

# Gas Flow Meter 2.0 (GFM)

The Gas Flow Meter 2.0 (GFM) is a portable, explosion-proof, battery-powered direct measurement instrument designed to determine an accurate leak rate from various pipe connectors, valves, compressor rod packings/seals and storage tank emissions typically found at compressor stations, production wells, processing, storage, LNG, regulator and city gate stations in a natural gas environment.

Fugitive emissions from can be captured by sampling at a high flow rate, where both gas and air pass through the sampler allowing measurement of gas concentration and flow rate. These measured values are then calculated to derive an accurate sample flow rate to determine actual leak rate in either cubic feet or liters per minute. The instrument automatically compensates for the difference in gas content between the sample and the ambient air, thus ensuring an accurate leak rate calculation.

A small-sized Non-Dispersion Infrared (NDIR) optical sensor with a wide temperature range of  $-40$  to  $140^{\circ}\text{F}$  measures the concentration of natural gas with great accuracy and resolution down to 0.005 SCFM or 0.15 LPM. The main difference from most optical sensors is the replacement of an incandescent micro-lamp emitter with a semiconductor LED emitter and a pyroelectric photodetector and photodiode receiver with an integrated spectral filter. This technique has improved reliability and significant reductions in sensor power consumption, which is essential in battery-powered systems.

To improve the accuracy of measurements on higher fugitive emission leak rates, we are using proprietary patented technology, Displaced Oxygen Correction. The measuring system has an additional sensor that indicates the volumetric oxygen content. During system purging, the system is checked and adjusted to 20.9% O<sub>2</sub>. During measurement, the natural gas content in the stream is corrected in the presence of high-order hydrocarbon impurities, thus eliminating the influence and thereby ensuring greater accuracy. Alternately, when lower gas concentrations are sampled, the operator may adjust the sampling flow rate down to ensure higher measurement accuracy.

The sampler is installed in a case and can be attached to a backpack harness, leaving the operator's hands free for use when climbing stairs and descending into confined spaces or use without the backpack harness to hand carry for simple jobs.

The sampler is controlled wirelessly using an Android phone (version 6.0 or higher) that displays technical information and controls the GFM. Data is recorded by the press of a button as well as a photo of the component in question if the operator wants to report both across communication channels. Reception distance is up to 15 feet with low energy consumption allowing uninterrupted measurements for approximately 14 hours.



## Advantages

- Low-temperature TFT display
- Rechargeable Lithium Ion battery for low temperature operation
- The degree of protection of the enclosure shell is IP 54
- Small size and weight making it the most portable sampler on the market

## Features

- The main console is aluminum
- The components in the main console are designed as a block structure making future maintenance simple, yet reliable for long term use.
- The blocks are easily detachable and have IP68 level protection of the shell
- For maintenance and repair, the blocks supplied get calibrated, which allows the special calibration gases

# Specifications

## Weight & Dimensions (L x W xH)

9.3 lbs (4.2 kgs)

11.4" x 11.2" x 3.9" (290 x 285 x 100 mm)

## Body Material

High strength aluminum

## Display

Graphic TFT display - thin film transistor liquid crystal display, active matrix LCD technology, vastly improved image quality and contrast compared to passive matrix LCD

## Temperature

Operational -40 to 140°F (-20 to 50 °C)

## Humidity

5 to 95% RH (non-condensing)

## Battery

3.7 V Lithium Polymer explosion-proof, low temperature rechargeable

## Capacity

11.0 Ah

## Charging Time

Up to 10 hours

## Duration of Work

More than 8 hours (cyclic mode)

## Method of Measurement

Pressure drop across the Venturi tube

## Measured Quantities

Sample flow rate; background gas concentration; gas concentration in the sample; battery capacity

## Estimated Values

Leakage concentration taking into account the background gas level; leak intensity; difference between 1st and 2nd leak rate measurement



## Measured Leakage Rate

1.0 to 350.0 l/min

## Minimum Detectable Leak Rate

From 0.15 l/min

## Leak Rate Measurement Error

±5% of reading

## Sample Flow Rate

Maximum - 350 l / min; Medium - 250 l / min;

Low - 150 l/min; In two-stage mode second speed lower than initial speed by 25%

## Flow Measurement Accuracy

±5% of reading

## Natural Gas Sensor

Optical Method

0 to 100% methane by volume; Accuracy is ±5% of reading or 0.1% methane, whichever is greater

## Oxygen Correction Method

5 to 100% natural gas by volume; Accuracy is ±2.5% natural gas by volume

## Sampler Memory

Cyclic - 50 hours of work

## Certification

Hazardous Area Intrinsic Safety Evaluation, Testing and Certification is currently underway by UL LLC.

## Distributed By:



**Your Safety...Our Commitment**

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**Manufactured By:** AddGlobe, LLC in the U.S.A

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