

Datasheet Dual Integrated Sensor Type HIS E222 F1 F2 Gx



Features and Benefits

- Dual-channel thermopile sensor with integrated ASIC
- 4-pin metal housing of size TO-5 / TO-39
- 2 separate outputs supply analogue thermopile voltages
- gain preset of selectable factor 4300 or 2150
- Wide operating range 2.7V to 5.5V , -40°C to 120°C
- Large variety of available filter types for different applications

Ordering Information

HIS -> Heimann thermopile sensor and ASIC in a TO-5 housing
 E222 -> „E“ dual cap TO39 ; „22“ 2x sensor chip TP2 ; „2“ ASIC STP1
 F1 -> Filter 1 : application-specific filter type (list)
 F2 -> Filter 2 : application-specific filter type (list)
 Gx -> sensor gain preset G2150 or G4300

e.g. HIS E222 F3.91/90 F4.26/180 G4300

Filter Selection		
<i>Filter Type</i>	<i>Application</i>	<i>Specification</i>
F4.26-180	CO2 gas detection	NBP CWL 4.26µm HPB 180nm
F4.27-90	CO2 gas detection	NBP CWL 4.27µm HPB 90nm
F4.43-60	CO2 gas detection	NBP CWL 4.43µm HPB 60nm
F4.64-180	CO gas detection	NBP CWL 4.64µm HPB 180nm
F3.30-160	HC gas detection	NBP CWL 3.30µm HPB 160nm
F3.37-190	HC gas detection	NBP CWL 3.375µm HPB 190nm
F3.91-90	gas reference	NBP CWL 3.91µm HPB 90nm
F5.30-180	NOx gas detection	NBP CWL 5.30µm HPB 180nm

Please contact Heimann customer service for special filter requirements.

Operating Conditions

<i>Parameter</i>	<i>Typical Value</i>	<i>Unit</i>	<i>Condition</i>
Supply voltage VDD	(2.7).. 3 .. 5..(5.5)	V	+Vs
Supply voltage VSS	0	V	-Vs , Ground
Supply current	2	mA	Without load
Operating temperature	-40.. 120	°C	

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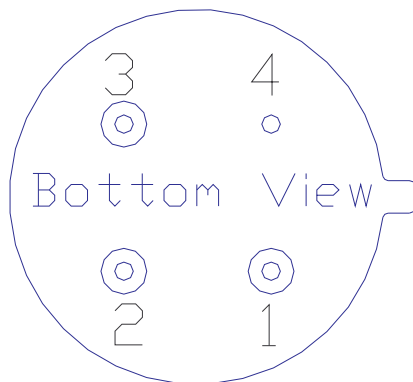
Electrical Specification

Parameter	Typical Value	Unit	Condition
Absorbing area	1.2 x 1.2	mm ²	Thermopile Chip
Voltage Sensitivity	38	V/W	Thermopile Chip
Voltage response	55	Vmm ² /W	Thermopile Chip
Time constant	8	ms	
Open loop gain	90	dB	ASIC
PSRR	>40	dB	
Output voltage range	0.15 .. (VDD-0.15)	V	
Noise voltage	45	nV/√Hz	Input related
Zero input sensor signal	1.25	V	Sensor output TPO
Sensor gain	4300 or 2150	V/V	preset

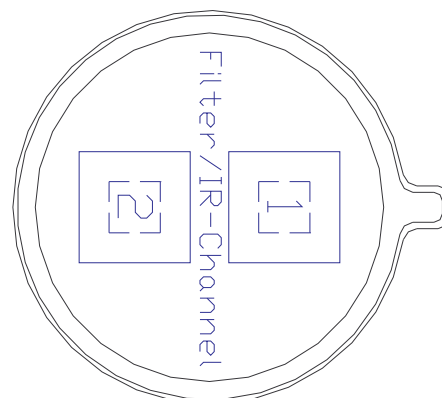
Pin Assignment

Pin No	Symbol	Description
1	TPO1	Analog output voltage sensor 1 – IR-channel 1 – Filter 1
2	TPO2	Analog output voltage sensor 2 – IR-channel 2 – Filter 2
3	VDD	Positive supply voltage
4	VSS	Negative supply voltage / Ground (0V)

Bottom View



Top View



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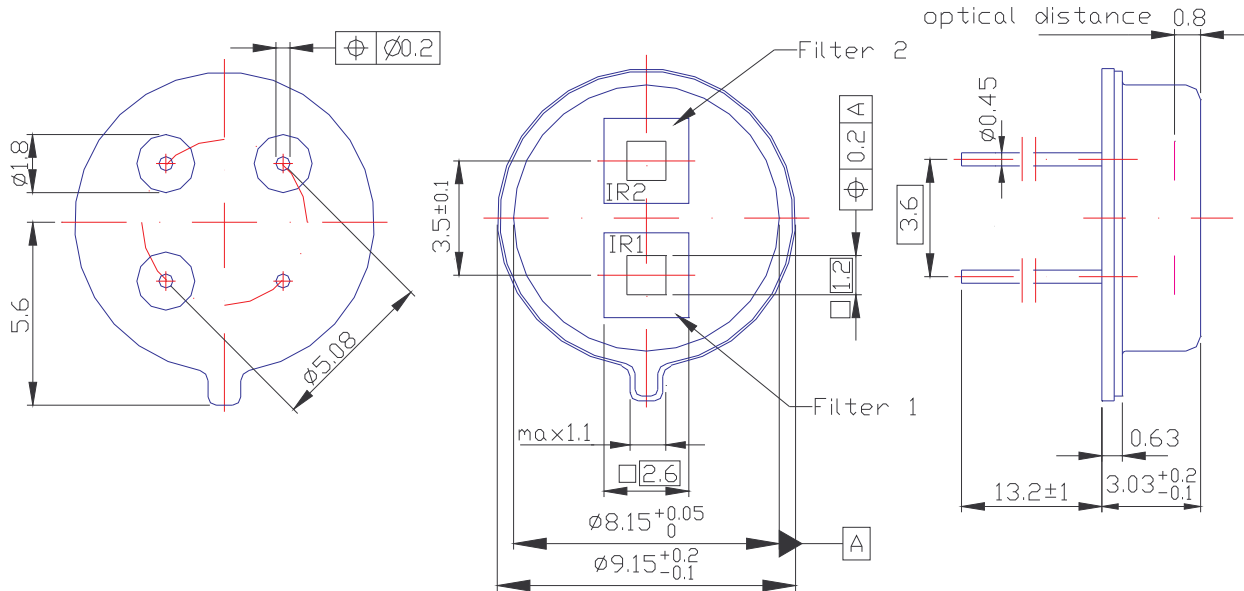
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Dimensions



Application Hints Gas Detection

A gas concentration can be measured by monitoring the absorption of an infrared light beam. The base equation for gas concentration measurement in the infrared way is Beer's law :

$$I = I(0) \cdot \exp(-k \cdot c \cdot L)$$

- I -> radiant flux at the point of measurement
- I(0) -> base radiant flux of the test system without gas absorption
- k -> constant (gas and filter specific)
- L -> measuring distance
- c -> gas concentration

The radiant flux is proportional to the output voltage of the sensor module :
 $U/U(0) \sim I/I(0)$.

A special infrared light source is used to generate the radiant heat. The infrared source needs to be square-pulse-triggered to eliminate adverse temperature influences. Don't hesitate to contact HEIMANN Sensor for support to use our long-time experience in infrared sensors and sensor modules.

Disclaimer

Changes or modifications at the product which haven't influence to the performance and/or quality of the device haven't to be announced to the customers in advance. Customers are requested to consult with Heimann Sensor representatives before the use of Heimann Sensor products in special applications where failure or abnormal operation may directly affect human lives or cause physical injury or property damage. The company or their representatives will not be responsible for damage arising from such use without prior approval.

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