INSTRUCTION MANUAL

MTC20

DATA/VIDEO CABLE TESTER

Contents

Page no

1. Introduction..... 4
2. Warnings.....4
3. Maintenance.....4
4. Tester Description.....5
5. Led Indicators.....5
6. Operation.....6
   - 6.1. Testing an Installed Data Cable.....6
   - 6.2. Testing Shielded Cable.....7
   - 6.3. Debugging Test.....7
   - 6.4. LED Status.....7
   - 6.5. T568B Data Cable Properly Wired.....7
   - 6.6. T568B Data Cable Cross Over Cable.....7
   - 6.7. T568B Data Cable With Split Pairs.....8
   - 6.8. T568B Data Cable With a Shorted and Open Pair.....8
   - 6.9. T568B Data Cable With Miswired Pair.....8
   - 6.10. Debugging Test: T568B Data Cable Properly Wired.....9
   - 6.11. Debugging Test: T568B Data Cable Cross Over Cable.....9
   - 6.12. Debugging Test: T568B Data Cable With Split Pairs.....9
   - 6.13. Debugging Test: T568B Data Cable With a Shorted and Open Pair....9
   - 6.14. Debugging Test: T568B Data Cable With Miswire Pair.....10
   - 6.15. Testing Wiring on Coax Cable Terminated with F-Type Connectors.....10
   - 6.16. Testing Wiring on Installed Coax Cable.....11
7. LED Status.....11
   - 7.1. Coax Cable with Proper Continuity.....11
   - 7.2. Coax Cable with a Short Between the Center Conductor and Shield.....12
   - 7.3. Coax Cable with a Loss of Continuity on the Center Conductor or Shield.....12
8. Battery Replacement.....12
9. General Specifications.....13
10. Warranty.....13

1. INTRODUCTION

The MTC20 Data Cable Tester quickly verifies and locates wiring faults on RJ45 terminated network cables and coax cables with F-Type connectors. The debugging function can identify split pairs, open pairs, shorts and miswired connections on twisted pair cables. 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 or damp 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.
- Do not plug a 6 position phone cable connector (RJ11/RJ12) into the tester. Damage to the test jack may occur.
- Replace the batteries immediately when the low battery warning appears. Test results may not be accurate when the low battery warning is on.

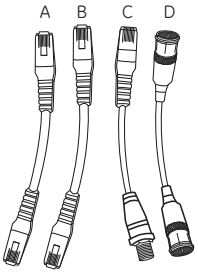
3. MAINTENANCE

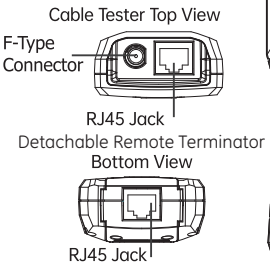
This tester is designed to provide years of dependable service, if the following care instructions are adhered to:

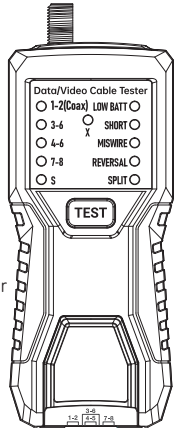
1. KEEP THE TESTER DRY. If it gets wet, wipe it off.
2. USE AND STORE THE TESTER IN NORMAL TEMPERATURES. Temperature extremes can shorten the life of the electronic parts and distort or melt plastic parts.
3. HANDLE THE TESTER WITH CARE. Dropping it can damage the electronic parts or the case.
4. KEEP 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 batteries should be removed to prevent damage to the unit.

4. TESTER DESCRIPTION

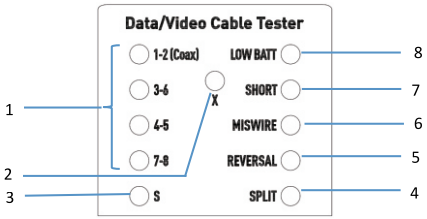
Cables included
A. Data Patch Cable (RED)
B. Data Patch Cable (RED)
C. Coax adapter for detachable remote (BLACK)
D. Coax Patch Cable (BLACK)







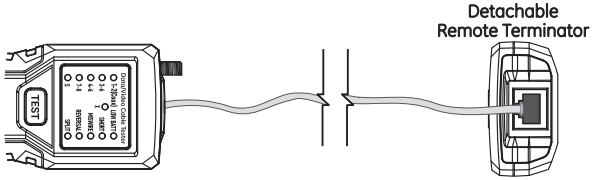
5. LED INDICATORS



1. Four **LEDs** indicate the status on twisted pair cables. The top LED also verifies continuity on Coax cables.
2. The **"X" LED** illuminates when testing a properly wired cross-over cable.
3. The **"S" LED** illuminates when a shielded data cable is properly connected at both ends of the cable. It will flash if the shield is shorted to a wire in the cable.
4. The **SPLIT LED** illuminates when the tester detects the signal is split between two or more pairs.
5. The **REVERSAL LED** illuminates if the connections on a pair are reversed.
6. The **MISWIRE LED** illuminates if there are misconnections between pairs.
7. The **SHORT LED** illuminates if two or more wires are shorted to each other.
8. The **LOW BATT LED** illuminates when the batteries are at the end of their life cycle. When illuminated, the batteries should be replaced immediately. Continued operation may result in inaccurate tests.

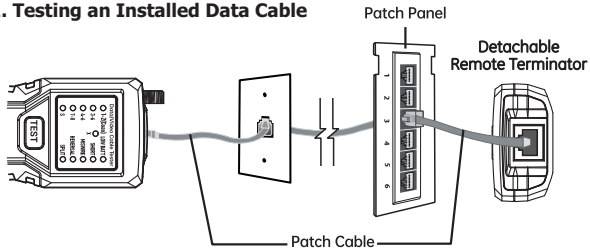
6. OPERATION

WARNING: Never test a cable that is connected to live equipment. Exposure to voltage can damage the tester.



1. Connect one end of the cable under test to the RJ45 port on the tester.
2. Detach the remote terminator from the bottom of the tester.
3. Connect the other end of the cable under test to the RJ45 port on the remote terminator.
4. Briefly press the **TEST** button.
5. Interpret the results using the Wiring and Display Examples on **pages 7 & 8**.

6.1. Testing an Installed Data Cable



1. Connect a known good patch cable (included) 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 terminator from the bottom of the tester.
4. Connect another known good patch cable (included) to the RJ45 port on the remote terminator.
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 **TEST** button.
7. Interpret the test results using the Wiring and Display examples shown on **pages 7 & 8**.

6.2. Testing Shielded Cable

When testing a shielded cable, the **"S" LED** will glow continuously if the shield is properly connected at both ends of the cable. If the shield is shorted to a wire within the cable, the **"S" LED** will flash along with the corresponding LED for the shorted wire.

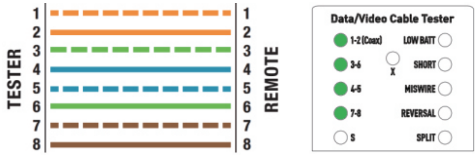
6.3. Debugging Test

The debugging test provides more detail on wiring errors. To activate debug, press and hold the **TEST** button for approximately 2 seconds. Each pair will be tested in sequence. Refer to Debugging Test examples shown below and on **page 8**.

6.4. LED Status

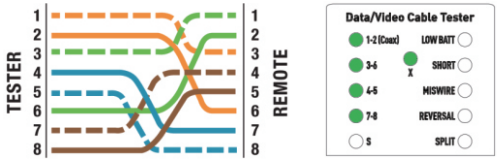
- Continuous glow indicates a correctly wired pair
- A flashing LED indicates a pair with a wiring fault
- The red LED indicates the cause of the failure

6.5. T568B Data Cable Properly Wired



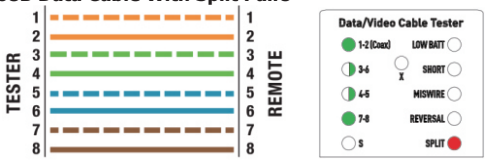
Quick Test: The LEDs for all four pairs glow indicating a properly wired cable.
Notes: The T568A wiring standard is the same as T568B, except that T568A swaps the green and orange pairs. Either standard will test the same electrically, as long as the same standard is used on both ends of the cable.

6.6. T568B Data Cable Cross Over Cable



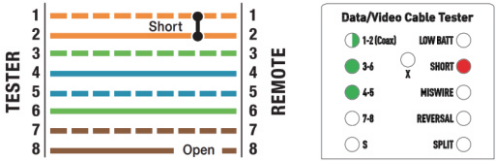
All four pairs cross over (transmit to receive and receive to transmit).
Quick Test: The LEDs for all four pairs glow and the **"X" LED** illuminates indicating a properly wired cross over cable

6.7. T568B Data Cable With Split Pairs



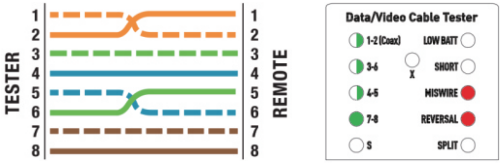
There is a split between the pairs on pins 3-4 and 5-6. Continuity is correct, but the split can cause a high level of crosstalk between the pairs.
Quick Test: The **"SPLIT" LED** glows and the LEDs for pairs 3-6 and 4-5 flash indicating the split is between these two pairs.

6.8. T568B Data Cable With a Shorted and Open Pair



The pair on pins 1 and 2 is shorted and the pair on pins 7 and 8 is open.
Quick Test: The LED for pair 1-2 flashes and the **"SHORT" LED** glows indicating the pair is shorted.
The LED for pair 7-8 does not glow indicating the pair is open/not properly connected.

6.9. T568B Data Cable With Miswired Pair



The wire pairs on pins 1 and 2 are reversed. And the wiring on pins 5 and 6 is incorrect because they cross at one end of the cable.
Quick Test: The LEDs for pairs 1-2, 3-6 and 4-5 flash to indicate a wiring error. The **"MISWIRE"** and **"REVERSAL" LEDs** glow to indicate the applicable errors.

6.10. Debugging Test: T568B Data Cable Properly Wired

1st Short Flash	2nd Long Flash	"X" (Crossover) Indicator	Fault Indicators	Status
1-2	1-2	No	None	Pair 1-2 is wired correctly
3-6	3-6	No	None	Pair 3-6 is wired correctly
4-5	4-5	No	None	Pair 4-5 is wired correctly
7-8	7-8	No	None	Pair 7-8 is wired correctly
S	None	No	None	No Shield

6.11. Debugging Test: T568B Data Cable Cross Over Cable

1st Short Flash	2nd Long Flash	"X" (Crossover) Indicator	Fault Indicators	Status
1-2	3-6	Yes	None	Pair 1-2 crosses over to 3-6
3-6	1-2	Yes	None	Pair 3-6 crosses over to 1-2
4-5	7-8	Yes	None	Pair 4-5 crosses over to 7-8
7-8	4-5	Yes	None	Pair 7-8 crosses over to 4-5
S	None	No	None	No Shield

6.12. Debugging Test: T568B Data Cable With Split Pairs

1st Short Flash	2nd Long Flash	"X" (Crossover) Indicator	Fault Indicators	Status
1-2	1-2	No	None	Pair 1-2 is wired correctly
3-6	3-6,4-5	No	SPLIT	Wires on pair 3-6 are spilt with wires on pair 4-5
4-5	3-6,4-5	No	SPLIT	Wires on pair 4-5 are spilt with wires on pair 3-6
7-8	7-8	No	None	Pair 7-8 is wired correctly
S	None	No	None	No Shield

6.13. Debugging Test: T568B Data Cable With a Shorted and Open Pair

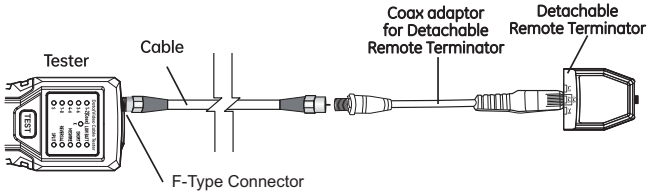
1st Short Flash	2nd Long Flash	"X" (Crossover) Indicator	Fault Indicators	Status
1-2	1-2	No	SHORT	Pair 1-2 is shorted
3-6	3-6	No	None	Pair 3-6 is wired correctly
4-5	4-5	No	None	Pair 4-5 is wired correctly
7-8	None	No	None	Pair 7-8 is open
S	None	No	None	No Shield

6.14. Debugging Test: T568B Data Cable With Miswire Pair

1st Short Flash	2nd Long Flash	"X" (Crossover) Indicator	Fault Indicators	Status
1-2	1-2	No	REVERSAL	Pair 1-2 is reversed at one end of the cable
3-6	3-6,4-5	No	MISWIRE	There is a misconnection between pairs 3-6 and 4-5
4-5	3-6,4-5	No	MISWIRE	There is a misconnection between pairs 4-5 and 3-6
7-8	7-8	No	None	Pair 7-8 is wired correctly
S	None	No	None	No Shield

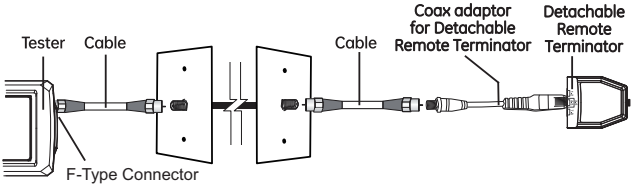
6.15. Testing Wiring on Coax Cable Terminated with F-Type Connectors

WARNING: Never test a cable that is connected to a live voltage source. Exposure to voltage can damage the tester.



1. Connect one end of the coax cable under test to the F-Type connector on the tester.
2. Detach the remote terminator from the bottom of the tester.
3. Connect the Coax adapter to the remote terminator.
4. Connect the other end of the cable under test to the Coax adapter.
5. Press the **TEST** button.
6. Interpret the results using the Wiring Examples for Coax Cable on **pages 11 & 12**.

6.16. Testing Wiring on Installed Coax Cable



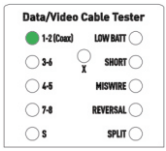
1. Connect a known good patch cable to the F-Type connector on the tester.
2. Connect the other end of the patch cable (included) to the wall port or cable under test.
3. Detach the remote terminator from the bottom of the tester.
4. Connect the Coax adapter cable into the remote terminator.
5. Connect another known good patch cable (included) to the Coax adapter.
6. Connect the other end of the patch cable to the wall port or patch panel for the cable being tested.
7. Press the TEST button.
8. Interpret the results of the test by looking at the Wiring Examples for Coax Cable on next page.

NOTE: The tester may not be able to test continuity though a splitter. Other cables connected to a common splitter may interfere with test results.

7. LED STATUS

- Continuous glow indicates a correctly wired pair
- A flashing LED indicates a pair with a wiring fault
- The red LED indicates the cause of the failure

7.1. Coax Cable with Proper Continuity



The cable is good and passes the test.

7.2. Coax Cable with a Short Between the Center Conductor and Shield

The center conductor is shorted to the shield.

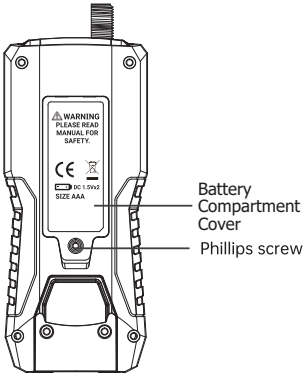
7.3. Coax Cable with a Loss of Continuity on the Center Conductor or Shield

There is a break in the cable causing an open circuit.

8. BATTERY REPLACEMENT

1. Loosen and remove the one Phillips screw.
2. Open the battery compartment by removing the battery compartment cover.
3. Replace the 2 x AAA batteries.
4. Replace the battery compartment cover and fasten the Phillips screw.

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



9. 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	2 x AAA 1.5V
Dimensions	141 x 54.5 x 27.8mm
Weight	122g

10. 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.

MAJOR TECH (PTY) LTD

South Africa

www.major-tech.com

sales@major-tech.com

Australia

www.majortech.com.au

info@majortech.com.au