

CAMPLEX[®]

BROADCAST FIBER OPTIC SOLUTIONS

USER MANUAL

CAMPLEX SMPTE 311 Hybrid Fiber Optic Cable Tester



CMX-SMPTE-TESTER

Complex CMX-SMPTE-TESTER

SMPTE 311 Hybrid Fiber Optic Cable Tester

Most fiber cable assemblies fail due to lack of proper end-face cleaning. When cleaning is not the issue, the Complex SMPTE 311 Hybrid Fiber Optic Tester is the perfect diagnostic tool for all user levels to accurately test and evaluate SMPTE cables in the studio and in the field. The Complex SMPTE 311 Tester is the most cost-effective means to test SMPTE electrical and optical continuity.

The unit includes a comprehensive electrical test circuit to evaluate shield continuity and shorts, a commonly overlooked but important test. Electrical testing scans the power, control, and main shield for open circuits and short circuits.

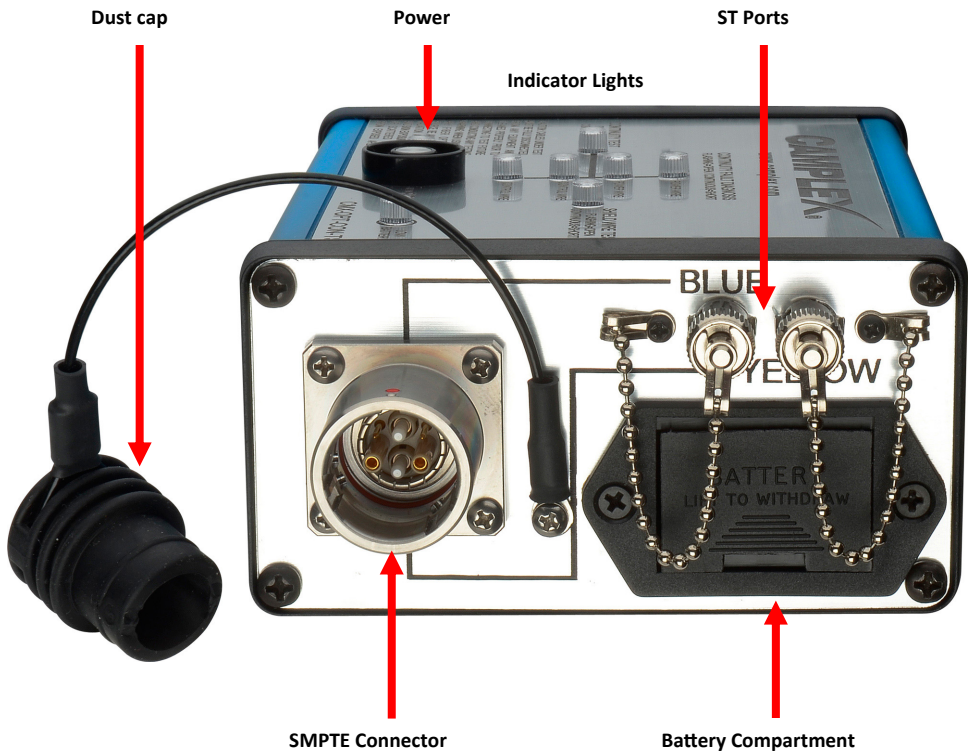
A Visual Fault Locator (VFL) is used to quickly locate broken fibers and to verify individual fibers for optical continuity. The tester can aid in the measurement of optical power loss and budgets, allowing access to fibers that are not easily accessible within LEMO and LEMO SMPTE 311 style connectors. The unit can also act as a break out box for the connection of additional fiber optic tools such as fiber light sources, power meters, and optical time-domain reflectometers (OTDR).



Features

- Find broken fibers and electric open/short circuits
- Conduct continuity and short circuit scan for each optical fiber electrical connection and ground
- Perform basic VFL optical continuity inspection for each fiber
- Diagnostic ports connect light sources and power meters for advanced testing (ORL/OTDR not included).
- Tests LEMO, Canare, Kings, and AFSI connectors (LEMO SMPTE 311 style or equivalent)
- Rugged field-ready housing includes protective dust caps
- Access to fiber channels in cable using fiber optic jumpers
- Connect other fiber optic test equipment to SMPTE terminated cables assemblies using jumpers
- Hard plastic carrying case with internal foam padding holds components securely in place

Features



Package Includes

- Main testing unit with 9VDC battery (installed)
- Laser source Visual Fault Locator (VFL) and VFL soft sheath
- Two singlemode 1m ST to ST breakout fiber jumpers
- Protective hard plastic case with foam padding



Instructions

1. Place the unit in a secure location where it will not be bumped or fall. Provide room around the unit to avoid interference. Ensure the fiber optic cable does not bend sharply in a tight radius, which can severely affect the signal transfer. A non-slip, antistatic surface mat is recommended on which to conduct the testing.
2. Disconnect cables from all equipment prior to testing.
3. CLEAN (see page 10 for cleaning instructions) all optical cable contacts that will be connected to the CMX-SMPTE-TESTER; this includes the SMPTE cable to be tested and the ST to ST jumper cables. Inspect with a video inspection unit – Lightel or similar if available. ST connections are securely made in the same manner you would connect a bayonet BNC: while pressing lightly in on the connector, twist it in a clockwise direction about 1/8 to 1/4 of a turn and then release. The connector should stay inserted and have backwards spring pressure holding the bayonet in place. SMPTE connections are made by aligning the keys or red dots and pushing them straight together until they click and lock.

NOTE: Before connecting the cable to be tested, turn the unit on. The unit is now in self-test mode and all the LEDs will be solidly illuminated except for the low battery LED. This self-test ensures that all the LEDs are functioning correctly and testing can proceed. Turn the unit off before connecting cables.

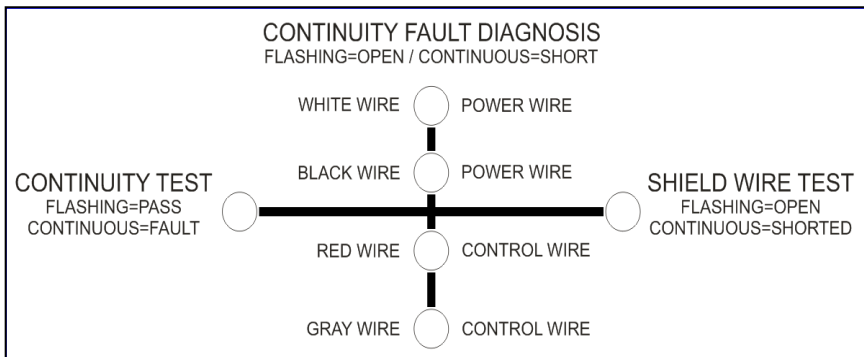


4. TEST THE ELECTRICAL CONDUCTORS

Connect the cable to be tested and turn the unit ON via the power switch. The LEDs and the diagnostic infographic on the top of the unit indicate wire status.

CONTINUITY TEST – overall diagnostics

- A flashing **BLUE** LED on the left of the infographic indicates that the copper conductors have proper continuity.
- A continuous/non-flashing **BLUE** LED indicates that there are continuity problems. A **RED** LED for each wire indicates which wire(s) failed. See CONTINUITY FAULT DIAGNOSIS below.
- As required by the SMPTE standard, a continuous **BLUE** LED indicates a failed shield wire test which means there is an overall fail status of the cable. See SHIELD WIRE TEST below.



CONTINUITY FAULT DIAGNOSIS – per wire

- A flashing **RED** LED indicates an open circuit.
- A non-flashing/continuous **RED** LED indicates a short circuit.

SHIELD WIRE TEST

- On the right is a **RED** LED labeled SHIELD WIRE TEST.
- A flashing **RED** LED indicates an open circuit.
- A non-flashing/continuous **RED** LED indicates a short circuit.

4. TEST THE FIBERS FOR FAULTS

Use the ST to ST jumpers provided to “break-out” the fibers from the SMPTE cable under test. The ST ports next to each SMPTE connector are directly connected to the adjacent SMPTE connector’s internal fiber optics.



ST-ST Jumper

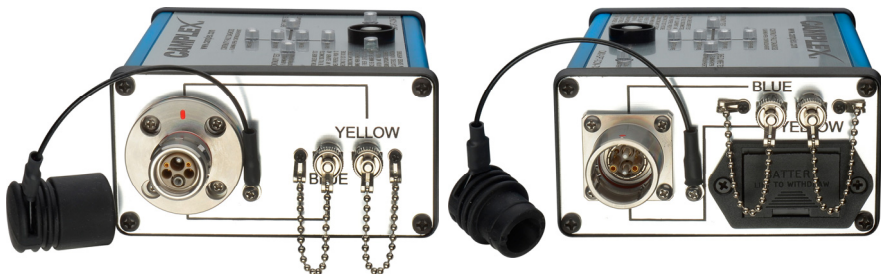
This allows easy access and connection of the class 3A red laser VFL that is included. Follow instructions when working with the VFL.

ALL safety precautions when working with the laser



VFL

WARNING: DO NOT LOOK DIRECTLY INTO THE VFL AND AVOID SKIN EXPOSURE TO DIRECT OR SCATTERED LIGHT RADIATION.



Tester Unit

TEST THE FIBERS FOR FAULTS (continued)

The SMPTE cable under test contains two fiber optic channels, YELLOW and BLUE, that should be checked with the VFL independently as follows:

- a. Clean and connect one end of each of the two ST to ST jumpers to the YELLOW labeled ST connector on each side of the tester along with the SMPTE cable under test which gives access to the usually yellow jacketed fiber in the SMPTE cable.
- b. Connect the VFL to the ST cable that is plugged into the left YELLOW ST connector on the tester and check for red laser light pass through at the end of the other ST jumper that is connected to the YELLOW ST connector on the right side of the tester. The light should be easy to see by aiming the connector at a lightly colored surface such as a standard sheet of paper.

DO NOT LOOK DIRECTLY INTO THE CONNECTOR!

If you do not see a red laser light shining on the surface of the sheet of paper, then there is a break in the fiber.

- d. Repeat steps A and B above to test the BLUE jacketed fiber in the SMPTE cable under test by changing YELLOW to BLUE throughout the instructions above.

NOTE: Regularly test the ST to ST jumpers by plugging them into the VFL and facing the other end at a lightly colored surface. If you do not see a bright red light shining on the surface, then a replacement ST to ST jumper may be needed. Confirm that the VFL itself is outputting red laser light by shining it at a lightly colored surface. **DO NOT LOOK INTO THE VFL.**

- e. Record conductor failure results and fiber fault results in detail in order to communicate this information when the cable is sent to an authorized SMPTE fiber repair center. This will facilitate repair turnaround time.

***CLEANING:** All fiber optical cable contacts¹ require cleaning EVERY time they are inserted into a device's outputs or inputs. Failure to clean the contacts can damage the unit's optics over time and can render the cable AND the device permanently useless.

USE cleaning kits that are specifically intended for fiber optics. Other cleaning kits can contain microscopic contaminants that can damage the contacts. Fiber Optic Cleaning Kits are available from your dealer or supplier.

¹ *Contacts are the terminated ends of the actual fibers, the part that is inserted and makes 'contact' to enable light wave transmission through the fiber.*





SAFETY PRECAUTIONS



1. To prevent fire or shock hazard, do not expose this equipment to high humidity and/or dust. Do not use in an unprotected outdoor installation nor any area classified as overly damp or wet.
2. The temperature for installation should be kept between 32°F to 140°F (0°C to 60°C). Avoid direct sunlight exposure or extreme changes of temperature over a short period of time.
3. Do not disassemble the unit or place it on an unstable base.
4. Do not drop the unit and avoid heavy impact.
5. This unit should not be placed in a built-in installation unless proper ventilation is provided. Any openings in the enclosure must not be blocked or covered as they protect the unit from overheating.
6. Before cleaning, unplug the unit from all connections. Use a clean, slightly damp cloth. Do not use liquid or aerosol cleaners. Use appropriate cleaning kits for fiber optic cables.
7. Do not overload outlets and extension cords as this may result in a risk of fire or electric shock.
8. Enclosure entry is dangerous. Never push objects of any kind, including liquids, into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock.
9. Do not attempt to open or service this unit yourself as opening or removing covers may expose you to dangerous voltage and other hazards.
10. There are no user-serviceable parts inside the unit. If the unit requires service contact your authorized dealer, or an authorized repair service company.

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