ON-LINE USER MANUAL

HD-4 Series Testsets

Model: HD-4

This is an on-line manual for the HD-4 Series of HD Telecom testsets.

The HD-4 series of telephone craft testsets are used by installers, repair technicians, and other telecommunications personnel for the installation and testing of telephone services.

The HD Telecom HD-4 Series Testsets provide:

- High Impedance "Safe For Data" Line Monitor feature
- Electronic ringer to indicate incoming calls
- DTMF (tone) and rotary (pulse) dialing
- Last number redial - 23 digits - T/P
- Line polarity indication
- Register recall/hook flash
- Mute feature for noisy locations
- Modular cordset connection

The modular jack for cordset connection allows you to change cordsets quickly.

The enclosure is made of impact-resistant polycarbonate designed to withstand the rough conditions and shocks associated with craft use.

The back of the testset is equipped with a non-slip pad, to enable testing while the HD-4 rests on your shoulder.

The recessed key pad design protects the keypad from damage and minimizes accidental button contact.

A large belt clips provides convenient connection to installer's belts,

The HD-4 series testsets may be used with several types of cordsets. See the CORDSET section for details.

SWITCHES AND INDICATORS
See drawing on page

TLK-RNG-MON Switch
Located below the receiver, this 3-position switch is used to select the mode of operation.

TLK (Talk)
This position connects the testset to the line for network signaling, conversation, and testing. The TLK position creates an off-hook condition such as that found with a regular telephone set.

RING
This position connects the internal electronic ringer to the line in order to receive incoming ring signals. The RING position creates an on-hook condition, with the speech and test circuits isolated from the line.

MON - Monitor
This position connects the testset to the line through a high impedance circuit, allowing monitoring of the line without disturbing conversations, data transmission, or network signaling.

The MON position creates an on-hook condition, with the speech, test circuits, and ring circuit isolated from the line.

P/T - Pulse/Tone Switch
Located below the receiver, this 2-position switch is used to select the dialing mode.

The PULSE position selects rotary style dial pulse signaling.

The TONE position selects DTMF signaling.

LEDs - Polarity Indicator
The HD-4 testsets employ 2 LEDs (one green and one red) to indicate line polarity. The polarity indicator LEDs are located above the keypad. Please see OPERATION section for details.

Keypad
There are 12 standard network addressing keys, and 4 control keys to enable special functions.

The 12 standard keys are used in signaling and for entering digits for network addressing.

For all models the control keys cause the following functions to be performed:

R - REDIAL key
When pressed, the last number dialed will be redialed from the internal memory. Please see OPERATION section for details.

M - Mute key
When pressed, the transmitter is muted and the sidetone is eliminated. Use of the mute feature improves communications in noisy locations.

F - FLASH key
When pressed, the testset produces line break (hook flash). This function is typically used for register recall.

Pol - POLARITY key - Model HD-4
When the polarity key on the Model HD-4 is pressed, the polarity of the line is checked and indicated on the LEDS's. Please see OPERATION section for details.

Polarity Testing - Model HD-4ASH

OPERATION
Basic operation of the testset may be accomplished as follows:
1. Select MON (monitor) mode.
2. Connect the cordset to the line:
    Red lead to Ring (-)
    Black lead to Tip (+)
3. Confirm line is not in use.
4. Select PULSE or TONE dialing.
5. Select "TLK" mode and confirm dial tone is received.
6. Proceed with dialing, conversation, line testing, etc.

Monitor Use
The high impedance monitor circuit enables the craft person to monitor a line without interrupting conversations or data transmissions.

MONITOR is an "on-hook" condition. Use the following procedure:
1. Select MON (monitor) mode.
2. Connect the cordset to the line:
    Red Lead to Ring (-)
    Black Lead to Ring (+)
3. Listen/monitor on the line.

Note: The amplified speaker feature does not operate in monitor mode.

Last Number Redial - LNR
Redialing of the last number dialed may be done in TONE or PULSE modes. Up to 23 digits may be recalled. The memory of a HD-4 Series testset will retain the last number redialed for 15 minutes. To use the redial: After you have dialed a number, go off-line for a moment, then, press "TLK" to reconnect to the network. Confirm that you have a dial tone, and then press the "R" key on the keypad. The last number previously dialed will be redialed from memory. Redial is done in the same mode (Tone or Pulse) as originally dialed.

If you need to dial "9" or some other access number followed by a pause, simple press the "9" and wait for the next dial tone. Then press the "R" key to redial the number in memory.

PICTURE # 2

Polarity Check - Models HD-4
For the Model HD-4 please use the following procedure to check the line polarity.

Connect the BLACK test lead to TIP (positive), and connect the RED test lead to RING (negative). Switch to "TLK" to access the network.

Press the "Pol" key on the keypad. If the GREEN LED lights up, the polarity is correct: if the RED LED lights up, the line polarity is reversed.

Polarity Check

NOTE: All HD-4 testsets will operate regardless of line polarity.

Ringer
The HD-4 testsets are equipped with an internal ringer to indicate incoming ring signals. Connect the testset to a line. The TLK/RING/MON switch should be in "RING" position in order to receive incoming ring signals.

Line Cord Connection
The testsets are equipped with a standard 6-position modular jack for easy connection of a variety of cordsets.

This jack is located under the cover that secures the belt clip. To change the cordset, remove the four screws holding the cover and release the cordset plug. Insert the new cordset plug and replace the cover and the screws.

CORDSETS

Standard Cord - Model MCS-001
This cordset is approximately 5 feet in length. It consists of two conductors, one red and one black. It is equipped with a modular plug on one end and bent nose alligator clips at the other end. The modular plug is inserted into the modular jack under the cover securing the belt clip. The bent nose alligator clips are attached to telephone line terminals for testing functions and monitoring the status of the line.

Ground Start Cord - Model MCS-301
This cordset is approximately 5 feet in length. It consists of three conductors, one red, one black, and one green. It is equipped with a modular plug a tone end and bent nose alligator clips at the other end. The modular plug is inserted into the modular jack under the cover securing the belt clip. The bent nose alligator clips are attached to telephone line terminals for testing functions and monitoring the status of the line.

310 Cordset - Model HD4-310
This coiled cordset is intended for central office use and is equipped with a modular plug on one end and a 310 plug, with a strain relief, on the other end. The modular plug is inserted into the modular jack inside of the HD-4 testset and the 310 plug is connect to the central office equipment.

Mod to Mod Cordset - Model HD4-202
This cordset is to be used for testing standard modular jack connections and has a 6-position, 4-wire modular plug at each end. One modular plug is inserted into the modular jack inside of the HD-4 testset, and the other modular plug is inserted into the jack to be tested.

SPECIFICATIONS

ELECTRICAL
Talk -
Loop Limit:……..8000 ohms maximum at 48 VDC
Monitor -
Leakage:……..Higher than 500K Ohms

Impedance…….Greater than 120K Ohms
Return Loss-
@ 600 Ohms: Greater than 500K Ohms

ROTARY DIAL OUTPUT
Pulse Rate:……10 pps +/- 10%
M/B Ratio:……..60/40% +/- 2%
Interdigit Interval:…….800ms typical
Leakage During Break: ……..Greater than 500K Ohms

DTMF OUTPUT
Tone Frequency Error:……+/- 1.5% maximum
Tone Level: High Group……..-6dBm +/-2dB
Low Group ……..-8dBm +/-2dB
High/Low Tone - twist:……..2 dB +/- 1dB

MEMORY DIALING
Type:……Last number redial
Mode:……Tone and Pulse
Retention……..15 minutes
Capacity……23 digits

RINGER
Output Level:……..76dBA at 1 meter
Response:……16 - 25 Hz. 60 Volts
Operating Temperature:….-10 Deg.C. to +60 Deg.C.

PHYSICAL
Length:……9 3/4 inches (24.76 cm)
Width:……...2 5/8 inches (6.66 cm)
Height:……..2 1/2 inches (6.35 cm)
Weight:……15 ounces (425 gms)

Specifications subject to change without notice.

MAINTENANCE
Cordsets should be checked periodically for continuity, shorts, and signs of physical wear, such as fraying and loose test clips that may interfere with the unit's ability to function properly.

HD-4 Series testsets may be cleaned with a damp cloth. Use a small amount of liquid soap if heavy dirt is encountered. Do not use scouring powders or cleansers as they may scratch the unit or cause malfunctions.

WARRANTY
Limited 1-Year Warranty
HD Telecom warrants to the original end-user purchaser that its lineman's testset, and the components thereof, will be free from defects in workmanship and materials for a period of one year from the date of purchase.

The obligations of HD Telecom, Inc. under this warranty shall be limited to the repair or replacement (at our option) during the warranty period, of any part that proves defective in material or workmanship under normal installation, use, and service provided the product is returned to HD Telecom, Inc. freight prepaid.

Products returned to us must be accompanied by a copy of the purchase receipt. In absence of such purchase receipt, the warranty period shall cease 18 months from the date of manufacture.

No warranties other than that set forth in this section are given or implied. HD Telecom shall not be liable for any consequential damages or loss, direct or incidental, including without limitation, damages or expenses resulting from the use, the misuse, or the inability of its products.

Cordsets used with testsets are not under warranty
This warranty shall be invalid if the product is damaged as a result of misuse, abuse, neglect, accident, exposure to improper electrical voltages or currents, repair, alteration, or maintenance by any persons other than the HD Telecom service facility.

Some states do not allow limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty give you specific rights and you may also have other rights which vary from state to state.

SERVICE
HD Telecom products are designed and manufactured to ensure a minimum of maintenance. However, should your testset ever require service, follow the instructions below.

In-Warranty Service
For in-warranty service, ship the unit to our service group.
Include a form of proof-of-purchase, such as a copy the sales receipt. HD Telecom will, at our option, repair or replace your testset free of charge, and will return it freight prepaid. Note that cordsets used with the testset are not under warranty.
See shipping instructions below.

Out-of-Warranty Service
For out-of-warranty service, ship the damaged unit to our service group. HD Telecom will inspect the unit for damage and advise the estimated cost of repair by phone or mail. Upon your approval of the estimated repair charge, we will make all necessary repairs and return the testset to you. Charges for service and return freight are invoice on a C.O.D. basis with the return shipment, unless you have an approved credit account.
See shipping instructions below.

Shipping Instructions
1. Ship the testset and a copy of the sales receipt, if available.
2. Enclose a description of the problem you are having.
3. Include your name, address, and telephone number.
4. Pack securely to prevent damage in transit.
5. Ship prepaid to:

HD Telecom, Inc., Service Group
2000 South College Ave., Suite 310
Fort Collins, CO 80525

NOTE: Specifications are subject to change without notice.