to help make pair identification more productive.

11.1 Filtered Tone Probes

Tone probes that have a filter for 577Hz or 1004Hz tone are highly recommended for all tone operations. The time required to locate a pair can be reduced by 75% or more. The primary advantage is in the reduction of noise. Only the identification tone should be heard with the filter on. Many of these probes also have a gain control. This allows the user to turn the gain down to determine which of several pairs is the correct one.

11.2 Tone Probe Headset

A headset connected to the tone probe can be very helpful in noisy environments. Many probes have a connector to allow the user to connect a headset or earpiece directly to the amplifier probe.

11.3 Bonds and Grounds

All identification procedures benefit by keeping the bonds and grounds in place. The noise will be reduced making it easier to hear the identification tone.

- Simplex tone, Tip Ground, and Ring Ground tone all send tone referenced to ground. These tone modes will be hard or impossible to identify if the ground or bonds are missing.
- Ensure the ground and bonds are maintained in open cases, especially when working in more than one location at the same time. This helps ensure that all locations have the ground reference needed to identify the tone.
- Connecting some of the vacant pairs to sheath/ground at both ends can help resolve problems when the sheath continuity and grounding are poor or suspected to be a problem.

11.4 Working pairs

- Simplex tone is the best to use on working pairs. The tone is balanced Ring to Ground and Tip to Ground. This is also called quiet tone as the tone is typically not heard or very low. This tone mode causes the least disturbance on the pair.
- It is imperative to maintain all grounds and bonds to reduce the chance of adding disturbances (noise) on working pairs.
- Use the Verify function on working pairs instead of shorting or grounding to confirm the pair when using remote tone. This will minimize disturbances on the pair.

11.5 Cross-Coupled Tone

Cross-coupled tone can make it difficult to identify a pair using tone sources. This can occur when the cable is wet or if there are problems with grounds and bonds.

- The tone may be easier to detect using Tip to Ring (metallic) tone.
- The ATV-25 and ATV R/T have a tone mode called Tri-Plex. This tone method is a form of metallic tone designed to minimize the amount of tone coupled to adjacent pairs. The tone probe will have to be very close or touching the pair when using Tri-Plex.
- Cross-coupled tone can sometimes be reduced by tying vacant pairs in the cable to the sheath/ground at each end. This increases the grounding and dissipates some of the coupling.

11.6 Using One of the Pairs as the Communication Pair – Tagging

The communication pair should not be included in the pairs being searched for tagging functions. **This is not an issue when using Remote Tone.** It is possible that the tagging process could interrupt the communications between the ATV R/T and the ATV-25 resulting in communication problems.

A vacant pair that is not in the count being worked may not be available in some cases. A 100 pair cable is one example. It is possible to use one of the pairs in the count in these cases.

1. Select one of the vacant pairs in the count and test it as described previously. Select pair 12 in group 1 for example. Connect the COMM cord to this pair at the ATV R/T as described in section 7 above.
2. Use a tone probe to locate the communication pair at the field location, connect the AUX cord, and set up the ATV-25 as described in section 8 above.
3. Turn off the 25 pair group containing the communication pair when starting the remote session at the ATV-25. This group will not be searched during tagging operations.

Example: Turn group 1 off when using any pair from 1 to 25 for communication or group two if the pair is in the 26 to 50 count.

4. Press [F1]Start and allow the ATV-25 to connect to the ATV R/T.
5. The communication pair has been identified using tone from the ATV R/T and needs no additional identification. Press [F2]RmtTone to identify the remaining 24 pairs in the group as described in section 10 above.
6. Press [F2]Tagging to return to the tagging mode. The remaining 75 pairs may now be tagged without disturbing the communication pair.
7. The communication pair can be cut after all other pairs have been identified.

12. Troubleshooting

The following steps should help resolve most problems encountered while using the ATV R/T and the ATV-25 for tagging and remote tone operation.

12.1 Searching for Remote Message

The ATV-25 will display this message if it is unable to detect the ATV R/T on the communication pair. The likely problems are:

1. The AUX cord clips are not properly connected to the communication pair or may be shorted. Recheck the connections.
2. The AUX cord is not connected to the correct pair. Use an amplifier probe and locate the correct pair.
3. The communication pair may be defective.
4. The AUX cord on the ATV-25 is not plugged into the AUX jack. Check the connection and correct it if necessary. **A defective pair is unlikely if the instructions in this guide are followed during setup.** Use the ATV-25 Open meter and the PR0 cord and check the pair. Another pair may need to be selected and the ATV R/T and ATV-25 connected to the pair if a defective pair is found.

Note: The pair will appear to have DC and AC voltages when the ATV R/T is connected to the pair and the power is on.

5. The ground between the ATV-25 and the ATV R/T is not present or not adequate. Check the ground connection at the ATV-25 and ensure it is connected to the cable sheath. An alternate ground may also be tried such as a temporary rod driven into the ground. The ground connection may be faulty at the ATV R/T if no problems are found at the ATV-25. **A ground problem at the ATV R/T is unlikely if the instructions in this guide are followed during setup.**
6. The ATV R/T power has been disconnected or the power switch is turned off. Check the ATV R/T and correct the problem. Disconnect the AUX cord at the ATV-25. The ATV R/T will automatically start sending tone on the pair if the ATV R/T power is on.

12.2 Multiple Pairs Found When Tagging

The following conditions may cause the tagging function to report multiple pair finds.

- Four wire circuits and some repeaters can be electrically identical at the central office and other locations. The tagger function may report two pairs in this case. It is necessary to remove the protector at the office or separate the two pair by other means to identify the correct pair.
- Missing grounds/bonds may prevent the proper operation of the tagging and verify functions. This causes problems in sending/receiving tone. Restoration of the grounds/bonds is recommended. Using the remote tone function and the TR or TriPlex tone modes is recommended if the grounds/bonds cannot be restored.

12.3 No Pairs are Found Using the Tagger Function

The following conditions may result in problems finding pairs using the Tagger function.

- The PR0 cord may be defective. Try using a different cord. The PR0 cord with clips, PR0 cord with access clip, and AUX cords are all electrically the same.
- The PR0 clips may not make connection properly when used with 26ga wire. Use the OpenMtr and connect the cord to a pair. If the Tip and/or Ring show Open, the clip is not making contact with the pair. Try a different cord if one is available. Check to ensure the needle cups on the clip are screwed all the way in.
- The ground connection at the ATV-25 or the ATV R/T may be poor. The display of Searching for Remote may indicate the ground between the two units is unacceptable for communications. The ground may also not be adequate for proper tagging. Improve the grounds/bonds and retest or use the remote tone function if the grounds cannot be restored. Grounding spare pairs to the ground/sheath at each end may help in some cases.
- Cable pair defects may prevent the tagging function from working properly. This is usually only for a few pairs. Use the Remote Tone function to identify these pairs. The OpenMtr helps determine if the problem is an Open pair between the ATV-25 and the ATV R/T.
- The ATV R/T may not be connected to the pairs being tagged. The ATV R/T allows groups to be disabled. Ensure the groups that are connected to the cable pairs at the ATV R/T are enabled. Press the [RMT] key on the ATV-25 to see the currently selected groups.
- The ATV R/T may be connected to a different pair group. Use the Remote Tone function and send tone on one of the pairs to identify the pair group.
- The grounds used for the communication pair and the pairs being tagged are not connected together. This is rare but may happen if the communication pair is in a different cable from the pairs being tagged. Ensure that the sheaths of both cables are bonded together.

12.4 Remote Tone is Not Present or Very Low

The remote tone transmission level is at 14V peak to peak. This tone is sufficient for most tone operations. The amplitude of the tone is affected by the length of the cable pairs, pair defects, pair gauge, condition of the grounds/bonds, and condition of the connection of the pairs to the ATV R/T.

- Check a different pair. Tone may not be heard if the connection to the pair at the ATV R/T is poor (bad tap shoe) or the pair is defective.
- Try a different mode. Simplex, RG, and TG modes are referenced to ground and the tone may not be heard if the grounds/bonds are defective. TR and TriPlex tone modes have metallic tone and may be a better choice when grounding issues exist.
- Try a different frequency. Some probes are tuned to 577Hz, 1004Hz, or other frequencies. The ATV R/T can transmit 577Hz and 1004Hz. Changing the frequency may make the tone audible.
- Changing the probe or the probe battery can also solve problems with picking up tone.

13. Support

Current information on the ATV R/T is available on the company website at www.aalogic.com. Additional support may be obtained by contacting your local sales representative or the manufacturer.

Replacement cords and power supplies are available for the ATV R/T. Contact your local sales representative or the manufacturer for availability and cost of these items.

Technical support for problems with equipment can be obtained by email at aalogic.help@aalogic.com or by phone at (817) 599-0272. Normal business hours are 9am to 5pm CST, Monday through Friday.

Please contact your local manufacturer's representative for operational and training support.

14. Warranty

The ATV R/T 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.

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.