FIXINST

## F305x Series

# Handheld Dewpoint Meter

· Instruction Manual ·

Version: 1.04

# 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.

## Contents

# 1 Safety Instructions

## 1.1 General Safety Instructions

| | |
|---|---|
|  | **Danger!**<br>**Compressed air!**<br>**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!**<br>**Power voltage!**<br>**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!**<br>**Operating conditions!**<br>**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!**<br>**Product malfunction!**<br>**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

- Ensure the product is transported at a temperature of -10 … +60 °C.
- It is recommended to use the product's original packaging for storage and transport.
- Make sure the product is stored at a temperature of -10 … +60 °C.
- Avoid exposure to sunlight and UV rays.
- The storage humidity must be < 70% and free of condensation.

# 2 Product Overview

## 2.1 Application

The F305x handheld dewpoint meter is a handheld instrument that integrates dewpoint measurement, data analysis and recording. It is suitable for on-site inspection, working condition analysis and diagnosis, and can simultaneously measure temperature, pressure and humidity parameters.
Integrating FIXINST-P polymer film capacitive sensor and FIXINST-A ultra-fast response Al2O3 sensor with updated moisture-sensitive materials and processes, enabling F305x to accurately measure a wide range of dewpoint from -110 ... +60 ℃td
The dewpoint curve prediction algorithm quickly and accurately predicts the final stable value and time required, thus efficiently complete on-site inspections. Curve sparse and data recording functions, real-time sparse dewpoint, temperature, pressure and other data measurement curves, record on-site working condition data, and easily analyze gas state change trends
The measurement chamber is equipped with a drying system that protects and dries the sensor when the instrument is not measuring, ensuring a quick response to the next measurement.

## 2.2 Features

- ✓ Compatible with various sensor technologies: polymer thin film, aluminum oxide sensors that can be used in different measurement ranges
- ✓ MEMS based pressure sensor for monitoring dewpoint and online pressure simultaneously (Abs. pressure 0 ··· 1.7 MPa.a)
- ✓ Accurate to ±2 ℃td with up to 10+ dewpoint calibration and multi-point temperature compensation (Refer to **Technical Data**)
- ✓ Dewpoint steady-state prediction helps customers predict the trend in advance to save waiting time
- ✓ Data logging and graphing
- ✓ Equipped with a dry measuring chamber to ensure ultra-fast response and high accuracy
- ✓ Outstanding long-term stability
- ✓ 4.3″ IPS wide viewing angle LCD with capacitive touch, data clearly displayed and user-friendly HMI
- ✓ Handheld so easy to use, start measurement by connecting the PTFE tube to the measuring chamber, no site restriction, no operational technical difficulties

## 2.3 Technical Data

| **Measuring Range** | |
|---|---|
| **Dewpoint** | |
| **F305A** | -60 ··· +60 ℃td |

| | |
|---|---|
| **F305B** | -110 ··· +60 ℃td |
| **Temperature** | -40 ··· +100 ℃ |
| **Pressure** | 0 ··· 1.7 MPa(a) |
| **Accuracy** | |
| **Dewpoint (Air or Nitrogen)** | |
| **+20 ··· -60 ℃td** | ±2 °Ctd |
| **-60 ··· -100 ℃td** | ±3 °Ctd |
| **Temperature (Customizable)** | |
| **0 ··· +50 ℃** | ± 0.3 °C (Standard) |
| **-40 ··· 0 ℃ & +50 ··· +100 ℃** | ± 0.5 °C (Standard) |
| **Pressure** | |
| **Accuracy @23°C** | ±0.3 %FS |
| **Pressure Drift with Temperature** | ±0.001 MPa/10 ℃ |
| **Response Time** | |
| **Dewpoint: 63% [90%], Reference: 20 °C, 1bar(a), 4L/min** | |
| **-50 → +20 ℃td** | 20 sec [40 sec] |
| **+20 → -50 ℃td** | 1 min [3 min] |
| **Pressure** | < 1 sec |
| **Power** | |
| **Battery Charging** | PD fast charger, 20 VDC 1A |
| **Charging Interface** | Type-C interface |
| **Charging Time** | 2.5 h |
| **Battery Life** | 16 h (at 20 °C operating temperature) |
| **Operating Environment** | |
| **Medium Temperature** | -30 ··· +70 ℃ |
| **Operating Temperature** | 0 ··· +50 °C |
| **Storage Temperature** | -10 ··· +60 ℃ (Recommended +20 °C) |
| **Relative Humidity** | 0 ··· 95 %RH |

| | |
|---|---|
| **Sample Gas Flow Rate** | >2 L/min |
| **Pressure** | 0 ··· 1.7 MPa(a) |
| **Output** | |
| **File Export** | Type-C interface |
| **Other** | |
| **Display** | 4.3" IPS LCD with capacitive touch |
| **Data log** | 1.5 G storage, 200,000,000 values |
| **Process connection** | Dewpoint sensor: ISO G 1/2" thread<br>Measuring chamber: 6 mm hose with fast connector |

# 3 Dimension & Installation

## 3.1 Dimension (in mm)

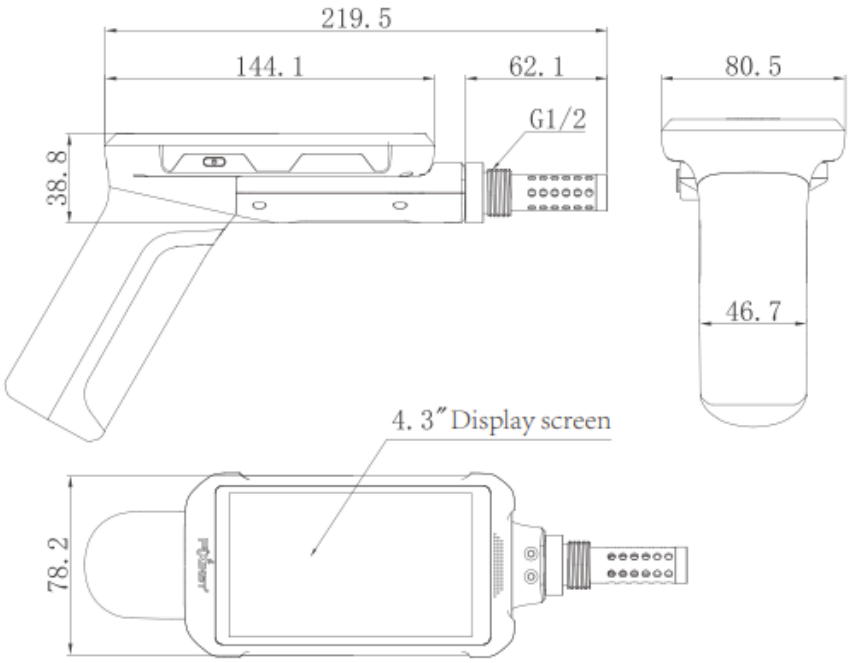



Figure 3-1 F305x Series Dimension Diagram

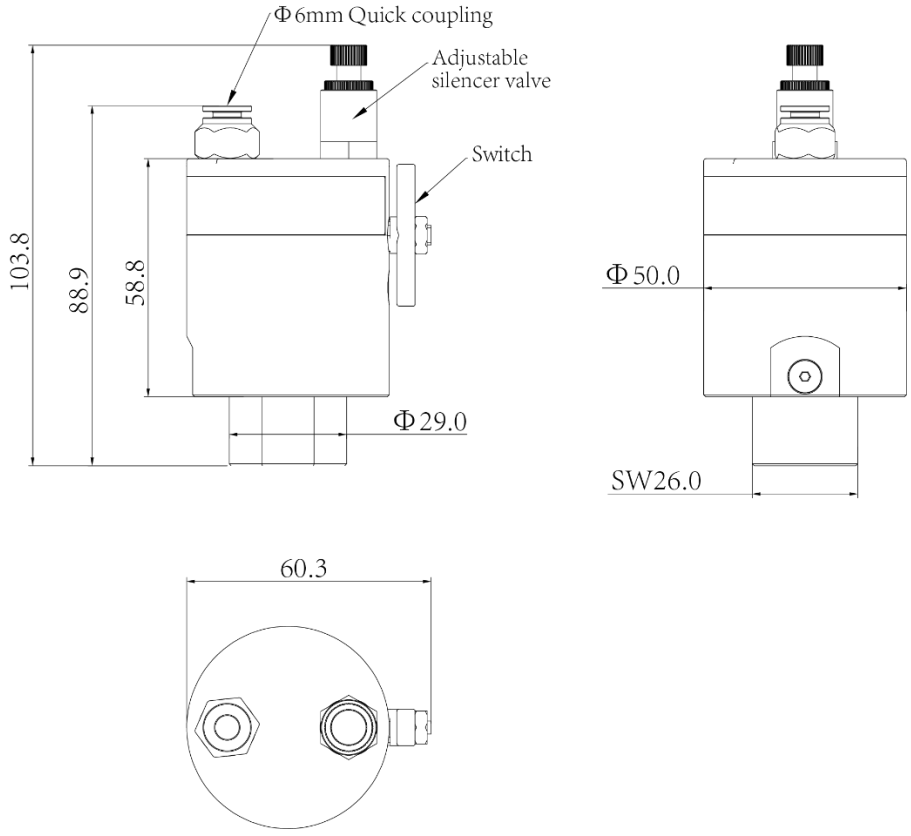



Figure 3-2 F305x Series Measuring Chamber Dimension Diagram

## 3.2 Packing List

| No. | Description | Quantity |
|---|---|---|
| 1 | F305x Handheld dewpoint meter | 1 |
| 2 | Measuring chamber | 1 |
| 3 | Charger + Charging cable | 1 |
| 4 | Teflon tube (2m) + Male quick-connect coupling (φ6mm) | 1 |
| 5 | FixInst Online dewpoint meter connection kit (optional) | 1 |
| 6 | Female quick-connect coupling (φ6mm) | 1 |
| 7 | OTG Type-C USB flash drive | 1 |
| 8 | Reserve desiccant | 1 |
| 9 | Envelope (quick guide + calibration certificate) | 1 |
| 10 | Specialized portable protective case | 1 |

## 3.3 Installation & Operation

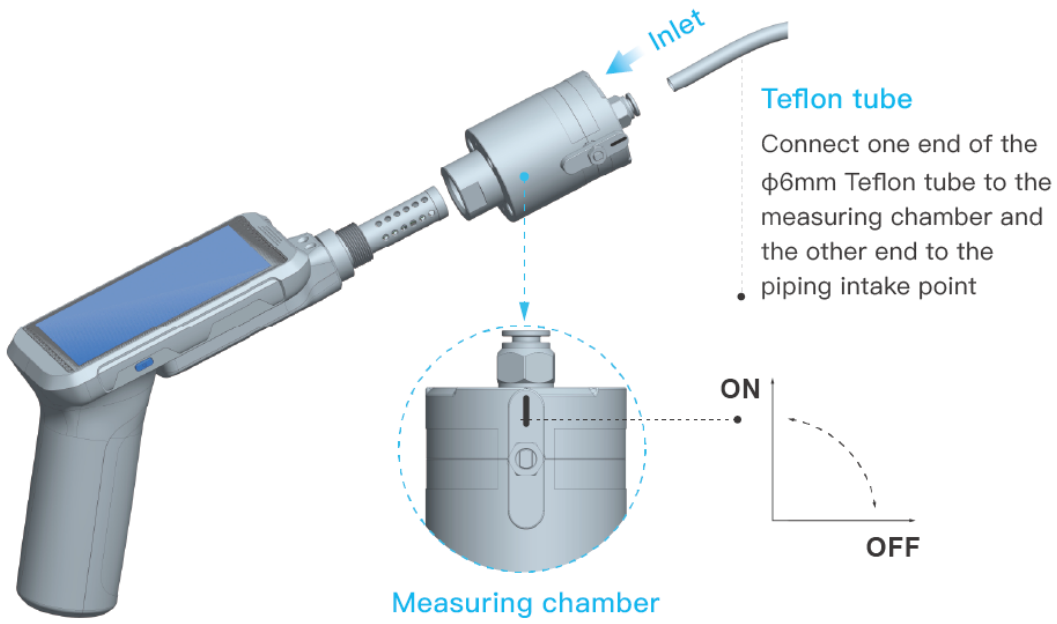



Figure 3-3 Measuring Chamber Usage Guide

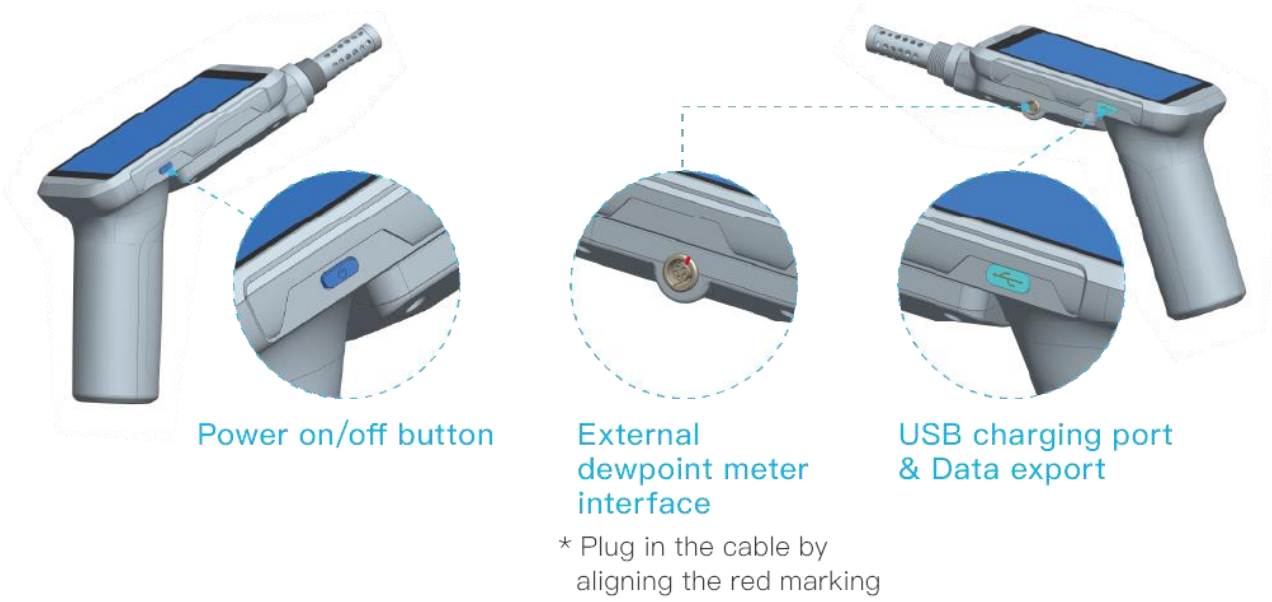



**Figure 3-4 F305x Button Locations and Functions**

## 3.4 UI Operation Guide

Due to software upgrade, the actual product interface may differ from the manual, the actual interface shall prevail. For technical support, you can contact FixInst after-sales service to get the latest operation guide (the following guide apply to software version V1.02).

- **UI-Value**

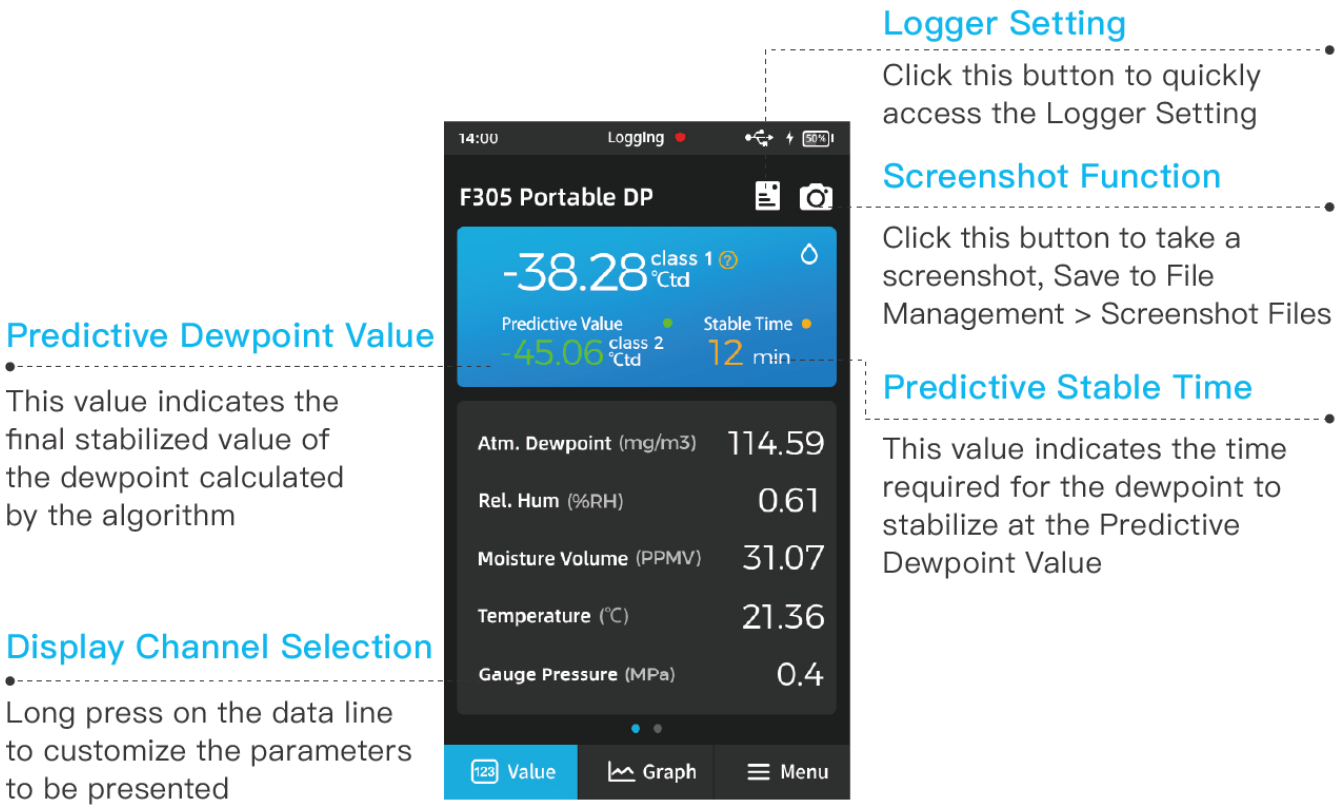
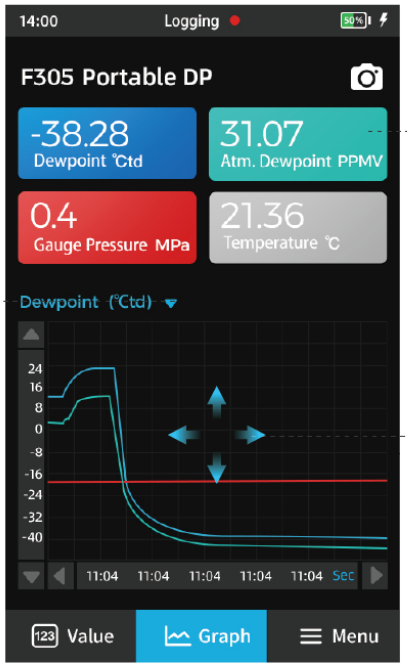



**Figure 3-5 F305x Value Interface**

- **UI-Graph**




**Y-axis Selection**

Click here to select the Y-axis parameter from the drop-down menu

**Curve Display**

Clicking the button, the highlighted curve is displayed in the graph area. Clicking it again, the value turns gray and the curve is removed from graph

**Data Curve Scaling**

Within the coordinate area,

Two-finger horizontal scaling adjusts the X-axis display area

Two-finger vertical scaling adjusts the Y-axis display area

**Figure 3-6 F305x Graph Interface**

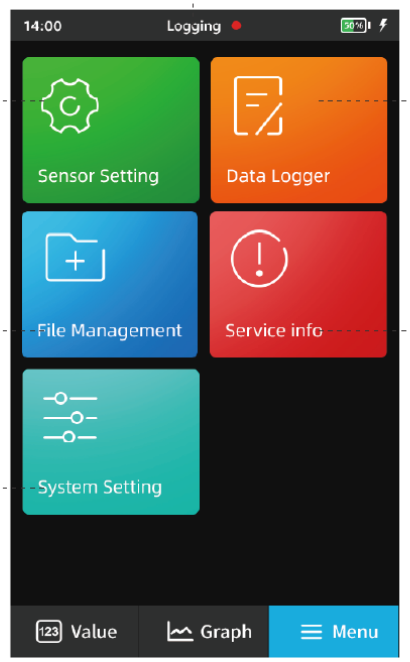
- **UI-Setting**

**Data Logging**

Data logging reminder function

Green dot flashes during data logging waiting

Red dot blinking during data logging




**Sensor Setting**

Click on this button to set the parameters of dewpoint, pressure, and temperature sensors

**Data Logger**

Click for data logging settings and related operations

**File Management**

Click to view Screenshot Files and Record Files

**Service Info**

Click here to see supplier information and service information

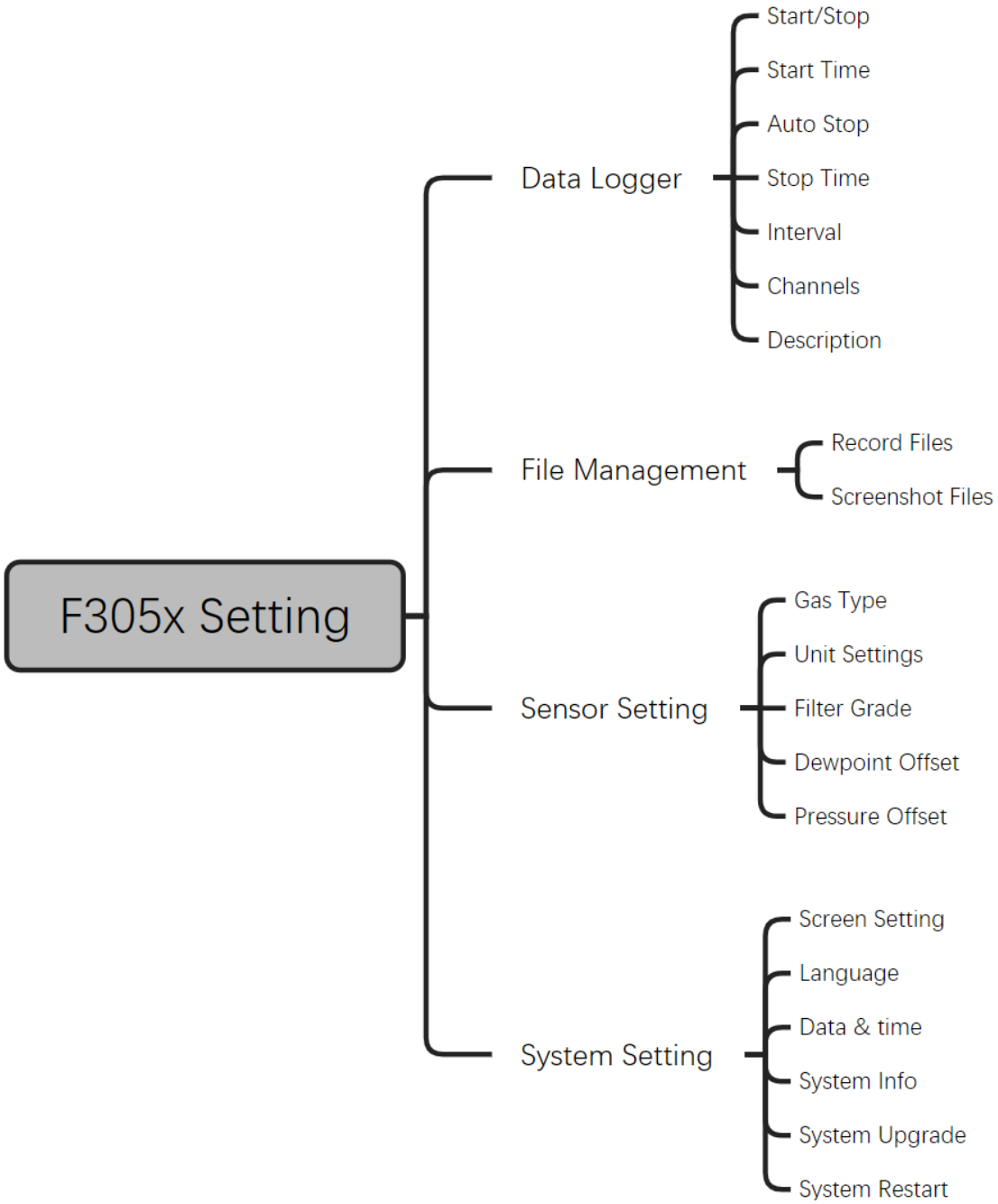
**System Setting**

Set the system language and time, upgrade and restart the device

**Figure 3-7 F305x Setting Interface**

## 3.5 Setting Menu

Note: Menus and content may be updated due to software upgrades, subject to availability or consult FixInst technical support.




### Data Logger:

| Function Name | Function Description |
|---|---|
| **Start/Stop** | Click to start or stop data logging. |
| **Start Time** | Set the Start Time for logging, defaults to the current time but supports setting a scheduled start time. |
| **Auto Stop** | Set whether the logging stops automatically. |

| | |
|---|---|
| **Stop Time** | When Auto Stop function is enabled, set the stop time, defaults to start time + 8 hours. |
| **Interval** | Set the interval time for logging measurement values. |
| **Channels** | Select measurement channels. |
| **Description** | Enter description for this data logging. |

### File Management:

| Function Name | Function Description |
|---|---|
| **Record Files** | Display all Record Files saved by the device, with options for export and delete. |
| **Screenshot Files** | Display all Screenshot Files saved by the device, with options for export and delete. |

### Sensor Setting:

| Function Name | Function Description |
|---|---|
| **Gas Type** | Set the type of medium being measured. |
| **Unit Settings** | Set the Pressure Unit and Temperature Unit. |
| **Filter Grade** | Set the sensor filtering grade to adjust the sensor sensitivity. |
| **Dewpoint Offset** | Perform single-point calibration for dewpoint value. |
| **Pressure Offset** | Perform single-point calibration for pressure value. |

### System Setting:

| Function Name | Function Description |
|---|---|
| **Screen Setting** | Set Screen Brightness.<br>Set Off-screen. |
| **Language** | Set system language: Simplified Chinese / Traditional Chinese / English. |
| **Data & time** | Set Current date & time. |
| **System Info** | Display Sensor Information, Display Information, CPU Temperature, and other product information. |
| **System Upgrade** | Insert the flash drive to update device firmware. |
| **System Restart** | Restart the device. |

## 3.6 File Export

After inserting the USB drive, access **Menu** > **File Management** > **Record Files/Screenshot Files**, select the files/screenshots to export, and click **Export.** The exported files will be saved to the USB drive in CSV (record files) and PNG (screenshot files) formats.

# 4 Calibration & Maintenance

## 4.1 Sensor Module

If calibration & maintenance of the sensor module are required, please follow the steps below to uninstall/install the sensor module:

**Step1.**

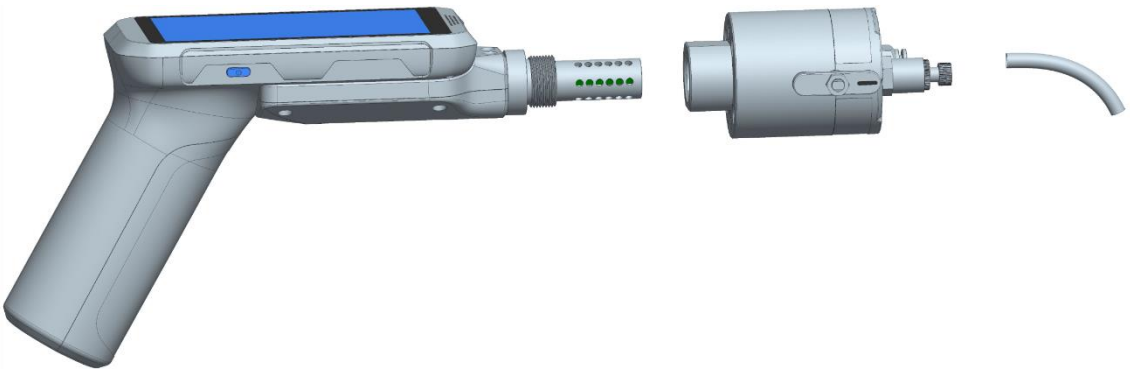


**Figure 4-1 F305x Uninstall/Install Sensor**

**Step2.**

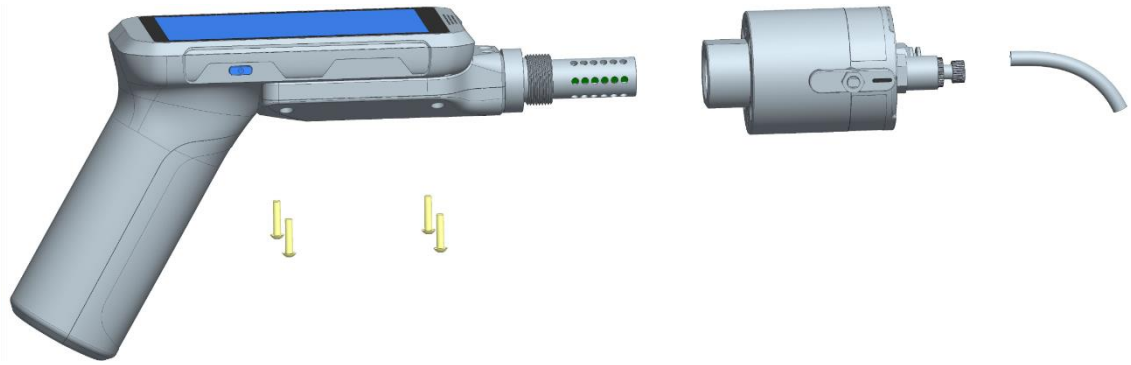


**Figure 4-2 F305x Uninstall/Install Sensor**

**Step3.**

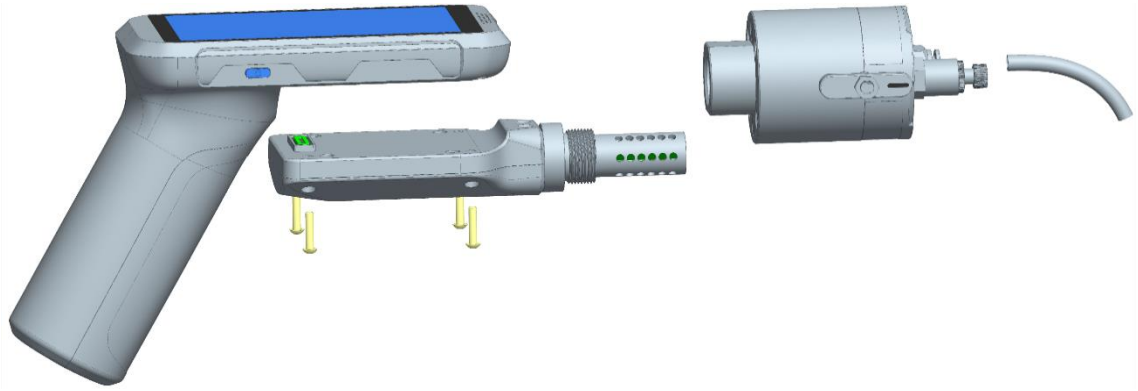


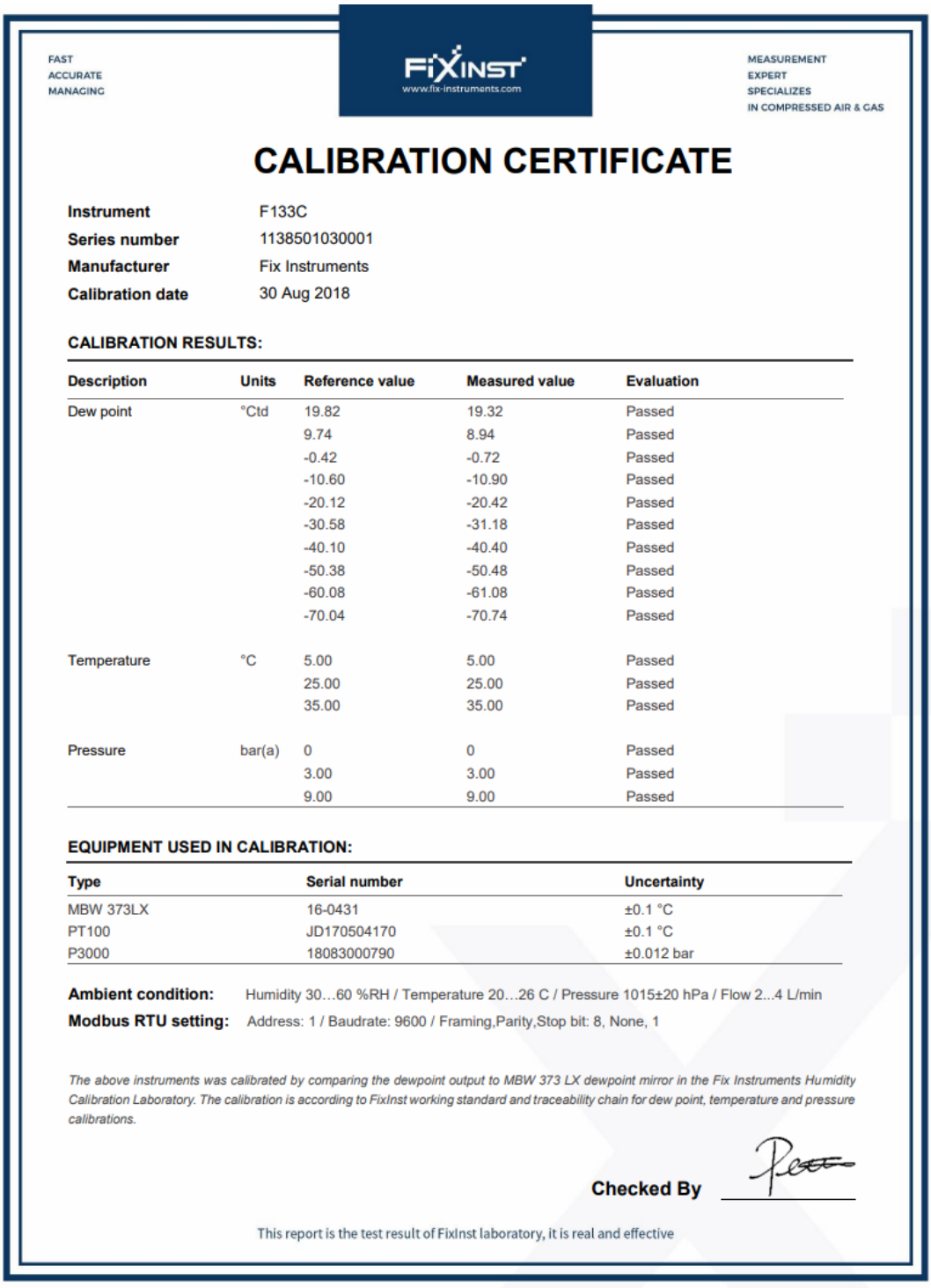
**Figure 4-3 F305x Uninstall/Install Sensor**

## 4.2 Calibration

The product is factory calibrated and the calibration certificate is attached to the product.

Since the measurement accuracy of the product is affected by the on-site environment (oil, high humidity, or other impurities can affect the accuracy), we recommend the user perform calibration once a year.

Calibration service is not covered by the product guarantee. Please contact the manufacturer in case calibration is required.



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# CALIBRATION CERTIFICATE

| | |
|---|---|
| **Instrument** | F133C |
| **Series number** | 1138501030001 |
| **Manufacturer** | Fix Instruments |
| **Calibration date** | 30 Aug 2018 |

**CALIBRATION RESULTS:**

| Description | Units | Reference value | Measured value | Evaluation |
|---|---|---|---|---|
| Dew point | °Ctd | 19.82 | 19.32 | Passed |
| | | 9.74 | 8.94 | Passed |
| | | -0.42 | -0.72 | Passed |
| | | -10.60 | -10.90 | Passed |
| | | -20.12 | -20.42 | Passed |
| | | -30.58 | -31.18 | Passed |
| | | -40.10 | -40.40 | Passed |
| | | -50.38 | -50.48 | Passed |
| | | -60.08 | -61.08 | Passed |
| | | -70.04 | -70.74 | Passed |
| Temperature | °C | 5.00 | 5.00 | Passed |
| | | 25.00 | 25.00 | Passed |
| | | 35.00 | 35.00 | Passed |
| Pressure | bar(a) | 0 | 0 | Passed |
| | | 3.00 | 3.00 | Passed |
| | | 9.00 | 9.00 | Passed |

**EQUIPMENT USED IN CALIBRATION:**

| Type | Serial number | Uncertainty |
|---|---|---|
| MBW 373LX | 16-0431 | ±0.1 °C |
| PT100 | JD170504170 | ±0.1 °C |
| P3000 | 18083000790 | ±0.012 bar |

**Ambient condition:** Humidity 30…60 %RH / Temperature 20…26 C / Pressure 1015±20 hPa / Flow 2...4 L/min

**Modbus RTU setting:** Address: 1 / Baudrate: 9600 / Framing,Parity,Stop bit: 8, None, 1

*The above instruments was calibrated by comparing the dewpoint output to MBW 373 LX dewpoint mirror in the Fix Instruments Humidity Calibration Laboratory. The calibration is according to FixInst working standard and traceability chain for dew point, temperature and pressure calibrations.*

**Checked By**

This report is the test result of FixInst laboratory, it is real and effective

**Figure 4-4 Dewpoint Calibration Certificate (for Reference Only)**

## 4.3 Maintenance

Please check the measuring chamber regularly. If contamination or blockage is found, please contact the manufacturer and clean the measuring chamber under their guidance.

**Caution!**

- **Wet or contaminated sensor will result in longer response time or even incorrect measurement result.**
- **Do not touch the sensor directly.**

# 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/**

Experts in Compressed Air &
Fluid Measurement

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