FIBERDYNE LABS, INC.

FD-FS SERIES
FIBER LED SOURCE

OPERATING
INSTRUCTIONS

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General

Model FD-FS8513A

Thank you for purchasing the Fiberdyne Labs, Inc. Fiber Source. The light-weight, hand-held Model FD-FS8513A Fiber Source is a precision optical fiber LED source in a pocked sized case.

The FD-FS8513A (850nm/1310nm) is a dual wavelength dual output unit. The unit is intended for field installation, testing and commissioning of all types of optical fiber systems.

The unit offers a continuous wave (CW) output, and a modulation output at 2 kHz. The highly efficient, stabilized outputs use rear facet diode technology to compensate for short and long term drift. The user may select one of the modulated modes for quick cable identification or the continuous mode for taking standard optical loss measurements.

The unit is equipped with a "Lowbatt" LED indicator to monitor the state of it's AA batteries. The unit can be ordered with a variety of optical connector styles.

The Fiber Source is contained in a rugged molded case and has an overall size of 6.3 x 3.3 x 1.3 inches.

Features

- 850 and 1310nm wavelengths *(dual wavelength / dual output port)*
- FC, SC, or ST type optical connectors
- Output Power adjust for each wavelength
- Multimode and Singlemode operation
- Accurate and stable
- Cable identification mode
- Modulated capability *(CW, and 2kHz)*
- Pocket size, robust, and lightweight
- Membrane switch overlay
- Visual output indication
- Easy to use

Applications

- Cable and link loss measurement
- Networking auditing and maintenance
- Troubleshooting and repair
- Connector and coupling losses
- Field test and repair
- Bare fiber loss measurement

Safety

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Precautions

Use care when working with any optical transmission equipment. It is good practice to avoid looking directly at any optical fibers or optical sources. Each of the Fiberdyne Fiber Sources emits LED light, and one should not look directly into the connector port. It is best to refer to your company's safety procedures when working with optical systems.

It is important to keep all optical connections and surfaces free from dirt, oils or other contamination to ensure proper operation. This applies to all connectors that are connected to the optical port on any of the Fiber Sources, as well as the optical port itself. Scratched or contaminated connectors can reduce system

performance. Refer to your company practices for cleaning optical connectors. Always replace the protective dust cap after use.
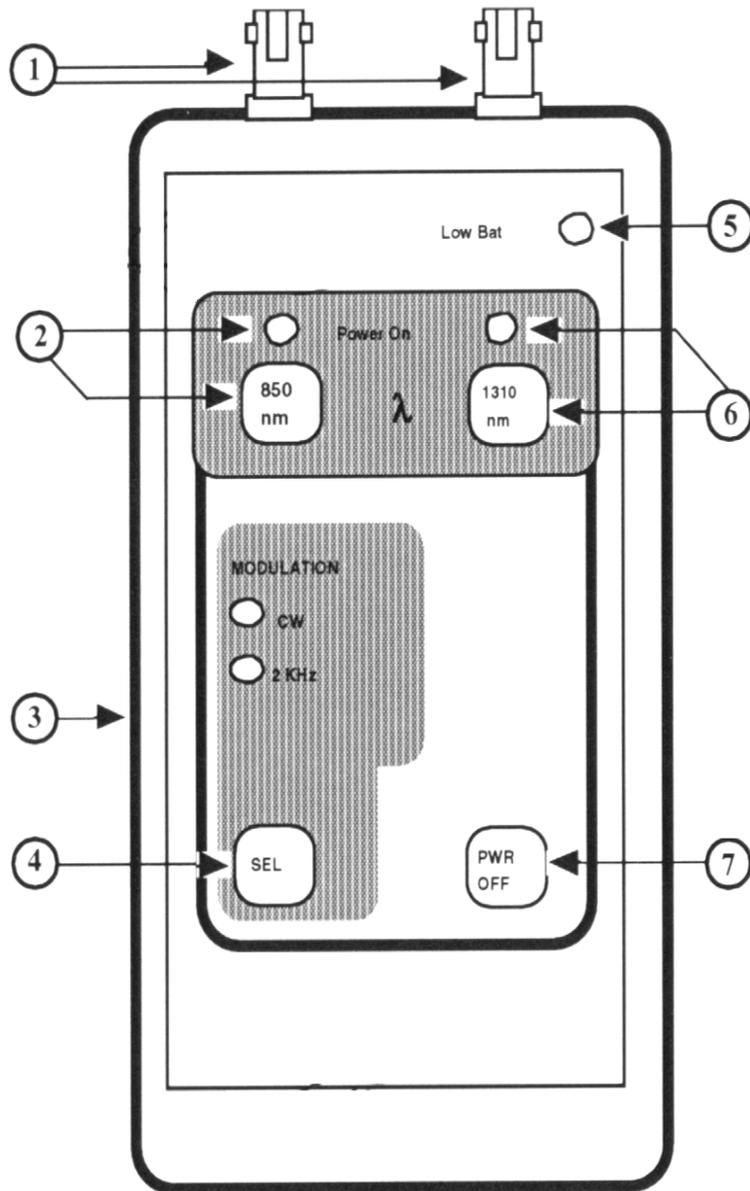
Operating Controls

Figure 1 – FD-FS8513A Fiber Source
Front Panel

Operating Controls

(1)   **FD-FS8513A -** Standard with **dual optical ports** available with either ST, SC, or FC Connectors.

(2)(6)   **Wavelength -** Selection is done by depressing the desired **wavelength key**. An LED illuminates indicating the desired selection.

(3)   An optional **charger jack port** used <u>only</u> with NiCad AA batteries.

(4)   The **SEL key** when depressed selects one of two modulations, **2 kHz** and **CW** and allows the output to be modulated at 2 kHz, or continuous wave, respectively.

(5)   **Low Bat** LED illuminates when the battery voltage has dropped below a working level. When battery voltage falls far enough, the Laser and its associated LED will shut off.

(7)   The **PWR OFF** key when depressed turns off the Fiber Source. The **battery compartment** holds two AA NiCad or Alkaline batteries. A **battery charger** jack is available to connect the unit to a charger for charging the NiCad batteries.

Operation

Optical Power Verification
Verification that the Fiberdyne Fiber Source is operating properly can be accomplished by following the procedure described below.
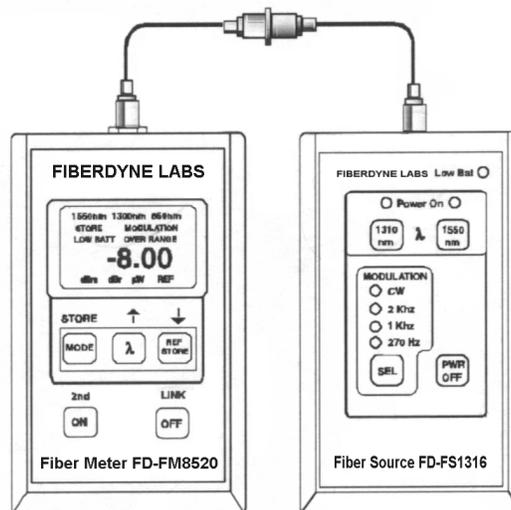

Figure 2 – Optical Power Verification Diagram

- Clean all optical ports and computers according to your company procedures.
- Connect a patch cable the Fiberdyne Fiber LED Source.
- Connect a patch cable to a power meter such as the Fiberdyne Model FD-FM8515A/B or FD-FM8520
- Connect the ends of the patch cables together using a coupling device.
- Turn on the Fiberdyne Fiber LED Source and set it to 1310nm. The unit will stabilize very quickly.
- Turn on the power meter and set the wavelength to 1310nm.
- Record the output of the Fiberdyne Fiber LED Source which should read approximately **-20.0 dBm**.
- Record the power meter reading. This measurement will be the *reference* level.

Note: An important consideration is the wavelength of the optical signal. Both the Fiber LED Source and the power meter must be set at the same wavelength to ensure accurate measurements. The above example describes 1310nm testing. To test 850nm, simply set **both** the Fiberdyne Fiber LED Source and the power meter to 850nm.

Optical Loss Measurements
- Verify the optical power and either record the reading, or if your power meter is a Fiberdyne Model FD-FM8515B or FD-FM8520, simply depress the **REF STORE** Key and the power measurement will be stored automatically.
- Disconnect the patch cables at the coupling. *Be sure not to disturb the connection at the end of the Fiberdyne Fiber LED Source or the power meter.* This is to ensure accurate measurements.
- Reconnect the patch cables to the fiber under test. Refer to Figure 3.0
- Record the power reading on the power meter. If the power meter is a Fiberdyne Model FD-FM8510 (does not have the **REF STORE** feature) subtract the reading from the previously recorded reference power reading, and the result will be the Loss of the fiber under test:

Optical Power **reference** level = **-20.0 dBm**
Optical power measured at end of cable = **-22.20 dBm**

Loss of fiber under test = **-20.0 - (-22.2) = 2.2 dB**

- If the power meter is a Fiberdyne Model FD-FM8515B or FD-FM8520, select **dBr** via the **MODE** Key, and the power reading for the Loss of the fiber under test (**2.2 dB**) will automatically be calculated and displayed.
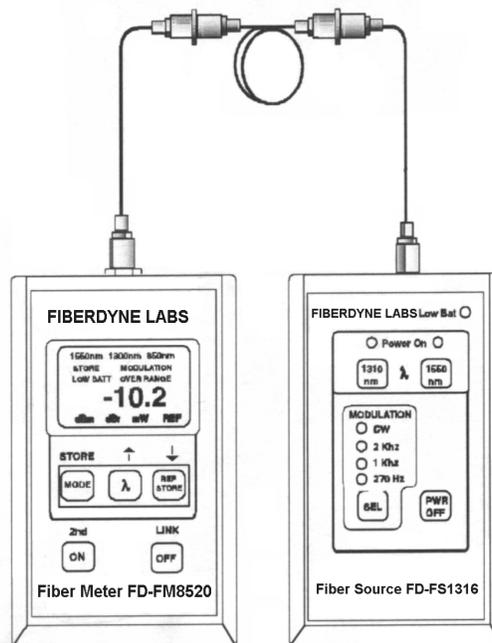

Figure 3 – Optical Loss Measurement Diagram

Maintenance

Battery Replacement
The Fiber Sources require no periodic maintenance other than replacing the batteries. Under normal use the two AA alkaline batteries should provide greater than 20 hours of continuous use. To replace battery, place the unit with its back side facing up. Use a small screwdriver to remove the two screws and release the battery cover. Install the battery and then secure the cover to the unit with screws.

Optional Battery Charger
When the Fiber Sources are purchased with the optional battery charger, they are shipped with two AA NiCad rechargeable batteries. The batteries have been kept in the uncharged state for shipment. Therefore, be sure to fully charge them before use.

To charge the batteries, simply plug the charger's transformer into an AC outlet and the other end into the charger jack on the Fiber Source. Charge the unit overnight (about 14 hours). The batteries may be charged with any battery charger with the following specifications:

> INPUT   AC 120V~, 60Hz in the USA and Canada
>
>   AC 110-240 V~, 50/60 Hz in other countries
>
> OUTPUT 8.7-15 V AC or DC @ > 150mA
>
>   2.1 mm coax jack (Tip – Positive)

Important – When charging batteries in the unit, please be sure to use only NiCad batteries. Charging any other type of battery will cause damage to the unit.

General Care
To avoid damage to the Fiber Sources, do not use cable connectors that are dirty or faulty. A dust cap is provided for the optical output port, and should be in place when the unit is not in use to prevent foreign material from entering the port. It is best to clean the connectors first, using cotton swabs and isopropyl alcohol.

To clean the inside of the optical connector, use only a small diameter cotton swab lightly moistened with isopropyl alcohol.

Clean the Fiber Source's body with a damp cloth. Do not use solvents or abrasives.

Customer Service

Repair

If repair of the Fiberdyne Fiber Source is necessary, return the unit in accordance with the warranty instructions in the back of this manual to the address listed below.

Fiberdyne Labs, Inc.
127 Business Park Drive
Frankfort, New York 13340
Tel: (800) 894-9694
Fax: (315) 895-8436

Technical Assistance

Should you need technical assistance with the Fiber Source, contact Applications Engineering at the following telephone numbers:
Toll-free: 1-800-894-9694   --or--   Outside the USA 001-315-895-8470

Ordering Information

Orders for the Fiberdyne Fiber Source, and any accessories should be directed to the address shown above.

More Information

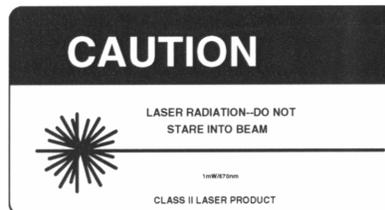This document and others may be viewed on our Internet Website at:
http://www.fiberdyne.com/techinfo/index1.html

Fiberdyne Labs, Inc. products and services may be viewed and purchased at:
http://www.fiberdyne.com

Specifications

	FD-FS8513A
Optical Connection	Dual Port
Source Type	LED - Class II Laser Diode
Wavelength (nm)	850nm +/-20 & 1310nm +/-20
Spectral Width (nm)	< 5nm
Transmission	Continuous or 1Hz Pulsed Signal
Range	Visible Beyond 5 km
Output Power (dBm)	-20 dBm into 62.5 mm
Stability	+/- 0.1 dB over 8 hrs.
Power	Single Replaceable 1.5V AA Alkaline
Battery Life (Alkaline)	80 / 20 hrs.
Output Connector	ST, FC, SC
Power	Two AA-Size Alkaline or NiCad (Opt.)
NiCad Charger (Opt.)	8.7-15 VAC/DC > 150mA – Tip Positive
Operating Temp.	0°C to +40° C
Storage Temp.	-20°C to +40° C
Humidity	0 to 95% (non-condensing)
Size	6.3"H x 3.3"W x 1.3"D (160 x 83 x 33mm)
Weight	0.56 lbs. (250g)

CAUTION

LASER RADIATION--DO NOT STARE INTO BEAM

1mW/870nm

CLASS II LASER PRODUCT

Warranty

The Fiberdyne Labs, Inc. FD-FS8513A Fiber LED Source is warranted for a period of one year to be free of defects in material and workmanship.