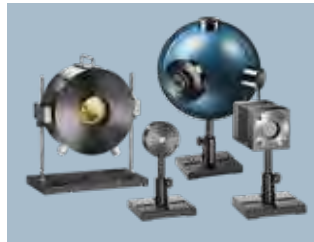


2022

CUSTOMIZED SOLUTIONS (OEM) 1.4

SENSORS



1.4 Customized Solutions (OEM)

1.4.1 Introduction

Ophir – The World Leading Source for Custom Designed Laser Measurement Solutions

Many laser systems manufacturers need to have a measuring capability built into their systems.

Ophir is the world's leading supplier of Customized Solutions (OEM) laser power/energy measurement instrumentation which can be built into host systems (such as medical, industrial, etc.). With extensive experience accumulated in the field, Ophir offers the largest variety of Customized Solutions (OEM) products and is therefore best able to satisfy customer requirements.

Many configurations possible

A Customized Solutions (OEM) product is usually needed to monitor laser performance in the system, and possibly to provide fast feedback for system control. Depending on your application, various configurations can be used, such as:

- Just a sensor, with raw analog output
- Sensor with electronics providing an amplified analog or digital output
- Complete instrument, including numeric display and/or PC interface
- Custom designed solution for special requirements

In the following pages, you will see a range of "standard" Customized Solutions (OEM) sensors available; these are actually families of existing Customized Solutions (OEM) sensors with typical specifications shown. They can be tailored as needed to fit your specific requirements.

In addition to the products described below, Ophir has developed hundreds of other Customized Solutions (OEM) products. Simply contact your Ophir representative and specify your needs.

1.4.2 Thermal and Photodiode Customized Solutions (OEM) Sensors

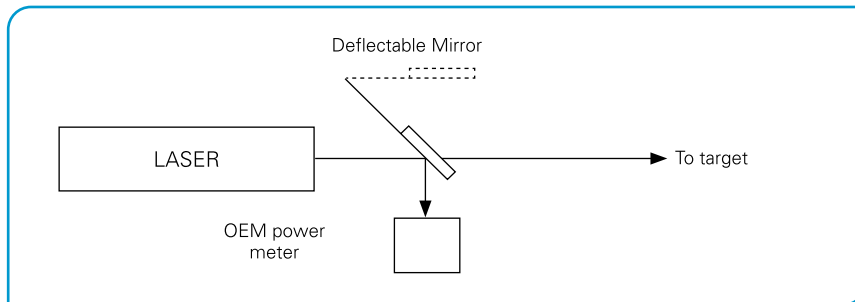
1.4.2.1 Sensor Usage

Ophir pioneered compact self-contained laser power meter sensors with built-in amplifiers. These sensors are easy to install and give a calibrated voltage proportional to power. They contain all the electronics needed including a speed up circuit to increase the speed of response of the sensor to the order of 1s, 0-95%. Connections to the sensors are simple, with the host providing DC power and the sensor providing a voltage or digital output proportional to power.

In most cases, the sensor is used in one of three ways:

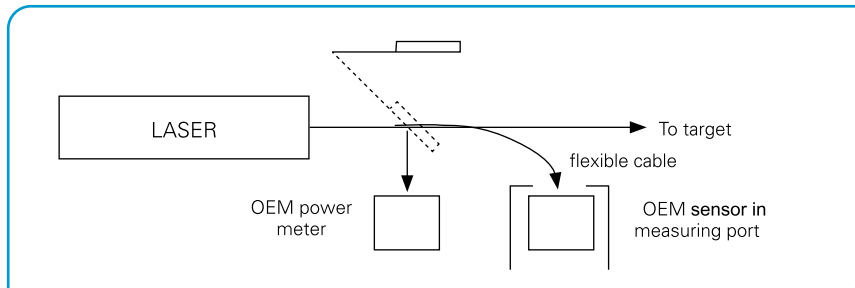
1. Beam Dump Mode

For lasers, such as surgical lasers, which are used in short bursts, the sensor is a beam dump with full power on it at all times except for the short periods of beam use when the beam is deflected to the work area.



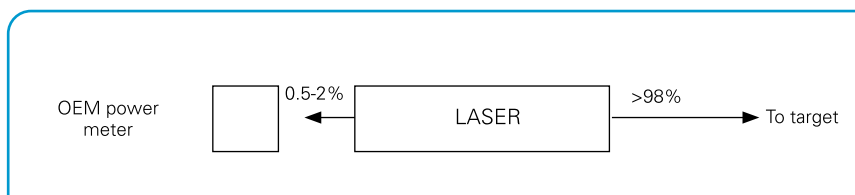
2. Sampling Mode

In this mode, the laser is usually available to the user and is only deflected to the monitor for short times when the beam is sampled by the sensor. Sampling is performed with a deflection mirror or with an output fiber optic cable which is inserted into the measuring port from time to time.



3. Rear Leak Mode

In this mode, a small fraction (0.5-2%) of the laser beam "leaks" out of the rear mirror of the laser and is constantly monitored by the sensor.



1.4.2.2 Advantages of Ophir Thermal and Photodiode Customized Solutions (OEM) Sensors

Compactness

Available in various sizes down to 38x38x25mm as described here and in addition even more compact designs for applications with more limited space.

Versatility

Ophir offers OEM sensors for almost any type of laser, for any power or configuration. These sensors can measure from pW or μJ to Kilowatts or hundreds of Joules, and can be cooled with water, air or conduction. Ophir offers a large selection of standard OEM sensors at competitive prices and with excellent delivery times. If required, the package, including the connectors, can be customized to customer specifications.

Reliability and accuracy

Ophir's thermal measuring sensors use the reliable and accurate thermopile disc principle: the output is a low impedance voltage proportional to power. Suitable absorbers which will not burn out or change reading with high power density lasers are available for any application. Ophir photodiode OEM sensors have very wide dynamic range and with software switchable ranges, one can easily cover 5 decades of intensity.

Calibration

Ophir is an accredited calibration laboratory per ISO/IEC 17025. With a wide variety of calibration sources, Ophir sensors can be factory calibrated at most user required wavelengths.

In addition to the sensors described below, Ophir offers a number of other OEM sensors with larger aperture, diffusers in front, special absorbers and other special features. Ophir also offers an OEM measuring set consisting of a sensor and smart meter.

Possible configurations of thermal or photodiode Customized Solutions (OEM) products include:

- **Sensor with amplified analog output** – purchasing a sensor mounted into a housing with amplifier reduces noise and allows you to get a factory calibrated unit with optimized response time acceleration
- **Sensor with RS232 interface** – for direct RS232 interface of the Customized Solutions (OEM) sensor with the host computer
- **Sensor with USB interface** – for direct USB interface of the Customized Solutions (OEM) sensor with the host computer
- **Sensor with Ethernet interface** – for direct Ethernet interface of the Customized Solutions (OEM) sensor with the host computer. Requires separate power supply connection from rear of sensor
- **Complete solution including sensor and meter** – this provides a visual display for the operator (numeric, Go/No Go, etc.). This can also be in addition to the RS232 or USB output
- **Disc with raw analog output** – the lowest cost solution when there is no need for an amplified signal, and a relative measurement is enough. Typical output voltage is on the order of mV/W
- **Disc with separate amplifier board** – when space is critical, and amplified analog output is needed