

# Datasheet Dual Integrated Sensor Type HID E22x F1 F2 G100



## Features and Benefits

- Thermopile Sensor with ASIC in 4-pin TO-5/TO-39 housing
- 2 IR channels with low noise chopper amplifiers and programmable gain
- Digital voltage output (via SMBus compatible RAM access) or PWM output
- Selectable for hardwired preset to 3V or 5V supply voltage
- Complies with ROHS regulations

## Ordering Information

HID : Heimann thermopile sensors and ASIC in TO-5 housing

E22 : ->„E“ cap with 2 filter openings ;

->„22“ two thermopile sensors of type TP2

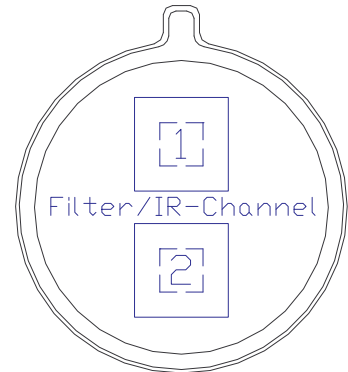
x : ASIC supply voltage ->„4“ : 5V ; ->„5“ : 3V

F1 : Filter 1 of IR channel 1, selection acc. to filter list

F2 : Filter 2 of IR channel 2, selection acc. to filter list

G100 : gain factor 100 – factory preset

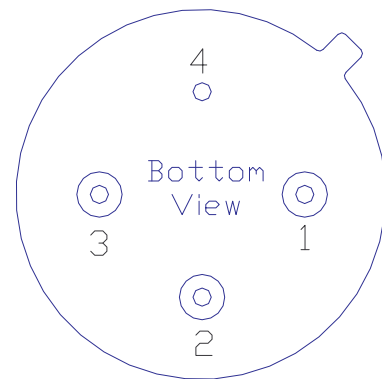
e.g. HID E224 F3.91-90 F4.26-180 G100



Filter Selection (Please contact Heimann customer service for special filter requirements)		
Filter Type	Application	Specification
F5.30-180	NO gas detection	NBP CWL 5.30µm HPB 180nm
F4.64-180	CO gas detection	NBP CWL 4.64µm HPB 180nm
F4.43-60	CO2 gas detection	NBP CWL 4.43µm HPB 60nm
F4.26-180	CO2 gas detection	NBP CWL 4.26µm HPB 180nm
F4.27-90	CO2 gas detection	NBP CWL 4.27µm HPB 90nm
F3.91-90	gas reference	NBP CWL 3.91µm HPB 90nm
F3.37-190	HC gas detection	NBP CWL 3.375µm HPB 190nm
F3.30-160	HC gas detection	NBP CWL 3.30µm HPB 160nm

## Pin Configuration

Pin	Sym	Description
1	SCL	Digital input , serial clock in SMBus compatible mode
2	VDD	Positive supply voltage
3	SDA / PWM	Digital I/O , data input /output in SMBus compatible mode (open drain), pulse width modulated temperature(s) in PWM mode
4	VSS	Negative supply voltage / Ground (0V) (connected to housing)



## Maximum Ratings

Parameter	Max. value	Unit	Condition
Supply voltage 1 VDD	7	V	Type 5V
Supply voltage 2 VDD	5	V	Type 3V
Reverse voltage	0.4	V	Ground
ESD sensitivity	2	kV	Human body
Storage temperature	-40.. 125	°C	

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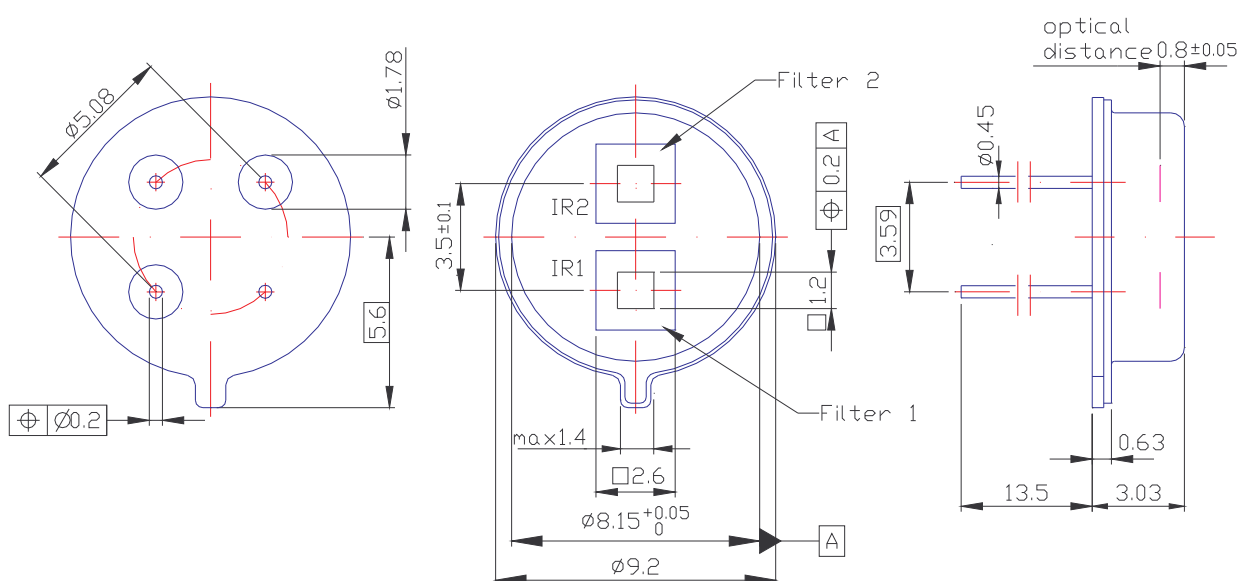
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## Operating Conditions

Parameter	Typical Value	Unit	Condition
Supply voltage 1 VDD	5	V	Preset option "x -> 4"
Supply voltage 2 VDD	3	V	Preset option "x -> 5"
Supply voltage VSS	0	V	Ground
Supply current	1	mA	Without load
Start up time after POR	0.15	sec	
Sensor absorbing area	1.2 x 1.2	mm <sup>2</sup>	Sensor type TP2
Sensitivity thermopile sensor	38	V/W	Sensor chip, 500K, 1Hz
Voltage response thermopile sensor	55	Vmm <sup>2</sup> /W	Sensor chip
Gain factor preset	100	V/V	
ADC resolution	16	Bit	ADC Reference voltage 1.2V
IR output voltage range	-960 .. 960	mV	RAM V <sub>TP</sub>
Voltage resolution	0.0293	mV/step	
Response time / Refresh rate	8 / 60..100	ms	Sensor chip / Digital out
Temperature sensor range	-40 .. +125	°C	RAM T <sub>A</sub>
Slave address	5Ah	hex	Factory default
Operating temperature range	-40.. 125	°C	
Interface (EEPROM Configuration )	2-wire SMBus compatible, output preset to open drain NMOS		
	1-wire PWM output, 10 bit resolution, output configurable to push-pull or open drain		

## Dimensional Drawing

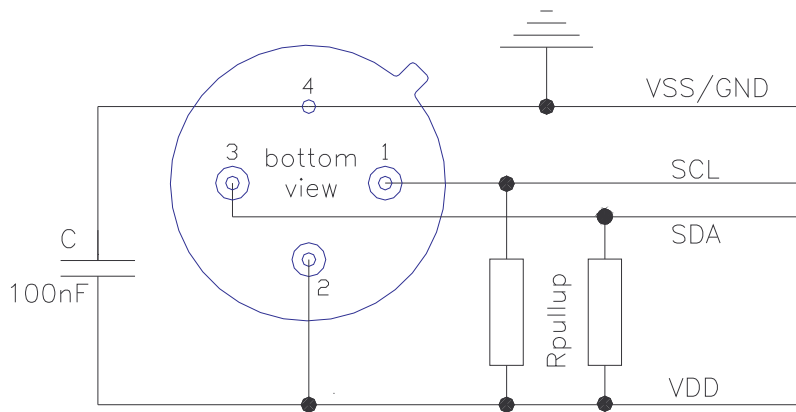


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**Applications Circuitry SM-Bus Operation**

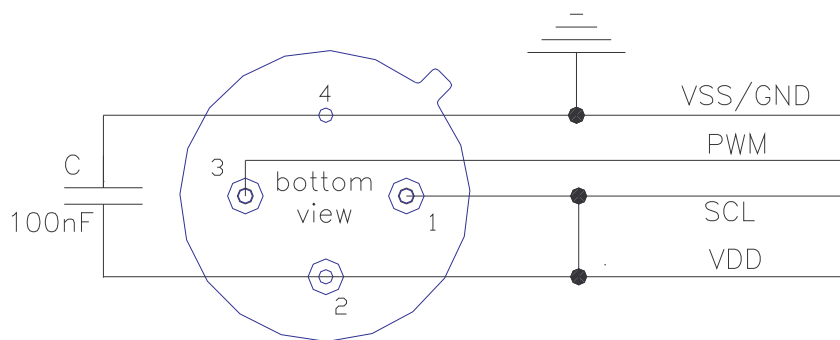


Pull-up resistor recommendation:

low power applications  
20kOhm (SM-Bus DC specification  
Ipullup 100µA .. 350µA)

high power applications  
1.5kOhm (SM-Bus DC specification  
Ipullup min. 4mA)

**Applications Circuitry PWM Operation**



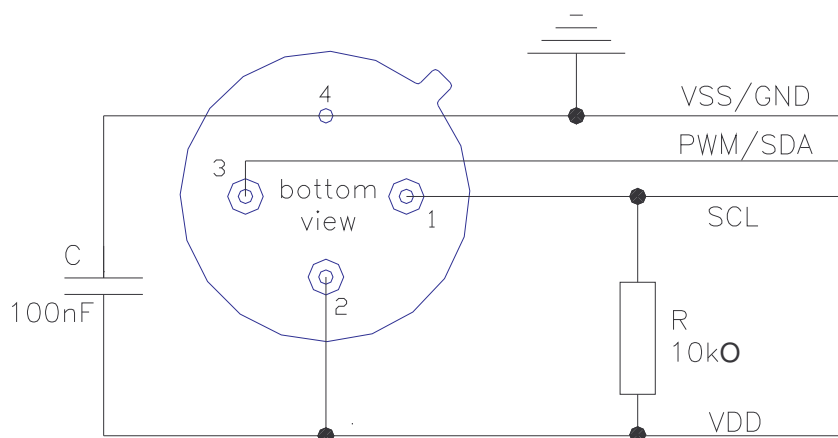
PWM mode is free running after power on.

Pin 3 (SCL) must be forced high for PWM mode

PWM output is configured as push pull

Default PWM output of object temperature 1

**Applications Circuitry PWM Operation with SM-Bus Option**



PWM mode is free running after power on.

SM-Bus operation available by added pull-up resistor

PWM output is configured as push pull

Default PWM output of object temperature 1