gRAY

Laser Power Detectors

greenTEG

For fast and accurate measurements

gRAY
Thermal Laser Power Detectors

Advantages

Laser power monitoring is crucial in ensuring the optimal operation of your laser system.

Our laser power detectors measure in real time and provide you with accurate data. By delivering information about the laser power, the gRAY detectors allow you to monitor and control your laser system. Since all gRAY modules are based on thermal sensors, they detect radiation power independent of the laser wavelength.

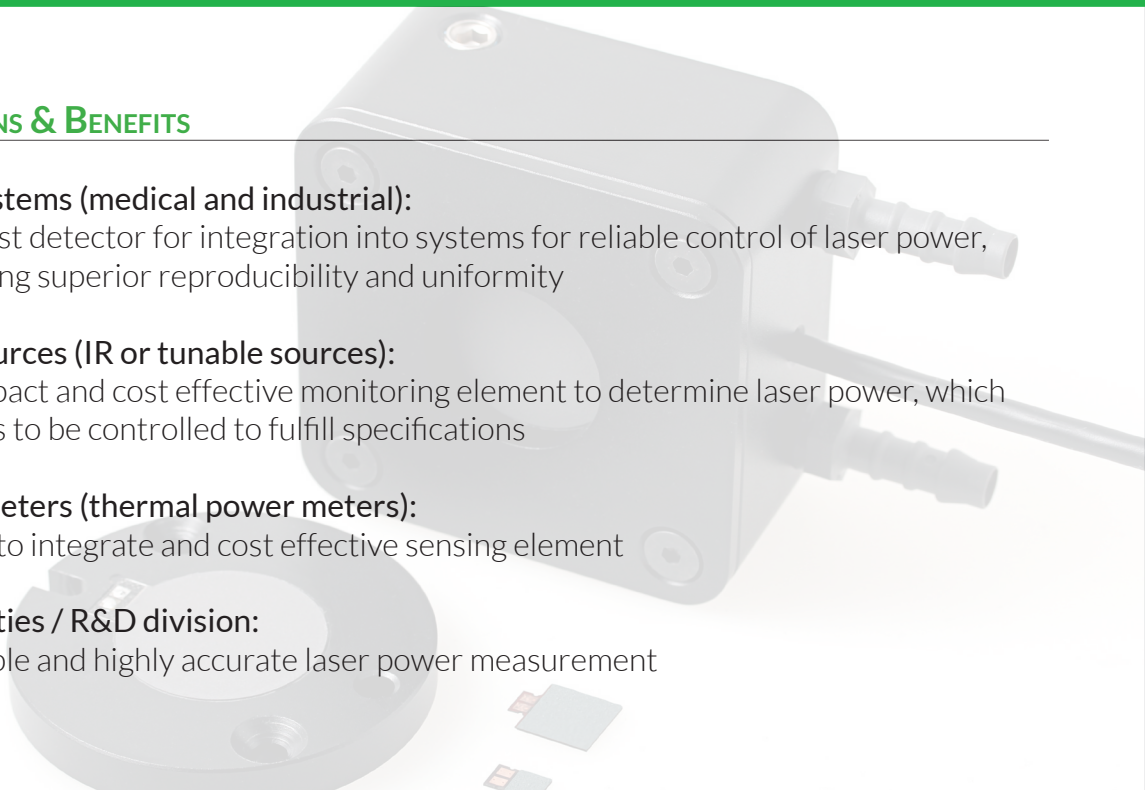
Applications & Benefits

- **Laser systems (medical and industrial):**
  Robust detector for integration into systems for reliable control of laser power, yielding superior reproducibility and uniformity

- **Laser sources (IR or tunable sources):**
  Compact and cost effective monitoring element to determine laser power, which needs to be controlled to fulfill specifications

- **Power meters (thermal power meters):**
  Easy to integrate and cost effective sensing element

- **Universities / R&D division:**
  Flexible and highly accurate laser power measurement



gRAY Overview

Key Features of all gRAY Detectors

- Large spectral range (UV to MIR)
- Fast response time
- Compact design

Our product names contain the main specs of our detectors. For example, the 50 W power head with water cooling is named:

C 50 - H W

Detector type	Max. power	Package	Cooling method

Types	Packages	Cooling methods
Type B Type C	Sensor Mounted Housed	Conduction, convection Water cooling

	Product Name	Power Range	Aperture Size	Application
Housed Detectors	**C05-HC**	5 mW to 5 W	Ø 25 mm	Laser systems/standalone
	**C10-HC**	10 mW to 10 W	Ø 25 mm	Laser systems/standalone
	C50-HW	50 mW to 50 W	Ø 25 mm	Laser systems/standalone
	C100-HW	100 mW to 100 W	Ø 25 mm	Laser systems/standalone
Mounted Detectors	**C50-MC**	50 mW to 50 W	Ø 26 mm	Laser systems/power meters
	**B05-MC**	10 µW to 5 W	10x10 mm^2	Laser systems/power meters /standalone
Bare Die Components	**B01-SC**	100 µW to 1 W	4.4 x 4.4 mm^2	Laser sources/laser systems /power meters
	**B05-SC**	100 µW to 5 W	10 x 10 mm^2	Laser sources/laser systems /power meter

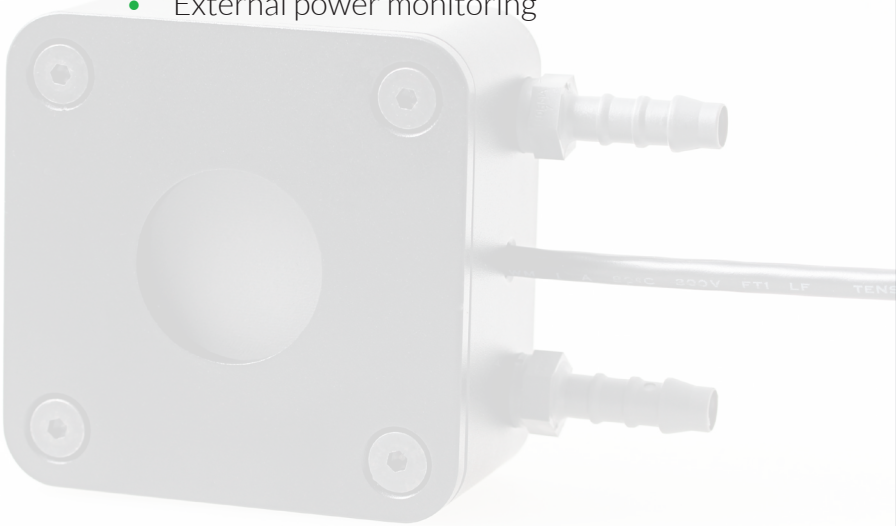
gRAY
Housed Detectors

Key Features

- Absolute power sensing of laser beams up to 100 W
- 200 ms rise time
- Full electrical and thermal integration provided
- Robust design for system integration or standalone applications

Application

- Integration into laser systems
- External power monitoring



Product Name	C05-HC	C10-HC	C50-HW	C100-HW
Sensing Area (Ø) [mm]	25	25	25	25
Max. Power [W]	5	10	50	100
Min. Detectable Power [mW]	5	10	50	100
Response Time (0 - 95%) [s]	0.2	0.2	0.2	0.2
Max. Power Density [kW/cm^2]	1.5	1.5	1.5	1.5
Spectral Range [µm]	0.19 - 15	0.19 - 15	0.19 - 15	0.19 - 15
Sensitivity [mV/W]	2000	1000	200	100
Cooling Method	conduction, convection	conduction, convection	water cooling	water cooling
Connector	4 wired cable	4 wired cable	4 wired cable	4 wired cable

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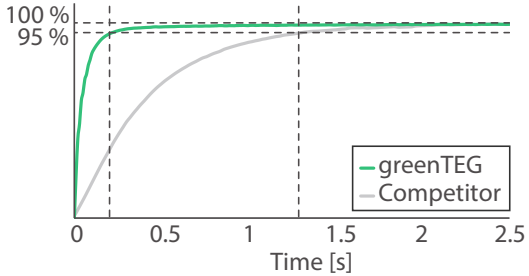
Mounted High Power Detector

Key Features

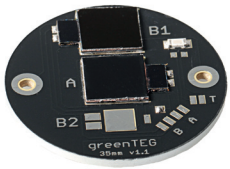
- Absolute power sensing of laser beams up to 100 W
- 200 ms rise time
- Compact design for versatile system integration
- Optional: Amplification circuit board for electrical integration

Application

- Integration into power meters
- Integration into laser systems



Product Name	C50-MC
Sensing Area (Ø) [mm]	26
Max. Power [W]	50 (100 with active cooling)
Min. Detectable Power [mW]	50
Response Time (0 - 95%) [s]	0.2
Max. Power Density [kW/cm^2]	1.5
Spectral Range [µm]	0.19 - 15
Min. Sensitivity [mV/W]	0.5
Cooling Method	conduction, convection
Amplification board	optional



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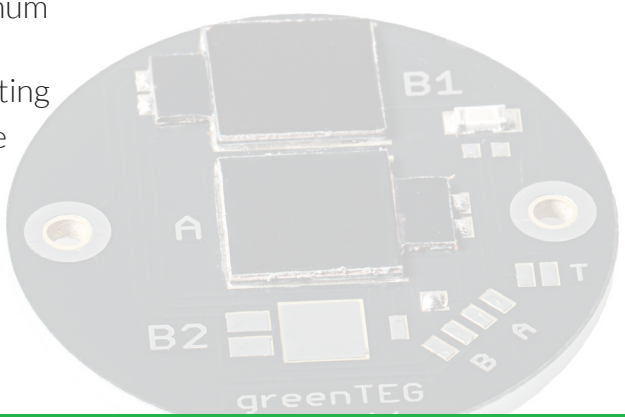
Mounted Detector

Key Features

- Mounted on a metal-core PCB; no thermal integration needed
- 10 µW to 5 W power range
- Thermal background compensation
- Optional: integrated NTC or platinum thermistor
- Simple, compact and robust mounting
- Available with NIST/PTB traceable calibration

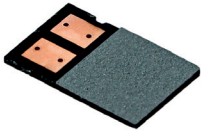
Application

- Integration into power meters
- Integration into laser systems
- External power monitoring



Product Name	B05-MC
Sensing Area [mm x mm]	10.0 x 10.0
Max. Power [W]	5
Min. Detectable Power [µW]	10
Response Time (0 - 95%) [s]	0.5[a] / 1.5
Max. Power Density [kW/cm^2]	1.5
Spectral Range [µm]	0.19 - 15
Min. Sensitivity [mV/W]	80
Cooling Method	conduction, convection
Integrated NTC or Platinum Thermistor	optional

[a] Anticipated Signal



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Bare Die Components

Key Features

- 100 µW to 5 W power range
- Linear power response
- Signal independent of illumination angle
- Ultra-thin design
- Simple integration on PCBs
- Attractive OEM pricing
- Various sizes available (2x2 to 30x30 mm^2)

Application

- Integration into power meters
- Integration into laser sources and systems

Product Name	B01-SC	B05-SC
Sensing Area [mm x mm]	4.4 x 4.4	10.0 x 10.0
Max. Power [W]	1	5
Min. Detectable Power [µW]	100	100
Response Time (0-95%) [s]	0.7[a] / 2.1	0.7[a] / 2.1
Max. Power Density [kW/cm^2]	1.5	1.5
Spectral Range [µm]	0.19 - 15	0.19 - 15
Min. Sensitivity [mV/W]	80	80
Cooling Method	conduction, convection	conduction, convection

[a] Anticipated Signal

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Company Overview

We Offer

With our new thermal laser power detectors, we provide you with fast and accurate power monitoring devices. Integrating these into your system will supply you and your customers with a key parameter that will enable more reliable system operation.

You will benefit from working with us through

- Laser power detectors with unique technical features
- Know-how of thermal and electronic integration of thermal power detectors into applications
- Partnerships with OEMs, system integrators and distributors for bringing new products to market
- Development of customized sensors and systems for OEM customers

Contact us and tell us about your application ideas. We will support you to find the best solution for your requirements.

About

greenTEG develops, manufactures and markets thermal sensor solutions. The company was founded in 2009 as an ETH Zurich spin-off and has since built up an international customer base, coupled with a global distributor network.

greenTEG's thermal sensors are integrated into diverse applications by customers active in markets such as laser, building technologies, medtech, automotive, processing industry and R&D.

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