
HETEK FLOW SAMPLER 2.0

User Manual

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Document #7.01**



Our Solutions. Your Safety.

Revision History

Rev #	Date	Revised By	Detail
1.0	May 8 th , 2026	Ashwin Mohan	New User Manual
1.1	June 24 th , 2026	Ashwin Mohan	Incorporating changes to operational functions

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1. Introduction

Hetek Solutions Inc. (“Hetek”) manufactures and distributes instrumentation for safety, environmental, and asset integrity applications. The Hetek Flow Sampler 2.0 is a methane specific, gas emission quantification instrument. It is a field based, portable, battery-powered instrument designed to determine the flow rate of gas leaks or fugitive emissions around various above grade natural gas infrastructure such as pipe fittings, valve packings, vents and compressor seals. Settings include gas wells, facilities such as natural gas storage, compressor stations, pressure regulation stations, and other industrial facilities.

1.1 Specified Use

The Hetek Flow Sampler 2.0 (also referred in this manual as the “instrument” or “HFS 2.0”) is a highly sensitive gas emission quantification device. Typically used in facilities containing natural gas infrastructure, it quantifies the leak or emission by sampling at high flow rate(s) to capture all the gas leaking from the component along with surrounding air. By measuring the flow rate of the sampling stream and the natural gas concentration within that sample stream, the gas leak rate is calculated and then outputted.

The HFS 2.0 is to be used after an initial fugitive emissions survey has been conducted using approved methods for the purposes of pinpointing the source location of the leak such as using a portable gas detector or an optical gas imaging (OGI) camera. Once all the leaking components have been identified, the user can measure the rates of those leaks using the HFS 2.0 at the location of the exact leaking component, thus being able to accurately capture the leak using appropriate end accessories.

The instrument is packaged and operated while it is situated in a hard plastic case, making it easy to transport for conducting measurements at various field locations. The case contains the instrument while its external accessories are in a separate bag.

⚠ WARNING: The Hetek Flow Sampler 2.0 is not to be used in any application that is beyond its intended purpose or beyond the scope of its specifications. Failure to adhere to this warning can result in personal injury, damage to the equipment, or reduced instrument performance.

⚠ WARNING: The Hetek Flow Sampler 2.0 is not a life safety device meant for the personal protection of the user or others. It is also not a portable gas leak detection instrument. A multi-gas personal safety monitor is to be used in conjunction with the Hetek Flow Sampler to warn the user of hazardous gases that could be present in the area.

⚠ WARNING: Use of unauthorized parts will void certification and warranty of the device.

⚠ WARNING: Hetek is not responsible for any damages that may occur from mishandling the instrument or its accessories.

1.2 Layout

The top of the HFS 2.0 faceplate going from left to right consists of a filter compartment, a USB port for data transfer, a toggle ON/OFF/Charging switch, and a charging port. The main graphical user interface, display, is in the centre of the faceplate with a rotary switch to the bottom of the display. The inlet of the flow tube is on the left side of the instrument, and the outlet is on the right side of the instrument.

2. Operation

The toggle switch has 3 positions. The instrument is switched ON when the toggle switch is positioned to the left, switched OFF when the toggle switch is positioned in the middle, and in charging mode when the toggle switch is positioned to the right. The left position turns the unit ON and initiates the start up sequence that includes purging and will take about a minute. The start up sequence involves:

- Hetek Logo
- Product Name and Firmware version
- Purging of sensors



Figure 1. Start-Up Screens

Please Note: Ensure that the instrument is switched ON in a clean atmosphere.

2.1 Display

A 5-inch, LCD screen will be the main user interface for the instrument's functionality navigation. The instrument is operated using touch screen or the rotary switch that can move the selector in the menu and can select an option by pressing down on it. Inside various menu options, the user can select the back arrow on the top-left of the screen to exit out of that menu.

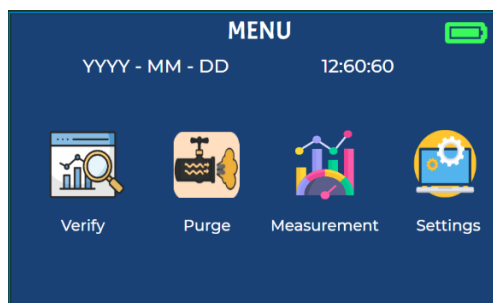


Figure 2. Main Menu Start Screen

2.2 Main Menu

The main menu has the following options:

1. **Verify:** The instrument's sensor accuracy can be validated
2. **Purge:** In addition to the initial purge, the user can manually perform a purge in clean air
3. **Measurement:** Main operation of the instrument with 4 modes
 - a. Automatic,
 - b. Continuous,
 - c. Interval, and
 - d. Manual.

See [Section 2.4 Measurement Test Overview and Mode Operations](#) for additional information.

4. **Settings:**
 - a. Units: Where users can adjust temperature ($^{\circ}\text{C}$ or $^{\circ}\text{F}$), pressure (kPa or psi) and flow units (LPM or CFM). Additionally, there is a soft toggle to switch the units for gram/hour.

Please Note: The gram/hour is a calculated value that assumes that the gas is of a standard density of methane, $\rho_{\text{CH}_4} = 0.657 \text{ kg/m}^3$. The mass flow will vary depending on atmospheric conditions as well as the actual gas density.

- b. Date / Time : Users can adjust the data and time that will be displayed on top of the instrument.
 - c. Record : Users can enable PC access to the data logs, delete records or download data

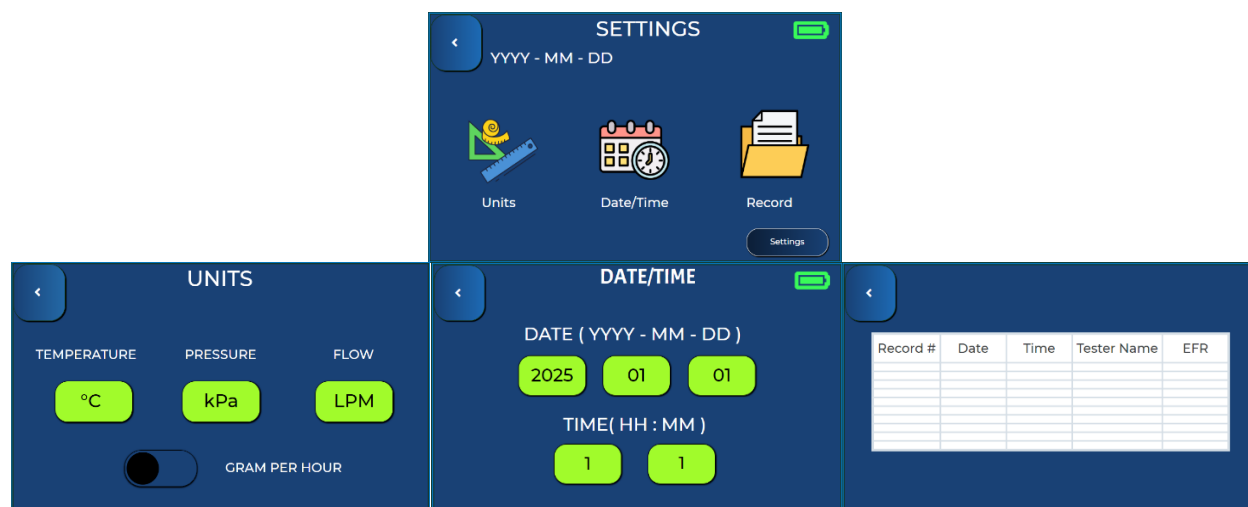


Figure 3. Settings Menu Options

2.3 Verification Procedure

The user can perform a verification of the HFS 2.0 to test its accuracy prior to daily use. It is recommended to verify using methane (CH_4) with a balance of air or nitrogen from a certified cylinder of 2.5% (or similar) volume of methane gas. The procedure for verification is as follows (in-order):

1. Select the option **Verify** present in the main menu.
2. Enter the User's name (Operator Name or ID) in the first entry line
3. Enter the Gas Concentration (2.50 or similar) of the gas cylinder in the second entry line

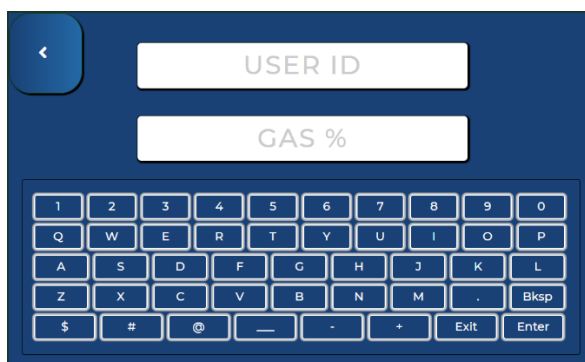


Figure 4. Verification Log

4. Select **EXIT** which yields to another screen to confirm the details and if the information appears correct, select **DONE** to begin the verification process.
5. Apply 2.5% Methane gas using a **demand flow regulator and clear tubing** to the small port (see Figure 5) located on the left-hand side of the pelican case.



Figure 5. Port used for verification

6. An automated process will ensure with the gas readings increasing and a confirmation if the verification has been successfully completed. If the reading is not satisfactory, an error will be displayed (see [Section 5](#) of this manual, Error Codes, for more information).



Figure 6. Verification Screen

The user can select the **ESCAPE** key to exit out of the verify menu onto the main menu.

A log of the verification of the instrument is stored in the memory for record keeping purposes.

Please Note: Ensure that the gas used for verification is a certified gas cylinder that is:

- (1) $\pm 2\%$ accuracy, traceable
- (2) Current validity (not expired), and
- (3) Has enough quantity present.

2.4 Measurement Test Overview and Mode Operations

The gas sample is drawn into the instrument's inlet on the left side of the case through a long flexible hose connected with various end attachments that is to be connected to the end of the hose based on the attachment's suitability to encapsulate the leaking component.

The main unit consists of a blower that draws in the gas and background air around the component being tested. The sample of gas-background air mixture first passes through a series of filters on the top left of the instrument that consists of two dust and two hydrophobic filters that is user replaceable on an as required basis. The mode operations menu can be accessed from the main menu by selecting the icon "Measurement".

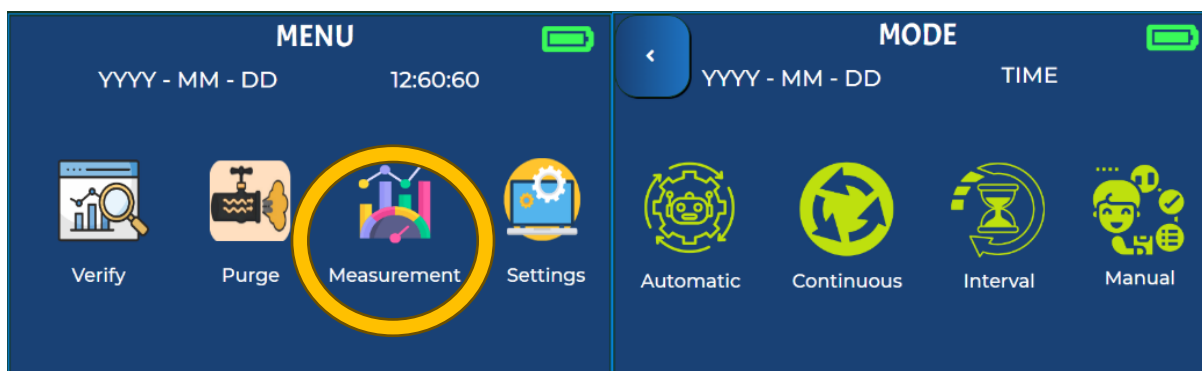


Figure 7. Measurement Modes Menu screen

2.4.1 Automatic Mode

The automatic mode is where the instrument will measure the emission automatically and the test will end within 3 minutes along with the % background measurement. This mode will be the fastest and is best used for continuously stable emissions.

1. To begin, an option will be given to the user on whether the data needs to be logged. If choosing not to, please follow the screen prompts to step 4 and document your results after step 6.
2. Enter the user name along with asset name, then select **Exit**
3. Verify if the information is correct, then select **Next**
4. Place the attachment on the emission source and then select **Start**

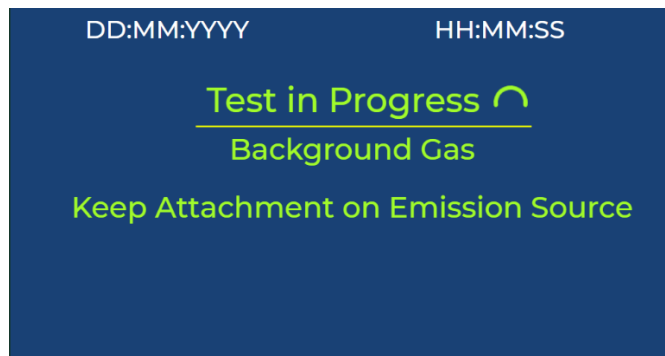


Figure 8. Background Gas Testing Screen

5. Background gas surrounding the attachment is tested for and stored as the baseline of local background gas conditions
6. A graph screen will appear with “Automatic” as the label on top with when doing a measurement and yields the result once the test is done with “Auto Result” as the label on top of the graph
7. Select **Next**
8. Remove attachment from the source towards fresh air allowing the device to purge

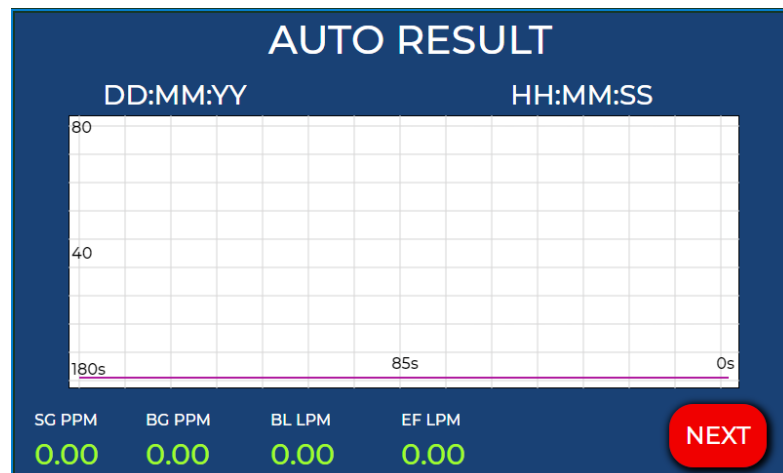


Figure 9. An example of the final screen where:

SG = sensor gas reading in PPM or % Gas

BG = background gas reading in PPM or % Gas

BL = Blower speed in LPM

EF = Emission Flow in LPM or g/hr

2.4.2 Continuous Mode

The continuous mode is meant for a continuous measurement especially where emissions are intermittent or need to be monitored over a larger duration to gather a significant sample size. In continuous mode, the HFS 2.0 will prompt the following:

1. Enter the user name along with the asset name, then select **Exit**
2. Verify if the information is correct, then select **Next**
3. Place the attachment on the emission source and then click **Start**
4. A background test takes place after which a graph is displayed with the emission flow rate over time
5. The tester can end the test at any time by selecting **Next**
6. Remove the attachment from the source and place it towards fresh air allowing the device to purge

At anytime, the user may exit this test without saving the data by selecting the back arrow on the top-left of the screen.

2.4.3 Interval Mode

The interval mode is meant for the instrument to take measurement, while the attachment is affixed on the emission source, after specific time intervals automatically. This mode allows for the instrument to collect less data and use less energy in comparison to continuous mode. The HFS 2.0 will prompt the following:

1. To begin, select a suitable interval: 1, 5, 10, 15, 30 or 60 minutes
2. Enter the user name along with asset name, then select **Exit**
3. Verify if the information is correct, then select **Next**
4. Place the attachment on the emission source and then select **Start**
5. A background test takes place – this will be the background data used for this first measurement
6. The measurement of the sample will ensue with a graph stating “Interval” on top PIC
7. The message “Waiting for the next interval cycle” will be displayed during the intermission where PIC the blower shuts off
8. Then after the interval, the measurement begins again with another automatic test. A background test is conducted first to establish a new baseline followed by the measurement.
9. Select **Next** to end the test and view the results
10. Remove attachment from the source and place it towards fresh air allowing the device to purge

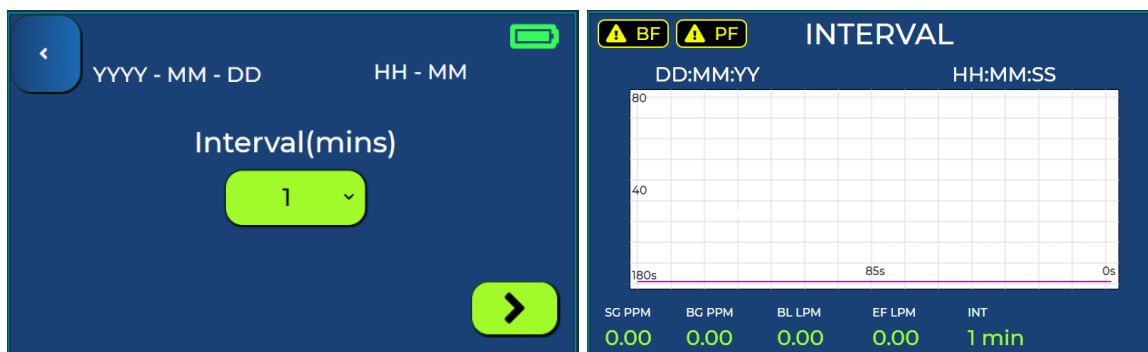


Figure 10. Screens in Interval Mode

2.4.4 Manual Mode

The manual mode is used when the tester desires more control over the measurement process and serves as an alternative to automatic mode. The HFS 2.0 will prompt the following in manual mode:

1. To begin, an option will be given to the user on whether the data needs to be logged. If choosing not to, please follow the screen prompts to step 4.
2. Enter the user name along with asset name, then select **Exit**
3. Verify if the information is correct, then select **Next**
4. Place the attachment on the emission source and then select **Start**
5. The Background Gas is first measured and stored whenever the tester desires. This is typically done when the readings are stable. Select “Store” to store the background reading.
6. The measurement of the sample will occur with results displayed live on a graph where one can:
 - a. Conduct another background test and store a new reading by selecting the **<** button on the bottom right
 - b. Select **Result** to stop the measurement and see the results of the test
 - c. Select **Next** to exit out of the measurement mode

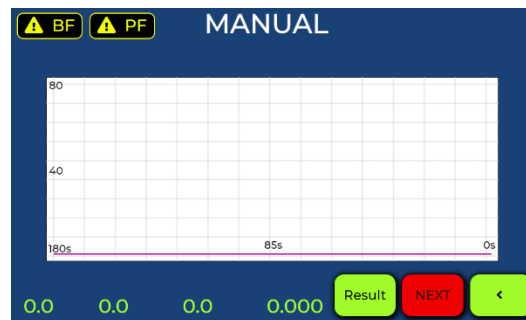


Figure 11. Manual Mode

7. Purging of the device will begin so the attachment must be facing fresh air

3. Purge

The purge option is used when the instrument has been in an area with excessive background gas, causing the instrument to read higher than normal, ambient concentrations. The user can begin by selecting “Start” and ending by selecting “Stop” upon the reading being at or close to 0 ppm.

Please Note: It is important that the purging be conducted in a clean atmosphere or upwind from a hazardous facility.

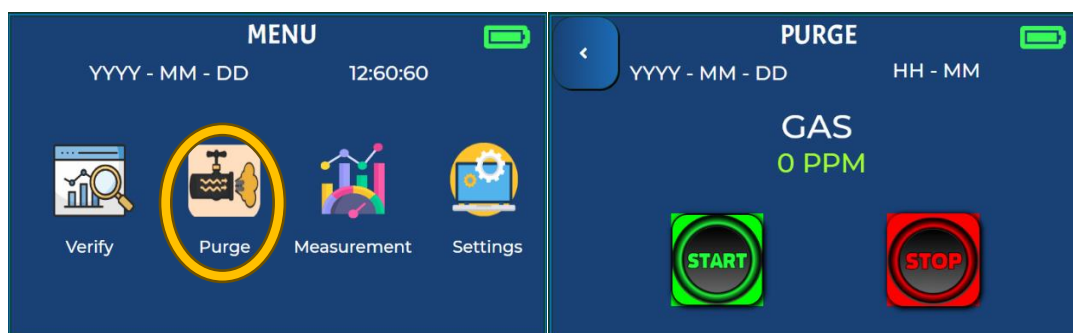


Figure 12. Purge Mode Screen

4. Data – Download, Display and Deletion

The user should conduct the following steps to download data:

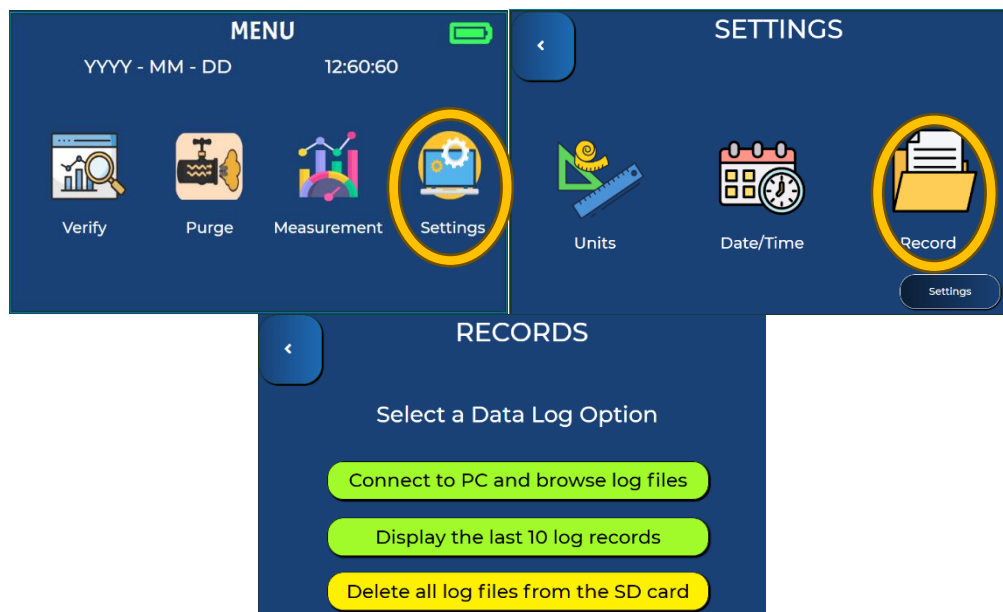


Figure 13. Record Menu

1. Go to “Settings”
2. Select “Record”
3. Select from the following options:
 - a. “Connect to PC and browse log files” – This will download the data to a computer
 - i. Connect the USB cable from the USB data port on the instrument to the USB port on the computer

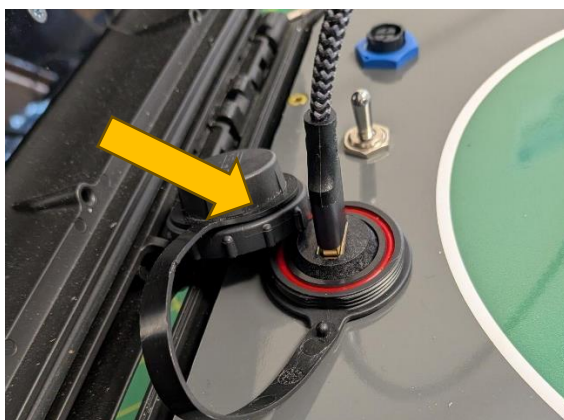


Figure 14. Data port

- ii. A folder with the data log will appear and takes up to 1 minute to load
 - iii. The file should be saved locally
 - iv. Unplug the USB after selecting the safe removal of hardware icon
 - b. Display the last 10 log records – This will display the past 10 log records on the screen

- c. Delete all log files from the SD card – This will delete all data
4. Shut the instrument and restart the HFS 2.0 should you wish to operate

5. Error Codes

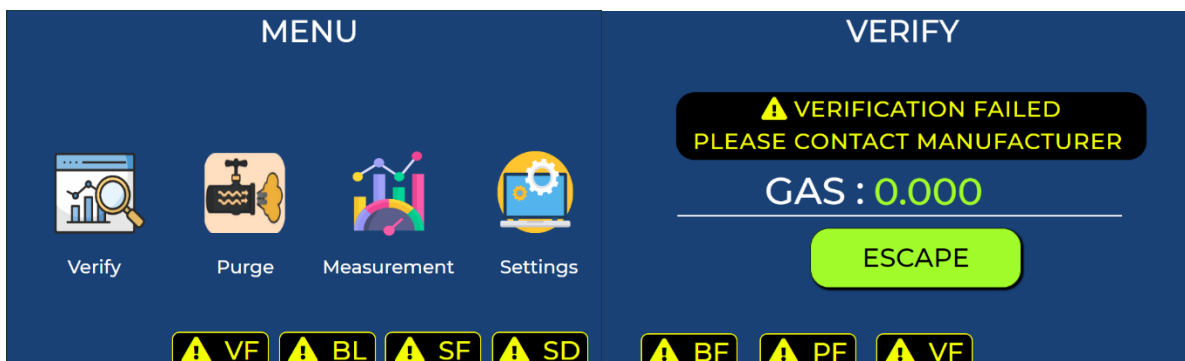


Figure 15. Error Codes

Occurrence	Error Code	Remediation
Blower fault due to blockage within the flow path towards the blower	BF	1. Exit operational mode 2. Remove physical obstacle 3. Enter back into operational mode
Pump fault due to blockage in the flow towards the pump.	PF	1. Exit operational mode 2. Remove physical obstacle 3. Enter back into operational mode
Verification fault due to improper gas being applied or instrument's inability to see the gas	VF	1. Exit verification mode 2. Apply the suitable gas 3. The verification should pass If error persists, contact a Hetek authorized facility for more support.
Low Battery	BL	1. Complete any tests 2. Charge the battery fully
Sampling Fault	SF	1. Turn off the instrument 2. Turn it on again in a clean atmosphere and attempt another measurement
Memory Fault due to memory becoming full past 90%	SD	1. Download the data from the HFS 2.0 to a computer 2. Delete the data

6. Attachments

The HFS 2.0 comes with four (4) attachments that enables the user to capture leaks from various fittings, locations, and positions. The appropriate attachment must be selected by the user and attached to the end of the instrument's hose assembly, of which the hose's other end is attached to the inlet, located at the side of the instrument.

Please Note: Attachments can have the effect of concentrating the leak. Ensure that a gap is present for air to get through into the instrument along with the emission

6.1 Crevice Tool (Part #1840-1082)

Used when the leak source is confined to a narrow space.



Figure 16. Crevice Tool

6.2 Cone Collection Tool (Part # 1840-0061)

A tool meant to be used over small fittings and vents.



Figure 17. Cone Collection Tool

6.3 Sample Collection Bag (#1840-0059)

A durable collection bag that is versatile enough to be used over various fittings, over components that contain multiple leak sources in a small area or that is hard to pinpoint or access. Once the sample collection bag is over the leaking component, use the drawstring to close the end of the bag.



Figure 18. Sample Collection Bag

Please Note: Do not close the off the bag completely, allow air to flow into the bag to replace the volume of gas and air being removed because of the instrument's intake during the test.

6.4 Flange Tool (Part #1840-0060)

Wrap the flange tool over a flange and ensure that the hose is connected to the flange tool at the top of the flange to best capture the leak as natural gas is lighter than air.



Figure 19. Flange Tool

Please Note: At high leakage rates or when the ability to capture all fugitive emissions from a leaking source is unknown, it is recommended to use an optical gas imaging (OGI) camera to view the measurement being conducted. This ensures that all gas has been captured by an attachment used with the HFS 2.0.

7. Specifications

Table 1. Technical Datasheet

Specification	Detail
Product	Hetek Flow Sampler 2.0
Manufacturer	Hetek Solutions Inc. 2085 Piper Lane, London, ON N5V 3S5 Canada
Display Information	• Verify • Purge • Measurement • Settings
Display Screen Size	5 inches
Emission Units	Volumetric (LPM or CFM) and Mass Flow (g/hr)
User Controls	Touchscreen and Rotary Switch
Data Output	Digital display
Communication	USB Cable
Logging	Measurement Log Data; Verification Log Data
Measured Values	Background Gas, Temperature and Pressure
Calculated Values	Emission Rate
Blower Flow Rate	~ 290 LPM (maximum)
Operating Temperature	-20°C to 50°C (-4° F to 122°F)
Storage Temperature	-20°C to 60°C (-4° F to 140°F)
Sensor	TDLAS – Tunable Diode Laser Absorption Spectroscopy
Battery Life	8 hours
Battery Charging	5 hours
Battery	9.6 V, Ni-MH, 7600 mAh
Weight	20 lbs or 9.07 kgs
Dimensions	20 in x 12 in x 7 in (50.8 cm x 30.48 cm x 17.78 cm)
Flow Measurement	In-Flow Sensor
Accuracy	+/- 5%
Certification	Pending

8. Manufacturing and Green Policy

The Hetek Flow Sampler 2.0 is designed, manufactured, and assembled in North America at Hetek Solutions' manufacturing facility based in London, Ontario, Canada. The product supports the following:

- Environmental stewardship, combatting climate change, as it will be used to accurately measure emissions of a major greenhouse gas that will be reported for reduction or elimination by repair.
- Energy efficiency with a longer battery duration and life cycle. Minimal accessory and packing materials used thus reducing its carbon footprint by reducing its shipping weight and size.
- Low cost of ownership with high quality, durable and lightweight materials used when possible.
- Strengthening local economies by supporting production teams consisting of professional engineers, technologists, certified technicians, apprenticeships, and training opportunities. Electronic components designed and produced by OES Inc. based in London, Ontario.
- Promotion of fair wages, labour, and employment practices.

9. Authorized Service Centres

It is recommended to send the Hetek Flow Sampler 2.0 to an authorized service centre for service.

! WARNING: The Hetek Flow Sampler 2.0 does not contain any user repairable parts. Repairs and service must be completed by the manufacturer or its authorized service centres. Contact Hetek Solutions for an authorized service centre located outside of Canada.

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WARRANTY

Hetek Solutions Inc. ("Hetek") warrants to the buyer that at the time of delivery, this product will be free from defects in material and manufacture and will conform substantially to Hetek's applicable specifications. Hetek's liability and buyer's remedy under this warranty are limited to repair or replacement, at Hetek's option, of this Product or parts thereof returned to the seller at the factory of manufacture and shown to Hetek's reasonable satisfaction to have been defective, provided that written notice of the defect shall have been given by buyer to Hetek Solutions Inc. within one (1) year after the date of delivery of this product.

The expected sensor life is up to 24 months under normal operations and are warrantied for 12 months.

Hetek warrants to buyer that it will convey good title to this product. Hetek's liability and Buyer's remedy under this warranty of title are limited to the removal of any title defects or, at the election of Hetek, to the replacement of this product or parts thereof that are defective in title. Hetek or its authorized service centre will be responsible for all the warranty work and service of the instrument.

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