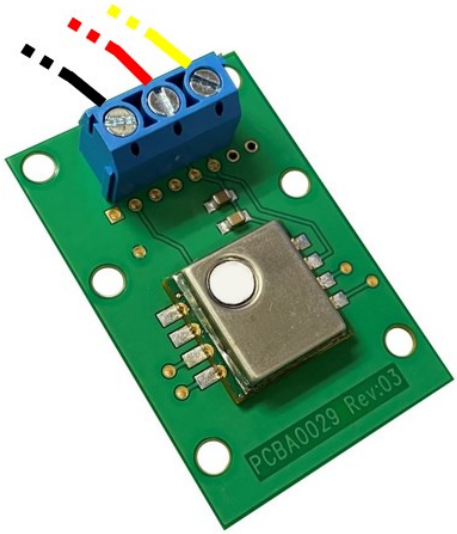
AX224068 Test Board

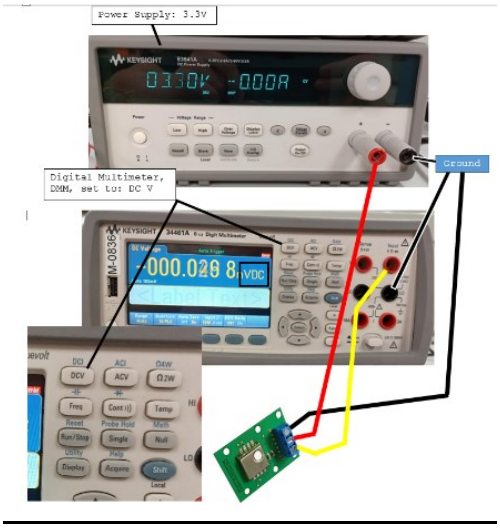


BILL OF MATERIAL

ITEM CODE	DESCRIPTION	QUANTITY	UOM
AX224021	TR H2 Sensor PV1 Generic Version	1	EA
PCBA0029	Thermal Runaway Mini Breakout Board	1	EA
AX221126	Terminal Block OSTTC032162	1	EA
CC-007	SN95/AG5 Solder Pot Tin	0.001	GM
C-060	SAC 305 No Clean HF Solder .040 Dia.	0.001	GM
I-267	20Awg 7/38 Bare Copper Wire TXL Black	6.5	FT
I-268	20Awg 7/38 Bare Copper Wire TXL Red	6.5	FT
I-269	20Awg 7/38 Bare Copper Wire TXL Yello	6.5	FT
EE-016	6 x 84 mil antistatic zipper	1	EA
TBD	0.1uF 0603 General Capacitor	1	EA
TBD	1uF 0603 General Capacitor	1	EA
TBD	Twist Tie	1	EA

Laboratory Single Device Test Setup

Using a power supply, and digital multimeter, power the part with 3.3 Volts as pictured.

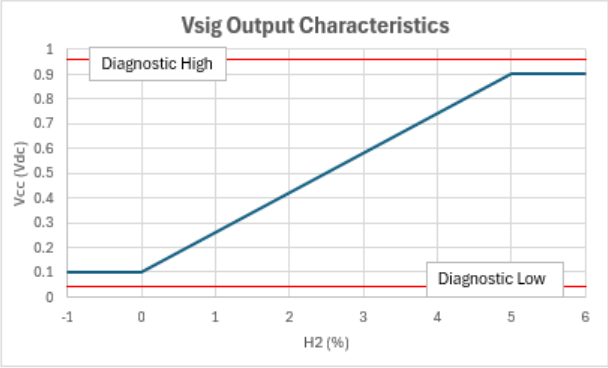


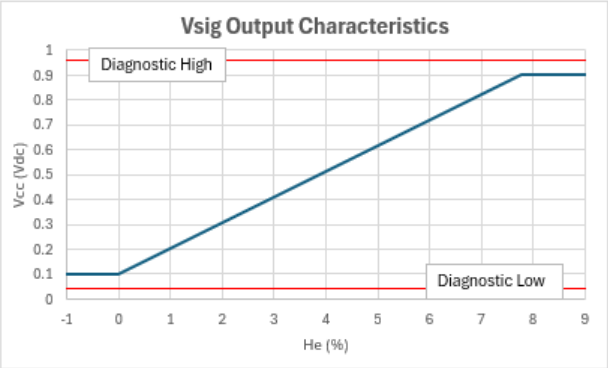
This sensor is not revers or over voltage protected. Be sure of setup before applying

Current will fluctuate between ~4mA and 20mA, and output voltage will be between ~0.33V to 0.45V depending on atmosphere and supply voltage.

Vsig Output (Yellow)

AX224021 is calibrated from 0% to 5% hydrogen concentration. Helium surrogate can be used for testing purposes and is characterized based on the relationship below.





Output Relationship

Linearized relationship between % concentration (H), supply voltage (V_{cc}) and output (V_{sig}) is shows below:

$$V_{cc} * (a * H + b) = V_{sig}$$

The coefficients a, b for calculating the He and H_2 concentration are shown in table 1.

Parameter	Value	Unit
Vsig Max	V_{cc}x 0.9	Volts
Vsig Min	V_{cc}x 0.1	Volts
Coefficient a, b for Helium concentration (%)		
a (He)	0.05	1/%
b (He)	0.1	-
Coefficient a, b for Hydrogen concentration (%)		
a (H2)	0.16	1/%
b (H2)	0.1	-

Table 1: Coefficients a, b for calculating He and h2 concentration

Any values calculated to be above V_{cc} x 0.9 or below V_{cc} x 0.1 are considered saturated and will be limited to these values.

Example

Calculating %H_2 Concentration			
Example 1		Example 2	
V_{out}	2 V	V_{out}	1.02 V
V_{cc}	3.3 V	V_{cc}	3.3 V
a	0.16 1/%	a	0.16 1/%
b	0.1	b	0.1
H_2 Conc.	3.1628 %	H_2 Conc.	1.3068 %

Calculating %He Concentration			
Example 1		Example 2	
V_{out}	2 V	V_{out}	1.02 V
V_{cc}	3.3 V	V_{cc}	3.3 V
a	0.10296 1/%	a	0.10296 1/%
b	0.1	b	0.1
He Conc.	4.9149 %	**He** Conc.	2.0307 %