

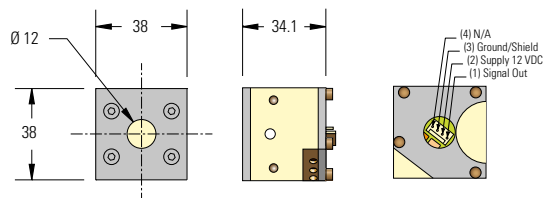
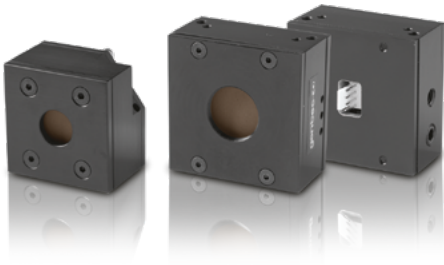
CUSTOM / OEM PRODUCTS

Product characteristics

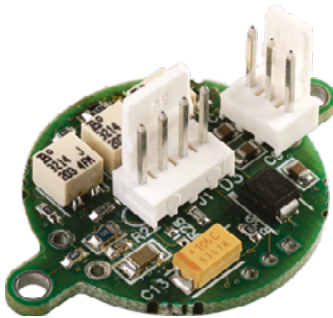
Gentec-EO offers OEM customers the highest flexibility so that you make no compromise. Whether you want a different housing, a specific sensitivity or another output connector, we have a solution for you. We will customize existing models or design a whole new detector to meet your needs.

COMPACTNESS

As an OEM, we know space is often a constraint. This is why we offer very compact detectors to ease the integration inside machines. Users can mix and match existing detectors and cooling modules from a large set of combinations.



PERFORMANCE



Anticipation

0-95% of the signal in as quickly as 0.3 s with the small UD12-70-H5 and in 0.6 s with the UD19-150-H5 using our external PCB.

Amplification

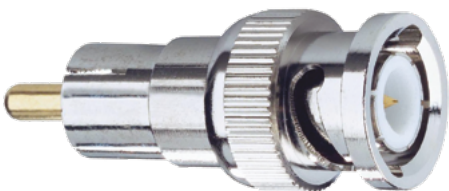
Adjust your disk sensitivity to get the perfect voltage for your acquisition system. Disks can be adjusted from 0.01 V/W up to 10 V/W depending on the model.

Filtering

Eliminate the high frequency noise coming from the environment with the integrated low-pass filter of our PCB.

CONNECTIVITY

Gentec-EO offers you several types of output connectors, from the more standard DB15, BNC and Molex to any exotic type you may need.



DB15

This connector contains an EEPROM with custom calibration data for both power and energy detectors.

BNC

The BNC output gives you fast, easy installation and direct connection to an oscilloscope

Molex or bare wires

The internal PCB gives an amplified signal output that can be accessed via a Molex connector and cable or bare wires. It is convenient for integrated systems.

CUSTOM / OEM PRODUCTS

Overview of the different models

Almost anything you see in our product line can be turned into an OEM unit! We also offer standard OEM products, at different levels of integration: from the simple thermopile disk to a complete head with internal PCB for signal anticipation and amplification.



UD SERIES

- Thermal sensor disks
- Designed for integration
- Many sizes and absorber choices:
 - 10, 12, 19, 25, and 55 mm Ø apertures
 - Broadband or high damage threshold coatings

■ THERMAL SENSOR DISKS

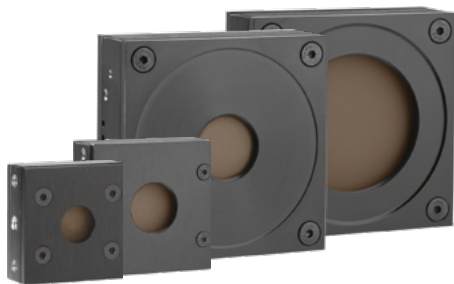
Available with
integra



UP SERIES

- Complete thermal heads with cooling modules
- Several sizes, coolings and absorber choices:
 - Apertures from 10 to 55 mm Ø
 - Broadband or high damage threshold coatings
 - Convection, fan or water-cooled
- DB15, USB, RS-232 or wireless

■ THERMAL SENSOR HEADS



UP SERIES WITH PCB

- Complete thermal heads with cooling modules
- Internal PCB for amplification, anticipation and filtering
- Several sizes, coolings and absorber choices:
 - 10, 12, 19, 25, 50 and 55 mm Ø apertures
 - Broadband or high damage threshold coatings
 - Convection, fan or water-cooled
- DB15, BNC or Molex connector, or bare wires

■ THERMAL SENSOR HEADS WITH PCB



CUSTOM DESIGN EXAMPLES

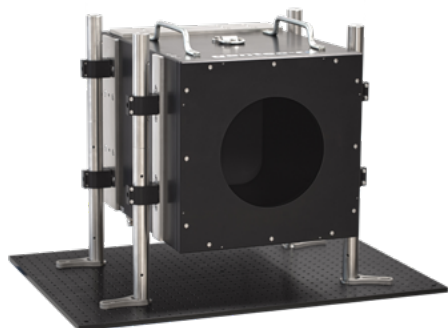
Specifications



After over 50 years of experience in the laser beam measurement business, we have developed many customized solutions, sometimes for very unusual applications! This section is only a small portion of the projects we have accomplished for our customers, so do not hesitate to contact us with any special need you may have. We are always striving to find the perfect solution for your application!

CUSTOM DESIGN EXAMPLES

Specifications

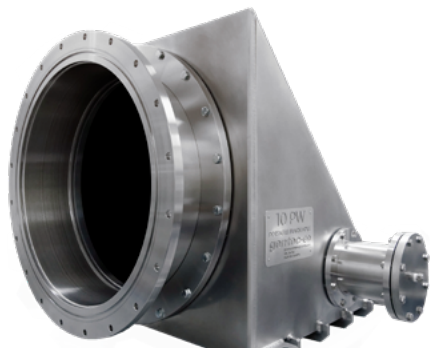


EXTREMELY HIGH POWER, LOW BACK-REFLECTIONS

When working at extremely high average power, even a low % of back-reflections can be dangerous. To manage the back-reflections and provide a safer working environment, we can equip your high-power detector with a water-cooled "TUBE" extension.

This custom project example can measure up to 100 kW of average power continuously, and less than 4 % of the incident radiation is backscattered.

- CUSTOM-DESIGNED HIGH-POWER DETECTOR

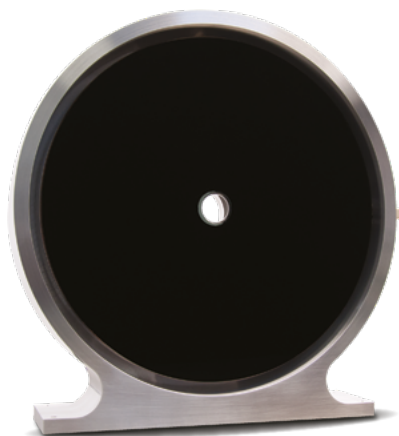


"10 PW PORTABLE BLACK HOLE"

Gentec-EO is the only supplier able to manufacture beam dumps able to withstand the tremendous peak power of a 10-petawatt laser, in a high vacuum environment.

By working closely with our client, we have designed the only existing beam dump that can fulfill the task of capturing and dissipating the energy contained in the single pulses of the ELI-NP end-of-line laser beams. Furthermore, this product was designed to be operated without external cooling, which simplifies its installation and makes it usable in a wide range of applications.

- UNRIVALED DAMAGE THRESHOLDS: UP TO 200 J/CM² FOR fs PULSES
- EXTREMELY LOW BACK-REFLECTIONS: < 0.02%



"HOLLOW" DETECTOR

This special calorimeter demonstrates the extent of Gentec-EO's customization capabilities. This product fulfills the requirements for the newest lasers for high energetic beam experimentation.

- High energy at low repetition rate for continuous measurement
- Femtosecond pulse
- Very large diameter with different shapes & sizes available
- Offers the flexibility to measure both power or energy
- Center hole option to let an electron beam through

- SHORT PULSES, HIGH ENERGIES
- VARIOUS SHAPES & SIZES

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CUSTOM DESIGN EXAMPLES

Specifications

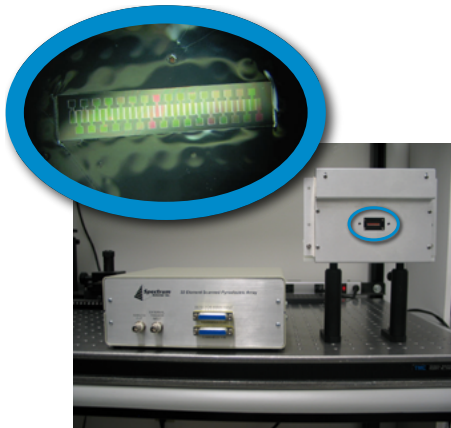


OPTICAL TRAP DETECTORS

Our optical TRAP detectors and their preamplifiers are used as primary spectral transfer standards in many metrology laboratories around the world.

These unique detectors are based on the use of two or three silicon photodiodes in an optical TRAP configuration. This results in extremely high quantum efficiency (QE) of greater than 99%. This extremely high QE renders the calibration uncertainty to record lows and allows one to calculate the precise current responsivity (A/W) at wavelengths in the 400 to 950 nm range using physical constants.

- HIGH QUANTUM EFFICIENCY
- HIGH PRECISION, THERMALLY STABLE, MULTI-GAIN PREAMPLIFIER



32-CHANNEL THZ PYROELECTRIC ARRAY

This self-scanned, linear, 32-element pyroelectric detector array was designed for use on a THz spectrometer. The spectrometer is used to characterize the "bunch length" of a high energy electron beam. It captures pulsed THz radiation at the 100 nJ level that help create interferograms as a diagnostic.

- BROAD SPECTRAL RESPONSE FROM 0.1 TO 3000 μm
- NOISE LEVEL LESS THAN 1 nJ



TEMPERATURE-CONTROLLED POWER METERS

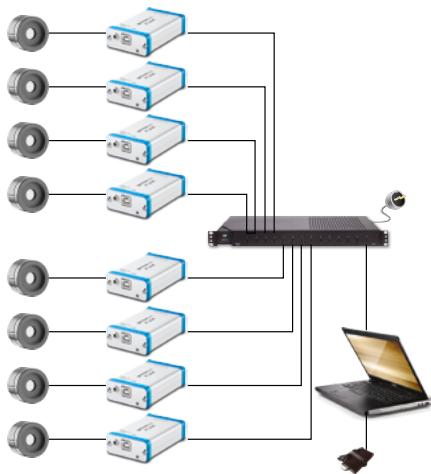
Our temperature-controlled pyroelectric power detectors were designed for NIST. They are used as a spectral transfer standard, from 0.6 to 24 μm for their IR detector calibration systems.

The detector features BL black absorbing carbon coating for flat spectral response. The detector is mated to a thermoelectric cooler which maintains the probe's temperature at $25\text{ }^{\circ}\text{C} \pm 0.05\text{ }^{\circ}\text{C}$. This results in the ultimate measurement stability: the voltage responsivity (V/W) is stable to $\pm 0.1\%$.

- THE ULTIMATE MEASUREMENT STABILITY

CUSTOM DESIGN EXAMPLES

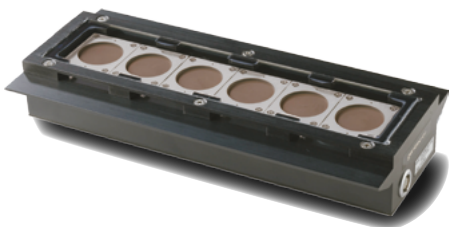
Specifications



OCTOLINK

OCTOLINK is our multichannel software that was specifically designed for the simultaneous measurement of a large set of power detectors. As its name indicates, OCTOLINK allows the measurement of up to 8 devices simultaneously, all on a combined control screen. Furthermore, this tool offers full flexibility on the functionalities, allowing to control, compare and collect data of multiple detectors in a simple but effective manner. The channels can be user-set, allowing a transparent integration in the existing systems. Pass-fail feature and complete data logging make OCTOLINK an ideal and inexpensive solution for long term power monitoring.

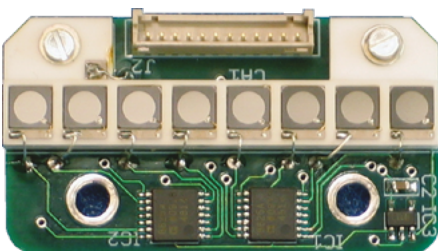
- MEASURE 8 DETECTORS SIMULTANEOUSLY
- USER-SETTABLE INTERFACE



6-ELEMENT DETECTOR BAR

Custom detector integration that monitors multiple lasers in a system. This detector bar included six independent power sensors, covered by protection windows with anti-reflective coating, presence sensors, on-board signal conditioning and acquisition to instantly measure power and communicate with the system through industrial serial protocol.

- 6 ELEMENTS ON ONE BOARD
- INSTANTANEOUS POWER MEASUREMENT OF ALL 6 ELEMENTS
- DETECTOR ELEMENTS PROTECTED BY WINDOWS WITH AR COATING



8-CHANNEL ARRAY FOR THZ TOMOGRAPHY

This eight-element, pyroelectric detector array was designed for use in a THz tomography system. It was used to analyze high pressure flames by measuring absorption in the water spectral bands, using THz radiation in the 0.5 to 2 THz region.

The detector elements are 3 mm diameter, accurately spaced on 5 mm centers. Its high responsivity and very low noise level allow precise detection of weak signals.

- 8-CHANNEL PYROELECTRIC ARRAY
- 0.5 TO 2 THZ RANGE
- HIGH VOLTAGE RESPONSIVITY

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CUSTOM / OEM PRODUCTS



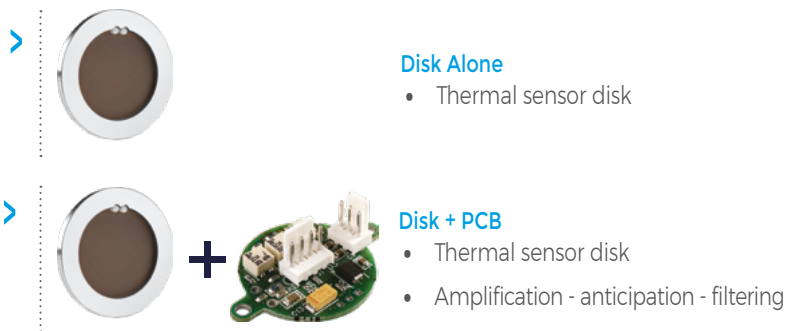
Thermal sensor disks, 10 - 55 mm Ø, 200 µW - 500 W



HOW TO USE SENSOR DISKS

The UD thermal sensor disks were designed for integration into laser systems. They are the solution if you are engineering the cooling and signal processing into your system already.

The chart below and on the next page show the various possibilities that Gentec-EO offers to OEM users. The choice of a level of integration depends on your needs in terms of calibration, output signal level, cooling availability, etc.



KEY FEATURES

- > **DESIGNED FOR INTEGRATION**
With a broad bandwidth and high power densities
- > **VERY THIN PROFILES**
Starting at only 2 mm deep
- > **VARIOUS APERTURE SIZES**
Choose your aperture from 10 mm Ø to 55 mm Ø
- > **2 LEVELS OF INTEGRATION**
 - Disk alone
 - Disk + PCB
- > **CUSTOM PRODUCTS**
Contact us for more options!



	UD10-2-H5-L	UD12-70-H5	UD19-50-W5	UD19-200-H9	UD25-350-H12	UD55-700-HD
MAX AVERAGE POWER (WATER-COOLED / FAN-COOLED)	2 W / 2 W	70 W / 30 W	50 W / 50 W	200 W / 110 W	350 W / 250 W	700 W / 600 W
EFFECTIVE APERTURE	10 mm ϕ	12 mm ϕ	19 mm ϕ	19 mm ϕ	25 mm ϕ	55 mm ϕ

MEASUREMENT CAPABILITY						
Spectral range	0.19 - 20 μm	0.19 - 20 μm	0.19 - 10 μm	0.19 - 20 μm	0.19 - 20 μm	0.19 - 20 μm
Noise equivalent power	0.1 mW	1 mW	1 mW	3 mW	10 mW	45 mW
Rise time (nominal) ^{a, b}	3.0 s	1.6 s	5 s	4.5 s	7.9 s	14 s
Sensitivity (typ into 100 kΩ load) ^b	2 mV/W	0.53 mV/W	0.65 mV/W	0.23 mV/W	0.1 mV/W	0.03 mV/W
Energy mode						
Sensitivity	2.4 mV/J	0.84 mV/J	0.33 mV/J	0.23 mV/J	0.05 mV/J	0.008 mV/J
Maximum measurable energy ^c 3 J	5 J	200 J	200 J	25 J	40 J	200 J
Noise equivalent energy ^a	5 mJ	20 mJ	23 mJ	60 mJ	200 mJ	250 mJ

DAMAGE THRESHOLDS						
Maximum average power density	36 kW/cm ²	36 kW/cm ²	100 kW/cm ²	45 kW/cm ²	45 kW/cm ²	45 kW/cm ²
Maximum energy density						
1064 nm, 360 μs, 5 Hz	5 J/cm ²	5 J/cm ²	100 J/cm ²	9 J/cm ²	9 J/cm ²	9 J/cm ²
1064 nm, 7 ns, 10 Hz	1 J/cm ²	1 J/cm ²	1.1 J/cm ²	1 J/cm ²	1 J/cm ²	1 J/cm ²
532 nm, 7 ns, 10 Hz	0.6 J/cm ²	0.6 J/cm ²	1.1 J/cm ²	0.6 J/cm ²	0.6 J/cm ²	0.6 J/cm ²
266 nm, 7 ns, 10 Hz	0.3 J/cm ²	0.3 J/cm ²	0.7 J/cm ²	0.3 J/cm ²	0.3 J/cm ²	0.3 J/cm ²

PHYSICAL CHARACTERISTICS						
Absorber	H5	H5	W5	H9	H12	HD
Dimensions	44 ϕ x 3D mm	36 ϕ x 2D mm	44 ϕ x 3D mm	44 ϕ x 3D mm	54 ϕ x 3D mm	85 ϕ x 4D mm
Weight (head only)	7 g	4 g	7 g	7 g	13 g	180 g

ORDERING INFORMATION						
Product page						

- a. These characteristics depend on the thermal management and electronics provided by the user. Packaging, cooling and electronics similar to our UP Series detectors will provide similar performances. See UP Series specifications sheets for more details. Actual performance depends on the tradeoffs in a user's design. It may be possible to enhance some performance parameters at the expense of others.
- b. Without anticipation algorithm or circuitry.
- c. For 360 μs pulses. Higher pulse energy possible for long pulses (ms), less for short pulses (ns).

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