263B Data Station Termination (DST) Assembly
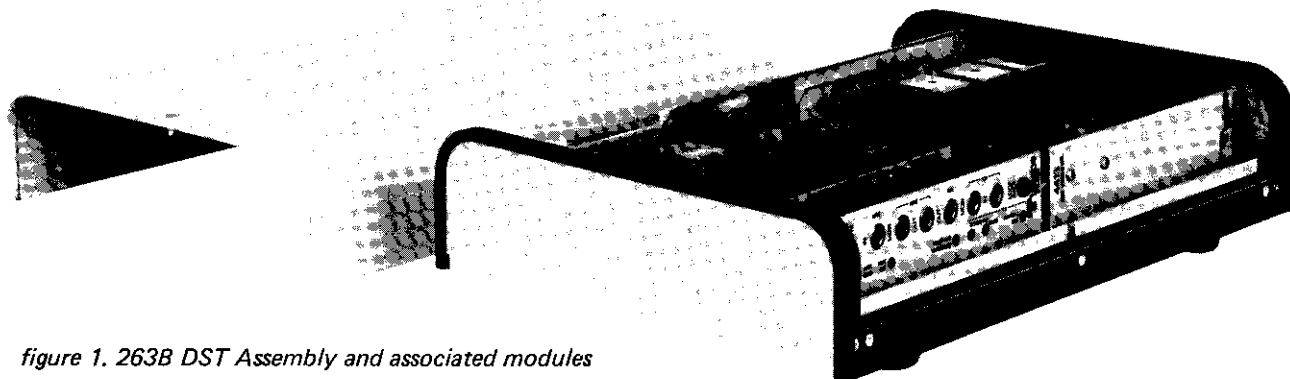

figure 1. 263B DST Assembly and associated modules

contents

1.   general description

1.01   The Tellabs 263B Data Station Termination (DST) Assembly (figure 1) is designed for use in data/voice-alternate applications of Tellabs' DST modules. The 263B Assembly mounts, supplies power to, and provides external connections for one DST module (4412A, 4412AS, 4412B, 4412C, 4412D, or 4212A) and one DST/Voice Alternate (VA) module (4413). The DST modules provide an interface between a data modem and a 4wire facility while the DST/VA module provides an interface between a 2wire telephone set and the DST module. Table 1 lists the DST and DST/VA modules and indicates their principal differences.

1.02   This Practice section is reissued to cover the Issue 3 version of the 263B Assembly (part number 83263B). The Issue 3 263B Assembly differs from the Issue 2 version through the addition of switch S2, which allows the 263B Assembly to supply either −24 or −48Vdc input power to its associated module.

1.03   Each 4412X DST module interfaces a 4wire transmission facility with a 4wire data modem. All 4412X DST modules provide from −15 to +20dB of gain plus optional amplitude equalization in the receive channel, attenuation and optional equalization in the transmit channel, impedance matching, and tone or dc-activated loopback toward the facility. Each 4412X module provides different tone-activated loopback features. For more information on the 4412X modules, please refer to their individual Tellabs practices.

1.04   The 4212A DST module is idential to the 4412A module with the exception that the 4212A provides an interface between a 4wire transmission facility and a 2wire data modem. For more information on the 4212A DST module, please refer to its Tellabs practice.

1.05   The 4413 DST Voice Alternate module adapts the 4412X or 4212A DST module to full data/voice-alternate operation. The 4413 interfaces a 2wire key telephone set with the 4wire facility, local data modem, and 4412X or 4212A DST module. The 4413 provides 2600Hz SF tone to implement manual ringdown signaling toward the distant end of the circuit, tone-detection circuitry for local station ringing, 30-second timeout of local ringing, ringing interruption, and 1300Hz ringback tone. For complete information, refer to the Tellabs practice on the 4413.

1.06   The 263B Assembly consists of a metal chassis and a printed circuit board that interconnects the DST modules and mounts components which rectify and regulate input power. Also integral to the 263B Assembly are terminal blocks for connection to the associated data set and 4wire facility, a 25-pair plug connector for telephone set interconnection, and card guides and connectors for the two modules. External surfaces of the 263B assembly are painted off-white with black anodized trim.

1.07   Optional equipment available with the 263B Assembly includes a lighted manual loop-back key (263B List 1), gas tube protection (263B List 2), a connectorized cable for data set interconnection (263B List 3), and a 26Vac, 7.5VA transformer (263B List 4) for powering the 263B Assembly's associated modules, buzzer, lights, and talk battery from a standard 117Vac outlet.

1.08   The 263B Assembly derives power for its associated modules from 18 to 26Vac input as supplied by the optional List 4 transformer. An option

switch allows either −24 or −48Vdc to be supplied to the modules.

1.09   The 263B Assembly is designed to be either placed on a desktop or mounted on a wall. The design of the 263B's cover allows an associated telephone set to be conveniently placed on top of the Assembly when located on a desktop. The Assembly is wall mounted by means of screws through four keyhole slots in its baseplate.

2.   application

2.01   In a typical application (figure 2), the 263B DST Assembly mounts and powers one 4412X or 4212A DST module and one 4413 DST/VA module to provide a data/voice-alternate termination of a telephone set at a data station. The 4413 performs the necessary switching, signaling, and voice transmission functions to interface a 2wire telephone set with the 4412X or 4212A DST module. The 4412X and 4212A DST modules perform the necessary level coordination, amplitude equalization, impedance matching, and loopback functions to interface the 4413 DST/VA module and a 2wire (4212A) or 4wire (4412X) data modem with a 4wire transmission facility.

2.02   The 4412X series of modules includes the 4412A, 4412AS, 4412B, 4412C, and 4412D. The modules are identical except for their tone-activated loopback functions. Data loopback on the 4412A, 4412AS and 4412C is activated by a single tone burst and deactivated by a second tone burst. Data loopback on the 4412B and 4412D is activated in the same way but is deactivated automatically after
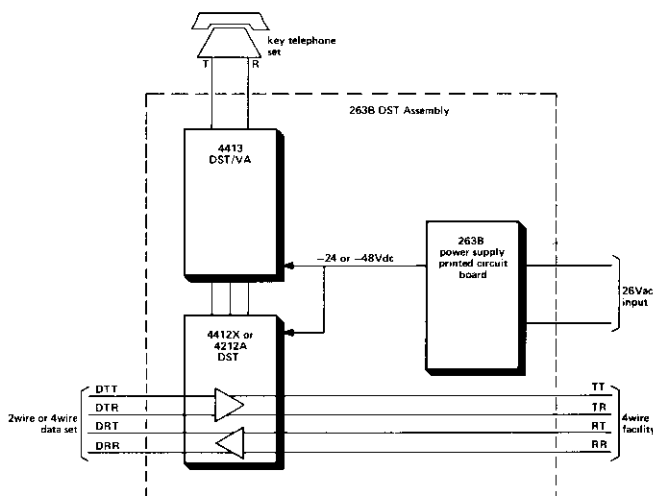

figure 2. 263B typical application

60 to 120 seconds. In addition, the 4412C and 4412D modules can be optioned to accept 11 different tone frequencies to activate loopback.

2.03   The data set used with the 263B Assembly may be any type of 2wire or 4wire data set. The key telephone set must be a Western Electric 565HK or equivalent (see paragraph 3.17). When used with this key telephone, the 263B Assembly provides the following wiring options: manual loopback of the DST module when the key telephone's sixth key is depressed; loopback lamp on the sixth key; voice-alternate control on the key telephone's fourth key; and nonlocking distant-station ringing control on the key telephone's fifth key.

DST module	interface	data loopback options
4412A	4w modem to 4w facility	dc activated: local via loopback switch or remote via simplex leads. tone activated: loopback activated by first tone burst, released by second tone burst.
4412AS	4w modem to 4w facility (with sealing current)	dc activated: local via loopback switch. tone activated: loopback activated by first tone burst, released by second tone burst.
4412B	4w modem to 4w facility	dc activated: local via loopback switch or remote via simplex leads. tone activated: loopback activated by tone burst, released automatically after 60 to 120 seconds.
4412C	4w modem to 4w facility	dc activated: local via loopback switch or remote via simplex leads. tone activated: loopback activated by tone burst at one of eleven optional frequencies, released by second tone burst.
4412D	4w modem to 4w facility	dc activated: local via loopback switch or remote via simplex leads. tone activated: loopback activated by tone burst at one of eleven optional frequencies, released automatically after 60 to 120 seconds.
4413 (DST/VA)	2w key telephone set to 4w facility via 4412X or 4212A DST module	none
4212A	2w modem to 4w facility	dc activated: local via loopback switch or remote via simplex leads. tone activated: loopback activated by first tone burst, released by second tone burst.

table 1. DST and DST/VA modules

2.04   The 263B Assembly is normally located on the same premises as the data modem, but it may be located at a physical distance from the modem consistent with the station-side level ranges of the DST modules and the level requirements of the modem itself. Also, the cable resistance of the 4413's station A lead and ground lead must not exceed 100 ohms.

2.05   The 263B Assembly derives power for its associated modules from 18 to 26Vac input. When the optional 263B List 4 Transformer is used, the 263B Assembly may be powered from commercial 117Vac.

3.   installation
inspection
3.01   The 263B DST Assembly should be visually inspected upon arrival to find possible damage incurred during shipment. If damage is noted, a claim should immediately be filed with the carrier. If stored, the 263B should be visually inspected again prior to installation.

cover removal
3.02   In order to install the 263B Assembly, the protective metal cover enclosing the modules must be removed. The cover is held in place by two slotted spring latches located on either side of the cover.

With a screwdriver, turn each latch clockwise approximately ½ turn until the latch clears the lip of the chassis. The cover can then be removed by lifting it straight upward and is replaced by an opposite motion. Store the wraparound cover in a location where it will not be bent or otherwise damaged.

mounting
3.03   As stated previously, the 263B Assembly may be located on a desktop or wall mounted via four keyhole slots in its baseplate. If the 263B Assembly is to be wall mounted, four mounting screws (not supplied) of a type suitable for the material of the wall are required.

> **Caution:** *When wall mounted, the 263B Assembly* **must** *be oriented so that the module's faceplates are* **not** *facing downward. Otherwise, the possibility exists of the modules working loose from their connectors.*

module installation
3.04   The 4412X or 4212A module mounts in the left-side connector (when viewed from the module side of the printed circuit board) and the 4413 in the right-side connector. The appropriate module number appears above each connector on the printed circuit board.
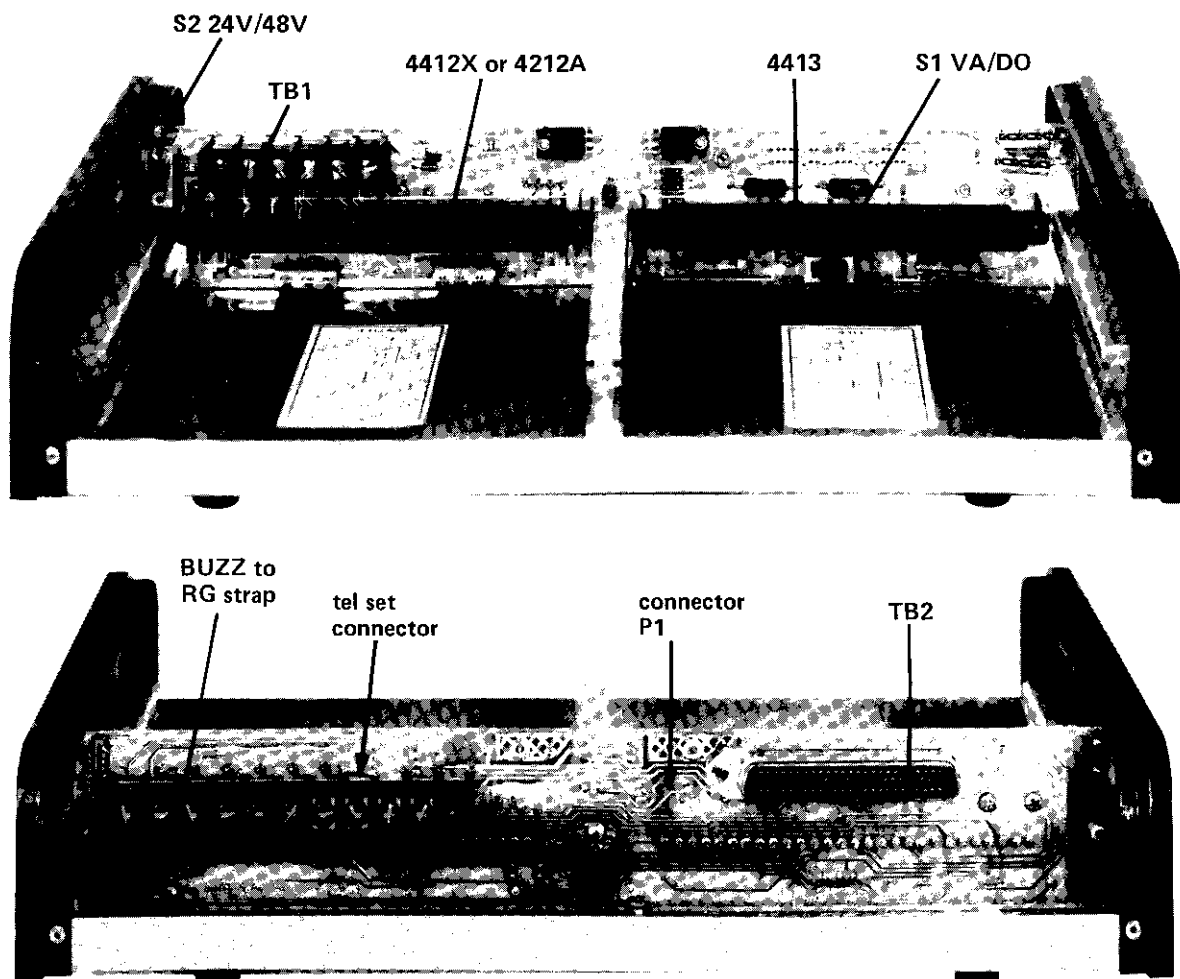

figure 3. 263B option switch and connector locations

options

3.05   Two option switches must be set before the 263B Assembly can be placed in service. The location of each switch is shown in figure 3. Switch *S1* selects either data-only or voice-alternate operation. For data-only operation (when only a 4412X or 4212A module is used), set *S1* to the *DO* position. For voice-alternate operation (when a 4413 module is used with one of the other DST modules), set *S1* to the *VA* position. Switch *S2* selects the voltage output to the modules housed in the 263B Assembly when power is supplied to the assembly from the optional 263B List 4 Transformer. To provide −24Vdc output, set *S2* to the *24V* position. To provide −48Vdc output, set *S2* to the *48V* position.

3.06   An external loopback control can be provided by connecting a normally open switch between the *MNLB* (manual loopback) and *GND* (ground) terminals on *TB2* (see paragraph 3.10).

3.07   An external loopback indicator lamp (incandescent, 10V rating) can be connected between the *LBL* (loopback lamp) and *GND* terminals on *TB2*.

3.08   If gas tube protectors are being used, it is recommended that they be installed where the facility cable enters the building. If, however, the two protectors must be installed on the 263B Assembly, plug them into component sockets *V1* and *V2*, which are located on the module side of the printed circuit board below the 56-pin connector on the left.

telephone-set functions and options

3.09   The telephone set may be optioned to provide a loopback lamp on the sixth key if the strap between terminals *LBL* and *L* (5) on *TB2* of the 263B is not removed. This strap is normally provided by the factory on all 263B's and must be removed if the sixth-key loopback lamp is not desired.

3.10   The telephone set is optioned for manual loopback control if the strap between terminals *MNLB* and *A*(5) on *TB2* of the 263B is not removed. The DST module is manually looped when the sixth key on the telephone set is depressed and the telephone set is off-hook. The strap is normally provided by the factory on all 263B's and must be removed if sixth-key manual loopback control is not desired.

3.11   The fourth key on the telephone set is the voice-alternate control. When the telephone set is off-hook and the fourth key is depressed, the 263B Assembly is in the voice mode.

3.12   The fifth key is arranged for nonlocking operation and provides distant-station ringing control. When the telephone set is off-hook and the fifth key is depressed, 2600Hz SF tone is transmitted to initiate ringing to the distant station.

data set connections

Note: *When making these and all other connections to the 263B Assembly, run all wiring through the grommeted hole on the right side of the Assembly. Refer to the 263B wiring diagram (section 5), the view of the printed circuit board showing the two terminal blocks (figure 3), and the telephone set wiring diagram (figure 4) as necessary. Lead designations for* **TB1** *are labeled on the reverse side of the printed circuit board above each terminal position. Lead designations for* **TB2** *are labeled below and adjacent to each terminal position.*

3.13   Connections from the data set to the 263B Assembly are made to terminal block *TB1*, the six-terminal block on the printed circuit board. The required connections are *DTT* and *DTR* (data transmit tip and ring), *DRT* and *DRR* (data receive tip and ring), and *TEK5* and *TEK6* (data disable). Some data modems have no TEK leads; thus, terminals *TEK5* and *TEK6* may not be used.

power connections

Caution: *Power should* **not** *be applied until all connections to the module are completed.*

3.14   Connect 18 to 26Vac power to *TB2* positions *1* and *2*. If the optional List 4 transformer is being used, connect screw terminals *1* and *3* of the transformer to positions *2* and *1* of *TB2* respectively, and terminal *4* (*GND*) of the transformer to position *11* of *TB2*.

3.15   To connect an external ringing generator to the 263B, remove the jumper strap between the terminals labeled *BUZZ* and *RG* (located below and to the left of the 25-pair telephone-set connector on the printed circuit board) and connect the ringing supply between the *GND* terminal on *TB2* and the *RG* terminal.

facility connections

3.16   The 4wire facility is connected to *TB2* as follows: transmit tip to terminal *TT*, transmit ring to terminal *TR*, receive tip to terminal *RT*, and receive ring to terminal *RR*.

voice-alternate telephone-set connections

3.17   The telephone set, normally a six-push-button key telephone (Western Electric 565HK or its functional equivalent), is connected to the 263B Assembly via the 25-pair connector on the 263B's printed circuit board. The telephone set must be wired to a mating 25-pair connector. The required telephone set connections are listed in table 2; refer also to section 5 and figure 4 as necessary. The fifth-line key must be arranged for nonlocking operation to implement manual ringdown.

Note: *When GTE Automatic Electric, Stromberg-Carlson, or ITT key telephone sets (equivalents of Western Electric 565HK) are used with the 263B, modifications to the lamp and buzzer leads (e.g., changes to the lamp grounds in the ITT key telephone set) may be necessary for compatibility. Specifically, the ringer and buzzer leads of any key telephone set used with the 263B must be arranged as shown in figure 4, which represents the wiring arrangement for the Western Electric 565HK.*
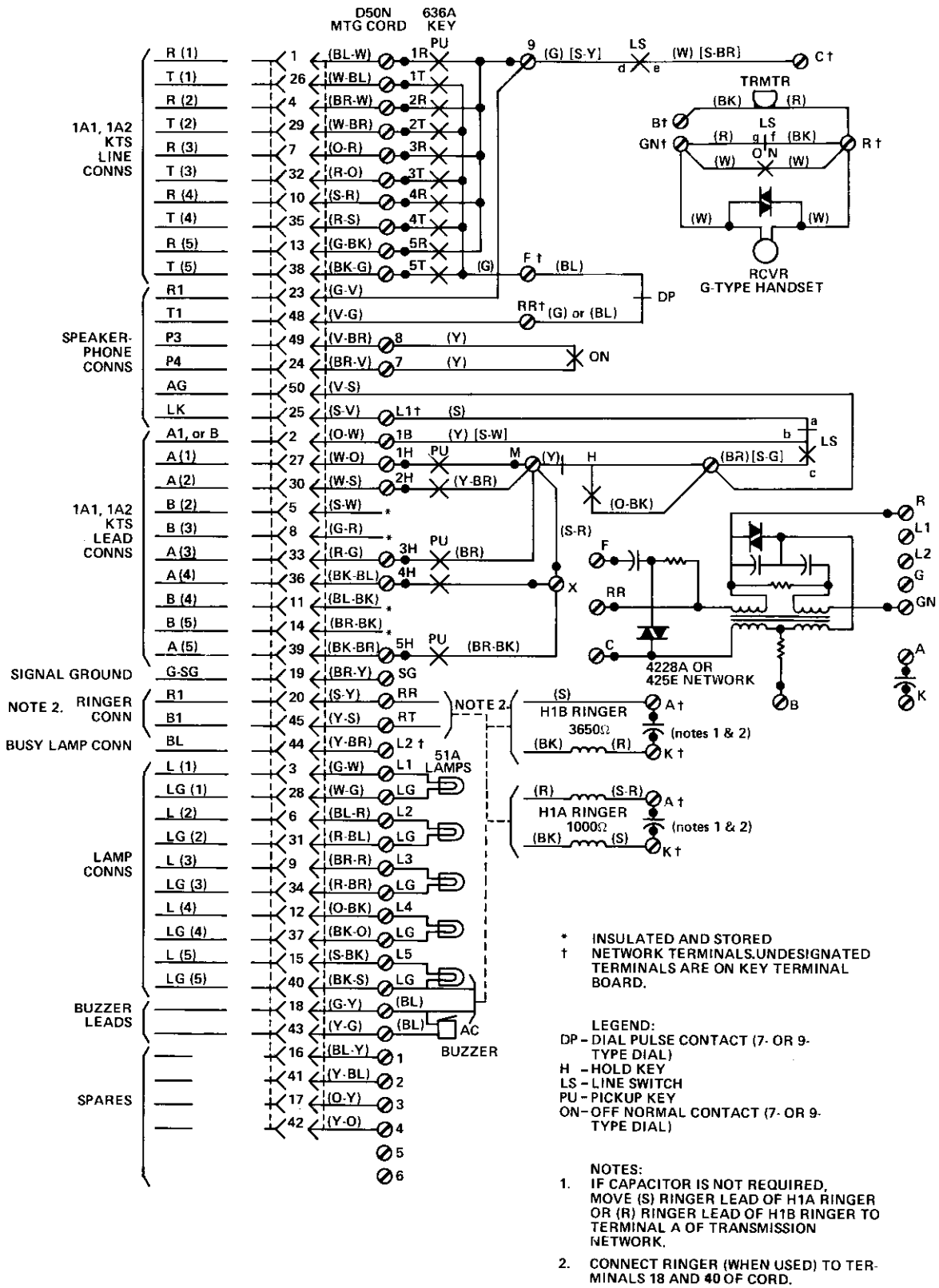
*figure 4. 565HK Telephone Set connections
to 263B Assembly*

25-pair connector	symbol	function
39 (BK-BR)	A(5)	6th-key A lead (loopback)
15 (S-BK)	L(5)	6th lamp lead
40 (BK-S)	LG	6th lamp ground and bell
18 (G-Y)	BL	buzzer or bell
43 (Y-G)	BL	buzzer
33 (R-G)	A(3)	4th-key A lead (talk)
36 (BK-BL)	A(4)	5th-key A lead (ring)
32 (R-O)	T(3)	tip
7 (O-R)	R(3)	ring
9 (BN-R)	L(3)	4th lamp lead
34 (R-BN)	LG	4th lamp ground
2 (O-W)	A1	A-lead ground

table 2. Voice-alternate connections
(WECo 565HK key telephone set)

3.18   The buzzer or ringer must be connected to
the terminals indicated in table 2. Note that the
ringer connections are different from the normal
ringer connections for the 565HK telephone set.
The ringer must be removed from connector pins 20
and 45 and connected to connector pins 18 and 40.

3.19   The telephone-set connector is secured to
the 263B Assembly by removing the normal retain-
ing screw in the connector hood and replacing it
with the 4-40x 1-inch screw provided with the 263B.
This screw is inserted from the connector side of
the printed wiring board into the threaded insert
on the board. The rear of the connector hood is
secured by inserting the 4-40 x ¾-inch screw pro-
vided with the 263B from the module-insertion
side through the hole in the printed circuit board
and fastening it to the connector hood.

4.   circuit description

4.01   This circuit description is intended to famil-
iarize you with the 263B Data Station Termination
Assembly for engineering and application purposes
only. Attempts to troubleshoot the 263B internally
are not recommended. Troubleshooting procedures
should be limited to those prescribed in section 7
of this Practice. Please refer to the wiring diagram,
section 5 of this Practice, as an aid in following the
circuit description.

4.02   The 263B provides all connections necessary
for use with a 4212A or 4412X Data Station Ter-
mination module and a 4413 DST Voice Alternate
module. A power supply on the 263B printed cir-
cuit board provides either −24Vdc or −48Vdc to
the modules from 18 to 26Vac input voltage. The
263B may also be powered from commercial 117Vac
by using the optional 263B List 4 Transformer.

−24Vdc operation
4.03   With *S2* set to the *24V* position, the 263B
uses a full-wave rectifier and a series voltage regula-
tor to provide −24Vdc regulated supply voltage to
the modules.

−48Vdc operation
4.04   When *S2* is in the *48V* position, a capacitive
voltage doubler is switched into the circuit, and the
zener-diode reference for the series voltage regula-
tor is changed to provide −48Vdc regulated supply
voltage to the modules.

263B Data Station Termination (DST) Assembly   83263B
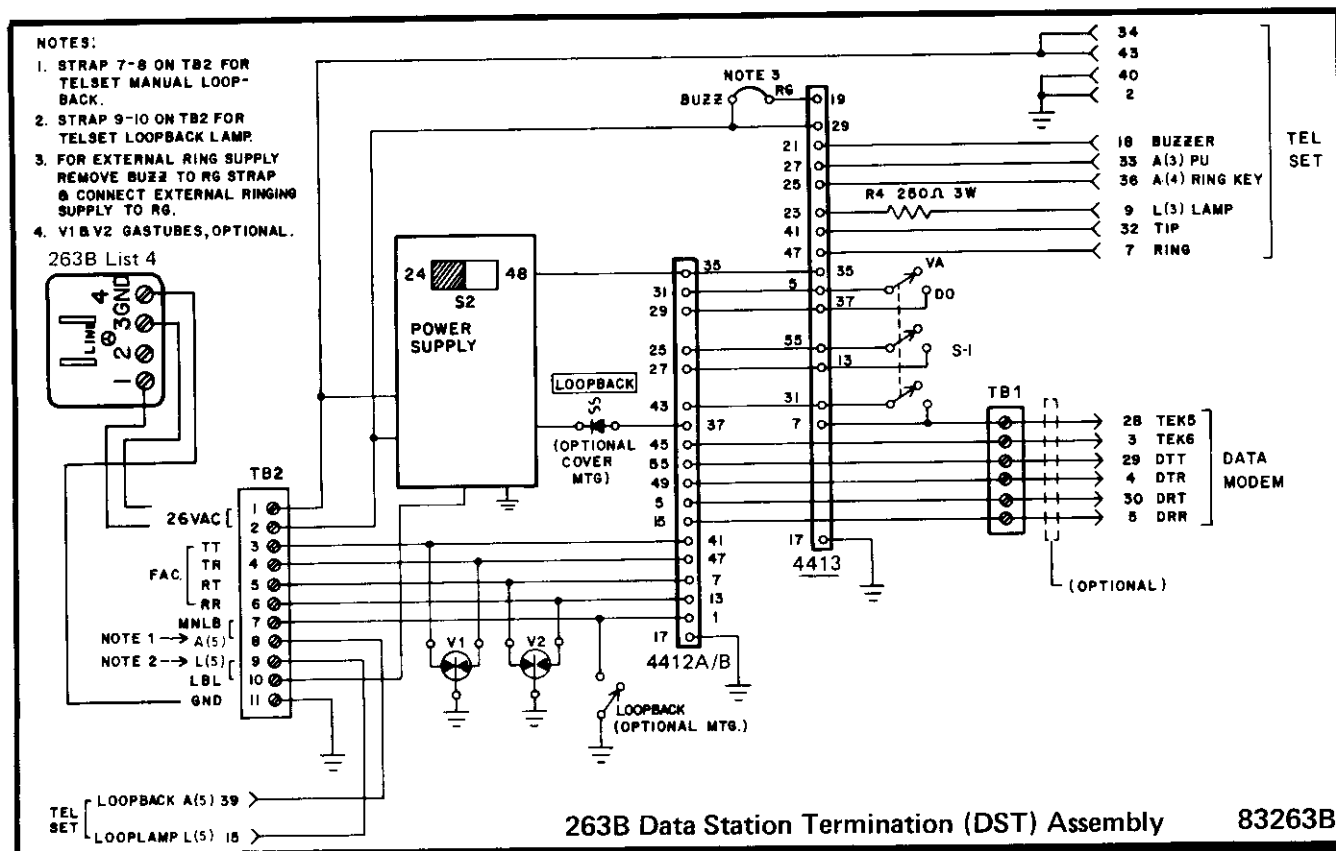
5. wiring diagram

6. specifications

power requirements
ungrounded 18 to 26Vac, 7.5VA maximum, or commercial 117Vac from conventional wall outlet when used with optional 263B List 4 Transformer (26Vac, 7.5VA)

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

power supplied to modules
regulated −24 or −48Vdc, depending upon setting of switch S2

dimensions
3.0 inches (7.52cm) high
8.75 inches (22.22cm) wide
12.75 inches (32.38cm) long

weight
2 pounds 12 ounces (1.24kg) without modules

mounting
desktop or wall (via four screws); provided with rubber feet for desktop

telephone set
Western Electric 565HK or equivalent

7. testing and troubleshooting

7.01   The Testing Guide Checklist in this section may be used to assist in the installation, testing, or troubleshooting of the 263B Assembly. The Checklist is intended as an aid in the localization of trouble within the Assembly. If an Assembly is suspected of being defective, a new one should be substituted and the test conducted again. If the substitute Assembly operates correctly, the original Assembly should be considered defective and returned to Tellabs for repair or replacement. We strongly recommend that no internal (component-level) testing or repairs be attempted on the 263B Assembly. Unauthorized testing or repairs may void the Assembly's warranty.

Note: *Warranty service does not include removal of permanent customer markings on Tellabs Assemblies, although an attempt will be made to do so. If an Assembly must be marked* **defective,** *we recommend that it be done on a piece of tape or on a removable stick-on label.*

7.02   If a situation arises that is not covered in the Checklist, contact Tellabs Customer Service at your Tellabs Regional Office or at our Lisle, Illinois,

or Mississauga, Ontario, Headquarters. Telephone numbers are as follows:

> US central region: (312) 969-8800
> US northeast region: (412) 787-7860
> US southeast region: (305) 645-5888
> US western region: (702) 827-3400
> Lisle Headquarters: (312) 969-8800
> Mississauga Headquarters: (416) 624-0052

7.03   If a 263B is diagnosed as defective, the situation may be remedied by either *replacement* or *repair and return*. Because it is more expedient, the *replacement* procedure should be followed whenever time is a critical factor (e.g., service outages, etc.).

replacement
7.04   To obtain a replacement 263B Assembly, notify Tellabs via letter (see addresses below), telephone (see numbers above), or twx (910-695-3530 in the USA, 610-492-4387 in Canada). Be sure to provide all relevant information, including the 8X263B part number that indicates the issue of the Assembly in question. Upon notification, we shall ship a replacement Assembly to you. If the Assembly in question is in warranty, the replacement will be shipped at no charge. Pack the defective 263B in the replacement Assembly's carton, sign the packing slip included with the replacement, and enclose it with the defective Assembly (this is your return authorization). Affix the preaddressed label provided with the replacement Assembly to the carton being returned, and ship the Assembly prepaid to Tellabs.

repair and return
7.05   Return the defective 263B Assembly, shipment prepaid, to Tellabs (attn: repair and return).
in the USA: Tellabs Incorporated
                      4951 Indiana Avenue
                      Lisle, Illinois 60532

in Canada: Tellabs Communications Canada, Ltd.
                      1200 Aerowood Drive, Unit 39
                      Mississauga, Ontario, Canada L4W 2S7

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

testing guide checklist

test	test procedure	normal result	if normal conditions are not met, verify:
power to Assembly, —24Vdc operation	Using dc voltmeter, measure voltage across capacitor *C1* or *C2*.	Measured voltage is —22 to —28Vdc □.	Broken wires or connector pins □. Switch *S2* properly set □. Loose power connections to *18VAC* terminals on *TB2* □. Faulty transformer or external source □.
power to Assembly, —48Vdc operation	Using dc voltmeter, measure voltage across capacitor *C1* or *C2*.	Measured voltage is —46 to —56Vdc □.	Same as above □.

Note: *For testing and troubleshooting information on the 4412X, 4212A, and 4413 modules used in the 263B Assembly, refer to the Tellabs practices on those modules. If trouble is encountered with modules mounted in the 263B Assembly, verify that switches S1 and S2 on the 263B are in the correct position, that all connections are correct and secure, and that the modules are plugged completely into the correct positions.*