

DH-Py Pyroelectric Detector User Notes



Overview

The Bentham Dh-Py houses a 2mm diameter DLATGS pyroelectric detector, including a built-in impedance matching amplifier, which may either be mounted to the exit slit of Bentham monochromators, or used free-standing.

This device is responsive over the spectral range 1-100 μ m, depending on the window fitted. This device is fitted with a KRS5 window, providing a response over the range 1-50 μ m.

The pyroelectric detector operates by heating of the crystal by the incident light giving rise to an altered crystal structure and a corresponding generated voltage (pyroelectric polarisation).

This is a transient effect; the pyroelectric detector must be used in the AC mode only.

It is recommended to operate this device at a chopping frequency of 15Hz and to ensure that the optical chopper is situated far from the detector, else the detector senses and infrared signal from the latter.

Should a calibration be purchased (_cal), please see the accompanying certificate for calibration results.

Electrical

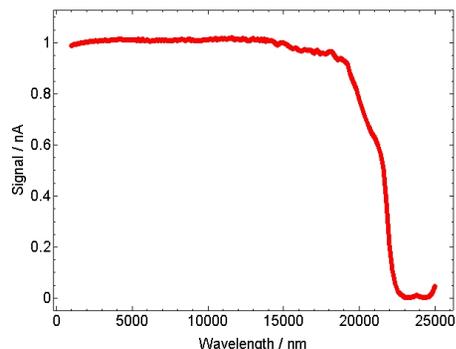
There are two electrical connections to the device. To one side is provided a five-pin connector with associated power supply to provide the 12V operation voltage.

To the opposite side of the device is to be found a BNC connector providing the device output, to be coupled to a lock-in amplifier.

Mechanical

The DH-Py is provided with the hole pattern to adapt to the slits of any Bentham monochromator.

The device is mounted by removing the rear cover and carefully mounting view M3*10mm screws to the slit.



Typical detector responsivity

Specifications

The device specifications are as follow:-

| | |
|-----------------------------------|---|
| Element size: | 2mm x 2mm |
| Power Supply: | Mains transformer |
| NEP | (500k,10) 1.6 x 10 ⁻¹⁰ W/Hz ^{1/2} |
| Responsivity | (500k,10) 1.5 x 10 ⁵ VW ⁻¹ |
| Noise | (10,1) 24mVHz ^{-1/2} |
| Window material | See below |
| Typical chopping frequency | 15Hz |

The range of window materials are as follows, where KRS5 is the standard.

| Window Material | Transmission Range (μ m) |
|-------------------|-------------------------------|
| KBr | 1-30 |
| Polythene | 20-1000 |
| CsI | 1-60 |
| KRS-5 | 1-40 |
| Quartz | 60-1000 |
| Bloomed silicon | 1.2-15 |
| Bloomed germanium | 1.8-23 |

WEEE statement:

Bentham are fully WEEE compliant, registration number is WEE/CB0003ZR. Should you need to dispose of our equipment please telephone 0113 385 4352 or 4356, quoting account number 135419.



Bentham Instruments Limited
2 Boulton Road, Reading, Berkshire, RG2 0NH, UK
Tel: +44 (0)118 975 1355 Fax: +44 (0)118 931 2971
Email: sales@bentham.co.uk Internet: www.bentham.co.uk