

# HVAC Testing and Instrumentation

## Application Note



### HVAC systems need ongoing maintenance

Most modern offices and retail spaces are equipped with high-performance HVAC equipment. These systems are usually very effective but, unless they are fully optimised and correctly maintained, they can consume much more energy and ultimately fail to control the climate inside the building.

To maximise the efficacy and energy efficiency of an HVAC system:

- The temperature and air flow through the ventilation ducts must be measured and leaks eliminated.
- The airflow into and out of each air outlet or extractor fan needs to be carefully matched to the local heating, cooling and ventilation requirements.
- The condition of the air filters in the system must be monitored to ensure they do not clog and restrict air flow.

### Modern HVAC trends

Climate change is driving exceptional growth in the global HVAC market.

As the global climate warms, more and more countries need air conditioning systems to stay cool in the summer. And this is combined with growing populations and disposable incomes in hot climates.



Measuring air flow out of air conditioning outlets is vital to correctly balance the system.



Dirty air filters increase energy consumption, reduce air flow, and expose occupants to harmful particles. Filters should be monitored regularly.

HVAC's fast-growing contribution to climate change is also becoming widely recognised. It currently consumes ~10% of all electricity produced globally, and ~70% of a typical building's energy consumption. As a result, the energy efficiency of HVAC is becoming the subject of increasing regulation which is focused on duct leak tightness and regular testing and maintenance.

### Challenges with HVAC testing

The field service engineers who conduct routine testing and maintenance of existing systems face several challenges including:

- Needing to transport a large number of heavy, bulky tools and test equipment around the building by hand.
- Access to ductwork and other test locations being tight and difficult.
- Accurate testing relying on taking a large number of different measurements in multiple locations to get a complete picture of system performance.
- Increased accuracy requiring frequent recalibration of tools, adding cost and down time for engineers.

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### Solutions to these issues

To help resolve these issues field engineers ideally want:

- Smaller, lighter, and more battery-powered instruments that are easy to use in tight spaces.
- Multifunctional instruments capable of taking many different measurements at the same time.
- Robust and highly accurate instruments with longer-battery lives and longer intervals before needing recalibration.

### How Flusso can help?

Flusso manufactures the world's smallest and least expensive flow sensors with class-leading accuracy, repeatability, and robustness.

We have sensors for air velocity, volumetric flow, and differential pressure that are ideally suited for tight integration into highly multifunctional, portable, and battery-powered test instruments.

### Evaluation Kit

Our evaluation kits contain everything you'll need to evaluate our sensors. All our kits come with a USB adapter to connect the sensor directly to your PC and GUI software that allows you to configure the sensor and log test data.

Our differential pressure kit comes with a fixture to adapt the FLS110 to 6 mm OD tube for ease of testing.

Our kits are factory calibrated and once connected, you can easily recalibrate the sensor to take account of your complete system for the best possible accuracy.



Using our evaluation kits, you can be measuring flow within minutes

### FLS110



The FLS110 is the world's smallest thermal differential pressure sensor.

Advantages over common membrane pressure sensors:

- Extremely robust to accidental overpressure reducing field failures.
- More sensitive to small differential pressures (10 Pa) improves performance.
- Extremely low drift in readings over time increases recalibration interval.

### FLS122



The FLS122 is the world's smallest thermal air velocity sensor.

Advantages over hot wire anemometers:

- No exposed wire increases durability.
- Lower power consumption extends battery life.

Advantages over turbine anemometers:

- No moving parts increases durability.
- Small size improves portability.
- Easier integration and calibration accelerates time to market.
- Extremely low drift can extend recalibration intervals or increase accuracy.



Scan QR Code for more information or to order a flow sensor evaluation kit