Posifa Technologies

Sensing Solutions for **HVAC-R**

- A2L Leak Detection
- Air Velocity Montoring
- Vacuum Measurement

Product Catalog

posifa TECHNOLOGIES

Posifa Technologies Sensing Solutions for HVAC-R

Overview

Posifa Technologies offers a portfolio of MEMS sensing solutions for HVAC/R designs that prioritize safety, system reliability, and efficient operation. This catalog highlights sensors for A2L refrigerant leak detection, air velocity monitoring, and vacuum measurement—covering both compact transducers and integrated vacuum gauges.

Each product section is organized to help you quickly understand what the sensor enables, why it's different, and how it integrates into your system. A selector section at the end provides a simple starting point for product selection.

The Posifa Advantage for HVAC/R

Posifa's MEMS-based sensing approach helps address common HVAC/R design challenges—fast response, stable measurement, and long-term reliability—in compact formats suited for modern system architectures.

Posifa MEMS Approach	Conventional Approaches	What This Enables
Solid-state thermal conductivity sensing for leak detection	Sensor technologies that can drift or degrade when exposed to contaminants	Stable performance in harsh environments and reduced sensitivity to contaminants
Environmental compensation (humidity, pressure, temperature) where applicable	Limited compensation or system-level correction required	More consistent readings across operating conditions
Compact footprints designed for flexible integration	Larger or mechanically constrained sensing assemblies	Easier placement and design flexibility
Solutions designed for long-term reliability in the field	More frequent maintenance and recalibration	Lower total cost of ownership and reduced service burden

Designed for Integration

Across the HVAC/R portfolio, Posifa sensors are engineered to simplify integration:

- Compact footprints to support space-constrained designs
- Digitized outputs where applicable (example: I^2C via connector-terminated harness)
- Calibration and compensation features to reduce system-level correction
- Low power options for portable and battery-powered instruments

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Product Platforms

Advanced A2L Leak Sensors

Miniaturized solution for new and existing designs

Key Benefits

- Patented solid-state thermal conductivity technology
- Approx. 50 mm^2 footprint for flexibility in design
- Humidity, pressure, and temperature compensated
- Accurate in harsh environments
- Non-reactive to contaminants and “poisons”
- Long-term reliability greater than 15 years
- Fast response time less than 250 ms

MEMS Anemometer Sensors

Easy integration into portable anemometers and fixed in-duct air velocity monitors

Key Benefits

- Fully calibrated and temperature compensated
- Excellent signal-to-noise ratio
- Repeatability of 1 % FS
- High accuracy of 5 % FS
- Low power consumption to extend battery life in portable anemometers
- Extremely fast response times of 20 ms typical
- I^2C or Modbus RTU over RS485 digital output via a connector-terminated wire harness

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MEMS Vacuum Transducers and Sensors

Advanced MEMS micro-Pirani technology for compact, precise vacuum pressure measurement

Key Benefits

- Integrated microstructures enable compact vacuum pressure sensing
- Better accuracy, repeatability, and range compared to conventional Pirani sensors
- Minimize power consumption while supporting scalable solutions
- Manufactured in a CMOS semiconductor fab
- Reliable results at a low cost
- Supports miniaturization of vacuum systems for modern designs

High-Performance Vacuum Gauges

Cost-effective solutions for atmosphere to medium vacuum applications

Key Benefits

- Combine MEMS Pirani sensor and barometric sensor for accurate measurement from 10^{-3} mbar to ATM
- Exceptional accuracy, wide measurement ranges, and long-term stability
- Eliminate the need for recalibration of replacement probes to reduce ownership costs
- Low working temperature supports resistance to contamination
- Customizable output voltages for plug-and-play replacement in existing systems
- Individually calibrated probes for enhanced precision and reliability

Application Examples

A2L Refrigerant Leak Detection

Use solid-state thermal conductivity sensing to support rapid identification of refrigerant leaks in A2L systems. Environmental compensation and a compact footprint can simplify placement in space-constrained designs while supporting stable performance under real-world conditions.

Air Velocity Monitoring in Ducts

Integrate MEMS anemometer sensors into fixed in-duct monitors to help track airflow behavior over time. Calibrated, temperature-compensated sensing supports consistent readings for system monitoring workflows.

Portable Anemometers for Field Service

Low power consumption and fast response support battery-powered instruments used in commissioning and maintenance. A digital interface option (I^2C via harness) can streamline electronics design and reduce integration effort.

Vacuum Measurement for Service and Instruments

MEMS micro-Pirani transducers provide compact vacuum measurement capabilities with improved accuracy and repeatability versus conventional Pirani sensing approaches, supporting modern portable tools and space-constrained systems.

Vacuum Gauge Replacement and Standardization

Integrated vacuum gauges with individually calibrated probes and customizable outputs can enable easier replacement in existing equipment while reducing the recalibration burden associated with probe swaps.

Next Steps

- Discuss your sensing requirements and integration constraints with Posifa
- Request evaluation units and documentation for rapid feasibility testing
- Review calibration and output options to match existing systems

Contact: info@posifatech.com

PRODUCT SELECTOR GUIDES

MEMS A2L Sensors

PART NUMBER	SPECIFICATIONS
PGS6032-R	R32
PGS6454-R	R454B
PGS6032-EVAL	Evaluation kit for R32 A2L refrigeration gas
PGS6454-EVAL	Evaluation kit for R454 A2L refrigeration gas

MEMS Anemometer Sensors

PART NUMBER	SPECIFICATIONS
PAV1005	7 m/sec, 0.5 V to 4.5 V, non-linear with I^2C digital output
PAV1015	15 m/sec, 0.5 V to 4.5 V, non-linear with I^2C digital output
PAV1005-KX	7 m/sec, 0.5 V to 4.5 V, non-linear with I^2C digital output and Molex connector
PAV1015-KX	15 m/sec, 0.5 V to 4.5 V, non-linear with I^2C digital output and Molex connector
PAV3005D	7 m/sec, I^2C, non-linear, SMD
PAV3015D	15 m/sec, I^2C, non-linear, SMD
PAV5040	30 m/sec, digital I^2C output, linear, probe only

MEMS Vacuum Transducers

PART NUMBER	SPECIFICATIONS
PVC5816	10^{-3} Torr to 760 Torr, I^2C Output, DN 16 ISO-KF Fitting
PVC4101	10^{-3} Torr to 760 Torr, SMD sensor, calibrated and temperature-compensated
PVC4001	10^{-3} Torr to 760 Torr, SMD sensor

MEMS Vacuum Sensors

PART NUMBER	SPECIFICATIONS
PVC3001	TO5 package
PVC3002	SMD, FR4 Substrate

High-Performance Vacuum Gauges

PART NUMBER	SPECIFICATIONS
PVC6800	Measurement range: 10^{-3} Torr to 1,125 Torr ($1.3x10^{-3}$ mbar to 1,500 mbar)