ST-101 / SR-101 Aerial Fault Location Quick Reference

This quick reference describes the use of the ST-101 (transmitter) and the SR-101 (receiver) for locating resistive cable faults.

1. Safety

All prescribed safety precautions and procedures must be observed while using the SR-101 equipment. Failure to do so can result in serious injury or death.

2. Types of Faults

The following resistive faults may be located:

- Short Tip connected to Ring
- Cross Tip or Ring of one pair is connected to the Tip or Ring of another pair
- Split Tip or Ring of one pair is split with the Tip or Ring of another pair

✓ **Locating ground faults are more difficult due to multiple ground signal return paths. It is recommended to locate shorts or crosses whenever possible. Otherwise it may be helpful to remove shield ground at the transmitter location, then connect the transmitter leads to the faulted lead and shield.**

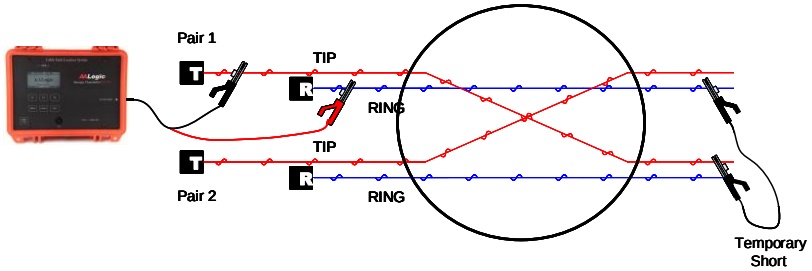
✓ **The cable length beyond the fault should be as short as possible.**

3. Fault Pre-Testing

The technician must identify the type of fault before attempting location. Test equipment, such as the AALogic D-105, ATV-25, or similar test sets may be used to identify various fault types. Once the faulted wires are identified, the transmitter can be connected. With multiple faults, it is beneficial to use the values of lowest resistance.

4. Pair Splits

The technician must identify the two wires involved in the split. The diagram below shows a split and how to place temporary short at the far end of the section and connect the transmitter clips.



Locating a Split

5. Fault Location Setup

Cable Length/Sectioning	The CO and the premise should be isolated from the fault, as close as practical on each side of the fault, following standard practice.
Transmitter Setup	1. The ST-101 should be positioned at one end of the cable section. The length past the fault, the far-end, should be minimized, to reduce carry-by of the tone. 2. Connect the transmitter clips to the fault as follows:

Fault	Connections
Short	Tip and Ring of the shorted pair.
Ground	Tip or Ring and the sheath. **(See para. 2 above)**
Cross	The two wires that are crossed
Split	The split wires. See paragraph 4.

3. The transmitter "Auto-Set" function serves as a general guideline for frequency and [LEVEL] settings. As a general rule, the higher the power level the easier to find tone and the lower the frequency the less carry-by.

	Turn on the transmitter and use Auto-Set for the transmitter initial frequency and power settings. The following guidelines help manually adjust the frequency based on the cable section length if needed:

Section Length	Frequency	Note
1 - 3 kFt	2 KHz	Higher frequencies may result in more signal carry-by the fault.
2 - 5 kFt	987 Hz	Some pair identification probe/coils are compatible with this frequency.
3 - 6 kFt	335 Hz	
4 - 10 kFt	145 Hz	Additional fault isolation is recommended if the section is greater than 10 kFt. If the section is longer than 10 kFt, start with 145 Hz.

Receiver Setup

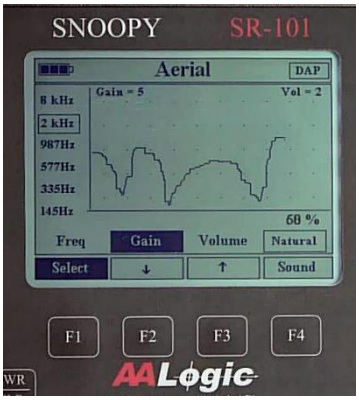
1. Connect the DHC-100, DAP-125, or another compatible probe/coil, to the SR-101 receiver. The probe/coil must be compatible with the frequencies used.
2. Turn on the receiver and select **Aerial [F3]** from the main screen.
3. Select [F1] to highlight Freq on the display if needed. Use ↓ [F2] or ↑ [F3] to select the frequency matching the transmitter.
4. Place the probe/coil on the cable at least ten feet from the transmitter. Press [F1] to select Gain and use ↓ [F2] or ↑ [F3] to adjust the gain and obtain a reading of 40% to 60%, as indicated on the display, that does not go all the way to the top or bottom. Adjust the transmitter power [LEVEL] setting, if necessary, to obtain this reading. A different frequency [FREQ] may also be used if needed.

The gain on the receiver should usually not be changed after the location begins. If a change is needed, it is recommended to return to the transmitter location and reset the gain, power, and/or frequency settings

5. Adjust Volume to a comfortable level. A headphone may also be connected if desired.
6. Press [F3] for Natural or Simulate Sound. Select the Sound that is the most desirable to the user.

6. LOCATING THE FAULT

1. Select a starting point and hold the probe/coil against cable moving slowly toward the fault.
2. Monitor the signal amplitude on the receiver display and sound from the speaker. The signal indication/volume will rise and fall as the probe/coil is moved along the cable. This is due to the twist in the cable. The fault location is indicated by a significant **DECREASE** in signal after passing the fault for a SHORT, GROUND, or CROSS. A SPLIT produces a significant **INCREASE** in signal when passing the fault.
3. If the signal is present and no significant change in strength, move to the next location closer to the fault.
4. The probe/coil can be moved back to the transmitter side to confirm the fault location.
5. If the fault cannot be identified, repeat the location process with the next lower frequency on the transmitter and receiver and/or increase the power level at the transmitter.



7. RESTIVE FAULT RANGE (APPROXIMATE)

Resistive Fault Range (Ω) (approximate)			
Fault Type	**Cable Diameter**		
	1”	**2”**	**3”**
Short	50K	30K	15K
Cross and T/R to Sheath	75K	50K	25K
Split	> 1600 ohms		