Fault Finder

TRADEMARKS USED IN THIS MANUAL

Any trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

EC Declaration of Conformity

The manufacturer declares under sole responsibility that the Fault Finder, manufactured in the United States of America, meets the intent of the directive 89/336/EEC for electromagnetic compatibility. Compliance was demonstrated to the following specifications as listed in the official Journal of the European Communities:

EN 50081-1, Emissions:	EN 55022	Radiated, Class B
	EN 55022	Conducted, Class B
	EN 60555-2	Power Harmonics

EN 50082-1, Immunity:	IEC 801-2	Electrostatic Discharge
	IEC 801-3	RF Radiated
	IEC 801-4	Fast Transients
	IEC 801-5	Surge

Specifications

Light Source — 635-nm red laser diode and monitor, with multi-quantum well structure

Central Wavelength — Nominal: 635 nm; Range (typical): 630 nm to 640 nm

Spectral Width — < 2 nm

Peak Power Output* — Into SMF-28 fiber, CW or MOD output mode: 1.0 mW (0 dBm) maximum, 316 µW (-5 dBm) minimum

Maximum Emitted Power — 5 mW

MOD Output Frequency — < 3 Hz, approximate

Power Requirements — (2) 1.5-volt alkaline batteries

Battery Life — 24 hours in solid mode; 48 hours in blinking mode

Connector Interface — 2.5-mm "quick connect" port (APC-type ferrule coupling efficiency reduced by > -3 dBm), or snap-on connector adapters

CDRH — Class 3a

Operating Temperature — 14 to 122°F (-10 to +50°C)

Storage Temperature — -40 to +140°F (-40 to +60°C)

Humidity — Up to 95% relative humidity, noncondensing

Size — 1" x 9" (2.54 x 22.9 cm)

Weight — 7 oz. (199 g) with batteries and pouch

*Within specified ambient environment of +20°C to +25°C; APC-type ferrule coupling efficiency reduced by > -3 dBm; Output power with beam collimator may exceed 1 mW. Product complies with CDRH Class II, 1-mW maximum without collimator accessory and IEC 825-1: 1993, 5-mW maximum

Introduction

The Fault Finder is a pocket-sized instrument for finding problems in fiber cabling. It uses a stabilized, high-output 635-nm laser diode that runs up to 24 hours in continuous mode, or 48 hours in blink mode, from two AA alkaline batteries.

The Fault Finder can clearly locate breaks and bending losses in optical fibers up to 3 km in length. A rotary switch on the instrument lets you select between continuous wave (CW) and a blink (MOD) mode that increases viewing contrast, or switch the instrument off with one hand. A universal "quick connect" output port enables convenient temporary coupling with all 2.5-mm fiberoptic connectors. The instrument can also be used with optional Fault Finder ST, SC, or FC snap-on connector adapters, which permit secure coupling with these industry-standard fiber optic interfaces.

When you order the Fault Finder, you'll receive the unit, a nylon carrying pouch, this instruction manual, and (2) 1.5-volt alkaline batteries. There are also optional ST, SC, and FC adapters for the Fault Finder available separately.

Battery Installation/Replacement

The Fault Finder is shipped without the batteries installed. The two AA-size alkaline batteries shipped with the instrument must be installed before use. Do not use non-alkaline or rechargeable batteries in the instrument.

NOTE

If the LED indicator appears dim during operation, it is time to replace the batteries in the unit.
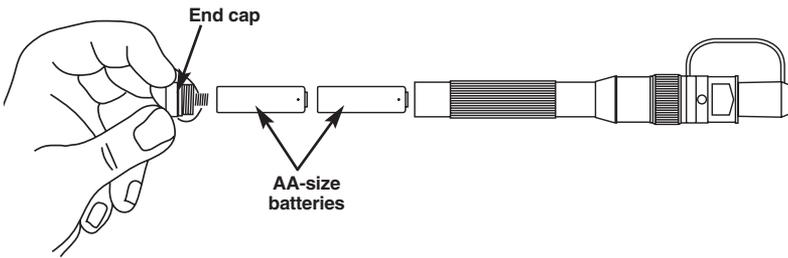

To install or replace the batteries, follow the steps below and refer to the illustration above.

1. Make sure the rotary switch is in the OFF position.

2. Unscrew the end cap by turning it counterclockwise, then remove the used batteries, if any.

3. Insert two new AA-size alkaline batteries positive end first, as shown in the illustration above.

4. Replace the end cap, turning it clockwise to tighten it in place.

Operation

Controls and Indicators

End cap
Rotary switch
"Quick connect" output port
LED indicator
Optional snap-on connector adapter
Dust cap
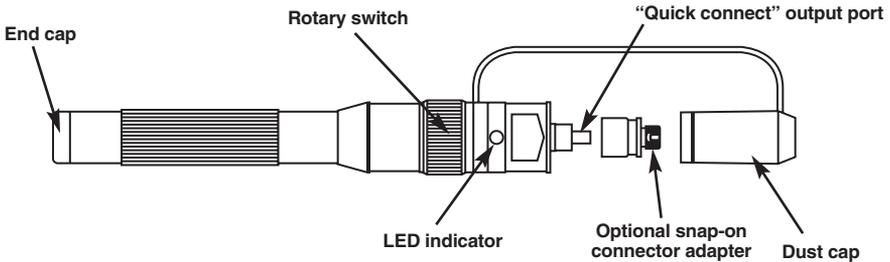
Using the 2.5-mm "Quick Connect" Output Port

1. Insert the ferrule of a fiber optic connector into the "quick connect" output port, ensuring that it seats completely. You should always clean the endface of the connector before inserting it in the quick connect output port.

2. Rotate the switch to the desired operating mode by moving it to the right. The first position puts the instrument in continuous wave (CW) mode. The second position puts the instrument in blink (MOD) mode. The LED indicator on the unit will light steadily in CW mode. It will blink in MOD mode.

3. See the **Applications** section for instructions on tracing faults in optical fibers.

Fault Finder Snap-On Connector Adapters

Optional Fault Finder snap-on connector adapters are available for ST, SC, and FC fiberoptic connectors. These adapters fasten securely to fiberoptic connectors and prevent them from pulling loose from the instrument. To use a snap-on connector adapter with the Fault Finder, follow the steps below.

1. Select the appropriate Fault Finder snap-on connector adapter and press it firmly over the quick connect output port.

2. Insert the connector under test into the adapter and secure it. Most fiberoptic connectors are secured by turning the outer sleeve clockwise.

3. Rotate the switch to the desired operating mode.

4. See the **Applications** section for instructions on tracing faults in optical fibers.

NOTE

Standard snap-on connector adapters cannot be used on the Fault Finder, as they are larger in diameter.

WARNING!

Do not look directly into the output port when the instrument is ON. Never use a viewing instrument, such as a magnifier or microscope, to view the free end of any optical fiber connected to the Fault Finder. The use of viewing instruments on active fibers can focus an intense laser beam onto the retina of the eye, resulting in permanent damage or blindness. Always aim the free end of an active fiber at a non-reflective surface.

Applications
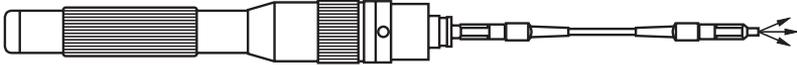
**Continuity Check**
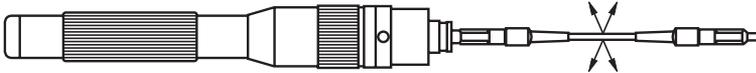
Break in fiber
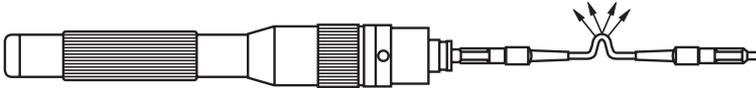
Microbend loss
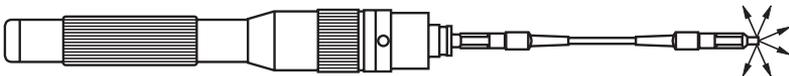
Dirty connectors

The Fault Finder is designed to quickly locate breaks in optical fibers. Any interruption in continuity will be indicated by red light escaping from the fiber. Light can also escape from the fiber if it is stressed or bent too tightly. In either case, escaping light is a sure sign of a problem.
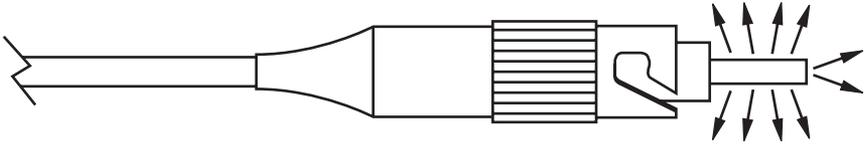
The Fault Finder can also be used to check the condition of ceramic ferrules. A fiber break inside, or past, the ferrule will make it glow, as shown above. If the entire connector glows, it is definitely bad.
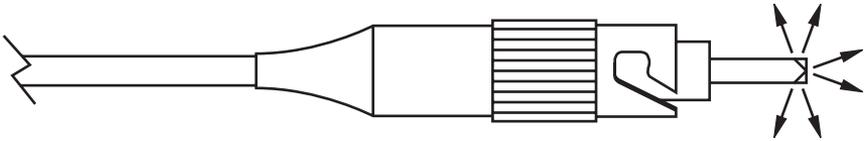
A glowing ferrule can also indicate a bad endface polish. If the endface polish is bad, light in the fiber will be reflected internally and will be visible through the ferrule, as shown above.

Cleaning

Cleaning the Output Port

Cleaning all connectors before coupling them to the Fault Finder ensures proper maintenance of the output port and laser lens. *Always cover the output port with the dust cap when you're not using the Fault Finder.*

If binding or stickiness is felt when inserting connectors into the output port, the ceramic sleeve should be cleaned. Insert a cleaning wand (not included) into the output port until it stops. Twist the wand, remove it, and discard. Do not reuse the cleaning wand.

Cleaning the Laser Lens

If the intensity of the light output decreases considerably, despite the batteries being in good condition, the laser lens is probably dirty. Loose dirt can be removed by applying suction to the output port.

NOTE

Do not blow air into the output port to remove dirt particles. Doing so will only pack the dirt and make it harder to remove.

If the lens is extremely dirty, flush out the output port with a small amount of reagent-grade isopropyl alcohol, then apply gently suction to remove any remaining dirt. Make sure that all residual alcohol has evaporated before resuming testing.

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