

HIS A-Series

Thermopile Integrated Sensor Modules for Gas Analysis and Temperature Measurement

The HIS Series devices include a thermopile sensor chip (optional TP1, TP1c, TP2, TP3) and an analog processing circuit in a TO-39 metal housing with 4 pins.

The sensor provides on analog outputs a high-accuracy amplification of the thermopile voltage with gain preset to 4300 or 2150 and an integrated temperature reference with a sensitivity of typically 15.5 mV/°C.

For gas detection, the sensors can be equipped with narrow band filters providing the gas specific center wavelength (CWL) and narrow half power bandwidth (HPBW).

For temperature measurements, we offer the standard filters F5.5 and F8-14 (atmospheric window).

Characteristics Sensor Chip

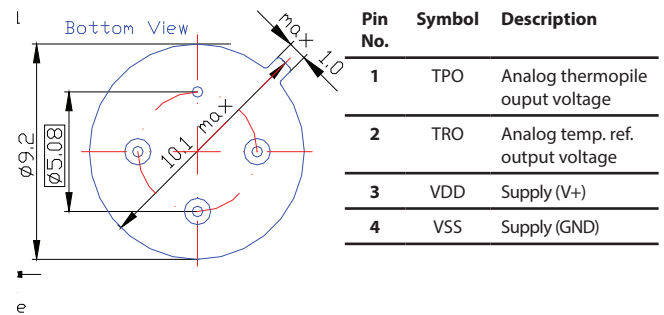
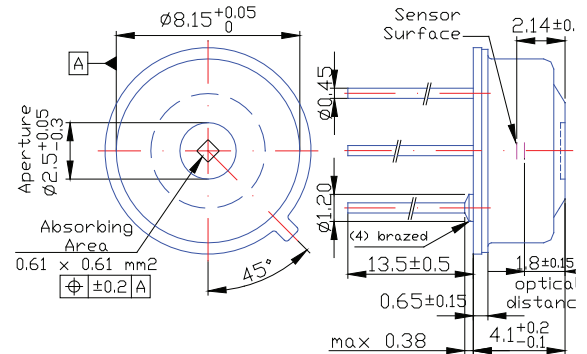
	TP1	TP1c	TP2	TP3	Unit
Element size	0.61 ²	0.76 ²	1.2 ²	2.1 ²	mm ²
Time constant sensor chip	5	8	10	18	ms
Sensitivity ^{a)}	58	52	44	26	V / W
Resistance R _{TP} ^{b)}	86	75	84	88	kOhm
Voltage response ^{a)}	22	30	63	115	Vmm ² / W

a) Without filter, T_{obj} = 100°C, DC
b) At T_{amb} = 25°C

Filter Options Gas Detection

Gas	REF	CO ₂	HC	CO	NO
	F3.91/90	F4.26/180	F3.3/160	F4.64/180	F5.3/180
Filter (CWL/HPBW)		F4.30/110	F3.37/190		
		F4.43/60			

Dimensions and PIN-Configuration



Characteristics Module

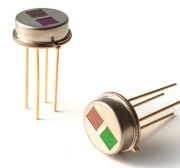
	HIS Ax1	HIS Ax2	Unit
Supply voltage	5	2.7 ... 5.5	V
Supply current	1	1	mA
Max. startup time after POR	0.5	0.5	s
PSRR	>40	>40	dB
Output voltage range	0.15.. (VDD-0.15)		V
Zero input sensor signal	1.225	1.2	V
Sensor gain preset	5600	4300 or 2150	V/V
Temp. ref. voltage ^{a)}	1.225	1.5	V
Sensitivity temp. ref.	15	16	mV/°C
Field of view ^{b)}	>70	>70	°
Operating temperature	-20 ... 120	-20 ... 120	°C
Storage temperature	-40 ... 125	-40 ... 125	°C

a) At T_{amb} = 25°C
b) Depending on the thermopile chip element size

Ordering Information

HIS	Heimann Integrated Sensor Module with analog outputs
Ax2	Standard cap, without optics
(x= 1, 1c, 2, 3)	Thermopile sensor chip
Fx	Filter (x= standard filter options or customized)
Gx	Gain preset (x= 2150 or 4300)

E.g.: HIS A22 F4.26/180 G4300



HIS E-Series

Thermopile Integrated Dual Sensor Modules for Gas Analysis

The HIS E222 is a two-channel thermopile sensor with integrated processing circuit providing high-accuracy amplification on analog voltage outputs. It comes in a 4 pin TO-39 housing. The sensor provides a wide operating range from 2.7 V to 5.5 V and -40°C to 120°C.

Heimann offers a large variety of filters for gas concentration measurements. Typically, one channel serves as reference where no gas absorption occurs. The other channel can be equipped with special filters providing the gas specific center wavelength (CWL) and very narrow half power bandwidth (HPBW).

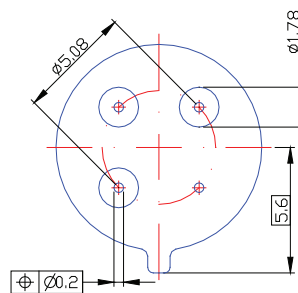
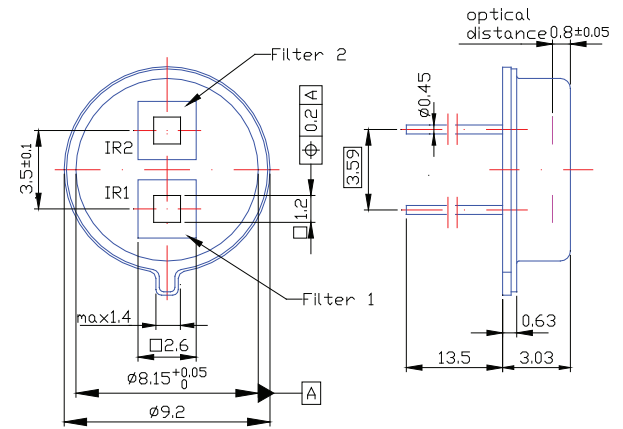
The gain factor can be preset to 4300 or 2150 on both thermopile channels.

Characteristics

	HIS E222	Unit
Element size sensor chip	1.2 ²	mm ²
Time constant sensor chip	10	ms
Sensitivity ^{a)}	44	V / W
Voltage response ^{a)}	63	V mm ² / W
Resistance R _{TP}	84	kOhm
Supply voltage	3 ... 5	V
Supply current	2	mA
Max. start up time after POR	0.5	s
PSRR	>40	dB
Output voltage range	0.15.. (VDD-0.15)	V
Zero input sensor signal	1.2	V
Sensor gain preset	4300 or 2150	V/V
Field of view ^{b)}	>70	°
Operating temperature	-20 ... 120	°C
Storage temperature	-40 ... 125	°C

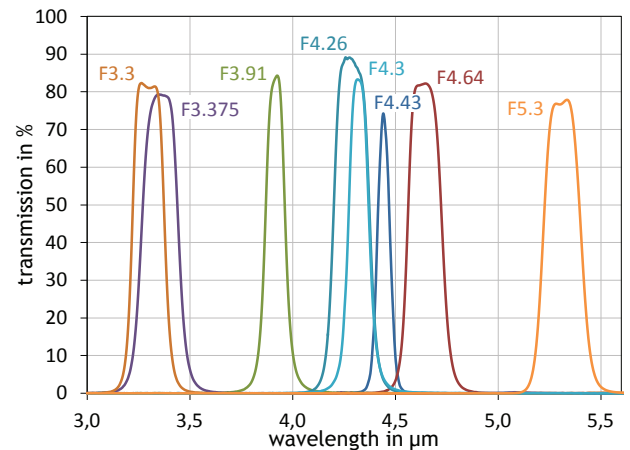
a) At T_{amb} = 25°C
b) At 50% voltage response

Dimensions and PIN-Configuration



Pin No.	Symbol	Description
1	TPO1	Analog output voltage sensor 1
2	TPO2	Analog output voltage sensor 2
3	VDD	Supply (V+)
4	VSS	Supply (GND)

Filter Options



Gas	REF	CO ₂	HC	CO	NO
Filter	F3.91/90	F4.26/180	F3.3/160	F4.64/180	F5.3/180
(CWL/HPBW)		F4.30/110	F3.37/190		
		F4.43/60			

Ordering Information

HIS	Heimann Integrated Sensor Module
E222	Dual type with two sensor chips TP2 and analog IC
F1 F2	Filter options (F1->IR1 ; F2->IR2 ; standard or customized)
Gx	Gain preset (x= 2150 or 4300)

E.g.: **HIS E222 F3.91-90 F4.26-180 G4300**