

1914, 1914P, and 1914PR Apparatus Cases

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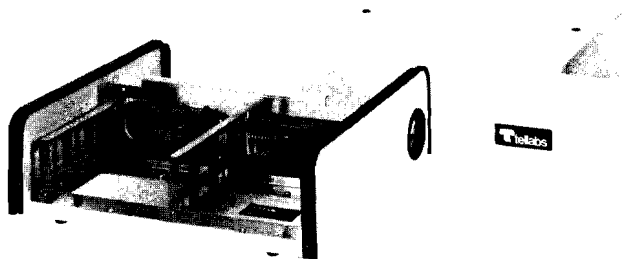


figure 1. 1914P Apparatus Case

1. description and application

1.01 The Tellabs 1914, 1914P, and 1914PR Apparatus Cases (figure 1) provide enclosed mounting for up to four Tellabs Type 10 modules. All three cases can be wall-mounted or used as desktop enclosures. The 1914 is the basic case on which the 1914P and 1914PR are based; it provides mounting and external connections but no power supply, integral power-conditioning circuitry, or integral ringing generator. The 1914P comes with a wall plug-in 48Vdc power supply and contains integral power-conditioning circuitry that provides filtering, voltage limiting, and current limiting for the -48Vdc supplied to the modules in the case from the plug-in supply. The 1914PR not only comes with the same power plug-in power supply and contains the same power-conditioning circuitry as the 1914P, but also contains an integral ringing generator that supplies 20Hz ringing voltage (85 to 106Vac) to the associated modules.

1.02 This practice section covers the Issue 3 versions of the 1914, 1914P, and 1914PR Apparatus Cases (Tellabs part numbers **831914**, **831914P**, and **831914PR**). The Issue 3 cases differ from previous issues in that power-conditioning and ringing circuitry are integral to the 1914PR. Previously, the power supply and ringing generator were supplied as separate plug-on devices housed within the 1914 case. The practice is revised to update the text portion of section 6.

1.03 The 1914 case consists of a mounting chassis, four 56-pin wire-wrapping connectors for connection to the associated Type 10 modules, two 30-position quick-connect terminal blocks for connection to external equipment, a 5-position barrier-type terminal strip for external power connections, and a metal cover. In addition, as mentioned above, the 1914P and 1914PR provide integral power-conditioning circuitry and an external wall plug-in power supply, and the 1914PR provides an integral 20Hz ringing generator capable of driving up to four high-impedance ringers. In most applications, internal leads on the 1914XX cases are wire-wrapped between the 56-pin module connectors

and three 20-pin wire-wrapping terminal strips, which are connected to the quick-connect terminal blocks via printed-circuit traces. The wiring scheme depends upon the specific modules used in the cases. Internal leads (jumpers) can be factory-wired if the modules to be used are known at the time of ordering.

1.04 The 1914XX Apparatus Cases are commonly used to house the modules of a Tellabs 260 Signaling and Terminating System. The 260 System is a complete, self-contained SF or DX signaling and terminating circuit with a 2wire or 4wire facility-side interface, a 2wire or 4wire terminal-side interface and optional alternate voice/data (AVD) capability. Please refer to the Tellabs practice on the 260 System for details on this application. The 1914XX cases can also be used in any other application involving up to four Type 10 modules. Refer to the individual module practices for detailed application information.

1.05 The 1914XX cases are designed to be either placed on a desktop or mounted on a wall. The cases are wall mounted by means of screws through four keyhole slots in their baseplates. The clean, modern styling and basic off-white/black color scheme of these cases make them attractive packages for applications in which they are to be located in an office, computer room, or similar setting.

1.06 The 1914P and 1914PR cases supply filtered, ground-referenced -48Vdc input power to their associated modules. The 1914PR, as normally shipped from Tellabs, also supplies 20Hz ringing voltage (85 to 106Vac) to its associated modules. (Higher frequencies are available; contact Tellabs' Customer Service Group at your Tellabs Regional Office or at our Canadian headquarters for complete information.) To prevent damage to the 1914P and 1914PR cases from excessive input current and/or voltage, both current limiting and voltage limiting are provided for the output of the power

filter, and current limiting is provided for the output of the ringing generator. The dc input required by both cases is provided by a Tellabs 8016 Power Supply shipped with each case. The 8016 plugs directly into a commercial 117Vac, 60Hz outlet and supplies pulsed nominal -48Vdc to the 1914P or 1914PR case.

2. installation inspection

2.01 The 1914XX Apparatus Case 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 cases should be visually inspected again prior to installation.

cover removal

2.02 To install a 1914XX case, the protective metal cover enclosing the modules must be removed. The cover is held in place by two plastic retainer latches located on each side of the cover. With a screwdriver, turn each latch clockwise approximately 1/2 turn until the latch clears the lip of the chassis. Then remove the cover by lifting it straight upward; it is replaced by an opposite motion. Store the wraparound cover in a location where it will not be bent or otherwise damaged.

mounting

2.03 The 1914XX case is supplied with four rubber feet for desktop use. If wall mounting is required, remove the rubber feet to allow the cases to be mounted flush against the wall. Four mounting screws (not supplied) of a type suitable for the material of the wall on which the case will be mounted are required.

Caution 1: When a 1914XX case is used to house modules containing mercury-wetted relays (e.g., Tellabs' 6001 and 6002 DX Signaling modules), the case must be wall mounted and the modules kept in an upright position to ensure proper relay operation.

Caution 2: When wall mounted, the 1914XX case must be oriented so that the modules' faceplates are not facing downward. Otherwise, the modules may work loose from their connectors.

installer connections

2.04 Before making any connections to a 1914XX case, ensure that power is **off** and modules are **removed**. Modules should be put into place only **after** they are properly optioned and **after** wiring is completed.

2.05 The connections that must be made to a 1914XX case depend upon the particular modules to be housed and powered. Refer to the practices for the individual modules used to determine the leads that must be connected. Lead numbers referenced in the practices are designated on the 56-pin module connectors in the case.

Note: Many Type 10 modules share common pin assignments. Thus, when a 1914XX case is wired for a particular module, other modules can, in many cases, be used interchangeably without changes to the 1914XX case's original customer wiring. Be sure to check the module practices before changing the wiring.

2.06 All wiring associated with a 1914XX case is performed in four basic steps: First, all required connections (if any) are made between the four Type 10 modules (intermodule wiring). Next, connections from the modules to the facility are brought out to terminal strips *P1*, *P2*, and *P3* (internal wiring). Then, connections to the external equipment are made at quick-connect terminal blocks *TB1* and *TB2* (external connections). Finally, the required power and ringing connections are made. Detailed instructions for wiring the 1914XX case are given in paragraphs 2.07 through 2.11. Terminal block locations and pin designations for the 1914XX case are shown in figure 2.

intermodule wiring

2.07 Intermodule wiring connections are made by wire-wrapping jumpers between the 56-pin module connectors. Refer to each individual module's practice to determine the leads that must be connected between the modules, and install the jumpers as required. The card cage that houses the four modules is hinged and must be raised to provide sufficient working space for making the wire-wrapped connections to the 56-pin connectors. To do this, remove the four retaining screws (see figure 2). Then turn the metal tabs located on each side of the card cage's lower lip outward to hold the card cage in the raised position.

internal wiring

2.08 Internal wiring consists of wire-wrapping jumpers (for all external connections other than power and ringing) between the 56-pin module connectors and terminal strips *P1*, *P2*, and *P3*. The pins labeled -48V, RG, GND, and RGR on *P3* are nondedicated (i.e., not reserved for any particular module connections) and may be connected in any convenient order. Run the jumpers from the 56-pin module connectors through the cable ties at the top of the card cage and then through the cable tie on the printed circuit board. Leave enough slack in the jumpers to allow the card cage to be raised or lowered without putting excessive tension on the jumpers.

external connections

2.09 External connections are made to the two 30-position quick-connect terminal blocks, *TB1* and *TB2*. Each position of *TB1* and *TB2* is connected to the corresponding pin on terminal strips *P1*, *P2*, and *P3* via printed-circuit traces. Run all external wiring through the access hole in the side of the case and through the cable ties located nearby. If there are not enough positions on *TB1* and *TB2* to make all required connections, make the external

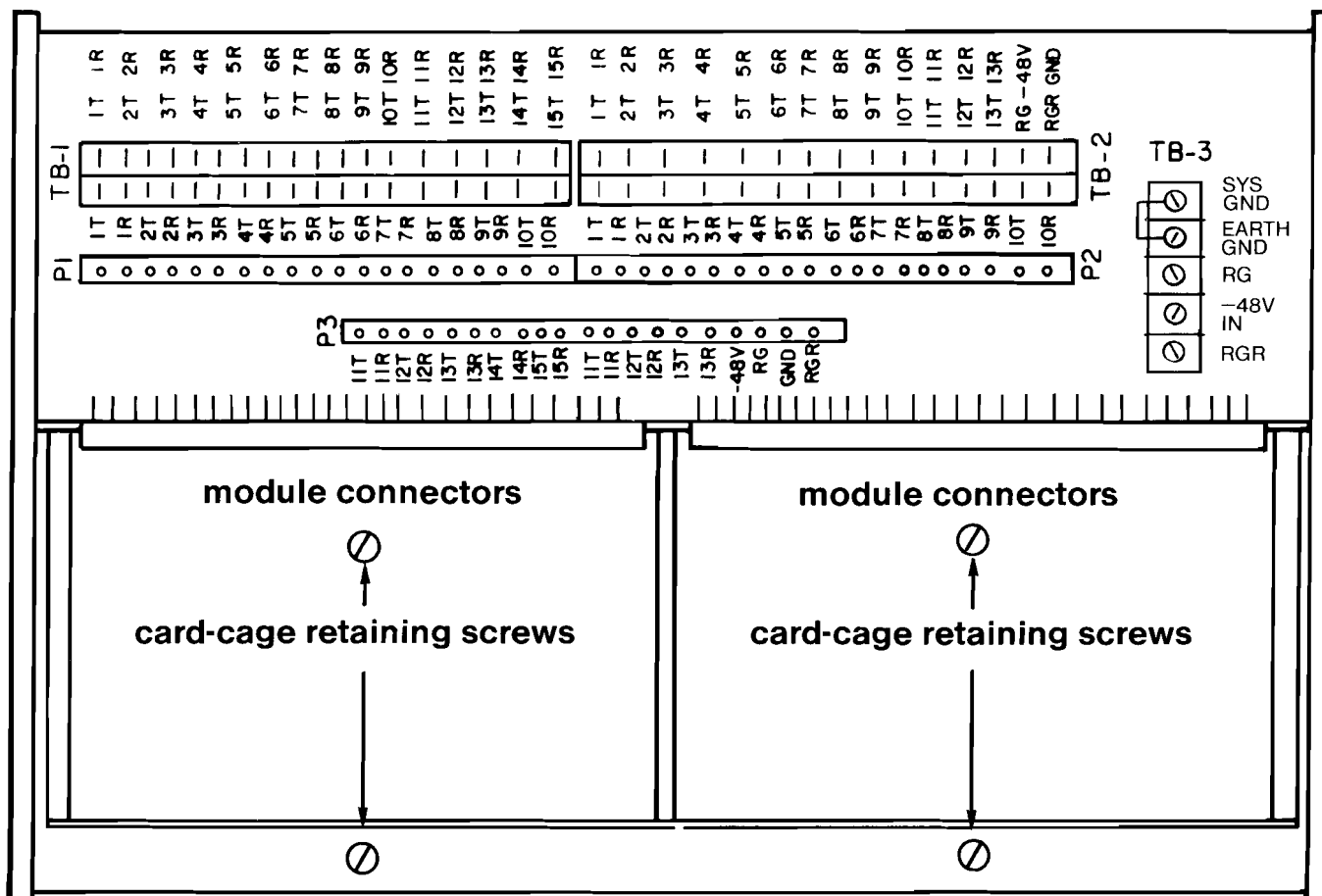


figure 2. 1914XX terminal block locations

connections by wire-wrapping directly to the 56-pin module connectors.

2.10 Power connections to the 1914P and 1914PR Apparatus Cases are made to five-position barrier-type terminal strip TB3. Connect the - terminal of the 8016 to the -48V IN terminal of TB3, and connect the + terminal of the 8016 to the SYS GND terminal of TB3. Then connect the 8016's GND terminal to the EARTH GND terminal of TB3. Power and ringing are extended to the modules by connecting the -48V, GND, RG, and RGR pins on

P3 to the appropriate module connector pins (refer to the individual module practices for power-input and ringing-input pin assignments). Factory-installed strap ST-2 connects the 1914XX's EARTH GND terminal to its SYS GND terminal, thus providing an earth-ground reference for the case's power supply. Strap ST-2 may be removed if an earth-ground reference is not desired. Power and ringing connections to the 1914XX case are listed in table 1.

2.11 When power and ringing are to be provided to a 1914 Apparatus Case, connect the external power and ringing supplies to the RG, -48V IN, RGR, and EARTH GND terminals of TB3. Then extend power and ringing to the modules by connecting the RG, -48V, RGR, and GND terminals of P3 to the appropriate pins of the module connectors.

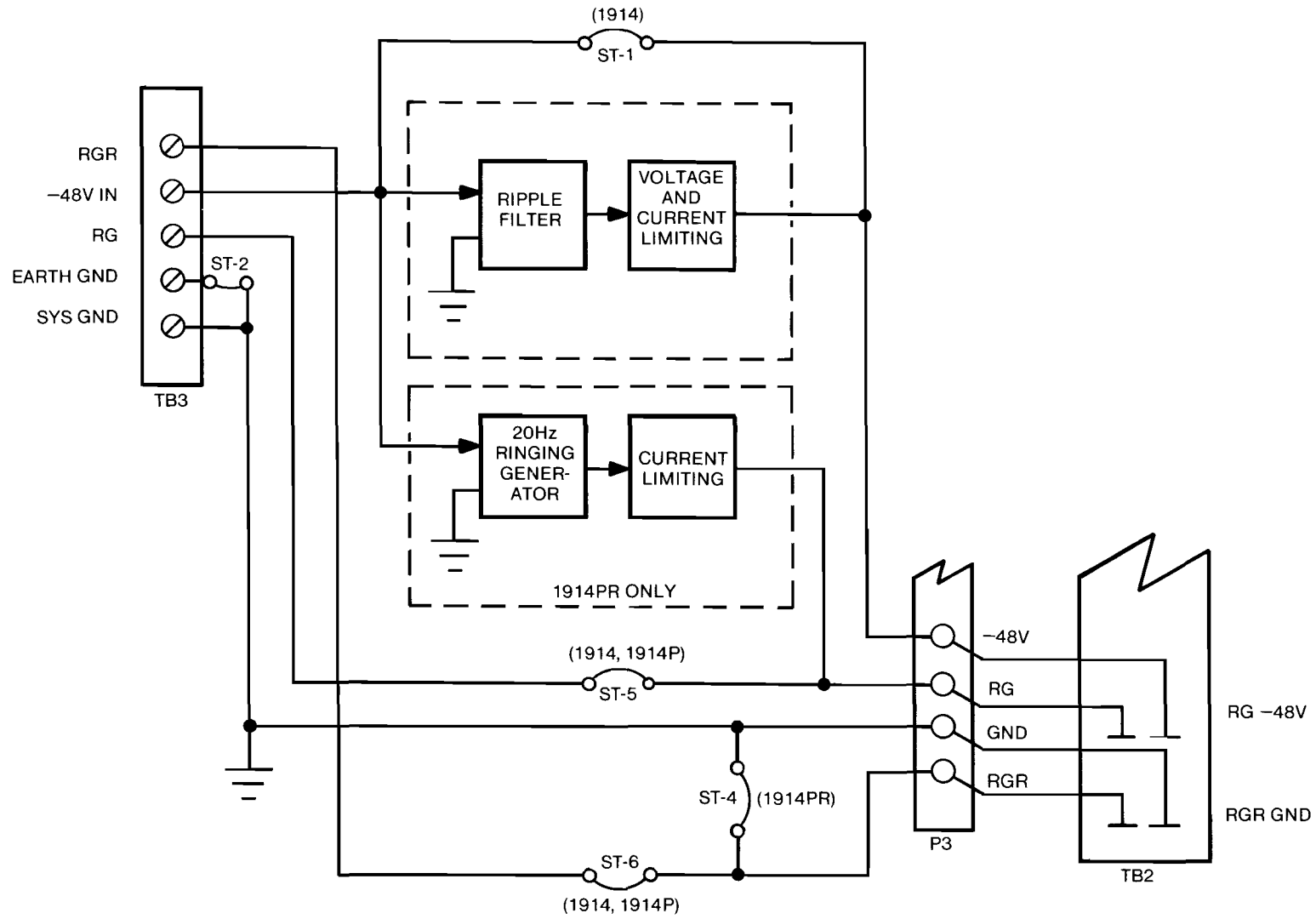
3. circuit description

3.01 This circuit description is intended to familiarize you with the 1914P and 1914PR Apparatus Cases for engineering and application purposes only. (Because the 1914 case contains no active circuitry, only the 1914P and 1914PR cases are covered in this circuit description.) Attempts to test or troubleshoot a 1914XX case internally are not recommended and may void its warranty. Procedures for recommended testing and troubleshooting in the field are limited to those prescribed in section 6 of this practice. Please refer to the 1914P and 1914PR block diagram, section 4 of this practice, while reading the circuit description.

connect:	to terminal block:	pin:
external power:		
- terminal of 8016 (battery)	TB3	-48V IN
+ terminal of 8016 (ground)	TB3	SYS GND
GND terminal of 8016 (earth ground)	TB3	EARTH GND
external ringing (1914 and 1914P only):		
ringing generator	TB3	RG
ringing generator return	TB3	RGR
internal power and ringing*:		
module negative battery input	P3	-48V
module ringing generator input	P3	RG
module ground	P3	GND
module ringing generator return	P3	RGR

*Internal power and ringing connections are made to the 56-pin module connectors as directed in the module practices.

table 1. Power connections to 1914, 1914P, and 1914PR



1914, 1914P, and 1914PR Apparatus Cases

831914/831914P/831914PR

4. block diagram

3.02 Both the 1914P and 1914PR cases provide filtered -48Vdc to their associated modules from the full-wave-rectified 48Vdc signal received from the 8016 Power Supply. The *ripple filter* on the 1914XX smooths the incoming supply voltage to a nominal -48Vdc with maximum ripple of 20mV peak-to-peak. Zener diodes associated with the *ripple filter* limit the output to 56Vdc . Overload protection is provided by a *current-limiting* circuit at the output of the *ripple filter*. When a short circuit occurs, the *current-limiting* circuit reduces the output current to near zero for the duration of the overload condition. Normal operation is restored automatically when the overload condition is removed.

3.03 In addition to the dc power supply, the 1914PR is equipped with a *20Hz ringing generator*, which is powered by the dc input from the 8016. The *ringing generator* consists of a variable-frequency oscillator and a power driver. The oscillator is factory-set for 20Hz output but can be adjusted for higher frequencies; contact Tellabs' Customer Service Group for details. The power driver boosts the oscillator's output to drive up to four high-impedance ringers. The output of the ringing generator is limited to 106Vac in compliance with part 68 of the FCC Rules and Regulations. Output protection for the *ringing generator* is provided by the *current-limiting* circuit. When an overload is detected, the *current-limiting* circuit momentarily turns off the oscillator. After approximately 50 to 100ms , the oscillator turns back on. If the overload condition still exists, the oscillator is turned off again. Normal operation is restored automatically when the overload condition is removed.

5. specifications

power requirements (1914P and 1914PR)

input to 8016: 105 to 129Vac , 60Hz

input to 1914P and 1914PR (from 8016):

nominal -48Vdc

voltage output to modules: -42 to -56Vdc , filtered, ground referenced

output ripple: 20mV peak-to-peak maximum

current output to modules: 0.55 ampere maximum (short-circuit protected)

ring generator output (1914PR only):

85 to 160Vac at 20Hz , which accommodates four high-impedance ringers (short-circuit protected)

operating environment (all)

20° to 130°F (-7° to 54°C), humidity to 95% (no condensation)

dimensions (all)

**4.50 inches (11.43 cm) high
13.30 inches (33.8 cm) wide
17.50 inches (44.5 cm) deep**

weight (without modules)

1914: 4 pounds 13 ounces (2.18kg)

1914P: 5 pounds (2.27kg)

1914PR: 8 pounds 8 ounces (3.90kg)

6. testing and troubleshooting

6.01 The **testing guide checklist** in this section may be used to assist in the installation, testing, or troubleshooting of the 1914XX Apparatus Case and/or its associated 8016 Power Supply (1914P and 1914PR only). The checklist is intended as an aid in the localization of trouble to this specific equipment. If the equipment is suspected of being defective, substitute new equipment (if possible) and conduct the test again. If the substitute operates correctly, the original should be considered defective and returned to Tellabs for repair or replacement as directed below. We strongly recommend that no internal (component-level) testing or repairs be attempted on the equipment. Unauthorized testing or repairs may void its warranty. Also, if the equipment is part of a registered system, unauthorized repairs will result in noncompliance with Parts 15 and/or 68 of the FCC Rules and Regulations.

Note: *Although repair service always includes an attempt to remove any permanent markings made by customers on Tellabs equipment, the success of such attempts cannot be guaranteed. Therefore, if equipment must be marked **defective** or **bad**, we recommend that it be done on a piece of tape or on a removable stick-on label.*

technical assistance via telephone

6.02 If a situation arises that is not covered in the **testing guide checklist**, contact Tellabs Customer Service as follows:

USA customers: Contact your Tellabs Regional Office listed below.

region	telephone	office location
US Atlantic	(203)798-0506	Danbury, CT
US Capital	(703)478-0468	Washington, DC
US Central	(312)357-7400	Chicago, IL
US Southeast	(305)834-8311	Orlando, FL
US Southwest	(214)869-4114	Dallas, TX
US Western	(714)850-1300	Orange County, CA

Canadian customers: Contact our Canadian headquarters in Mississauga, Ontario. Telephone (416)624-0052.

International customers: Contact your Tellabs distributor.

selecting correct product service procedure

6.03 If equipment is diagnosed as defective or if in-service equipment needs repair, follow the **product return procedure** in paragraph 6.04 in all cases except those where a critical service outage exists (e.g., where a system or a critical circuit is down and no spares are available). In critical situations, or if you wish to return equipment for reasons other than repair, follow the **product replacement procedure** in paragraph 6.05.

product return procedure (for repair)

6.04 To return equipment for repair, first contact Tellabs Product Services (see addresses and numbers below) to obtain a Material Return Authorization (MRA). A service representative will request

key data (your company's name and address, the equipment's model and issue numbers and warranty date code, and the purchase order number for the repair transaction). The service representative will then give you an MRA number that identifies your particular transaction. After you obtain the MRA number, send the equipment prepaid to Tellabs (attn: Product Services).

in the USA:

Tellabs, Inc.
4951 Indiana Avenue
Lisle, Illinois 60532
telephone (312) 969-8800

in Canada:

Tellabs Communications Canada, Ltd.
1200 Aerowood Drive, Unit 39
Mississauga, Ontario, Canada L4W 2S7
telephone (416) 624-0052

Enclose an explanation of the malfunction, your company's name and address, the name of a person to contact for further information, and the purchase order number for the transaction. Be sure to write the MRA number clearly on the outside of the carton being returned. Tellabs will inspect, repair, and retest the equipment so that it meets its original performance specifications and then ship the equipment back to you. If the equipment is in warranty, no invoice will be issued. Should you need to contact Tellabs regarding the status of a repair, call or write the Product Services department at our Lisle or Mississauga headquarters as directed above.

product replacement procedure

6.05 For critical service outages, Tellabs offers a choice of two replacement services (if the product is in replacement stock) in lieu of the 15-day repair and return service described above. These are **overnight express service** (at extra cost) anywhere in the USA and **five-day expedited delivery** (at no extra cost) anywhere in the USA and Canada. To obtain replacement equipment via either of these services, contact your Tellabs Regional Office in the USA or our Canadian headquarters in Mississauga, Ontario, for details, costs (if applicable), and instructions. Telephone numbers are given in paragraph 6.02. A service representative will request key data (your company's name and address, the equipment's model and issue numbers and warranty date code, and the purchase order number for the replacement transaction). Tellabs will then ship the replacement to you in accordance with the replacement service you request. An invoice in the amount of the replacement's current price plus any applicable service charges will be issued after the replacement is shipped. When you receive the replacement, pack the equipment to be returned in the replacement's carton, sign and enclose the packing list, affix to the carton the preaddressed label provided, and ship the carton prepaid to Tellabs at our USA or Canadian headquarters. When we receive the defective equipment (within 30 days of our issuing the replacement), the invoice will be adjusted to reflect only service charges (if applicable). Please note that OEM, modified, and manufacture-discontinued equipment is not available via overnight express service.

testing guide checklist

test	procedure	normal result	if normal conditions are not met, verify:
input voltage	Connect VOM (set to 50Vdc scale) to <i>-48 IN</i> and <i>GND</i> terminals on <i>TB3</i> .	-42 to -56Vdc present <input type="checkbox"/> .	8016 plugged into active 117Vac outlet <input type="checkbox"/> . Check input power wiring <input type="checkbox"/> . Replace 8016 and retest <input type="checkbox"/> .
output voltage	Connect VOM (set to 50Vdc scale) to <i>-48V</i> and <i>GND</i> terminals on <i>P3</i> .	-42 to -56Vdc present <input type="checkbox"/> .	8016 plugged into active 117Vac outlet <input type="checkbox"/> . Check internal power wiring <input type="checkbox"/> . Replace apparatus case and retest <input type="checkbox"/> .
ringing voltage (no load)	Connect VOM (set to 250Vac scale) to <i>RG</i> and <i>RGR</i> terminals on <i>P3</i> .	100 to 106Vac present <input type="checkbox"/> .	DC input power <input type="checkbox"/> . Internal wiring <input type="checkbox"/> . Replace apparatus case and retest <input type="checkbox"/> .
ringing voltage (full load)	Maintain connections from previous test. Connect 2500-ohm, 5-watt resistor across <i>RG</i> and <i>RGR</i> terminals on <i>P3</i> .	85 to 106Vac present <input type="checkbox"/> .	Same as above <input type="checkbox"/> .