GAS FLOW METER 3.0

Instrument Manual

Direct Measurement Method

of Natural Gas Fugitives

Guidelines PR 26 - 02.01

Operation and Maintenance Version 2.1

03.22.2026

GFM 3.0 is designed for use in Zone 1. The sampler is fully EPA-compliant and provides precise gas-leak rate measurements, making it ideal for environmental monitoring and industrial applications. Additionally, ATEX and UL certifications are currently in progress, which will further enhance its global reliability for accurate and safe performance.

AddGlobe, LLC
www.addglobe.com
info@addglobe.com

1650 Arabian Drive
Loxahatchee, FL 33470

GAS FLOW METER 3.0

Instrument Manual

About AddGlobe, LLC

AddGlobe, LLC, founded in 2002, is a global leader in high-volume methane sampling and direct emissions-quantification technology. The company supports downstream, midstream, and upstream gas networks, LNG operations, and LDAR field programs, with a primary focus on transmission, storage, and midstream infrastructure.

The Gas Flow Meter 3.0 represents the latest generation of AddGlobe's high-volume methane-quantification platform. GFM 3.0 introduces methane-only selectivity through laser-based sensing technology and is engineered for high-precision quantitative methane-measurement missions. The system delivers an industry-leading minimum detection threshold of 0.5 grams of methane per hour and is designed to support regulated methane-measurement programs across global jurisdictions, including advanced LDAR and emissions-quantification frameworks.

Building on the proven field performance and global deployment experience of the Gas Flow Meter 2.0, the Gas Flow Meter 3.0 expands AddGlobe's capabilities into measurement scenarios requiring enhanced methane selectivity and ultra-low detection thresholds. Meanwhile, the Gas Flow Meter 2.0 remains an established high-volume direct-quantification instrument. GFM 2.0 holds international certifications, including ATEX, UL, and Canadian approvals, and continues to be widely used by methane-emissions professionals worldwide for high-flow sampling and emissions quantification under regulatory programs such as OGMP 2.0 and U.S. EPA frameworks.

AddGlobe pioneered the international expansion of high-volume sampling and maintains long-term production expertise, a global technical service infrastructure, and established manufacturing leadership in high-volume console architecture optimized for methane quantification.

AddGlobe headquarters are located in Florida, with operating and technical service hubs in Texas and European operations coordinated from Latvia. The AddGlobe team's field experience spans methane quantification, LDAR implementation, emissions reporting, research and development, accessory design, and manufacturing, providing customers with high-volume methane quantification systems backed by decades of global field and regulatory expertise.

Thank you for your business and continued support.

AddGlobe, LLC

Customer Service: 561-985-7523

1650 Arabian Drive, Loxahatchee, FL 33470

Customer Support: info@addglobe.com

Website: www.addglobe.com

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0. Bringing the device into operational state

GFM 3.0 is a metrological instrument. It does not operate correctly “out of the box” without stabilization and calibration. Like any precision measurement system, it must be brought into a defined working condition before valid measurements begin.

This is particularly important:

- **after installing new firmware,**
- **after powering the device on and before powering the device off,**
- **after transportation,**
- **after significant changes in altitude, pressure, or temperature.**

The required sequence is (will be explained in several places in the Manual):

1. Purge and Laser Calibration (3.8.6 Manual Item)
2. Gas Test (3.8.4 Manual Item “Test”) and Gas Calibration (4 Manual Item “Calibration”)

Only after completing this sequence is the device considered stabilized and ready for valid measurements.

The Purge and the laser calibration steps are critical. It adapts the laser behavior to the specific environmental conditions (temperature, pressure, altitude) of the current location. This is not optional. It defines the reference state for the day’s measurements and should be performed at the beginning of each working session.

Skipping or shortening this initialization can produce systematic deviations.

1. Introduction

1.1 General Description

Gas Flow Meter 3.0 is a portable, explosion-proof, battery-powered instrument designed to measure the volumetric leak rate from various pipe fittings, compressor rod packing, wet/dry seals (off turbine compressors), main line suction and discharge valves, blowdown valves, pressure relief valves, emergency shutdown valves, storage tanks, vents and all other pipe connectors typically found at natural gas facilities.

This product contains an internal Class 1 laser system. Under normal operating conditions, no user-accessible laser radiation is present.

The GFM can quantify approximately 98–99% of fugitive methane emissions at a typical natural gas compressor station or similar facility. The leak rate is measured by high-speed sampling to capture all gas escaping from the source while it is diluted with ambient air. Accurate measurement of both the sample flow rate and the natural gas concentration enable calculation of the leakage rate according to Formula 1. The instrument automatically compensates for differences in gas content between the sample and the ambient air, ensuring accurate leakage-rate calculations.

A compact laser detector with a wide operating temperature range of -40 to 140 °F (-40 to 60 °C) was selected for measuring natural gas concentration.

$$Leakage = Flow\,(Gas_{sample} - Gas_{background})\ (Formula\ 1)$$

Where:

Leakage – The rate of gas leakage from a source;
Flow – Sample flow rate;
Gas $_{sample}$ – Concentration of gas from the source of the leak;
Gas $_{background}$ – Background gas concentration.

Natural gas contains approximately 85–95 vol.% methane, with the remaining balance consisting of other gases. In addition to nitrogen and carbon dioxide, it also includes other hydrocarbons, primarily ethane, propane, butane, and others. The presence of higher-order hydrocarbons does not cause a significant increase in the laser detector readings and remains within the stated measurement error limits.

The sampler is mounted in a case attached to the harness, allowing the operator to keep both hands free when climbing ladders or entering confined spaces. The sampler can also be used without the harness.

The sampler is controlled wirelessly using an Android phone (version 6.0 or later), which displays technical information and control functions for the GFM. Its operating range is up to 15 ft.

The sample is drawn into the instrument through a flexible hose with an inner diameter of 40 mm. The end of the sampling hose is equipped with a variety of attachments that ensure all escaping gas from the test object is captured.

The metering unit consists of a structurally safe, high-performance fan that draws air from the leakage area through a flexible hose into a gas manifold located inside the unit. The sample flow rate is determined by a flow meter that measures differential pressure.

The measurement cycle consists of alternating determinations of CH_4 concentration in the Gas Sample and the Gas Background. First, a small portion of the Gas Sample from the collection chamber enters the laser sensor, which measures the CH_4 content in the range of 0.2% to 100% by volume. Then, an equivalent portion of the Gas Background enters the laser detector, where the CH_4 content is measured over the same range. Based on the measured flow rate and the CH_4 concentrations (leakage and background), the leakage rate from the tested component is calculated. All measured and calculated values are then displayed on the connected phone.

1.2 Contents

- Gas Flow Meter (in case)
- 40mm hose, 6 ft long
- Harness/Backpack
- Carrying Case
- Accessory Kit Bag
- Charging Adapter
- Car charging (12v) Adapter
- Range of accessories:
- Capture bag 35" x 35" (90cm x 90cm) (2.95 CFM)
- Corrugated nozzle
- Coarse filter
- Grounding cable
- Rotameter

1.3 Benefits of Using a Gas Flow Meter

• Ensures greenhouse gas regulatory compliance for US EPA Subpart W and OOOOb reporting.

• Supports Department of the Interior requirements for quantifying abandoned and orphaned wells.

• Meets compliance standards for Canada, the European Union, and OGMP 2.0.

• Enables classification of leaks by intensity.

• Allows users to evaluate potential cost savings from eliminating gas leaks.

• Helps determine the payback period for particularly costly repairs.

• Supports more efficient allocation of repair budgets.

• Identifies baseline leak levels.

• Provides permanent documentation of leaks and repairs.

• Represents a best practice for EPA-directed Inspection and Maintenance Programs at natural gas facilities.

1.4 Description

The front panel (Figure 1) contains the following elements:

1. Battery charge connector;
2. Direct Inlet;
3. USB connector;
4. LED indicators panel;
5. On/Off button;
6. Main Suction Intake;

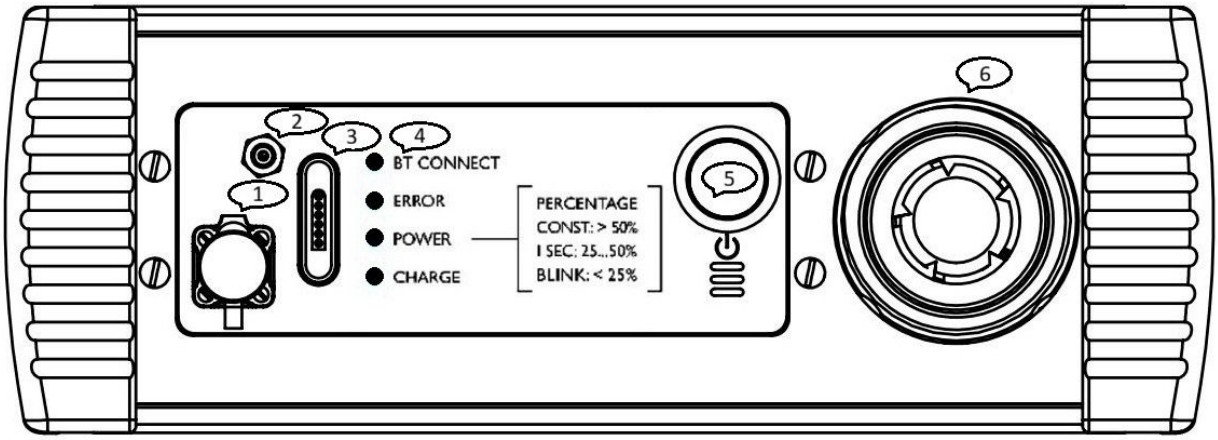

Figure 1 – Front panel

The rear panel (Figure 2) contains the following elements:

1. Working leak- channel filter;
2. Direct inlet filter;
3. Ground connector;

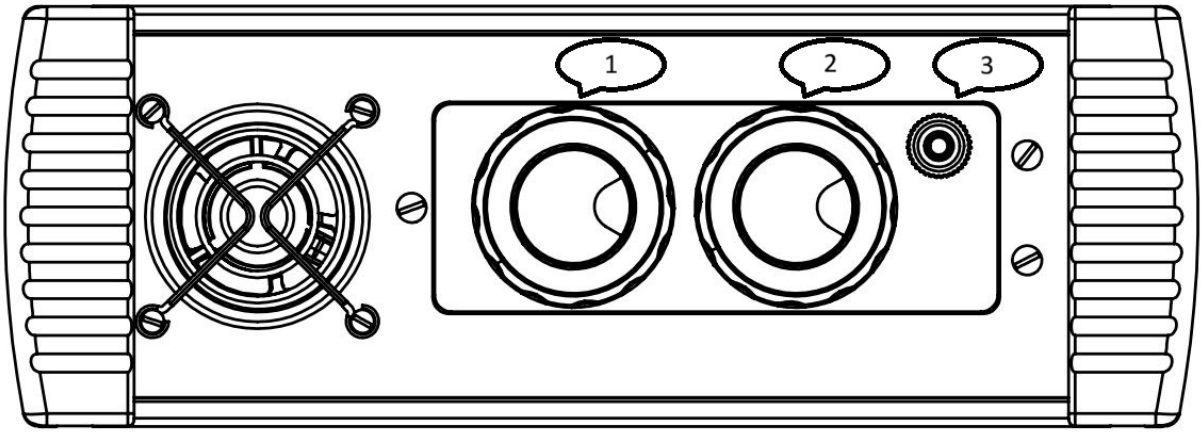

Figure 2 – Rear panel

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

2. Technical data

Control buttons	On / off.
Connection	Bluetooth, USB
Software	Android (OS version 6.0 or higher) Applications for GFM Operations and Calibration are preinstalled
LED Indicators	Bluetooth connection; Error/Malfunction; Battery percentage (blink); Charge.
Estimated Values	Leakage concentration accounting for background gas level; Leak intensity.
Variable Blower Flow Rate	2.47 CFM to 12.36 CFM; 70 to 350.0 l/min; 2.76 to 13.8 kg/hr*
Fan Intake Flow Range	1.75 CFM to 15.75 CFM; 50 to 450.0 l/min; 1,95 to 17.71 kg/hr
Measured Sampling Flow Rate	0.00027 CFM to 12.36 CFM; 0.0076 to 350 l/min; 0.0003 to 13.78 kg/hr
Minimum detectable leak rate (MDLR)	0.00025 CFM; 0.00722 l/min; 0.28 g/h
Leak Rate Measurement Error	±5% of reading
Dynamic flow stabilization (Venturi-based)	Active regulation of sampled gas flow within the measurement path using a Venturi-based ejector to maintain optimal measurement conditions
Detection And Measuring Principle	Laser-based methane detection
Temperature	Operational: -4 ° to 122°F (-20° to 50 °C) Storage: -40 ° to 140°F (-40° to 60 °C)
Humidity	5 to 95% RH (Non-condensing)
Battery	Type: Intrinsically Safe, low-temperature rechargeable LiPo; Rated voltage: 3.7 V; Capacity: 10.0 Ah; Charging time: Up to 10 hours; Duration of work: 8+ hours (cyclic mode).
Sampler memory	Cyclic - 50 hours of work
Measuring memory, photographs of the object	Limited by phone memory
Dimensions	11.4" x 11.2" x 4" 29cm x 28.5cm x 10cm
IP protection	IP67
Weight	13.1 lbs. (5.96 kg)
Certifications	In progress

*12,36 CFM is the nominal blower intake capacity rated under standard test conditions; it doesn't represent the upper measurement limit of the instrument. The values in "kg*h" are given for 100% CH_4.

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3. Operation

3.1 Important Safety Precautions

When using the sampler, it is prohibited to:

1. Break the seal and unscrew the screws. Doing so without prior authorization will void the warranty.
2. Troubleshoot outside an authorized service center.
3. Operate a sampler that has mechanical damage or broken seals.

Urgency of work or other reasons do not justify violating safety rules.

ATTENTION! Conditions for safe use of the sampler:

1. **The battery must be charged outside hazardous areas using the manufacturer's power adapter included in the delivery set.**
2. **The battery must be replaced outside hazardous areas.**

Before starting work with the sampler in a hazardous area, check the following:

1. **Integrity of the instrument housing.**
2. **Presence and integrity of all fasteners and assemblies.**

Perform the Purge and the Laser Calibration" procedure according to 3.8.6 "Purge and Laser Calibration" each time before:

- **powering off the sampler**
- **gas testing and calibration,**

And each time after:

- **powering on the sampler,**
- **installing new firmware,**
- **transportation,**
- **significant changes in altitude, pressure, or temperature.**

Skipping or shortening this initialization can produce systematic deviations.

IMPORTANT! To ensure the operational lifespan of the power supply unit, we recommend maintaining a battery charge of at least 20%, even when the device is not in use.

To ensure the instrument is properly reset at start-up, be sure to turn the GFM on in clean air (free from combustible gases or vapors).

EPA recommends a pre- and post-test calibration verification every day the measurements are taken to ensure reliable reading. Always purge the instrument with clean air after measurements. This removes combustible substances from the laser chamber and extends the life of the laser.

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3.2 Connecting the Hose and Accessories

The hose (Figure 3) can be fitted with several attachments as needed. It includes the following components:

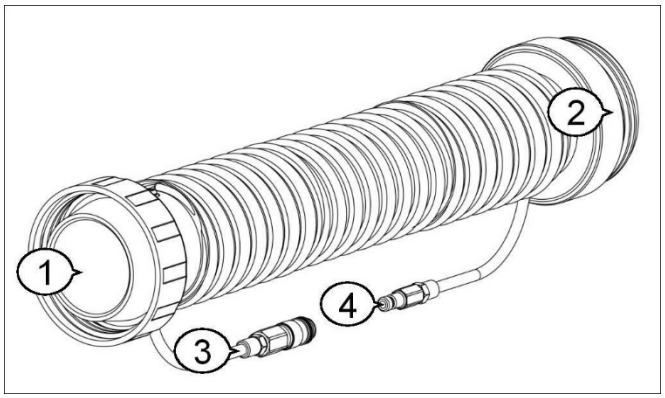

Figure 3 – Hose

1. Adapter for connecting the hose to the device;
2. Adapter for connecting accessories;
3. Quick-release connector for connection to the background-channel inlet;
4. Background gas intake.

3.3 Grounding

CAUTION: GFM 3.0 must be grounded to reduce the risk of static discharge. Grounding is recommended when performing man-lift operations on vent stacks and other large emission sources. Connect the instrument's grounding cable to the nearest earth ground (Figure 4).

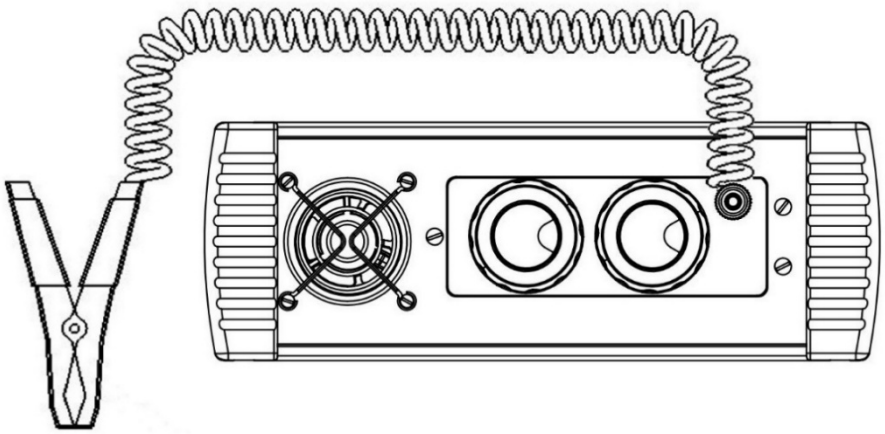

Figure 4 – Grounding

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

3.4 Accessories

A variety of GFM accessories are available to capture leaking gas. Select the accessory that matches the type of object being inspected and attach it to the end of the main sampling hose.

3.4.1 Capture Bag

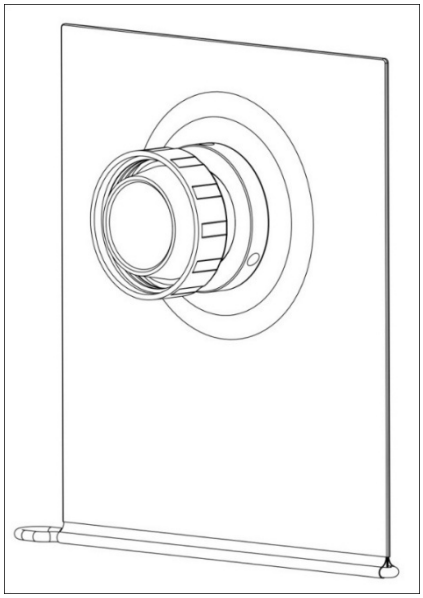

Figure 5 – Capture bag

The 35" × 35" (90 cm × 90 cm) (2.95 CFM) capture bag (Figure 5) is reusable and can fully cover a component that may have multiple leakage points or a leak source that is difficult to locate or access. An oversized capture bag (47" × 69", 120 × 175 cm) is available for measuring bulky components (see Section 6.3).

To use, close the bag with the drawstring, but do NOT seal it completely. Allow fresh air to flow through the enclosure during sampling. This accessory is ideal for valve actuators, compressor unloaders, regulators, pneumatic controllers, Enardo valves, storage tanks, and blow-down systems.

3.4.2 Corrugated Nozzle

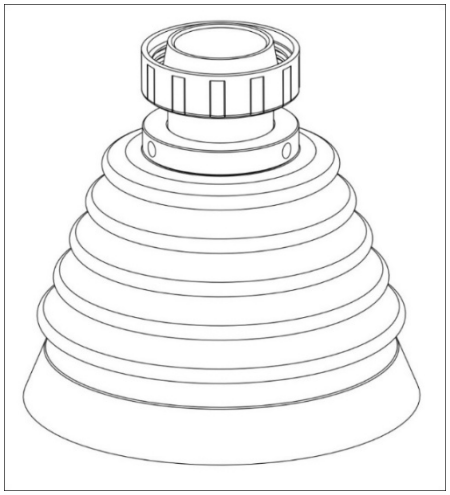

Figure 6 – Corrugated nozzle

The corrugated nozzle (Figure 6) is useful for catching leaks on valve stems,
small pipe connector fittings and rod packing compressor seal vents.

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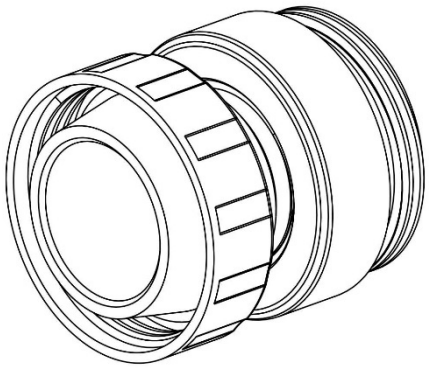
3.4.3 Coarse Filter



The coarse filter (Figure 7) is a stainless-steel mesh filter that is used to prevent coarse debris from entering the sampling channel.

Figure 7 – Coarse filter

3.5 Powering On the GFM 3.0

Take the GFM to an area with clean air (free of combustible gases or vapors). Press and hold the On/Off button until the beep stops. After powering on, the sampler will enter standby mode while waiting to connect to the phone. When the phone connects to the sampler, the red BT Connect indicator on the front panel will illuminate.

ATTENTION! Perform the "Purge and laser calibration" procedure according to 3.8.6 "Purge and Laser Calibration" each time after powering the sampler on for measuring.

3.6 Powering Off the GFM 3.0

Completely purge the unit before shutting it down. To switch the device off, press and hold the On/Off button until the audible signal stops.

ATTENTION! Perform the "Purge and laser calibration" procedure according to 3.8.6 "Purge and Laser Calibration" each time before powering the sampler off.

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3.7 Pairing the Phone to the GFM 3.0

3.7.1 Installing App on Android Phone

Important: Before installing the new software, you must uninstall the old application from your phone.

Download the application from the website https://addglobe.com/software to your personal computer. You may also contact customer service or sales by phone or email, providing the device's serial number, to receive a link to the current apps.

Below is the procedure for copying the downloaded data to your phone:

1. Connect your phone to your personal computer using a USB cable;
2. Unlock your phone;
3. On the home page, select the "Settings" item (Figure 8).
4. On the Settings page, type "usb" in the search line (Figure 9).

Figure 8 – Home Page

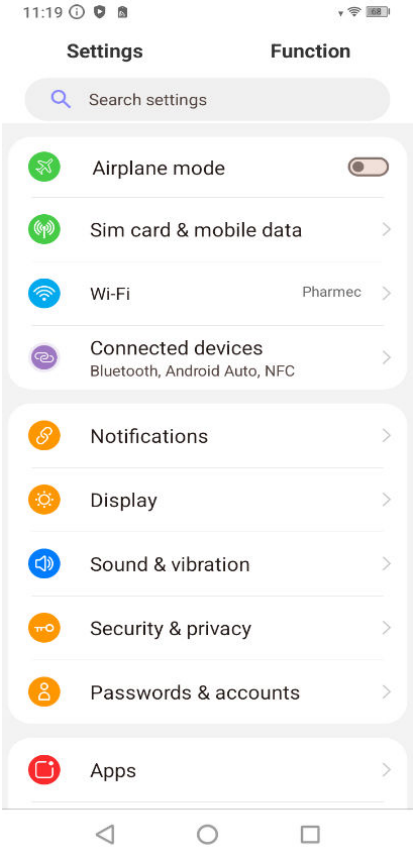

Figure 9 – Settings

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5. Click on the "USB controlled by" (Figure 10)
and then click on the "File transfer" (Figure 11)

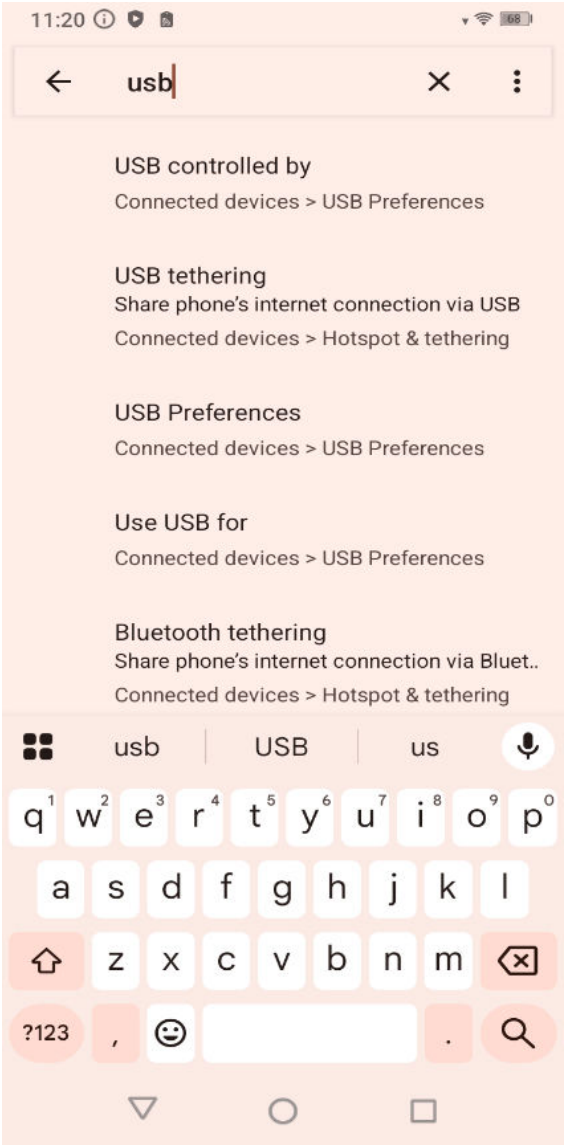

Figure 10 – USB controlled by

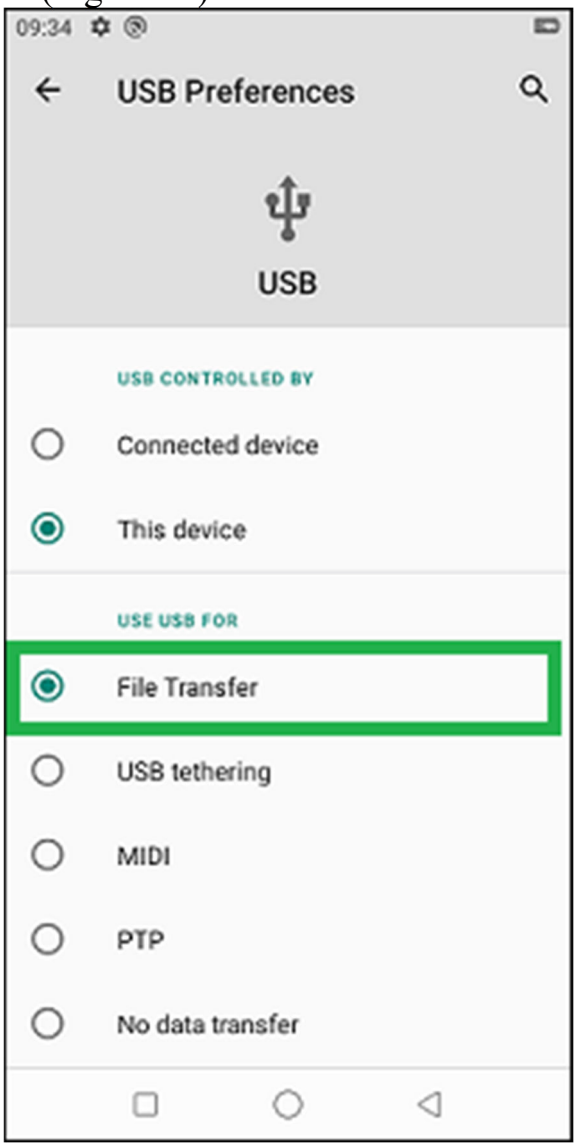

Figure 11 – File transfer

6. Open Explorer on your personal computer;
7. Select the connected phone;
8. Select "Internal storage";
9. Open the "Downloads" folder;
10. Move the previously downloaded application file from your personal computer to the Download folder on your phone. After transferring the file, you may disconnect the USB cable.

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11. On the home page, locate “Files” and tap it (Figure 12).
12. In the Files menu, select the “Downloads” (Figure 13).
13. Select the application, and begin the installation (Figure 14).

If the installer prompts you to scan the app before installation, tap “More details” and then “Install without scanning".

Figure 12 – Home page

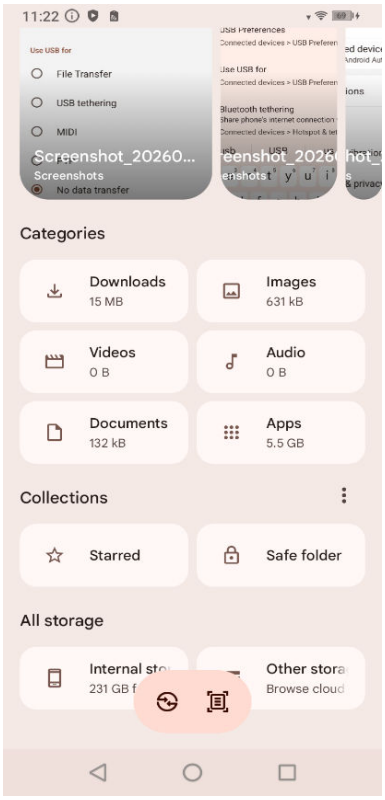

Figure 13 – Files

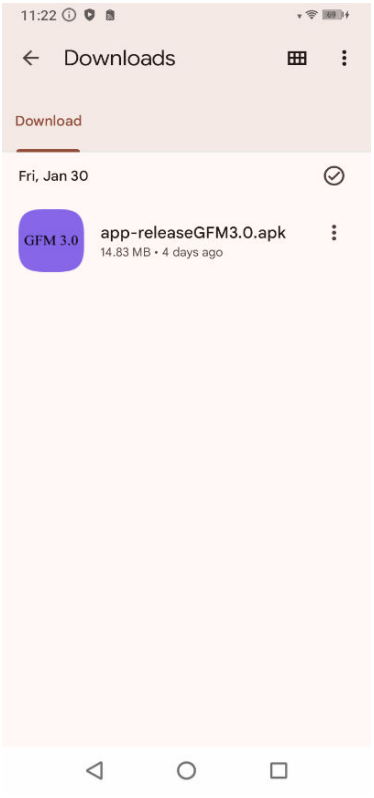

Figure 14 – Downloads

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3.7.2 Connecting GFM to a Phone

Screenshots are provided for Android 13.0. For other Android versions and themes, images may differ. Make sure the Gas Flow Meter is turned on.

On the home page, find and click “Settings” (Figure 15).

In the menu, select the “Connected devices” (Figure 16)

Figure 15 – Home page

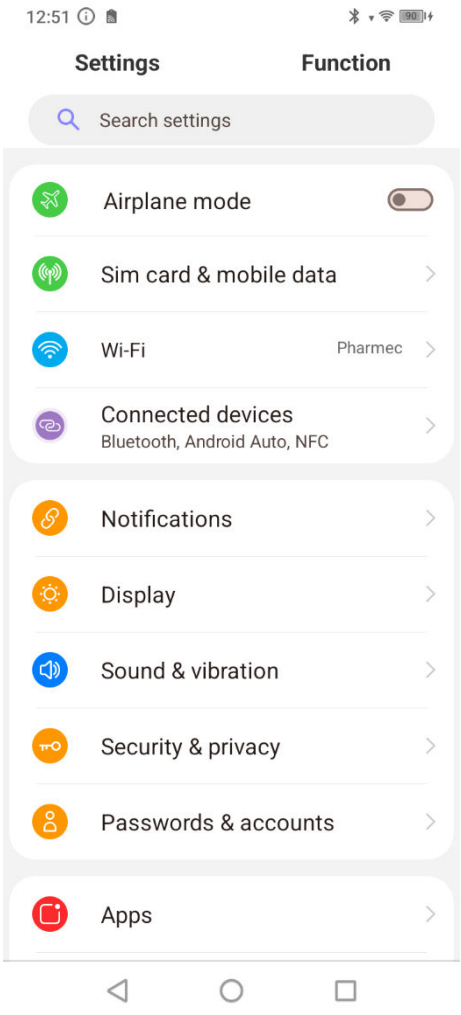

Figure 16 – Settings

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In "Connected Devices," select "Bluetooth" (Figure 17), then review the list of "Available devices" (Figure 18). Wait until the search for Bluetooth devices is complete. The detected devices will appear in the list. Tap on "GFM 3.0 S/N: XXXXXXX," where XXXXXXX is the serial number of the Gas Flow Meter.

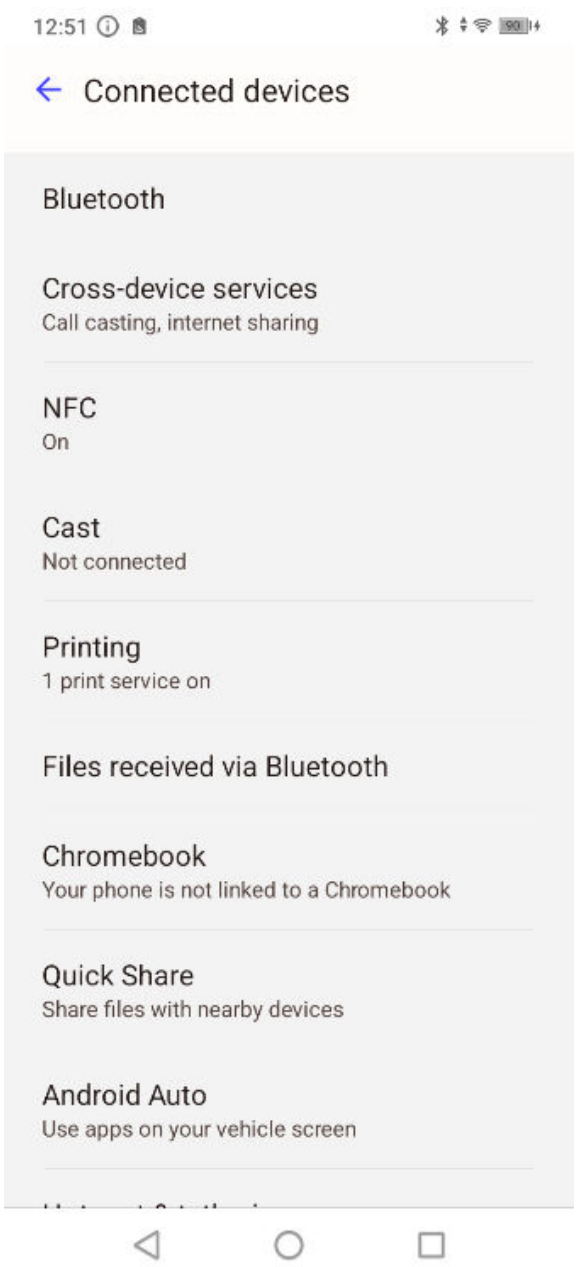
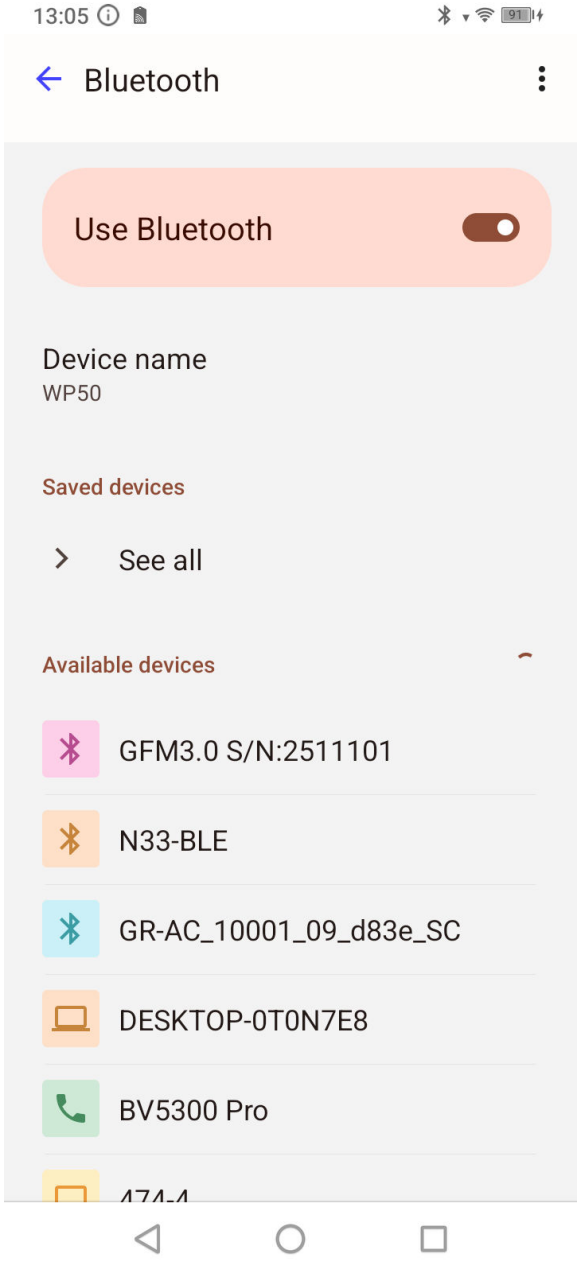


Figure 17 – Bluetooth Figure



18 – Bluetooth devices

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

In some versions of Android, you may need to tap the "Pair new device" button (Figure 19). After the desired device appears, tap it to establish a connection. In the dialog box that opens, enter 1234 in the password field (Figure 20), then tap OK.

Figure 19 – Pair new device

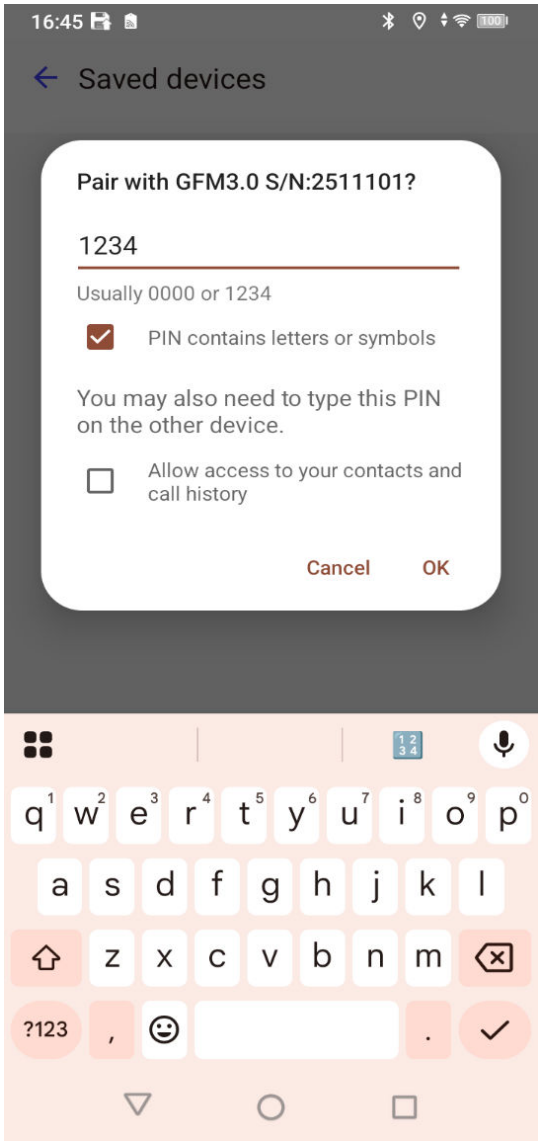


Figure 20 – PIN dialog box

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3.8 Operating Procedure

Note: All figures in this manual displaying leakage graphs use the unit of measurement in lpm (liters per minute).

3.8.1 Opening the App, Connecting to GFM

When you open the app, a loading window will appear (Figure 21). The app version is displayed at the bottom of the loading screen (Example: V 1.0.1).
When the app is launched for the first time, you'll be prompted to choose a folder for saving data. Create a folder by tapping the "Create new folder" button (Figure 22).

Figure 21 – App Launcher

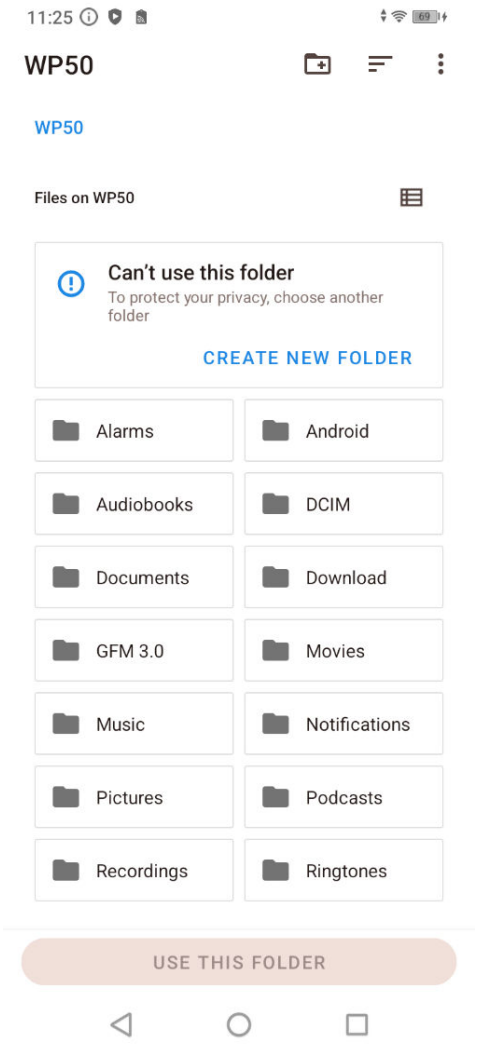

Figure 22 – Create a new folder

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the “0. Bringing the device into operational state” before valid measurements begin.

The folder can be given any name (for example, GFM data) (Figure 23). Next, you need to select the folder you just created (Figure 24) using the "USE THIS FOLDER" button (Figure 24) and allow GFM 3.0 to access files in GFM 3.0 by tapping the "Allow" button (Figure 25). Pay close attention to the full path of the selected folder (Figure 24), as all app files will be stored there. Once the folder is selected, the remaining directory structure will be created automatically.

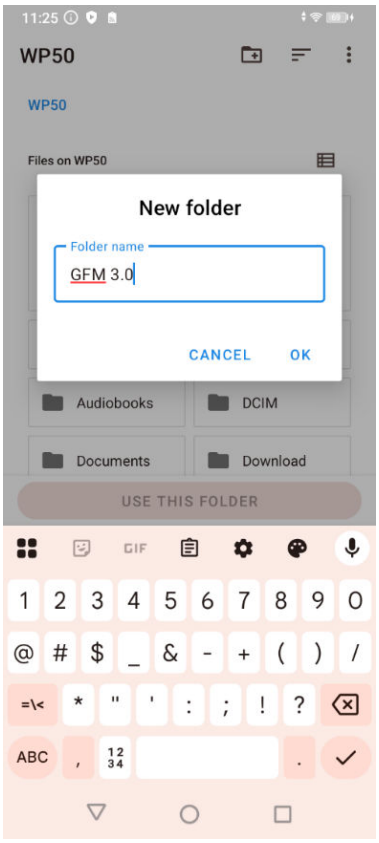

Figure 23 – New folder name

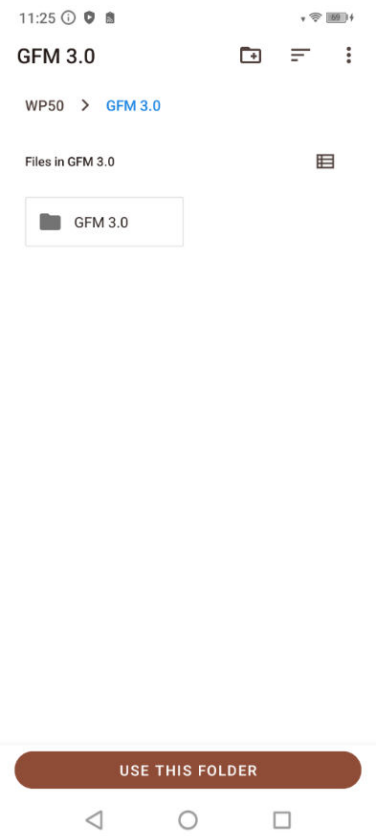

Figure 24 – Select folder

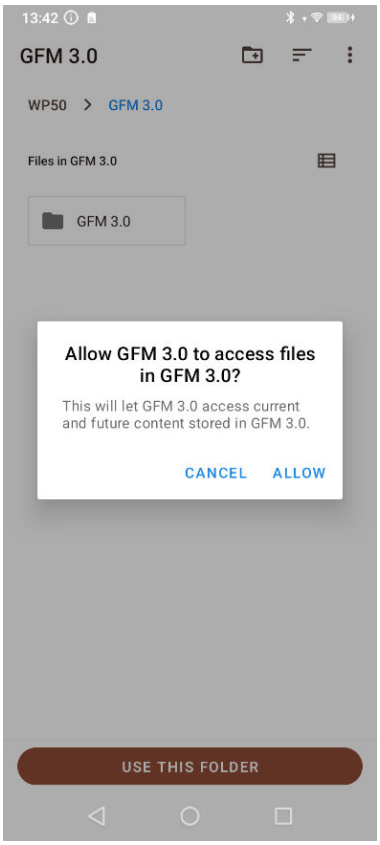

Figure 25 – Allow

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Thereafter, you need to grant all necessary permissions for the app to function properly by tapping the "While using the app" button (Figure 26, 27).

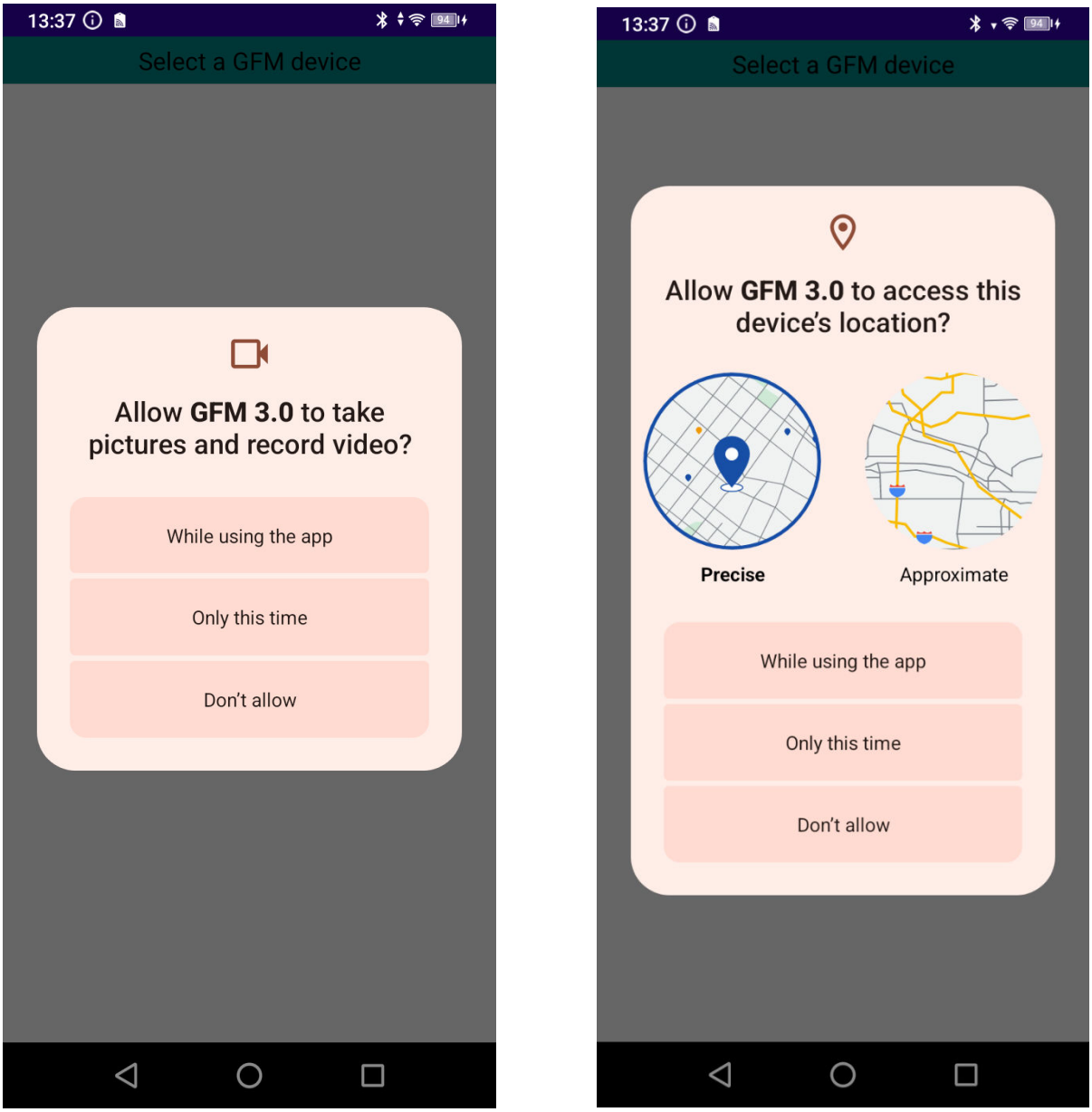


Figure 26 and 27 – Grant permissions

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the “0. Bringing the device into operational state” before valid measurements begin.

Thereafter, you need to grant all necessary permissions for the app to function properly by tapping the "Allow" button (Figure 28, 29).

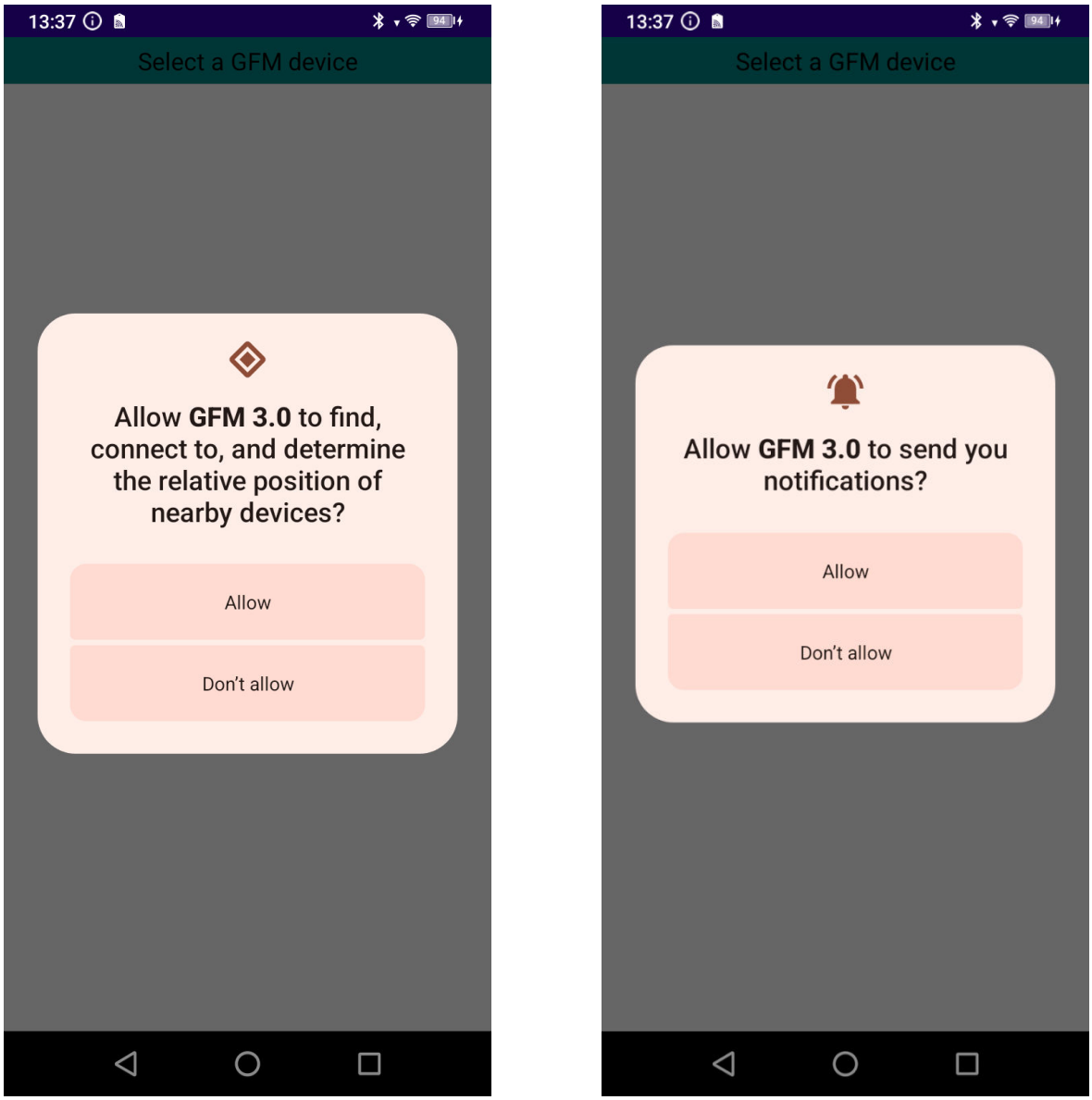


Figure 28 and 29 – Grant permissions

The steps described above only need to be performed once during the app installation.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

The following section outlines how to launch the app for daily use:

1. Open the GFM 3.0 app on the phone. Select the previously paired GFM from the start page. (Figure 30).
2. Connect to the GFM sampler by tapping the required device.
3. The connected device will appear in the list (Figure 31).
4. Tap it, and the app will prompt you to begin working with the instrument (Figure 32). As a result of connecting to the device, additional icons will appear: a check mark and a cross. The check mark indicates an active connection, while the cross allows you to close the connection. The "Go to GFM" button and the "Global Settings GFM" button will also become available.

Figure 30 – Home page

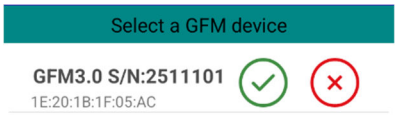


Figure 31 – Connected

Figure 32 – Go to GFM

As a result, the sampler will synchronize its settings by updating the current date and time. The device's internal clock is set according to the time on the phone.

When you tap the "Go to GFM" button, you will be taken to the GFM menu, and when you tap the "Global Settings GFM" button, you will be taken to the global GFM settings.

Note: Exiting the application by pressing the "Back" button closes all existing connections. When the application is minimized by pressing the or all existing connections remain active, and data continues to be exchanged with connected devices.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

3.8.2 Global Settings GFM

Click on the "Global settings GFM" button (Figure 33).

Figure 33 – Home page

This will open the "Global settings GFM" page (Figure 34). On this page, the operator can set the required date and time formats, which will be reflected in the log file (Figure 31) and in the file when saving manually.

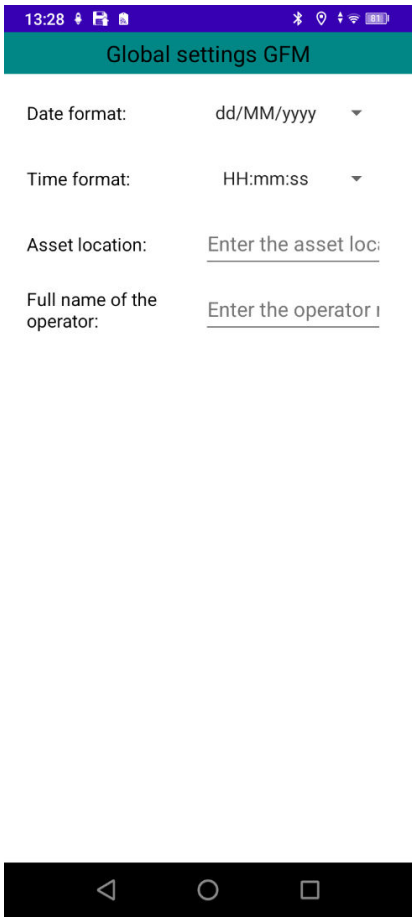


Figure 34 – Global settings GFM

The operator can also enter the name of the measurement or company asset, as well as their personal information, such as their name or employee identification number. The "Asset location" field is text-based, allowing any information that identifies the measurement object to be entered (special characters prohibited in file names cannot be used). Similarly, the data in the "Full name of the operator" field is text-based, so entering the employee's Personnel number/Employee ID or other identifying details is permitted. The Asset name and the operator's personal information will be recorded in the log file (Figure 35).

Note: The asset location and the operator's personal data will be recorded in the log file when navigating to the GFM menu. It is also important to note that when switching to another Company asset or changing the operator, this information should be updated for proper logging and further analysis.

Note: The asset location data is also used when saving the log file and manually recorded files, which are stored in a folder named after the asset. If the asset location is not specified, the data will be saved in a folder named "unknown_object.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

Note: Do not use the # symbol in either the asset location or the full name of the operator. This will prevent the data from formatting correctly when converting to a spreadsheet**.**

The dialog boxes "Temperature Celsius" and "Temperature Fahrenheit" are used by the operator to enter the current temperature in either Celsius or Fahrenheit.

When a value is entered in Celsius, the corresponding Fahrenheit value is automatically calculated, so there's no need to edit the "Temperature Fahrenheit" field manually.

Likewise, entering a temperature in Fahrenheit will automatically convert it to Celsius, and the "Temperature Celsius" field does not need to be changed.

The "Pressure (mmHg)" and "Pressure (Pa)" dialog boxes are used by the operator to enter the current pressure in either millimeters of mercury or Pascals.

When a value is entered in millimeters of mercury, the pressure is automatically converted to Pascals, so there's no need to change the "Pressure (Pa)" field manually.

Likewise, entering a value in Pascals will automatically convert the pressure to millimeters of mercury, and the "Pressure (mmHg)" dialog box does not need to be edited.

Note: Temperature and pressure data are used to generate a PDF report in the "EPA Automatic" mode. For more details, refer to Section 3.8.9, Menu Item "EPA Automatic."

	A	B	C	D	E	F	G	H	I	J	K	L
1	Date	Time	Date pattern	Time pattern	Latitude	Longitude	Asset location	Operator name	Battery	Calibration Temperature Celsius	Calibration Pressure (Pa)	Temperature Celsius
2	04.03.2026	8:04:54	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.73
3	04.03.2026	8:04:55	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.73
4	04.03.2026	8:04:56	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.74
5	04.03.2026	8:04:57	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.74
6	04.03.2026	8:04:58	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.74
7	04.03.2026	8:04:59	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.75
8	04.03.2026	8:05:00	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.76
9	04.03.2026	8:05:01	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.76
10	04.03.2026	8:05:02	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.76
11	04.03.2026	8:05:03	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.77
12	04.03.2026	8:05:04	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.77
13	04.03.2026	8:05:05	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.78
14	04.03.2026	8:05:06	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.78
15	04.03.2026	8:05:07	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.79
16	04.03.2026	8:05:08	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.79
17	04.03.2026	8:05:09	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.79
18	04.03.2026	8:05:10	dd/MM/yyyy	HH:mm:ss					85	21.00	95930	25.80

Figure 35 – Log file

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

When you click the "Back" ◁ button, the global settings data will be saved and will not need to be re-entered when you reopen the application, unless the measurement object or the operator performing the measurements has changed.

3.8.3 GFM Menu

Click on the "Go to GFM" (Figure 36)

Figure 36 – Home page

This will open the GFM menu page (Figure 37).

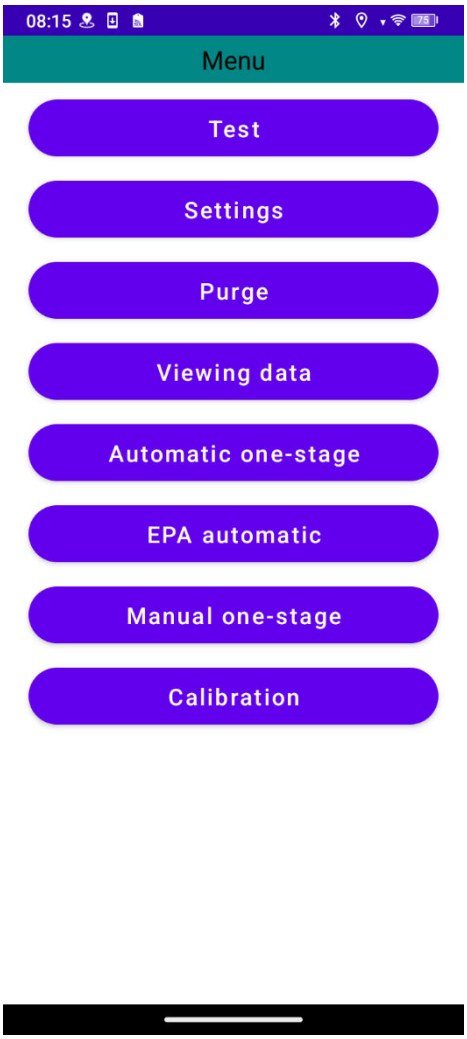


Figure 37 – GFM Menu

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

3.8.4 Menu Item "Test"

ATTENTION! Perform the "Purge and laser calibration" procedure according to 3.8.6 "Purge and Laser Calibration" each time before performing testing instructions below

The Test mode is required to check the operability of the device, the correctness of the determination of methane concentrations and the correctness of the calculation of the volumes of leaks.

In the "Test" mode, the instrument is tested using gas mixtures of known concentrations. The device is tested in the low and high concentration ranges. The lower concentration range is from 1.5% to 3.0%, inclusive. The upper concentration range is from 40.0% to 100.0%, inclusive. To check the accuracy of methane concentration measurements, methane gas mixtures with concentrations of 2.5% (for the low range) and 50% (for the high range) must be used.

We do not recommend connecting the calibration gas cylinder directly to the instrument's calibration ports. Always use the supplied rotameter to ensure a constant flow of testing gas. The connection diagram for the components is shown in Figure 38.

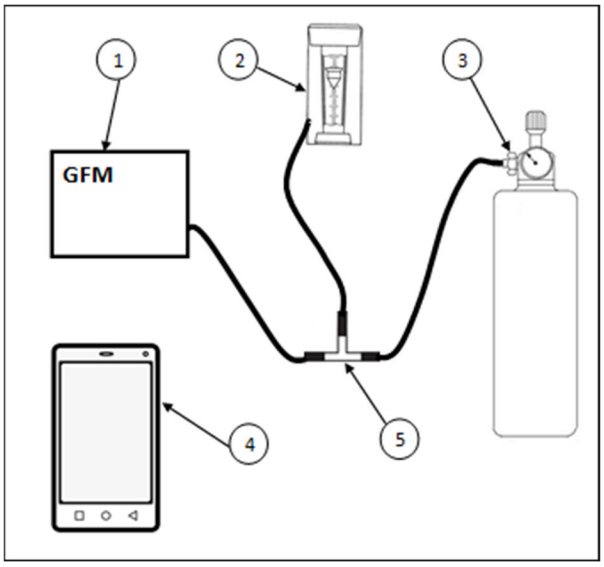


Figure 38 – Connection diagram

The scheme includes:

1. GFM 3.0 device.
2. Rotameter.
3. Reducer.
4. Telephone.
5. Tee.

1. Assemble the testing bench to the connection diagram (Figure 38), following the exact sequence of steps:

1.1 Ensure that the cylinder valve is closed, Open the regulator on the reducer to release any residual gas pressure and prevent damage to the device from a sudden pressure surge at the inlet.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

1.2 Close the pressure regulator and verify that the pressure gauge on the reducer reads 0.

1.3 Open the cylinder valve and confirm that the pressure on the reducer's pressure gauge increases and stabilizes.

1.4 Connect the rotameter to the cylinder reducer as shown in Figure 38, using the tee and tubing from the rotameter kit. Secure the rotameter in an upright position. **Do not** connect the device to the tee at this stage.

2. Open the reducer regulator and adjust the rotameter reading in the middle of the scale.
3. Connect the addition inlet of the instrument (1) to the tee of the testing bench (5) according to the diagram in Figure 38.
4. Press the button ▶ and select the Low or High concentration mode according to the gas mixture selected for the test (Figure 39). 10. Press the "Continue" button, set the concentration of the gas mixture selected for the test, and press "Start" (Figure 40).

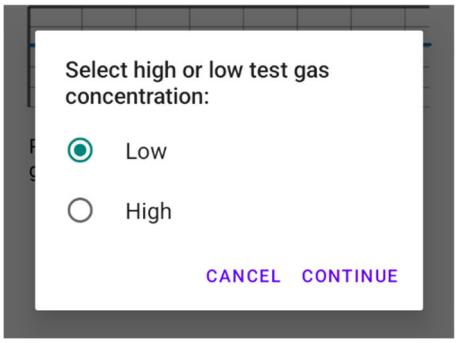


Figure 39 – Select concentration

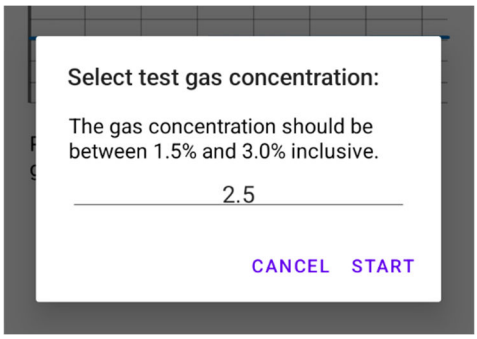


Figure 40 – Set concentration

5. Wait for 20 seconds the Leak reading to stabilize.
6. Make sure the "Percentage difference test gas/leak channel" reading is stabilized within 5% for at least 10 seconds. If the "Percentage difference test gas/leak channel" reading deviates from the test mixture by more than 5%, calibrate the instrument according to Section 4 "Calibration".

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

7. Click the button  to save the test result. When you click the record button, the message "DATA SAVED" will appear at the bottom. Then click the  button. Saving data is not available after clicking the  button.
8. Disconnect the background channel of the instrument from the test setup, close the cylinder valve first, then close the reducer.
9. Exit the Test menu, select the Purge menu item and perform the Purge procedure for 2 minutes with the buttons  and 
10. Repeat the procedure to test on mixtures of other concentrations.
11. Pressing the "Back"  button will return you to the application menu.

Note: The verified data is saved to a file, which makes it possible to confirm whether a check was performed at the beginning or end of the working day and to verify the accuracy of the GFM 3.0 sampler measurements (Figure 41).

	A	B	C	D	E	F	G
1	Date	Time	Date pattern	Time pattern	Test gas concentration	Concentration leak	Difference leak channel
2	04.03.2026	9:06:00	dd/MM/yyyy	HH:mm:ss	2,5	0.010	-99.60
3	04.03.2026	9:06:02	dd/MM/yyyy	HH:mm:ss	2,5	0.010	-99.59
4	04.03.2026	9:06:03	dd/MM/yyyy	HH:mm:ss	2,5	0.011	-99.57
5	04.03.2026	9:06:05	dd/MM/yyyy	HH:mm:ss	2,5	0.011	-99.58
6	04.03.2026	9:06:06	dd/MM/yyyy	HH:mm:ss	2,5	0.011	-99.57
7	04.03.2026	9:06:07	dd/MM/yyyy	HH:mm:ss	2,5	0.011	-99.56
8	04.03.2026	9:12:57	dd/MM/yyyy	HH:mm:ss	50	55.256	10.51

Figure 41 – Test data

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

3.8.5 Menu Item "Settings"

Click on the item "Settings" (Figure 42). This will open the settings page (Figure 43).

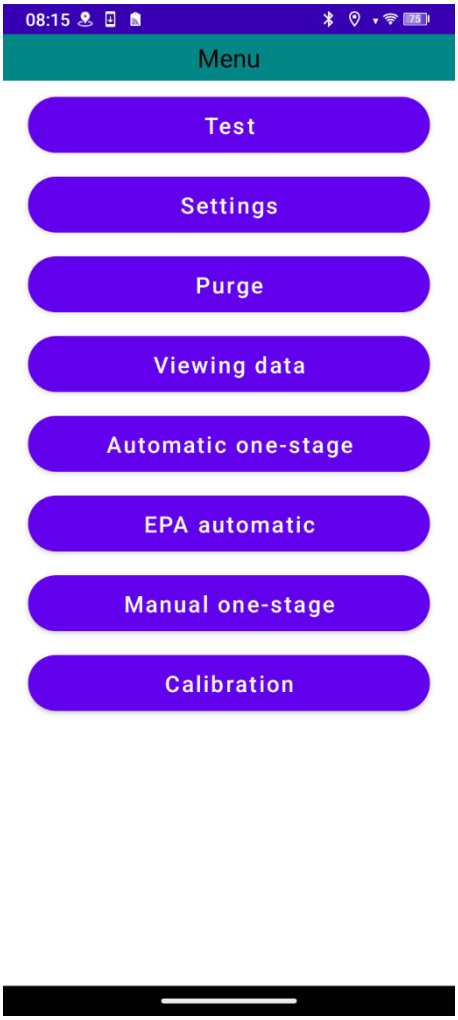


Figure 42 – GFM menu

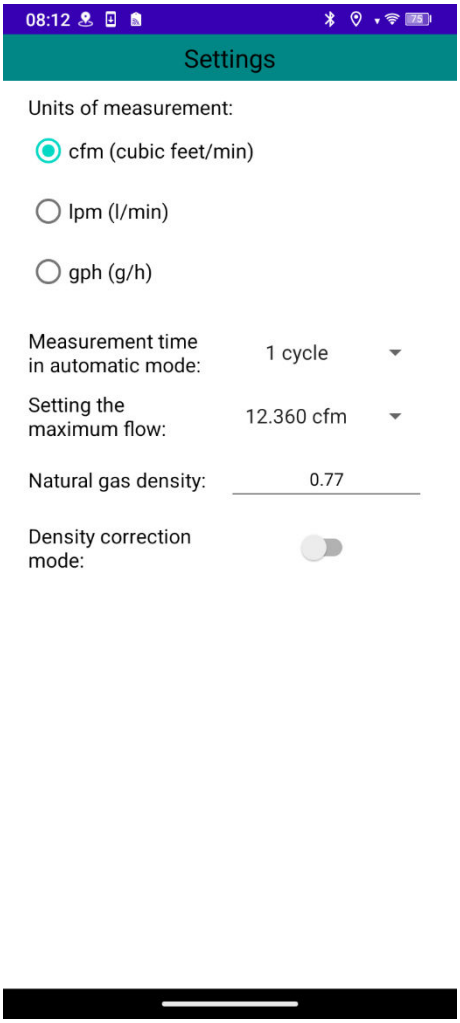


Figure 43 – Settings

The settings page allows you to select the required units of measurement, such as:

– cfm (cubic feet/min);
– lpm (l/min);
– gph (g/h).

You can set the maximum flow rate for Manual mode one-stage with values that depend on the selected units of measurement (Table 3).

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

Table 3

Units of measurement	Meaning
cfm (cubic feet/min)	12.36 CFM
	8.82 CFM
	5,29 CFM
	2.47 CFM
lpm (l/min)	350 lpm
	250 lpm
	150 lpm
	70 lpm
gph (g/h)	25.28 g/h
	18.06 g/h
	10.83 g/h
	5.05 g/h

You can set the number of measurement cycles in Automatic one-stage mode from 1 to 5. For a description of how the cycles work, see section 3.8.8 of the Menu item "Automatic one-stage". The time diagram of each cycle is as follows: Within 30 seconds, a measurement is taken in the background channel, then within a minute a measurement is taken in the leakage channel.

The "Density correction mode" parameter is disabled by default. You can turn it on to get measurements corrected for the density of the air in a particular area.

Table 4 presents the data displayed on the data viewing screens corresponding to the different measurement modes.

Table 4

Count	Description
Date	Date of measurement taken
Time	Time of measurement taken
Battery charge	The remaining battery charge of the sampler in %
Flow rate	Flow rate in cfm or lpm (depending on the units selected)
Background concentration	Background gas concentration in %
Leak concentration	Gas concentration in the flow in %
Latitude	Latitude of the device in degrees
Longitude	Longitude of the device location in degrees
Leakage intensity	in cfm, lpm, or gph (depending on the units selected)
Barcode	Scanned barcode data

The "Back" ◁ button is used to return to the application menu.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

3.8.6 Menu Item "Purge and Laser Calibration"

Perform the Purge and the Laser Calibration" procedure each time before:

- **powering off the sampler**
- **gas testing and calibration,**

And each time after:

- **powering on the sampler,**
- **installing new firmware,**
- **transportation,**
- **significant changes in altitude, pressure, or temperature.**

Skipping or shortening this initialization can produce systematic deviations.

Select the GFM menu. Click on the item "Purge" (Figure 44).

This will open the purge page (Figure 45).

The "Start" ▶ and "Stop" ■ buttons are used to start and stop the sampler purge. When you press the "Start" button , the ▶ purge process will start. The "AutoShort" Auto Short and "AutoLong" Auto Long buttons will become unavailable (Figure 46).

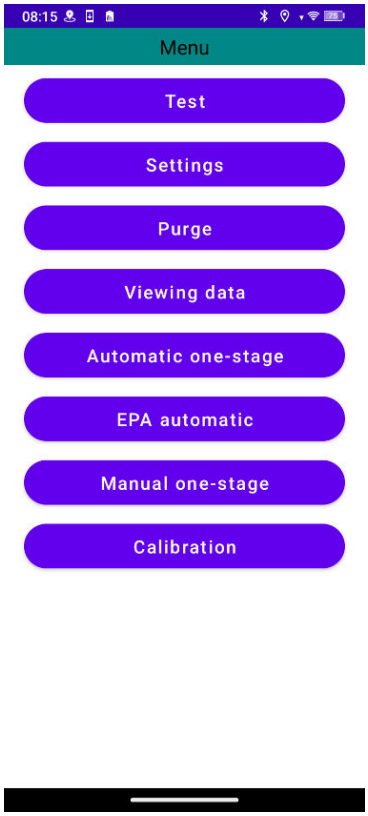


Figure 44 – GFM menu

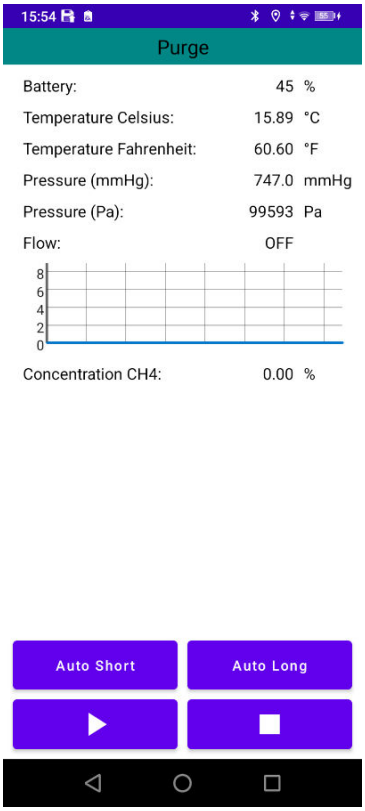


Figure 45 – Purge

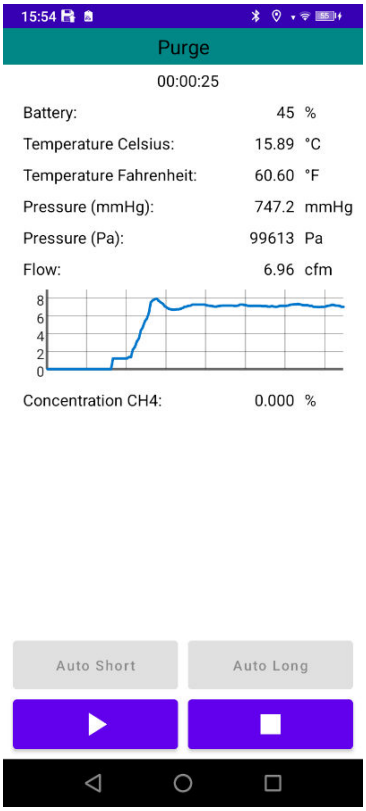


Figure 46 – Purge run

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

Also, when the purge process starts, a timer will be displayed, signaling the time elapsed since the start of the process (Figure 46).

1. Perform the Purge procedure not less for 2 minutes using "Start" ▶ and ■ "Stop" buttons.
2. Run the Auto Short procedure with the Auto Short button. Do not close the GFM3.0 application until the procedure is complete.
3. When the message "Max found" appears, proceed to Step 4.
   3.1 If the message "Max not found" appears, run the Auto Long procedure using the corresponding button. Do not close the GFM 3.0 application until the procedure is complete.
   3.2 If, after completing Auto Long, the message "Max found" appears, proceed to Step 4.
   3.3 If the message "Max not found" appears again, turn off the sampler for 2 minutes and then return to Step 1.
   3.4 If, after waiting 2 minutes with the sampler turned off and repeating the Auto Short and Auto Long procedures in sequence, the message "Max not found" still appears, contact the sampler manufacturer.
4. Exit the Purge menu. The "Back" ◁ button serves to return to the application menu and stops the blowing process in the same way as the "Stop" ■ button.

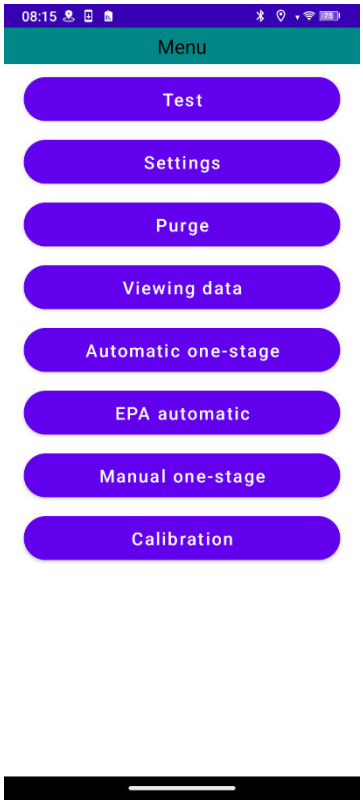
3.8.7 Menu Item "Viewing Data"

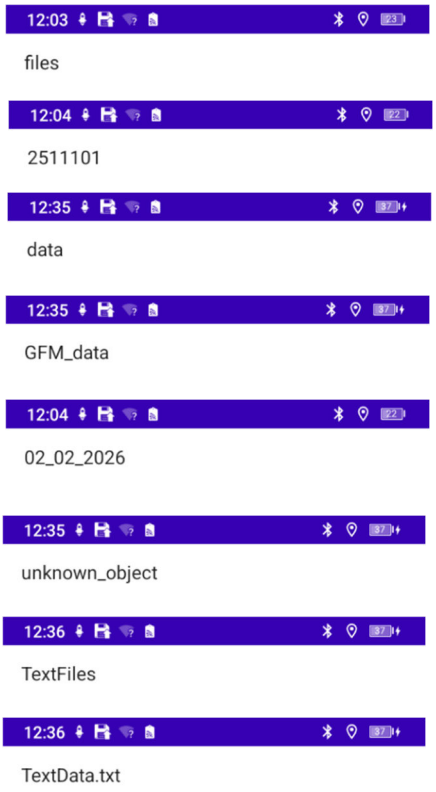
This mode is used to view measurements taken and saved on the phone in **Automatic one-stage (AOS)**, **EPA automatic**, and **Manual one-stage (MOS)** modes. Tap "Viewing Data" (Figure 47). This will open the file selection page. Select the required folders until the document opens (the folder names match the object names set in the global settings mode): tap the "Files" and select the folder, device, date and txt file (Figure 48) for viewing the txt file (Figure 49). The displayed data depends on the measurement mode in which the manual save was performed.

The button in the center of the screen labeled "Back" in the application is used to return to the previous directory.

The "Back" ◁ button is used to return to the application menu.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the “0. Bringing the device into operational state” before valid measurements begin.





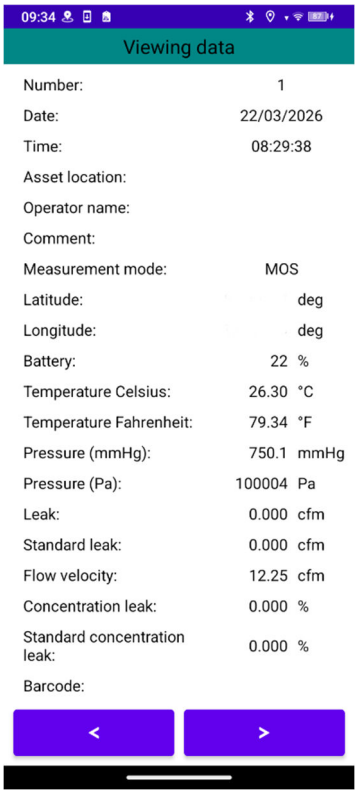


Figure 47 – GFM menu Figure 48 – txt file select Figure 49 – txt viewing

If the percentage difference between the maximum and minimum leakage value in EPA mode is less than 10%, then the data will be highlighted in green, otherwise in red.

Note: If the operator has set the density adjustment mode, the "Measurement mode" cell will display AOSC <density value>, MOSC <density value>, or EPAC <density value>. Here, the "density value" represents the gas density set by the operator, which defaults to 0,77.

The “Back” button ◁ is used to return to the file selection page.

When you open a file, the first entry in the text document is displayed by default; to navigate through the entries, use the “Previous” and “Next” buttons. You can also swipe right or left to navigate through the entries.

Note: The data is presented in a scrollable table (up and down).

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

3.8.8 Menu Item "Automatic one-stage"

Click on the item "Automatic one-stage" (Figure 50) to open the "Automatic one-stage" page (Figure 51).

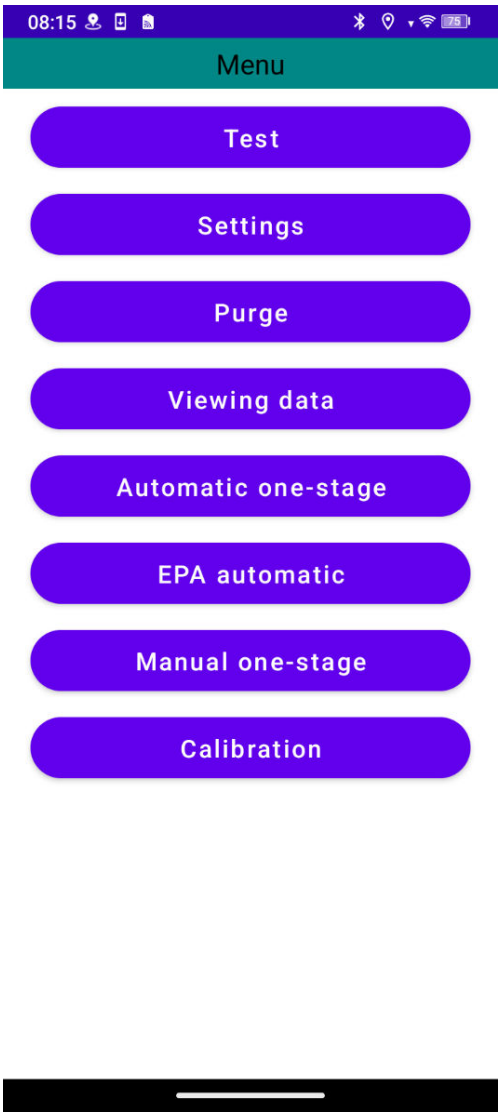


Figure 50 – GFM menu

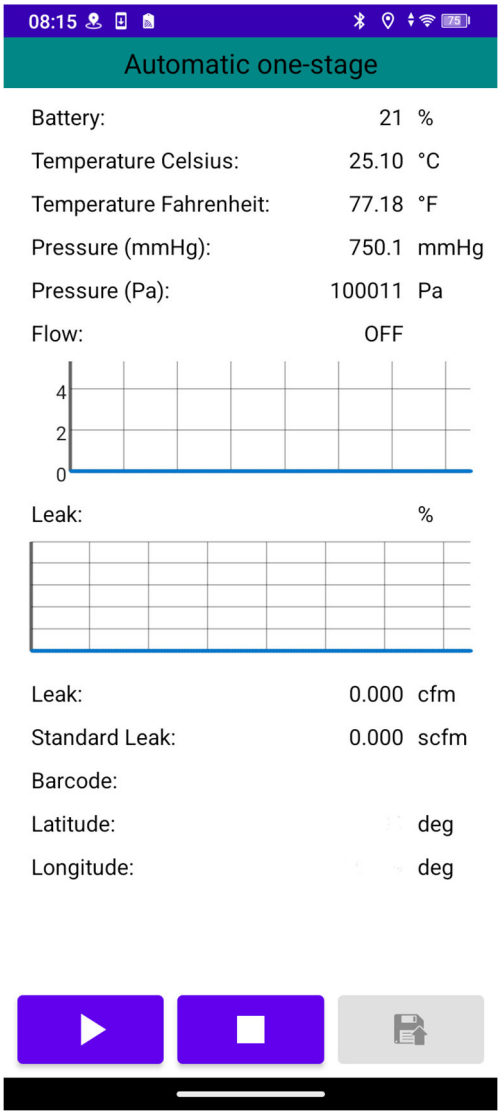


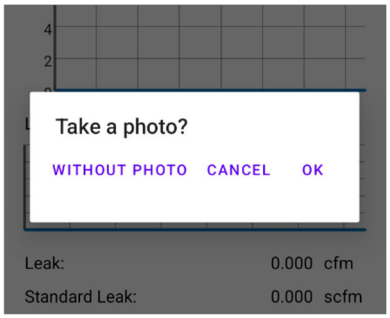
Figure 51 – Automatic one-stage mode

The "Start" ▶ and "Stop" ■ buttons allow you to start or stop measuring, respectively.

IMPORTANT! The Flow value displays the flow measured under real-time conditions, without Density Correction.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

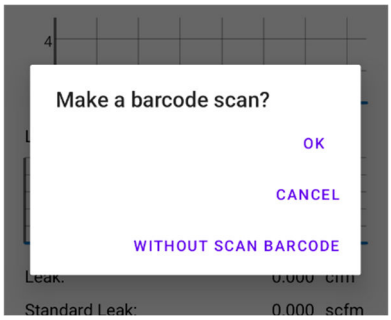
When you click the "Start" button, a dialog box will open.



Clicking on the "OK" button will open the "CAMERA" application to take a picture of the measured component. If the operator has taken a picture, the name of the picture will be recorded in the log file throughout the measurement process. If the operator exits the "CAMERA" application, the log file will be recorded with an empty value. After that, a dialog box will open (Figure 52).

Figure 52 – "Photo"

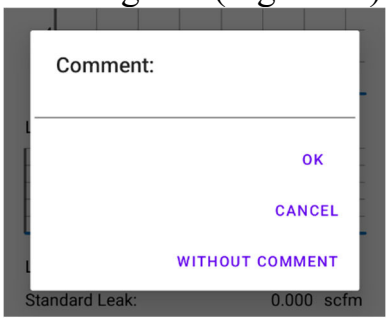
Clicking on the button "WITHOUT PHOTO" will cause the dialog box (Figure 53) to open and empty values to be written throughout the measurement.



Clicking on the "OK" button will open the "CAMERA" application to scan the barcode. If the barcode was scanned by the operator, the barcode data will be recorded throughout the measurement process in the log file.
If the operator exits the "CAMERA" application, the log file will be recorded with an empty value. After that, a dialog box will open (Figure 53).

Figure 53 – "Bar Scan"

Clicking on the button "WITHOUT SCAN BARCODE" will open a dialog box (Figure 54) and record empty values throughout the measurement.



Clicking on the "OK" button will start the measurement process, and a timer will be displayed indicating the time elapsed since the start of the measurement, and will also record the data from the input field (highlighted in green)
into the log file throughout the measurement process.

Figure 54 – "Comment"

Clicking on the button "WITHOUT COMMENT" will start the measurement process, and a timer will be displayed indicating the time elapsed since the start of the measurement, as well as recording empty values throughout the measurement (Figure 55).

The "CANCEL" button is required to cancel the start of the measurement process.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

After the measurement process is complete, the "Write to file" button will become available (Figure 56). Clicking on this button performs a manual data recording, and a corresponding notification will appear.

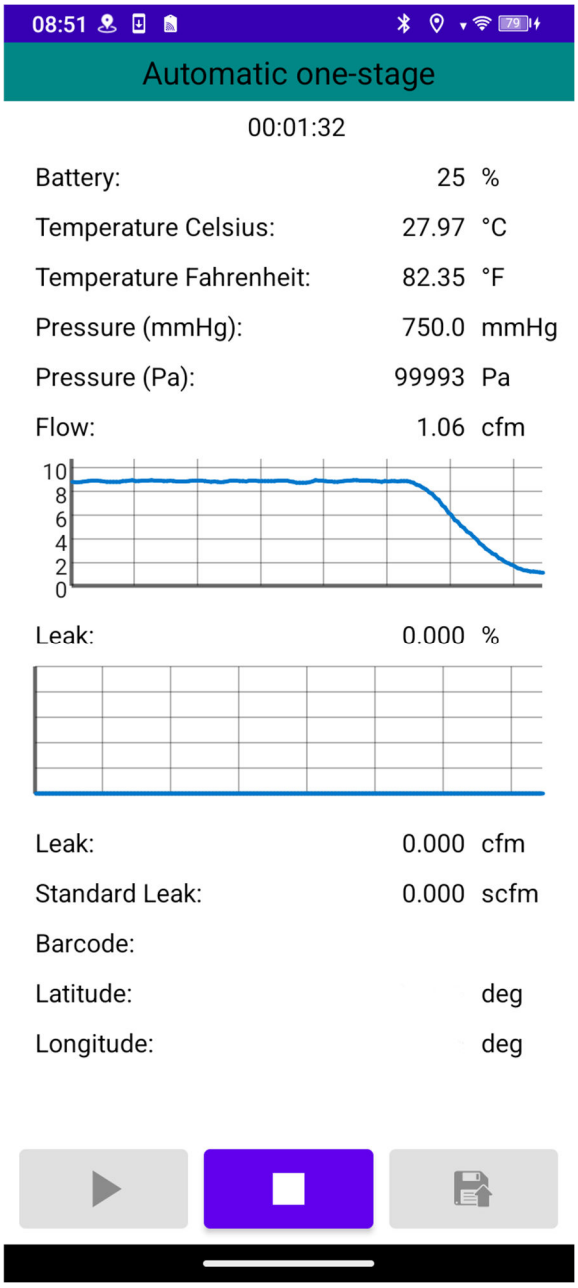


Figure 55 – Automatic one-stage mode

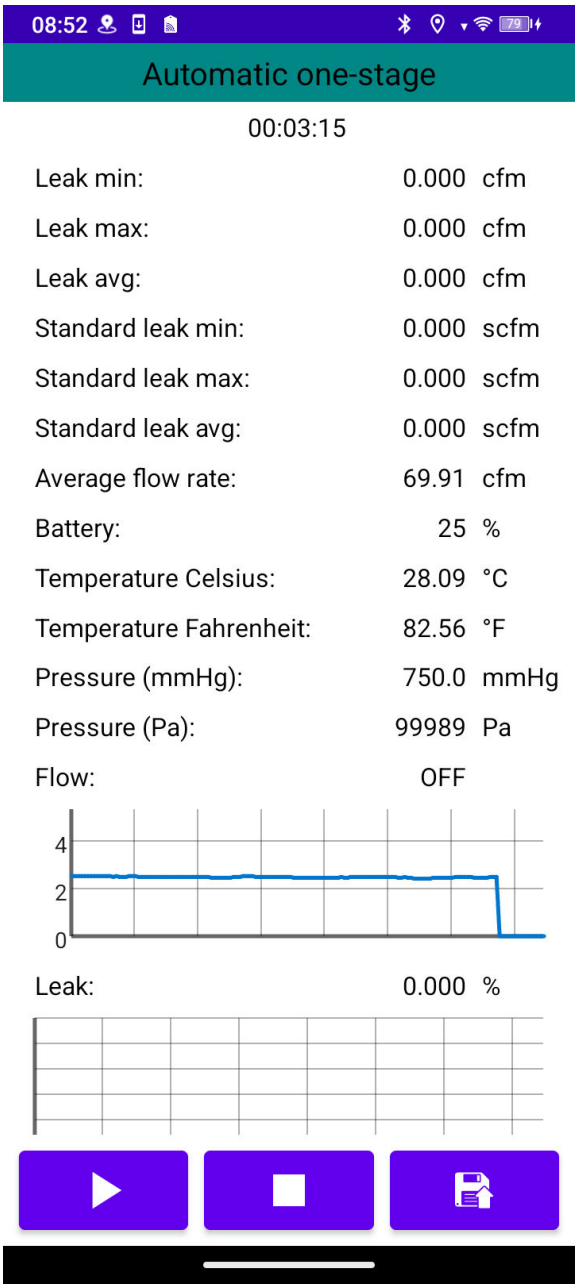


Figure 56 – Automatic one-stage data

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

Figure 57 shows the data, including the photo name, barcode data, and the comment provided by the operator.

Date	Time	Date pattern	Time pattern	Столбец 1	Столбец2	Asset location	Operator name	Battery	Calibration Temperature Celsius
22.03.2026	8:15:10	dd/MM/yyyy	HH:mm:ss					21	21.00
22.03.2026	8:15:11	dd/MM/yyyy	HH:mm:ss					21	21.00
22.03.2026	8:15:35	dd/MM/yyyy	HH:mm:ss					21	21.00
22.03.2026	8:15:36	dd/MM/yyyy	HH:mm:ss					21	21.00
22.03.2026	8:15:37	dd/MM/yyyy	HH:mm:ss					21	21.00
22.03.2026	8:15:38	dd/MM/yyyy	HH:mm:ss					21	21.00
22.03.2026	8:15:39	dd/MM/yyyy	HH:mm:ss					21	21.00
22.03.2026	8:15:40	dd/MM/yyyy	HH:mm:ss					21	21.00

Calibration Pressure (Pa)	Temperature Celsius	Temperature Fahrenheit	Pressure (mmHg)	Pressure (Pa)	Measurement type	Active	Photo name	Barcode data	Comment
95930	27.75	81.95	750.0	99994	AOS	RUNNING			
95930	27.75	81.95	750.0	99993	AOS	RUNNING			
95930	27.76	81.97	750.0	99994	AOS	RUNNING			
95930	27.76	81.97	750.0	99995	AOS	RUNNING			
95930	27.76	81.97	750.0	99995	AOS	RUNNING			
95930	27.76	81.97	750.0	99994	AOS	RUNNING			
95930	27.76	81.97	750.0	99993	AOS	RUNNING			
95930	27.76	81.97	750.0	99993	AOS	RUNNING			

Leak rate units	Density correction	Flow rate	Selected flow rate	Selected density value	Current density	Standard density	Current flow rate	Standard flow rate	Calibration concentration CH4
cfm	-	8.935		0.77	1.16	1.20	253.000	257.626	-0.002
cfm	-	8.935		0.77	1.16	1.20	253.000	257.635	-0.002
cfm	-	8.899		0.77	1.16	1.20	252.000	256.616	-0.001
cfm	-	8.793		0.77	1.16	1.20	249.000	253.561	-0.000
cfm	-	8.793		0.77	1.16	1.20	249.000	253.561	0.000
cfm	-	8.758		0.77	1.16	1.20	248.000	252.543	0.001
cfm	-	8.864		0.77	1.16	1.20	251.000	255.598	0.002
cfm	-	8.864		0.77	1.16	1.20	251.000	255.606	0.002

Actual concentration CH4	Standard concentration CH4	LEAK	BACK	Concentration leak	Standard concentration leak	Leakage rate	Standard leakage rate	Valid	State
-0.002	-0.002	0.000	0.000	0.000	0.000	0.000	0.000	-	bcd 15s
-0.002	-0.002	0.000	0.000	0.000	0.000	0.000	0.000	-	bcd 15s
-0.001	-0.001	0.000	0.000	0.000	0.000	0.000	0.000	-	bcd 15s
-0.000	-0.000	0.000	0.000	0.000	0.000	0.000	0.000	+	bccc 1m
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	+	bccc 1m
0.001	0.001	0.000	0.001	0.000	0.000	0.000	0.000	+	bccc 1m
0.002	0.002	0.000	0.002	0.000	0.000	0.000	0.000	+	bccc 1m
0.002	0.002	0.000	0.002	0.000	0.000	0.000	0.000	+	bccc 1m

Figure 57 – Log file data

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the “0. Bringing the device into operational state” before valid measurements begin.

The measurement process in automatic one-stage mode follows this algorithm:

1. To pre-determine the methane concentration (leakage volume), the flow is set to 12.36 cfm (250 lpm).

2. A sample from the background channel is pumped into the laser detector, then the methane concentration in the background channel is measured.

3. A sample from the leakage channel is pumped into the laser detector, and the methane concentration in the leakage channel is measured.

4. Based on concentration, the flow rate is automatically adjusted to one of the values: 2.472 cfm/70 lpm, 5.297 cfm/150 lpm, 8.829 cfm/250 lpm, or 12.36 cfm/350 lpm to reduce measurement error.

5. A measurement cycle is started, consisting of successive shifts of methane concentration measurements (leakage volume) in the background channel and leakage channel. The number of measurement cycles is set in the menu item "Settings" – "Measurement time in automatic mode" (Menu item 3.8.5 “Test”) and varies from 1 to 5 according to a predefined parameter value.

The “Back” ◁ button is used to return to the application menu and stop the measurement, similar to the “Stop” ■ button.

Note: The data is presented in a table that can be scrolled (up and down).

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

3.8.9 Menu item "EPA automatic"

This test feature is designed to follow the procedure and protocol to perform an exact EPA-compliant OOOOb 4-minute test for Rod Packings of Reciprocating Compressors or Wet/Dry Seals off Turbine Compressors.

Click on the item "EPA automatic" (Figure 58) to open the "Automatic one-stage" page (Figure 59).

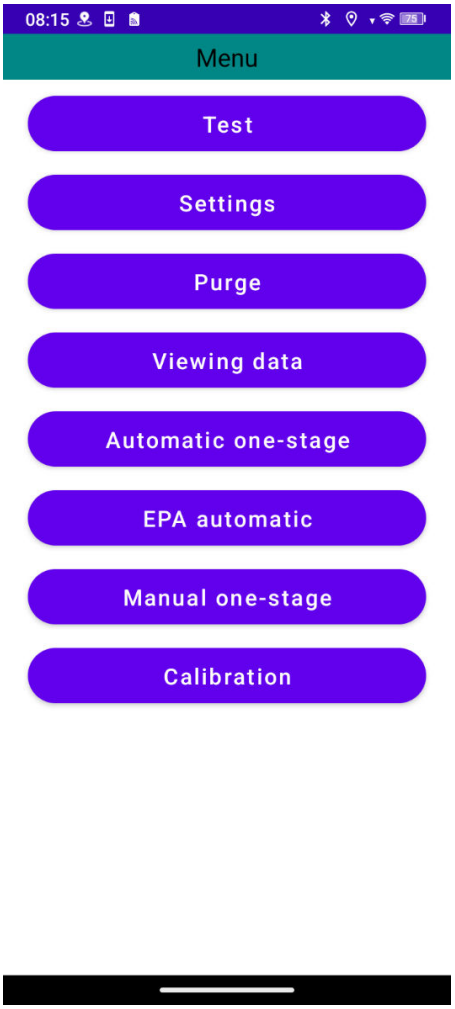


Figure 58 – GFM menu

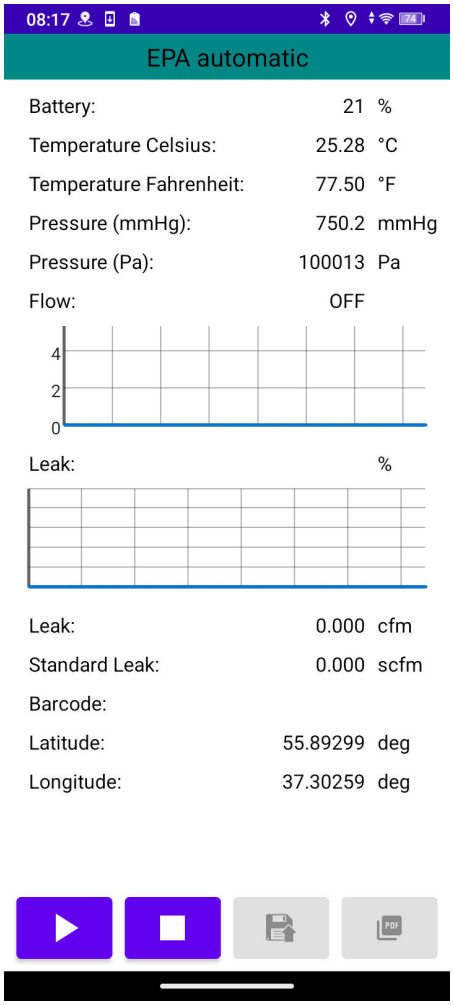


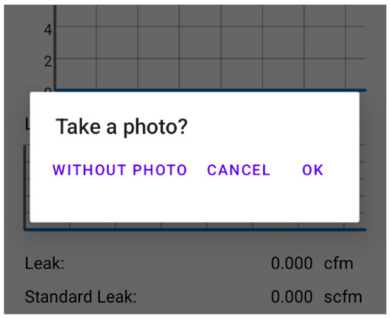
Figure 59 – EPA automatic mode

IMPORTANT! The Flow value displays the flow measured under real-time conditions, without Density Correction

The "Start" ▶ and "Stop" ■ buttons allow you to start or stop measuring, respectively.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

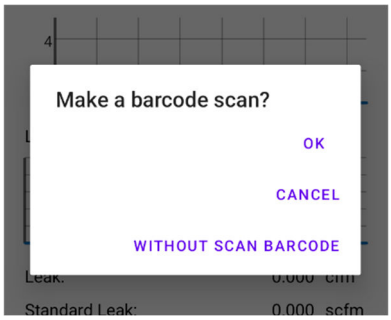
When you click the "Start" button, a dialog box will open.



Clicking on the "OK" button will open the "CAMERA" application to take a picture of the measured component. If the operator has taken a picture, the name of the picture will be recorded in the log file throughout the measurement process. If the operator exits the "CAMERA" application, the log file will be recorded with an empty value. After that, a dialog box will open (Figure 60).

Figure 60 – "Photo"

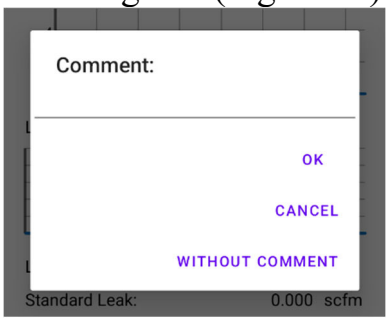
Clicking on the button "WITHOUT PHOTO" will cause the dialog box (Figure 53) to open and empty values to be written throughout the measurement.



Clicking on the "OK" button will open the "CAMERA" application to scan the barcode. If the barcode was scanned by the operator, the barcode data will be recorded throughout the measurement process in the log file.
If the operator exits the "CAMERA" application, the log file will be recorded with an empty value. After that, a dialog box will open (Figure 61).

Figure 61 – "Bar Scan"

Clicking on the button "WITHOUT SCAN BARCODE" will open a dialog box (Figure 54) and record empty values throughout the measurement.



Clicking on the "OK" button will start the measurement process, and a timer will be displayed indicating the time elapsed since the start of the measurement, and will also record the data from the input field (highlighted in green)
into the log file throughout the measurement process.

Figure 62 – "Comment"

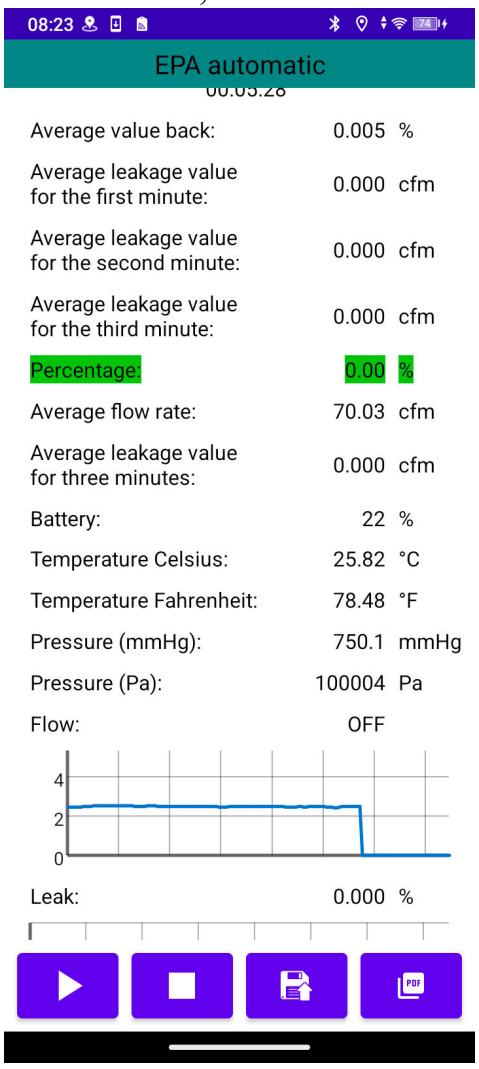
Clicking on the button "WITHOUT COMMENT" will start the measurement process, and a timer will be displayed indicating the time elapsed since the start of the measurement, as well as recording empty values throughout the measurement (Figure 62).

The "CANCEL" button is required to cancel the start of the measurement process.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

The measurement process in the "EPA automatic" mode is performed according to the following algorithm:

- For 1 minute, the background concentration is measured, and the concentration through the leak channel is measured at a flow rate of 250 lpm.
- At the end of the first minute, the average background leak value in % is calculated and displayed on the screen in the top line (field "Average value back").
- After this, based on the concentration through the leak channel, the flow rate is determined and automatically set. The flow rate is selected from the set values of 2.472 cfm/70 lpm, 5.297 cfm/150 lpm, 8.829 cfm/250 lpm, or 12.36 cfm/350 lpm.
- The measurement process continues for 3 minutes. Throughout the measurement, the current leak value is displayed in the "Leak" field.



- At the end of each of the three minutes, the average leak rate for that minute is displayed (fields "Average leakage value" for the first/second/third minute).

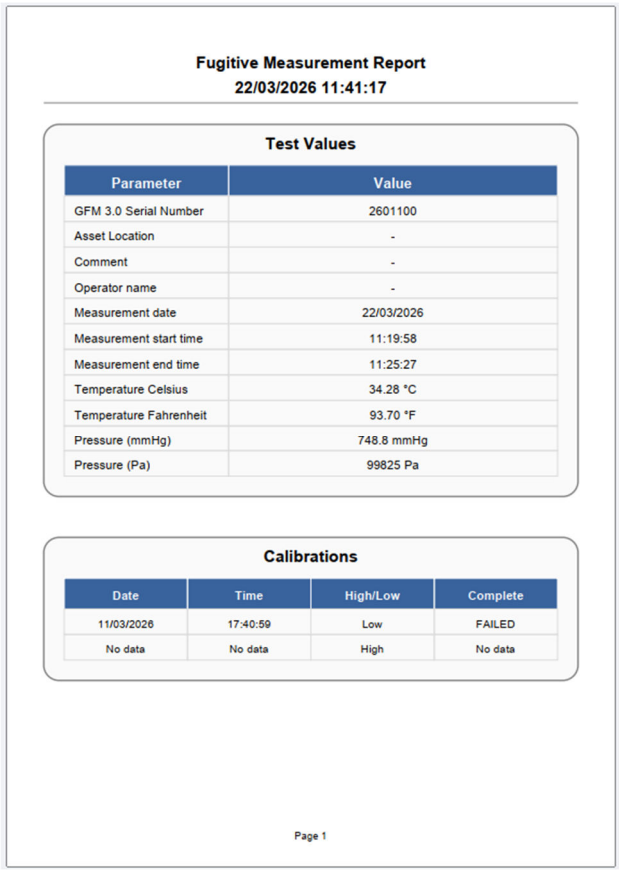
Thus, after the measurement process is complete in EPA automatic mode, the screen will show (Figure 63): the average background leak, average leak for the first minute, average leak for the second minute, average leak for the third minute, and the percentage difference between the maximum and minimum leak rate values from the three minutes (field "Percentage"). If the percentage difference is less than 10%, the Percentage field is highlighted in green; otherwise, it is highlighted in red. The average leak rate for the 3 minutes is also displayed (field "Average leakage value for three minutes").

- The measurement process automatically ends, and the "Write to file" button becomes available for manual data recording by the operator.

Figure 63 – Completed "EPA automatic" process

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

Once the measurement process is complete, the "Generate PDF report" button will become available; clicking it allows you to generate a PDF report. (Figure 64, Figure 65, Figure 66, Figure 67).



Fugitive Measurement Report
22/03/2026 11:41:17

Test Values

Parameter	Value
GFM 3.0 Serial Number	2601100
Asset Location	-
Comment	-
Operator name	-
Measurement date	22/03/2026
Measurement start time	11:19:58
Measurement end time	11:25:27
Temperature Celsius	34.28 °C
Temperature Fahrenheit	93.70 °F
Pressure (mmHg)	748.8 mmHg
Pressure (Pa)	99825 Pa

Calibrations

Date	Time	High/Low	Complete
11/03/2026	17:40:59	Low	FAILED
No data	No data	High	No data

Page 1

Daily Test Audit Data

Date	Time	Test Gas Concentration	Concentration	Percent Difference
Current Date Test Data				
No data	No data	No data	No data	No data
No data	No data	No data	No data	No data
Previous Test Data				
No data	No data	No data	No data	No data
No data	No data	No data	No data	No data

Statistics

Parameter	Minimum	Average	Maximum
CH4 Concentration	0.00 %	0.00 %	0.00 %
Flow Rate	65.00 cfm	70.00 cfm	72.00 cfm
Leak Rate	0.00 cfm	0.00 cfm	0.00 cfm
Mass Leak Rate CO2e (GWP-100 = 28)	0.00 MT/year	0.00 MT/year	0.00 MT/year
Mass Leak Rate CO2e (GWP-20 = 81)	0.00 MT/year	0.00 MT/year	0.00 MT/year
Standard Mass Leak Rate CO2e (GWP-100 = 28)	0.00 MT/year	0.00 MT/year	0.00 MT/year
Standard Mass Leak Rate CO2e (GWP-20 = 81)	0.00 MT/year	0.00 MT/year	0.00 MT/year

Page 2

Figure 64 and 65 – Fugitive Measurement Report (page 1 and 2)

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

Figure 66 and 67– Fugitive Measurement Report (page 3 and 4)

The "Back" button ◁ is used to return to the application menu and stops the measurement in the same way as the "Stop" button

Note: The data is presented in a table that can be scrolled (up and down).

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the “0. Bringing the device into operational state” before valid measurements begin.

3.8.10 Menu item “Manual one-stage”

ATTENTION! Perform the "Purge and Laser Calibration" procedure according to 3.8.6 "Purge and Laser Calibration" each time before:

- **powering off the sampler**
- **gas testing and calibration,**

and each time after:

- **powering on the sampler,**
- **installing new firmware,**
- **transportation,**
- **significant changes in altitude, pressure, or temperature.**

It defines the reference state for the day’s measurements and should be performed at the beginning of each working session

Skipping or shortening this initialization can produce systematic deviations.

In the manual one-stage mode, the operator starts the measurement at the flow rate set in the "Settings" menu and waits until stable leakage readings appear.

The device offers selectable sampling rates (2.472 cfm/70 lpm, 5.297 cfm/150 lpm, 8.829 cfm/250 lpm, or 12.36 cfm/350 lpm) in manual mode to allow flexibility across different leak magnitudes. In practice, lower flow rates typically provide improved stability for very small leaks, while higher flow rates are more appropriate for larger releases.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

Tap "Manual one-stage" (Figure 68). This will open the manual one-stage mode page (Figure 69).

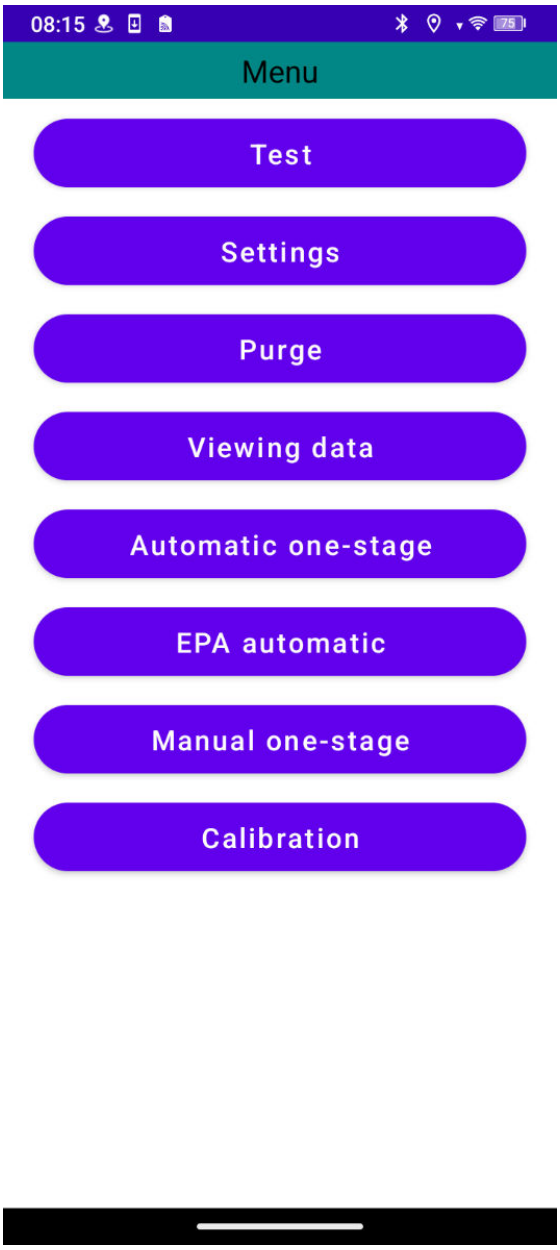


Figure 68 – GFM menu

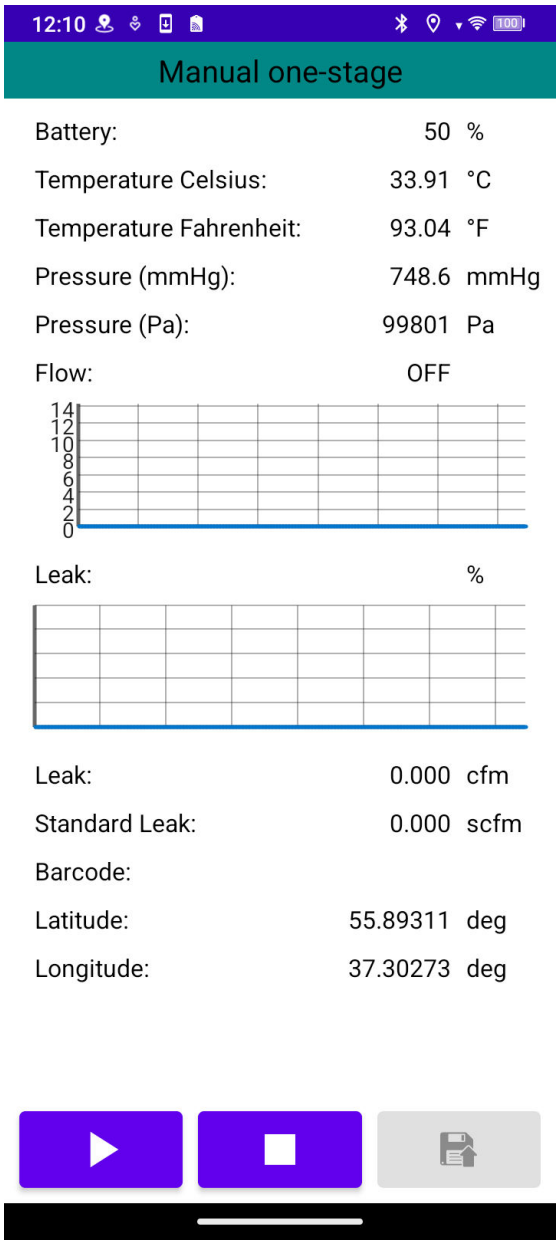


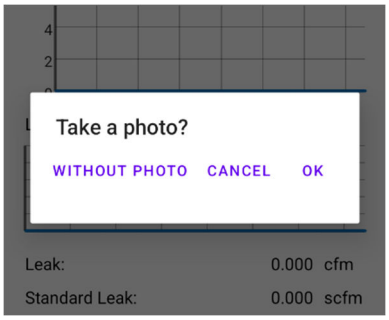
Figure 69 – Manual one-stage

IMPORTANT! The Flow value displays the flow measured under real-time conditions, without Density Correction

The "Start" ▶ and "Stop" ■ buttons allow you to start or stop measuring, respectively.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

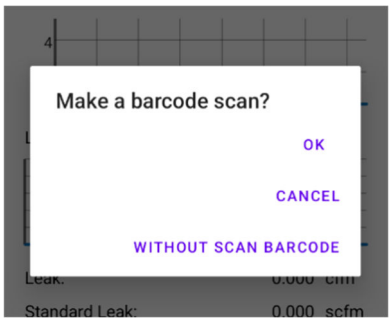
When you click the "Start" button, a dialog box will open.



Clicking on the "OK" button will open the "CAMERA" application to take a picture of the measured component. If the operator has taken a picture, the name of the picture will be recorded in the log file throughout the measurement process. If the operator exits the "CAMERA" application, the log file will be recorded with an empty value. After that, a dialog box will open (Figure 70).

Figure 70 – "Photo"

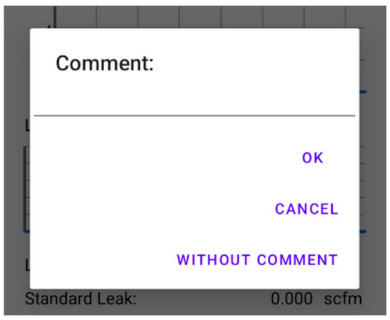
Clicking on the button "WITHOUT PHOTO" will cause the dialog box (Figure 71) to open and empty values to be written throughout the measurement.



Clicking on the "OK" button will open the "CAMERA" application to scan the barcode. If the barcode was scanned by the operator, the barcode data will be recorded throughout the measurement process in the log file.
If the operator exits the "CAMERA" application, the log file will be recorded with an empty value. After that, a dialog box will open (Figure 71).

Figure 71 – "Bar Scan"

Clicking on the button "WITHOUT SCAN BARCODE" will open a dialog box (Figure 72) and record empty values throughout the measurement.



Clicking on the "OK" button will start the measurement process, and a timer will be displayed indicating the time elapsed since the start of the measurement, and will also record the data from the input field (highlighted in green)
into the log file throughout the measurement process.

Figure 72 – "Comment"

Clicking on the button "WITHOUT COMMENT" will start the measurement process, and a timer will be displayed indicating the time elapsed since the start of the measurement, as well as recording empty values throughout the measurement.

The "CANCEL" button is required to cancel the start of the measurement process.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

After the measurement process starts, the "Write to file" button becomes unavailable until valid data is received. During this time, the Leak and the Standart Leak values will be highlighted in yellow (Figure 73).

When the data becomes valid, the save data button becomes available, allowing manual data recording (Figure 74). After a short period, the data update process will repeat (Figure 73).

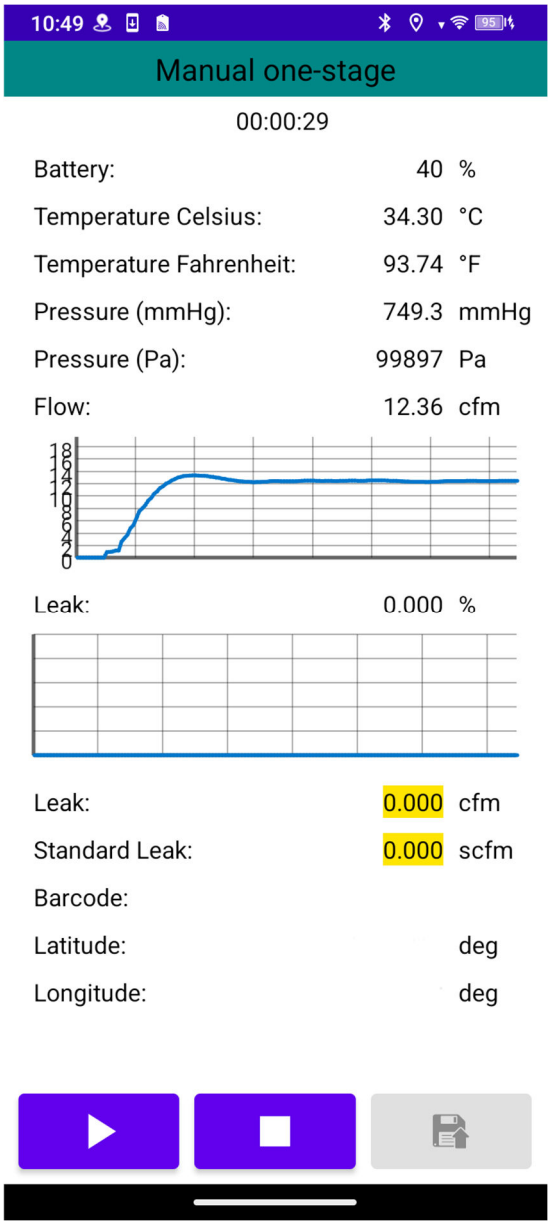


Figure 66 – Non-correct data

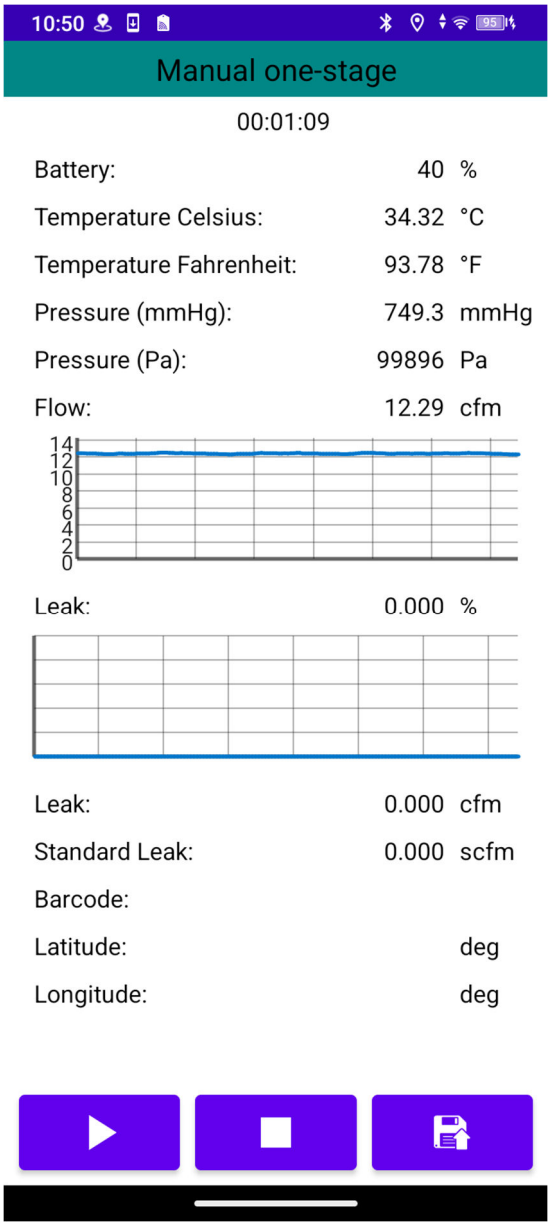


Figure 67 – Correct data

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

Date	Time	Date pattern	Time pattern	Столбец 1	Столбец2	Asset location	Operator name	Battery	Calibration Temperature Celsius
22.03.2026	8:23:49	dd/MM/yyyy	HH:mm:ss					22	21.00
22.03.2026	8:23:50	dd/MM/yyyy	HH:mm:ss					22	21.00
22.03.2026	8:23:51	dd/MM/yyyy	HH:mm:ss					22	21.00
22.03.2026	8:23:52	dd/MM/yyyy	HH:mm:ss					22	21.00
22.03.2026	8:23:53	dd/MM/yyyy	HH:mm:ss					22	21.00
22.03.2026	8:23:54	dd/MM/yyyy	HH:mm:ss					22	21.00
22.03.2026	8:23:55	dd/MM/yyyy	HH:mm:ss					22	21.00
22.03.2026	8:23:56	dd/MM/yyyy	HH:mm:ss					22	21.00

Calibration Pressure (Pa)	Temperature Celsius	Temperature Fahrenheit	Pressure (mmHg)	Pressure (Pa)	Measurement type	Active	Photo name	Barcode data	Comment
95930	25.85	78.53	750.1	100001	MOS	STOPPED			
95930	25.85	78.53	750.1	100000	MOS	RUNNING			
95930	25.86	78.55	750.1	100000	MOS	RUNNING			
95930	25.86	78.55	750.1	100001	MOS	RUNNING			
95930	25.86	78.55	750.1	100001	MOS	RUNNING			
95930	25.86	78.55	750.1	100000	MOS	RUNNING			
95930	25.86	78.55	750.1	100001	MOS	RUNNING			
95930	25.86	78.55	750.1	100001	MOS	RUNNING			

Leak rate units	Density correction	Flow rate	Selected flow rate	Selected density value	Current density	Standard density	Current flow rate	Standard flow rate	Calibration concentration CH4
cfm	-	0.000		0.77	1.16	1.20	0.000	0.000	-0.041
cfm	-	0.000		0.77	1.16	1.20	0.000	0.000	-0.042
cfm	-	0.883		0.77	1.16	1.20	25.000	25.500	-0.042
cfm	-	3.849		0.77	1.16	1.20	109.000	111.179	-0.044
cfm	-	7.451		0.77	1.16	1.20	211.000	215.218	-0.046
cfm	-	10.559		0.77	1.16	1.20	299.000	304.977	-0.047
cfm	-	12.396		0.77	1.16	1.20	351.000	358.016	-0.048
cfm	-	13.172		0.77	1.16	1.20	373.000	380.456	-0.049

Actual concentration CH4	Standard concentration CH4	LEAK	BACK	Concentration leak	Standard concentration leak	Leakage rate	Standard leakage rate	Valid	State
-0.042	-0.043	-0.020	0.000	0.000	0.000	0.000	0.000	-	-
-0.043	-0.044	-0.020	0.000	0.000	0.000	0.000	0.000	-	-
-0.044	-0.045	-0.020	0.000	0.000	0.000	0.000	0.000	-	-
-0.045	-0.047	-0.020	0.000	0.000	0.000	0.000	0.000	-	back
-0.047	-0.049	-0.020	0.000	0.000	0.000	0.000	0.000	-	back
-0.048	-0.050	-0.020	0.000	0.000	0.000	0.000	0.000	-	back
-0.050	-0.051	-0.020	0.000	0.000	0.000	0.000	0.000	-	back
-0.050	-0.052	-0.020	0.000	0.000	0.000	0.000	0.000	-	back

Figure 75 – Log file data

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the “0. Bringing the device into operational state” before valid measurements begin.

Figure 75 (“Log file data”) displays the photo name, barcode data, and comments set by the operator.

Once stable readings are reached, the operator can manually save all measured and calculated data to memory using the "Write to file" button.

Recording in this mode can be done any number of times, depending on the operator's measurement plan. This mode is used when the leakage rate measurement process requires more careful control.

The "Back" button is used to return to the application menu and also stops the measurement, similar to the "Stop" button.

Note: The data is presented in a table that can be scrolled (up and down).

ATTENTION! Perform the "Purge and Laser Calibration" procedure according to 3.8.6 "Purge and Laser Calibration" each time before powering off the sampler.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

3.9 Transferring Data to a PC

All measured and calculated data stored in memory can be copied to a personal computer as an ASCII file, where individual values are separated by the "#" symbol. This file can then be imported into any spreadsheet program for further analysis. The following section describes the procedure for copying the recorded data to a personal computer.

1. Connect your phone to your personal computer using a USB cable;
2. Unlock your phone;
3. On the home page, select the "Settings" item (Figure 76).
4. On the Settings page, type "usb" in the search line (Figure 77).

Figure 76 – Home Page

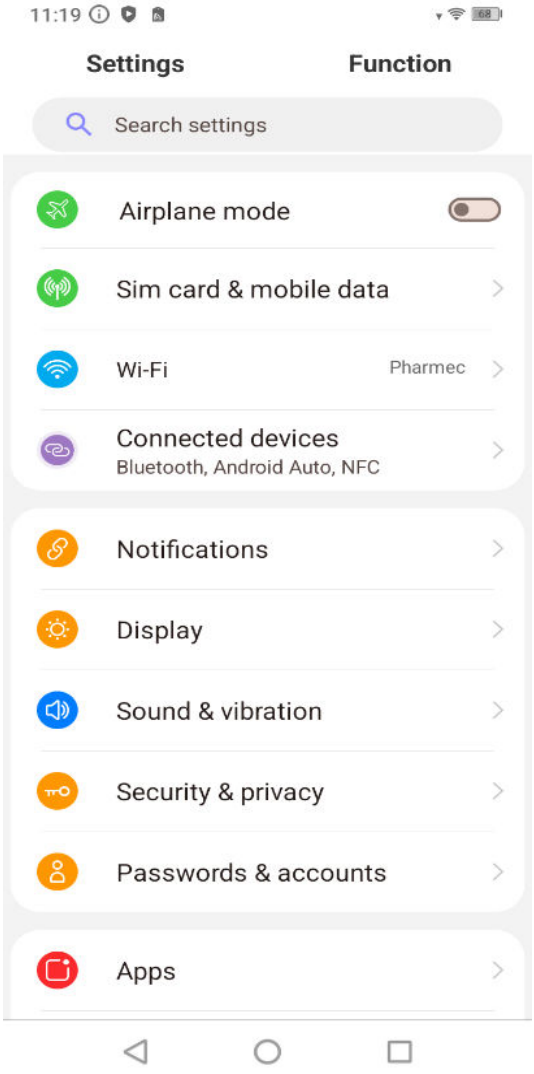


Figure 77 – Settings

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

5. Click on the "USB controlled by" (Figure 78) and then click on the "File transfer" (Figure 79)

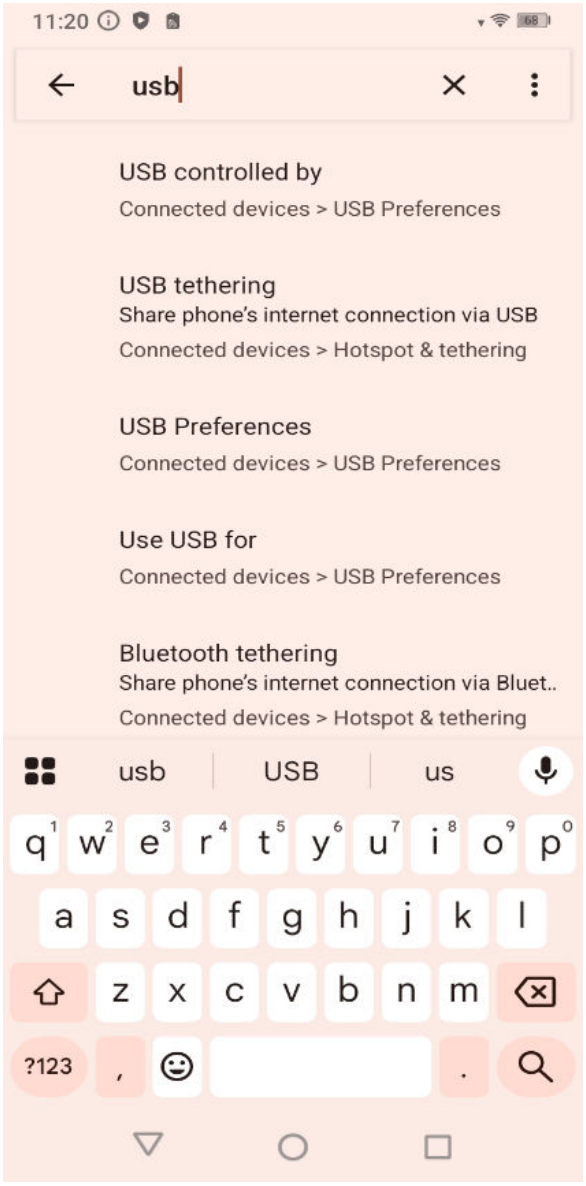


Figure 78 – USB controlled by

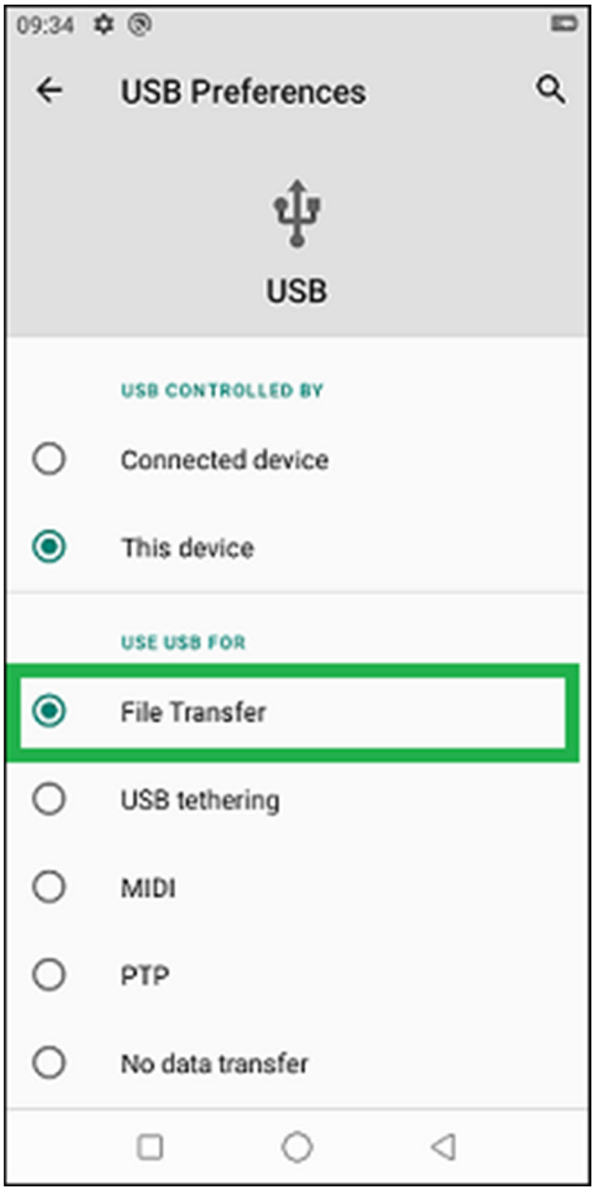


Figure 79 – File transfer

1. Open File Explorer on your personal computer.
2. Select the connected phone.
3. Select "Internal storage".

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the “0. Bringing the device into operational state” before valid measurements begin.

4. All folders in the phone's internal storage will appear. Select the previously chosen folder for saving. (section 3.8.1 Opening the App, Connecting to GFM).
5. Select the "GFM 3.0" folder.
6. Select the "files" folder.
7. Select the <device serial number> folder.
8. Select the "data" folder.
9. Select the "GFM data" folder.
10. Select the folder with the required date (example: 22_02_2026).
11. Select the folder named after the measurement object. If the measurement object name was not set in the global settings, select the "unknown object" folder.
12. Folders with files will be displayed. The "TextFiles" folder contains text files of saved measurements. The "Pictures" folder contains photos if the operator took any. If no photos were taken, the "Pictures" folder will be absent.
13. Copy the necessary folders to your personal computer.

3.10 Clearing Phone Memory

It is recommended to clean the phone memory, which includes deleting the folders "Measurement date (example: 23_08_2024)", "Measurement object (example: unknown_object)", "TextFiles", and "Pictures". The number of entries is limited by the internal memory of the phone.

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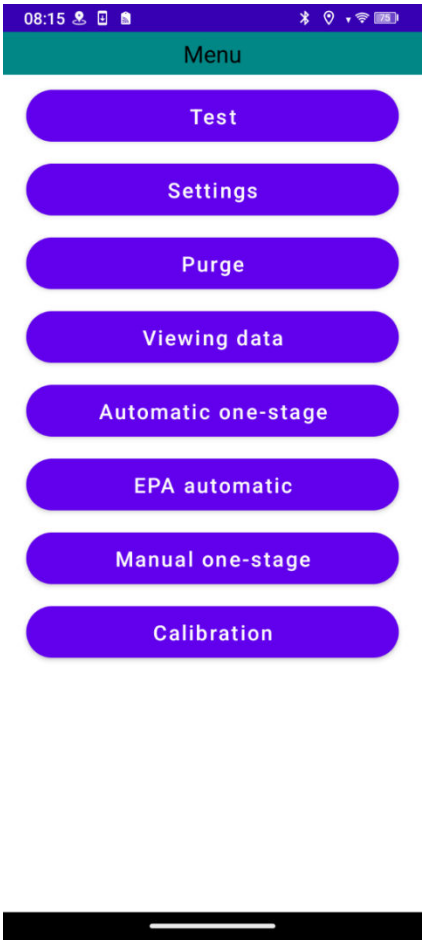
4. Calibration

In the "Calibration" mode, the instrument is calibrated using gas mixtures of known concentrations. The manufacturer calibrates the device using 6 methane mixtures with different concentrations in the low and high concentration ranges. The lower concentration range is from 1.5% to 3.0%, inclusive. The upper concentration range is from 40.0% to 100.0%, inclusive. The operator must calibrate the device for accurate methane concentration measurement using methane mixtures with concentrations of 2.5% ± 5% (for the low range) and 50% ± 5% (for the high range).

We do not recommend connecting the calibration gas cylinder directly to the calibration ports of the instrument. Always use the supplied rotameter to ensure a constant flow of calibration gas. The connection diagram of the elements is shown in Figure 80.

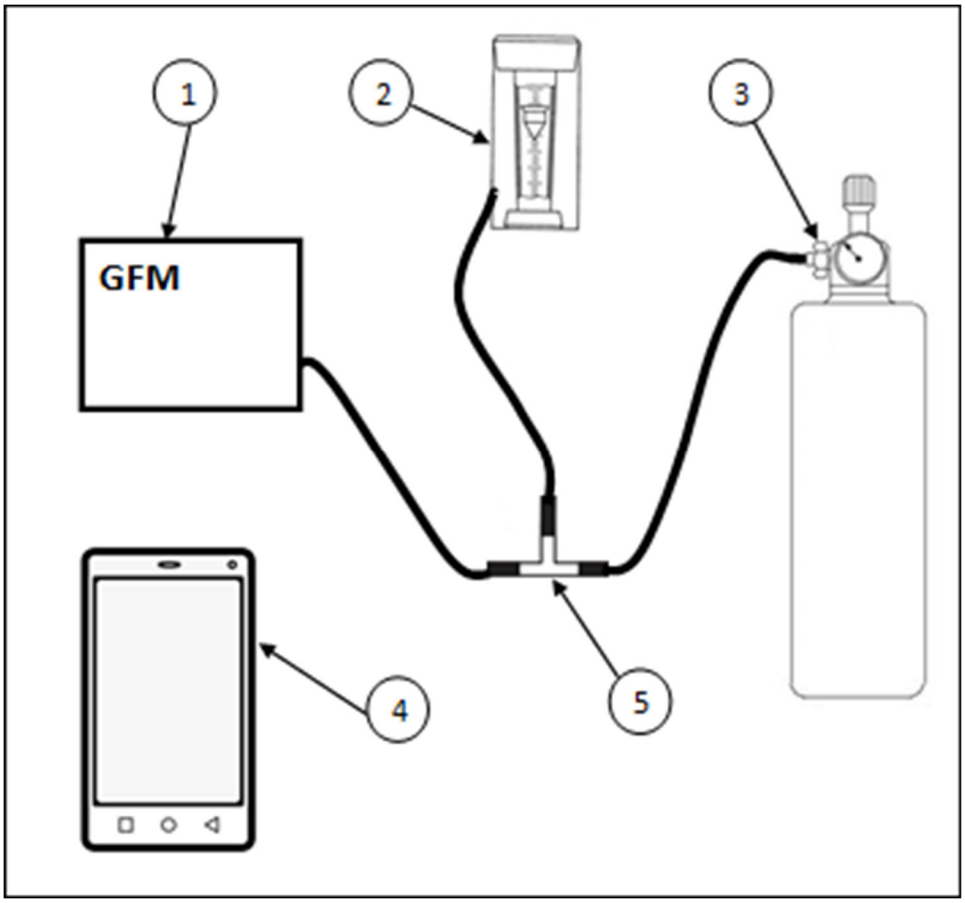
Click on the item "Calibration" (Figure 82). This will open the manual Calibration mode (Figure 80).



IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

Figure 80 – GFM menu Figure 81 – Calibration

ATTENTION! Perform the "Purge and laser calibration" procedure according to 3.8.6 "Purge and Laser Calibration" each time before performing calibrating instructions below.



The scheme includes:

1. GFM 3.0.
2. Rotameter.
3. Reducer.
4. Telephone.
5. Tee.

Figure 82 – Connection diagram

1. Assemble the calibrating bench to the connection diagram (Figure 82), following the exact sequence of steps:

1.1 Ensure that the cylinder valve is closed, Open the regulator on the reducer to release any residual gas pressure and prevent damage to the device from a sudden pressure surge at the inlet.

1.2 Close the pressure regulator and verify that the pressure gauge on the reducer reads 0.

IMPORTANT! GFM 3.0 is a metrological instrument. It must be brought into a defined working condition according the "0. Bringing the device into operational state" before valid measurements begin.

1.3 Open the cylinder valve and confirm that the pressure on the reducer's pressure gauge increases and stabilizes.

1.4 Connect the rotameter to the cylinder reducer as shown in Figure 82, using the tee and tubing from the rotameter kit. Secure the rotameter in an upright position. **Do not connect the device to the tee at this stage.**

2. Select the Calibration menu item, select the calibration level of Low or High (Figure 83). Tap the ▶ button.
3. Wait for 20 seconds and make sure the Leak reading is in the range of +/- 0.1% for 10 seconds, otherwise wait while the Leak reading will be stable for 10 seconds with another readings and tap the ZERO button to set it to zero (Figure 74). **Be careful not to click the Zero button when the sampler is connected to the calibration station and not to click Set Low/High button before step 8!** Tap the "Stop" button.
4. Open the reducer regulator and adjust the rotameter reading in the middle of the scale.
5. Connect the Direct Inlet of the instrument (1) to the tee of the calibrating bench (5) according to the diagram in Figure 82.
6. Enter the gas mixture concentration according to the mixture concentration in the calibration bench (Figure 84), tap the ▶ button.

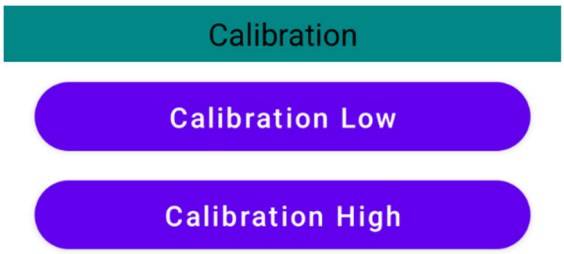


Figure 83 – Calibration level

Figure 84 – Zero and level set.

7. Open the reducer regulator and adjust the rotameter reading in the middle of the scale.
8. Wait about 20 seconds and make sure the Leak reading is within 5% of the test mixture for at least 10 seconds. If the Leak reading deviates from the test mixture by more than 5% wait while the Leak reading will be stable for 10 seconds with

another readings then make sure the gas mix concentration is entered correctly and click the "Set low" button.

9. Disconnect the Direct Inlet of the instrument from the calibration bench, close the cylinder valve first, then close the reducer.
10. Repeat the procedure for calibration on mixtures of other concentrations.

Pressing the "Back" ◁ button will return you to the application menu.

All calibration data is automatically saved in a comma-separated text file, which can then be uploaded into dynamic tables (Excel). The full path to the file is:

Internal storage → Select the previously chosen save folder (see Section 3.8.1 Opening the App, Connecting to GFM) → GFM 3.0 → files → <device serial number> → calibrations → calibrations.txt using the same steps as described in section 3.9.

5. Maintenance

Preventive maintenance of GFM 3.0 consists of the following:

1. Charging the battery;
2. Replacement or cleaning of external filters;
3. Checking the accuracy of methane concentration measurements;
4. Calibration of GFM on methane mixtures.
5. If necessary and periodically, wipe down connectors, venturi tube, and sample hose to remove oil residue.

5.1 Charging the Battery

The rechargeable battery must be charged in a gas-free environment using the manufacturer's provided charging adapter. To ensure maximum battery life, we recommend maintaining a battery charge of at least 20% and fully charging the battery every three months while the unit is in storage.

The LED indicator shows the battery level:

Steady glow	1 sec interval glow	Flashing
>50%	25% - 50%,	<25%

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5.2 Replacing External Filters

The external filter (Figures 85 and 86) contains the following elements:

1. Filter base;
2. Sealing ring;
3. Filter element;
4. Clip;
5. Washer.

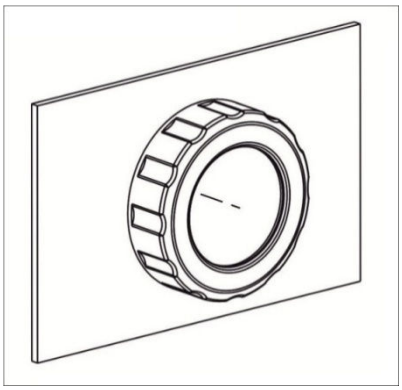

Figure 85 – Assembled outer filter

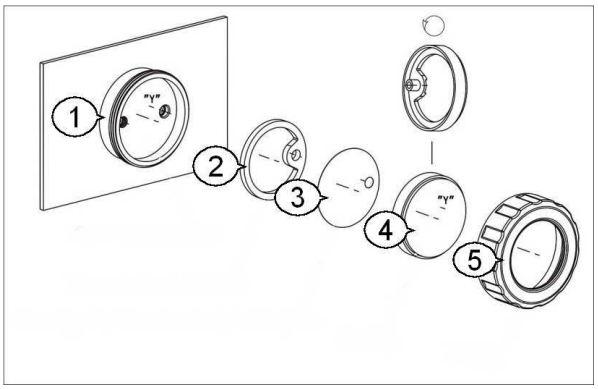

Figure 86 – Disassembled outer filter

The procedure for disassembling the external filter to replace or clean the filter element consists of the following steps:

1. Unscrew the washer (5) counterclockwise;
2. Remove the clip (4) from the filter base;
3. Remove the sealing ring (2) from the holder;
4. Carefully remove the filter element (3), avoiding surface creases;
5. Install the filter element into the clip. The "smooth" side of the filter element should face to the glass (Figure 85);
6. Install the sealing ring into the holder;
7. Install the assembled cartridge into the filter base (1), ensuring the correct positioning of the elements by aligning the "Y" axes as shown in Figure 86;
8. Screw the washer clockwise with as much hand force as possible.

5.3 Warranty and Repair

The Gas Flow Meter 3.0 comes with a one (1) year warranty from the date of shipment. The warranty covers failures due to defective materials or workmanship occurring during normal use. Damage from improper use, accident, or misapplication is not covered under this warranty and will be determined upon inspection. Damage caused by neglect of proper filter and battery maintenance is excluded and will be assessed upon inspection for replacement of individual parts. AddGlobe's responsibility shall be limited to repairing or replacing any defective part, provided the product is returned to our repair department in Florida. Return shipping charges and insurance will be paid by AddGlobe, LLC.

6. Optional Gas Flow Meter Accessories

6.1 Collapsible Sampling Cone (Part # 70723)

Sampling Cone Accessory for leak quantification of Open-Ended Lines and Blow Down Systems. Ideal for vertical OELs up to 8-inch (20 CM) diameter. Collapsible for easy storage and portability. Lightweight and bright orange with reflective stripes.

6.2 12-Foot Sampling Hose with Mounting Ends (Part # 70721)

12-foot sampling hose accessory that attaches to the original 6-foot GFM sampling hose to allow for 18 feet of hose extension.

6.3 Large Capture Bag (Part # 70713)

Oversized Capture Bag for measurement of bulky components, including storage tank vent systems, valve actuators, and Christmas Tree structures on production well pad sites. Adaptable thread fitting to GFM sampling hose. 47x69 inches.

6.4 GFM Adapter Hose Pair (Part # 70719)

Transitional hose connections for compatibility with the Bacharach Hi-Flow Sampler.

7. GFM Certificates and Declarations

7.1 EU Declaration Of Conformity

ADDGLOBE, LLC

EU DECLARATION OF CONFORMITY

Product(s):	Natural Gas Leak Rate Measurement
Model(s):	GFM 3.0
The manufacturer of the products covered by this declaration:	1650 Arabian Drive Loxahatchee, FL 33470, U.S.A. FEIN: 86-3547743 Email: info@addglobe.com Tel: +1 (561) 657-9522
Year(s) conformity is declared:	2026
Serial Numbers:	2601101-2612199
Directive(s)	RED 2014/53/EU Radio Equipment Directive RoHS 2011/65/EU Restriction of Hazardous Substances

This declaration of conformity is issued under the sole responsibility of the manufacturer.

The object of the declaration described above is in conformity with the relevant Union harmonization legislation.

Harmonized Standard(s)

EN 300 328 V2.2.2:2019-07	Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz band
EN 61326-1:2013	Electrical equipment for measurement, control, and laboratory use
EN 61010-1:2010/A1:2019/AC:2019	Safety requirements for electrical equipment for measurement, control, and laboratory use

Signed for and on behalf of AddGlobe LLC

1650 Arabian Drive,
Loxahatchee, FL 33470, U.S.A., February 10, 2026

RB

---------- Richard Bianchi, Technical Manager