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 146) 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.
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:
  - 12, 19, 25, and 55 mm Ø Apertures
  - Broadband or High Damage Threshold Coatings

THERMAL SENSOR DISKS

See page 142

UP SERIES
- Complete Thermal Heads with Cooling Modules
- Several Sizes, Coolings and Absorber Choices:
  - 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 144

UP SERIES WITH PCB
- Complete Thermal Heads with Cooling Modules
- Internal PCB for Amplification, Anticipation and Filtering
- Several Sizes, Coolings and Absorber Choices:
  - 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

See page 146

QS SERIES
- TO5/TO8 Discrete or Hybrid Pyroelectric Detectors
- Available in 5 Sizes: 1, 2, 3, 5 and 9 mm Ø Apertures
- 6 Families of products to choose from
- Test Box Available for Hybrid Detectors

DISCRETE OR HYBRID PYROS
SMALL TO5/TO8 PACKAGES

See pages 148 to 158
OEM DETECTORS

UD SERIES
Thermal Sensor Disks, 12 - 55 mm Ø, 1 mW - 400 W

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 12 mm to 55 mm

4. **2 Levels of Integration**
   - Disk alone
   - Disk + PCB

AVAILABLE MODELS

- UD12-70-H5 (12 mm-70 W)
- UD19-150-H5 (19 mm-150 W)
- UD19-200-H9 (19 mm-200 W)
- UD25-300-H9 (25 mm-300 W)
- UD55-400-H9 (55 mm-400 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.

1. **Disk Alone**
   - Thermal Sensor Disk

2. **Disk + PCB**
   - Thermal Sensor Disk
   - Amplification - Anticipation - Filtering

SEE ALSO
# UD SERIES

## SPECIFICATIONS

### MODELS

|------------|-------------|-------------|-------------|-------------|------------|

### MAX AVERAGE POWER

<table>
<thead>
<tr>
<th>(CONTINUOUS / 1 MINUTE)</th>
<th>70 W / 110 W</th>
<th>150 W / 190 W</th>
<th>200 W / 200 W</th>
<th>300 W / 300 W</th>
<th>400 W / 400 W</th>
<th>50 W / 85 W</th>
</tr>
</thead>
</table>

### EFFECTIVE APERTURE

<table>
<thead>
<tr>
<th>12 mm Ø</th>
<th>19 mm Ø</th>
<th>19 mm Ø</th>
<th>25 mm Ø</th>
<th>55 mm Ø</th>
<th>17 mm Ø</th>
</tr>
</thead>
</table>

## MEASUREMENT CAPABILITY

<table>
<thead>
<tr>
<th>Spectral Range</th>
<th>0.19 – 20 µm</th>
<th>0.19 – 20 µm</th>
<th>0.19 – 20 µm</th>
<th>0.19 – 20 µm</th>
<th>0.19 – 20 µm</th>
<th>0.19 – 10 µm</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Noise Equivalent Power</th>
<th>1 mW</th>
<th>1 mW</th>
<th>3 mW</th>
<th>3 mW</th>
<th>5 mW</th>
<th>1 mW</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Rise Time (nominal) a b</th>
<th>1.6 sec</th>
<th>2.8 sec</th>
<th>4.5 sec</th>
<th>5 sec</th>
<th>11 sec</th>
<th>5 sec</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Sensitivity (typ. into 100 kΩ load) a</th>
<th>0.53 mV/W</th>
<th>0.65 mV/W</th>
<th>0.23 mV/W</th>
<th>0.23 mV/W</th>
<th>0.12 mV/W</th>
<th>0.65 mV/W</th>
</tr>
</thead>
</table>

### ENERGY MODE

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>0.84 mV/J</th>
<th>0.65 mV/J</th>
<th>0.23 mV/J</th>
<th>0.14 mV/J</th>
<th>0.03 mV/J</th>
<th>0.33 mV/J</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Maximum Measurable Energy c</th>
<th>5 J</th>
<th>15 J</th>
<th>25 J</th>
<th>40 J</th>
<th>200 J</th>
<th>200 J</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Noise Equivalent Energy a</th>
<th>20 mJ</th>
<th>20 mJ</th>
<th>60 mJ</th>
<th>0.2 J</th>
<th>0.25 J</th>
<th>23 mJ</th>
</tr>
</thead>
</table>

## DAMAGE THRESHOLDS

### Maximum Average Power Density

<table>
<thead>
<tr>
<th>36 kW/cm²</th>
<th>36 kW/cm²</th>
<th>45 kW/cm²</th>
<th>45 kW/cm²</th>
<th>45 kW/cm²</th>
<th>100 kW/cm²</th>
</tr>
</thead>
</table>

### Pulsed Laser Damage Thresholds

<table>
<thead>
<tr>
<th>1064 nm, 360 µs, 5 Hz</th>
<th>5 J/cm²</th>
<th>5 J/cm²</th>
<th>9 J/cm²</th>
<th>9 J/cm²</th>
<th>10 J/cm²</th>
</tr>
</thead>
<tbody>
<tr>
<td>1064 nm, 7 ns, 10 Hz</td>
<td>1 J/cm²</td>
<td>1 J/cm²</td>
<td>1 J/cm²</td>
<td>1 J/cm²</td>
<td>1.1 J/cm²</td>
</tr>
<tr>
<td>532 nm, 7 ns, 10 Hz</td>
<td>0.6 J/cm²</td>
<td>0.6 J/cm²</td>
<td>0.6 J/cm²</td>
<td>0.6 J/cm²</td>
<td>1.1 J/cm²</td>
</tr>
<tr>
<td>266 nm, 7 ns, 10 Hz</td>
<td>0.3 J/cm²</td>
<td>0.3 J/cm²</td>
<td>0.3 J/cm²</td>
<td>0.3 J/cm²</td>
<td>0.7 J/cm²</td>
</tr>
</tbody>
</table>

## PHYSICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Absorber</th>
<th>H5</th>
<th>H9</th>
<th>H9</th>
<th>H9</th>
<th>H9</th>
<th>W5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>36Ø x 2D mm</td>
<td>44Ø x 3D mm</td>
<td>44Ø x 3D mm</td>
<td>54Ø x 3D mm</td>
<td>85Ø x 4D mm</td>
<td>44Ø x 3D mm</td>
</tr>
<tr>
<td>Weight (head only)</td>
<td>4 g</td>
<td>7 g</td>
<td>7 g</td>
<td>13 g</td>
<td>39 g</td>
<td>7 g</td>
</tr>
</tbody>
</table>

## ORDERING INFORMATION

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Number (Including stand)</td>
<td>200382</td>
<td>200262</td>
<td>200576</td>
<td>200263</td>
<td>200264</td>
<td>200761</td>
</tr>
</tbody>
</table>

### PHYSICAL CHARACTERISTICS

- **Absorber**
  - H5
  - H9
  - H9
  - H9
  - H9
  - W5

- **Dimensions**
  - 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)**
  - 4 g
  - 7 g
  - 7 g
  - 13 g
  - 39 g
  - 7 g

### ORDERING INFORMATION

- UD12-70-H5
- UD19-150-H5
- UD19-200-H9
- UD25-300-H9
- UD55-400-H9
- UD19-50-W5

---

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, 12 - 55 mm Ø, 1 mW - 400 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/cm² in average power density

4. Choice of connectors
   DB-15, BNC, Molex

AVAILABLE MODELS

- UP12E
  (12 mm Ø-Up to 110 W)
- UP19K-H
  (19 mm Ø-Up to 200 W)
- UP25N(M)
  (25 mm Ø-Up to 350 W)
- UP55N(M)
  (55 mm Ø-Up to 500 W)
- UP19K-W5
  (19 mm Ø-100 kW/cm²)
- UP50N(M)-W9
  (50 mm Ø-100 kW/cm²)

LEVELS OF INTEGRATION

1. Head Only
   - Thermal Sensor Head (with natural response)
   - Connector

2. Head with PCB & Connector
   - Thermal Sensor Head
   - Amplification - Anticipation - Filtering
   - Connector

3. Head with PCB & Display
   - Thermal Sensor Head
   - Amplification - Anticipation - Filtering
   - Connector
   - Display

SEE ALSO

- HOW IT WORKS 12
- CALIBRATION 6
- TECHNICAL DRAWINGS 98
- ABSORPTION CURVES 103
- COMPATIBLE MONITORS
  - MAESTRO 18
  - UNO 24
  - S-LINK-2 26
  - P-LINK 28
# UP SERIES

## SPECIFICATIONS

### MODELS

<table>
<thead>
<tr>
<th></th>
<th>UP12E</th>
<th>UP19K-H</th>
<th>UP25N(M)</th>
<th>UP55N(M)</th>
<th>UP19K-W5</th>
<th>UP50N-W9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAX AVERAGE POWER</strong>&lt;br&gt;(CONTINUOUS / 1 MINUTE)</td>
<td>70 W / 110 W</td>
<td>200 W / 200 W</td>
<td>350 W / 350 W</td>
<td>500 W / 500 W</td>
<td>50 W / 85 W</td>
<td>50 W / 85 W</td>
</tr>
<tr>
<td><strong>EFFECTIVE APERTURE</strong></td>
<td>12 mm Ø</td>
<td>19 mm Ø</td>
<td>25 mm Ø</td>
<td>55 mm Ø</td>
<td>17 mm Ø</td>
<td>50 mm Ø</td>
</tr>
</tbody>
</table>

### MEASUREMENT CAPABILITY

<table>
<thead>
<tr>
<th>Spectral Range</th>
<th>0.19 – 20 µm</th>
<th>0.19 – 20 µm</th>
<th>0.19 – 20 µm</th>
<th>0.19 – 20 µm</th>
<th>0.19 – 10 µm</th>
<th>0.19 – 10 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available Cooling Modules (Max. Power)</td>
<td>Standalone (S)</td>
<td>10 W</td>
<td>15 W</td>
<td>40 W</td>
<td>40 W</td>
<td>15 W</td>
</tr>
<tr>
<td></td>
<td>Heatsink (H)</td>
<td>20 W</td>
<td>30 W</td>
<td>100 W</td>
<td>100 W</td>
<td>30 W</td>
</tr>
<tr>
<td></td>
<td>Large Heatsink (L)</td>
<td>–</td>
<td>50 W</td>
<td>–</td>
<td>–</td>
<td>50 W</td>
</tr>
<tr>
<td></td>
<td>Fan (F)</td>
<td>–</td>
<td>110 W</td>
<td>250 W</td>
<td>300 W</td>
<td>50 W</td>
</tr>
<tr>
<td></td>
<td>Water (W)</td>
<td>70 W</td>
<td>150 W</td>
<td>350 W</td>
<td>500 W</td>
<td>50 W</td>
</tr>
<tr>
<td></td>
<td>Water (W)</td>
<td>–</td>
<td>200 W</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Noise Equivalent Power</td>
<td>1 mW</td>
<td>1 mW</td>
<td>3 mW</td>
<td>5 mW</td>
<td>1 mW</td>
<td>5 mW</td>
</tr>
<tr>
<td>Rise Time (nominal)</td>
<td>1.6 sec</td>
<td>2.8 sec</td>
<td>5 sec</td>
<td>11 sec</td>
<td>5 sec</td>
<td>16 sec</td>
</tr>
<tr>
<td>Sensitivity (typ into 10 MΩ load)</td>
<td>0.53 mV/W</td>
<td>0.65 mV/W</td>
<td>0.23 mV/W</td>
<td>0.12 mV/W</td>
<td>0.65 mV/W</td>
<td>0.12 mV/W</td>
</tr>
<tr>
<td>Maximum Average Power Density</td>
<td>36 kW/cm²</td>
<td>36-45 kW/cm²</td>
<td>45 kW/cm²</td>
<td>45 kW/cm²</td>
<td>100 kW/cm²</td>
<td>100 kW/cm²</td>
</tr>
</tbody>
</table>

### PHYSICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Effective Aperture Diameter</th>
<th>12 mm Ø</th>
<th>19 mm Ø</th>
<th>25 mm Ø</th>
<th>55 mm Ø</th>
<th>17 mm Ø</th>
<th>50 mm Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absorber</td>
<td>H5</td>
<td>H5/H9</td>
<td>H9</td>
<td>H9</td>
<td>W5</td>
<td>W9</td>
</tr>
<tr>
<td>Dimensions (c)</td>
<td>38H x 38W x 140 mm</td>
<td>50H x 50W x 20.6D mm</td>
<td>89H x 89W x 32D mm</td>
<td>89H x 89W x 32D mm</td>
<td>50H x 50W x 20.6D mm</td>
<td>89H x 89W x 32D mm</td>
</tr>
<tr>
<td>Weight (c)</td>
<td>130 g</td>
<td>160 g</td>
<td>680 g</td>
<td>620 g</td>
<td>160 g</td>
<td>620 g</td>
</tr>
</tbody>
</table>

### ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Full Product Name (Standalone)</th>
<th>Product Number</th>
<th>Full Product Name (Heatsink)</th>
<th>Product Number</th>
<th>Full Product Name (Large Heatsink)</th>
<th>Product Number</th>
<th>Full Product Name (Fan)</th>
<th>Product Number</th>
<th>Full Product Name (Water)</th>
<th>Product Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP19K-200W-H9-DO</td>
<td>–</td>
<td>UP19K-50L-W5-DO</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>UP19K-50F-W9-DO</td>
<td>–</td>
<td>UP19K-50L-W5-DO</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

---

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

b. At 1064 nm, 10 W CW.

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

Specifications are subject to change without notice
OEM DETECTORS

UP SERIES + PCB
Thermal Sensor Heads with Internal PCB, 12 - 55 mm Ø, 1 mW - 400 W

KEY FEATURES

1. Fully Integrable Thermopile Sensor Heads
   OEM Sensors designed to integrate easily into existing systems

2. With Internal PCB
   Integrated amplification, anticipation and filtering

3. Modular Concept
   Increase the power capability of your detector:
   5 different cooling modules

4. Very High Damage Thresholds
   Up to 100 kW/cm² in average power density

5. Largest Choice of connectors
   DB-15, BNC, Molex or custom

AVAILABLE MODELS

- **UP12E**: 12 mm Ø, 10 W, With Rear Molex Output
- **UP19K-H**: 19 mm Ø, 15-30-50-110-150 W, Standard Broadband Coating (H5 or H9)
- **UP25N**: 25 mm Ø, 40-100-250-300 W, Standard Broadband Coating (H9 or H12)
- **UP55N**: 55 mm Ø, 40-100-300-400 W, Standard Broadband Coating (H9 or H12)
- **UP19K-W5**: 17 mm Ø, 15-30-50 W, High Damage Threshold 100 kW/cm² Coating (W5)
- **UP50N-W9**: 50 mm Ø, 40-50 W, High Damage Threshold 100 kW/cm² Coating (W9)

LEVELS OF INTEGRATION

1. **Head Only**
   - Thermal Sensor Head (with natural response)
   - Connector

2. **Head with PCB & Connector**
   - Thermal Sensor Head
   - Amplification - Anticipation - Filtering
   - Connector

3. **Head with PCB & Display**
   - Thermal Sensor Head
   - Amplification - Anticipation - Filtering
   - Connector
   - Display

SEE ALSO

| HOW IT WORKS | 12 |
| CALIBRATION | 6 |
| TECHNICAL DRAWINGS | 98 |
| ABSORPTION CURVES | 103 |
| COMPATIBLE MONITORS | |
| MAESTRO | 18 |
| UNO | 24 |
| S-LINK-2 | 26 |
| P-LINK | 28 |
# UP SERIES + PCB

## SPECIFICATIONS

### MODELS
- **UP12E**
- **UP19K-H**
- **UP25N**
- **UP55N(M)**
- **UP19K-W5**
- **UP50N-W9**

### MAX AVERAGE POWER (CONTINUOUS / 1 MINUTE)
- **UP12E**: 70 W / 110 W
- **UP19K-H**: 200 W / 200 W
- **UP25N**: 350 W / 350 W
- **UP55N(M)**: 500 W / 500 W
- **UP19K-W5**: 50 W / 85 W
- **UP50N-W9**: 50 W / 85 W

### EFFECTIVE APERTURE
- **UP12E**: 12 mm Ø
- **UP19K-H**: 19 mm Ø
- **UP25N**: 25 mm Ø
- **UP55N(M)**: 55 mm Ø
- **UP19K-W5**: 17 mm Ø
- **UP50N-W9**: 50 mm Ø

## MEASUREMENT CAPABILITY

### Spectral Range
- 0.19 – 20 µm

### Available Cooling Modules (Max. Power)

<table>
<thead>
<tr>
<th>Module Type</th>
<th>10 W</th>
<th>15 W</th>
<th>40 W</th>
<th>40 W</th>
<th>15 W</th>
<th>40 W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standalone (S)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>50 W</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Heatsink (H)</td>
<td>30 W</td>
<td>100 W</td>
<td>100 W</td>
<td>50 W</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Large Heatsink (L)</td>
<td>50 W</td>
<td>–</td>
<td>–</td>
<td>250 W</td>
<td>50 W</td>
<td>–</td>
</tr>
<tr>
<td>Fan (F)</td>
<td>110 W</td>
<td>250 W</td>
<td>300 W</td>
<td>50 W</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Water (W)</td>
<td>150 W</td>
<td>350 W</td>
<td>500 W</td>
<td>50 W</td>
<td>85 W</td>
<td>–</td>
</tr>
<tr>
<td>Water (W)</td>
<td>200 W</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

### Noise Equivalent Power
- 0.2 mW

### Rise Time (anticipated)
- 0.3 sec

### Sensitivity (typ into 10 MΩ load)
- 400 mV/W

### Maximum Average Power Density
- 36 kW/cm²

## PHYSICAL CHARACTERISTICS

### Effective Aperture Diameter
- 12 mm Ø
- 19 mm Ø
- 25 mm Ø
- 55 mm Ø
- 17 mm Ø
- 50 mm Ø

### Absorber
- H5
- H5/H9
- H9
- H9
- W5
- W9

### Dimensions
- 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
- 200 g
- 200 g
- 680 g
- 620 g
- 200 g
- 620 g

## ORDERING INFORMATION

### Full Product Name (Standalone)
- **UP12E-10S-H5-MT-B**
- **UP19K-10S-H5-MT**
- **UP25N-10S-H9-MT**
- **UP55N-10S-H9-MT**
- **UP19K-15S-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-50L-H5-MT**
- **UP19K-110F-H9-MT**
- **UP19K-150W-H5-MT**
- **UP19K-200W-H9-MT**

### Full Product Name (Heatsink)
- **UP12E-10S-H5-MT-B**
- **UP19K-10S-H5-MT**
- **UP25N-10S-H9-MT**
- **UP55N-10S-H9-MT**
- **UP19K-15S-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-50L-H5-MT**
- **UP19K-110F-H9-MT**
- **UP19K-150W-H5-MT**
- **UP19K-200W-H9-MT**

### Full Product Name (Large Heatsink)
- **UP12E-10S-H5-MT-B**
- **UP19K-10S-H5-MT**
- **UP25N-10S-H9-MT**
- **UP55N-10S-H9-MT**
- **UP19K-15S-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-50L-H5-MT**
- **UP19K-110F-H9-MT**
- **UP19K-150W-H5-MT**
- **UP19K-200W-H9-MT**

### Full Product Name (Fan)
- **UP12E-10S-H5-MT-B**
- **UP19K-10S-H5-MT**
- **UP25N-10S-H9-MT**
- **UP55N-10S-H9-MT**
- **UP19K-15S-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-50L-H5-MT**
- **UP19K-110F-H9-MT**
- **UP19K-150W-H5-MT**
- **UP19K-200W-H9-MT**

### Full Product Name (Water)
- **UP12E-10S-H5-MT-B**
- **UP19K-10S-H5-MT**
- **UP25N-10S-H9-MT**
- **UP55N-10S-H9-MT**
- **UP19K-15S-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-50L-H5-MT**
- **UP19K-110F-H9-MT**
- **UP19K-150W-H5-MT**
- **UP19K-200W-H9-MT**

### Full Product Name (Water)
- **UP12E-10S-H5-MT-B**
- **UP19K-10S-H5-MT**
- **UP25N-10S-H9-MT**
- **UP55N-10S-H9-MT**
- **UP19K-15S-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-30H-H5-MT**
- **UP19K-50L-H5-MT**
- **UP19K-110F-H9-MT**
- **UP19K-150W-H5-MT**
- **UP19K-200W-H9-MT**

### Full Product Number
- **UP12E-10S-H5-MT-B**: 200919
- **UP19K-10S-H5-MT**: 200150
- **UP25N-10S-H9-MT**: 200197
- **UP55N-10S-H9-MT**: 200217
- **UP19K-15S-H5-MT**: 200290
- **UP19K-30H-H5-MT**: 200904
- **UP19K-50L-H5-MT**: 200151
- **UP25N-100H-H9-MT**: 200201
- **UP55N-100H-H9-MT**: 200221
- **UP19K-30H-W5-MT**: Call
- **UP19K-50L-W5-MT**: Call
- **UP19K-100H-H9-MT**: Call
- **UP19K-100H-W9-MT**: Call
- **UP19K-150W-H5-MT**: 200152
- **UP25N-350W-H12-MT**: 201153
- **UP55N-350W-H12-MT**: 201159
- **UP19K-300W-H5-MT**: 201585
- **UP50N-300W-W9-MT**: 201918
- **UP19K-300W-W5-MT**: 201919

### Notes
- a. For model with the most efficient cooling module available.
- b. For standalone version. Ask gentec-EO for dimensions of other versions.
- c. For Molex connector version (-MT). Contact Gentec-EO for other types.

*Other Sizes Available Upon Request*

Specifications are subject to change without notice.
OEM DETECTORS

QS-L
Discrete Pyro Detectors, Low Noise Level

KEY FEATURES
1. Broad Spectral Response
From 0.1 to 100 µm

2. Optimum Current Output
To maximize the detector’s thermal time constant

3. Easy to Integrate Format
TO5 and TO8 packages make the QS detectors small and easy to integrate in an existing system

4. Large Area Sensors
5 mm and 9 mm diameter pyroelectric sensors make optical alignment easier

5. Several IR Windows in Option
- Quartz: 0.2 – 3.5 µm
- Barium Fluoride: 0.2 – 17.5 µm
- Sapphire: 0.1 – 7.0 µm
- Silicon: 1.2 – 9.0 µm and 22 – 100 µm
- AR Germanium: 1.8 – 23 µm (10.6 µm peak)

AVAILABLE MODELS
- QS1-L 1 mm Ø, TO5 Packaging
- QS2-L 2 mm Ø, TO5 Packaging
- QS3-L 3 mm Ø, TO5 Packaging
- QS5-L 5 mm Ø, TO5 Packaging
- QS9-L 9 mm Ø, TO8 Packaging

ACCESSORIES
Permanent IR Windows (Various types available)
Pelican Carrying Case

SEE ALSO
TECHNICAL DRAWINGS 138
# QS-L Specifications

<table>
<thead>
<tr>
<th>MODELS</th>
<th>QS1-L</th>
<th>QS2-L</th>
<th>QS3-L</th>
<th>QS5-L</th>
<th>QS9-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>CURRENT RESPONSIVITY</td>
<td>1 µA/W</td>
<td>0.5 µA/W</td>
<td>0.5 µA/W</td>
<td>0.25 µA/W</td>
<td>0.25 µA/W</td>
</tr>
<tr>
<td>EFFECTIVE APERTURE</td>
<td>1 mm Ø</td>
<td>2 mm Ø</td>
<td>3 mm Ø</td>
<td>5 mm Ø</td>
<td>9 mm Ø</td>
</tr>
<tr>
<td>PACKAGE</td>
<td>T05</td>
<td>T05</td>
<td>T05</td>
<td>T05</td>
<td>T08</td>
</tr>
</tbody>
</table>

## Measurement Capability

<table>
<thead>
<tr>
<th>Spectral Range</th>
<th>0.1 - 1000 µm</th>
<th>0.1 - 1000 µm</th>
<th>0.1 - 1000 µm</th>
<th>0.1 - 1000 µm</th>
<th>0.1 - 1000 µm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Average Power</td>
<td>50 mW</td>
<td>50 mW</td>
<td>50 mW</td>
<td>50 mW</td>
<td>50 mW</td>
</tr>
<tr>
<td>Capacitance (at 1000 Hz)</td>
<td>15 pF</td>
<td>22 pF</td>
<td>60 pF</td>
<td>90 pF</td>
<td>250 pF</td>
</tr>
<tr>
<td>Current Responsivity (at 630 nm)</td>
<td>1 µA/W</td>
<td>0.5 µA/W</td>
<td>0.5 µA/W</td>
<td>0.25 µA/W</td>
<td>0.25 µA/W</td>
</tr>
<tr>
<td>Thermal Frequency (3 dB)</td>
<td>3.5 Hz</td>
<td>1.6 Hz</td>
<td>0.8 Hz</td>
<td>0.5 Hz</td>
<td>0.25 Hz</td>
</tr>
<tr>
<td>Temperature Coefficient</td>
<td>0.2%/°C</td>
<td>0.2%/°C</td>
<td>0.2%/°C</td>
<td>0.2%/°C</td>
<td>0.2%/°C</td>
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</tbody>
</table>

## Physical Characteristics

<table>
<thead>
<tr>
<th>Effective Aperture</th>
<th>1 mm Ø</th>
<th>2 mm Ø</th>
<th>3 mm Ø</th>
<th>5 mm Ø</th>
<th>9 mm Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>Package</td>
<td>T05</td>
<td>T05</td>
<td>T05</td>
<td>T05</td>
<td>T08</td>
</tr>
<tr>
<td>Sensor</td>
<td>MT</td>
<td>MT</td>
<td>MT</td>
<td>MT</td>
<td>MT</td>
</tr>
<tr>
<td>Absorber</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
</tr>
<tr>
<td>Dimensions</td>
<td>8.3 Ø x 6.4D mm</td>
<td>8.3 Ø x 6.4D mm</td>
<td>8.3 Ø x 6.4D mm</td>
<td>8.3 Ø x 6.4D mm</td>
<td>13.6 Ø x 6.4D mm</td>
</tr>
<tr>
<td>Weight</td>
<td>1.0 g</td>
<td>1.0 g</td>
<td>1.0 g</td>
<td>1.0 g</td>
<td>1.5 g</td>
</tr>
</tbody>
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## Ordering Information

<table>
<thead>
<tr>
<th>Full Product Name</th>
<th>QS1-L</th>
<th>QS2-L</th>
<th>QS3-L</th>
<th>QS5-L</th>
<th>QS9-L</th>
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<tr>
<td>Product Number</td>
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<td>201659</td>
<td>201662</td>
<td>201664</td>
<td>201666</td>
</tr>
</tbody>
</table>

Specifications are subject to change without notice

* For details, contact your Gentec-EO representative
QS-H
Discrete Pyro Detectors, High Average Power

KEY FEATURES

1. **Broad Spectral Response**
   From 0.1 to 100 µm

2. **Handles Higher Average Powers**
   Thanks to a maximized heat dissipation design

3. **Easy to Integrate Format**
   TO5 and TO8 packages make the QS detectors small and easy to integrate in an existing system

4. **Large Area Sensors**
   5 mm and 9 mm diameter pyroelectric sensors make optical alignment easier

5. **Several IR Windows in Option**
   - Quartz: 0.2 – 3.5 µm
   - Barium Fluoride: 0.2 – 17.5 µm
   - Sapphire: 0.1 – 7.0 µm
   - Silicon: 1.2 – 9.0 µm and 22 – 100 µm
   - AR Germanium: 1.8 – 23 µm (10.6 µm peak)

AVAILABLE MODELS

- QS1-H 1 mm Ø, TO5 Packaging
- QS2-H 2 mm Ø, TO5 Packaging
- QS3-H 3 mm Ø, TO5 Packaging
- QS5-H 5 mm Ø, TO5 Packaging
- QS9-H 9 mm Ø, TO8 Packaging

ACCESSORIES

- Permanent IR Windows (Various types available)
- Pelican Carrying Case

SEE ALSO

TECHNICAL DRAWINGS 138
# QS-H Specifications

<table>
<thead>
<tr>
<th>MODELS</th>
<th>QS1-H</th>
<th>QS2-H</th>
<th>QS3-H</th>
<th>QS5-H</th>
<th>QS9-H</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAX AVERAGE POWER</td>
<td>500 mW</td>
<td>500 mW</td>
<td>500 mW</td>
<td>500 mW</td>
<td>500 mW</td>
</tr>
<tr>
<td>EFFECTIVE APERTURE</td>
<td>1 mm Ø</td>
<td>2 mm Ø</td>
<td>3 mm Ø</td>
<td>5 mm Ø</td>
<td>9 mm Ø</td>
</tr>
<tr>
<td>PACKAGE</td>
<td>T05</td>
<td>T05</td>
<td>T05</td>
<td>T05</td>
<td>T08</td>
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</table>

### Measurement Capability

<table>
<thead>
<tr>
<th></th>
<th>QS1-H</th>
<th>QS2-H</th>
<th>QS3-H</th>
<th>QS5-H</th>
<th>QS9-H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectral Range</td>
<td>0.1 - 1000 µm</td>
<td>0.1 - 1000 µm</td>
<td>0.1 - 1000 µm</td>
<td>0.1 - 1000 µm</td>
<td>0.1 - 1000 µm</td>
</tr>
<tr>
<td>Max Average Power</td>
<td>500 mW</td>
<td>500 mW</td>
<td>500 mW</td>
<td>500 mW</td>
<td>500 mW</td>
</tr>
<tr>
<td>Capacitance (at 1000 Hz)</td>
<td>3 pF</td>
<td>12 pF</td>
<td>30 pF</td>
<td>90 pF</td>
<td>250 pF</td>
</tr>
<tr>
<td>Current Responsivity (at 630 nm)</td>
<td>0.25 µA/W</td>
<td>0.25 µA/W</td>
<td>0.25 µA/W</td>
<td>0.25 µA/W</td>
<td>0.25 µA/W</td>
</tr>
<tr>
<td>Thermal Frequency (3 dB)</td>
<td>5 Hz</td>
<td>5 Hz</td>
<td>5 Hz</td>
<td>5 Hz</td>
<td>5 Hz</td>
</tr>
<tr>
<td>Temperature Coefficient</td>
<td>0.2%/°C</td>
<td>0.2%/°C</td>
<td>0.2%/°C</td>
<td>0.2%/°C</td>
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### Physical Characteristics

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<th>QS3-H</th>
<th>QS5-H</th>
<th>QS9-H</th>
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</thead>
<tbody>
<tr>
<td>Effective Aperture</td>
<td>1 mm Ø</td>
<td>2 mm Ø</td>
<td>3 mm Ø</td>
<td>5 mm Ø</td>
<td>9 mm Ø</td>
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<tr>
<td>Package</td>
<td>T05</td>
<td>T05</td>
<td>T05</td>
<td>T05</td>
<td>T08</td>
</tr>
<tr>
<td>Sensor</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
</tr>
<tr>
<td>Absorber</td>
<td>MT</td>
<td>MT</td>
<td>MT</td>
<td>MT</td>
<td>MT</td>
</tr>
<tr>
<td>Dimensions</td>
<td>8.3Ø x 6.4D mm</td>
<td>8.3Ø x 6.4D mm</td>
<td>8.3Ø x 6.4D mm</td>
<td>8.3Ø x 6.4D mm</td>
<td>13.6Ø x 6.4D mm</td>
</tr>
<tr>
<td>Weight</td>
<td>1.0 g</td>
<td>1.0 g</td>
<td>1.0 g</td>
<td>1.0 g</td>
<td>1.5 g</td>
</tr>
</tbody>
</table>

### Ordering Information

<table>
<thead>
<tr>
<th></th>
<th>QS1-H</th>
<th>QS2-H</th>
<th>QS3-H</th>
<th>QS5-H</th>
<th>QS9-H</th>
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<tbody>
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<td>201667</td>
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</table>

Specifications are subject to change without notice.

* For details, contact your Gentec-EO representative
OEM DETECTORS

QS-VF
Hybrid Pyro Detectors, Voltage Mode, Fast Response

KEY FEATURES

1. High Frequency Response
   Up to 10 MHz

2. Fast Response in Voltage Mode
   Optimized frequency response takes full advantage of the pyroelectric detectors’ phenomenal response time

3. Easy to Integrate Format
   TO5 and TO8 packages make the QS detectors small and easy to integrate in an existing system

4. Large Area Sensors
   5 mm and 9 mm diameter pyroelectric sensors make optical alignment easier

5. Several IR Windows in Option
   - Quartz: 0.2 – 3.5 µm
   - Barium Fluoride: 0.2 – 17.5 µm
   - Sapphire: 0.1 – 7.0 µm
   - Silicon: 1.2 – 9.0 µm and 22 – 100 µm
   - AR Germanium: 1.8 – 23 µm (10.6 µm peak)

AVAILABLE MODELS

- QS1-VF 1 mm Ø, TO5 Packaging
- QS2-VF 2 mm Ø, TO5 Packaging
- QS3-VF 3 mm Ø, TO5 Packaging
- QS5-VF 5 mm Ø, TO5 Packaging
- QS9-VF 9 mm Ø, TO8 Packaging

ACCESSORIES

- QS-V-TEST (Test Box in Voltage Mode)
- Permanent IR Windows (Various types available)
- Pelican Carrying Case

SEE ALSO

TECHNICAL DRAWINGS
### OEM DETECTORS

#### QS-VF

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>MODELS</th>
<th>QS1-VF</th>
<th>QS2-VF</th>
<th>QS3-VF</th>
<th>QS5-VF</th>
<th>QS9-VF</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOLTAGE RESPONSIVITY</td>
<td>100 V/W</td>
<td>50 V/W</td>
<td>50 V/W</td>
<td>25 V/W</td>
<td>25 V/W</td>
</tr>
<tr>
<td>CURRENT RESPONSIVITY</td>
<td>1 µA/W</td>
<td>0.5 µA/W</td>
<td>0.5 µA/W</td>
<td>0.25 µA/W</td>
<td>0.25 µA/W</td>
</tr>
<tr>
<td>EFFECTIVE APERTURE</td>
<td>1 mm Ø</td>
<td>2 mm Ø</td>
<td>3 mm Ø</td>
<td>5 mm Ø</td>
<td>9 mm Ø</td>
</tr>
<tr>
<td>PACKAGE</td>
<td>T05</td>
<td>T05</td>
<td>T05</td>
<td>T05</td>
<td>T08</td>
</tr>
</tbody>
</table>

#### MEASUREMENT CAPABILITY

<table>
<thead>
<tr>
<th>Spectral Range</th>
<th>Max Average Power</th>
<th>Noise Equivalent Power</th>
<th>Detectivity</th>
<th>Capacitance (at 1000 Hz)</th>
<th>Current Responsivity (at 630 nm)</th>
<th>Voltage Responsivity</th>
<th>Thermal Frequency (3 dB)</th>
<th>Load Resistor</th>
<th>Supply Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 - 1000 µm</td>
<td>50 mW</td>
<td>2x10^8 W/(Hz)^1/2</td>
<td></td>
<td>15 pF</td>
<td>1 µA/W</td>
<td>100 V/W</td>
<td>3.5 Hz</td>
<td>100 MΩ</td>
<td>+9 to +15 V</td>
</tr>
<tr>
<td>0.1 - 1000 µm</td>
<td>50 mW</td>
<td>4x10^8 W/(Hz)^1/2</td>
<td></td>
<td>22 pF</td>
<td>0.5 µA/W</td>
<td>50 V/W</td>
<td>1.6 Hz</td>
<td>100 MΩ</td>
<td>+9 to +15 V</td>
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<tr>
<td>0.1 - 1000 µm</td>
<td>50 mW</td>
<td>4x10^8 W/(Hz)^1/2</td>
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<td>0.5 µA/W</td>
<td>50 V/W</td>
<td>0.8 Hz</td>
<td>100 MΩ</td>
<td>+9 to +15 V</td>
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<tr>
<td>0.1 - 1000 µm</td>
<td>50 mW</td>
<td>1x10^-7 W/(Hz)^1/2</td>
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<td>90 pF</td>
<td>0.25 µA/W</td>
<td>25 V/W</td>
<td>0.5 Hz</td>
<td>100 MΩ</td>
<td>+9 to +15 V</td>
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</tbody>
</table>

#### PHYSICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>Effective Aperture</th>
<th>Package</th>
<th>Sensor</th>
<th>Absorber</th>
<th>Dimensions</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mm Ø</td>
<td>T05</td>
<td>Pyroelectric</td>
<td>MT</td>
<td>8.3Ø x 6.4D mm</td>
<td>1.0 g</td>
</tr>
<tr>
<td>2 mm Ø</td>
<td>T05</td>
<td>Pyroelectric</td>
<td>MT</td>
<td>8.3Ø x 6.4D mm</td>
<td>1.0 g</td>
</tr>
<tr>
<td>3 mm Ø</td>
<td>T05</td>
<td>Pyroelectric</td>
<td>MT</td>
<td>8.3Ø x 6.4D mm</td>
<td>1.0 g</td>
</tr>
<tr>
<td>5 mm Ø</td>
<td>T05</td>
<td>Pyroelectric</td>
<td>MT</td>
<td>8.3Ø x 6.4D mm</td>
<td>1.0 g</td>
</tr>
<tr>
<td>9 mm Ø</td>
<td>T08</td>
<td>Pyroelectric</td>
<td>MT</td>
<td>13.6Ø x 6.4D mm</td>
<td>1.5 g</td>
</tr>
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#### ORDERING INFORMATION

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<thead>
<tr>
<th>Full Product Name</th>
<th>Product Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>QS1-VF</td>
<td>201668</td>
</tr>
<tr>
<td>QS2-VF</td>
<td>201669</td>
</tr>
<tr>
<td>QS3-VF</td>
<td>201670</td>
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<tr>
<td>QS5-VF</td>
<td>201671</td>
</tr>
<tr>
<td>QS9-VF</td>
<td>201672</td>
</tr>
</tbody>
</table>

*a: 630 nm, 1 Hz, 1 Hz Bandwidth  
b: 630 nm, 15 Hz*

Specifications are subject to change without notice.

### QS-V-TEST EVALUATION TEST BOX

- Batteries
- R<sub>i</sub> Resistors
- C<sub>i</sub> Compensating
- Package
- Optical Mount
- Front Bezel

**QS-V-TEST**

+9V  
10<sup>6</sup> - 10<sup>10</sup> Ω
NO  
101.6H x 127W x 58.4D
¼-20 Threaded
SM1 (1.035-40)

* For details, contact your Gentec-EO representative
**QS-VL**
Hybrid Pyro Detectors, Voltage Mode, Low Noise Level

**KEY FEATURES**

1. **Low Noise Level in Voltage Mode**
   Ultra low noise Field-Effect Transistor (FET) and 60Ω resistor for unparalleled performance from 1 Hz to 1 KHz

2. **High Voltage Response**
   Up to 900 V/W

3. **Easy to Integrate Format**
   T05 and T08 packages make the QS detectors small and easy to integrate in an existing system

4. **Large Area Sensors**
   5 mm and 9 mm diameter pyroelectric sensors make optical alignment easier

5. **Several IR Windows in Option**
   - Quartz: 0.2 – 3.5 µm
   - Barium Fluoride: 0.2 – 17.5 µm
   - Sapphire: 0.1 – 7.0 µm
   - Silicon: 1.2 – 9.0 µm and 22 – 100 µm
   - AR Germanium: 1.8 – 23 µm (10.6 µm peak)

**AVAILABLE MODELS**

- QS1-VL  1 mm Ø, T05 Packaging
- QS2-VL  2 mm Ø, T05 Packaging
- QS3-VL  3 mm Ø, T05 Packaging
- QS5-VL  5 mm Ø, T05 Packaging
- QS9-VL  9 mm Ø, T08 Packaging

**ACCESSORIES**

- QS-V-TEST (Test Box in Voltage Mode)
- Permanent IR Windows (Various types available)
- Pelican Carrying Case

**SEE ALSO**

TECHNICAL DRAWINGS 138
# QS-VL Specifications

## OEM Detectors

### Models

<table>
<thead>
<tr>
<th>Models</th>
<th>QS1-VL</th>
<th>QS2-VL</th>
<th>QS3-VL</th>
<th>QS5-VL</th>
<th>QS9-VL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage Responsivity</td>
<td>900 V/W</td>
<td>200 V/W</td>
<td>90 V/W</td>
<td>25 V/W</td>
<td>15 V/W</td>
</tr>
<tr>
<td>Current Responsivity</td>
<td>1 μA/W</td>
<td>0.5 μA/W</td>
<td>0.5 μA/W</td>
<td>0.25 μA/W</td>
<td>0.25 μA/W</td>
</tr>
<tr>
<td>Effective Aperture</td>
<td>1 mm Ø</td>
<td>2 mm Ø</td>
<td>3 mm Ø</td>
<td>5 mm Ø</td>
<td>9 mm Ø</td>
</tr>
<tr>
<td>Package</td>
<td>TO5</td>
<td>TO5</td>
<td>TO5</td>
<td>TO5</td>
<td>TO8</td>
</tr>
</tbody>
</table>

### Measurement Capability

<table>
<thead>
<tr>
<th>Spectral Range</th>
<th>0.1 - 1000 μm</th>
<th>0.1 - 1000 μm</th>
<th>0.1 - 1000 μm</th>
<th>0.1 - 1000 μm</th>
<th>0.1 - 1000 μm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Average Power</td>
<td>50 mW</td>
<td>50 mW</td>
<td>50 mW</td>
<td>50 mW</td>
<td>50 mW</td>
</tr>
<tr>
<td>Noise Equivalent Power</td>
<td>3x10⁻¹⁰ W/(Hz)⁰⁵⁰</td>
<td>6x10⁻¹⁰ W/(Hz)⁰⁵⁰</td>
<td>1x10⁻⁹ W/(Hz)⁰⁵⁰</td>
<td>2x10⁻⁷ W/(Hz)⁰⁵⁰</td>
<td>5x10⁻⁷ W/(Hz)⁰⁵⁰</td>
</tr>
<tr>
<td>Detectivity</td>
<td>2.9x10⁶ cm(Hz)⁻⁵⁰ /W</td>
<td>3.0x10⁶ cm(Hz)⁻⁵⁰ /W</td>
<td>2.7x10⁵ cm(Hz)⁻⁴⁰ /W</td>
<td>2.2x10⁴ cm(Hz)⁻³⁰ /W</td>
<td>1.6x10³ cm(Hz)⁻²⁰ /W</td>
</tr>
<tr>
<td>Capacitance (at 1000 Hz)</td>
<td>15 pF</td>
<td>22 pF</td>
<td>60 pF</td>
<td>90 pF</td>
<td>250 pF</td>
</tr>
<tr>
<td>Current Responsivity (at 630 nm)</td>
<td>1 μA/W</td>
<td>0.5 μA/W</td>
<td>0.5 μA/W</td>
<td>0.25 μA/W</td>
<td>0.25 μA/W</td>
</tr>
<tr>
<td>Voltage Responsivity</td>
<td>900 V/W</td>
<td>200 V/W</td>
<td>90 V/W</td>
<td>25 V/W</td>
<td>15 V/W</td>
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<tr>
<td>Thermal Frequency (3 dB)</td>
<td>3.5 Hz</td>
<td>1.6 Hz</td>
<td>0.8 Hz</td>
<td>0.5 Hz</td>
<td>2.5 Hz</td>
</tr>
<tr>
<td>Load Resistor</td>
<td>300 GΩ</td>
<td>300 GΩ</td>
<td>100 GΩ</td>
<td>100 GΩ</td>
<td>100 GΩ</td>
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<tr>
<td>Supply Voltage</td>
<td>+9 to +15 V</td>
<td>+9 to +15 V</td>
<td>+9 to +15 V</td>
<td>+9 to +15 V</td>
<td>+9 to +15 V</td>
</tr>
</tbody>
</table>

### Physical Characteristics

<table>
<thead>
<tr>
<th>Effective Aperture</th>
<th>1 mm Ø</th>
<th>2 mm Ø</th>
<th>3 mm Ø</th>
<th>5 mm Ø</th>
<th>9 mm Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>Package</td>
<td>TO5</td>
<td>TO5</td>
<td>TO5</td>
<td>TO5</td>
<td>TO8</td>
</tr>
<tr>
<td>Sensor</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
</tr>
<tr>
<td>Absorber</td>
<td>MT</td>
<td>MT</td>
<td>MT</td>
<td>MT</td>
<td>MT</td>
</tr>
<tr>
<td>Dimensions</td>
<td>8.3Ø x 6.4D mm</td>
<td>8.3Ø x 6.4D mm</td>
<td>8.3Ø x 6.4D mm</td>
<td>8.3Ø x 6.4D mm</td>
<td>13.6Ø x 6.4D mm</td>
</tr>
<tr>
<td>Weight</td>
<td>1.0 g</td>
<td>1.0 g</td>
<td>1.0 g</td>
<td>1.0 g</td>
<td>1.5 g</td>
</tr>
</tbody>
</table>

### Ordering Information

<table>
<thead>
<tr>
<th>Full Product Name</th>
<th>QS1-VL</th>
<th>QS2-VL</th>
<th>QS3-VL</th>
<th>QS5-VL</th>
<th>QS9-VL</th>
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</thead>
<tbody>
<tr>
<td>Product Number</td>
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<td>201676</td>
<td>201677</td>
<td>201678</td>
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</table>

Specifications are subject to change without notice

---

**QS-V-TEST Evaluation Test Box**

![QS-V-TEST Evaluation Test Box](image)

**QS-V-TEST**

- Batteries
- R, Resistors
- C, Compensating
- Package
- Optical Mount
- Front Bezel

*For details, contact your Gentec-EO representative*
**QS-IF**

Hybrid Pyro Detectors, Current Mode, Fast Response

**KEY FEATURES**

1. **High Frequency Response**
   From 1 KHz to 20 MHz

2. **Fast Response in Current Mode**
   The QS-IF take full advantage of the pyroelectric detectors’ fast response times

3. **Easy to Integrate Format**
   TO5 and TO8 packages make the QS detectors small and easy to integrate in an existing system

4. **Large Area Sensors**
   5 mm and 9 mm diameter pyroelectric sensors make optical alignment easier

5. **Several IR Windows in Option**
   - Quartz: 0.2 – 3.5 µm
   - Barium Fluoride: 0.2 – 17.5 µm
   - Sapphire: 0.1 – 7.0 µm
   - Silicon: 1.2 – 9.0 µm and 22 – 100 µm
   - AR Germanium: 1.8 – 23 µm (10.6 µm peak)

**AVAILABLE MODELS**

- QS1-IF 1 mm Ø, TO5 Packaging
- QS2-IF 2 mm Ø, TO5 Packaging
- QS3-IF 3 mm Ø, TO5 Packaging
- QS5-IF 5 mm Ø, TO5 Packaging
- QS9-IF 9 mm Ø, TO8 Packaging

**ACCESSORIES**

- QS-I-TEST (Test Box in Current Mode)
- Permanent IR Windows (Various types available)
- Pelican Carrying Case

**SEE ALSO**

TECHNICAL DRAWINGS 138
### OEM DETECTORS

#### QS-IF SPECIFICATIONS

<table>
<thead>
<tr>
<th>MODELS</th>
<th>QS1-IF</th>
<th>QS2-IF</th>
<th>QS3-IF</th>
<th>QS5-IF</th>
<th>QS9-IF</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOLTAGE RESPONSIVITY</td>
<td>100 V/W</td>
<td>50 V/W</td>
<td>50 V/W</td>
<td>25 V/W</td>
<td>25 V/W</td>
</tr>
<tr>
<td>CURRENT RESPONSIVITY</td>
<td>1 µA/W</td>
<td>0.5 µA/W</td>
<td>0.5 µA/W</td>
<td>0.25 µA/W</td>
<td>0.25 µA/W</td>
</tr>
<tr>
<td>EFFECTIVE APERTURE</td>
<td>1 mm Ø</td>
<td>2 mm Ø</td>
<td>3 mm Ø</td>
<td>5 mm Ø</td>
<td>9 mm Ø</td>
</tr>
<tr>
<td>PACKAGE</td>
<td>TO5</td>
<td>TO5</td>
<td>TO5</td>
<td>TO5</td>
<td>TO8</td>
</tr>
</tbody>
</table>

#### MEASUREMENT CAPABILITY

- **Spectral Range**: 0.1 - 1000 µm
- **Max Average Power**: 50 mW
- **Noise Equivalent Power**: 5x10^-8 W/(Hz)^1/2 / W
- **Detectivity**: 22 pF
- **Capacitance (at 1000 Hz)**: 15 pF
- **Current Responsivity (at 630 nm)**: 1 µA/W
- **Voltage Responsivity**: 100 V/W
- **Thermal Frequency (3 dB)**: 3.5 Hz
- **Feedback Resistor**: 100 MΩ
- **Supply Voltage**: ± 12 V

#### PHYSICAL CHARACTERISTICS

- **Effective Aperture**: 1 mm Ø
- **Package**: TO5
- **Sensor**: Pyroelectric
- **Absorber**: MT
- **Dimensions**: 8.3Ø x 6.4D mm
- **Weight**: 1.0 g

#### ORDERING INFORMATION

- **Full Product Name**
  - QS1-IF: 201679
  - QS2-IF: 201680
  - QS3-IF: 201681
  - QS5-IF: 201682
  - QS9-IF: 201683

Specifications are subject to change without notice.

### QS-I-TEST EVALUATION TEST BOX

- **Batteries**: +9V / -9V
- **R, Resistors**: 10Ω - 10^10 Ω
- **C, Compensating**: YES
- **Package**: 101.6H x 127W x 58.4D
- **Optical Mount**: ¼-20 Threaded
- **Front Bezel**: SM1 (1.035-40) mm

* For details, contact your Gentec-EO representative.
QS-IL
Hybrid Pyro Detectors, Current Mode, Low Noise Level

**KEY FEATURES**

1. **High Voltage Response in Current Mode**
   - This family of pyro detectors offers a $10^{11} \, \Omega$ chip resistor that results in an incredible 50 000 V/W voltage response.

2. **Low Noise Level**
   - The high voltage response allows to detect signals down in the nW range!

3. **Easy to Integrate Format**
   - TO5 and TO8 packages make the QS detectors small and easy to integrate in an existing system.

4. **Large Area Sensors**
   - 5 mm and 9 mm diameter pyroelectric sensors make optical alignment easier.

5. **Several IR Windows in Option**
   - Quartz: 0.2 – 3.5 µm
   - Barium Fluoride: 0.2 – 17.5 µm
   - Sapphire: 0.1 – 7.0 µm
   - Silicon: 1.2 – 9.0 µm and 22 – 100 µm
   - AR Germanium: 1.8 – 23 µm (10.6 µm peak)

**AVAILABLE MODELS**

- QS1-IL  1 mm Ø, TO5 Packaging
- QS2-IL  2 mm Ø, TO5 Packaging
- QS3-IL  3 mm Ø, TO5 Packaging
- QS5-IL  5 mm Ø, TO5 Packaging
- QS9-IL  9 mm Ø, TO8 Packaging

**ACCESSORIES**

- QS-I-TEST (Test Box in Current Mode)
- Permanent IR Windows (Various types available)
- Pelican Carrying Case

**SEE ALSO**

TECHNICAL DRAWINGS 138
# QS-IL Specifications

## Models
<table>
<thead>
<tr>
<th></th>
<th>QS1-IL</th>
<th>QS2-IL</th>
<th>QS3-IL</th>
<th>QS5-IL</th>
<th>QS9-IL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voltage Responsivity</strong></td>
<td>50 kV/W</td>
<td>25 kV/W</td>
<td>25 kV/W</td>
<td>13 kV/W</td>
<td>13 kV/W</td>
</tr>
<tr>
<td><strong>Current Responsivity</strong></td>
<td>1 µA/W</td>
<td>0.5 µA/W</td>
<td>0.5 µA/W</td>
<td>0.25 µA/W</td>
<td>0.25 µA/W</td>
</tr>
<tr>
<td><strong>Effective Aperture</strong></td>
<td>1 mm Ø</td>
<td>2 mm Ø</td>
<td>3 mm Ø</td>
<td>5 mm Ø</td>
<td>9 mm Ø</td>
</tr>
<tr>
<td><strong>Package</strong></td>
<td>TO5</td>
<td>TO5</td>
<td>TO5</td>
<td>TO5</td>
<td>TO8</td>
</tr>
</tbody>
</table>

## Measurement Capability

<table>
<thead>
<tr>
<th>Parameter</th>
<th>QS1-IL</th>
<th>QS2-IL</th>
<th>QS3-IL</th>
<th>QS5-IL</th>
<th>QS9-IL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectral Range</td>
<td>0.1 - 1000 µm</td>
<td>0.1 - 1000 µm</td>
<td>0.1 - 1000 µm</td>
<td>0.1 - 1000 µm</td>
<td>0.1 - 1000 µm</td>
</tr>
<tr>
<td>Max Average Power</td>
<td>50 mW</td>
<td>50 mW</td>
<td>50 mW</td>
<td>50 mW</td>
<td>50 mW</td>
</tr>
<tr>
<td>Noise Equivalent Power</td>
<td>8 x 10^10 W/(Hz)^1/2</td>
<td>2 x 10^-6 W/(Hz)^1/2</td>
<td>2 x 10^-6 W/(Hz)^1/2</td>
<td>6 x 10^-7 W/(Hz)^1/2</td>
<td>6 x 10^-7 W/(Hz)^1/2</td>
</tr>
<tr>
<td>Detectivity</td>
<td>1.1 x 10^8 cm(Hz)^1/2 /W</td>
<td>9.0 x 10^7 cm(Hz)^1/2 /W</td>
<td>1.3 x 10^8 cm(Hz)^1/2 /W</td>
<td>7.0 x 10^7 cm(Hz)^1/2 /W</td>
<td>1.3 x 10^8 cm(Hz)^1/2 /W</td>
</tr>
<tr>
<td>Capacitance (at 1000 Hz)</td>
<td>15 pF</td>
<td>22 pF</td>
<td>60 pF</td>
<td>90 pF</td>
<td>250 pF</td>
</tr>
<tr>
<td>Current Responsivity (at 630 nm)</td>
<td>1 µA/W</td>
<td>0.5 µA/W</td>
<td>0.5 µA/W</td>
<td>0.25 µA/W</td>
<td>0.25 µA/W</td>
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<tr>
<td>Voltage Responsivity</td>
<td>50 kV/W</td>
<td>25 kV/W</td>
<td>25 kV/W</td>
<td>13 kV/W</td>
<td>13 kV/W</td>
</tr>
<tr>
<td>Thermal Frequency (3 dB)</td>
<td>3.5 Hz</td>
<td>1.6 Hz</td>
<td>0.8 Hz</td>
<td>0.5 Hz</td>
<td>0.25 Hz</td>
</tr>
<tr>
<td>Feedback Resistor</td>
<td>100 GΩ</td>
<td>100 GΩ</td>
<td>100 GΩ</td>
<td>100 GΩ</td>
<td>100 GΩ</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>± 5 to ± 12 V</td>
<td>± 5 to ± 12 V</td>
<td>± 5 to ± 12 V</td>
<td>± 5 to ± 12 V</td>
<td>± 5 to ± 12 V</td>
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</table>

## Physical Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>QS1-IL</th>
<th>QS2-IL</th>
<th>QS3-IL</th>
<th>QS5-IL</th>
<th>QS9-IL</th>
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</thead>
<tbody>
<tr>
<td>Effective Aperture</td>
<td>1 mm Ø</td>
<td>2 mm Ø</td>
<td>3 mm Ø</td>
<td>5 mm Ø</td>
<td>9 mm Ø</td>
</tr>
<tr>
<td>Package</td>
<td>TO5</td>
<td>TO5</td>
<td>TO5</td>
<td>TO5</td>
<td>TO8</td>
</tr>
<tr>
<td>Sensor</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
<td>Pyroelectric</td>
</tr>
<tr>
<td>Absorber</td>
<td>MT</td>
<td>MT</td>
<td>MT</td>
<td>MT</td>
<td>MT</td>
</tr>
<tr>
<td>Dimensions</td>
<td>8.3Ø x 6.4D mm</td>
<td>8.3Ø x 6.4D mm</td>
<td>8.3Ø x 6.4D mm</td>
<td>8.3Ø x 6.4D mm</td>
<td>13.6Ø x 6.4D mm</td>
</tr>
<tr>
<td>Weight</td>
<td>1.0 g</td>
<td>1.0 g</td>
<td>1.0 g</td>
<td>1.0 g</td>
<td>1.5 g</td>
</tr>
</tbody>
</table>

## Ordering Information

<table>
<thead>
<tr>
<th>Full Product Name</th>
<th>QS1-IL</th>
<th>QS2-IL</th>
<th>QS3-IL</th>
<th>QS5-IL</th>
<th>QS9-IL</th>
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<tr>
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<td>201685</td>
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<td>201688</td>
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Specifications are subject to change without notice.

### QS-I-TEST Evaluation Test Box

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batteries</td>
<td>+9V/-9V</td>
</tr>
<tr>
<td>R, Resistors</td>
<td>100 GΩ</td>
</tr>
<tr>
<td>C, Compensating</td>
<td>3.5 Hz</td>
</tr>
<tr>
<td>Package</td>
<td>101.6H x 127W x 58.4D</td>
</tr>
<tr>
<td>Optical Mount</td>
<td>¼-20 Threaded</td>
</tr>
<tr>
<td>Front Bezel</td>
<td>SM1 (1.035-40)</td>
</tr>
</tbody>
</table>

* For details, contact your Gentec-EO representative.