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Fiber Lab 3200
Operating Manual
SN: General

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1.) Safety

The Fiber Lab 3200, although used with optical sources and optical detectors, contains no active components that emit or detect optical signals. So by itself, it is an inherently safe device.

When used for its intended purpose, the Fiber Lab 3200 product is connected through optical fiber to an optical source such as an infrared laser transmitter. Since the output of an infrared optical source is not visible with the naked eye, it is **extremely important** that the user never look directly into the output connector or fiber connected to the optical source. It is also **extremely important** that the connectors on the front of the Fiber Lab 3200 remain covered when not in use to avoid direct viewing. Several important safety steps should be taken whenever the Fiber Lab 3200 is used with an optical source.

- **Disable** the optical source by removing power to ensure that the optical source is not emitting any optical power from the connector or pigtail.
- Remove the Fiber Lab 3200 connector covers for the attenuators/lengths that will be used in the system.
- Use patch cords to serially connect (if required) the various attenuations/lengths required for the system.
- Connect the optical source to the Fiber Lab 3200.
- Connect the optical receiver to the Fiber Lab 3200
- Enable the optical source by turning on the power.
- When the system evaluation is complete, **disable** the optical source before disconnecting any of the patch cord connections.

2.) Technical Data

The Fiber Lab 3200 is designed to provide four (4) selectable levels of actual fiber attenuation or fiber length in a compact bench top or rack mount package. The attenuation/length is selectable at the time the purchase order is placed for the product. The standard available fiber (SMF-28) attenuations are 1 dB \pm 20%, 2 dB \pm 15%, 4 dB \pm 10% and 8 dB \pm 10% measured at

1310 nm. Other types of fiber vary in attenuation tolerance due to length variations, dB/km variations and variables associated with short lengths or low dB values. Other more unique fiber attenuations can be provided as requested. Any fiber length (to 25km) can be specified per each of the four outputs. The maximum fiber attenuation contained in the Fiber Lab 3200 is approximately 32 dB at 1310 nm. The standard connector is the SC-APC connector with typical insertion loss at 0.2 db and return loss maximum at – 60 dB. Other connectors can be accommodated on the front panel or via hybrid patch cords.

The Fiber Lab 3200 is available in a bench mount version without rack mounting brackets and is 16.94 in. (W) X 6U (10.75 in.) (H) X 15 in. (D). The rack mount product is 2 inches wider at 18.94 in., with all other dimensions remaining the same.

The weight of the Fiber Lab 3200 will vary depending on the fiber attenuations/lengths specified. However the maximum weight with four 8+ dB attenuations/25 km length will not exceed 33 pounds or 15 kilograms.

3.) Design

All companies that are engaged in the development and/or manufacture of fiber systems or components know that they can not use fixed or variable attenuators to set up or evaluate their products. Fixed or variable attenuators simply do not duplicate the performance characteristics of *real fiber*.

Many Companies use spools of fiber to test their systems and components but the spools are scattered around on benches, sometimes hard to find and are subject to contamination, breakage, and crimping. Fiber Lab brings all of this under your control and gives you the added versatility of the different attenuations or lengths to meets specific demands.

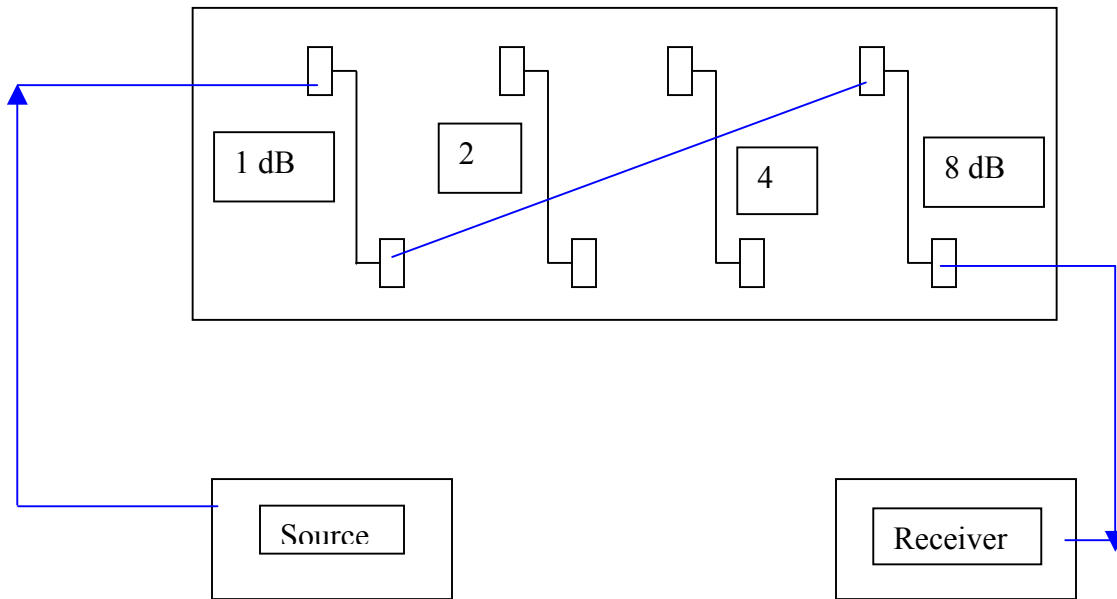
The Fiber Lab 3200 was designed to make it easy for anyone to conduct fiber optic system and component evaluations with *real fiber*. It is ideal for system and component development labs, testing labs, manufacturing test labs, central offices, head ends, hub sites, and in general anyone that needs to evaluate or demonstrate their products with *real fiber*. This product is ideal for trade shows and exhibits because it is an efficient package and helps prevent connector contamination and fiber breakage due to its compact, rugged and secure construction.

The box contains spools of fiber with the ordered attenuation or length. Each spool is terminated on the front panel. The spools have been designed to ensure acceptable fiber bend radius that in turn ensures long product life.

4.) Set Up and Operation

The unit is very easy to use and the best way to demonstrate its use is by example. If you purchased P/N (FL-1248-S-10-28-SC-A-B), you would have one each 1dB, 2dB, 4dB, and 8dB terminated spools.

If you decided to set up your system for 9 dB, you would connect the 1 dB attenuation in series with the 8 dB attenuation. You would connect your source to one end of the 1 dB fiber attenuator, connect the other end of the 1 dB fiber attenuator to one end of the 8 dB fiber attenuator and your receiver to the other end of the 8 dB attenuator as shown.



The length of the connecting patch cords is not important but the cleanliness and repeatability of the connectors are very important in order to obtain consistent results.

It is highly recommended as a standard practice to assign patch cords to the front panel connectors and, if possible, leave them plugged in at all times. This way the patch cords become sacrificial, low cost parts that will wear out before the front panel adapters. The patch cords are easily

replaceable when they become unreliable. And the front panel adapters will remain consistent for a much longer time.

5.) Maintenance

There are no hard and fast maintenance procedures specifically for the Fiber Lab 3200. However, there are several precautionary procedures that should be adopted as habit with the connectors and patch cords used with the product.

- Whenever possible leave patch cords plugged into all connectors on the front panel. It is better to wear out a patch cord than the adapter on the unit. Otherwise keep connector covers on all front panel connectors when not in use.
- Always clean patch cord connectors just prior to attaching them to Fiber Lab 3200. A dirty connector may permanently degrade the surface of the Fiber Lab connector. A dirty adapter can be cleaned by removing the screws, disconnecting the inside connector, cleaning the components and replacing them.
- Use in a dust free environment to minimize any buildup on connectors and adapters.

If the fiber Lab 3200 needs repair and it is within the warranty period, contact M2 Optics, Inc. for a return material authorization (RMA) prior to shipping the unit. Products returned for repair un-accompanied by an RMA number will not be accepted.

6.) Warranty

The Fiber Lab 3200 product is warranted against defects in material and workmanship for a period of (1) one year from the date of shipment to the end user from the factory, or 15 months from the date of shipment from the factory to a distributor. Since optical connectors and adapters are intolerant to misuse, dust, dirt, contaminated mating connectors, etc., they are warranted to meet the product specification upon leaving the factory but are not warranted after delivery of the product to the

customer. The factory will be the sole determinant of whether the product failure was due to defects in material and/or workmanship (covered) or misuse and physical abuse (not covered). The warranty is void if it is determined that the product has been tampered with, opened or modified. All warranty returns must have a factory issued RMA number and the box containing the product must be boldly marked with the RMA number. Returned material will not be accepted without a factory issued RMA number.

The customer is responsible for freight and insurance costs to return the in-warranty product to the factory for repair. M2 Optics, Inc. is responsible for freight and insurance to return the in-warranty repaired product to the customer.

All transportation and insurance costs, as well as material and labor for the repair, will be the responsibility of the customer for out-of-warranty repairs. Out-of-warranty repairs will be accompanied with a valid purchase order to cover the cost of the repair. Advanced out-of-warranty repair estimates can be obtained by calling the factory and requesting a quotation prior to returning the product to the factory for repair.

The Fiber Lab 3200 product will provide years of trouble free service. We hope you enjoy it and recommend the product to others.

Attenuation Data

After final assembly of the fiber into the Fiber Lab 3200 package, the length and attenuation of all fiber lengths were measured with a NIST traceable Optical Wavelength Laboratories Optical Meter. The results were recorded and are shown as follows:

<u>Spool</u> *	<u>Input</u>	<u>Output</u>	<u>Loss</u>	<u>Spec.</u>
A1				
A2				
A3				
A4				

*Left to right looking at front of chassis.