

## **Model "SPMT" 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 unit operates on 5VDC input only. In operation, the standard unit provides a constant current, preset at the factory, to the laser. So, the output power of your laser will be fixed and will vary only with environmental changes. The unit does not have a feedback system to regulate the laser power. So, the unit 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. Therefore, 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 output power of your laser 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 ¼ turn potentiometer located on the end of two orange wires. 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:** The TTL modulation signal is transmitted to the system via a single coaxial cable (provided by the customer) connected to the male BNC connector located on the end of the system. It is recommended that additional cable added is < 0.5m in length.

**Warranty Note:** The co-axial cable from the power supply is connected to the laser head with a threaded connector. However, this connector is not intended to be removed by the customer and is sealed. The cable is the maximum recommended length. Cutting these wires or breaking the seal on the connector will void any warranty.

