

### Comparison Table: BME680 vs. BME688

Feature	BME680	BME688
<b>Primary Focus</b>	General Air Quality (IAQ)	Specific Gas Detection & AI
<b>Gas Sensor Type</b>	MOX (Metal Oxide)	
<b>AI Integration</b>	None (Software-based IAQ only)	Integrated AI support (BME AI-Studio)
<b>Gas Detection</b>	Broad VOCs (Volatile Organic Compounds)	VOCs + VSCs (Volatile Sulfur Compounds)
<b>Gas resistance range</b>	Standard	Extended (for better discrimination)
<b>Humidity Stability</b>	Moderate cross-sensitivity (~15-25% error)	High stability (<5% error in high humidity)
<b>Software Support</b>	Basic BSEC library	BSEC + BME AI-Studio
<b>Replacement Type</b>	N/A	Backward compatible "Drop-in" replacement

Since the BME688 and BME680 provide gas data as resistance in ohms ( $\Omega$ ), the value decreases as the air becomes more polluted. Here is how to interpret those ohm values for a typical indoor environment:

Gas Resistance ( $\Omega$ )	Air Quality	Interpretation
<b>&gt; 1,000,000 (1M+)</b>	◆ Excellent	Very clean air. Typical for outdoors or well-ventilated rooms.
<b>500k - 1,000k</b>	◆ Very Good	Fresh indoor air.
<b>100k - 500k</b>	◆ Good	Normal indoor environment.
<b>50k - 100k</b>	◆ Fair	Noticeable odors or VOCs (e.g., <i>cooking, cleaning products</i> ).
<b>10k - 50k</b>	◆ Poor	Significant pollution. Time to open a window.
<b>&lt; 10k</b>	◆ Very Poor	High concentration of VOCs or gases (e.g., <i>heavy smoke or alcohol</i> ).

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