

The Ultratec TDD Detector

Installation Instructions

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NOTE: *In this manual TTY, TDD and text telephone all refer to the same device.*

About TTYs and the TDD Detector

About TTYs and the Deaf TTY Network

The deaf telecommunications network began in the early 1960's. Surplus Teletype machines became available, and a deaf physicist named Robert Weitbrecht invented a modem that enabled these machines to communicate over the telephone lines. These machines coupled with the Weitbrecht modem became the first Telecommunications Devices for the Deaf (TDDs). These Teletype machines used 5-level Baudot code, and established the foundation for today's extensive deaf Baudot TTY network.

TTYs today are small electronic typewriter-like devices that use built-in Weitbrecht-type modems to communicate in Baudot code. They are used by people who are deaf or hearing or speech impaired to access the telephone network.

Please note: In this manual TTY, TDD and text telephone all refer to the same device.

The Ultratec TDD Detector announces incoming TTY calls

The Ultratec **TDD Detector** connects directly to the telephone line. It monitors the line, listening for the sounds of incoming TTY (Baudot code) signals. Incoming TTY signals mean that someone is typing to you on a TTY (text telephone).

When the TDD Detector hears TTY signals on the phone line, it responds in two ways. First, a built-in voice "announces" the incoming TTY call to you by repeating, "TDD CALL... TDD CALL." Second, the TDD Detector sends a TTY message for your caller to read on his or her TTY display. The standard TTY message says, "911 HERE PLEASE HOLD."

Although it is connected to your phone line, the TDD Detector does not affect the normal operation of your telephone equipment.

NOTE: If your installation requires a TTY message that differs from the standard message ("911 HERE PLEASE HOLD"), you can order a custom message for your TDD Detector. See page 11.

Control from a Touch-Tone telephone keypad

Your operators control the TDD Detector by pressing the "RESET" or "SEND" buttons on the front panel. These same operations can be accomplished by easy-to-use commands from the operator's Touch-Tone® telephone. Additional Touch-Tone® commands allow your operators to abort (stop) the send command, and to test the TDD Detector's internal circuits.

Manual and automatic reset—two ways to install the TDD Detector

There are two ways to install the TDD Detector in your setting—the **manual reset installation** and the **automatic reset installation**.

The manual reset installation requires no special wiring, but your operators should be trained to reset the Detector after it has received a TTY call. The **automatic reset installation** requires that your TDD Detector be installed so that it can detect the on- and off-hook status of the phone line. It will automatically reset when the operator hangs up after a TTY call.

Refer to page 3 for a complete description of the two installations.

Install the TDD Detector

Description of manual and automatic reset installations— equipment

The manual reset installation requires no specific adjustments to your telephone equipment.

In the automatic reset installation the TDD Detector monitors the on-hook or off-hook status of the phone line.

Read the descriptions of the **manual** and **automatic reset installations** below, and select the installation that is best for your setting. Then turn to the appropriate page for complete installation instructions.

The **manual reset installation** for the TDD Detector requires no special wiring. However, with this installation, your operator is responsible for pressing the "RESET" button at the end of each TTY call he or she receives. When the "RESET" button is pressed, the TDD Detector resumes monitoring the phone line for TTY signals.

If the operator fails to press the "RESET" button, the TDD Detector will reset itself after a standard 10-minute time-out period.

Turn to page 4 for manual reset installation instructions.

NOTE: The length of the time-out period can be changed at Ultratec to meet your specifications.

In the **automatic reset installation**, the TDD Detector determines the beginning of each new telephone call by detecting loop current, or by monitoring the on- or off-hook status of the phone line. In either case, the TDD Detector knows when an operator has answered a call, and automatically monitors the beginning of that call to listen for TTY signals. When the operator hangs up, the TDD Detector will wait until the beginning of the next incoming call to monitor the phone line. The operator does not need to press the "RESET" button.

Turn to page 5 for automatic reset installation instructions.

Manual reset installation instructions

The Ultratec TDD Detector uses two built-in RJ12C telephone modular jacks to connect directly to the telephone and the telephone line. These jacks are located on the back panel of the TDD Detector, and are labeled "LINE" and "TELEPHONE."

1. Install the TDD Detector in a place that is convenient for your operator.

You can place the operator's telephone on top of the TDD Detector. The operator should be able to reach the buttons on the front panel easily.

2. Connect the TDD Detector to the phone line.

Use the modular telephone wire included with your TDD Detector.

If you have a single phone line...

Plug one end of the modular phone wire into the jack labeled "LINE" on the back panel of your TDD Detector. Plug the other end of the phone wire into the telephone line outlet.

If your setting has either a multi-line (KTS) telephone system, or a call-director console...

Connect the TIP and RING for the telephone or from the call-director console to a telephone wire with a modular plug that fits a RJ12C modular jack. Plug the phone wire into the jack labeled "LINE" on the back panel of your TDD Detector.

3. Connect the operator's telephone to the TDD Detector.

Plug the modular phone wire from the operator's telephone into the "TELEPHONE" jack on the back panel of the TDD Detector.

4. Connect the AC adapter.

Plug the AC adapter wire into the "POWER" jack on the back panel of your TDD Detector.

Plug the AC adapter into an electrical outlet.

5. Press the "RESET" button to initialize the TDD Detector.**6. Connect an external speaker (optional).**

Plug the speaker wire into the RCA phono jack labeled "SPEAKER" on the back panel of your TDD Detector.

7. Go on to page 9 to test your installation.

Automatic reset installation instructions

Off-hook detect installation

There are two ways to install your TDD Detector so that it will automatically reset after each call you receive—**off-hook detect** and **loop-current detect** installations. Either installation makes it possible for the TDD Detector to know when the telephone is on or off the hook.

1. Install the TDD Detector in a place that is convenient for your operator.

You can place the operator's telephone on top of the TDD Detector. The operator should be able to reach the buttons on the front panel easily.

2. Connect the TDD Detector to the phone line.**If you have a single phone line...**

Plug one end of the modular phone wire into the jack labeled "LINE" on the back panel of your TDD Detector. Plug the other end of the phone wire into the telephone line outlet.

If you have either a multi-line (KTS) telephone system, or a call-director console...

Connect the TIP and RING for the telephone or from the call-director console to a telephone wire with a modular plug that fits a RJ12C modular jack. Plug the phone wire into the jack labeled "LINE" on the back panel of your TDD Detector.

3. Connect the operator's telephone to the TDD Detector.

Plug the phone wire from the operator's telephone into the "TELEPHONE" jack on the back panel of the TDD Detector.

4. Connect an unused pair of off-hook switch contacts from the operator's telephone to the 3.5mm "OFF-HOOK" jack on the back panel of your TDD Detector.

The switch contacts (N.O. contacts) should be closed when the operator is off-hook (on the line).

5. Connect the AC adapter.

Plug the AC adapter wire into the "POWER" jack on the back panel of your TDD Detector.

Plug the AC adapter into an electrical outlet.

6. Press the "RESET" button to initialize the TDD Detector.

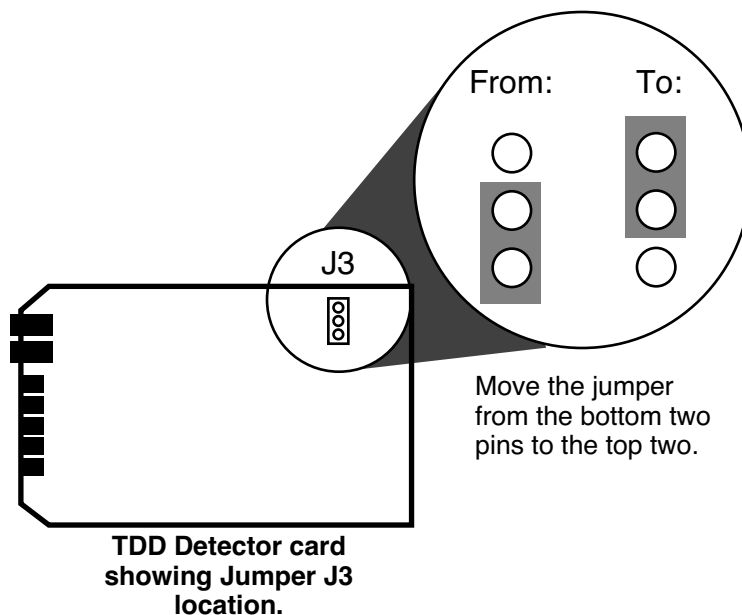
7. Connect an external speaker (optional).

Plug the speaker wire into the RCA phono jack labeled "SPEAKER" on the back panel of your TDD Detector.

8. Go on to page 9 to test your installation.

Loop-current detect installation

To set up your TDD Detector for Automatic Loop Current Detection you must open the case by removing the four screws in the bottom of the case. Move Jumper J3 as follows:



This enables the circuitry to detect loop current. Whenever the operator goes off-hook, the TDD Detector will detect this loop current and begin looking for a TTY call. When connecting the operator's phone (Telephone) and the telephone line (Line), be sure not to reverse these connections on the back of the TDD Detector.

1. Install the TDD Detector in a place that is convenient for your operator.

You can place the operator's telephone on top of the TDD Detector. The operator should be able to reach the buttons on the front panel easily.

2. Connect the TDD Detector to the phone line.

Use the modular telephone wire included with your TDD Detector.

If you have a single phone line...

Plug one end of the modular phone wire into

the jack labeled "LINE" on the back panel of your TDD Detector. Plug the other end of the phone wire into the telephone line outlet.

If you have either a multi-line (KTS) telephone system, or a call-director console...

Connect the TIP and RING for the KTS telephone set or the TIP and RING from the call-director console to a telephone wire. The telephone wire must have a modular plug that fits a RJ12C modular jack. Plug the phone wire into the jack labeled "LINE" on the back panel of your TDD Detector.

3. Connect the operator's telephone to the TDD Detector.

Plug the phone wire from the TIP and RING of the operator's telephone into the "TELEPHONE" jack on the back panel of the TDD Detector. The TDD Detector will use the telephone line loop current to monitor the on-hook and off-hook status of the operator's line.

4. Connect the AC adapter.

Plug the AC adapter wire into the "POWER" jack on the back panel of your TDD Detector.

Plug the AC adapter into an electrical outlet.

5. Press the "RESET" button to initialize the TDD Detector.

6. Connect an external speaker (optional).

Plug the speaker wire into the RCA phono jack labeled "SPEAKER" on the back panel of your TDD Detector.

7. Go on to page 9 to test your installation.

Test your installation and train your operators

Test procedures for manual and automatic reset installations

1. Check your phone line.

Pick up the receiver of a telephone connected to a line that the TDD Detector is monitoring.

Listen to the dial tone on the line. It should sound clear and loud.

2. Press the black "RESET" button on the front panel.

3. Press the red "SEND" button.

You will hear a series of beeping sounds on the phone line. The beeping sounds you hear are the sounds of the TTY message (in Baudot code) being sent over the line by the TDD Detector. The message says, "TYPE YOUR NAME GA."

Touch-Tone commands can be used by operators during a call as well as for testing the installation.

4. Test the Touch-Tone commands.

- Lift the receiver on the operator's telephone.
- "SEND"—Type [#][#][1] on the telephone keypad. This should initiate the "SEND" function. You should hear the sound of TTY signals on the line as the message, "TYPE YOUR NAME GA" is sent.
- "TEST"—Type [#][#][2] on the telephone keypad. This is the "TEST" command. You should hear a voice over the speaker saying "TDD CALL... TDD CALL..." The voice should sound clear and loud. Then you should hear the "beeping" sounds of the TTY message, "911 HERE PLEASE HOLD." All the lights on the front panel of the TDD Detector should come on, and the receive circuitry in the unit is automatically checked internally.

5. If you are using an external speaker to broadcast the voice, type the [#][#][2] TEST command, and adjust the "VOLUME" control as the voice message is broadcast.

The "VOLUME" control is on the back panel of the TDD Detector. The voice should sound clear, and be loud enough to be heard easily.

6. Arrange for someone to call you with a TTY to test your installation.

Tell the person who calls you to type on the TTY keyboard to send TTY signals after you answer. The TTY call should initiate the voice message ("TDD CALL... TDD CALL...") and the TTY message ("911 HERE PLEASE HOLD") from the TDD Detector.

Train your operators

Thorough training of your operators in established procedures for handling TTY calls will help to assure prompt response to people calling by TTY.

1. Read the operator's instructions that were included in this packet.

Make sure to read the instructions that apply to the installation procedure you have chosen for your location– **automatic reset** or **manual reset** installation.

2. Carefully review the operator's instructions with your operators.

You might want to make copies of the instructions for your operators. Make sure your operators know how to recognize a "silent" call, and what to do when they receive one. (See page 2 of the Operator's Instructions.) Make sure you have clearly established procedures for how to handle TTY calls once they have been received and identified.

3. Help your operators to become sensitive to the needs of the deaf or hard of hearing people who may be calling you.

The responsibility of using special TTY equipment to respond to people who are deaf or hard of hearing may be new to some of your operators. Inviting a spokesperson from the

deaf community in your area to speak with your operators can help them to become sensitive to and aware of the special communication problems faced by people who cannot hear.

4. Establish a regular testing procedure for your TDD Detector.

You should regularly test three aspects of your system:

1. The TDD Detector itself. Test the TDD Detector circuits regularly by using the Touch-Tone® "TEST" command ([#][#][2]).
2. The other equipment which supports the TDD Detector, such as the phone lines, etc.
3. Your operators' preparedness to receive a TTY call. This includes not only how to operate the equipment, but the operators' general knowledge of TTYs and deafness.

The best way to be sure you are ready for TTY calls is to have someone use a TTY to call your number regularly. The calls should be made on different days of the week and at different times to be sure all your operators are prepared.

TDD Detector options, service, and specifications

TDD Detector options available

*You can request any or all of
the following options for your
TDD Detector.*

- **Rack installation.** You can order your TDD Detectors for installation in your telephone equipment rack. Order one card in the rack for each line you want to monitor.
- **Custom outgoing TTY message.** Ultratec can program your TDD Detector to send a TTY message that you create.
- **Custom voice message.** The standard message, "TDD CALL... TDD CALL..." can be reprogrammed to your specifications.
- **Custom time delay.** When the TDD Detector is installed in a manual reset situation, it waits 10 minutes between TTY calls and then resets itself. You can specify a different time delay.

If your TDD Detector needs repair

If you think your TDD Detector needs repair or service...

- Disconnect the TDD Detector from the phone line.
- Call the Ultratec National Service Center:
(608) 238-5400 (Voice/TTY)
Toll Free: (800) 482-2424 (Voice/TTY)
Ask for the Customer Service
Department.
- Tell them that you are a 911 center and that you require immediate assistance.

Ultratec offers 24-hour replacement service for your TDD Detector...

- If your TDD Detector needs repair or service, Ultratec can send a replacement or "loaner" unit to you within 24 hours.

To send your TDD Detector in for repair or service...

- Package it in its original shipping box.
- Include a note that describes the problem you are having. The note will help our technicians complete your repair quickly.
- Insure your TDD Detector when you ship it. Ultratec is not responsible for any damage that occurs to your unit during shipping.
- Send your TDD Detector to the Ultratec National Service Center:

Ultratec National Service Center
5901 Research Park Blvd.
Madison, WI 53711

(608) 238-5400 (Voice/TTY)

Toll Free:

(800) 482-2424 (Voice/TTY)

If the detector is under warranty, Ultratec will pay for the cost of repair.

A technical manual for the TDD Detector is available from Ultratec.

TDD Detector specifications

TESTING PROCEDURES:

All TDD Detectors go through extensive testing procedures as part of Ultratec's quality control program. These procedures include complete computerized testing of the board set, and a 24-hour hot/cold cycling of the unit while operating. These tests, along with Ultratec's standard quality assurance procedures (see the Quality Assurance Manual), help to ensure that the TDD Detector will meet the performance criteria required of this kind of device.

PHYSICAL DIMENSIONS:

Size	1.40" high x 6.33" wide x 9.50" deep
Weight	1.25 pounds

POWER:

Requirements 12 VDC (Nominal), 3 W

TELECOMMUNICATIONS:

Codes: Detects Baudot (45.45 baud)

Sensitivity: -45 dBm (minimum)

Baudot and Bell 103 Output:
-9 dBm (maximum)

Voice output: -25 dBm

FCC Part 68 approved:

FCC#: D8K7IB-19552-MD-N

REN: 0.5A

The TDD Detector is designed for indoor use only.

*Specifications for switches,
indicator lights, and
connectors*

FRONT PANEL:

TTY SIGNAL	Off when monitoring the phone line. On when TTY characters are detected. Blinking after voice and TTY messages have been sent.
RESET	Sets TDD Detector to resume monitoring the phone line.
SEND	For "silent" TTY calls, sends TTY (Baudot code) message over the phone line.
POWER	On when the TDD Detector has power. Off when there is no power.

BACK PANEL:

TELEPHONE	RJ12C jack connection for operator's telephone.
LINE	RJ12C jack connection from CO or call-director.
OFF-HOOK	3.5 mm jack for automatic reset installation.
VOLUME	Controls output volume for external speaker.
SPEAKER	Connect external speaker here. (8 Ohms, 0.25 W maximum)
POWER	Connects AC adapter to power outlet. (12 VDC @ 300 mA)

Appendix A

TDD Detector Rack Installation

Equipment Needed:

Screwdriver

Two 50-pin, male, micro-ribbon connectors

Procedure:

1. Install the Ultratec TDD Detector Rack Enclosure in the Telephone Communications Rack where desired. Position the 12VDC 10 Amp power supply in the rack or close enough to it so that the 9-ft. power cable can reach the TDD Detector Rack enclosure. Do not connect the power cable to the TDD Detector rack or plug the power supply into the 115-VAC power outlet.
2. Remove all the cards from the TDD Detector Rack Enclosure by unscrewing the 2 wing bolts, removing the restraining bar and then pulling the cards out one at a time. Be careful of the TDD Detector cards. They are static sensitive, and all precautions for static sensitive electronic printed circuit boards should be observed. Note the orientation of the cards before removing them in order to correctly reinstall them later.
3. Set the Auto/Manual switch on the back of the TDD Detector Rack Enclosure to the desired position.
4. Using a screwdriver, connect the 2 conductor power cable to the TDD Detector Rack Enclosure. Be sure to Connect the +V (marked on the cable end) to the +V terminal and the -V conductor to the -V terminal on the back of the TDD Detector Rack Enclosure. CAUTION: Connecting the power supply to the TDD Detector Rack Enclosure with the wrong polarity may cause harm to the TDD Detector cards when installed.
5. Plug in one of the TDD Detector cards supplied with the TDD Detector Rack Enclosure in Card Slot #1.
6. Plug the power cord from the 12 VDC 10 Amp power supply into the 115 VAC power outlet and press the reset (Black) button for Card #1. The Power LED should be glowing brightly and no other LEDs should be on. (If the Rack is set for Auto mode the Auto LED will also be on.)

7. Press the Send (Red) Button and the Send LED will turn on. You have now tested the rack for correct wiring of the power supply and Auto/Manual mode selection.
8. Disconnect the power supply from the 115VAC source.
9. Connect the telephone lines to the 2 Micro-ribbon Male connectors as indicated in the schematic diagram at the back of this manual which shows the connectors on the back of the TDD Detector Rack Enclosure.

Manual Connection - Connect only Tip# and Ring#. No other connections are necessary.

Automatic Switch Connection - Connect the Tip#, Ring#, OH# and the Ground as indicated on the diagram. TipL# and RingL# are not to be connected. The OH# and its GND connection are the connections to the open switch element indicating when the telephone line is Off/On hook. These connections should go only to the switch element. The OH# connection is internally biased on the TDD Detector card so no outside power connections are required.

Automatic Loop Current Detection - In this mode the TDD Detector card is placed in series ahead of the operator so that loop current detection is accomplished. This requires 4 telephone line connections to be made. Connect Tip# and Ring# as indicated. The connections to the operator's equipment then come from the TipL# and RingL# connections as shown on the diagram. Jumper J3 on the TDD Detector card must be changed to the top position.

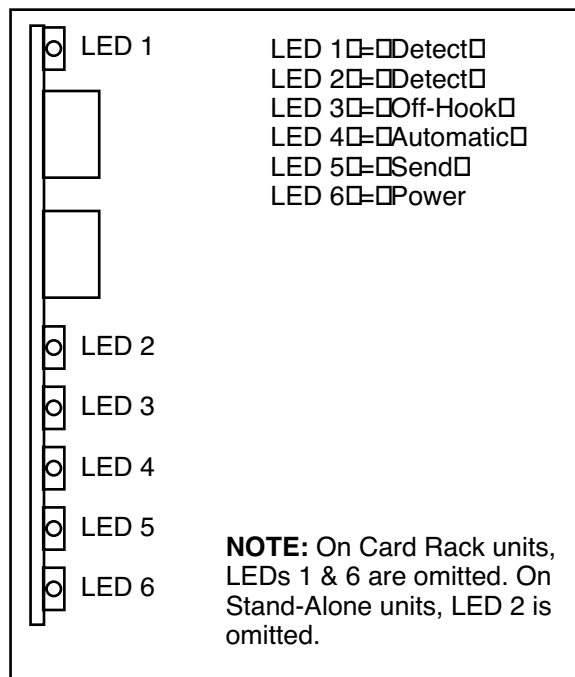
Note: The TDD Detector cards do not draw loop current. Therefore loop current must be drawn by the operator's equipment for this feature to operate (10mA. min).

10. Plug the 2 Micro-ribbon connectors into the back of TDD Detector Rack Enclosure. Please note that Connector #1 is for lines 1-7 and Connector #2 is for lines 8-15. Re-connect the 115 VAC power source to the 12VDC power supply and press the Reset (Black) button on Card #1 in the TDD Detector Rack Enclosure.
11. Perform the TDD Detector Installation Test (see below) for Card #1.
12. Disconnect the 115 VAC power source. Install the remaining TDD Detector cards in the TDD Detector Rack Enclosure. Reinstall the restraining bar using the 2 wing screws provided.
13. Re-connect the 115 VAC power source and press the Reset (Black) button on each TDD Detector card. Test each line using the TDD Detector Installation Test procedure given below.

TDD Detector Installation Test

1. Place the operator's headset or telephone in an Off-Hook condition and listen for dial tone. There should be no difference between the sound before and after the TDD Detector connection.
2. Using the Operators Touch Tone keypad press the sequence "[#][#][2]". This will initialize the test sequence for the TDD Detector Card. The LEDs will turn on and off, next the voice will be output followed by the transmission of the Baudot (TTY Code) message "The quick brown fox jumped over the lazy dog's back 1234567890".
3. Use a TTY to call this line and test the TDD Detector Card for proper TTY detection.
4. Use the Send Button on the Card or "[#][#][1]" on the Touch Tone keyboard to test the Send function.

The TDD Detector Rack Enclosure is now installed and tested. Ultratec suggests that the individual cards (lines) be tested for proper operation at regular intervals. The easiest way to test the lines (and familiarize the operators with the TTY) is to make a TTY call into the 911 center.



TD3 card front showing indicator lights

FCC Information

Your TDD Detector generates radio frequency energy, and may cause radio or television interference.

Use your TDD Detector in strict adherence with these instructions.

If radio frequency interference occurs, try to correct it:

Your TDD Detector complies with Part 68 of the Federal Communications Commission (FCC) Rules.

Use a Telephone Company registered jack to connect your to the nationwide telephone network.

Use the Ringer Equivalence Number (REN) to determine how many direct connect devices you can connect you your telephone line.

Know the rights of your Telephone Company.

Your TDD Detector complies with the regulations for a Class A computing device as specified in Subpart J of Part 15 of the FCC Rules. These rules are designed to minimize radio frequency interference in residential installations.

There is no guarantee that radio frequency interference will not occur during use. You can determine if your TDD Detector causes interference to radio or television reception by disconnecting and reconnecting it while your radio or television is on.

- Reorient the radio or television receiving antenna.
- Move your TDD Detector away from the receiving antenna.
- Move your TDD Detector away from the radio or television.
- If necessary, consult an experienced radio/television technician for additional suggestions.

The label on the bottom of your TDD Detector presents the following required information. You must, if your Telephone Company requests, provide this information:

FCC Registration Number:
D8K7IB-19552-MD-N

Ringer Equivalence Number (REN):
0.5A

Use registered jack type USOC #RJ12C. This jack is a modular outlet that you can order from your local Telephone Company or telephone supply store.

FCC Rules do not permit you to connect your TDD Detector to a pay telephone. Connection to party lines is subject to local Telephone Company regulations.

Add up the REN numbers of all the direct connect devices plugged into your phone line. This includes telephones, direct connect TTYs, or products such as your TDD Detector that plug directly into the phone line. In most, but not all, areas of the country the sum of the RENs should not be more than five (5.0). (Contact your local Telephone Company to determine the maximum REN for your local area.) If you plug too many devices into your phone line, some of them may fail to ring when someone calls you.

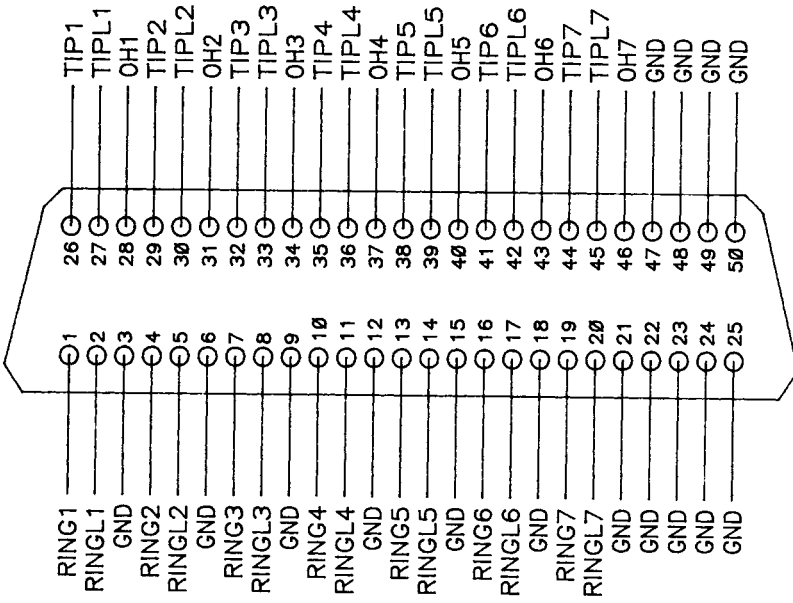
Your Telephone Company may make changes in its facilities, equipment, operations, or procedures that could affect the proper functioning of your TDD Detector. If this happens, they will notify you in advance to give you the opportunity to maintain uninterrupted service.

If your TDD Detector causes harm to the telephone network, your Telephone Company has the right to discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice is not practical, they will notify you as soon as possible. You will have the opportunity to correct the situation, and you will be informed of your right to file a complaint with the FCC.

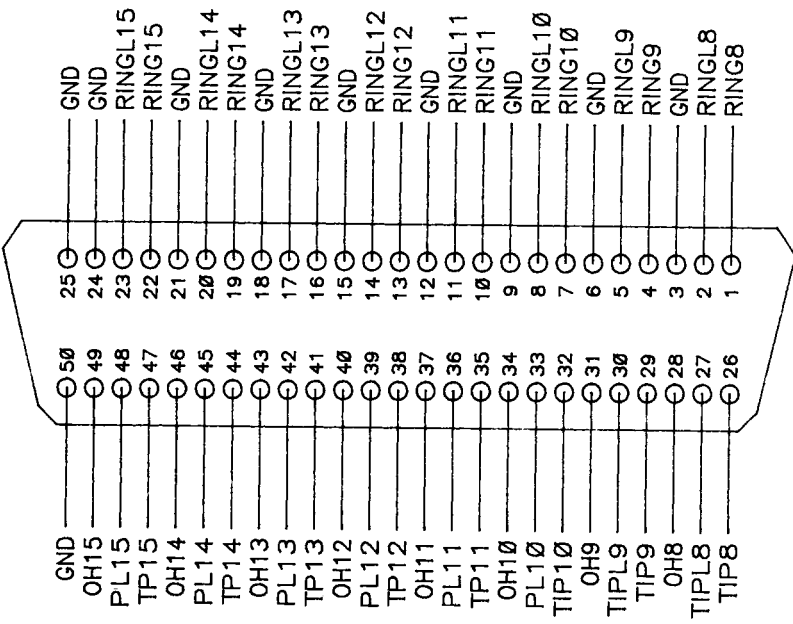
50 PIN AMPHENOL CONNECTORS

CONNECTOR #1

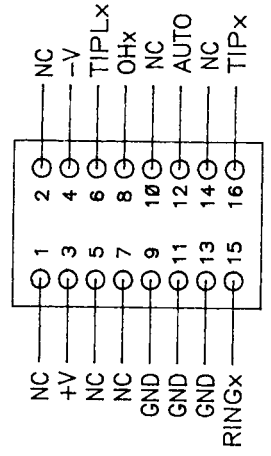
(NOTE: RINGx AND RINGLx LINES ARE CONNECTED TOGETHER FOR EACH CARD)



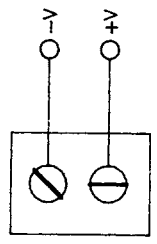
CONNECTOR #2



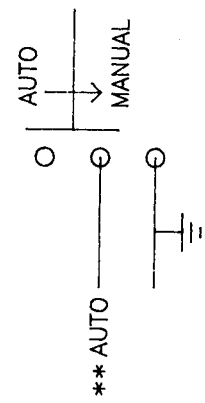
ONE OF 15 CARD CONNECTORS (CARDx)



2 POSITION TERMINAL STRIP



AUTO/MANUAL SWITCH



** AUTO LINES ARE CONNECTED TO THE SWITCH

TD3

MOTHER BD.

JCS | 3/9/88