

Model "ACMT" LASER DIODE OEM SYSTEM INSTRUCTIONS

GENERAL OPERATION - EXTERNAL TTL MODULATION

Introduction

These Laser Diode OEM Systems are designed for external TTL compatible modulation from CW to 20MHz.

Operation

The system operates on 5VDC input only. In operation, the standard system provides a constant current, preset at the factory, to the laser. So, the laser output power is fixed and will vary only with environmental changes. The system does not have a feedback system to regulate the laser power. So, the system will not automatically adjust for these changes. *See the section below concerning optional drive current controls.*

Note: Since the system drives the laser at a constant current, you need to understand the implications of the temperature and laser power correlation. As temperature decreases, the laser power increases. At the same time, the laser's current rating decreases. So, the possibility of a laser burn-out is increased as the temperature drops due to the preset drive current (or current adjustment with Option X22) exceeding the drive current capacity of the laser. There are a couple of methods to avoid this outcome. You can maintain a constant ambient temperature or, optionally, you can monitor the laser power and adjust the Option X22 current control to keep the laser output power under the maximum rating of the system.

Since the modulation is TTL, the external pulse generator operation must toggle between 0VDC and 5VDC. The system can be operated CW (with 0VDC on the data input) or pulsed up to 20MHz. The system will not operate until driven by a pulse generator, via the coaxial cable, or the termination is shorted (which allows the system to operate CW).

Optional Drive Current Control:

The Option X22 is a $\frac{3}{4}$ turn potentiometer located on the end of the system. This enables the user to adjust the drive current to the laser and therefore change the output power from zero to 100% of the rated power of the system. There is also an Option D2 which enables the current to be digitally controlled. If you have this option, then you need to refer to those separate instructions.

Caution: Check the operating range of the power meter before setting the power. Most photodiode based meters will saturate at 2mW (without an external attenuation). Although some digital meters will indicate power greater than 2mW, this reading is usually in error with the meter always giving a reading below the actual power. Also, because the system is modulated the meter will not give a true reading. For the true laser power you must factor in the pulse width and the pulse frequency.

Installation

Do not mount the system in a thermal insulating material, such as foam plastic. For best heat dissipation use a metal mounting fixture. A heatsink is recommended for operating temperatures above 25°C.

Heat generation can also be a problem on systems that have an output power of 5mW or greater or, that have 70mA or more of current drawn by the laser. *If either of these conditions exist for your system then a heat sink is recommended to prevent damage to the laser diode.*

The TTL modulation signal is transmitted to the system via a single coaxial cable (provided by the customer) connected to the male SMC connector located on the end of the system. A female SMC connector, and assembly instruction sheet, is provided for the customer to assemble an SMC to BNC cable (< 0.5m length recommended).

Warranty Notes:

Sealed Locking Ring: The laser diode is held in place with a locking ring. This locking ring is factory sealed. It is necessary to remove the lens in order to gain access to this ring. So, accidental breaking of this seal is unlikely.

Breaking the seal on this locking ring voids the warranty.



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