

# Fiber-Optic Camera Cable Checker Models FCT-FCKIT & FCT-OCKIT

## Instruction Manual



MAW021 E.V1.1

### Safety Precautions

Caution - use of controls or adjustments or performances other than those specified herein may result in hazardous radiation exposure.



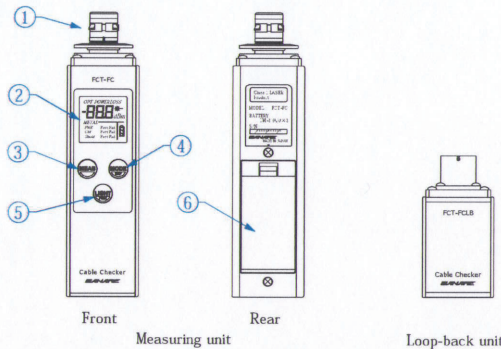
- If you detect a strange smell, unusual heat generation, or smoke coming from the cable checker, immediately switch off the power, remove batteries, and contact your nearest Canare dealer.
- Do not expose the cable checker to rain or an environment where it may be splashed by water or other liquids to prevent failure.
- Be sure to use the specified type of batteries with correct polarity (+ and - direction) when loading them.
- Wrong polarity connections could cause damage or failure to the cable checker.
- When cleaning, do not wipe the cable checker's panel using benzene, thinner, alcohol, or detergent as doing so could damage the cable checker's finish.
- Do not drop or pound cable checker.
- Do not disassemble the cable checker.
- The cable checker is a Class 1 laser product.
- Complies with CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No.50 dated July 26, 2001.

### General Description

- The cable checker measures the signal loss depending on loopback distance within fiber-optic camera cables, while at the same time detecting broken electrical lines.
- The FCT-FCKIT is designed for use with Canare FC Series connectors, while the FCT-OCKIT is intended for use with Canare OC Series connectors.
- The cable checker is also designed to function as a simple power meter.

### Outline & Functions

\*FCT-FCKIT is shown below.



① Fiber-Optic Camera Connector	Connects the cable checker to fiber-optic camera connectors. The FCT-FCKIT is used for Canare FC-Series connectors and the FCT-OCKIT is used for Canare OC Series connectors.
② LCD	<ul style="list-style-type: none"> <li>Displays the measurement mode.</li> <li>OPT POWER : Optical Power Measurement mode</li> <li>OPT LOSS : Optical Loss Measurement mode</li> <li>Test Signal Status.</li> <li>Flashes when in continuous measurement mode.</li> <li>Displays a measured optical power level or one of the following error indications.</li> <li>Lo : Optical power is too low.</li> <li>Hi : Optical power is too high.</li> <li>Err : Zero calibration failed.</li> <li>EEE : The built-in laser has failed.</li> <li>Battery indicator</li> <li>Indicates the remaining battery charge levels in four steps.</li> <li>The batteries should be replaced when the indicator begins to blink.</li> <li>Displays electrical line condition.</li> <li>PWR : Power line</li> <li>Ctrl : Control line</li> <li>Shield: Shield</li> </ul>
③ Measurement Button	Press to start measurements. Hold down for longer than two seconds for continuous measurement mode.
④ Mode Button	Selects and toggles between loss measurement mode and power measurement mode. Hold down for longer than two seconds to run Zero-calibration, and the cable checker is automatically set to loss measurement mode when the calibration is completed.
⑤ Light Button / Power On/Off	Illuminates the LCD backlight when power is on. The backlight automatically goes off after ten seconds. The power is turned on and off each time this button is held down for longer than two seconds.
⑥ Battery Compartment	Install two AA batteries into this compartment. (Alkaline batteries are recommended.)

### Taking Measurement

#### I) Getting Started

Ensure that the measuring unit and loop-back unit are working correctly.

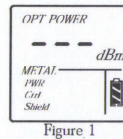


Figure 1

- (1) Couple the measuring unit and the loop-back unit together.
- (2) Hold down the light button ⑤ for longer than two seconds to turn the power on.
- (3) Press the mode button ④ to place the cable checker in power measurement mode (See Figure 1).
- (4) Press the measurement button ③.

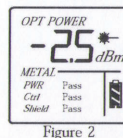
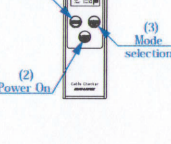


Figure 2

- (3) Press the mode button ④ to place the cable checker in power measurement mode (See Figure 1).
- (4) Press the measurement button ③.

Note: If the measured optical power is -3.6dBm or lower, the fiber-optic connector may be dirty. Clean it using a recommended stick type cleaner.

#### II) Preparing to Measure

Perform Zero-calibration for optical loss measurement

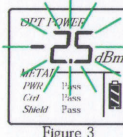
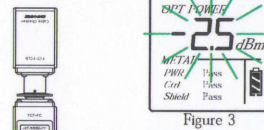


Figure 3

- (1) Hold down the mode button ④ for longer than two seconds.  
The optical power indicator blinks and the indicated value is stored as a reference value (See Figure 3).
- (2) A reading of 0.0dB indicates that calibration has been completed (See Figure 4).  
Once the reference value is stored, the reading shows 0.0dB and the cable checker automatically enters loss measurement mode.

Note: If the optical power indicator displays Lo or Hi, it means that the cable checker is not within a measurable range and Zero-calibration cannot be performed.

- Performing Zero-calibration first displays blinking indication of a reference optical power value, which then changes to the indication of 0.0dB regardless of measurement mode settings.
- The reference value is stored in a built-in memory even if the power is switched off.

#### III) Taking a Measurement

Measure the optical loss and electrical condition within fiber-optic camera cables.

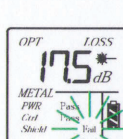
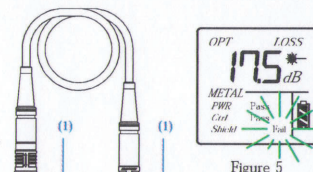


Figure 4

- (1) Connect the measurement unit to the end of the fiber-optic camera cable, then connect the loop-back unit to the other end of the cable.
- (2) Press the measurement button ③ to take a measurement. The display indicates both the optical loss and the condition of the electrical lines.

Note: Optical loss is measured based on the loopback values for Channel 1 and 2 combined.

- The indication of "fail" blinks if the electrical line is broken (See Figure 5).
- Shield line is measured based on the reference values for general-use braided shield.
- The electrical line checking function does not detect failures caused by short circuits.
- When measurement is complete, the absolute optical power reading is indicated by pressing the mode button to place the cable checker in power measurement mode.
- If the optical power is -20dBm or less, the indicator blinks.

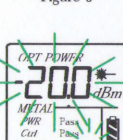
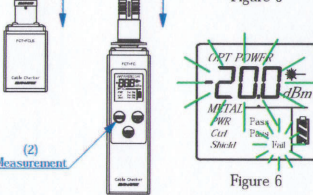


Figure 5

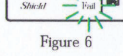


Figure 6

### Other Functions

- The power automatically goes off when the voltage drops below the minimum operating level.
- The power is automatically switched off if the cable checker stays idle for longer than ten minutes.
- Holding down the measurement button for longer than two seconds places the cable checker in continuous measurement mode. This mode is useful to measure fluctuating optical loss in real time.
- Once a zero-calibration has been performed, the reference value resulting from it is stored in a built-in memory even if the power is switched off, eliminating the need to perform the zero-calibration again.

### Quick Reference Table for Loopback Loss

The following table shows theoretical values of fiber-optic loss within a typical fiber-optic camera cable.

Cable Length	Number of Cables (dB)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Under 200m	1.2	2.2	3.2	4.2	5.2	6.2	7.2	8.2	9.2	10.2	11.2	12.2	13.2	14.2	15.2
500m	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5
1000m	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
2000m	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
3000m	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

Loopback loss = Number of connected fiber-optic camera cables (n) + Cble length (km)

### Cleaning Fiber-Optic Connectors

Clean fiber-optic connectors to ensure stable transmission of optical signals.  
Note: Scratches and dust on the tip of the ferrule can have a detrimental effect on fiber-optic transmission.

- To clean the tip of the ferrule, apply a non-alcohol treated stick type cleaner lightly to the tip of the ferrule and rotate it gently several times. (Recommended cleaner: CLETOP® stick 2.0/2.5)
- The inside and outside of both male and female connector shells and the inside of dust caps tend to attract dust and metal particles. If these become dirty, clean them using a piece of soft gauze moistened with alcohol.

### Specifications

Model Name	: FCT-□□□□	<ul style="list-style-type: none"> <li>KIT : Both units and accessories.</li> <li>No identification : Measuring unit</li> <li>LB : Loop-back unit</li> </ul>
	FC : Canare FC Series connectors	
	OC : Canare OC Series connectors	
Light Source Performance		
Laser Diode	: FP-1D	
Light Emission Wavelength	: 1310nm±20nm (Ta=23°C, CW)	
Optic Power Output Level	: -2.5dBm±0.5dBm (Ta=23°C, CW, Class 1 laser product)	
Optical Fiber	: SM (9/125 μm)	
Sensor Performance		
Photo Diode	: PIN-PD	
Optical Power Input Range	: -24.0dBm to -2.0dBm	
Error Variance	: ±10% (Ta=23°C, 1310nm, -20dBm, CW)	
Metal Line Measurement Performance		
Subjects	: Power line, Control line, shield. Measure condition of metal lines individually	
Maximum Cable Length	: Approx. 3.5km (When measuring Canare LF-2SM9R)	
Performance and Function		
Power Source	: AA batteries X2	
Battery Life	: Approx. 20 hours (Measured value with alkaline batteries in continuous use.)	
Operating Temperature	: -10°C to 60°C	
Storage Temperature	: -20°C to 70°C	
Operating Humidity	: 30% to 85% (Without condensation)	
Dimensions	: 46mm(W)×46mm(H)×150mm(D) (Measuring unit, excluding connectors)	
	: 46mm(W)×46mm(H)×65mm(D) (Loop-back unit, excluding connectors)	
Weight	: Approx. 380g (Measuring unit)	
	: Approx. 180g (Loop-back unit)	
Accessories	: Carrying case, Strap, Cleaning stick (10pcs.), AA batteries (2pcs.), instruction manual, and Hard case.	

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Specifications of this product are subject to change without notice.