FLUKE networks

TS®30
Test Set

Users Guide

PN 2448469
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LIMITED WARRANTY AND LIMITATION OF LIABILITY

Each Fluke Networks product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period for the mainframe is 18 months and begins on the date of purchase. Parts, accessories, product repairs and services are warranted for 90 days, unless otherwise stated. Ni-Cad, Ni-MH and Li-Ion batteries, cables or other peripherals are all considered parts or accessories. The warranty extends only to the original buyer or end user customer of a Fluke Networks authorized reseller, and does not apply to any product which, in Fluke Networks' opinion, has been misused, abused, altered, neglected, contaminated, or damaged by accident or abnormal conditions of operation or handling. Fluke Networks warrants that software will operate substantially in accordance with its functional specifications for 90 days and that it has been properly recorded on non-defective media. Fluke Networks does not warrant that software will be error free or operate without interruption.

Fluke Networks authorized resellers shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of Fluke Networks. Warranty support is available only if product is purchased through a Fluke Networks authorized sales outlet or Buyer has paid the applicable international price. Fluke Networks reserves the right to invoice Buyer for importation costs of repair/replacement parts when product purchased in one country is submitted for repair in another country.

Fluke Networks warranty obligation is limited, at Fluke Networks option, to refund of the purchase price, free of charge repair, or replacement of a defective product which is returned to a Fluke Networks authorized service center within the warranty period.

To obtain warranty service, contact your nearest Fluke Networks authorized service center to obtain return authorization information, then send the product to that service center, with a description of the difficulty, postage and insurance prepaid (FOB destination). Fluke Networks assumes no risk for damage in transit. Following warranty repair, the product will be returned to Buyer, transportation prepaid (FOB destination). If Fluke Networks determines that failure was caused by neglect, misuse, contamination, alteration, accident or abnormal condition of operation or handling, or normal wear and tear of mechanical components, Fluke Networks will provide an estimate of repair costs and obtain authorization before commencing the work. Following repair, the product will be returned to the Buyer transportation prepaid and the Buyer will be billed for the repair and return transportation charges (FOB Shipping point).

THIS WARRANTY IS BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. FLUKE NETWORKS SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE OR THEORY.

Since some countries or states do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warranty may not apply to every buyer. If any provision of this Warranty is held invalid or unenforceable by a court or other decision-maker of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision.

4/04-18

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TS®30 Test Set

Overview of Features

The TS30 Test Set is a portable handset used by installers, repair technicians and other authorized personnel for testing of telephone lines and for temporary communications. The TS30 is powered by the telephone line. It does not require any batteries.

The following is a list of the TS30 features:

- Talk and Monitor modes
- Tone and Pulse dial signaling
- Transmitter mute
- Last Number Redial in Tone and Pulse Modes
- Automatic regulation of speech levels
- Hearing aid compatible receiver
- Hook flash generation
- Line polarity indicators
- Fully functional with either line polarity
- High impedance Monitor mode
- Electronic ringer
- Overvoltage protection
- Impact resistant and rain resistant
- Field replaceable line cord
- Field replaceable spring-loaded belt clip
- Ergonomic design

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

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Safety Information

The following 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.
CE	Conforms to relevant European Union directives.
C SP US	Complies with relevant North American Safety Standards.
	Do not put products containing circuit boards into the garbage. Dispose of circuits boards in accordance with local regulations.

⚠Warning⚠

Read all safety information before you use the Product.

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.

Do not connect directly to mains.

Do not touch voltages > 30 V ac rms, 42 V ac peak, or 60 V dc.

Do not use the Product around explosive gas, vapor, or in damp or wet environments.

Measure a known voltage first to make sure that the Product operates correctly.

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.

Physical Characteristics

See Figure 1.

The TS30 housing is made of high-impact plastic. The unit provides rugged service and withstands the rough handling and shocks normally associated with field use. The TS30 housing permits operation in bad weather, such as in rain and dust storms.

The back of the handgrip has a contoured surface, which lets you grip the test set between chin and shoulder, leaving both hands free for other tasks.

The keypad has 16 keys that are recessed. The recessed area protects the keypad and reduces accidental pressing of the keys.

The belt clip includes a spring-loaded clip that ensures a secure connection to belt loops and D-rings.

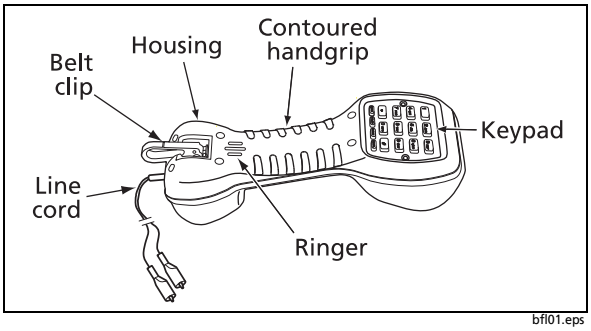

Figure 1. Physical Characteristics

The line cord is attached through a rubber strain relief. See “Line Cord”.

The electronic ringer is located near the belt clip on the hand grip.

Mode Controls

See Figure 2.

The **TALK/MONITOR** switch is on the inside of the hand grip near the transmitter. It puts the unit on-hook (Monitor mode) or off-hook (Talk mode).

The **TONE/PULSE** switch is on the inside of the hand grip near the receiver. This switch selects the dialing mode.

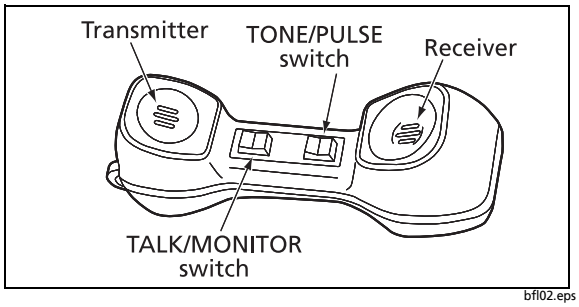

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Figure 2. Controls and Indicators

Keypad

See Figure 3.

The TS30 Test Set keypad includes 12 standard dialing keys and 4 special purpose keys. All keys on the keypad are functional when the unit is in the Talk mode. They are not functional when the unit is in the Monitor mode.

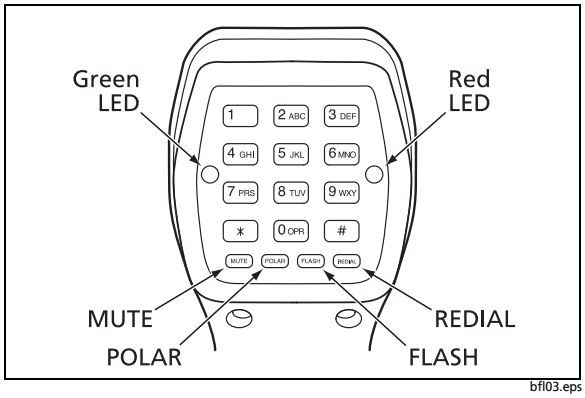

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Figure 3. Keypad

MUTE: Pressing the **MUTE** key shuts off the TS30 transmitter for as long as the key remains depressed.

POLAR: When an off-hook unit is connected to a powered telephone line, pressing the **POLAR** key causes one of the LEDs to turn on. The LEDs indicate the polarity of direct current on the telephone line.

FLASH: Pressing the **FLASH** key will cause a timed interruption of the loop current. Some PBX setups or telephone office switches may use this signal to put a call on hold or to activate some special function.

REDIAL: This key allows the user to redial the last number dialed.

Dialing Keys

See Figure 3.

When the **TONE/PULSE** switch is in the TONE position, each of the 12 dialing keys, when pressed, generate dialing tones. This includes the asterisk (*) and the pound (#) keys. When the **TONE/PULSE** switch is in the **PULSE** position, only the numeric keys (1, 2, 3, 4, 5, 6, 7, 8, 9, 0) will cause pulses to be generated when pressed. In Pulse mode, the asterisk and pound keys are not functional. In Pulse mode the asterisk and pound keys will not be stored in the redial memory.

The special purpose keys are labeled **MUTE**, **POLAR**, **FLASH**, and **REDIAL**.

Light Emitting Diodes (LEDs)

See Figure 3.

The LEDs are on each side of the keypad. One or the other of the LEDs will light only when the test set is in the Talk mode, connected to a powered telephone line, and the **POLAR** key is pressed. The LEDs indicate the polarity of current on the transmission line. See "Polarity Check".

Line Cord

See Figure 4.

The TS30 comes with a line cord for connecting the test set to telephone lines. This line cord consists of one red and one black insulated conductor, each approximately 1.5 meters long. Each clip is covered with a neoprene boot to prevent the clips from causing electrical shorts.

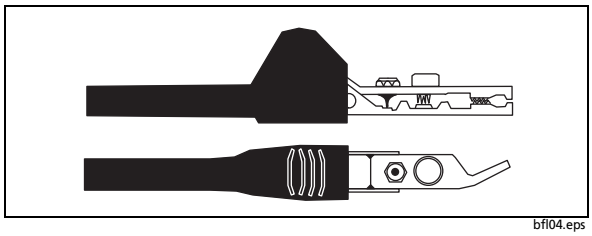

Figure 4. Line Cord with ABN Clips

Operation

⚠Warning⚠

When connecting to metallic network wires, handle alligator clips by insulated boots.

Line Monitoring

Move the **TALK/MONITOR** switch to **MONITOR** and connect the red and black test leads to the telephone line wire pair under test. If there is any audio on the line under test, it can now be heard in the unit's receiver. Because the TS30 presents a high impedance to the line when in Monitor mode, it will not disturb existing signals on the line under test. Monitor mode is typically used by service personnel to verify that there is no call in progress on the wire pair before going off-hook.

Dialing

Note

If tone dialing is selected, the tones associated with each digit will be generated as its respective key is pressed. If pulse signaling has been selected, the desired number may be entered at any rate on the keypad. The digits will automatically be pulsed out at the correct rate.

Move the **TALK/MONITOR** switch to the **MONITOR** position and connect the red and black test leads to the wire pair under test. Move the **TONE/PULSE** switch to select the desired dialing mode. Move the **TALK/MONITOR** switch to **TALK**, and verify that dial tone is received. Enter the number to be called on the keypad. To end the call, either during or after dialing, move the **TALK/MONITOR** switch to the **MONITOR** position.

Flash

Some telephone services require a timed hook flash (approximately ½ second on-hook/off-hook loop interruption) to activate features. The **FLASH** key provides this timed hook flash signal.

Mixed Mode Dialing

On some telephone lines, calls can only be set up by pulse dialing. Once the call is established in Pulse mode, then the **TONE/PULSE** switch can be moved to the **TONE** position. Tones can now be sent over the telephone lines by pressing dialing keys. This is useful when there is a need to send dialing tones as data to activate some function in a device connected to the other end of the telephone line. For example, dialing tones can be used to command an answering machine to play back recorded messages.

Last Number Redial

If a call is not successful and you wish to redial that number, do the following: Put the TS30 Test Set into Monitor mode, then put the unit back into Talk mode, and press the **REDIAL** key. The last number dialed will be automatically redialed. The number in the redial memory is saved for about 8 minutes when the unit is in Monitor mode. The last number redial function is available in either the Pulse or Tone mode. The redial memory has a 23-digit capacity.

Polarity Check

Connect the TS30 Test Set to a powered wire pair. Move the **TALK/MONITOR** switch to **TALK** and press the **POLAR** key. The green LED will light if the red test lead is connected to a more negative voltage than the black test lead. The red LED will light if the red test lead is connected to a more positive voltage than the black lead.

Transmitter Mute

When using the TS30 Test Set in a noisy environment, such as near a street with a lot of automobile traffic, the ambient noise will enter the TS30 Test Set's transmitter and a portion of the noise will be sent to the receiver (side tone effect). This noise may be loud enough in the receiver to make it difficult to hear the person on the other end of the telephone line. Press and hold the **MUTE** key to shut off the transmitter, thus eliminating the ambient noise and making it easier to hear the person at the other end of the telephone line.

Receiving Calls

To receive an incoming call, put the **TALK/MONITOR** switch in the **MONITOR** position. Incoming call signals on the telephone line will cause the TS30 to produce a ringing sound. To answer the incoming call, move the **TALK/MONITOR** switch to the **TALK** position.

Maintenance

⚠ Caution

Disconnect from telephone network when replacing line cord.

Do not use CRC Cable Clean® or any similar chlorinated solvent on the TS30 Test Set. Doing so will damage the test set.

Belt Clip Replacement

See Figure 5.

The TS30 belt clip can be replaced by the user if it becomes damaged or wears out. To obtain a replacement belt clip contact your local distributor or Fluke Networks.

To replace the belt clip assembly:

1. Using a Phillips screwdriver, remove the two screws that secure the belt clip to the test set housing.
2. Remove the old belt clip and replace with a new one.
3. Secure the belt clip assembly to the test set housing with the original screws. Be careful not to over tighten the screws.

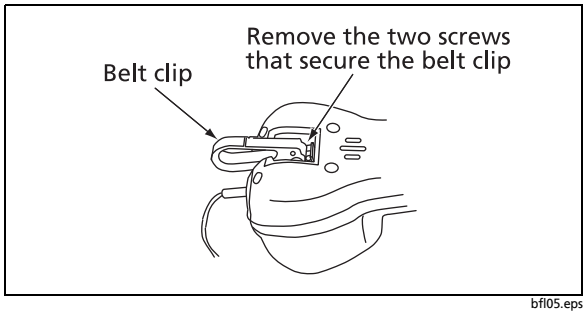

Figure 5. Replacing the Belt Clip

Line Cord Replacement

The line cord can be replaced by the user. To replace the line cord refer to the instructions that come with the replacement line cord. To obtain a replacement line cord contact your local distributor or Fluke Networks.

Accessories

To order accessories, contact your local distributor or Fluke Networks.

Description	Fluke Networks Model Number
Angled Bed-of-Nails Cord (ABN)	P3080009
Load Coil Standard Line Cord (STD) with Piercing Pin Clips	P3080001
Belt Clip	P3218350

Specifications

Electrical	
Return Loss	>14 dB (ref 600 Ω)
Line Current Range	15 mA to 120 mA
Resistance to Continuous Current (Talk Mode)	275 Ω typical at 20 mA
Monitor Mode Impedance	>120,000 Ω 300 Hz to 3400 Hz
Pulse Dial Output	
Pulsing Rate	10 pps ±1 pps
Open/Close Ratio	60/40
Inter-digit Interval	800 ms +20 %, -10 %
Resistance During Pulse Open	> 200,000 Ω
Protection Against Alternating Current Overvoltage	The TS30 survives up to 300Vpk across its test leads.
Protection Against Transient Voltages	The TS30 survives up to 1500 V across its test leads.
DTMF Output	
Tone Frequencies	per ITU-T Q.23
Tone Frequency Error	±1.5% maximum
Tone Level	
High Group	-4 dBm ±2 dB (into 600 Ω)
Low Group	-6 dBm ±2 dB (into 600 Ω)
High vs Low Tone Difference	2dB ±1db
Last Number Redial (Tone/Pulse)	
Memory Capacity	23 digits
Memory Retention	8-minutes nominal
Flash Duration	600 ms ±100 ms
Ringer Loudness	> 70 dBA at 1 meter
Ringer Equivalent (REN)	0.14
Peak Acoustic Output of the Receiver	<120 dBspl
Maximum Sound Level from the Receiver	125 dB(A) above 20 µPa for less than 1 second
Physical	
Measurements	10 in x 2.83 in x 3.34 in (25.5 cm x 7.2 cm x 8.5 cm)
Weight	16.8 ounces (0.476 kg)
Environmental	
Temperature	
Operating	-4 °F to +140 °F (-20 °C to +60 °C)
Storage	-40 °F to +151 °F (-40 °C to +66 °C)
Altitude	To 3,000 m (10,000 ft) maximum
Relative Humidity	5 % to 95 % (non-condensing)

Safety	
Telecom Electrical Safety Classification	TNV-3
IP54	

Regulatory Standards Used

47 CFR Part 15, Subpart B

ICES-003 Issue 3

AS/NZS 3548

EMC Directive 89/336/EEC, EN 55022:98, EN 61326:97, A1:98 Annex C, EN 61000-4-2, EN 61000-4-3

LV Directive 73/23/EEC, EN 610010.1 (1993)

Certifications and Compliance

Safety

IEC 61010-1:2010, Pollution Degree 2, Category: None

Complies with CAN/CSA-C22.2 No. 61010-1

EMC

IEC 61326-1 (Portable), IEC 61326-2-2, CISPR 11 (Group 1, Class A)

Group 1 equipment: group 1 has intentionally generated and/or use conductively coupled radio-frequency energy which is necessary for the internal functioning of the equipment itself.

Class A equipment is equipment suitable for use in all establishments other than domestic and those directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.

USA (FCC) – 47 CFR 15 subpart B, this product is considered an exempt device per clause 15.103

KCC-REM-FKN-012001001: EMC approval for Korea

Class A Equipment (Industrial Broadcasting & Communication Equipment)

This product meets requirements for industrial (Class A) electromagnetic wave equipment and the seller or user should take notice of it. This equipment is intended for use in business environments and is not to be used in homes.

A 급 기기 (업무용 방송통신기자재)

이 기기는 업무용 (A 급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며 , 가정외의 지역에서 사용하는 것을 목적으로합니다 .

Notes

Specifications subject to change without notice.

Legal requirements may exist regarding permission to connect equipment to a Telecom network operated by a public network operator.