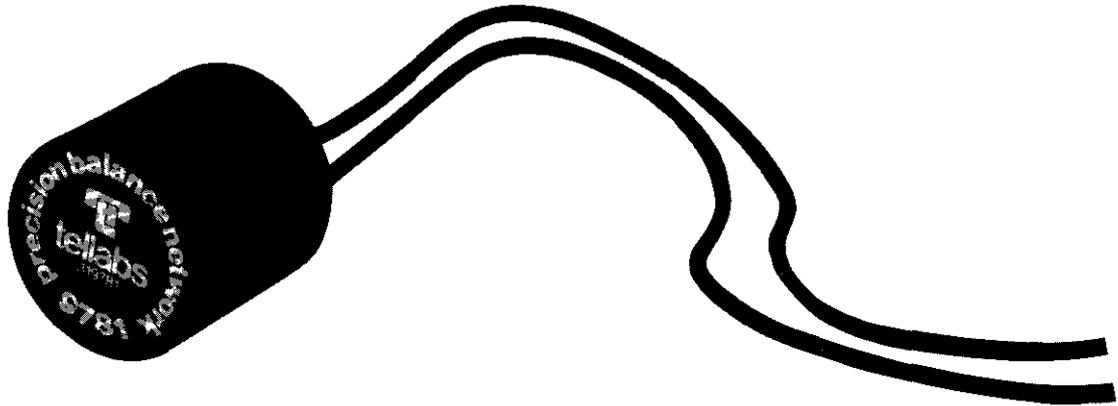


9781 Precision Balance Network



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1. description/application

1.01 The Tellabs 9781 Precision Balance Network (figure 1) is a passive circuit designed to approximate the impedance of a 500-type telephone set. The 9781 is used for precision balancing (i.e., improving the transhybrid loss when unacceptably low) of terminating sets connected directly to station instruments. A minimum of 15dB of transhybrid loss is provided by the 9781. In typical applications, however, the 9781 may provide as much as 25dB of transhybrid loss. Cable length between the term set and station instrument typically does not exceed 1000 feet, but longer lengths may be used where necessary, with some performance penalty. The 9781 may be used with Tellabs 420X Terminating Sets or with any other conventional two-transformer term sets.

2. installation

inspection

2.01 Each 9781 Precision Balance Network should be visually inspected upon arrival in order to find possible damage incurred during shipment. If damage is noted, a claim should immediately be filed with the carrier. If stored, the module should be visually inspected again prior to installation.

mounting/installer connections

2.02 Before connecting the 9781, ensure that power is **off**. The term set module may be left in place or removed, as desired. When a Tellabs 420X Term Set is used, simply connect the two leads of the 9781 to connector pins 7 and 13 of the 420X. This may be done by wire-wrapping, soldering, or

punching the leads down on a quick-connect block. Then open option switch SA-2 on the 420X to remove the internal compromise balance network from the circuit. Because of its small size, the 9781 may be left "hanging" by its leads (as is the normal practice) or may be attached where desired by tie-wrapping.

Note: If the 420X Term Set is part of a Tellabs 261 Signaling and Terminating System, the 9781 may alternately be connected to terminals 4T and 4R (circuit No. 1) or to terminals 16T and 16R (circuit No. 2) on the Type 66 Terminal Block.

2.03 To install the 9781 on term sets other than the Tellabs 420X modules, connect the 9781's two leads to the external balance network leads of the term set and disconnect the term set's internal compromise balance network in the manner required for the particular term set being used.

inductor adjustment

2.04 The inductor on the 9781 must be adjusted to maximize transhybrid loss for the particular installation involved. Required equipment consists of a terminated (600 ohm) ac voltmeter and a plastic tuning wand (GC Electronics 9440 or equivalent). In many applications, merely adjusting the inductor to the midpoint of its range will suffice. Where a more precise adjustment is required, however, proceed as follows:

Note: This adjustment procedure applies specifically to the 9781 when used with a Tellabs 420X Term Set. When an equivalent term set is used, minor modifications of the procedure may be necessary.

- A. Request the distant location to send 2000Hz test tone at the level specified for the circuit.
- B. Verify that the received level is within limits for the circuit by connecting the ac voltmeter to the 4W RCV jack on the 420X term set.

C. Remove the ac voltmeter test lead from the *4W RCV* jack and connect it to the *4W XMT* jack.

D. Seize the circuit (the 2wire facility must be connected to connector pins 41 and 47 for this measurement) and, using the plastic tuning wand, adjust the inductor on the 9781 to **minimize** the signal level at the *4W XMT* jack. A more precise adjustment may be achieved if the test frequency is varied. As the inductor adjustment is made.

3. circuit description

3.01 The 9781 Precision Balance Network comprises a passive RLC (resistance-inductance-capacitance) circuit designed to approximately match the impedance a 500-type telephone set.

4. testing and troubleshooting

4.01 This Testing Guide may be used to assist in the installation, testing, or troubleshooting of the 9781 Precision Balance Network. The Guide is intended as an aid in the localization of trouble to a specific 9781. If a 9781 is suspected of being defective, a new 9781 should be substituted and the test conducted again. If the substitute 9781 operates correctly, the original 9781 should be considered defective and returned to Tellabs for repair or replacement. It is strongly recommended that no internal (component level) testing or repairs be attempted on the 9781. Unauthorized testing or repairs may void the 9781's warranty.

4.02 If a situation arises that is not covered in the Testing Guide, contact Tellabs Customer Service at (312) 969-8800 for further assistance.

4.03 If a 9781 is diagnosed as defective, the situation may be remedied by either *replacement* or *repair and return*. Because it is the more expedient method, the *replacement* procedure should be followed whenever time is a critical factor (e.g., service outages, etc.).

replacement

4.04 If a defective 9781 is encountered, notify Tellabs via telephone, letter or twx. Notification should include all relevant information, including the 8X9781 part number (from which we can determine the issue of the 9781 in question). Upon notification, we shall ship a replacement 9781 to you. If the warranty period of the defective 9781 has not elapsed, the replacement module will be shipped at no charge. Package the defective 9781 in the replacement 9781's carton; sign the packing list included with the replacement 9781 and enclose it with the defective unit (this is your return authorization); affix the preaddressed label provided with the replacement 9781 to the carton being returned; and ship the equipment prepaid to Tellabs.

repair and return

4.05 Return the defective 9781, shipment prepaid, to
 Tellabs Incorporated
 4951 Indiana Avenue
 Lisle, Illinois 60532
 Attn: repair and return dept.

Enclose an explanation of the 9781's malfunction. Follow your company's standard procedure with respect to administrative paperwork. Tellabs will repair the 9781 and ship it back to you. If the 9781 is in warranty, no invoice will be issued.

testing guide checklist

test	test procedure	normal conditions	if normal conditions are not met, verify:
proper operation of 9781	Adjust signal level at <i>4W XMT</i> jack as described in text.	Signal level is minimized as 9781 is adjusted <input type="checkbox"/> .	Circuit is seized and local station is off-hook <input type="checkbox"/> . Slug on 9781 is intact (not cracked) <input type="checkbox"/> . Term set's internal compromise balance network is removed from circuit <input type="checkbox"/> . Term set is operating properly <input type="checkbox"/> . Substitute new 9781 and retest <input type="checkbox"/> .