

AA Logic DAP105 Differential Amplified Probe

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GENERAL DESCRIPTION

The process of locating tone with the DAP105 is similar to practices currently used where a sending device is placed at one end of the cable and a receiving device at the other. The DAP105 is designed to be used with the D105 test set at the receiving end. To take full advantage of the DAP105 features it is recommended to use a second D105 test set or *TriTone* Generator as the sending unit.

Unlike many tone probes available, the DAP105 is a Differential Probe capable of receiving TriPlex, tones placed between the TIP to RING with ground reference, and Simplex tone referenced to ground.

Simplex tone places the same signal on the Tip and Ring. Typically Simplex tone is preferred because it is less noticeable to the customer, who only hears the difference between the Tip and Ring. However, when working with wet cable, or cable with faults, it is often difficult for the technician to distinguish the pair on which the tone is being sent. There are two possibilities in these situations. Either the tones are of the same level, or the differences are so slight the human ear can't discern the difference.

USING THE DAP105 WITH SIMPLEX TONE

Locating Simplex Tone on a cable with good sheath continuity is usually very easy. When sheath continuity is poor, or non-existent, several pairs can be bonded to the sheath at each end of the cable to reduce bleed-over of tones to adjacent pairs. It should be noted that best results are obtained when all leads including grounds are kept as short as possible.

The D105 probe software and hardware can discern small differences in tone amplitude, even when no difference can be heard. This method uses a "squelch" technique to mute the speaker until the signal level exceeds the squelched amplitude. When the signal level increases above the precision squelch point the speaker is turned on. This abrupt change makes minor tone level differences more easily identified.

Probe Signal levels on the D105 are displayed on a scale of 0-100%. The "bar graph" is a visual indication of received signal level. Below the graph the equivalent numeric value is shown. The down arrow in the upper portion of the graph indicates the squelch point. For signals less than this point the speaker is turned OFF. Signals that exceed the squelch point cause the speaker to become unmuted. F1 and F3 function keys are used to decrease or increase the received signal level so that the indication resides within the graph window. F2 function key sets the squelch to a value slightly above the current signal being received by the probe.

The squelch point is set by placing the probe flat against a pair where tone is being heard and pressing the F2 function key. Once set the user can search through the remaining pairs for a stronger signal. Any slight difference will unmute the speaker. If the speaker does not unmute, try setting the squelch for a different pair. When signal differences are not adequate to break or unmute squelch the user may be able to use the numeric display to distinguish the correct pair.

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THE DAP105 WITH TRIPLEX TONE

TriPlex tone is a special tone sent by the D105 and **TriTone** Generator to reduce tone bleed-over on adjacent pairs. Given reduced bleed-over, it may be necessary to probe pairs individually rather than probing binders. The TriTone can send 577Hz and 987Hz tone at higher amplitudes, making it ideal for use in cables conditions where large signal attenuation exists.

The squelch method described for Simplex is also used in the TriPlex mode. A significant advantage of the TriPlex mode becomes obvious when using the DAP105 differential probe. Placing the probe between the Tip and Ring of the correct pair will cause the received tone level to double. If the probe is placed between an adjacent pair with bleed-over the level will decrease, thus giving a substantial difference between the correct pair and the adjacent pair.

FILTERED PROBE

The D105 includes an internal digital filter that is used with the DAP105. The default filter frequency is 577Hz. When used with the TriTone Generator the optional 987Hz filter can be selected.

CONCLUSION

Placing a low resistance short on the pair with TriPlex tone will decrease the generator's output, therefore on cable pairs having a low resistance fault using Simplex may yield better results. Pairs with significant bleed-over, or if customers are already out of service, TriPlex is the best choice. The user should consider that TriPlex is not a quiet tone, and thus can be heard by customers when using their POTS telephone.



D105 Sending Tone

D105 Receiving Tone

The picture on the left is a D105 sending TriPlex tone at the transmitting end of a cable pair. When the technician at the receiving end shorts the pair a momentary "BUZZ" is seen in the T-R window. Also as tone is being sent (SIMPLEX or TRIPLEX) voltage readings are taken between TR/TG/RG and displayed accordingly.

The Right picture is a screen shot of the D-105 located at the receiving end. The graph shows approximately ½ bar length, equating to 52% signal level. Above the bar the squelch down arrow has been set to approximately 32%. Since the signal level is above the squelch threshold the user hears the tone being received on the pair.