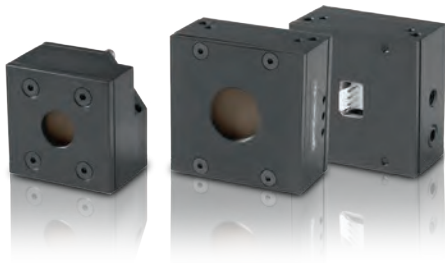


# PRESENTATION

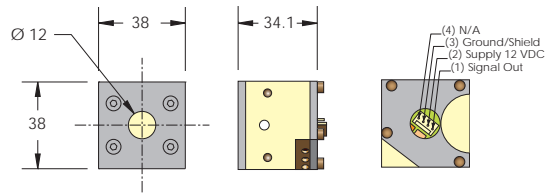
## PRODUCT CHARACTERISTICS

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. We have built our expertise on detector compactness on our exclusive modular design. Users can mix and match existing detectors and cooling modules from a large set of combinations, thus obtaining the smallest detector possible.



### PERFORMANCE

If you select an Ultra Disk (UD Series), you can use our external PCB for signal anticipation, amplification and filtering. We can also integrate a PCB inside complete detectors. See the UP SERIES WITH PCB (Page 136) for details.



#### ANTICIPATION

0-95% of the signal in as quickly as 0.3 sec with the small UD12-70-H5 and in 0.6 sec with the UD19-200-H5 using our external PCB.

#### AMPLIFICATION

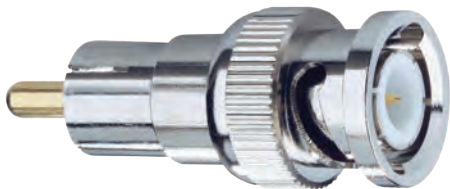
Adjust your disk sensitivity to get the perfect voltage for your acquisition system. Disks can be adjusted from 0.6 to 2 V/W.

#### 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 DB-15, BNC and Molex to any exotic type you may need.



#### DB-15

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 the best EMI noise shielding. Perfect for the sensitive Energy Detectors.

#### MOLEX

With the Molex connector and pigtail, you join the power and signal wires of the pigtail to your system. Easy to unplug for service.

# PRESENTATION

## 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.



See page [132](#)

### 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



See page [134](#)

### UP SERIES

- Complete Thermal Heads with Cooling Modules
- 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
- BNC, Molex or DB-15 Connectors

### THERMAL SENSOR HEADS



See page [136](#)

### 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
- BNC, Molex or DB-15 Connectors

### THERMAL SENSOR HEADS WITH PCB

# UD SERIES

Thermal Sensor Disks, 10 - 55 mm Ø, 200µm - 500W



## KEY FEATURES

1. **DESIGNED FOR INTEGRATION**  
With a broad bandwidth and high power densities
2. **VERY THIN PROFILES**  
Starting at only 2 mm deep
3. **VARIOUS APERTURE SIZES**  
Choose your aperture from 10 mm Ø to 55 mm Ø
4. **2 LEVELS OF INTEGRATION**
  - Disk alone
  - Disk + PCB

## AVAILABLE MODELS



UD10-2-H5-L  
(10 mm-2 W)



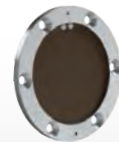
UD12-70-H5  
(12 mm-70 W)



UD19-150-H5  
(19 mm-150 W)



UD19-200-H9  
(19 mm-200 W)



UD25-300-H9/H12  
(25 mm-350 W)



UD55-400-H9/H12  
(55 mm-500 W)



UD19-50-W5  
(19 mm-100 kW/cm²)

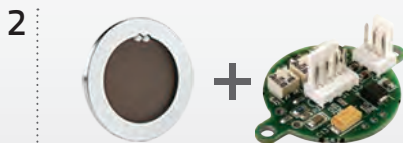
## HOW TO USE SENSOR DISKS

The Ultra 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.



**Disk Alone**  
Thermal Sensor Disk



**Disk + PCB**

- Thermal Sensor Disk
- Amplification - Anticipation - Filtering

## SEE ALSO

- HOW IT WORKS
- ABSORPTION CURVES
- LIST OF ALL ACCESSORIES

14  
90  
190



# UD SERIES

## SPECIFICATIONS



	UD10-2-H5-L	UD12-70-H5	UD19-150-H5	UD19-200-H9	UD25-300-H9(H12)	UD55-400-H9(H12)	UD19-50-W5
<b>MAX AVERAGE POWER (CONTINUOUS / 1 MINUTE)</b>	2 W / 2 W	70 W / 110 W	150 W / 190 W	200 W / 200 W	300 W / 300 W (350 W / 350 W)	400 W / 400 W (500 W / 500 W)	50 W / 85 W
<b>EFFECTIVE APERTURE</b>	10 mm Ø	12 mm Ø	19 mm Ø	19 mm Ø	25 mm Ø	55 mm Ø	17 mm Ø
<b>MEASUREMENT CAPABILITY</b>							
Spectral Range	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 10 µm
Noise Equivalent Power	0.2 mW	1 mW	1 mW	3 mW	3 mW (10 mW)	5 mW (15 mW)	1 mW
Rise Time (nominal) <sup>a,b</sup>	2.7 sec	1.6 sec	2.8 sec	4.5 sec	5 sec (7.9 sec)	11 sec (18 sec)	5 sec
Sensitivity (typ into 100 kΩ load) <sup>b</sup>	2 mV/W	0.53 mV/W	0.65 mV/W	0.23 mV/W	0.23 mV/W (0.1 mV/W)	0.12 mV/W (0.06 mV/W)	0.65 mV/W
Energy Mode							
Sensitivity	---	0.84 mV/J	0.65 mV/J	0.23 mV/J	0.14 mV/J (0.05 mV/J)	0.028 mV/J (0.015 mV/J)	0.33 mV/J
Maximum Measurable Energy <sup>c</sup>	---	5 J	15 J	25 J	40 J	200 J	200 J
Noise Equivalent Energy <sup>a</sup>	---	20 mJ	20 mJ	60 mJ	200 mJ	250 mJ	23 mJ
<b>DAMAGE THRESHOLDS</b>							
Maximum Average Power Density	36 kW/cm <sup>2</sup>	36 kW/cm <sup>2</sup>	36 kW/cm <sup>2</sup>	45 kW/cm <sup>2</sup>	45 kW/cm <sup>2</sup>	45 kW/cm <sup>2</sup>	100 kW/cm <sup>2</sup>
Pulsed Laser Damage Thresholds							
1064 nm, 360 µs, 5 Hz	5 J/cm <sup>2</sup>	5 J/cm <sup>2</sup>	5 J/cm <sup>2</sup>	9 J/cm <sup>2</sup>	9 J/cm <sup>2</sup>	9 J/cm <sup>2</sup>	100 J/cm <sup>2</sup>
1064 nm, 7 ns, 10 Hz	1 J/cm <sup>2</sup>	1 J/cm <sup>2</sup>	1 J/cm <sup>2</sup>	1 J/cm <sup>2</sup>	1 J/cm <sup>2</sup>	1 J/cm <sup>2</sup>	1.1 J/cm <sup>2</sup>
532 nm, 7 ns, 10 Hz	0.6 J/cm <sup>2</sup>	0.6 J/cm <sup>2</sup>	0.6 J/cm <sup>2</sup>	0.6 J/cm <sup>2</sup>	0.6 J/cm <sup>2</sup>	0.6 J/cm <sup>2</sup>	1.1 J/cm <sup>2</sup>
266 nm, 7 ns, 10 Hz	0.3 J/cm <sup>2</sup>	0.3 J/cm <sup>2</sup>	0.3 J/cm <sup>2</sup>	0.3 J/cm <sup>2</sup>	0.3 J/cm <sup>2</sup>	0.3 J/cm <sup>2</sup>	0.7 J/cm <sup>2</sup>
<b>PHYSICAL CHARACTERISTICS</b>							
Absorber	H5	H5	H5	H9	H9/(H12)	H9/(H12)	W5
Dimensions	44Ø x 4D mm	36Ø x 2D mm	44Ø x 3D mm	44Ø x 3D mm	54Ø x 3D mm	85Ø x 4D mm	44Ø x 3D mm
Weight (head only)	7 g	4 g	7 g	7 g	13 g	39 g	7 g
<b>ORDERING INFORMATION</b>							
Product Name	UD10-2-H5-L	UD12-70-H5	UD19-150-H5	UD19-200-H9	UD25-300-H9	UD55-400-H9	UD19-50-W5
Product Number	202832	200382	200262	200576	200263	200264	200761
Product Name					UD25-350-H12	UD55-500-H12	
Product Number					202378	201220	

\* Other Sizes Available Upon Request

a. These characteristics depend on the thermal management and electronics provided by the user. Packaging, cooling and electronics similar to our Ultra Series (UP) 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 when customized for long pulses (ms), less for short pulses (ns).

Specifications are subject to change without notice

# UP SERIES

Thermal Sensor Heads, 10 - 55 mm Ø, 50 µm - 700 W



## KEY FEATURES

1. **FULLY INTEGRABLE THERMOPILE SENSOR HEADS**  
OEM Sensors designed to integrate easily into existing systems
2. **MODULAR CONCEPT**  
Increase the power capability of your detector : 5 different cooling modules
3. **VERY HIGH DAMAGE THRESHOLDS**  
Up to 100 kW/cm<sup>2</sup> in average power density
4. **CHOICE OF CONNECTORS**  
DB-15, BNC, Molex

## AVAILABLE MODELS



UP10-H  
(10 mm Ø -  
Up to 2 W)



UP12-H  
(12 mm Ø -  
Up to 110 W)



UP19-H  
(19 mm Ø -  
Up to 200 W)



UP25-H  
(25 mm Ø -  
Up to 350 W)



UP55-H/HD  
(55 mm Ø -  
Up to 700 W)



UP19-W  
(18 mm Ø -  
100 kW/cm<sup>2</sup>)



UP50-W  
(50 mm Ø -  
100 kW/cm<sup>2</sup>)



### Head Only

- Thermal Sensor Head (with natural response)
- Connector



### Head with PCB & Connector

- Thermal Sensor Head
- Amplification - Anticipation - Filtering
- Connector



### Head & Display

- Thermal Sensor Head
- Connector
- Display

## SEE ALSO

HOW IT WORKS	14
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ABSORPTION CURVES	90
COMPATIBLE MONITORS	
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TUNER	24
UNO	26
S-LINK	28
P-LINK	30
M-LINK	32
LIST OF ALL ACCESSORIES	190

# UP SERIES

## SPECIFICATIONS



\*Also traceable to NRC-CNRC



	UP10-H	UP12-H	UP19-H	UP25-H	UP55-H/HD	UP19-W	UP50-W
<b>MAX AVERAGE POWER<sup>a</sup> (CONTINUOUS / 1 MINUTE)</b>	2 W / 2 W	70 W / 110 W	200 W / 200 W	350 W / 350 W	700 W / 700 W	50 W / 85 W	50 W / 85 W
<b>EFFECTIVE APERTURE</b>	10 mm Ø	12 mm Ø	19 mm Ø	25 mm Ø	55 mm Ø	17 mm Ø	50 mm Ø
<b>MEASUREMENT CAPABILITY</b>							
Spectral Range	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 10 µm	0.19 – 10 µm
Available Cooling Modules (Max. Power)							
Standalone (S)	2 W	10 W	15 W	40 W	40 W	15 W	40 W
Heatsink (H)	---	20 W	30 W	100 W	100 W	30 W	50 W
Large Heatsink (L)	---	---	50 W	---	---	50 W	---
Fan (F)	---	---	110 W	250 W	300 W	50 W	50 W
Water (W)	---	70 W	150 W	350 W	500 W	50 W	50 W
Water (W)	---	---	200 W	---	700 W (HD)	---	---
Noise Equivalent Power	0.05 mW <sup>b</sup>	1 mW	1-3 mW	3-10 mW	5-45 mW	1 mW	5 mW
Rise Time (nominal)	2.7 sec	1.6 sec	2.8-4.5 sec	5-7.9 sec	11-18 sec	5 sec	16 sec
Sensitivity (typ into 10 MΩ load)	2 mV/W	0.53 mV/W	0.23-0.65 mV/W	0.1-0.23 mV/W	0.03-0.12 mV/W	0.65 mV/W	0.12 mV/W
Maximum Average Power Density <sup>b</sup>	36 kW/cm <sup>2</sup>	36 kW/cm <sup>2</sup>	36-45 kW/cm <sup>2</sup>	45 kW/cm <sup>2</sup>	45 kW/cm <sup>2</sup>	100 kW/cm <sup>2</sup>	100 kW/cm <sup>2</sup>
<b>PHYSICAL CHARACTERISTICS</b>							
Effective Aperture	10 mm Ø	12 mm Ø	19 mm Ø	25 mm Ø	55 mm Ø	17 mm Ø	50 mm Ø
Absorber	H5	H5	H5/H9	H9/H12	H9/H12/HD	W5	W9
Dimensions <sup>c</sup>	50H x 50W x 20.6D mm	38H x 38W x 14D mm	50H x 50W x 20.6D mm	89H x 89W x 32D mm	89H x 89W x 32D mm	50H x 50W x 20.6D mm	89H x 89W x 32D mm
Weight <sup>c</sup>	160 g	130 g	160 g	680 g	620 g	160 g	620 g

AVAILABLE MODELS	UP10K-ZS-H5-L-DO	UP12E-10S-H5-DO	UP19K-15S-H5-DO	UP25N-40S-H9-DO	UP55N-40S-H9-DO	UP19K-15S-W5-DO	UP50N-40S-W9-DO
Standalone	UP10K-ZS-H5-L-DO	UP12E-10S-H5-DO	UP19K-15S-H5-DO	UP25N-40S-H9-DO	UP55N-40S-H9-DO	UP19K-15S-W5-DO	UP50N-40S-W9-DO
Heatsink	---	UP12E-20H-H5-DO	UP19K-30H-H5-DO	UP25N-100H-H9-DO	UP55N-100H-H9-DO	UP19K-30H-W5-DO	UP50N-50H-W9-DO
Large Heatsink	---	---	UP19K-50L-H5-DO	---	---	UP19K-50L-W5-DO	---
Fan-Cooled	---	---	UP19K-110F-H9-DO	UP25N-250F-H12-DO	UP55N-300F-H12-DO	UP19K-50F-W5-DO	UP50N-50F-W9-DO
Water-Cooled	---	UP12E-70W-H5-DO	UP19K-150W-H5-DO	UP25M-350W-H12-DO	UP55M-500W-H12-DO	UP19K-50W-W5-DO	UP50M-50W-W9-DO
	---	---	UP19K-200W-H9-DO	---	UP55M-700W-HD-DO	---	---

\* Other Sizes Available Upon Request

- a. For model with the most efficient cooling module available.  
 b. 0.2 mW with anticipation.  
 c. At 1064 nm, 10 W CW.  
 d. For standalone version. Ask gentec-EO for dimensions of other versions.

Specifications are subject to change without notice

# UP SERIES + PCB

Thermal Sensor Heads with Internal PCB, 10 - 55 mm Ø, 50 µm - 700 W



## KEY FEATURES

- FULLY INTEGRABLE THERMOPILE SENSOR HEADS**  
OEM Sensors designed to integrate easily into existing systems
- WITH INTERNAL PCB**  
Integrated amplification, anticipation and filtering
- MODULAR CONCEPT**  
Increase the power capability of your detector : 5 different cooling modules
- VERY HIGH DAMAGE THRESHOLDS**  
Up to 100 kW/cm<sup>2</sup> in average power density
- LARGEST CHOICE OF CONNECTORS**  
DB-15, BNC, Molex or custom

## AVAILABLE MODELS

- **UP10-H** 10 mm Ø, 12 W, Standard Broadband Coating (H5), 50 µm Noise Level
- **UP12-H** 12 mm Ø, 10 W, With Rear Molex Output
- **UP19-H** 19 mm Ø, 15-30-50-110-150-200 W, Standard Broadband Coating (H5 or H9)
- **UP25-H** 25 mm Ø, 40-100-250-350 W, Standard Broadband Coating (H9 or H12)
- **UP55-H/HD** 55 mm Ø, 40-100-300-500-700 W, Standard Broadband Coating (H9/H12 or HD)
- **UP19-W** 17 mm Ø, 15-30-50 W, High Damage Threshold 100 kW/cm<sup>2</sup> Coating (W5)
- **UP50-W** 50 mm Ø, 40-50 W, High Damage Threshold 100 kW/cm<sup>2</sup> Coating (W9)



## LEVELS OF INTEGRATION

- 

**Head Only**

  - Thermal Sensor Head (with natural response)
  - Connector
- 

**Head with PCB & Connector**

  - Thermal Sensor Head
  - Amplification - Anticipation - Filtering
  - Connector
- 

**Head & Display**

  - Thermal Sensor Head
  - Connector
  - Display

## SEE ALSO

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UNO	26
S-LINK	28
P-LINK	30
M-LINK	32
LIST OF ALL ACCESSORIES	190

# UP SERIES + PCB

## SPECIFICATIONS



NEW

	UP10-H	UP12-H	UP19-H	UP25-H	UP55-H/HD	UP19-W	UP50-W
<b>MAX AVERAGE POWER<sup>a</sup> (CONTINUOUS / 1 MINUTE)</b>	2 W / 2 W	10 W / 10 W	200 W / 200 W	350 W / 350 W	700 W / 700 W	50 W / 85 W	50 W / 85 W
<b>EFFECTIVE APERTURE</b>	10 mm Ø	12 mm Ø	19 mm Ø	25 mm Ø	55 mm Ø	17 mm Ø	50 mm Ø
<b>MEASUREMENT CAPABILITY</b>							
Spectral Range	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 20 µm	0.19 – 10 µm	0.19 – 10 µm
Available Cooling Modules (Max. Power)							
Standalone (S)	2 W	10 W	15 W	40 W	40 W	15 W	40 W
Heatsink (H)	---	---	30 W	100 W	100 W	30 W	50 W
Large Heatsink (L)	---	---	50 W	---	---	50 W	---
Fan (F)	---	---	110 W	250 W	300 W	50 W	---
Water (W)	---	---	150 W	350 W	500 W	50 W	85 W
Water (W)	---	---	200 W	---	700 W (HD)	---	---
Noise Equivalent Power	0.05 mW <sup>b</sup>	0.2 mW	0.2 mW	1-10 mW	2-45 mW	0.2 mW	3 mW
Rise Time (anticipated)	0.8 sec	0.3 sec	0.5 sec	1.3 sec	2-5 sec	1.4 sec	3.5 sec
Sensitivity (typ into 10 MΩ load)	1 V/W	400 mV/W	30-400 mV/W	24-150 mV/W	8-150 mV/W	400 mV/W	120-150 mV/W
Maximum Average Power Density <sup>c</sup>	36 kW/cm <sup>2</sup>	36 kW/cm <sup>2</sup>	36-45 kW/cm <sup>2</sup>	45 kW/cm <sup>2</sup>	45 kW/cm <sup>2</sup>	100 kW/cm <sup>2</sup>	100 kW/cm <sup>2</sup>
<b>PHYSICAL CHARACTERISTICS</b>							
Effective Aperture	10 mm Ø	12 mm Ø	19 mm Ø	25 mm Ø	55 mm Ø	17 mm Ø	50 mm Ø
Absorber	H5	H5	H5/H9	H9/H12	H9/H12/HD	W5	W9
Dimensions <sup>d</sup>	50H x 50W x 25.6D mm	38H x 38W x 28.6D mm	50H x 50W x 25.6D mm	89H x 89W x 32D mm	89H x 89W x 32D mm	50H x 50W x 25.6D mm	89H x 89W x 32D mm
Weight <sup>d</sup>	200 g	200 g	200 g	680 g	620 g	200 g	620 g
<b>ORDERING INFORMATION<sup>c</sup></b>							
Standalone	UP10K-25-H5-L-MT	UP12E-10S-H5-MT-B	UP19K-15S-H5-MT	UP25N-40S-H9-MT	UP55N-40S-H9-MT	UP19K-15S-W5-MT	UP50N-40S-W9-MT
Heatsink	---	---	UP19K-30H-H5-MT	UP25N-100H-H9-MT	UP55N-100H-H9-MT	UP19K-30H-W5-MT	UP50N-50H-W9-MT
Large Heatsink	---	---	UP19K-50L-H5-MT	---	---	UP19K-50L-W5-MT	---
Fan-Cooled	---	---	UP19K-110F-H9-MT	UP25N-250F-H12-MT	UP55N-300F-H12-MT	UP19K-50F-W5-MT	---
Water-Cooled	---	---	UP19K-150W-H5-MT	UP25M-350W-H12-MT	UP55M-500W-H12-MT	UP19K-50W-W5-MT	UP50M-50W-W9-MT
	---	---	UP19K-200W-H9-MT	---	UP55M-700W-HD-MT	---	---

\* Other Sizes Available Upon Request

a. For model with the most efficient cooling module available.

b. 0.2 mW with anticipation.

c. For standalone version. Ask gentec-EO for dimensions of other versions.

d. For convection-cooled models. Contact Gentec-EO for the weights and dimensions of the other cooling modules or see the specifications sheets of the corresponding UP Detectors.

Specifications are subject to change without notice