SMPTE
Easy Checker

INSTRUCTION MANUAL

Revision 1.0
10.10.2025

Contents

1 Introduction

SMPTE Easy Checker

is a portable, handheld set of two devices for testing both copper and fiber optic lines. Copper check can detect open connection, wire cross and short. Optical check can detect open connection, cross and the Optical Loss of both optical fibers.
Units are powered by internal Lithium battery charged by standard 5V on USB – C type.
SMPTE Easy Checker consist of Main and Remote unit.

REMOTE UNIT

MAIN UNIT

2 Features

- Hybrid cables – fiber optic testing and copper pairs checking
- Ruggedized aluminium case
- Testing of 2 fibers
- Manual operation alows individual fiber or wire check
- Auto operation mode with optical loss and copper wires check
- Able to detect incorrect fiber and wire connection, disconnection and short circuit connection
- Built-in charger, battery status indicator
- Easy to use

3 Application

- IL measurement
- Broadcast infrastructure networks measurement
- SMPTE compatible HDTV system

4 Accessories

4.1 Standard

- Power charging adaptor
- USB connection cable

5 Specifications

General specifications		**Note:**
Dimensions	132 x 90 x 53 mm	without connectors
Weight	420 g	with battery
Temperature operating storage Humidity (non condensing)	-10 to +50 °C -40 to +70 °C 0 to 95%	
IP rating	IP 54	
Battery working time	> 20 hrs	between battery charging
Light Source		
Output power		
1310 nm	-6 to -10 dBm	typ. value
Stability (1 hour, delta/2):		tested after 20 min warm up temperature 23 ± 1°
1310 nm	± 0.2 dB	
Power Meter		
Photodetector	2x 1 mm InGaAs	
Working wavelengths	1310 nm	
Dynamic range: Standard	-50 dBm to +10 dBm	1310 nm
Uncertainty	± 12%	1310 nm @ -20 dBm
Resolution	0.01	
Electrical wires checking		
Electrical wires continuity	Yes	
Short circuit	Yes	
Isolation	Yes	
Pins interconnection	Yes	

6 Ordering Code

FCT-SEC-TX Remote Unit (source of test signals)

FCT-SEC-RX Main Unit (receiver of test signals)

7 Safety information

SMPTE Easy Checker Remote Unit complies with the following safety classifications:
IEC825-1 and 21CFR1040: Class1
This applies to laser and LED options up to 1 mW, above 700 nm. Devices in this category are classified as safe for use by technicians under normal viewing, provided that magnifying devices are not used.

It is the responsibility of the user to acquire adequate training and familiarity with relevant safety issues and work practices before using this equipment.

WARNING!

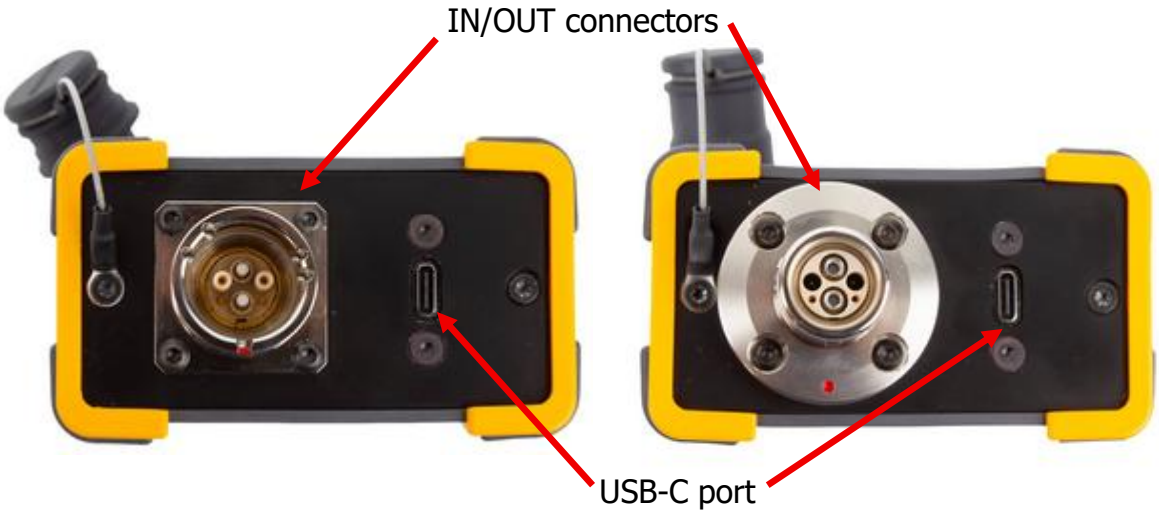
SMPTE Easy Checker Main Unit emits no optical power itself and does not create any hazards to the user.
To ensure a high level of operator safety during installation, commissioning and operating the equipment, as well as ensuring that the equipment remains undamaged, it is necessary to consider the following general warnings and recommendations.

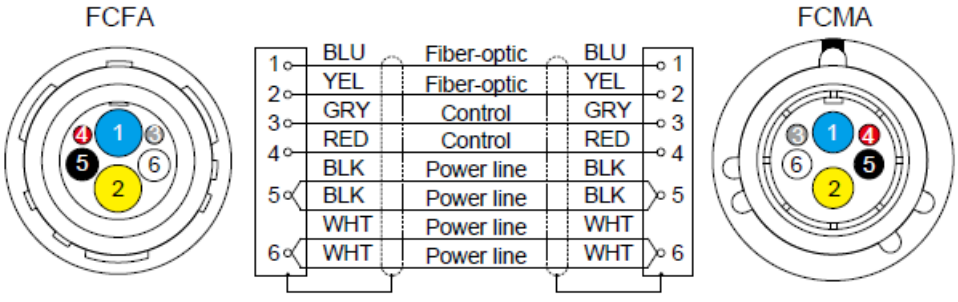
- Never use magnifying devices to inspect optical fiber ends unless you are certain that no optical power is being emitted.
- Only use magnifying devices with a built-in infra-red filter to ensure safety.
- During operation, testing or maintenance of a fiber optic system, never look into an active fiber optic cable. Infrared radiation may be present and this can result in permanent eye damage.
- Avoid direct exposure to the beam.
- Do not activate the laser when there is no fiber attached to the optical output connector.
- Optical connectors must be clean, in case the connectors are not perfectly clean – please clean them according to the procedure described in the technical specification for the relevant connectors.
- Use only the equivalent connector types to those built into the instrument in order to avoid damage to the instrument components.
- Under no circumstances should you look into the end of an optical cable attached to the optical output when the device is operational. The laser radiation can seriously damage your eyesight.
- Installation, commissioning, operation and service of equipment with high power level are only allowed to be carried out by an authorised person.

8 Device description

FCT-SEC front view

FCT-SEC top view





SMPTE cable connection

9 Maintenance

9.1 Battery maintenance

SMPTE Easy Checker comes equipped with a built-in charger and is powered by Li-Pol type battery (standard accessories).

- Charging – via USB port (PC) or by using external USB power charging adaptor (standard accessories)
- Before using the SMPTE Easy Checker for first time, charge fully the batteries.
- Use only supplied USB power charging adapter.
- Charging is not recommended until battery status indicator is 30% or less.
- Charge the batteries fully before storing the tester for a long period. The batteries will lose its capacity during storage.
- If you are not going to use the SMPTE Easy Checker for long period, charge the batteries once every six months.
- The batteries are a consumable. Repeated charging and discharging decreases batteries lifetime.
- To extend batteries lifetime it is recommended that batteries be completely drained before re-charging – battery refresh.

9.2 Instrument maintenance

- During storage and transport keep the instrument in its carry case to protect against crushing, vibration, dust and moisture.
- Where possible keep the instrument away from strong sunlight.
- Clean the instrument housing using alcohol or other cleaning agents. Acetone or other active solvents may damage the case.
- The instrument is resistant to normal dust and moisture, however it is not waterproof. If moisture does get into instrument, dry it out carefully before using it again.

9.3 Optical connector type

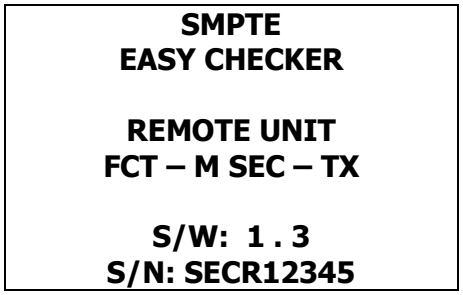
- Cleanliness will affect the performance of an optical fiber system.
- All connectors and fiber end faces need to be clean prior to testing.
- Clean all connectors, adapters, and attenuators before making any connections.
- Use appropriate optical cleaning supplies to keep connectors and adaptors free from contamination.
- The following cleaning materials are recommended and should form part of your cleaning kit:
- Lint-free laboratory wipes.
- Isopropyl alcohol in pressurized dispenser
- Lint free pipe cleaners
- Clean, dry, oil-free compressed air

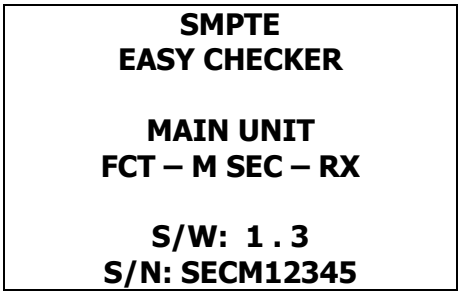
10 Instrument and button function description

10.1 General description

Power ON the Units
Press ON/OFF button to turn the unit ON or OFF.

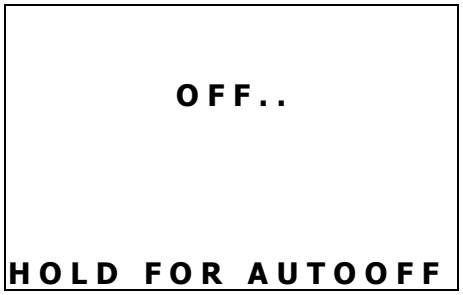
After the device turns on, it displays its type, firmware version, and serial number on the screen.





If you hold the "ON/OFF" button at power on instead of pressing it, it will activate the display backlight.

Automatic shutdown
The automatic shutdown feature (Auto OFF) turns the device off after 5 minutes of inactivity. To enable / disable this feature, press and hold the "ON/OFF" button.



If Auto OFF is enabled, the unit will display an hourglass (send watch) symbol next to the battery indicator.

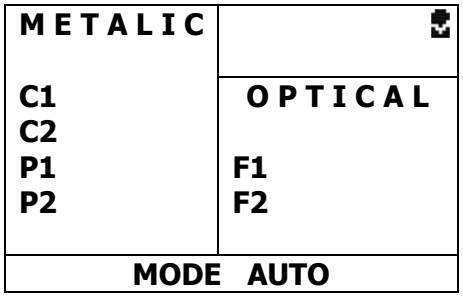
Other battery icons meaning

 **Battery is charging**

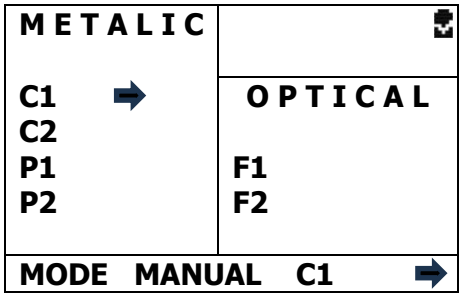
 **Battery is fully charged**

10.2 Remote Unit operation
FCT-SEC-TX, source of testing signals

AUTO MODE
Remote unit starts in AUTO MODE, waiting for a request from Main Unit to perform a "TEST".
TEST consists of applying test signals to C1, C2, P1, P2 pins and F1, F2 fibers in time slots.



MANUAL MODE
Manual Mode allows the user to apply test signal to pins and fibers individually.



Pressing MODE button rotates function as follows:
- MANUAL MODE C1 > C1 test signal ON
- MANUAL MODE C2 > C2 test signal ON
- MANUAL MODE P1 > P1 test signal ON
- MANUAL MODE P2 > P2 test signal ON
- MANUAL MODE F1 > F1 laser on fiber 1 ON
- MANUAL MODE F2 > F2 laser on fiber 2 ON
- AUTO MODE – ready for automated test

NOTE 1: TEST request from Main unit has a priority over Manual mode, Remote Unit will perform the TEST, and will stay in AUTO mode.

NOTE 2: When the REMOTE UNIT is waiting in AUTO mode, both lasers are ON for better optical power stability. This is not indicated on display of REMOTE UNIT and it is not measured by MAIN UNIT.

NOTE 3: For better Optical Loss results, wait 3 minutes after powering on the REMOTE UNIT, before performing referencing or Test.

10.3 Main Unit operation
FCT-SEC-RX, receiver of testing signals

Main Unit starts in MONITORING mode, sensing and displaying testing signals live, this mode is useful for MANUAL MODE on Remote Unit.

M E T A L I C	OPT dB
C1 C2 P1 P2	F1 - --.-- F2 - --.--
MONITORING	

Performing TEST
press TEST Button to perform automated test, after a short time this screen will appear.

M E T A L I C	OPT dB
C1 – C1 C2 – C2 P1 – P1 P2 – P2	F1 - 0.23 F2 - 0.22
DONE	

After viewing the results, press TEST button to get back to MONITORING mode.

Example of Automated test results:

C1-C1	C1 is connected to C1		
C2-C2	etc..		
P1-P1	**F1:**	**-XX.XX**	Optical Loss of Fiber 1
P2-P2	**F2:**	**-XX.XX**	Optical Loss of Fiber 2

Other examples of results for Copper part:

C1 -	not connected, C1 is not connected
C1 - C2	misconnected**,** C1 is connected to C2
C1 – C1 C2	short between C1 and C2

Other results for Optical part:

F1: -XX.XX	value
F2: ---.--	not connected

F1: ---.--	not connected, or crossed – use manual mode
F2: ---.--	not connected, or crossed – use manual mode

11 Fiber optic networks – measurement methods

11.1 Setting an Optical power reference

Connect Main and Remote units with Reference cable

Set the REMOTE UNIT into AUTO MODE.
Press and hold TEST/REF button on MAIN UNIT until "NEW REFERENCE" is on the display.
Then press TEST/REF button again to perform the referencing.
This setup allows the user to check copper connections of the units themselves and will measure the Optical power of each Laser in dBm. This screen will appear for a short time.

METALIC	**OPT dBm**
C1-C1 **C2-C2** **P1-P1** **P2-P2**	**F1 - 8.23** **F2 - 8.22**
REFERENCING	

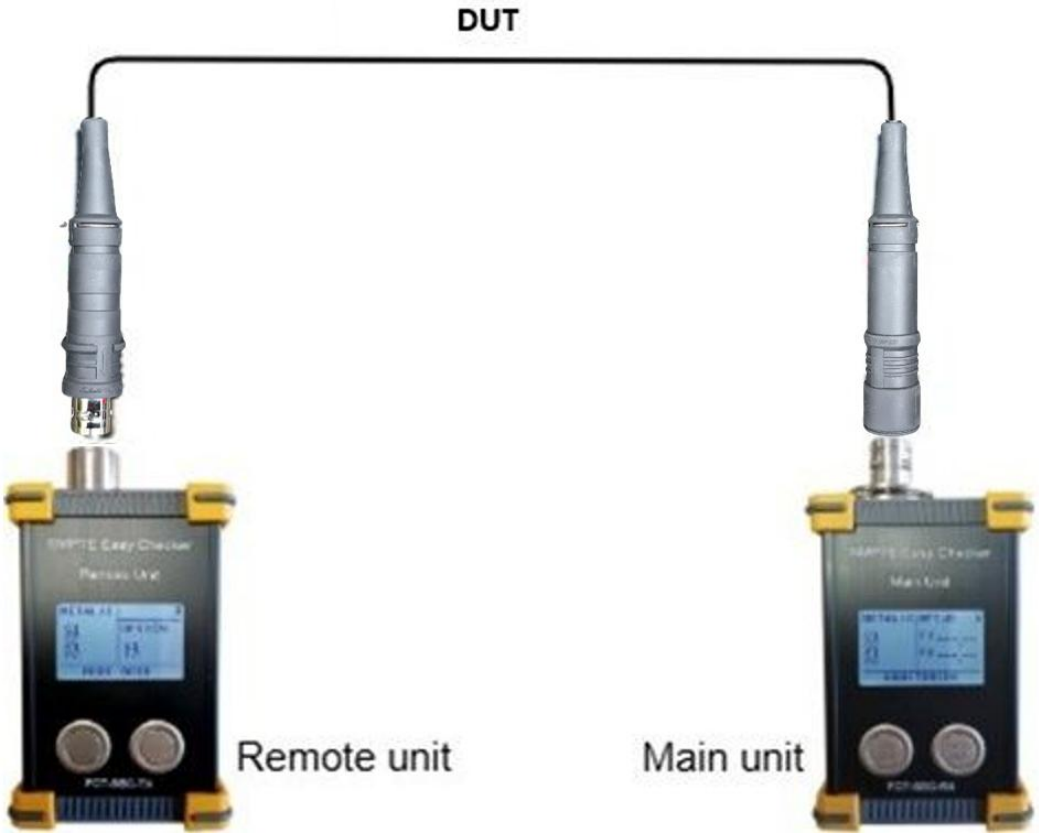
These Optical power levels are set as a reference power 0 dB:

METALIC	**OPT dB**
C1-C1 **C2-C2** **P1-P1** **P2-P2**	**F1 0.00** **F2 0.00**
REFERENCING	

Unit will then return to MONITORING mode.
The MAIN unit keeps last set reference until a new one is set.

11.2 DUT testing

Connect the DUT between Main and Remote unit.



Important

- All connectors and fiber end faces should be cleaned prior to testing.
- It is very important that the connections are not disturbed after the reference value is established.
- When testing the cable, make sure it is completely disconnected from the CCU （Camera Control Unit）
- Note: When mating the connectors, make sure to hold the side of the checker unit firmly during the connection process.

Loss Table

Quick reference Table for Loss
The following table shows reference value of fibre-optic loss within a typical fibre-optic camera cable.

(dB)

		Number of Cables														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cable Lenght	Under 200m	0.65	1.20	1.70	2.25	2.75	3.30	3.80	4.35	4.85	5.40	5.90	6.45	6.95	7.50	8.00
	500m	0.80	1.35	1.85	2.40	2.90	3.45	3.95	4.50	5.00	5.55	6.05	6.60	7.10	7.65	8.15
	1000m	1.05	1.60	2.10	2.65	3.15	3.70	4.20	4.75	5.25	5.80	6.30	6.85	7.35	7.90	8.40
	2000m	1.60	2.10	2.65	3.15	3.70	4.20	4.75	5.25	5.80	6.30	6.85	7.35	7.90	8.40	8.95

12.Notes