TS®42DLX
Deluxe Test Set

Users Guide

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TS®42DLX Deluxe Test Set

Introduction

The TS42DLX Deluxe Test Set is an analog test telephone used by installers, repair technicians and other authorized personnel for the testing of copper wire, voice subscriber lines. In addition to providing standard off-hook operations, such as dialing and voice communications, the TS42DLX Deluxe model has an on-hook Monitor Mode, which allows the operator to clip on and listen to the line without disturbing voice or data signals that may be on the line. The test set has a speaker for hands-free listening. The test set also has a speaker-phone that allows two-way conversations while freeing up the operator's hands for other tasks.

In today's telecommunications environment, many subscriber lines carry data services. The data services are in the same distribution facilities as voice services. It is not always easy to tell the difference between data and voice services. The TS42DLX Deluxe Test Set incorporates unique patented circuitry that prevents disruption of digital data services to which the test set may have been unintentionally connected.

Registration

Registering your product with Fluke Networks gives you access to valuable information on product updates, troubleshooting tips, and other support services. To register, fill out the online registration form on the Fluke Networks website at **www.flukenetworks.com/registration**.

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Visit our website for a complete list of phone numbers.

Safety Information

The following IEC symbols are used either on the test set or in the manual:

⚠	Warning: Risk of personal injury. See the manual for details.
	Caution: Risk of damage or destruction to equipment or software. See the manual for details.
⚠	Warning: Risk of electric shock.
⏚	Earth ground
⌧	Do not put products containing circuit boards into the garbage. Dispose of circuits boards in accordance with local regulations.

⚠ ⚠ Warning

Do not use the test set if it is damaged. Before you use the test set, inspect the case. Look for cracks or missing plastic. Pay particular attention to the insulation surrounding the connectors.

If this product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired.

Design Features

Design features of the TS42DLX Deluxe Test Set include:

- DataSafe™ in Monitor Mode
- High Impedance Monitor
- High Voltage Protection
- Last Number Redial up to 23 digits
- Microphone Mute
- PBX Pause Key
- Continuous Polarity Indication in Talk Mode
- Two-Way Speakerphone

- Receive-Only Loud Speaker
- Speed Dialing for ten 23 digit numbers
- Tone and Pulse Dialing
- Hook Flash
- Line Voltage Test
- Low Loop Current Test
- Low Battery Indication
- Relocatable Belt Clip Either End
- Field Replaceable Belt Clip
- Field Replaceable Battery
- Field Replaceable Line Cord
- Weatherproof Case
- High Voltage Lockout in Talk Mode
- Software Upgradable

Physical Characteristics

Housing

See Figure 1.

The TS42DLX Deluxe Test Set housing is made of high-impact plastic. The test set provides rugged service and withstand the rough handling and shocks normally associated with field use. The housing permits operation in bad weather, such as heavy rain and dust storms.

Belt Clips

See Figure 1.

The belt clip may be attached at either or both ends of the housing. It has a spring-loaded, locking clip that assures a secure connection to belt loops and D-rings. Both forward folding and backwards folding versions of the belt clip may be installed on the test set. The test set can be hung by the belt clip in one of two ways: (1) with keypad and speakerphone facing the user for convenient access or (2) with the transmitter facing the user.

The belt clips may be replaced or relocated in the field. See "Replacing or Relocating the Belt Clip" on page 15.
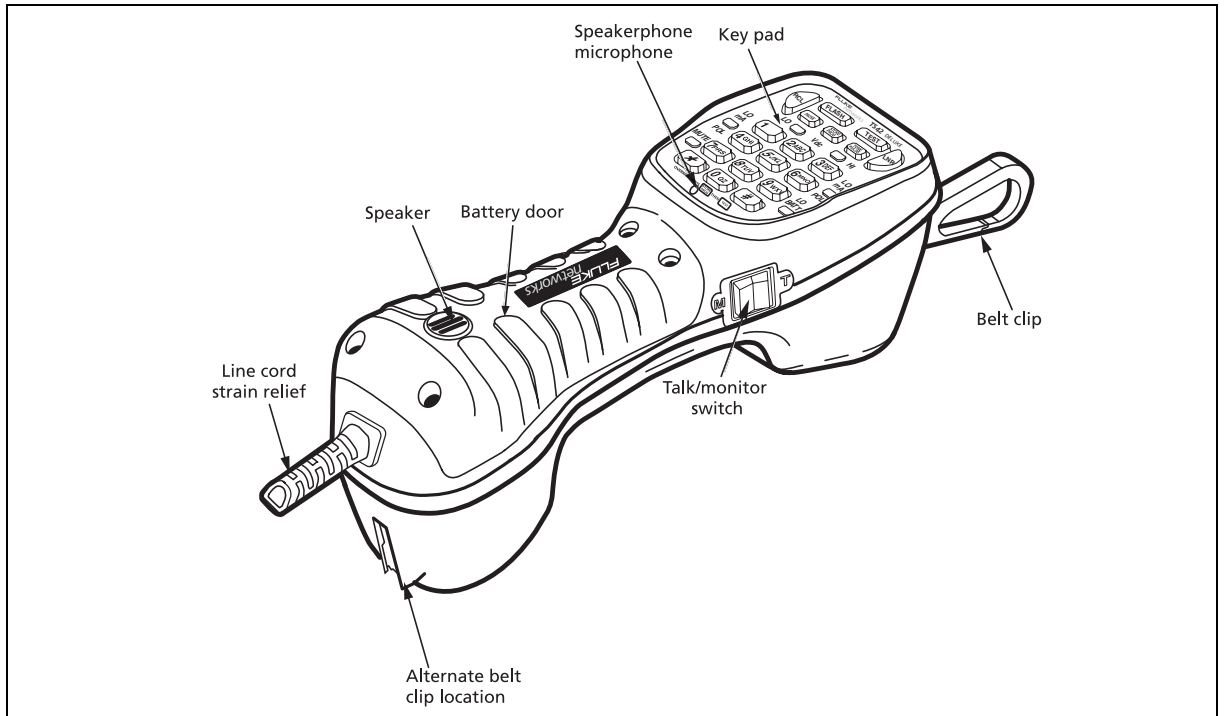
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Figure 1. Physical Characteristics

Line Cords

See Figure 1.

The test has a field replaceable line cord. See "Replacing the Line Cord" on page 15. The line cord is attached through a rubber strain relief at the transmitter end of the test set. Several different configurations of line cords are available. See "Accessories" on page 17 for model numbers.

Battery

See Figure 1.

⚠ Caution

Use caution when handling batteries. Do not allow the terminals to be shorted together. Dispose of battery properly to ensure contacts cannot short. Disposal may be restricted by local laws.

The test sets battery compartment makes battery replacement easy. See "Replacing the Battery" on page 14.

Note

If the test set fails to operate properly, first replace the battery and retest before sending the test set in for repair.

A 9 V alkaline battery must be installed for the test set to operate. Do not use rechargeable batteries. The battery performs two main functions:

- It powers the test set when on-hook.
- It supplies supplementary current to the speaker (if on) when the test set is off-hook.

The speaker draws more current than any other circuit in the test set. It follows that the battery will last longer if the speaker is used in moderation.

When the **LO BATT** LED begins flashing, the battery, and thus the test set has anywhere from several hours to several days of life remaining depending on how often the speaker is used.

See "Replacing the Battery" on page 14 for instructions on changing the battery.

If the test set stops working, remove the 9 V battery, wait at least 40 seconds, then replace the battery. Use the same battery if you know it is good or use a new battery if you are not sure. This will reset the test set. If it still doesn't work, contact Fluke Networks Technical Support.

Speaker and Speakerphone Microphone

See Figure 1.

The speaker and speakerphone microphone are located on the keypad side of the test set. The speaker draws more current than any other circuit in the test set. The battery lasts longer if the speaker is used in moderation.

Audio Controls

See Figure 2.

The three audio control keys are located on the inside handle of the test set between the handset receiver and the handset microphone. These controls allow the operator to switch between the handset and speakerphone, to mute the active microphone, and to control the volume of the received audio signal. Table 1 describes the audio control keys.

⚠️ Warning

Never hold the speaker against your ear when it is on, or when turning it on or off. Sounds emitted by the speaker can be loud enough to damage your hearing.

Keypad Controls and Indicators

See Figure 3.

The keypad has 19 keys that are recessed into the receiver end of the housing. The recessed bezel provides physical protection for the keypad and helps prevent accidental key press. Table 2 describes the keys on the keypad and other indicators on the test set.
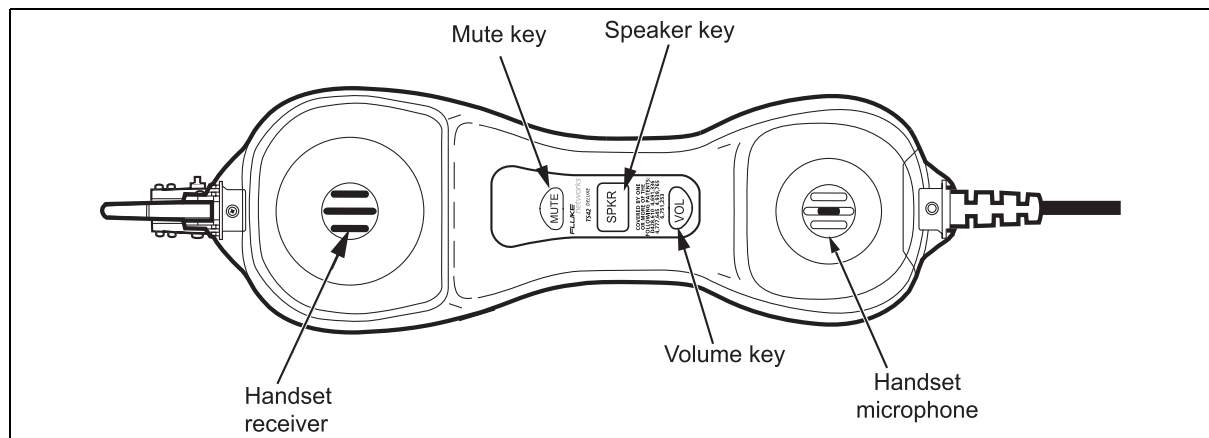

Mute key   Speaker key   Volume key   Handset microphone   Handset receiver

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Figure 2. Audio Control Keys

Table 1. Test Set Audio Control Keys

Key	Description (see Figure 2)
MUTE	The **MUTE** key is functional only when the test set is off-hook; it has no function when the unit is on-hook. When the test set is off-hook and is being used as a handset, pressing the **MUTE** key will shut off the handset's microphone. This is useful in noisy environments such as near traffic. With the mute on, ambient noise is not picked up by the test set's microphone and therefore does not end up in the operator's ear. When the mute is on, it is easier to hear the person at the other end of the line and easier to hear static or noise on the line. Pressing the **MUTE** key again will turn the microphone on. When the test set is off-hook and is in Speakerphone mode, pressing the **MUTE** key will shut off the speakerphone's microphone and will put the test set into a Receive-Only Loud Speaker mode. This is a better mode for troubleshooting than Speakerphone mode. Pressing the **MUTE** key again will turn the speakerphone microphone on. The test set may be configured to operate exclusively in Receive-Only Loud Speaker mode. When in this mode, the **MUTE** key has no effect on test set operation while in loudspeaker mode. See "Configuring Your Test Set" on page 10. When the mute is on, the **MUTE** LED will flash.
VOL (Volume)	Pressing the **VOL** key switches the sound level of the test set's active receiver between normal and high volume. This is true in Monitor mode as well as Talk mode. The state of the **VOL** key is preserved when the active receiver is changed. For example, assume the handset receiver is set to high volume, if you switch to the speaker, it will also be set to high volume. The **VOL** key only affects the volume of received signals. It does not affect the volume of transmitted signals.
SPKR (Speaker)	The **SPKR** key is used to turn the test set's speaker on and off. It functions in both Talk and Monitor modes. In Monitor mode, if the test set is being used as a handset, pressing the **SPKR** key will turn on the speaker. This allows a user to monitor a line while working at a distance from the test set. If the test set is off-hook and is being used as a handset, pressing the **SPKR** key will turn on the Speakerphone. The handset microphone and receiver are shut off and the speakerphone microphone and speaker are enabled. This mode is intended for two-way, hands-free conversation. You may also configure the test set to operate exclusively in Receive- Only Loud Speaker mode (see "Configuring Your Test Set" on page 10.) For test sets configured as Receive-Only Loud Speaker; if the test set is off-hook and is being used as a handset, pressing the **SPKR** key will turn on the Receive- Only Loud Speaker. This mode is intended for listening to the line, hands free.
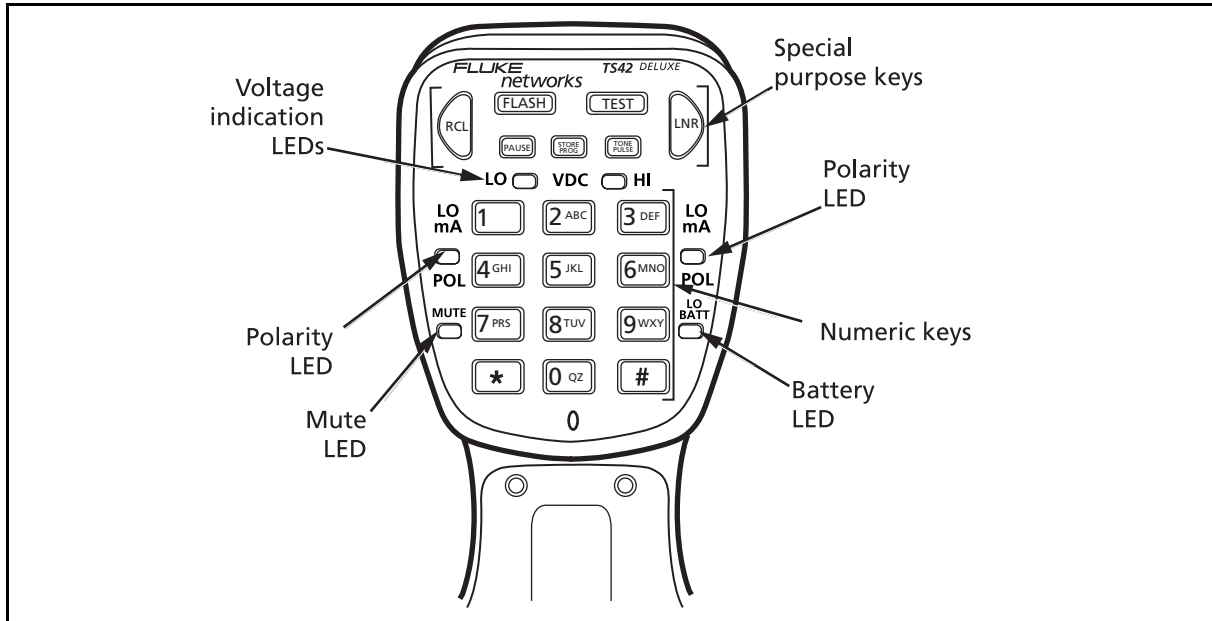
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Figure 3. TS42DLX Deluxe Keypad and Overlay

Table 2. Test Set Keypad Control and Indicators

Key or Indicator	Description (see Figure 3)
Numeric Keypad	The numeric keypad is used to dial telephone numbers and make function selections. The numeric keypad includes 12 standard dialing keys including the star (✳) and the pound (#) keys. The seven special purpose keys are described below.
RCL (Recall) key	The **RCL** key is used for the storing and recalling of repertory dialing numbers. See "Program Speed Dialing Numbers" on page 11.
FLASH (Hook-Flash) key	The **FLASH** key is used to interrupt loop current for a timed duration. The **FLASH** key only operates when the test set is off-hook. When pressed, the **FLASH** key will interrupt loop current for the programmed hook-flash duration. See "Hook Flash Duration" on page 12.
LNR (Last Number Redial) key	The **LNR** key is used to redial the number most recently dialed. See "Last Number Redial" on page 10.
PAUSE key	The **PAUSE** key is used to insert a timed pause into a stream of dialed digits. The **PAUSE** key is commonly used in combination with speed dial numbers that will be dialed out through a PBX. The duration of the pause is user programmable. See "Pause Duration" on page 12.
STORE/PROG key	The **STORE/PROG** key is used for storing speed dialing numbers and for programming special test set functions.

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Table 2. Test Set Keypad Control and Indicators (continued)

Key or Indicator	Description (see Figure 3)
TONE/PULSE	The **TONE/PULSE** key is used to switch between tone and pulse dialing. The **TONE/PULSE** key is only active when the test set is off-hook. Any time the test set goes off-hook, it is automatically set to tone dialing. Once off-hook, pressing the **TONE/PULSE** key will change the dialing mode to pulse dialing. Pressing the key again will switch back to tone dialing.
TEST	The **TEST** key is used to perform two tests. One test is performed when the test set is on-hook and the other test when the test set is off-hook. The results of the tests are meaningful only if the unit's test leads are connected to Tip and Ring of a subscriber line. When the test set is on-hook, pressing the **TEST** key causes one of the tests to be executed. The test set measures the dc voltage across Tip and Ring and then displays, by LED, whether the voltage is high, low, or normal. The test is designed to indicate dc voltage on the line under test (see "HI/LO Voltage LEDs" for a description of the indications). For example, the user runs the test, expecting a normal battery voltage of -48 Vdc on a particular line, instead, the amber LED flashes indicating the dc voltage is lower than a normal CO battery. This tells the user that they may be connected to the wrong pair and should further investigate why the battery on the line under tests is not normal. The **POL** LEDs double as low loop current indicators. When off-hook and the **TEST** key is pressed, if the current reading is below 23 mA, the LED corresponding to the line polarity will flash for 5 seconds. If the loop current is normal, the LED will light solid. Low loop current may indicate a problem on the line.
Light Emitting Diodes (LEDs)	All LEDs are located on the keypad inside the recessed area.
MUTE LED	The **MUTE** LED flashes when the mute function is activated.
LO BATT (Low Battery) LED	The **LO BATT** LED flashes when the 9 V battery is nearly discharged. The low battery LED is active only in operating modes that use the battery.
POL LED	*Notes* *The TS42DLX Deluxe Test Set is not polarity sensitive, and will function in either polarity.* *The POL LEDs will not light if the test set is on-hook or when the speaker is on.* When the test set is off-hook, one of the two Polarity (**POL**) LEDs will illuminate automatically to indicate the dc polarity of the line. The green **POL** LED will light if the red test lead is connected to the Ring (negative) side of the line and the black test lead is connected to the Tip (positive) side of the line. The red **POL** LED will light if the test leads are reversed; that is, with the red test lead connected to the Tip (positive) side and with the black test lead connected to the Ring (negative) side. **LO mA LED.** The **POL** LEDs double as low loop current indicators. When off-hook and the **TEST** key is pressed, if the current reading is below 23 mA, the LED corresponding to the line polarity will flash for 5 seconds. If the loop current is normal, the LED will light solid. Low loop current may indicate a problem on the line.
Electronic Ringer	The electronic ringer is enabled while the test set is on-hook.

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Table 2. Test Set Keypad Control and Indicators (continued)

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Key or Indicator	Description (see Figure 3)
HI/LO VDC (high/low Vdc) LEDs	When the test set is on-hook and the TEST key is pressed, the unit measures the DC voltage across Tip and Ring and indicates the voltage level as follows: Voltage Range — Indication 0 V to 2 V — **LO** Vdc LED lights for 5 seconds 2 V to 42 V — **LO** Vdc LED blinks for 5 seconds 42 V to 53 V (Normal CO battery voltage) — Both the **LO** Vdc and **HI** Vdc LEDs flash once 53 V to 140 V — **HI** Vdc LED blinks for 5 seconds Above 140 V — **HI** Vdc LED lights for 5 seconds If the indicated voltage causes either LED to light solidly for 5 seconds, the voltage has been measured at a level which the test set will not allow off-hook operation. If the test set is placed in Talk mode on a loop with more than 140 Vdc, the test set will lock out and the **HI** Vdc LED will remain lit until the test set is placed in Monitor mode or the voltage drops below 140 V.

Operation

The test set has two basic modes of operation: Talk mode and Monitor mode. Talk mode is used for off-hook operations (such as dialing verification, automatic number identification, and audio quality verification). Monitor mode is for audio monitoring of the Tip and Ring pair while on-hook. In Monitor mode, the test set has a high input impedance, which allows monitoring of the line without disrupting conversations or data signaling if present.

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⚠ **Caution**

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When testing circuits that are close to a battery source, clipping onto a line may case loud pops in the receiver. Holding the receiver tightly against your ear may cause acoustic shock. The test set is designed to rest comfortably on the shoulder with some space between the receiver and the ear. It should be used in this position when working close to a battery source.

Shorting the Tip and Ring leads together while connected to a data line will disrupt data on the line.

Talk/Monitor Switch

See Figure 1.

The **TALK/MONITOR** switch is a rocker switch located on the side of the test set. The **T** position puts the test set into Talk mode. The **M** position puts the test set into Monitor mode.

Using the Test Set in Monitor Mode

While in Monitor mode, the test set is always on-hook. The test set draws no direct current from the line and it transmits no signals to the line. In this mode, the test set has a high AC input impedance, which allows listening for audio signals without disrupting conversations or data signaling that might exist on the line.

Either the handset receiver or the speaker can be used to monitor a line. In the Monitor mode, the test set is typically used to perform one or more of the following procedures:

- Verification that a line is idle when looking for a line to borrow.
- Listening for noise on the line.
- Hunting for tracer tones.
- Testing for dc voltage on the line by using the **TEST** key.

Using the Test Set in Talk Mode

In Talk mode, if talk battery is present, the test set will go off-hook. When off-hook, the test set operates like a standard telephone; it is typically used to verify the proper operation of a voice telephone line or to establish temporary communications on a "borrowed pair".

Originating a Call

1 Set the Talk/Monitor switch to **M**.

2 Clip the test set to Tip and Ring of a subscriber loop.

3 Monitor (listen to) the line to verify it is idle.

4 If not idle, disconnect the test set from the line.

5 If the line is idle, set the Talk/Monitor switch to **T.**

6 If talk battery is present, the test set will go off-hook and draw dial tone.

Note

The test set will not go off-hook if the line voltage exceeds 140 V.

7 Dial the desired number.

Disconnecting a Call

To disconnect a call, set the Talk/Monitor switch to **M** or remove the test leads from the line.

Answering a Call

1 If a ringing signal is received, set the Talk/Monitor switch to **T**.

2 If talk battery is present, the test set will go off-hook and draw dial tone.

Note

The test set will not go off-hook if the line voltage exceeds 140 Vdc.

Ground Start

Ground start lines are typically found on PBX installations. To activate an idle ground start telephone line, do the following:

1 Set the Talk/Monitor switch to **M**, and connect the test leads to Tip and Ring of the ground start line. With a third wire, temporarily short the Tip side of the line to earth ground. A wire with an alligator clip at each end is often used for this. Do not allow clips to short network connections.

2 With the short-to-earth in place, set the Talk/Monitor switch to **T**. When dial tone is received, remove the third wire from earth. The circuit is now ready for dialing.

Data Safe Practices

Always monitor the line for an audible signal before attempting to go off-hook to draw dial tone. To detect data signals within the human audio range, such as produced by voiceband modems and subrate DDS transceivers, you must listen to the line using the test set's audio monitoring capability. If you hear the telltale hiss of a voice band modem or low frequency data transceiver, do not move the **TALK/MONITOR** switch to **T**. It will go off hook and it will interfere with the voice band modem or data transceiver. To avoid this, try another line or wait until the line is idle.

When going from pair to pair searching for tracer tone or dial tone it is best to connect the test set to Tip and Ring of the pairs. Avoid the practice, either in Talk or Monitor mode, of clipping one lead of the test set to ground, and using the other lead to search for tracer tone or dial tone on a block. This may create an electrical imbalance on a data line that will disrupt service. Once you find the voice line you are searching for then it is OK to test Tip to ground or Ring to ground on that line.

Be careful not to short the test leads together if you are connecting to a data line (or any line for that matter), as this could bring down the service.

It is best to put the test set in Monitor mode when troubleshooting a line, searching for capacitance kicks, RF signals, craft provided tones, etc.

High Voltage Lockout Operation

The TS42DLX Deluxe is designed for use by Outside Plant and Central Office technicians in environments where analog voice lines co-exist with lines that carry high DC voltage.

Accidentally going off-hook on a line carrying a high DC voltage can damage the power supply feeding the line. To prevent this from occurring, the TS42DLX Deluxe provides an automatic high voltage lockout function. When a TS42DLX Deluxe is connected to a Tip and Ring pair with its **TALK/MONITOR** switch in the TALK position, it will measure the voltage on the line prior to going off-hook. If the measured voltage exceeds 140 Vdc, the test set will lockout, preventing itself from going off-hook.

The high voltage lockout condition is indicated by a solidly lit **HI** Vdc LED. In the event of a high voltage lockout, the **TALK/MONITOR** switch should be set to **M** and the test set leads should be carefully removed from the line.

⚠ Caution

Do not short the test leads to each other while it is connected to a line carrying high voltage.

There is no way for the operator to override a high voltage lockout. Lines with voltages exceeding 140 Vdc do not carry analog voice services.

Configuring Your Test Set

Last Number Redial

In the Tone or Pulse dialing mode, the last number dialed can be automatically redialed by pressing the **LNR** key after going on-hook and then back off-hook. To redial a number, the **LNR** key should be the first key pressed after going back off-hook.

If, after going off-hook, any dialing key is pressed, the LNR memory will be cleared and the value of the pressed key will be the first number stored in the cleared memory.

The **PAUSE** key is considered a dialing key. If pressed, it is stored in the redial memory, taking up one of the 23 digit slots.

In tone dialing mode, the dialing keys that are permitted to be stored in LNR memory include 1,2,3,4,5,6,7,8,9,0,*,# and PAUSE. If the star (✷) and pound (#) keys are pressed in pulse mode they will be ignored. The star (✷) and pound (#) keys will not be redialed when the test set is in pulse mode even if the redial memory includes star (✷) and pound (#).

Program Speed Dialing Numbers

While in Monitor mode, the test set allows the storage of ten speed dialing numbers in ten memory locations (0 through 9). Each location will store up to 23 digits. If an attempt is made to store more than 23 digits, only

the first 23 are stored. The **PAUSE** key is accepted as a dialing digit when storing numbers.

Storing a Number When in Monitor Mode (Preferred Method)

1   Set the Talk/Monitor switch to **M**.

2   Press **RCL**.

3   Using the dialing keypad, enter the number to be stored.

4   Press the **STORE/PROG** key.

5   Press one of the number keys (0 through 9) to select the desired memory location. The test set gives a confirmation tone.

Note

*If a non-dialing key is pressed while programming a number sequence, it will be ignored. Pressing **RCL** a second time will exit the Programming mode.*

Storing the Last Number Dialed

If you dial a number then go on-hook and you decide you want to save that number in speed dialing memory, do the following:

1   Set the Talk/Monitor switch to **M**.

2   Press **RCL**.

3   Press **LNR** (Last Number Redial).

4   Press the **STORE/PROG** key.

5   Press one of the number keys (0 through 9) to select the desired memory location. The test set gives a confirmation tone.

Storing a Number You are Calling

1   Connect the test set to a working telephone line, set the **TALK/MONITOR** switch to **TALK**, and receive dial tone.

2   Dial the number.

3   Press the **STORE/PROG** key.

4   Press one of the number keys (0 through 9) to select the desired memory location.

Putting a Pause in a Stored Number

Note

*Each time the **PAUSE** key is pressed, it counts as one dialing digit.*

In some situations it may be necessary to put a pause between digits of a stored number, as when accessing a trunk through a PBX that requires a **9** to get an outside line. You can do this by pressing the **PAUSE** key at the point where the pause is required. For example, to store the number 9-555-1234, with a pause between the **9** and **5**, enter **9[PAUSE]5551234**. When the number is dialed out, there will be a pause between the **9** and **5**. The duration of a pause is user programmable (see "Pause Duration" on page 12). You can insert a longer pause by pressing **PAUSE** more than once.

Dialing a Stored Number

1   Connect the test set to a working telephone line.

2   Set the **TALK/MONITOR** switch to **T**.

3   When the test set goes off-hook, press **RCL** (RECALL) and then the number key (0 through 9) for the memory location. For example, to dial a number stored in location 5, press **RCL** and then **5**. The number will be automatically dialed.

Hook Flash Duration

When the test set is off-hook, pressing the **FLASH** key causes a timed interruption of the loop current to occur. Some PBX setups or telephone office switches may use this signal to put a call on hold or to activate some special function. One flash is generated for each press of the key.

To change the flash duration value:

1 Set the Talk/Monitor switch to **M**.

2 Press the **STORE/PROG** key.

3 Press the **FLASH** key.

4 Press a number key to select a hook flash time. Invalid entries are ignored. The test set gives a confirmation tone when the entry is accepted.

Key	Hook Flash Time
1	100 ms
2	200 ms
3	300 ms
4	400 ms
5	500 ms
6	600 ms (default)
7	700 ms
8	800 ms
9	900 ms
0	1000 ms

Pause Duration

The PBX Pause feature lets you insert a delay into speed dialing numbers. This is required when dialing out through a system that provides a second dial tone (such as PBX). Different PBX devices may require different pause durations to allow enough time for the second dial tone to be returned. The pause duration can be programmed.

To change the PBX Pause duration:

1 Set the Talk/Monitor switch to **M**.

2 Press the **STORE/PROG** key.

3 Press the **PAUSE** key.

4 Press a number key to select a pause time. Invalid entries are ignored. The test set gives a confirmation tone when the entry is accepted.

Key	Pause Time
1	2 seconds
2	3 seconds
3	4 seconds (default)
4	5 seconds

Exclusive Receive-Only Loud Speaker

Under certain usage scenarios (such as hunting for dial tone), a test set operator may prefer to have the test set's speaker remain in Receive-Only mode (muted) while transitioning in and out of Talk mode. To accommodate these procedures, the test set may be configured to operate with the speaker exclusively in a Receive-Only mode.

To enable/disable Exclusive Receive-Only Loud Speaker mode:

1 Set the Talk/Monitor switch to **M**.

2 Press the **STORE/PROG** key.

3 Press the **MUTE** key. The test set gives a confirmation tone.

Speaker Timeout

The speaker draws more current from the battery than any other circuit on the test set. The battery will be drained quickly if the speaker is left on continuously. To extend battery life, the test set has a timeout function that automatically turns off the speaker when the test set is on-hook. A timer is started whenever the test set is put on-hook. As long as the test set is off-hook the timer will not start.

If the test set is used as a handset in Monitor mode and if the test set's receiver has been set to high volume, the battery will be asked to deliver enough current to drain the battery sooner than desired. So the same timeout that is applied to the speaker is applied to the high volume state in Monitor mode. If the test set is in Monitor mode with the receiver's volume set to high volume, after the timeout the test set will revert to low volume. When the test set is in Monitor mode with the speaker off and with the receiver volume set to low, it draws very little current from the battery.

The speaker timeout duration is programmable while on-hook and 240 minutes (4 hours) while off-hook. The off-hook timeout cannot be changed. Remember, the longer the selected timeout duration the shorter the battery life.

To change the speaker timeout duration:

1   Set the Talk/Monitor switch to **M**.

2   Press the **STORE/PROG** key.

3   Press the **SPKR** key.

4   Press a number key to select a duration. Invalid entries are ignored. The test set gives a confirmation tone when the entry is accepted.

Key	Speaker Timeout Duration
1	2 minutes (default)
2	5 minutes
3	10 minutes
4	20 minutes
5	30 minutes
6	40 minutes

Factory Defaults

The Restore Defaults function lets you restore all programmable features to their original factory settings. This function does not clear stored telephone numbers. The defaults are as follows:

- Pause Duration: 4 seconds
- Hook Flash Duration: 600 ms
- Speaker Timeout: 2 minutes
- Exclusive Only Loud Speaker: Disabled

To restore the factory default values:

1   Set the Talk/Monitor switch to **M**.

2   Press the **STORE/PROG** key.

3   Press the pound (#) key. The test set provides a confirmation tone when the entry is accepted.

Maintenance

⚠ Warning

Disconnect clips from any metallic connections before performing any maintenance. Read all instructions completely and understand possible hazards to end user if repairs are not performed properly.

Batteries are hazardous to handle. Do not allow the terminals to be shorted together. Severe burns or explosion can result if not handled properly. Dispose of battery properly to ensure contacts cannot short. Disposal may be restricted by local laws.

⚠ Caution

Do not use CRC Cable Clean® or any similar chlorinated solvent on the test set. Doing so will damage the test set.

Replacing the Battery

See Figure 4.

To replace the 9 V battery:

⚠ Caution

Be sure to account for all hardware removed. Loose or missing hardware could create a hazard for the end user. Be sure to replace the battery with a good 9 V alkaline or lithium battery or the test set will not operate properly.

1   Disconnect the test set from the line and place on a flat work surface with battery cover up.

Note

Battery cover screws are retained in the cover and will not come all the way out of the battery cover.

2   Using a Phillips screwdriver, loosen only the four screws attaching the battery door cover to the back of the test set.
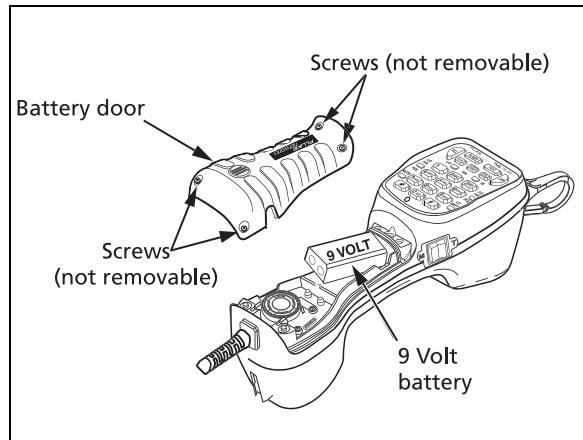

bfu04.eps

Figure 4. Battery Replacement

3   Remove the battery door cover. Do not access or handle printed circuit or other areas of the test set other than the battery.

4   Remove the old battery from the test set and properly discard. Make sure the terminals cannot short.

5   Insert a new 9 V battery into the test set. When inserting batteries, observe the proper polarity.

6   Check that all sealing surfaces are clean and mate properly for water resistant seal.

7   Place the battery door cover on the test set and fasten the four screws securely. Do not over tighten screws. The battery door screws should be torqued to a maximum of 0.904 N-m or 8 in-lb.

Replacing or Relocating the Belt Clip

See Figure 5.

The belt clip assembly is field replaceable in the event of damage or prolonged wear. It also can be relocated to one of two locations. To order a replacement belt clip, contact your local Fluke Networks authorized distributor. See "Accessories" on page 17 for belt clip model numbers.

To replace or relocate the belt clip assembly:

1   Using a Phillips screwdriver, remove the screw that secures the belt clip to the test set housing at the keypad end.

2   Remove the old belt clip and replace with a new one. Secure the belt clip assembly to the test set housing with the original screw.
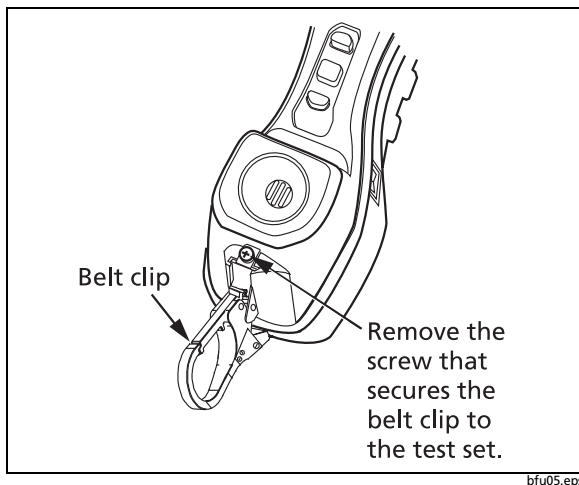

bfu05.eps

Figure 5. Belt Clip Replacement

To install a second belt clip:

1   Remove the blank insert from the test set.

2   Place the belt clip on the test set and secure with the screw supplied with the belt clip.

3   Place the blank insert in the belt clip slot that is <u>not</u> being used.

Replacing the Line Cord

A worn out or damaged line cord can be replaced by the user. To order a replacement line cord contact your local Fluke Networks authorized distributor. See "Accessories" on page 17 for line cord model numbers.

⚠ Warning

Read all instructions completely and understand possible hazards to end user if repairs are not performed properly.

Disconnect test set clips from any metallic connections before performing this maintenance.

Removing the Old Line Cord

To remove the old line cord:

Notes

Battery cover screws are retained in the cover and will not come all the way out of the battery cover.

Be careful not to damage or pinch the speaker wires, printed circuit faces or insulating materials.

Be sure to account for all hardware removed. Loose or missing hardware could create a hazard for the end user.

1   Using a Phillips screwdriver, loosen only the four screws attaching the battery door cover to the back of the test set (See Figure 4).

2   Remove the battery door cover (see Figure 4) and battery from the test set.

3   Loosen the two screws that hold the line cord to the PCB (see Figure 6).

4   Using needle nose pliers or one of the line cord clips, remove the two screws and washers from the line cord connectors.

-continued-

5   Using needle nose pliers, remove the plastic clip (see Figure 7) that holds the line cord strain relief in place.

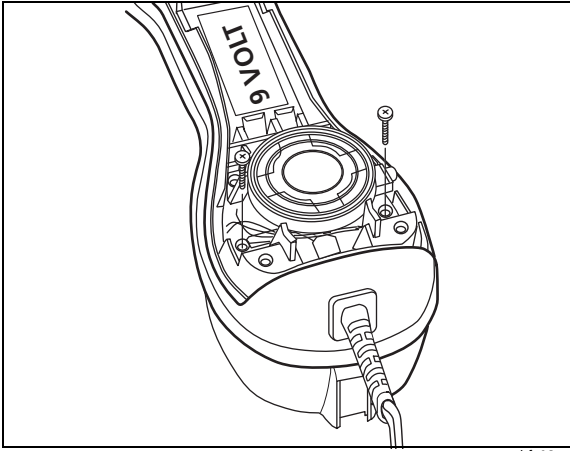**6**   Slip the line cord screw lugs (see Figure 8) out through the hole in the end of the housing.

Figure 6. Removal/Installation of Line Cord Screws

Figure 7. Removal/Installation of Plastic Clip

Installing a New Line Cord

To install a new line cord on either model:

1   From the outside of the housing, slide the screw lugs of a new line cord through the hole in the end of the test set housing. Make sure the crimp barrel offset side of the screw lugs is up (see Figure 9) and that the line cord screw lugs are flush against the circuit board.

Note

Do not over tighten screws. Over tightening will strip the plastic.

2   Fasten the red wire lug to the PCB (Ring) with screw and washer (see Figure 8).

3   Fasten the black wire lug to the PCB (Tip) with screw and washer (see Figure 8).

4   Insert the plastic clip over the line cord strain relief at the base of the test set housing (see Figure 7) and press tightly into place. Inspect all work to ensure no pinched wires or areas where weather resistance and safe operation is affected.

5   Reinstall the battery. Observe the proper polarity.

6   Place the battery door cover on the test set and fasten the four screws (see Figure 4). Tighten screws to a maximum torque of 0.904 N-m or 8 in-lb.
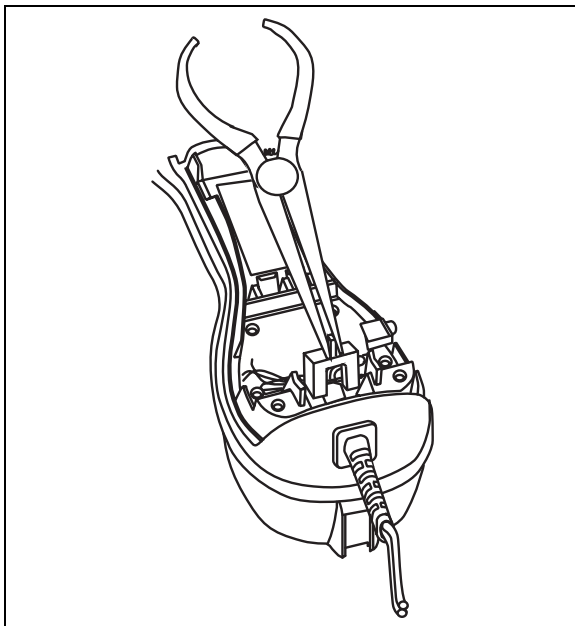
bfu08.eps

Figure 8. Removal/Installation of Line Cord Screw Lugs

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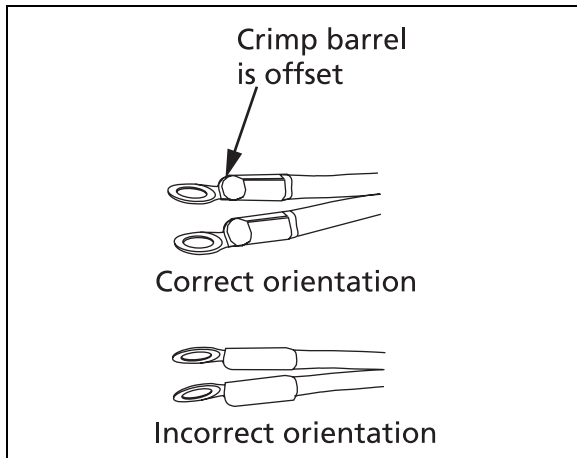
Figure 9. Orientation of Line Cord Screw Lugs

Accessories

To order accessories, contact your local Fluke Networks distributor.

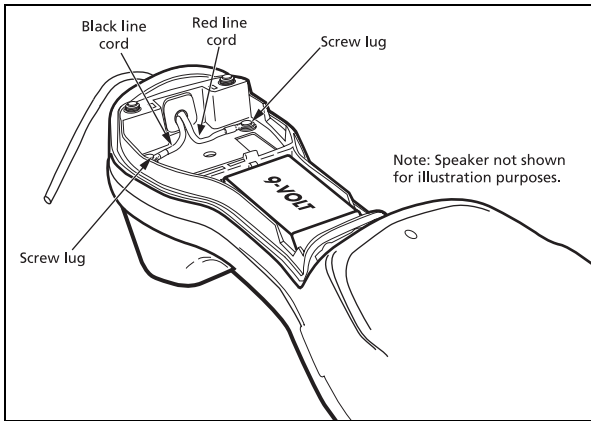| Description	Fluke Networks Model Number
Belt clip, lockable (both ends)	P4080248
Belt clip, non-lockable (both ends)	P4080249
Standard Line Cord (STD) with Piercing Pin Clips	P4480001
Central Office Line Cord with 346A Plug	P4480004
Angled Bed-of-Nails Cord (ABN) and Piercing Pin Clips	P4480009

Specifications

Electrical	
Current Range (Off-Hook)	10 mA to 100 mA
DC Resistance	
Off-Hook	150 Ω nominal
On-Hook	>3 MΩ
AC Impedance	
Off-Hook	600 Ω nominal; 300 Hz to 3400 Hz
On-Hook	>120 kΩ; 300 Hz to 3400 Hz
Rotary Dial Output	
Pulsing Rate	10 pps ±1 pps
Break/Make Ratio	60/40
Interdigit Interval	>300 ms
Resistance During Break	>100 kΩ
DTMF Output	
Tone Frequency Error	±1.5 % maximum
Tone Level	-3 dBm combined (typical)
High versus Low Tone Difference	2 dB ± 2 dB
Memory Dialing	
Memory Capacity	10 speed dial memories plus one last number redial memory
Digit Capacity	23 digits per memory
PBX Pause Duration	User programmable; default of 4 seconds
Hook Flash Duration	User programmable; default of 600 ms
Automatic Speaker Shut Off Duration	User programmable; default of 2 minutes
Battery	9 V alkaline or lithium battery

Physical	
Measurement	10 in x 3.75 in x 4.25 in (254 mm x 96 mm x 107 mm)
Weight	Less than 1.5 pounds (0.68 kg) with one belt clip
Water Resistance	Rain and moisture resistant
Environmental	
Temperature Range	
Operating:	29 °F to 140 °F (-34 °C to 60 °C)
Storage	-40 °F to 150 °F (-40 °C to 66 °C)
Altitude	To 10,000 ft (3,000 m) max
Drop	Two 20-foot drops and twelve 12-foot drops onto concrete.
Note	
Specifications subject to change without notice.	