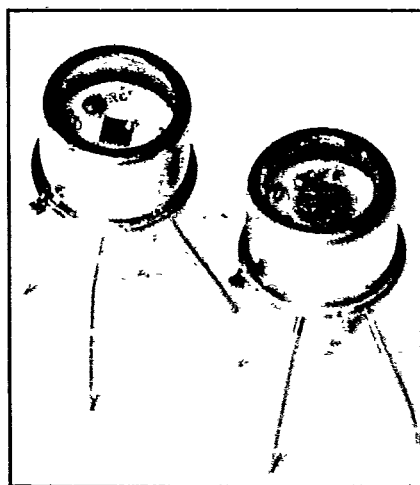




Features: P1-700 Series

- Rugged LiTaO₃ material
- Non-hygroscopic
- 610°C Curie temperature
- Ultra low-noise FET
- Hybrid FET assembly
- High $D^* = 1.5 \times 10^8$ @ 1 KHz

Features: P1-800 Series

- Sensitive doped TGS material
- Hermetically sealed
- Permanently Poled
- Ultra low-noise FET
- Hybrid FET assembly
- High $D^* = 3.1 \times 10^8$ @ 1 KHz

Applications

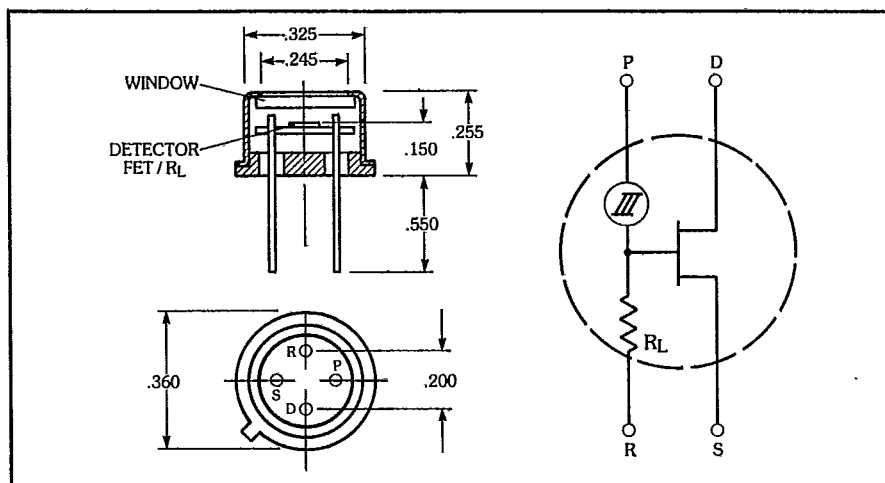
- FTIR Spectrometry
- Gas Analyzer Instrumentation
- Non-contact temperature measurement
- Radiometric measurement
- IR Spectrometry

Description

We have developed two new families of Hybrid Pyroelectric detectors for the FTIR Spectrometer manufacturer and user. Their performance has been optimized for use from $2\mu\text{m}$ to $30\mu\text{m}$ and at frequencies from 15Hz to 1000Hz. They are packaged in standard, pin compatible TO5 cans and hermetically sealed behind an infrared window of your choice.

FTIR Pyroelectric Detector/FET Hybrid

T-65-13
Molectron
DETECTOR, INCORPORATED



Performance Specifications: P1-700/800

(Typical characteristics, measured at 25°C)

	P1-710	P1-713	P1-810	P1-813	Units
Detector Geometry	1.0 Dia.	1.3 Dia.	1 x 1 Sq.	1.3 Dia.	mm
Element Capacitance	15	18	15	18	pF
Curie Temperature	610	610	49-62	49-62	°C
Thermal Time-Constant	20	20	20	20	mSec
Electrical Time-Constant	4.5	6.0	0.45	0.6	Sec
Voltage Responsivity (1000°K Blackbody, 15 Hz)	1270	960	3210	2420	V/W
Detectivity, D^*_{BB} (1000K, 15 Hz, 1) (1000K, 100 Hz, 1) (1000K, 1000 Hz, 1)	2.5 2.0 1.5	2.5 2.0 1.5	7.1 6.3 3.5	6.2 5.5 3.1	$10^8 \text{ cm Hz}^{1/2}/\text{W}$
NEP (1000K, 15 Hz, 1)	3.5	4.7	1.4	1.8	$10^{-10} \text{ W/Hz}^{1/2}$
Load Resistor	30	30	3	3	10^{10} Ohms
Output Impedance	5	5	5	5	10^3 Ohms
Supply Voltage	+9	+9	+9	+9	Volts
Window: Standard Optional Thickness	None * *	None * *	KBr CsI 1	KBr CsI 1	— — mm
Maximum Average Power	50	50	50	50	mW

Notes: (*)

1. Optional windows such as KRS-5, Polyethylene, Ge, Irtran II, etc. are available for all models.

The P1-700 series features a 1mm or 1.3mm diameter LiTaO₃ Pyroelectric detector mated to a selected, ultra low noise FET preamplifier which results in an excellent D^* of 1.5×10^8 at 1000Hz. It includes a flat, black coating that enhances spectral performance and prevents channeling. The detector is non-hygroscopic and has a high Curie temperature of 610°C. It is offered in a 4 pin, welded TO5 can with optional IR windows.

The P1-800 series features a 1mm square or 1.3mm diameter doped TGS Pyroelectric detector integrated with a selected, ultra low noise FET preamplifier which yields the ultimate D^* of 3.1×10^8 at 1000Hz. The material is permanently poled and includes a flat, black coating to enhance its spectral performance and prevents channeling. It is packaged in a 4 pin TO5 can and hermetically sealed behind a KBr IR window.



DETECTOR, INCORPORATED

7470 SW Bridgeport Road

Portland, OR 97224

(503) 620-9069 (800) 366-4340

Fax: (503) 620-8964 Telex: 5106002976

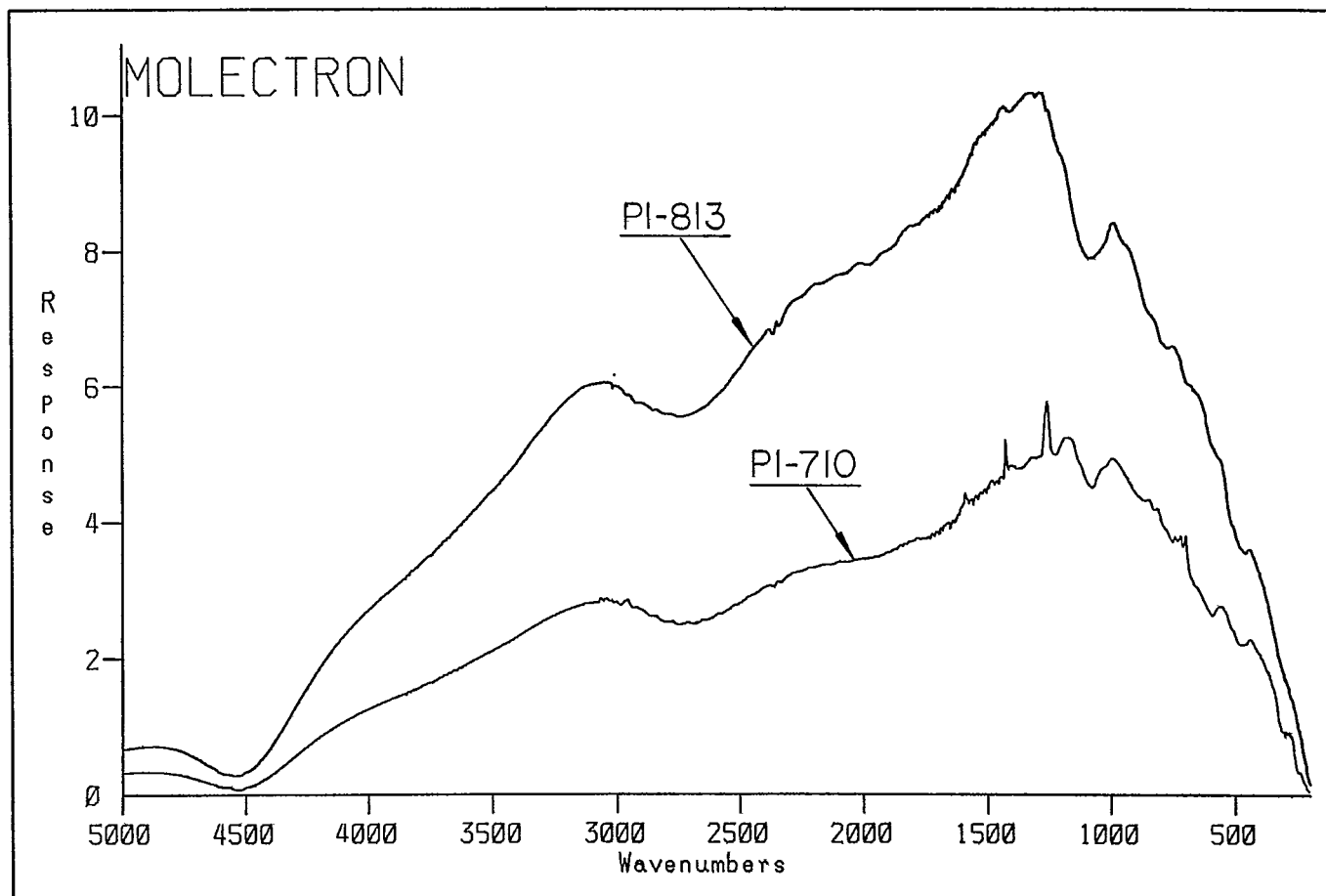


Fig. 1. Molelectron P1-710 and P1-813 Single Beam Spectral Response, Res = 4.0

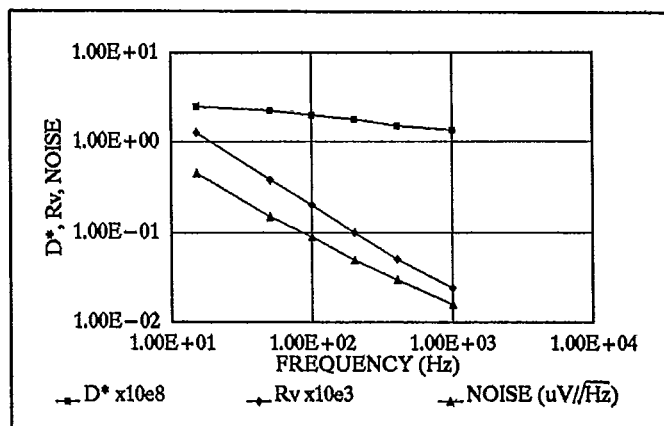


Fig. 2. Molelectron P1-710 Blackbody Test Data

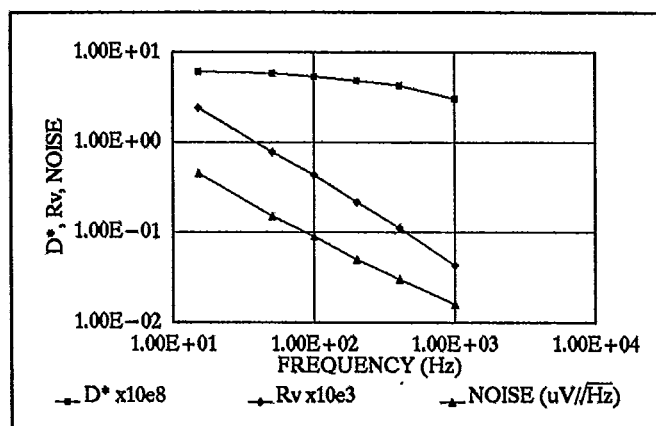


Fig. 3. Molelectron P1-813 Blackbody Test Data