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rev A

practice section 816256

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6256 RBR Trunk

contents

1. general description

1.01 The 6256 Reverse Battery Ringing (RBR) Trunk module regenerates signaling and supervision between a loop start or ground start station facility or PBX trunk and a loop start common control central office (normally centrex) trunk. While the 6256 is used in association with a station facility or PBX trunk, it appears as a central office trunk to the centrex equipment. This allows the centrex to provide the line or PBX trunk with those features normally associated with a CO trunk. (See application section 2.01.) The 6256 provides reverse battery detection circuitry to accommodate reverse battery signals integral to trunk appearances of the common control switch. Aside from its reverse battery circuitry and a built-in 2second-on/4second-off ringing interrupter, the 6256 module is very similar in function and features to a dial long line (DLL) unit, such as Tellabs' model 7002.

1.02 On calls toward the station, the 6256 detects a reverse battery signal from the switching equipment and applies an external ringing source toward the station through its 2second-on/4second-off ringing interrupter. Ringback tone energy is provided and ringing is tripped by the 6256 when the station answers. On calls from the station, the 6256 detects and regenerates an off-hook condition, and repeats dial pulsing. Additionally, in the ground start mode of operation, the 6256 accommodates tip-ground/ring-ground conditions of a ground start PBX trunk.

1.03 Maximum signaling (station-side) range of the 6256 is 3000 ohms loop resistance at 48Vdc operation. The 6256 may also be operated at 72Vdc (for 4500 ohms maximum range) or at 96Vdc (for 6000 ohms maximum range). When operated at 48Vdc, the 6256's maximum range provides 13.3mA loop current predicated upon 3000 ohms cable resistance plus 600 ohms station instrument and internal module resistance.

1.04 Current limiting circuitry allows the 6256 to be applied to long or short loops at any specified operating voltage.

1.05 In addition to increasing the signaling range of the circuit to which it is applied, the integral repeat coil of the 6256 also improves circuit balance

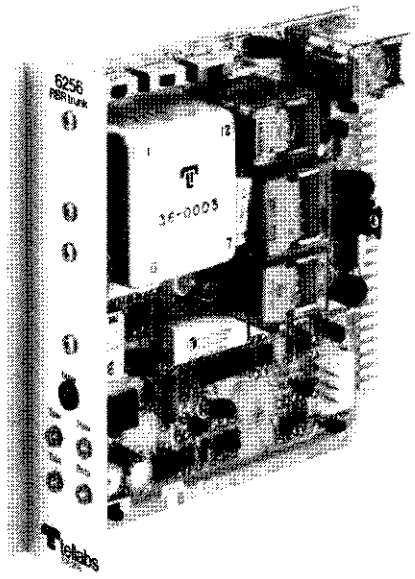


figure 1. 6256 RBR Trunk

and noise characteristics by providing balanced longitudinal isolation between switching and station sides.

1.06 Where pulse distortion is a problem, the 6256 may be equipped with an optional model 9901 or 9902 Pulse Corrector subassembly. The 9901 or 9902 plugs into receptacles on the printed circuit board of the module. The 9901 corrects pulses in the 8-14pps range, while the 9902 operates at 20pps.

1.07 Heat energy, generated during short-loop, high-current operation, is dissipated by using the module's front panel as a heat sink, and by the incorporation of precision ballast lamps.

1.08 Features provided by the 6256 include modular construction; switchable loop start or ground start station-side operation (switching-side operation is loop start only.); solid state reverse battery detection and ring trip circuitry; ring trip during silent or ringing interval; an optional pulse corrector (Tellabs model 9901 or 9902); less than 5% pulse distortion when the Pulse Corrector is not used; loop current limiting; switchable ringing mode selection; switchable 600 or 900 ohm impedance on both station and switching sides of the unit; a front panel LED to indicate circuit status; relay contacts to disable an associated voice frequency repeater during idle; signal and transient limiting circuitry; flexible ± 48, 72 or 96Vdc station loop operation; and a switchable 4wire option for simplex operation.

1.09 The 6256 mounts in one position of the Tellabs Type 10 Shelf, variations of which provide for relay rack and apparatus case installation. In

relay rack applications, the Type 10 Shelf mounts up to 12 modules across a 19" rack or up to 14 modules across a 23" rack. In either case, 6" vertical rack space is utilized.

2. application

2.01 The 6256 is used in conjunction with the portion of a common control switch designated for centrex service to permit service options programmed only for predetermined classes of trunks to be applied to centrex subscriber lines or PBX trunks. For example, in a shared (partitioned) centrex, certain line-to-line calls (those from one customer's stations directly to another customer's stations) may not be desireable. While the centrex has no way of restricting line-to-line calls, it can restrict line-to-trunk calls. The 6256, therefore, makes a line look like a trunk, thus allowing line-to-line restriction. In the same manner, the 6256 may be used to restrict individual stations of a centrex subscriber from direct inward dialing (DID) access to PBX trunks, or it may be used to allow the centrex to apply ringing to trunks that would not otherwise respond to a reverse battery signal. The 6256 is normally connected to a trunk-link port of the centrex machine. While the majority of 6256 use involves these specific centrex applications, other applications utilizing the module's reverse battery ringing trunk may be accommodated. Thoroughly review sections 1 and 2 of this practice to determine if the 6256 may be of use in your particular non-centrex-oriented application.

2.02 The 6256 may be applied to either a loop start or ground start station-side facility or PBX trunk. (A switch option selects the loop start or ground start mode.) Switching-side operation, because the module normally interfaces a centrex, is loop start only.

2.03 Because the centrex uses a reverse battery signal to apply ringing to a station in a line-to-trunk call, the 6256 incorporates reverse battery detection circuitry. In response to a reverse battery signal, ringing (from an external source) is applied toward the station through the 6256's integral 2second-on/4second-off ringing interrupter.

2.04 The following functions (e.g., range extension, optional pulse correction, etc.) and applicational aspects of the 6256 RBR Trunk module are similar to those of a dial long line (DLL) module.

2.05 The integral repeat coil of the 6256 provides isolation and longitudinal balance to the circuit by applying a separate (locally derived) source of loop current toward the station.

2.06 Local sources of battery both power the 6256 and supply the fresh source of talk battery that the 6256 extends toward the station. The 6256 module itself operates from −48Vdc, while battery potentials of 24, 48, 72 or 96Vdc may be applied singly or in combination to the 6256 for extension toward the station.

2.07 48Vdc operation provides a maximum signaling and supervisory range of 3000 ohms on the station side of the 6256; 72Vdc operation provides a range of 4500 ohms; and 96Vdc provides a range of 6000 ohms.

2.08 Talking battery is supplied to the station side of the loop through 400 ohms resistance. This internal resistance must be considered in calculation of station loop current. (See table 1.)

2.09 Switching-side range of the 6256 RBR Trunk module is determined by the central office equipment's range.

talk battery potential	maximum 6256 signaling range (range providing 23mA is somewhat less)
−48Vdc	3000Ω (23mA provided over 1488Ω cable +600Ω tel set and internal resistance)
−72Vdc	4500Ω (23mA provided over 2530Ω cable +600Ω tel set and internal resistance)
−96Vdc	6000Ω (23mA provided over 3570Ω cable +600Ω tel set and internal resistance)

table 1. Maximum station-side ranges

2.10 While normally physically at or near the centrex's trunk-link port, the 6256 may be located at any point in the loop at which the unit can be mounted, powered, and optionally supplied with ringing. This location must also be within the normal range of the switching equipment and within current requirements of the station. (Refer to paragraphs 2.06 thru 2.09 and figure 2.)

2.11 The 6256 may be applied singly or in tandem with DLL units, such as the Tellabs 7002 DLL. The practical limitation on tandem operation with DLL's is three DLL's. Whenver the 6256 is operated in tandem with more than one DLL, the pulse correction option is recommended.

2.12 When operated in tandem with DLL's, distances from the station to the nearest DLL, and from the switching equipment to the 6256 module on that side of the circuit, continue to be determined, respectively, by current requirements and switching equipment range. Distance between tandem DLL's is limited by the maximum station-side range of the respective DLL's. (Refer to paragraphs 2.06 thru 2.09 and figure 3.)

2.13 When the 6256 is used in the ground start mode on a PBX-CO trunk, the sensitivity of the PBX's tip-ground sensing circuitry must be considered. In cases where the 6256 must be located at a distance exceeding the range of this sensing circuitry, external positive voltage may be applied to the A-lead of the 6256, replacing the ground signal, and thus giving greater range to the PBX sensing circuitry.

2.14 Though basically a 2wire device, the 6256 Trunk may also be applied to a 4wire circuit on either its station or switching equipment side. The 6256, however, must interface the 4wire circuit(s) through a 4wire transmission device such as a line

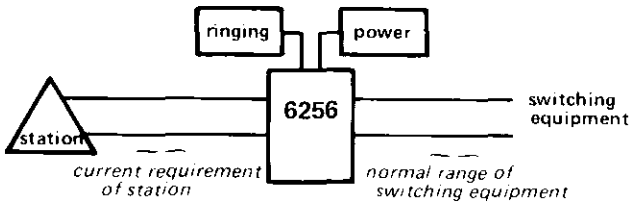


figure 2. Range limits

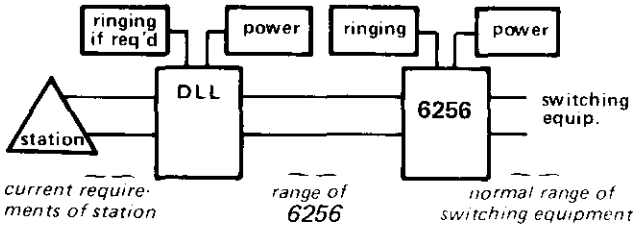


figure 3. Tandem range limits

amplifier or voice frequency repeater. This interface is accomplished by the assignment of the T and R leads of the 6256 to the A and B-leads or simplex leads of the 4wire device(s). Figure 4. *TIP STA* and *RING STA* leads of the 6256 are connected to station-side A and B or simplex leads of the 4wire device, and likewise, *TIP SW* and *RING SW* of the 6256 Trunk are connected to switching-side A and B or simplex leads.

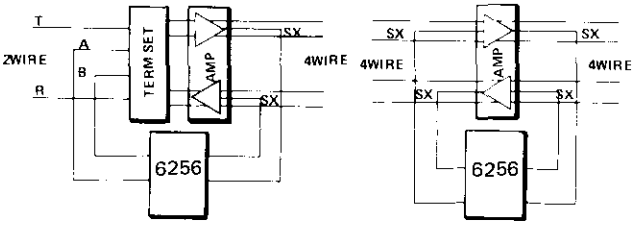


figure 4. 2W/4W and 4W/4W interfaces

2.15 The 6256 may be optioned for internal or external connection to power sources. By "internal", it is meant that the same power source is applied toward the station as is supplied to operate the module. Because the module's internal power circuit requires –48Vdc, internal powering limits the 6256 to 48Vdc operation for application of talk battery as well.

2.16 External connection puts external power (48, 72 or 96Vdc) through 400 ohms resistance directly into the loop, with the module powered separately.

2.17 The 6256 has access, via switch option, to any of the voltages (or combinations of those voltages) which may be present at the rear of the mounting shelf. The advantage of internal loop powering is that it saves two leads. The advantage of external loop powering is that it is not limited to 48Vdc.

2.18 Current limiting circuitry is provided by the 6256 for both the station-side and switching-side loops. This both prevents damage to the unit or external equipment, and enhances the module's ability to operate in short loop situations.

2.19 Ringing is repeated and interrupted by the 6256, and the ring generator local to the module may be biased in one of several ways. This biasing voltage is supplied by dc voltage connected in series with the ac ringing source. It is, therefore, possible to derive 48, 72 or 96Vdc biasing, as described in paragraph 3.09. The ring supply bias voltage determines the maximum ring trip range (which is the limiting factor in ringing) toward the station. With 48Vdc bias, the range is 0-3000 ohms; with 72Vdc bias, 0-4500 ohms; and with 96Vdc bias, 0-6000 ohms.

2.20 A start lead is also provided to start the local ringing generator when reverse battery is applied toward the 6256 by the switching equipment.

2.21 The 6256 may be used on circuits employing any type of ringing other than multi-party biased selective ringing. Any combination of five (5) ringers may be rung simultaneously.

2.22 A repeater enable lead is provided by the 6256 to turn off an associated voice frequency repeater when the circuit is idle.

2.23 When used without the optional pulse corrector, the 6256 contributes less than 5% distortion to dial pulsing. When the 9901 Pulse Corrector is used, input dial pulses at 8-12pps between 30% and 70% break will be corrected to 58% ± 2% break, and pulses at 14pps between 40% and 65% break will be corrected to 57% ± 3% break. With the 9902 Pulse Corrector, input dial pulses at 20pps between 30% and 70% break are corrected to 58%±2% break.

3. installation

inspection

3.01 The 6256 RBR Trunk module 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

3.02 Each 6256 module mounts in one position of the Tellabs Type 10 Mounting Shelf, variations of which provide 19" and 23" relay rack mounting. The module plugs physically and electrically into a 56-pin connector at the rear of the Type 10 Shelf.

installer connections

3.03 Before making any connections to the mounting shelf, make sure that power is **off** and modules are **removed**. Modules should be put into place only **after** properly optioned and **after** wiring has been completed.

3.04 Table 2 lists connections to the 6256 module. All connections are made via wire wrap at the 56-pin connector at the rear of each module's mounting shelf position. Pin designations are found on the body of the connector.

options and alignment

3.05 No alignment is required. Options are selected via slide switches and the inclusion or exclusion

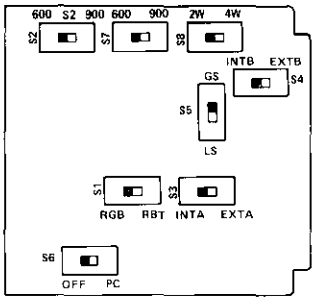


figure 5. Option location

of the plug-in 9901 or 9902 Pulse Corrector subassembly. The option location diagram, figure 5, shows relative positions of the switch and plug-in options on the 6256 printed circuit board.

3.06 600 or 900 ohm impedance matching to the switching and station sides of the 6256 is effected through use of slide switches S2 and S7, respectively.

3.07 Switch S5 is used to select the loop start or the ground start (station-side) mode of operation.

3.08 Switch S8 has two positions. In 2wire applications, S8 is set to the *2W* position. To interface a 4wire transmission device on either the station side of the 6256 or the switching equipment side, or both, switch S8 must be set to the *4W* position. Simplex or A and B leads from the 4wire device are then wired into *TIP SW* and *RING SW* (pins 51 and 33) if the 4wire device is on the switching equipment side of the 6256; and into *TIP STA* and *RING STA* (pins 41 and 49) if the 4wire device is on the station side of the 6256.

3.09 Ringing and ringing bias potentials are determined by 2-position slide switch S1 and those voltages applied to pins 13, 45 and 11. With the S1 switch in the *RGB* position, the ringing generator bias is determined by the difference in potential between the dc voltage of the *APWR* lead and the dc voltage connected to the local ring generator. When the S1 switch is in the *RBT* position, the dc voltages present on pin 45 *RING GEN* and 11 *RING GEN RETURN* are added to determine the ringing generator bias. Bias potentials may be 48, 72, or 96Vdc. Resulting ring trip range limitations are discussed in paragraph 2.19.

connect:	to pin:
TIP SW (Tip from switching equipment)	51
RING SW (ring from switching equipment)	33
TIP STA (Tip from station)	41
RING STA (ring from station)	49
GND (Ground in)	17
BATT (–48Vdc battery in)	35
RPTR EN (Repeater enable) (when required)	29
APWR (Tip power in) (when required)	13
BPWR (Ring power in) (when required)	53
MACH ST (Ring generator start) (when required)	37
RING GEN RTN (when required)	11 or 12
RING GEN (when required)	45 or 46

notes: In 4wire applications, see paragraph 3.08 for wiring information.
Wiring for various ringing modes is discussed in paragraph 3.09.
Wiring for various input power modes is discussed in paragraph 3.12, 3.13, and 3.14, and table 3.

table 2. External connections

3.10 Pulse Correction is effected by setting switch S6 to position *PC* and installing a Tellabs 9901 or 9902 Pulse Corrector subassembly. The Pulse Corrector plugs into a 4-pin connector on the 6256 circuit board and is further held in place by a snap-in post. Be sure that both ends of the Corrector are secured. If the Pulse Corrector is not used, set switch S6 to the *OFF* position.

3.11 Power Options: Switches S3 and S4 determine whether the talk battery extended to the station from the 6256 Trunk is internally or externally derived. See table 3.

3.12 For internal power (tapping the same –48Vdc source that supplies power to the 6256 module through pins 17 and 35), set switches S3 and S4 to *INTA* and *INTB* positions respectively. In this mode of operation, connections need not be made to pins 13 and 53. The module is, however, limited to 48Vdc operation.

3.13 For external power to the loop (derived through power leads *APWR* and *BPWR*), the S3 and S4 switches should be set to the *EXTA* and *EXTE* positions. Power to the loop is now determined by the sum of the potentials connected to the *APWR* and *BPWR* leads through pins 13 and 53. The sum of these potentials must not exceed 96Vdc. The *APWR* potential must be positive or ground, and the *BPWR* potential must be negative and at least –48Vdc. Resulting signaling and supervisory range limitations are shown in table 3.

3.14 In the ground start mode of operation, the *RING GEN RTN* lead may not be biased negatively, as this effects a negative bias on the Tip lead (station side) during ringing. The operation of the associated PBX trunk circuit may require that the Tip lead be at ground or positive potential to allow the operation of the incoming call circuitry. If the PBX trunk circuitry does require this ground or positive potential, then a negatively biased ringing generator or a positive voltage connected to the *RING GEN RTN* lead is required.

4. circuit description

4.01 This circuit description is intended to familiarize you with the 6256 Trunk for engineering and application purposes only. Attempts to troubleshoot the 6256 internally are not recommended. Procedures for recommended troubleshooting in the field are limited to those prescribed in Section 7 of this practice.

4.02 The Trunk provides all functions required for the regeneration of dc signaling and supervisory and ac ringing signals as required for loop start or ground start operation. The unit provides detection and regeneration functions toward the station and switching sides.

4.03 Switching-side loop current is limited by the non-linear resistance of lamp LP2. Station-side loop current is provided by the 6256 from a local power supply, through two 200 ohm resistors. This current is limited by the insertion of non-linear resistance lamps LP1 and LP3 through operation of the PR RELAY.

4.04 A ringing generator start lead (MACH ST) is provided by the RU RELAY that indicates a switching side seizure by grounding pin 37.

4.05 A voice frequency repeater enable lead (RPTR EN) is provided by the B RELAY that indicates a station-side seizure by grounding pin 29.

4.06 Metallic line voltage transient protection and signal limiting is provided by a varistor, which limits the signal and transients to approximately 5 volts peak.

4.07 A front-panel-mounted, red, light emitting diode (LED) follows the status of the A RELAY, to indicate dialing and circuit-busy conditions.

4.08 In the idle state, the A, B, PR, RU and TGS relays are released. Seizure is indicated by a station loop closure which operates the LOOP CURRENT SENSE circuitry. The LOOP CURRENT SENSE circuitry indicates the loop current magnitude to the LOOP CURRENT LEVEL DETECT circuitry, which operates the slow-release B RELAY and then (via the optional pulse corrector, if provided) the A RELAY. If the loop current is of sufficient magnitude, the PR RELAY also operates. The operation of the PR RELAY inserts current limiting non-linear resistance into the station loop to prevent excessive heat build-up inside the unit and to protect external equipment from excessive current. The operation of the A and B RELAYS causes a switching side loop closure and seizure of the switching equipment.

Range (Note 1)	Possible Talk Battery Sources		Possible Ringing Generator Bias Voltage Sources	
	internally connected: (switches S3 & S4 "INTA" & "INTB")	externally connected: (switches S3 & S4 at "EXTA" & "EXTB")	repeated ringing: S1 switch at "RGB"	repeated ringing: S1 switch at "RBT"
3000 ohms (provides 23mA over 1488Ω cable — Note 4)	−48Vdc on BATT Ground on GND	−48Vdc on BPWR Ground on APWR (Note 2)	48Vdc total bias potential externally from the APWR lead to the ring generator	48Vdc total bias from the RING GEN to the RING GEN RETURN lead (external bias voltage) (Note 3)
4500 ohms (provides 23mA over 2530Ω cable — Note 4)	N/A	−48Vdc on BPWR and +24Vdc on APWR —or— −72Vdc on BPWR and ground on APWR (Note 2)	72Vdc total bias potential externally from the APWR lead to the ring generator	72Vdc total bais from the RING GEN lead to the RING GEN RETURN lead (external bias voltage) (Note 3)
6000 ohms (provides 23mA over 3570Ω cable — Note 4)	N/A	−48Vdc on BPWR and +48Vdc on APWR —or— −72Vdc on BPWR and +24Vdc on APWR —or— −96Vdc on BPWR and Ground on APWR (Note 2)	96Vdc total bias potential externally from the APWR lead to the ring generator	96Vdc total bias from the RING GEN lead to the RING GEN RETURN lead (external bias voltage (Note 3)

Note 1. Either talk battery or ring gen bias potential (whichever is lower) limits range. For example, with 96Vdc talk battery and 48Vdc ring bias, circuit is limited to 48Vdc range.
Note 2. See paragraph 2.12.
Note 3. See paragraph 3.14.
Note 4. Cable resistance derived assuming 600Ω tel set and 6256 internal resistance.

table 3. Range and option relationships

4.09 When the switching equipment is ready to receive dial pulsing, it applies dial tone to the line, which is transmitted to the station side through the transformer. Station-side dialing is sensed by the LOOP CURRENT SENSE and LOOP CURRENT LEVEL DETECT circuitry, causing the A RELAY to pulse the switching-side loop current. The B RELAY and PR RELAY (if operated) remain operated during dial pulsing.

switching side seizure

4.10 Seizure of the circuitry by the switching equipment is initiated by application of reverse loop current. The loop reversal is detected by the REV BATT circuitry, which operates RU and TGS relays and starts the INTR. The RU RELAY applies ring voltage to the station side through the ringing mode selection S1 switch and the RING TRIP DETECTION circuitry. The operated RU RELAY applies locally supplied ring voltage source to the station side. The REV BATT circuitry repeats the ringing signal toward the station until a ring trip signal is detected or the call is abandoned.

4.11 Ring trip is detected during the silent interval by the LOOP CURRENT SENSE and LOOP CURRENT LEVEL DETECT circuitry. The operation of the A and B RELAYS then causes switching-side loop current to flow, which causes the switching equipment to ring trip. If ring trip occurs during the ringing interval, the RING TRIP circuit operates, causing the A and B RELAYS to operate. These relays ring trip the switching equipment by causing switching equipment loop current to flow.

4.12 Disconnect is accomplished by a sustained on-hook (no loop current) from the station. This causes the A RELAY to release, which opens the

loop toward the central office. After an additional period, the B RELAY releases.

6. specifications

station side range limitations
48Vdc operation – 3000 ohms loop resistance + tel set (200 ohms nominal)
72Vdc operation – 4500 ohms loop resistance + tel set (200 ohms nominal)
96Vdc operation – 6000 ohms loop resistance + tel set (200 ohms nominal)

switching-side range
range of the central office equipment (typically 1200 to 1500 ohms)

station side loop current
0-100mA current limited
(50mA current limiting activate point)

maximum switching side loop current
100mA max. (direct 48Vdc battery)
70mA max. (0 ohm loop, 400 ohm, 48Vdc battery)

dialing distortion
less than 5% without pulse corrector

dialing speed
(with 9901 Pulse Corrector) 8-14pps
(with 9902 Pulse Corrector) 20pps
(without Pulse Corrector) 6-15pps

pulse correction (optional)
(using Tellabs 9901 Pulse Corrector)
input: 8-12pps (30-70% break) = output: 58±2% break
input: 14pps (40-65% break) = output: 57±3% break
(using Tellabs 9902 Pulse Corrector)
input: 20pps (30-70% break) = output: 58±4% break

ringing interruption
2seconds-on / 4seconds-off ± 10%

repeated ringing voltage
85 to 130Vac, 16 to 67Hz
(battery or ground connected ring generator)

ring trip range
(either superimposed or grounded ring generator)
48Vdc bias – 3000 ohms loop resistance
72Vdc bias – 4500 ohms loop resistance
96Vdc bias – 6000 ohms loop resistance

ringing capability
all modes except multi-party biased selective
(up to 5 ringers may be rung simultaneously)

impedance matching
600 or 900 ohms, switch-selectable, station side or switching side

crosstalk coupling
90dB minimum loss

minimum facility leakage resistance station side
20k ohms, tip to ring, tip to ground, or ring to ground

maximum input level
+10dBm

frequency response
300 to 3400Hz ±1dB

insertion loss
0.5dB maximum at 1kHz

reverse battery detection delay
100ms

power requirements
10mA idle
75mA operated
(plus station side loop current)

longitudinal
balance: 60dB minimum
environment: 10Vac RMS minimum tip or ring to ground (equivalent to 60Vac RMS line induction.) Measured with 6256 removed, and tip and ring connected together to ground through a 500 ohm resistor.)

echo return loss
23dB minimum at 40mA loop current

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

dimensions
5.58 inches (14.17cm) high
1.42 inches (3.61cm) wide
5.96 inches (15.14cm) deep

weight
20 ounces (567 grams)

mounting
one position of Tellabs Type 10 Shelf or one position of Wescom Type 400 Shelf.

7. testing and troubleshooting

7.01 This Testing Guide may be used to assist in the installation, testing or troubleshooting of the 6256 RBR Trunk module. The Guide is intended as an aid in the localization of trouble to a specific module. If a module is suspected of being defective, a new module should be substituted, and the test conducted again. If the substitute module operates correctly, the original module should be considered defective and returned to Tellabs for repair or replacement. It is strongly recommended that no "internal" testing or repairs be attempted on the 6256 module. Unauthorized testing or repairs may void the 6256 warranty.

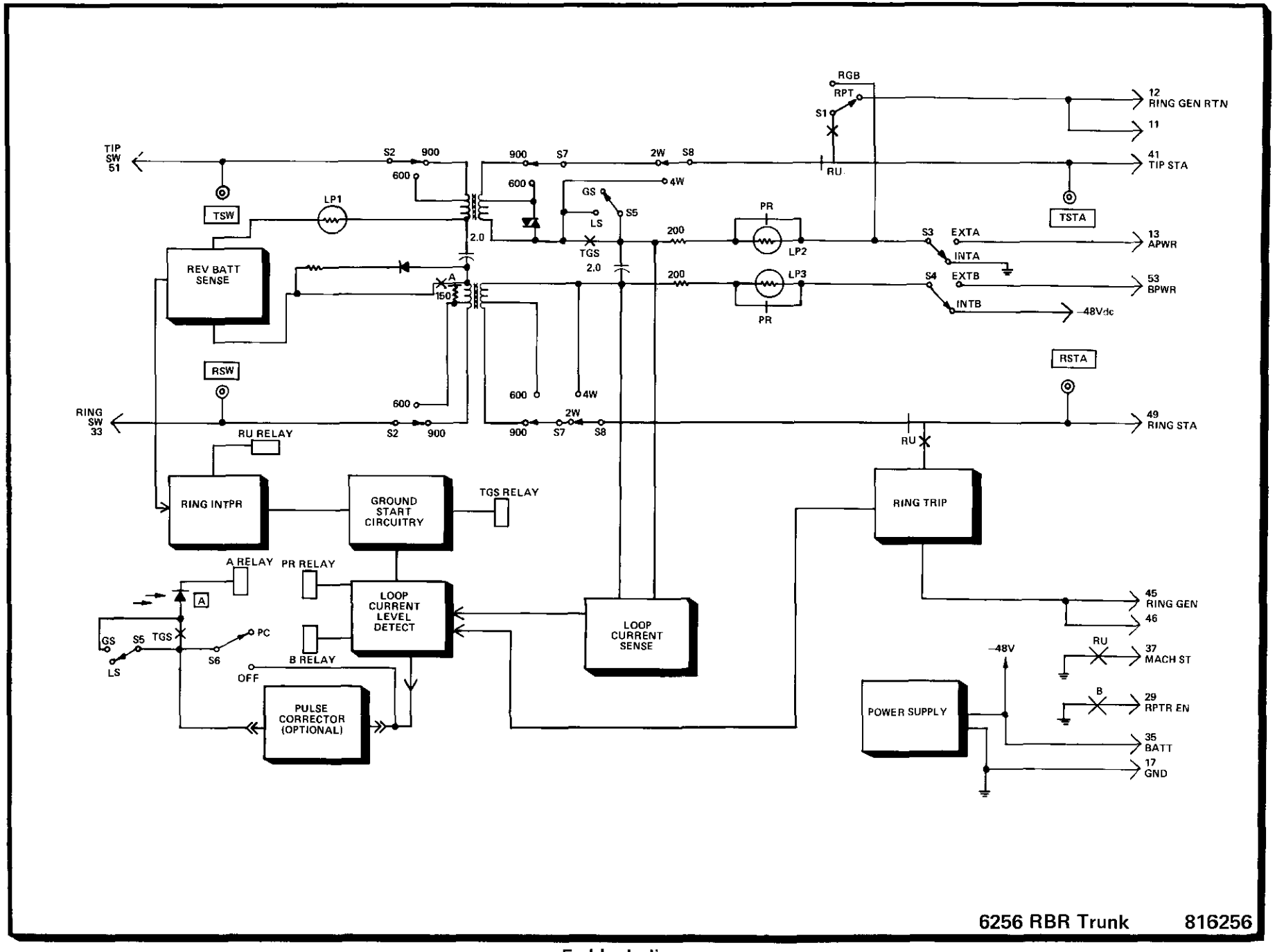
7.02 If a situation arises that is not covered in the Testing Guide, contact Tellabs Customer Service (312)969-8800 for further assistance.

7.03 If a 6256 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. (i.e; service outages, etc.).

replacement

7.04 If a defective 6256 module is encountered, notify Tellabs directly, via telephone, letter or twx. Notification should include all relevant information, including the 8X6256 part number (from which we can determine the Issue of the module in question). Upon notification, we shall ship a replacement module to you. If the Warranty date of the defective module has not elapsed, the replacement module will be shipped at no charge. Package the defective module in the replacement module's carton; sign the packing list included with the replacement module and enclose it with the defective module (this is your return authorization), affix the preaddressed label provided with the replacement module to the carton being returned; and ship the equipment prepaid to Tellabs.

testing and troubleshooting continued on page 8



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5. block diagram

repair and return

7.05 Return the defective 6256 module, shipment prepaid, to: Tellabs Incorporated
4951 Indiana Avenue
Lisle, Illinois 60532
Attn: repair and return dept.

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

6256 testing guide checklist

test	test procedure	normal conditions	if normal conditions are not met, verify:
Circuit Idle (Loop Start)	Connect VOM (set to 50Vdc or 250Vdc scale) to test points Tsw and Rsw, then to Tsta and Rsta.	Line busy lamp is out ☐. Minimum 48Vdc battery on Tsw and Rsw ☐. Minimum 48Vdc local talk battery on Tsta and Rsta with Tsta positive ☐.	Local power ☐. Wiring ☐. No excessive cable leakage ☐. No ground on ring conductor ☐. No open switching cable pairs ☐. No defective switching equipment ☐. Switch S5 in Loop Start ☐.
Circuit Idle (Ground Start)	Connect VOM to Tsta and -48Vdc and then to Rsta and Gnd.	0Vdc on Tip ☐, and -48Vdc on Ring ☐.	Local power ☐. Wiring ☐. No grounded tip conductor ☐. No open or grounded ring conductor ☐. Switch S5 in ground start (GS) position ☐. No defective switching equipment ☐.
Ringing	Using test points Tsw and Rsw, and Tsta and Rsta, measure switching (reverse battery) and station-side ringing signal with VOM (set to 250Vac scale).	Line busy lamp is out ☐. Switching side ringing signal (Tsw is negative with respect to Rsw) of 40Vdc minimum ☐. Station-side ringing signal interrupted at 2on/4off rate, 65Vac minimum ☐.	Option switch S1 in correct position (see section 3.09) ☐. Check local ringing source ☐. *See note
Ring Trip	With tel set on station-side tip and ring, use VOM (at 250Vac, then 50Vdc scales) to observe ring trip on station side of module — access at test points Tsta and Rsta.	Place tel set off-hook during ring cycle: busy lamp lights ☐, and ring voltage removed from station side ☐. After ring trip occurs, both switching and station-side experience a drop in dc loop voltage ☐.	Station is within specified range of trunk ☐. DC-biased generator is present ☐.
Supervision (Loop Start)	Observe current with VOM (set to 100mA scale) connected across tip and ring (Tsta and Rsta).	With VOM connected across station side tip and ring, busy lamp is on ☐, and current between 16 and 80mA ☐.	Local power ☐. Option switches set correctly ☐.
Supervision (Ground Start)	With VOM between Tsta and —48Vdc, connect Rsta to Gnd.	Busy lamp on ☐. —48Vdc ☐.	Local power ☐. Switch S5 in ground start (GS) position ☐.
Dialing (for pulse correction testing, see 9901/9902 Practice)	With tel set on station tip and ring, access test points Tsw and Rsw with VOM (50Vac scale) from Tsta to Gnd., and from Rsta to Gnd.	Busy lamp follows dial pulses ☐. Vom follows pulses (average 20-30Vdc during pulsing ☐).	Option switches S3 and S4 correct ☐. Longitudinal voltages with tel set off-hook are less than 10Vac ☐.
Talking	Tel set across station tip and ring.	Busy lamp goes off when tel set placed on-hook ☐.	Longitudinal voltages less than 10Vac ☐. Excessive cable leakage ☐. Option switches ☐.

*Note: If the loop between the 6256 and the station has excessive leakage resistance, or if capacitance in excess of 5μFd exists between Tip and Ring, or from Ring to Ground, pre-trip may occur. This will be evidenced by a short burst of ringing during each ringing cycle. If this symptom occurs, the abnormal loop condition should be corrected.