

# MODEL 447

## PRELIMINARY DATA

### IR-EYE™ INTEGRATED SENSOR Parallel Opposed Dual IR Detector With Integrated Signal Processing\*

Eliminate Burn-In Tests      Miniaturize Circuitry  
Improve RF Immunity          Reduce Components  
Eliminate False Alarms        Reduce Repairs

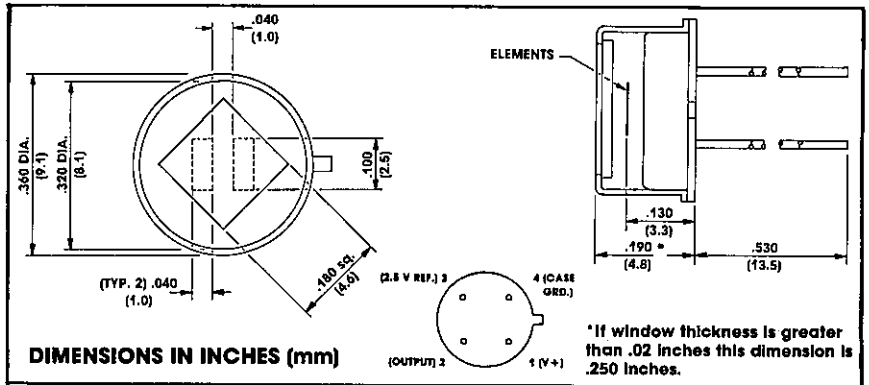
The **Model 447 IR-EYE™** Integrated Sensor is a Lithium Tantalate pyroelectric parallel opposed dual element high gain detector with complete integral analog signal processing. This unit offers greatly improved detection capability over an extended temperature range of -40 to +70°C with no significant change in noise or sensitivity.

#### Features

100 x Signal Amplification  
100 x Voltage Regulation  
2 x Detection Capability  
Wide Operating Temperature

#### Applications

People/Object Detection  
Intrusion Detection  
Lighting Control  
Robotics  
Motion Sensing  
Automatic Door Control  
Safety Warning  
High Stability Industrial &  
Military Applications



#### MODEL 447 Specifications

##### Operating Characteristics

D* (cm Hz <sup>1/2</sup> /W, BW-1Hz)	2.0 x 10 <sup>8</sup>
NEP (W/Hz <sup>1/2</sup> , BW-1Hz)	2.0 x 10 <sup>-10</sup>
Responsivity (V/W)	2.7 x 10 <sup>5</sup>
Common Mode Rejection (Min.)	5/1
(Typ.)	15/1
Noise (mV/Hz <sup>1/2</sup> )	0.2
Breakpoint:	
Thermal	0.15Hz
Electrical	5Hz
Incident Power (Max.)	0.2 Watts
Power Supply Voltage	5-15 VDC
Current (Max.)	2.0 mA

##### Output Characteristics

Voltage (Max.)	V+
Current (Rec.)	0.02 mA
Output Load (min.)	2 Kohm
Reference Voltage**	
pin 3/4	+2.5 V

##### Ambient Operating Conditions

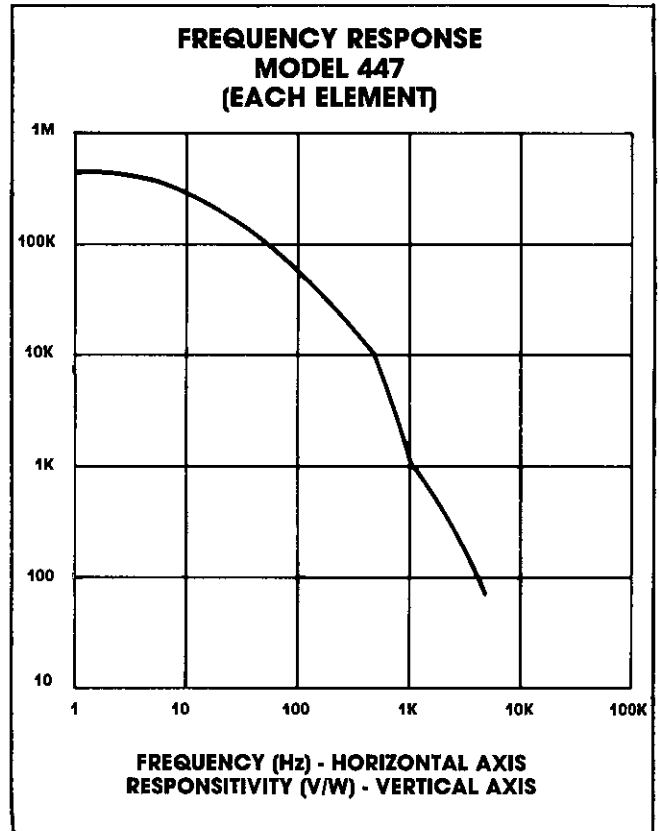
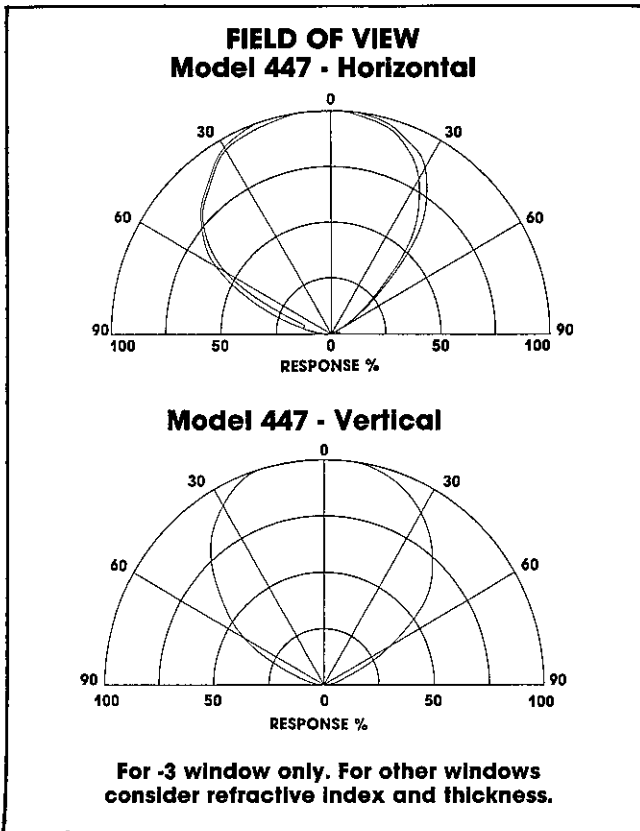
Storage Temp.	-55 to +125°C
Operating Temp.	-40 to +70°C
Sensitivity to: Temperature	+ .3%/°C

NOTE 1- Characteristics are at 25°C, 14.7 psia, V+ = 5VDC,  
f = 1Hz, Bandwidth of 8-14 micrometers.

NOTE 2- The information contained in this sheet has been obtained  
from development samples. Data is believed to be  
representative.

\* Patent pending. Manufactured under one or more of the  
following U.S. patents: 3,839,640 - 4,218,620 - 4,326,663 - 4,384,207 -  
4,437,003 - 4,441,023 - 4,523,095

\*\* See reverse for additional information.



### Mounting, Soldering and Handling:

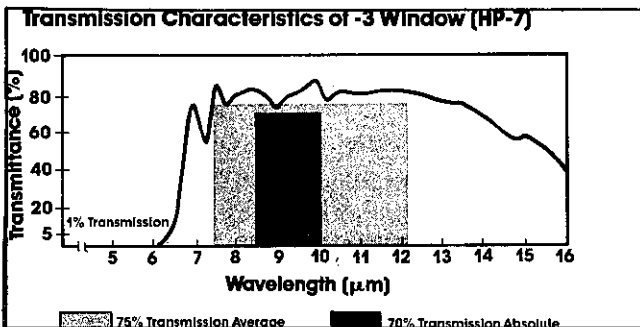
These Sensors have been improved over previous Models and can withstand normal handling and automatic assembly as well as wave soldering at 280°C for 10 seconds, at 1/4" (6.3mm) from the case bottom.

Contamination and fingerprints on the window surface should be cleaned with alcohol and a soft cloth.

Avoid mechanical stresses on case and leads.

### Static Discharge

Additional safety features are used internally to make these sensors almost immune to electrostatic discharge.



### Reference Voltage

The internal biasing voltage is accessible on pin 3. This voltage is used to drive the internal output amplifier. Offset voltage is referred to this point.

This reference provides a low drift zero to allow for direct DC coupling of a subsequent comparator or A/D converter.

The recommended maximum load on this pin is 20 uA (source only) to maintain electrical and thermal stability. Current loads greater than 20uA may adversely affect performance; however, the output is short circuit proof.

### Light Leakage

Slight sensitivity to visible light leaking through the glass-to-metal seal on the base may be observed.

