ASHA Beam Profile

Thermal Power Meter Bundle

PMB-201

About Us

In order to design and manufacture programmable optometrical, optomechanical and optoelectronical devices, the science-based company, ASHA Beam Profile, was established in 2016.

ASHA has been able to design a wide range of devices, relying on indigenous capability and knowledge. Also, since being calibratable is essential for measuring equipment, clients can carry out their periodical calibration.

Field of activity

The main field of activity of this company is the design and production of laser, optics and photonics equipment and can be categorized in the following topics:

- Diode laser driver
- Laser diode stabilizer
- Laser Parameters measuring equipment such as Power Meter, Beam Profiler, and Ultra-fast Detector
- Lithographic masks
- Linear positioner with stepper motor driver
- Calibration of Power Meters and beam profilers
- Design and production of software to facilitate the use of electro-optic and optomechanical programmable equipment

Main features

Introduction

Measuring the output of light sources is very important. For example, the optical power of medical lasers is very sensitive and can cause irreparable damage if the function of the device goes out of its proper range. In experimental and research applications, it is always necessary to measure the output of laser sources. In addition to the above, it is crucial to pay special attention to the necessity of calibration of industrial and military laser equipment.

Hence, the thermal power meter is designed for high precision laser applications. Productions of this company can well meet the needs of the scientific and industrial community in the field of power metering.

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Features

- Direct connection to the multimeter with a special cable (depends on order)
- Ability to operate in 3 different ranges (depends on order)
- Adjustable for desired light sources in the specified wavelength range (depends on order)
- Able to have specific Gain for required scale (depends on order)
- Measuring the power of coherent optical sources
- Measuring the power of continuous light sources
- Possibility to remove background radiation (depends on order)
- Internal rechargeable battery for portable use

Applications

- Study incident and reflected beam power and qualify light sources
- Study the effect of environmental changes on laser sources performance
- Study the variation of power when passing through (transparent) environments
- Examining the quality of lenses and optical windows
- Measure the intensity of reflection/passing beam from different surfaces

Warning! With regard to the items listed in the requirements section, to maximize the accuracy of the device, it is strongly recommended to connect the power meter earth to the standard one.

Technical Features

Item	Min	Typ	Max	Unit
Input Voltage	4.75	5	5.25	V
Input Current	60	250	500	mA
Battery	-	<2000	-	mAh
Battery Life	-	20	-	h
Charge Time	-	5	-	h
Wavelength Range	0.19	-	20	µm
Optical Power Working Range/ Display Power Range	>10	-	2×10^4	mW
Output Voltage	-	-	<2.5	V
Ranges	0.01 ~ 0.1999	0.01 ~ 1.999	0.1 ~ 19.99	W
Measurement Uncertainty	±5% + 100 Counts	±5% + 10 Counts	±5% + 5 Counts	

More Spec.		Discription
Dimention	Detector	50x40x18 mm^3
	Console	180x165x70 mm^3
Weight	Detector	< 300 gr
	Console	< 1000 gr
Detector Connection		DB9
Output Connection		BNC
Active Detector Area		20x20 mm^2
Input Aperture		Ø10 mm
Display		2000 counts - 7segment

Figure 1.Thermal Power Meter Detector

Figure 2.Thermal Power Meter Console - Front View

Figure 3.Thermal Power Meter Console - Back View

Contents

Power Meter Parts

Available Accessories

Please make sure that all accessories are available for the box in your first use.

» Thermal Sensor	x 1
» Photodiode Power Meter Console	x 1
» User Manual*	x 1
» 5V Power Supply	x 1
» Multimeter Connector Cable	x 1
» M4 Screw	x 1
» M6 Screw	x 1

* Digital version of this user manual is available by scanning the QR-code undwer the console.

Detector Parts

1. Anodised Aluminum Body
2. M4 screw for vertical aligning
3. M6 screw for vertical aligning
4. Detector Screws(if open, guarantee void)
5. Input aperture

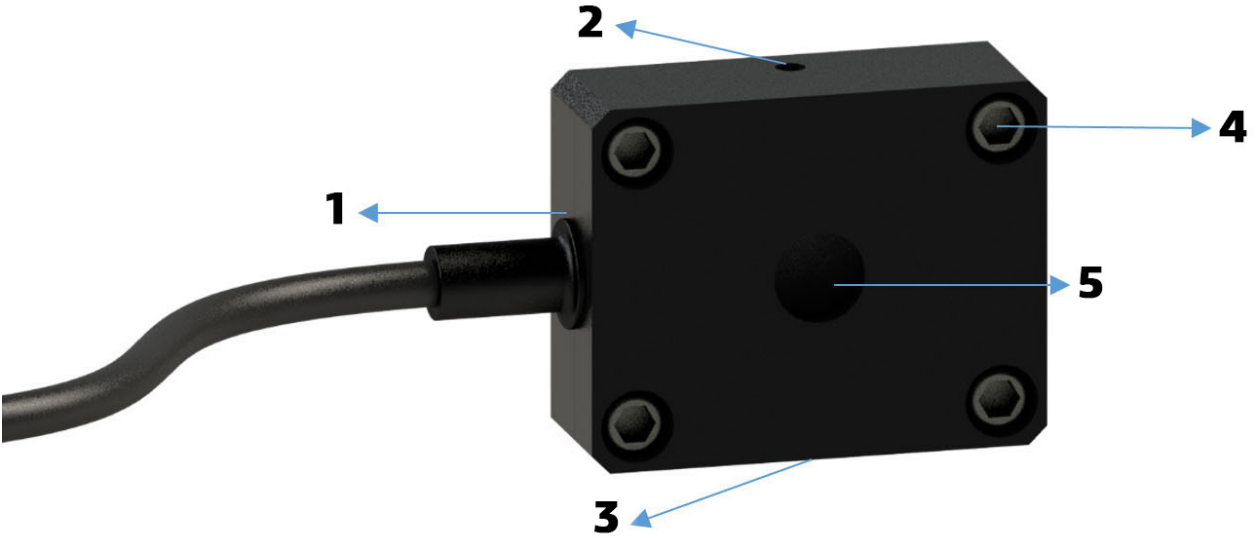

Figure 4. Thermal Power Meter Detector - Front View

Console Parts

1. Power range selector
2. Power range LED
3. 4 digits display for reporting power

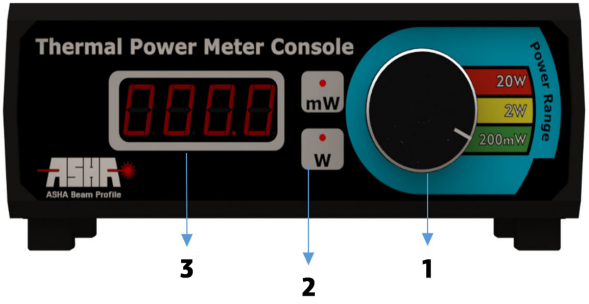

Figure 5.Front Parts of Thermal Power Meter Console

4. Charging status LED (depends on order)
5. ON/OFF Key
6. Input Power
7. Detector connector
8. Offset null volume
9. Output (BNC)
10. To download datasheet scan this QRcode

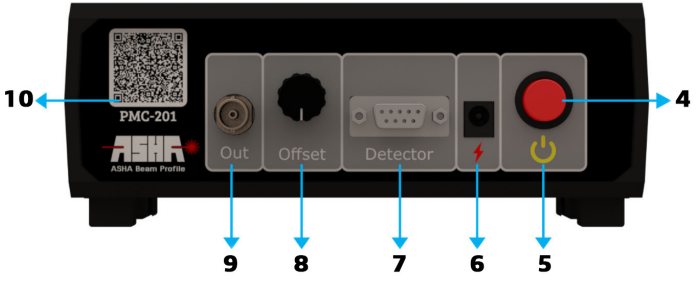

Figure 6. Back Parts of Thermal Power Meter Console

Pinout

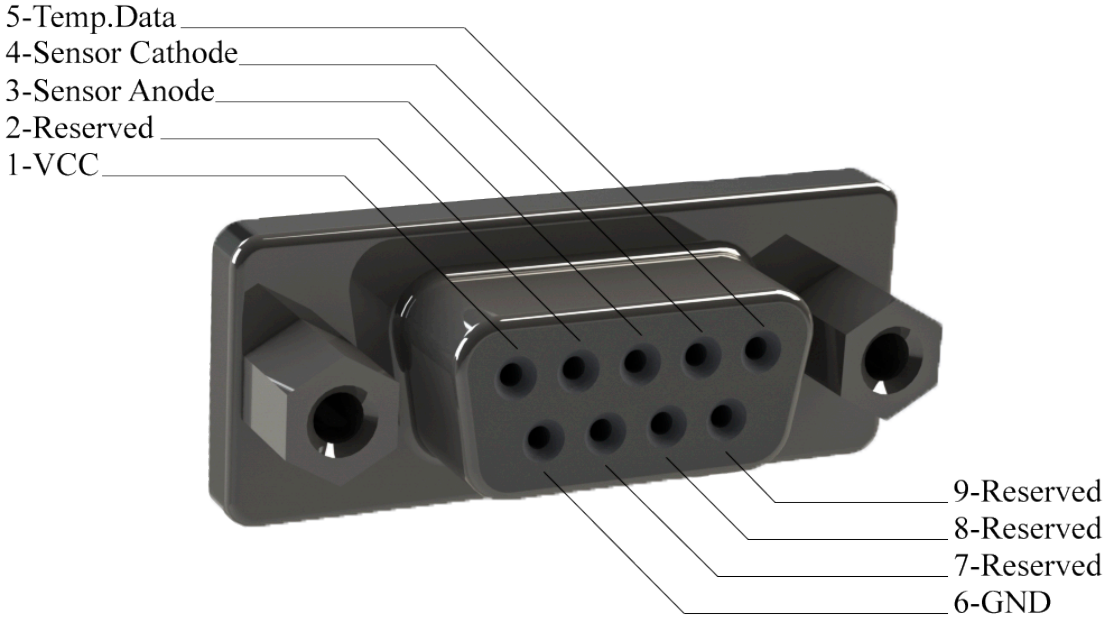

Figure 7. Pinout - Thermal Power Meter Detector

Setup

Safety

It should be noted that all safety tips in this manual are only useful when used in accordance with the conditions and for use under the mentioned situations. All parts should be connected to each other with a suitable and shielded cable. If you need to replace some parts of Asha's company with others, you need to inform ASHA's Technical support. If any changes in the components of the product are applied, it may lose its functionality. Due to the body reflection and optical filter, it is recommended that you turn off the light source or set it in low power mode when using in the desired location. It is also necessary to have an orthogonal beam on the sensor surface. This instrumentational device only will be calibrated when placed in the foam and special box according to the original packaging. It is recommended that you take alternative packaging from ASHA company if necessary.

Preparation and Measurement

To set up the device, first it is necessary to put the sensor perpendicular to the beam axis with the proper connection at the desired location, and then connect the sensor cable to the device.

The device has a display on its front panel, and it's possible to directly display the result on the screen in addition to measuring through the multimeter. The output of this device, according to the order, is able to be calibrated for required ranges, so that the output voltage of the device will be a coefficient of beam power.

The display on the device shows the exact amount of optical power according to the selected range. If the voltmeter is used at the range of 200mW, the measured voltage is ten times the real power value. In the 20W range, the measured voltage is one-tenth of real power and in the 2 W power range, the reported voltage is the same as the real value of power.

If you want to measure power using a voltmeter, using the supplied cable, connect the analog output of the device (BNC port) to the corresponding BNC cable, then connect the black probe to the COM port and the red probe to the voltmeter. Then turn on the device by using the On/Off key. If the device has enough battery, the display on the front panel of the console will turn on. Otherwise, connect the adapter to the input power connector. In this case, the charging light turns on, which means that the battery is charging and you can use the console at the same time. When the battery is fully charged, the red light will

turn off and you can unplug the adaptor from the console.

This device can measure 3 ranges specified in the technical table. To prepare the device to measure the desired range, turn the selector and select the desired range. In the end, turn on the beam source or remove the obstacle and measure the beam.

One of the features of this product (according to the order)is the offset setting, which can be used to remove the background radiation and then measure the absolute power of the beam source. To do this, use the offset knob on the back panel of the device and rotate the knob to apply the desired offset according to the application. One of the important applications of this feature is the removal of the background radiation from the end result, which is very useful in environments with unwanted background radiation.

Requirements

- High precision analog or digital voltmeter (5.5Digits)
- Appropriate Power Supply (Available in Package)
- Standard ground connection (Due to the high sensitivity of the sensor, if there is no proper ground connection, the environmental noise will greatly affect the sensor performance.)
  It is necessary to mention that this power meter is very precise and sensitive and due to the precision the device output (listed in the table), in order to use full capabilities of the device, it is recommended to use voltmeters with the accuracy better than 100µV.

Drawings

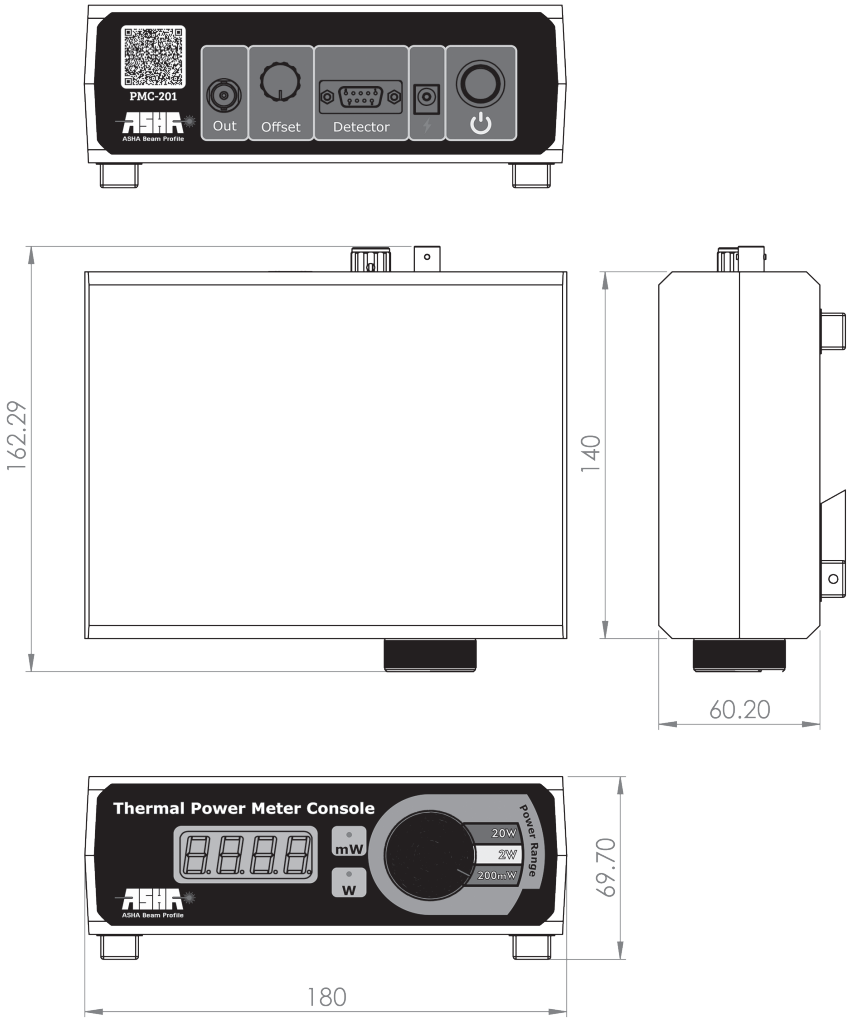

Figure 8. Thermal Power Meter Console - Dimensions

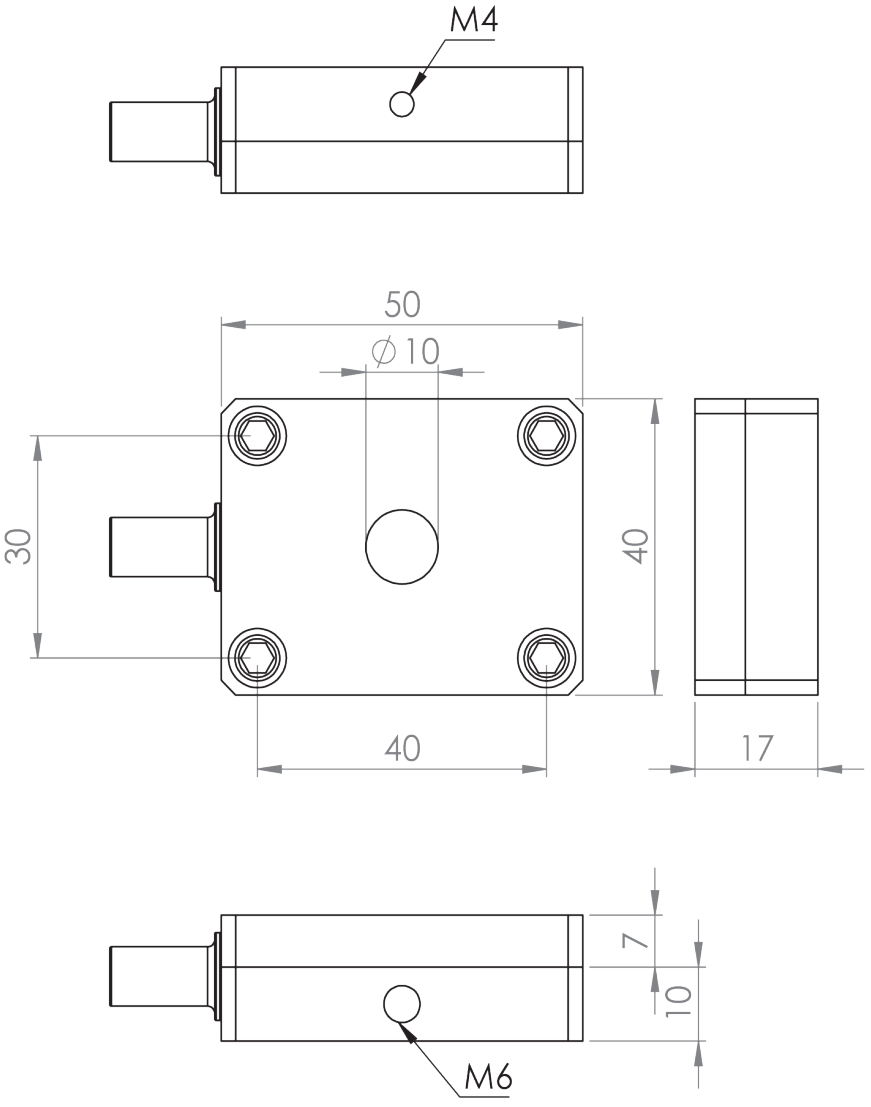

Figure 9.Thermal Power Meter Detector - Dimensions

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