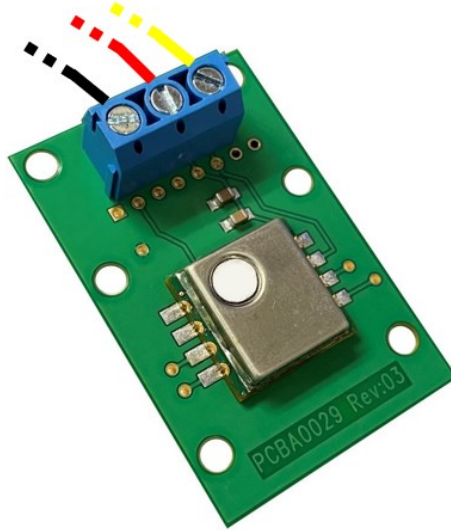


## AX224068 Test Board



### BILL OF MATERIAL

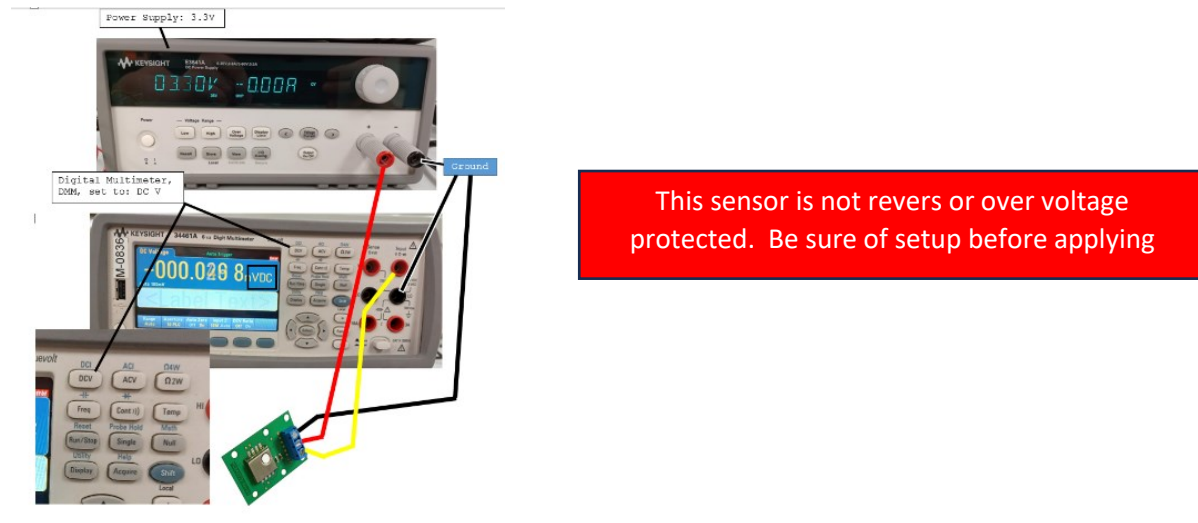
ITEM CODE	DESCRIPTION	QUANTITY	UOM
AX224021	TR H2 Sensor PV1 Generic Version	1	EA
PCBA0029	Thermal Runaway Mini Breakout Board	1	EA
AX221126	Terminal Block OSTTC032162	1	EA
CC-007	SN95/AG5 Solder Pot Tin	0.001	GM
C-060	SAC 305 No Clean HF Solder .040 Dia.	0.001	GM
I-267	20Awg 7/38 Bare Copper Wire TXL 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

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## Laboratory Single Device Test Setup

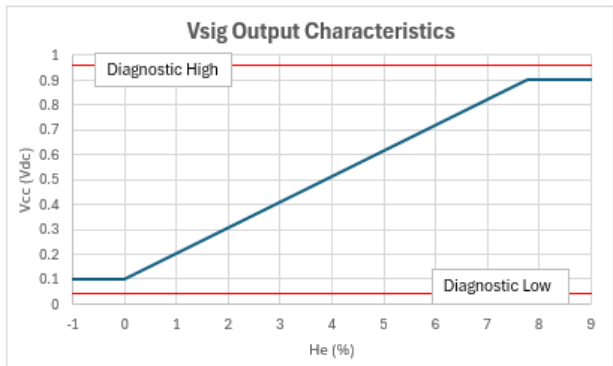
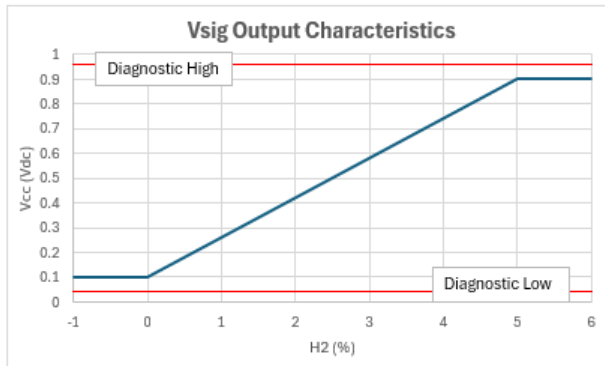
Using a power supply, and digital multimeter, power the part with 3.3 Volts as pictured.



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 shown 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	$V_{cc} \times 0.9$	Volts
Vsig Min	$V_{cc} \times 0.1$	Volts
<b>Coefficient a, b for Helium concentration (%)</b>		
a (He)	0.05	1/%
b (He)	0.1	-
<b>Coefficient a, b for Hydrogen concentration (%)</b>		
a (H <sub>2</sub> )	0.16	1/%
b (H <sub>2</sub> )	0.1	-

Table 1: Coefficients a, b for calculating He and h<sub>2</sub> concentration

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

### Example

Calculating %H <sub>2</sub> 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 <sub>2</sub> Conc.	3.1628 %	H <sub>2</sub> 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 %