INSTRUCTION MANUAL

MTC30

VOICE, DATA & VIDEO CABLE MAPPER

WARRANTY

Warranty Coverage

Major Tech warrants its test instruments to be free from defects in materials or workmanship under normal use and service for a period of two (2) years from the date of shipment. This warranty is extended exclusively to the original purchaser, provided the online Product Registration has been completed on either www.major-tech.com or www.majortech.com.au, depending on which country the product was purchased. This warranty is non-transferable.

Exclusions

This warranty does not cover:

- Disposable batteries and fuses
- Damage caused by leaking batteries (damaging the meter and components)
- Normal wear and tear of mechanical components
- Failures caused by use outside the product's specifications Any product which, in the opinion of Major Tech, has been misused, contaminated, or damaged due to neglect.

Check Procedure

Prior to contacting Major Tech or a distributor regarding a warranty claim, please check the following:

- Batteries are installed correctly
- Battery condition – either replace disposable batteries or ensure rechargeable batteries are charged where applicable
- Test leads are inserted in the correct terminals and are fully inserted, no damage to test leads.

Contact Information

For any warranty claims or inquiries, please contact either Major Tech or the distributor from whom the product was purchased.

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1. INTRODUCTION

The MTC30 Voice/Data/Video (VDV) Tester analyzes wiring on telephone, computer Ethernet/LAN and coaxial cables in one easy step. The large backlit LCD display maps out connections and describes wiring faults. The built-in tone generator and the included Video and Data remote identifiers can be used to quickly locate cables in wiring closets and patch panels. With proper use, this tester will provide many years of reliable service.

2. WARNINGS

- Do not connect the tester to a live circuit. Exposure to voltage can damage the tester.
- Do not modify or try to repair the tester. No serviceable parts are inside.
- Do not use the tester in a wet environment or during electrical storms.
- Do not use the tester near explosive gases, dust or vapor.
- Visually inspect an RJ plug before inserting it into the tester. Poorly terminated plugs may damage the jacks on the tester.

3. ⚠MAINTENANCE

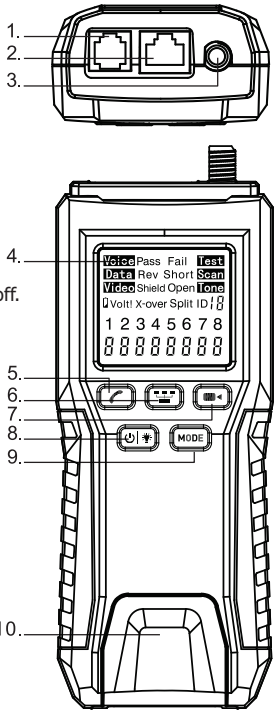
This tester is designed to provide years of dependable service, if the following care instructions are adhered to:

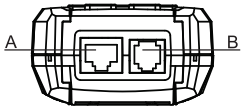
1. KEEP THE TESTER DRY. If it gets wet, wipe it off.
2. USE AND STORE THE TESTER IN NORMAL TEMPERATURES. Temperature extremes can shorten the life of the electronic parts and distort or melt plastic parts.
3. HANDLE THE TESTER GENTLY AND CAREFULLY. Dropping it can damage the electronic parts or the case.
4. KEEP THE TESTER CLEAN. Wipe the case occasionally with a damp cloth. DO NOT use chemicals, cleaning solvents, or detergents.
5. USE NEW BATTERIES OF THE RECOMMENDED SIZE AND TYPE. Remove old or weak batteries so they do not leak and damage the unit.
6. IF THE TESTER IS TO BE STORED FOR A LONG PERIOD OF TIME, the battery should be removed to prevent damage to the unit.

4. TESTER DESCRIPTION

1 - Voice - RJ11/RJ12 Jack
2 - Data - RJ45 Jack
3 - Video - F connector
4 - LCD display
5 - **Voice button:** performs wire map test on RJ11/RJ12 terminated cable
6 - **Data button:** performs wire map test on RJ45 terminated cable.
7 - **Video button:** performs wire map test on F-type connector terminated cable.
8 - **Power/Backlight button:** turns unit on or off, turns backlight on or off.
9 - **Mode button:** transmits analog tones via conductor wires of RJ45 terminated cables that are connected to the tester. This button also cycles through available tone cadences and conductor wire selection/pairing options.
10 - Detachable Remote Terminator.

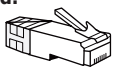
Cable Tester Top View



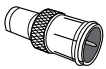


Detachable Remote Terminator
Bottom View
(A). Data - RJ45 Jack
(B.) Voice - RJ11/RJ12 Jack

Included:

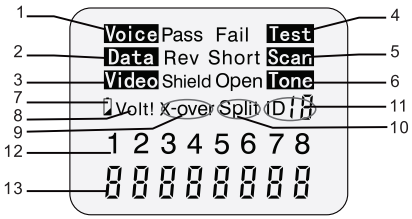


RJ45 Remote Identifiers:
5 x numbered Remote IDs permit mapping up to 5 remote locations at once.
An Expansion Kit is available for a maximum of 16 Remote IDs.



F-type Connector Remote Identifiers:
5 x numbered Remote IDs permit mapping up to 5 remote locations at once.
An Expansion Kit is available for a maximum of 16 Remote IDs.

5. SYMBOLS USED ON LCD DISPLAY



1 - Voice: Appears when telephone cable testing mode is active.

2 - DATA: Appears when Ethernet/LAN cable testing mode is active.

3 - Video: Appears when coaxial cable testing mode is active.

4 - Test: Indicates cable test is in progress.

5 - Scan: Indicates continuous scanning mode is active.

6 - Tone: Appears when the tone generator mode is active.
- **Pass:** Indicates proper wiring on cable being tested.
- **Fail:** Indicates wiring error on cable being tested.
- **Rev:** Indicates the connections on one or more pairs is reversed at one of the cable terminations.
- **Short:** Indicates that two or more wires are shorted to each other.
- **Shield:** Is displayed when the cable being tested has a shield that is connected at both ends. The Shield indicator will flash if there is a short between the shield and any wire within the cable.
- **Open:** Is displayed when one or more pairs are open/not continuous along the cable under test.

7 - **Low Battery:** Indicates low battery. When this symbol appears, results from the tester may not be reliable and the battery should be replaced immediately.

8 - **Volt!:** Flashes when the tester is connected to a cable with voltage on it. Exposure to voltage can damage the tester. If this warning appears, immediately disconnect the cable from the tester to prevent damage to the tester or injury.

9 - **X-over:** Is displayed when the tester detects a properly wired cross over cable.

10 - **Split:** Is displayed when the tester detects the signal is split between two or more pairs.

11 - **ID 1:** Is displayed when the tester detects a Remote ID. The number that appears corresponds to the number on the Remote ID, connected to the opposite end of the cable under test.

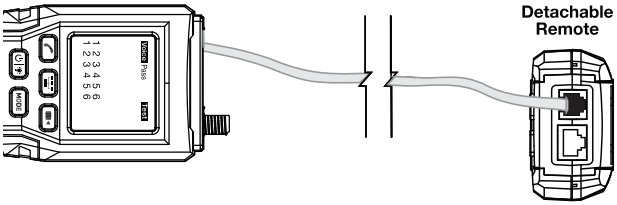
12 - **Wire Map near end:** The top row of numbers displays the connector pins on the tester end of the cable in numerical order. These pins are mapped to the pins shown directly below (bottom row of numbers).

13 - **Wire Map remote end:** The bottom row of numbers displays the corresponding pin numbers on the remote end of the cable. Dash lines indicate shorted pins. Missing pin numbers indicate an open pair.

6. OPERATION

6.1. Voice

WARNING: Exposure to voltage can damage the tester. Immediately disconnect the cable under test if the Voltage warning appears on the display. Make sure the cable is not connected to any device that can supply voltage before you proceed.
Do not connect two different cables into the Voice (RJ11/12) and Data (RJ45) test ports at the same time. The cables will interact with each other and alter test results.

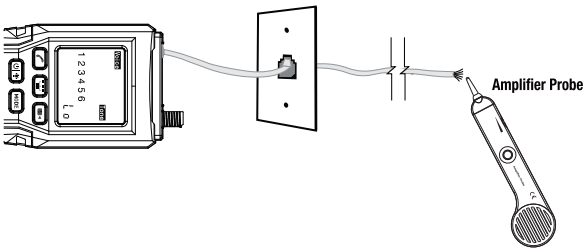


1. Connect one end the cable under test to the RJ11/RJ12 port on the tester.
2. Detach the remote from the bottom of the tester.
3. Connect the other end of the cable under test to the RJ11/RJ12 port on the remote.
4. Press the button to start the test.
5. Interpret the results using the Wiring and Display Examples on **page 9**.
6. Press and hold the button for 2 seconds to switch between **"Test"** and **"Scan"**.

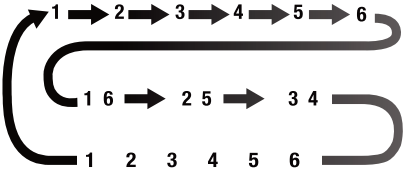
NOTE: During testing, the display may show **"Split"** for cables where the pairs are not twisted.

6.2. Using the Tone Generator to Trace a Phone Line

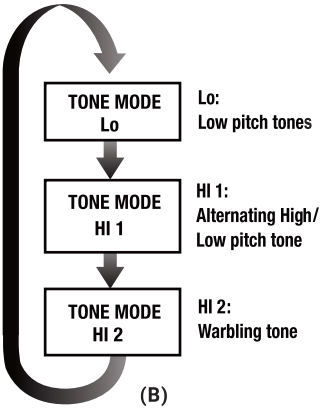
NOTE: It is necessary to use a separate amplifier probe in order to make the tone audible.



1. Connect the cable under test to the RJ11/RJ12 port on the tester.
2. Press the button to start the test.
3. Press the **MODE** button to activate the Tone Generator Mode.
4. The connector pins the tone is being sent through will be shown on the bottom of the display. Press the **MODE** button until the desired pins are selected. Refer to sequence chart (A) below for explanation of pin selection.
4. Press and hold the **MODE** button for 2 seconds to select the desired tone. Refer to sequence chart (B) for explanation of tone selection.



(A)

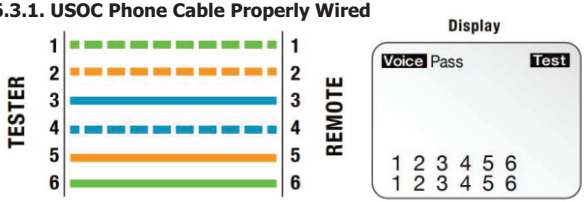


(B)

NOTE: When tracing a cable run from the tone generator to the end of the cable, applying the tone on a single pin will allow the tone to be detected at a greater distance from the cable. When trying to locate a cable in an equipment room or patch panel, sending the tone through all 8 pins or a single pair will limit the tone signal from spreading to other nearby cables. The tone will be loudest when the probe tip is placed directly on the wires the tone is being sent through at the end of the cable. When sending a tone through a single pair, verification can be made by shorting the suspected pair. The tone will be very faint when the pair the tone is being sent through is shorted.

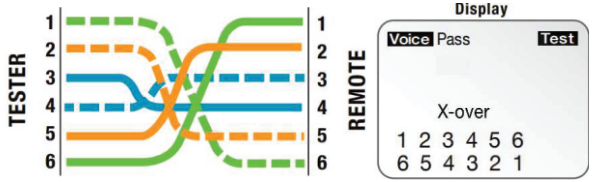
6.3. Wiring and Display Examples for Voice Cable

6.3.1. USOC Phone Cable Properly Wired



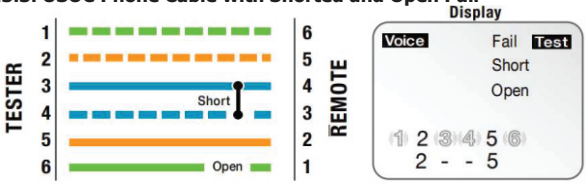
Pass appears on the display indicating a properly wired cable. The pin numbers on the top row and bottom row are the same indicating proper continuity.

6.3.2. USOC Cross Wired Phone Cable Properly Wired



A cross wired cable reverses the connection at one end of the cable. Pins 1, 6 cross over to pins 6, 1, pins 2, 5 cross over to pins 5, 2, and pins 3, 4 cross over to pins 4, 3. Cross wired cables are often used between the wall port and phone. Pass and X-over appear on the display indicating a properly wired cross wired cable. The pin numbers on the bottom row indicate the corresponding reversal to the pin numbers on the top row.

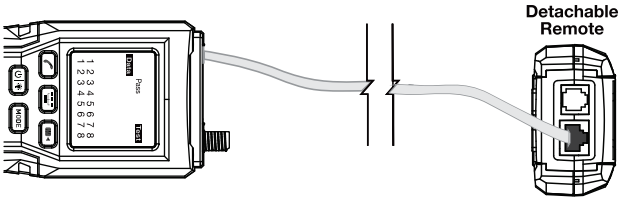
6.3.3. USOC Phone Cable with Shorted and Open Pair



The pair on pins 3 and 4 is shorted and the pair on pins 1 and 6 is open. Fail, Short and Open appear on the display indicating a defective cable. The pins with wiring errors will flash. The dash lines below pins 3 and 4 indicate a shorted pair. The missing pin numbers under pins 1 and 6 indicate an open pair.

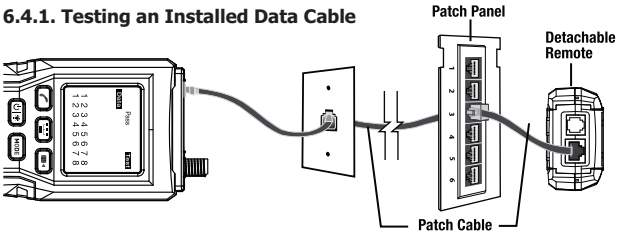
6.4. Data

WARNING: Exposure to voltage can damage the tester. Immediately disconnect the cable under test if the Voltage warning appears on the display. Make sure the cable is not connected to any device that can supply voltage before you proceed.
Do not connect two different cables into the Voice (RJ11/RJ12) and Data (RJ45) test ports at the same time. The cables will interact with each other and alter test results.



1. Connect one end the cable under test to the RJ45 port on the tester.
2. Detach the remote from the bottom of the tester.
3. Connect the other end of the cable under test to the RJ45 port on the remote.
4. Press the button to start the test.
5. Interpret the results using the Wiring and Display Examples on **pages 13 & 14**.
6. Press and hold the button for 2 seconds to switch between **"Test"** and **"Scan"**.

6.4.1. Testing an Installed Data Cable



1. Connect a known good patch cable to the wall port or patch panel of the cable being tested.
2. Connect the other end of the patch cable to the RJ45 port on the tester.
3. Detach the remote from the bottom of the tester.
4. Connect another known good patch cable to the RJ45 port on the remote.

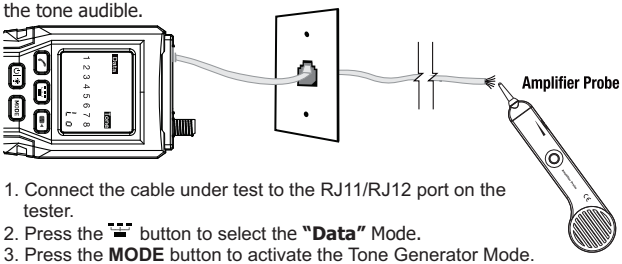
5. Connect the other end of the patch cable to the wall port or patch panel at the other end of the cable being tested.
6. Press the button to start the test.
7. Interpret the results of the test using the Display and Wiring Examples shown on **pages 13 & 14**.

6.4.2. Testing Shielded Cable

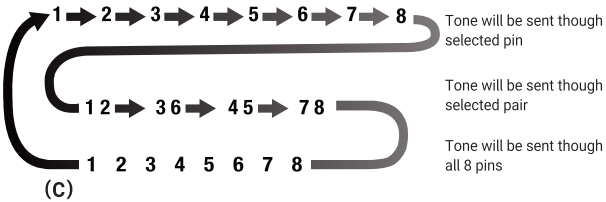
When testing a shielded cable, the Shield indicator will appear on the display if the shield is connected at both ends of the cable. If the shield is shorted to a wire within the cable, the Shield indicator and the corresponding shorted pin will flash. A dash mark under the flashing pin will also appear indicating a short.

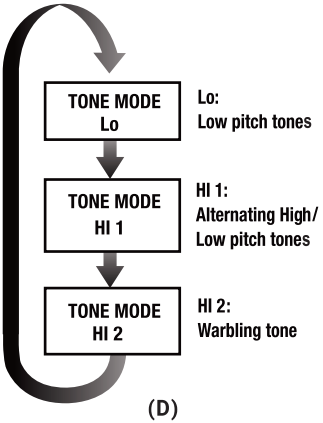
6.4.3. Using the Tone Generator to Trace a Data Cable

NOTE: It is necessary to use a separate amplifier probe in order to make the tone audible.



1. Connect the cable under test to the RJ11/RJ12 port on the tester.
2. Press the button to select the **"Data"** Mode.
3. Press the **MODE** button to activate the Tone Generator Mode.
4. The connector pins the tone is being sent through will be shown on the bottom of the display. Press the **MODE** button until the desired pins are selected. Refer to sequence chart (C) below for explanation of pin selection.
5. Press and hold the **MODE** button for 2 seconds to select the desired tone. Refer to sequence chart (D) for explanation of tone selection.



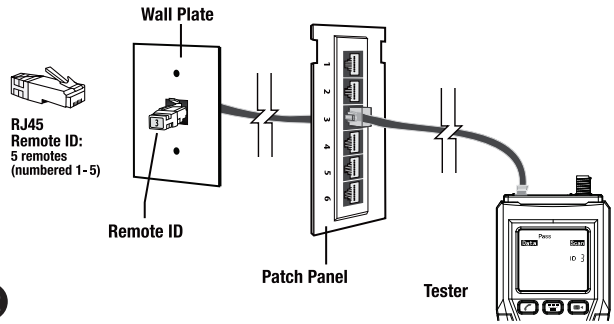


NOTE: When tracing a cable run from the tone generator to the end of the cable, applying the tone on a single pin will allow the tone to be detected at a greater distance from the cable. When trying to locate a cable in an equipment room or patch panel, sending the tone through all 8 pins or a single pair will limit the tone signal from spreading to other nearby cables. The tone will be loudest when the probe tip is placed directly on the wires the tone is being sent through at the end of the cable. When sending a tone through a single pair, verification can be made by shorting the suspected pair. The tone will be very faint when the pair the tone is being sent through is shorted.

6.4.4. Cable Identification on Installed Data Cable

NOTE: The MTC30 includes 5 Remote IDs for data cables and 5 Remote IDs for coaxial cables. Expansion Kits are available for a maximum of 16 Remote IDs.

The Remote IDs can be used to identify cable runs from the patch panel to a wall port. Each identifier has a labelled ID number. When the tester is connected to a cable that has an identifier attached at the other end, the tester will display the ID number that is marked on the identifier.

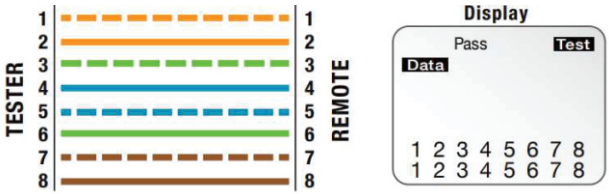


1. Connect the numbered remote IDs to the port for each cable that needs to be identified.
2. At the wiring cabinet or patch panel, connect the unknown cable to the RJ45 port on the tester.
3. Press the button to start the test.
4. If the cable being tested is connected to one of the remote IDs, the display will indicate the number that corresponds to the remote.

NOTE: The RJ45 remote IDs do not test the wiring on the cable. Only the detachable remote can identify wiring faults. The remote may not identify the cable if the cable is mis-wired.

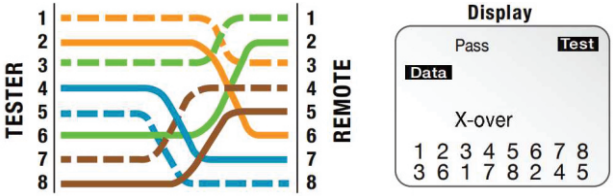
6.4.5. Wiring and Display Examples for Data Cable

6.4.5.1. T568B Data Cable Properly Wired



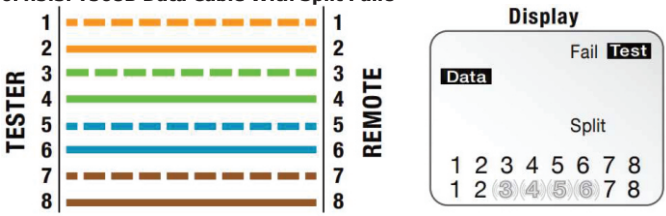
Pass appears on the display indicating a properly wired cable. The pin numbers on the top row match the bottom row indicating proper continuity.
Notes: Both the T568A and T568B wiring standards will test the same as long as the same standard is used on both ends of the cable.

6.4.5.2. T568B Cross Over Data Cable Properly Wired



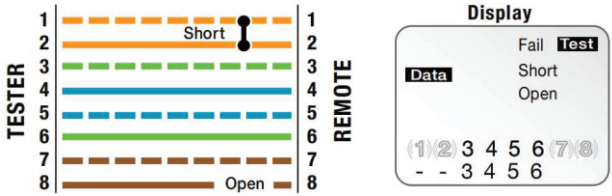
The pairs cross over (transmit to receive and receive to transmit). Pass and X-over appear on the display and the pin numbers on the bottom row indicate the corresponding cross over to the pin numbers on the top row.

6.4.5.3. T568B Data Cable With Split Pairs



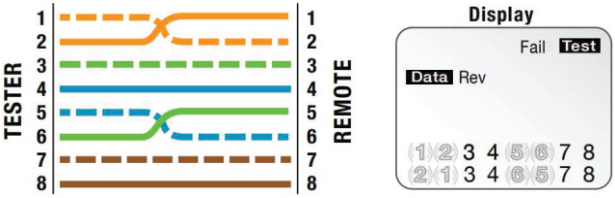
There is a split between the pairs on pins 3, 4 and 5, 6. **"Fail"** and **"Split"** appear on the display and the pin numbers with the split will flash.

6.4.5.4. T568B Data Cable With a Shorted and Open Pair



Pins 1 and 2 are shorted and the pair on pins 7 and 8 is open. Fail, Short and Open appear on the display and the pins with wiring errors will flash. Dash lines will appear below the shorted pins and the numbers will be missing below the open pair.

6.4.5.5. T568B Data Cable With Reversed Pair and Crossed Connection

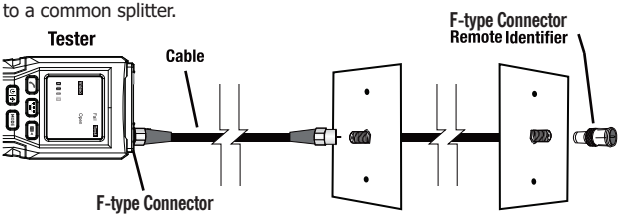


The pair on pins 1 and 2 is reversed and the wires on pins 5 and 6 are crossed at one end of the cable. Fail will appear on the display indicating a

defective cable. The pins with wiring errors will flash. Pins 2 and 1 shown below pins 1 and 2 indicate a reversal on the Orange pair. Pins 6 and 5 shown below 5 and 6 indicate a crossed connection.

6.5. Video

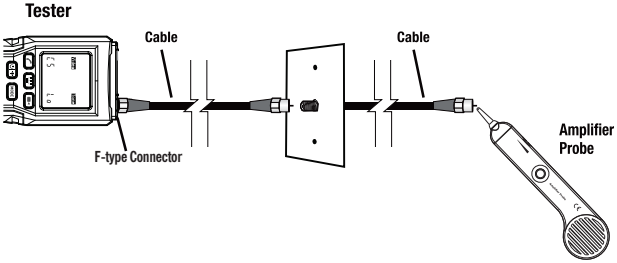
NOTE: Test signals in the Video mode may not pass through a splitter. Only one Remote ID can be connected at a time when testing cables connected to a common splitter.



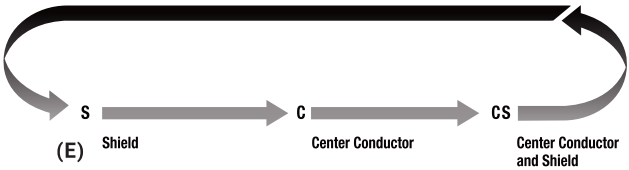
1. Connect a known good patch cable to the F-type connector on the tester.
2. Connect the other end of the patch cable to the wall port or patch panel connected to the cable under test.
3. Connect a numbered coax Remote ID to the wall port at the other end of the cable under test.
4. Press the button to start the test.
5. Interpret the results of the test by using the Wiring and Display Examples on **page 17**.

6.5.1. Tone Tracing on Coax Cable

NOTE: It is necessary to use a separate amplifier probe in order to make the tone audible. Certain splitters used on Coaxial cables will prevent the tone from passing through.



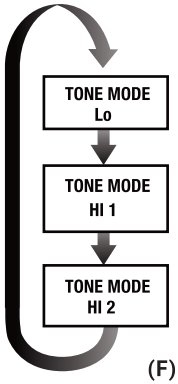
1. Connect the cable under test to the F-type connector on the tester.
2. Press the button to start the test.
3. Press the **MODE** button to activate the Tone Generator Mode.
4. The tone can be sent through the center conductor, the shield or both. The connector pins the tone is being sent through will be shown on the bottom of the display. Press the **MODE** button to select the desired setting. Refer to sequence chart (E) below for explanation of selections.



(E)

NOTE: Applying the tone on the center conductor and the shield or just the shield will allow the tone to be detected at a greater distance from the cable. When trying to identify a cable in the presence of multiple cables, sending the tone through just the center conductor will limit the signal spreading to other cables. The cable that is being toned can be identified by touching the probe tip to the center conductor at the end of the cable.

5. Press and hold the **MODE** button for 2 seconds to select the desired tone. Refer to sequence chart (F) for explanation of tone selection.

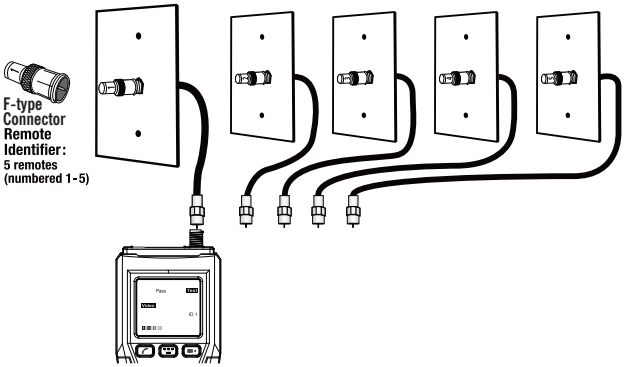


(F)

6.5.2. Cable Identification on Installed Video Cable

NOTE: The MTC30 includes 5 Remote IDs for data cables and 5 Remote IDs for coax cables. Expansion Kits are available for a maximum of 16 Remote IDs.

The Remote IDs can be used to identify cable runs from the patch panel to a wall port. Each identifier has a labeLled ID number. When the tester is connected to a cable that has an identifier attached at the other end, the tester will display the ID number that is marked on the identifier.



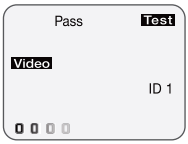
1. Connect the numbered Remote IDs to the F-type connector port for each location that needs to be identified.
2. At the patch panel, connect the unknown cable to the F-type port on the tester.
3. Press the button to start the test.
4. If the cable being tested is connected to one of the Remote IDs, the display will indicate the number that corresponds to the Remote ID.

NOTE: The Open or Short indicator will appear if the cable is defective.

6.5.3. Wiring and Display Examples for Coax Cable

6.5.3.1. Coax Cable with Proper Continuity

Display



The cable is good and passes the test.
ID 1 signifies that Remote Identifier number 1 is being used to terminate the cable.
NOTE: The flashing **"o"**s on the bottom of the display indicate the tester is running a continuous test.

6.5.3.2. Coax Cable with a Short

Display

The center conductor is shorted to the shield. The cable fails the test and the Remote Identifier cannot be detected.

6.5.3.3. Coax Cable with an Open CCT

Display

There is a break in the cable causing an open circuit. A broken connection in the center conductor or shield will trigger a fault. The cable fails the test and the Remote Identifier cannot be detected.

7. BATTERY REPLACEMENT

1. Loosen the one Phillips screw.
2. Lift the battery compartment cover, allowing access to the battery compartment.
3. Replace the 9V battery.
4. Replace the battery compartment cover and tighten the Phillips screw.

NOTE: Do not operate the tester with the battery cover removed.

8. GENERAL SPECIFICATIONS

Function	Range
Cable Type	Shielded or Unshielded: CAT 7, CAT 7A, CAT 6A, CAT 6, CAT 5E, CAT 5, CAT 3, COAX
Maximum Cable Length	305m (1000 feet)
Minimum Cable Length for Split Pair Detection	0.5m (1.6 feet)
Maximum Voltage Between Any Two Pins to Prevent Damage	60V DC or 55V AC
Maximum Coax Cable Resistance	100 Ohms Maximum DC
Operating Temperature	0°C to 50°C (32°F to 122°F)
Storage Temperature	-20°C to 60°C (-4°F to 140°F)
Humidity	10% to 90%, Non-Condensing
Battery	9V
Dimensions	181.5 x 70 x 38.2mm
Weight	386g

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