



F501A Series

Portable Oil Vapor Monitor

• Instruction Manual •

Version: 1.01

Experts in Compressed Air & Fluid Measurement

Fast · Accurate · Management

Preface

- Dear customer, thank you for choosing our products.
- This manual is a description of the use range, functions, installation and operation methods, troubleshooting, and maintenance of the product.
- The user must read this operation manual completely before using the device to properly use the product.
- After you read it, keep it in an accessible place for the next operational reference.

Notice

- Fix Instruments is not responsible for damage caused by unauthorized changes to the equipment without reviewing the operation manual or violating the provisions of this operation manual, and the instrument guarantee will be automatically voided.
- Fix Instruments is not responsible for incidental damage caused by transportation, equipment performance, or mishandling.
- Fix Instruments do not promise the suitability of this equipment for any application not described herein.
- Fix Instruments have tried to make the information in this manual correct. If you find any problems, you are welcome to contact us.
- The contents of this manual are forbidden to be reproduced, copied, or modified without permission.

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1 Safety Instructions

1.1 General Safety Instructions

**Danger!****Compressed air!**

Any contact with rapid air leaks or pressurized parts of the compressed air system can lead to significant injury or even death.

- Never exceed the recommended pressure range.
- Make sure air tools & hoses are in good condition.
- Ensure the system is not under pressure when performing repair & maintenance.

**Danger!****Power voltage!**

Any contact with the electrical parts of the product can lead to significant injury or even death.

- Consider all electrical installation-related regulations.
- Any power connections must be disconnected when performing repair & maintenance.
- Any electrical work on the system is to be performed by authorized personnel only.

**Attention!****Operating conditions!**

Please check the permissible operating conditions. Any operation beyond these limits could potentially cause measurement failure or even damage the instrument or the entire system.

- Please review national standards and regulations during the preparation and installation process.
- The product is prohibited for use in explosive areas.
- Ensure the product operates within the allowed working conditions.

**Caution!****Product malfunction!**

Incorrect handling and improper transport could cause product malfunction.

- Unauthorized disassembly of the product is prohibited.
- Use correct and appropriate tools to operate to product.
- In case the product malfunctions, please stop using it and contact customer support.

1.2 Storage and Transport Safety

- It is recommended to use the product's original packaging for storage and transport.
- Ensure the product operates at a temperature of -20 ... +50 °C.
- Make sure that the product is stored at a temperature of -20 ... +45 °C.
- The storage humidity must be < 40 % and free of condensation.
- Avoid exposure to sunlight and UV rays.

1.3 Battery Safety

- Do not use accessories or chargers not recommended by the manufacturer.
- The built-in battery cannot be dismantled. Please contact the manufacturer for repair if necessary.
- When the device reaches the end of its life, follow local guidelines for proper disposal or recycling. Do not dispose of the device with regular trash.

2 Product Overview

2.1 Application

The F501A is a high-precision, wide-range portable instrument. It measures oil vapor concentrations from 0.001 ... 5.000 mg/m³ and simultaneously monitors pressure dewpoint, pressure, and temperature, delivering excellent cost-performance.

Refer to the ISO 8573-1, the F501A features oil vapor and dewpoint class evaluation functions for compressed air, making it an ideal choice for on-site inspections.

A 7" touchscreen provides real-time curve display, data recording, and USB export. With 25 GB of onboard storage, users can easily perform professional data analysis directly in the field.

Automatic background calibration and self-cleaning at shutdown ensure reliable accuracy and extend sensor lifetime. Multi-color LED indicators, combined with on-screen alarms, clearly display the status of power, measurement environment, sensor, and filter, providing users with full visibility into system operation.

2.2 Features

- ✓ ppb level accuracy with an extremely low detection limit, wide range 0.001 ... 5.000 mg/m³
- ✓ Automatic background calibration and self-cleaning at shutdown, ensuring accuracy and extending the lifetime
- ✓ FixInst newly developed ultra-fast aluminum oxide sensor technology, measuring dewpoint from -110 ... +20 °Ctd
- ✓ Integrated temperature and pressure sensors for online temperature and pressure monitoring
- ✓ Two isolated Modbus RTU (RS485) interfaces
- ✓ (Optional) 4G and Wi-SUN wireless modules, support uploading data to the cloud wirelessly and device networking
- ✓ Portable instrument, connects via Ø6 mm PTFE quick-connect fittings, easy to install and move between sites
- ✓ Large-screen dynamic curve displays for real-time monitoring of gas concentration changes
- ✓ The capacitive touch 7" IPS LCD with an ultra-wide viewing angle, offering smooth and intuitive user interaction

2.3 Technical Data

Oil Vapor	
Measuring Range	0.001 ... 5.000 mg/m ³
Accuracy	1.5%RD + 0.003
Resolution	0.001

Dewpoint	
Measuring Range	-110 ... +20 °Ctd
Accuracy	±2 °Ctd (-60 ... +20 °Ctd) ±3 °Ctd (-110 ... -60 °Ctd)
Resolution	0.01
Pressure	
Measuring Range	0 ... 1.7 MPa(a)
Accuracy	±0.3 %FS @23°C
Resolution	0.01
Temperature	
Measuring Range	0 ... 50 °C
Accuracy	±0.3 °C
Resolution	0.01
Display	
Display	7" IPS touch LCD
Resolution	1280 × 800 px
Signal Output	
Analog Signal	4 ... 20 mA
Digital Signal	Modbus RTU (RS485) Modbus TCP (Ethernet)
Alarm Signal	2 × Relay alarm channel (Oil Vapor, Dewpoint)
Wireless Signal	Wi-SUN (Optional) IoT-4G (Optional)
Power	
Supply Voltage & Power	96 ... 264 VAC Max 50 W
Data Logging	
Storage	25 G, 3,000,000,000 values
Data Export	USB Type-C
Operating Environment	
Measuring Medium	Compressed air and non-corrosive, non-explosive gases

Medium Temperature	0 ... +50 °C
Medium Pressure	0.3 ... 1.7 MPa(a)
Relative Humidity	0 ... 40 %RH (Non-condensing) @ 20 °C, 100 KPa
Sample Gas Flow Rate	0.5 ... 2 NI/min
Environment Temperature	-20 ... +45 °C
Storage Temperature	-20 ... +45 °C
Other	
Zero Filter Life Time	2 Year @ 2 ppm
UV Lamp Life Time	8000 h
Case Material	PP
Dimension	445 × 319 × 177 mm (L×W×H)

2.4 Confirm Packing List

To ensure smooth installation of the product, please check the packing list carefully within 7 calendar days after receiving the product, and if there are any discrepancies, please be sure to contact the seller within this period.

* The power plug varies depending on the country of use

Description	Quantity	Note
F501A Main Unit	1	Standard
Three-pin Power Plug*	1	Standard
M12 Female Connector	2	Standard
2 m PTFE Tube	1	Standard
Quick Connector	1	Standard
High-gain Antenna	Actual	Optional
Other Optional Accessories	Actual	Optional
Accessories (Calibration Certificate + Quick Guide)	1	Standard

3 Dimension & Installation

3.1 Product Dimension

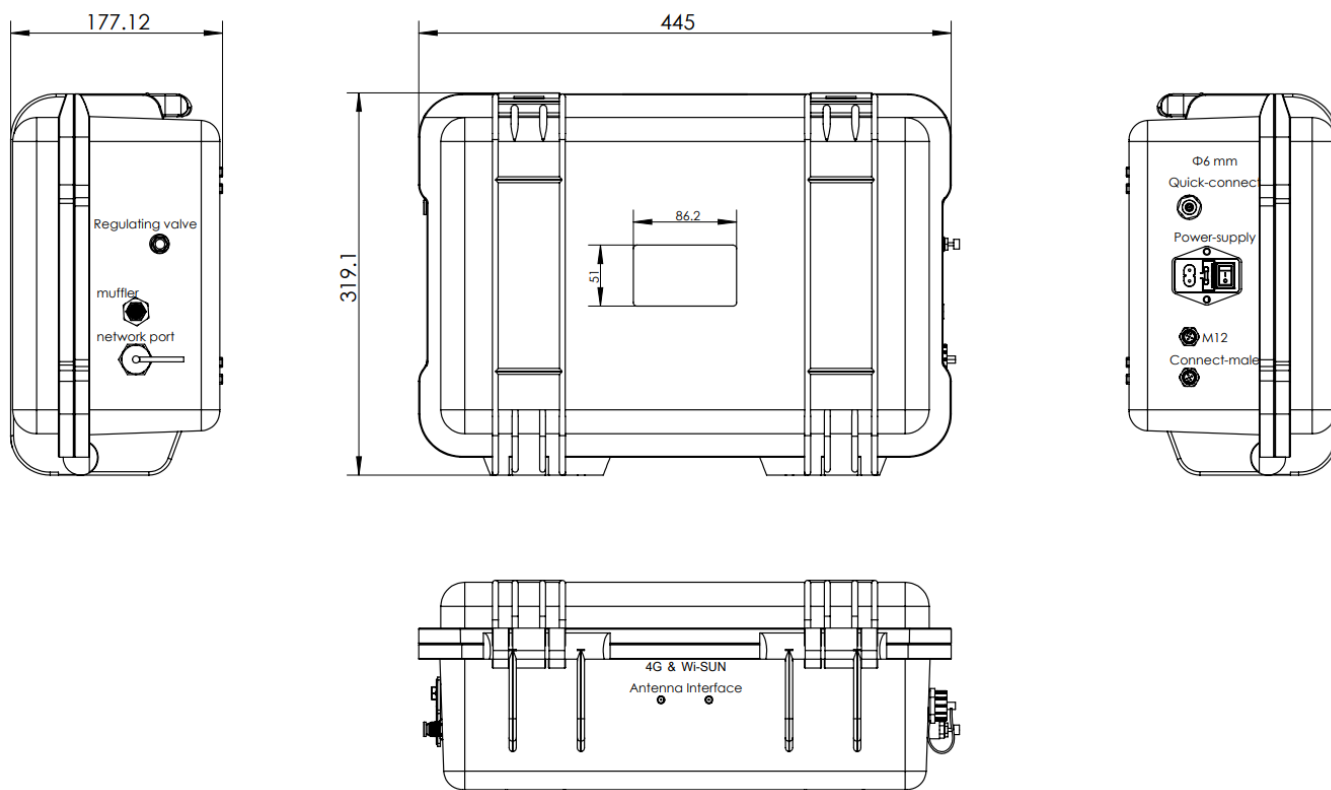


Figure 3-1 F501A Dimension Diagram

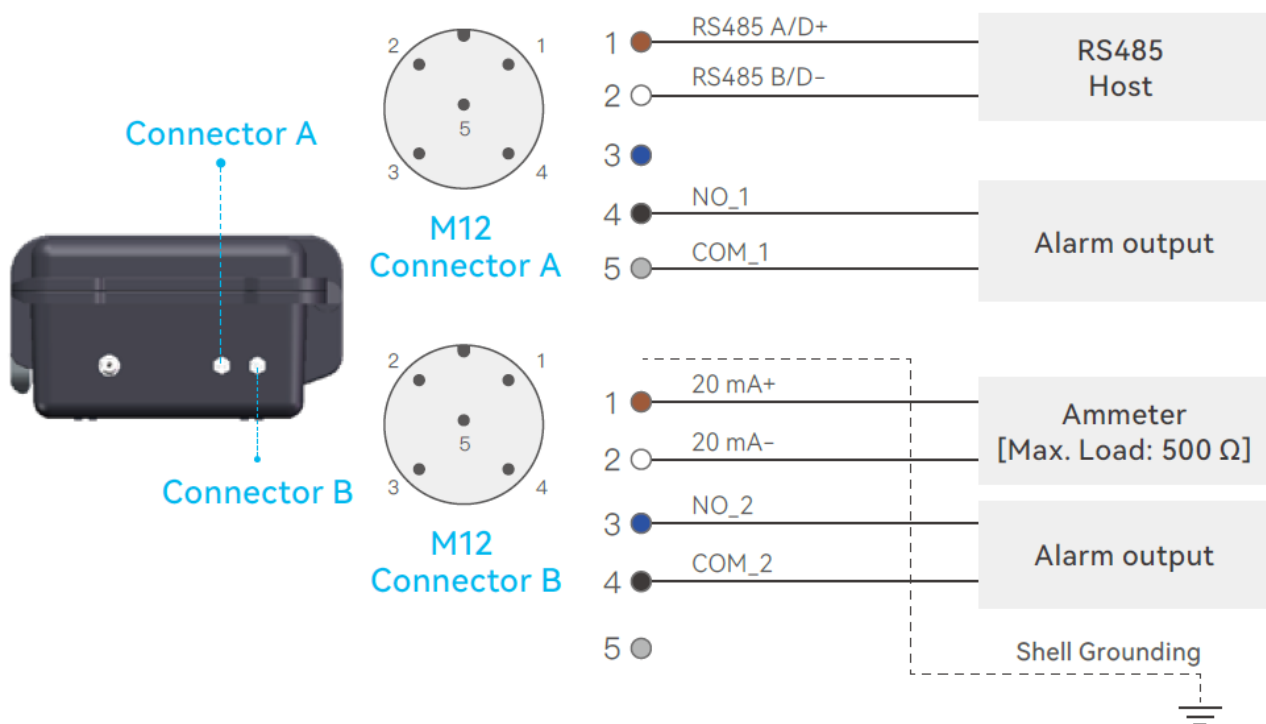
3.2 Product Installation Guide



Figure 3-1 F501A Operating Steps

- ① Install the antenna on the antenna interface on the back of the product (optional 4G/Wi-SUN)
- ② Screw the quick connector onto the pre-installed gas vent ball valve
- ③ Insert one end of the Teflon tubing into the equipment's air inlet and the other end into the quick connector, then open the ball valve
- ④ Plug in the power cord and turn on the power switch; the screen will light up
- ⑤ Slightly open the regulating valve until you feel gas being released from the outlet; you are now ready to proceed with the measurement preparation stage

3.3 Electrical Wiring

**Figure 3-3 Electrical Connection Diagram**

M12 Pin Definition

Connection	Pin1	Pin2	Pin3	Pin4	Pin5
Connector A	RS485 A/D+	RS485 B/D-	N/A	NO_1	COM_1
Connector B	20 mA+	20 Ma-	NO_2	COM_2	N/A
FixInst Cable Color	Brown	White	Blue	Black	Grey

3.4 LED Indicator

The F501 panel features four multi-color LED indicator with the following functions:

LED	Function	Function Description
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Power	Indicates the power status	When the power supply is normal, the LED is green. When the power supply is abnormal, the LED is red.
Warning	Indicates the measurement environment status	When the measurement environment (pressure, temperature, internal communication) is normal, the LED is green. When the measurement environment (pressure, temperature, internal communication) is normal, the LED is red.
Service Sensor	Indicates whether the sensor need to be serviced	When the PID sensor status is normal, the LED is green. When the PID sensor status is abnormal, the LED is red.
Service Filter	Indicates whether the service filter need to be replaced	When the zero filter status is normal, the LED is green. When the zero filter status is abnormal, the LED is red.

4 Operation

Note: Due to software upgrades, interface functions may vary. Please refer to the actual interface or contact FixInst technical support for details.

4.1 Home Interface

After the device is powered on successfully, the following interface is displayed.

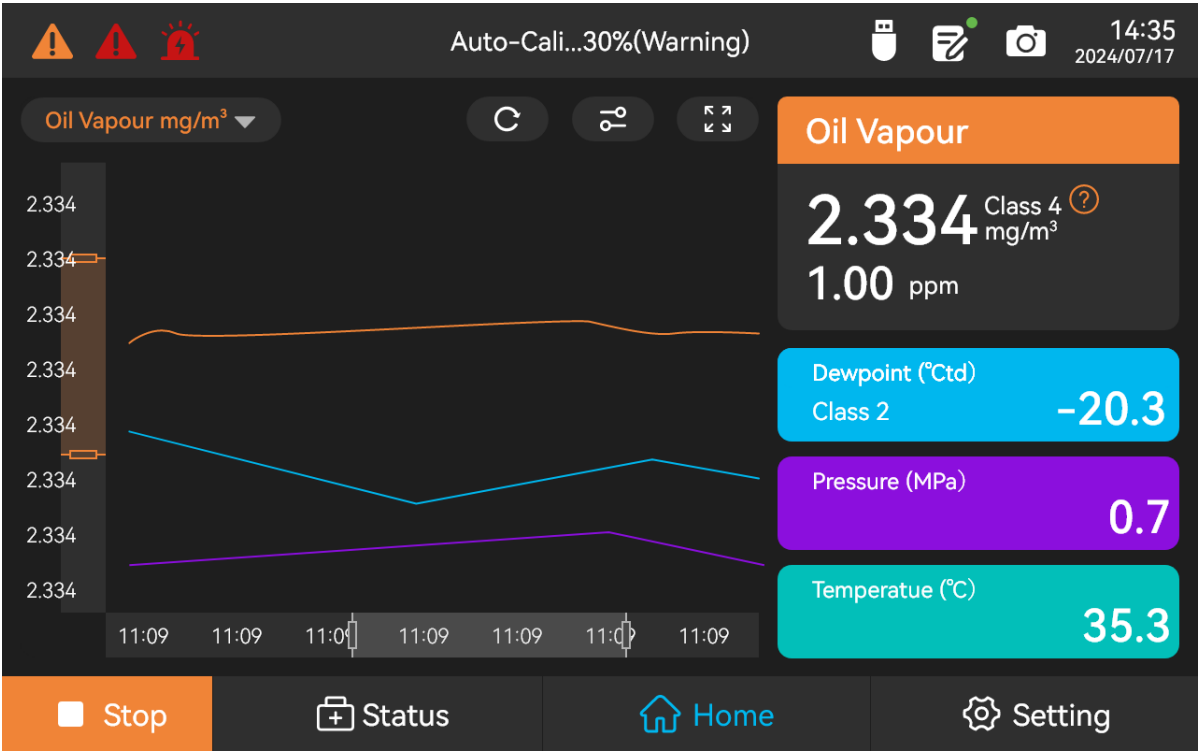


Figure 4-1 F501A Home Interface

Measurement Process

Click [Start] in the bottom-left corner to begin measurement, or [Stop] to end measurement. The status bar definitions are as follows:

Note: When an [Orange Status Warning] appears in the status bar, it indicates that the measured values are for reference only and may not be fully accurate. Please check the [Status] page for details!

No.	Name	Description
1	Start	Start measurement.
2	Stop	Stop measurement.
3	Initializing... 30%	Checks if the measurement environment meets the requirements.
4	Zeroing (Warming)...30%	Starts warming up and zero calibration. The oil vapor values displayed are invalid during this phase.

5	Zeroing...30%	Zero calibration. The oil vapor values displayed are invalid during this phase.
6	Measuring (Warming)...	Measuring, but warming is incomplete. The oil vapor values may not be fully accurate.
7	Measuring...	Measuring with stable temperature. The oil vapor data is accurate and reliable.
8	Cleaning...30%	The device is running an auto self-cleaning or manual cleaning program. To ensure sensor life and accuracy, do not interrupt unless necessary.
9	Stop (Warning)	When this status occurs, please check the [Status] page for the cause. The system will automatically start measurement once the issue is resolved.
10	Stop (Error)	When this status occurs, please check the [Status] page for the cause. You must manually start measurement once the issue is resolved.

4.2 Status Interface

Click the [Status] button to access the Status interface, as shown below:

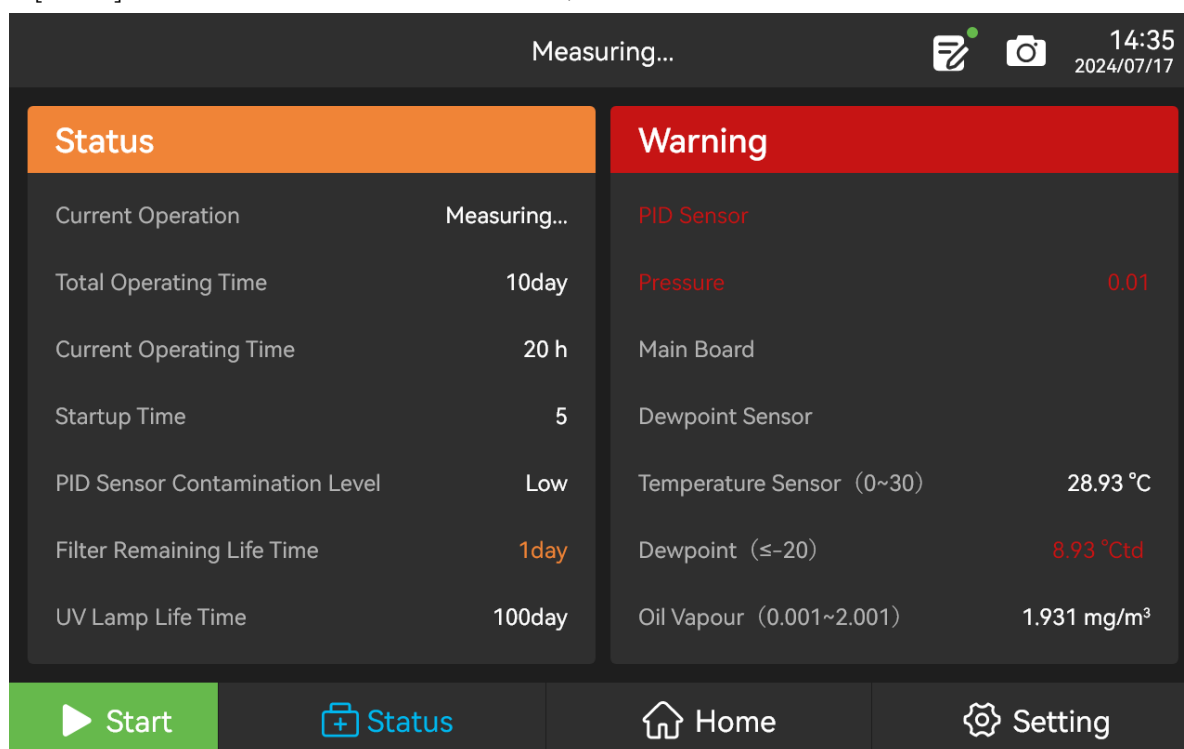


Figure 4-2 F501A Status Interface

4.3 Setting Interface

Click the [Setting] button to access the Status interface, as shown below:

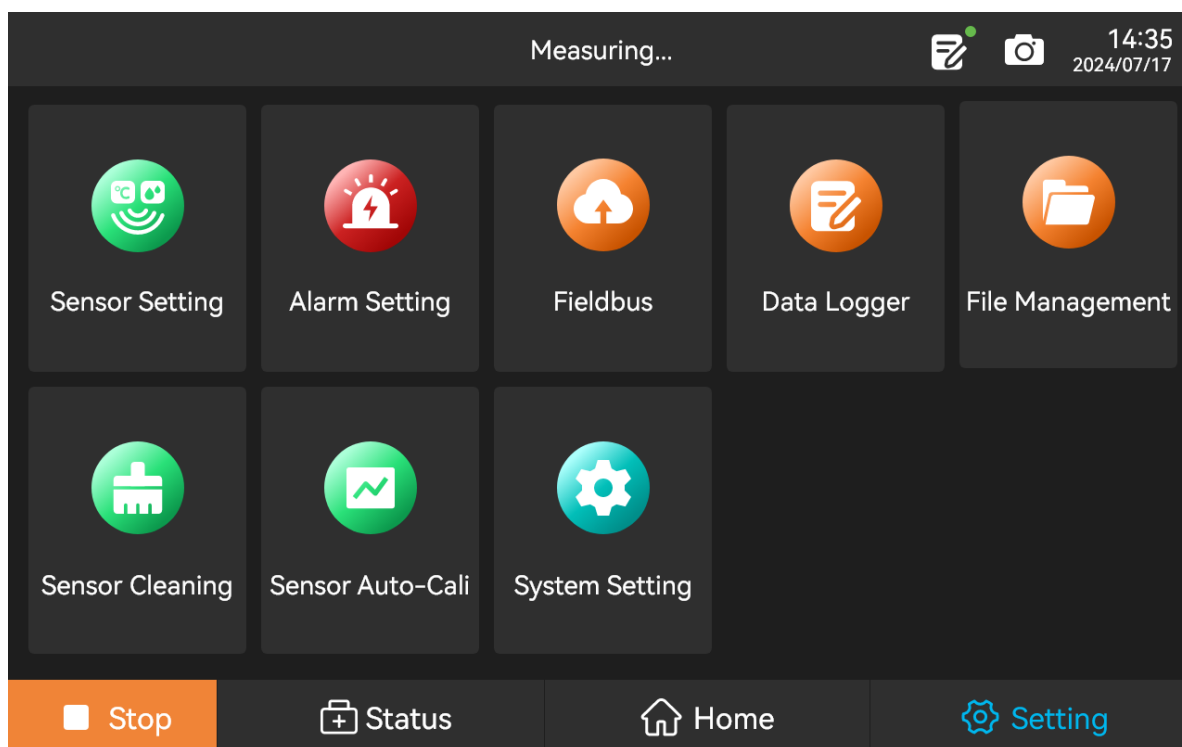
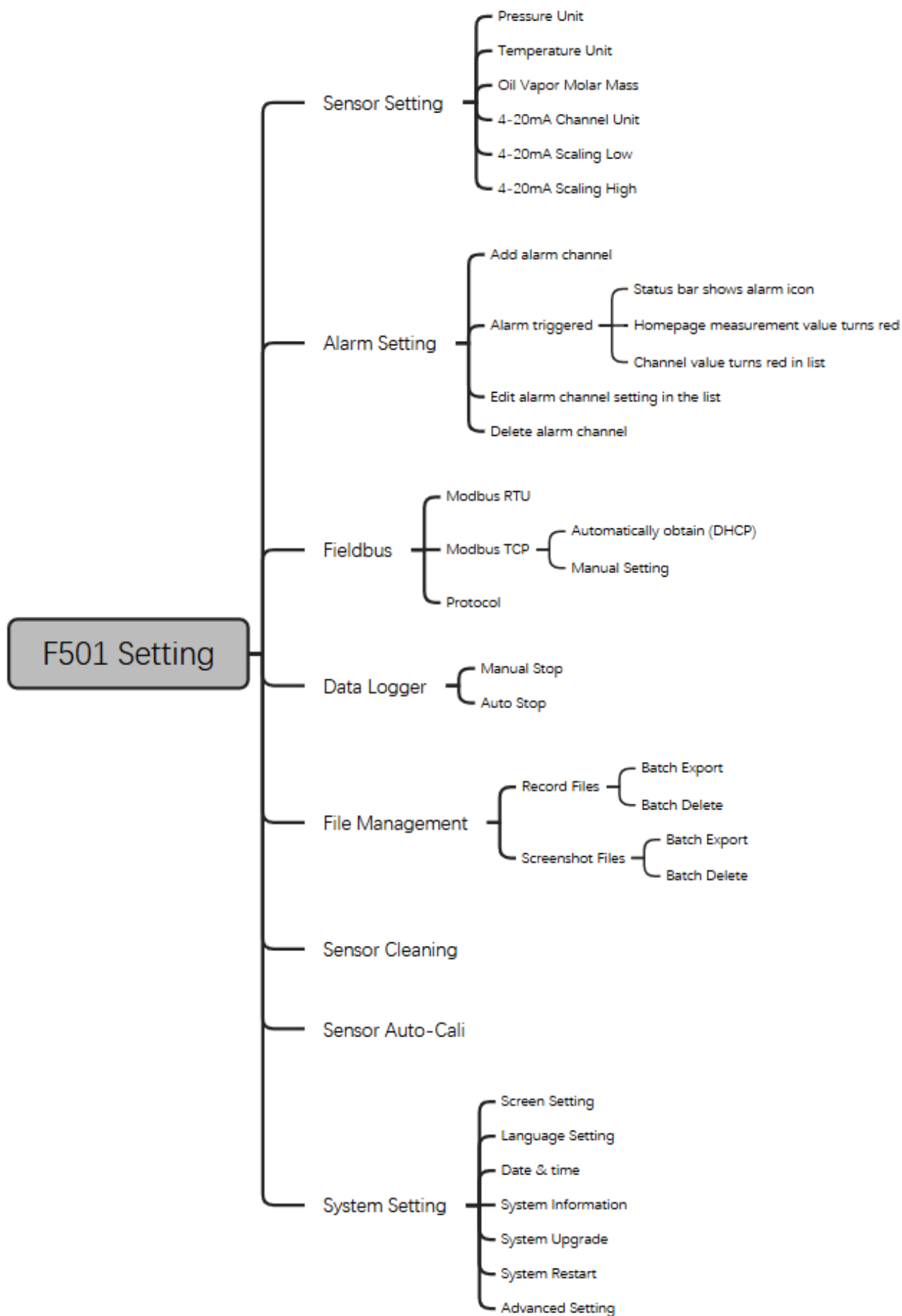


Figure 4-2 F501A Setting Interface

4.4 Setting Menu



5 Warranty Terms

Dear Customer:

Thank you for choosing FixInst products. We have always been committed to providing our customers with high-quality, high-performance instrumentation products to meet your needs in a variety of application scenarios.

In order to ensure your satisfaction after purchasing the product, please read the following after-sales terms and conditions carefully, so that you can correctly and efficiently apply for the warranty service when needed.

5.1 Warranty Period

12 months from product shipment.

5.2 Warranty Coverage

1、Warranty period due to the product's own problems caused by performance failures, confirmed by the seller's test, will provide free maintenance services; human misuse or due to the site of the product working conditions and the product type does not match the damage caused by the exceptions.

The following are not covered by warranty:

- ① Product damage caused by force majeure factors (such as natural disasters, etc.).
- ② Products due to natural wear and tear, rough handling caused by the appearance of damage, scratches or wear (such as impact caused by the loss of paint, surface bumps, etc.).
- ③ Damage caused by disassembling the product without the Company's consent or unauthorized changes in the use of the product.
- ④ Damage to the product caused by repair or modification not authorized by the company.
- ⑤ Damage caused by improper use of the product by the user or operation in violation of the instructions.
- ⑥ Products purchased from unauthorized sources.

2、For non-warranty or non-warranty product failure, we will provide paid repair services, the specific cost depends on the actual situation.

5.3 Warranty Certificate

Users are required to provide valid proof of purchase (e.g., invoice, receipt, etc.) and product serial number when applying for warranty service.

5.4 Warranty Channels

Users can apply for after-sales warranty service by filling out our after-sales treasure system or contacting customer service personnel.

<https://www.fixinstruments.com/about-us/contact-us/>

6 Disposal of Waste



Notice!

Electronic devices are recyclable material and do not belong in the household waste. The device, the accessories and packaging must be disposed according to your local statutory requirements.

The dispose can also be carried by the manufacturer of the product. Please contact the manufacturer for details.

Experts in Compressed Air &
Fluid Measurement

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