WISE AIR 4.0 ®

MEASURE TO MANAGE

Compressed Air Energy Saving Solutions

Smart Measurement Technology That You Can Trust

For More Info
SCAN HERE

About Us

At WiseAir Technologies, our mission is to empower industries with innovative and advanced measurement solutions for compressed air and gases. With over 20 years of expertise in the field of compressed air management, we have developed smart, reliable, and state-of-the-art products that are both accurate and easy to use. Our focus is on incorporating cutting-edge technologies like M2M communication and the Industrial Internet of Things (IIoT) to bring increased automation, improved communication, and self-monitoring to industrial processes.

Our WA range of smart IIoT sensors can be easily integrated into existing manufacturing and energy management software to enhance data collection, exchange, and analysis for improved productivity and efficiency.

Our Network

Our Smart Sensors are Developed with Design and Technology Support from Our Partners Across North America, Europe and Asia. With Our Strong Network of Partners, we offer Seamless and Best-in-Class Service to Our Customers.

Artificial Intelligence and Machine Learning Software
Our software are programmed to analysis and self Diagnose the Measured Datas

Smart IIOT Sensors
For measurement of Flow, Power, Dew Point and Pressure

Product Experts
Product Specialists with Decades of Experience in Compressed Air Measurement and Management

Simplify Your Compressed Air Management With Our Smart Technology

Compressed Air Systems are Dynamic and Highly In-Efficient. Hence they Require Continuous Monitoring for Sustained Benefits. With Our WiseAir 4.0 Smart Sensors and M2M / AI Softwares Your Compressed Air System is Measured, Analysed and Improved Over Time.

With Our Seamless and Detailed Analytical Reports You Can Keep Track Of Your Compressed Air Systems Efficiency with Minimal Human Intervention.

Our Services

We Offer Free Assessment Services to Identify the HotSpots For Improvements and Develop Road Maps for Sustainable Results. Our Product Specialists Can Also Offer You Customised Plans for Monitoring the Key Performance Factors Of Your Compressed Air System.

Connect with Our Expert Product Specialists to Learn How Your Factory Can Begin to Realize Energy and Cost Savings with Our Advanced Solutions.

Call Us
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Europe : **+45 36 99 04 22**

Email Us
Asia   : **info@wiseair.asia**
Europe : **info@wiseair.asia**

Understand The True Costs Of Compressed Air

In a Compressor's Life Cycle More than 80 % of its Operating Costs is Spent Towards its Energy. Hence Monitoring and Managing Compressors at their Peak Energy Efficiency will give Significant Energy Savings.
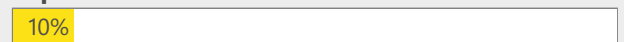
Our Smart Sensors Can Provide Vital Informations Like Flow, Power, Dew Point and Pressure. When Our Sensors are Networked with Our AI Software Programs, All the Measured Datas are Analysed and Reported To You With Suggested Action Plans in Real Time.

Manage Your Compressed Air System Efficiently and Effortlessly With Our WiseAir Smart Sensors and AI Softwares.

Energy Costs
80%

Capital Costs
10%

Maintenance Costs
10%

Index

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General Information

Please read this user manual in full and carefully observe the notes and instructions before and during installation, operation and maintenance. The manufacturer cannot be held liable for any damage which occurs as a result of non-observance or noncompliance with this user manual.

Should the device be tampered with in any manner other than a procedure which is described and specified in this manual, the warranty is cancelled and the manufacturer is exempt from liability. The device is designed exclusively for the described application.

This user manual should be read carefully by the technician / qualified personnel and the end user. Once you install, use or maintain this product, you accept that you have read, understood and complied with this manual. This manual should be kept with the Flow Meter and made available to relevant personnel as needed. WiseAir Endeavours to make changes to the content of this Manual, and tries to ensure Correctness and well stated, but is not responsible for Omissions or errors and the consequences caused thereby.

Compressed Air Safety

- Any contact with quickly escaping air or bursting parts of the compressed air system can lead to serious injuries or even death.
- Do not exceed the maximum permitted pressure
- Only use pressure tight installation material.
- Avoid getting hit by escaping air or bursting parts.
- The system must be pressure-less during maintenance work.

Installing the Flow Meter, Calibration & Maintenance

- The product must be installed properly and frequently calibrated, otherwise it may lead to the wrong measurement values, which can lead to wrong results.
- Always Observe the Direction of Flow When installing the Sensor. The
- Direction is Indicated on the Housing.
- Do Not Exceed the Maximum Operation Temperature at the Sensors Tip.
- Avoid Condensation on the Sensor Element as this will affect the accuracy enormously.
- Please observe national regulations before/during installation and operation.
- Do not disassemble the product.
- Always use a spanner to mount the product properly

Electrical Safety

- Any contact with energized parts of the product, may lead to an electrical shock which can lead to serious injuries or even death. Consider all regulations for electrical installations.
- The system must be disconnected from any power supply during maintenance work.
- Any electrical work on the system is only allowed by authorised qualified personal.

Using the Flow Meter

- Do not use this product in explosive areas.
- Do not exceed the permitted operating parameters.
- Any operation exceeding these parameters can lead to malfunctions and may lead to damage on the instrument or the system.
- Do not exceed or go below the permitted storage and operation temperature and pressure.
- This product should be maintained and calibrated frequently, at least every 2 years.

Storage and Transportation

- Make sure that the transportation temperature of the sensor is between -10°C to 60 °C.
- Storage temperature of the sensor is between -10 °C to 50 °C and the humidity is <90%, no condensation.
- Avoid direct UV and solar radiation during storage.

About WAFS -107 Thermal Mass Flow Meter

● **Importance of Flow Meters :**

Flow meters are very popular for measuring compressed air systems. Depending on where they are installed, flow meters can tell you the compressor output, system consumption, peaks and troughs as well as average usage. When used well, flow monitoring can help keep your system under control and highlight any unusual activity in your system.

● **Benefits**
- Improves system efficiency
- Reduces system maintenance
- Reduces operating and energy costs
- Increases system understanding and operation
- Identifies changes in system performance
- Identifies non-productive air demand and leakage
- Identifies peak and average demand

Different types of flow meters should be used depending on the specific location and purpose. However, when it comes to compressed air, flow meters such as vortex or orifice plates can create a pressure drop within the system, ultimately leading to increased operating cost of the entire plant. As such, vortex or orifice plate flow meters are not recommended for compressed air.

● **Thermal Mass Flow Sensor :**

● Thermal mass flow meter measures gas mass flow based on thermal diffusion theory and thermal principle of Newton. It has two RTDs as its sensor. One RTD is heated to T1 by a heating power rate of P, the other is not heated but to measure the medium temperature T2. So there is a temperature difference TD= T1-T2. TD reach max when mass flow is 0. When the mass flow Q increases, the heat on T1 is taken away so the T1 decline and the TD become smaller. So there is a certain relationship between heating power rate P, difference of temperature TD and mass flow Q as below.

$$P/TD = K1 + K2\ F(Q)^{K3}$$

● The K1, K2 and K3 in above equation is constant related to the character of medium. So the mass flow Q can be get through measuring the heating power rate P and difference of temperature TD. In actual application, there are two different methods, one is consistent current method and other one is consistent temperature method.

● **Key Features of thermal mass flow meter :**
- Insertion type sensor.
- Independent of temperature and pressure change.
- Ultra wide 1:2500 turndown ratio, measurement range from 0.1 Nm/s to 250 Nm/s.
- 2.8" ultra wide viewing angle LCD capacitive touch.
- No moving parts, low pressure drop.
- Standard RS485 Modbus RTU interface and 4-20mA current/pulse output.
- Inbuilt Data Logging Function

What's in the Box ?

● **Each WAFS - 105 Flow Meter Unit comes with :**
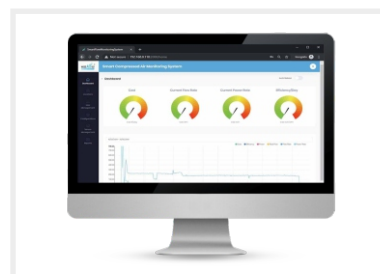

1. WAFS - 105 Flow Sensor

2. Power Adapter

3. User Manual

4. 2x5 Pin M12 Connector with 2 meter cable

5. Calibration Certificate

● **Optional Accessories**

  ● The following accessories are available for WAFS - 103 Flow Meter. Talk to your local dealer for pricing and other accessories.

Y-type M12 connector for connecting
multiple sensors simultaneously via RS485

Smart Data Acquisition and
Monitoring Software

WISE Air 4.0®
MEASURE TO MANAGE

Product Specification

Measuring Range	
Flow Range	0(0.1) ... 250 Nm/s
Accuracy	±(1% reading + 0.3% Full Scale)
Sample Rate	Sample Rate
Reference Cond	20°C, 1 bar(a) - ISO 1217 (Programmable)

Communication Output	
Analog (Standard)	4...20 mA (Isolated) / Pulse Output
Digital (Standard)	RS485, MODBUS RTU Protocol
Connector	2 x 5 - pin M12, Female
Wireless	Bluetooth (Standard), Lora (Option)

Power Supply	
Input	18 to 30V / 5W

Display / Data Logger	
Display	1.5" LCD with Capacitive Touch Panel
Data Logger	10,000,000 Samples

Operating Environment	
Op. Temp	-30 ... +70 °C
Medium Temp	-40 ... 150 °C
Op. Pressure	WAFS - 106 : 0...5.0 MPa (>1.6 MPa need Installation Device) WAFS - 107 : 1.6 MPa (Option:4.0 MPa)

Others	
Process Conn	G1/2" (ISO 228-1)
EMC	According to IEC 61326-1

Flow Range

| Pipe Size		Flow Range (Nm³/h)	
DN	ID(mm)	Min Flow (cfm)	Max Flow (cfm)
15	15	0.04	45
20	20	0.06	79
25	25	0.12	125
32	32	0.18	204
40	40	0.29	319
50	50	0.41	499
65	65	0.71	843
80	80	1.06	1278

Installation - Mechanical

To maintain the accuracy stated in the technical data, the sensor must be installed inline and fitted to tubes with the same diameter. Please consider that enough space exists at your site for an adequate installation as described in this manual.

WARNING!

- Incorrect installation can damage the sensor or cause it to work incorrectly.

- **Align the Sensor With Direction of Flow**
  - The flow meter is not bidirectional. When installing and using the flow meter, please pay attention to the direction of air flow and the alignment of the sensor.
  - The direction is flow is marked by 4 green arrows on the back of the sensor and underneath the sensor.
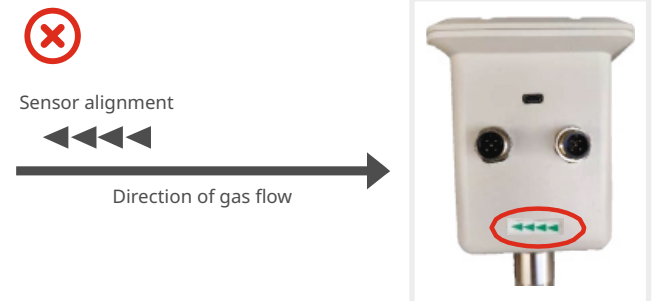
- **Correct Installation**

 The Sensor is aligned in the same direction as the gas flow.

  Sensor alignment
  ▶▶▶▶

  Direction of gas flow
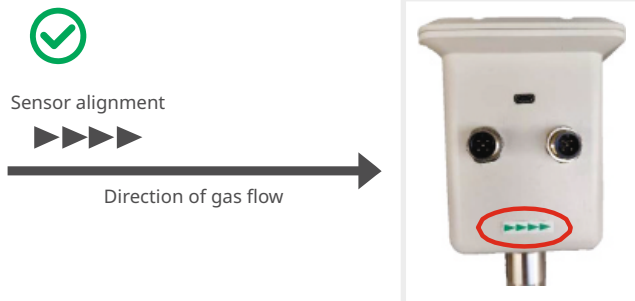
- **Incorrect Installation**

  Note : Inaccurate measurement may occur if the sensor is installed incorrectly.

  Sensor alignment
  ◀◀◀◀

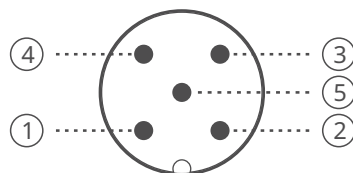 Direction of gas flow

Installation - Electrical (Wiring)

- The flow sensor is equipped with two M12 connector plugs - "A" and "B". Cables are connected to the sensor through the M12 connector plugs.
- Do not screw the M12 connector using force. Otherwise, it may damage the connection pins.

- **Connector A (Modbus)**
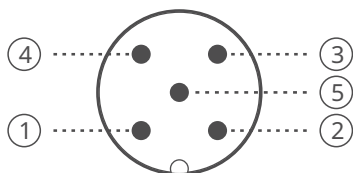
  Pin 1_ Modbus RTU Data +
  Pin 2_ Modbus RTU Data -
  Pin 3_ Not Used
  Pin 4_ +18~30v DC
  Pin 5_ 0v DC

- **Connector B (Analogue)**

  Pin 1_ 4~20mA +
  Pin 2_ 4~20mA -
  Pin 3_ Pulse
  Pin 4_ Pulse
  Pin 5_ Not Used

1_ Connector A
2_ Connector B
3_ Micro USB Connection

MENU	SUB MENU 1	SUB MENU 2	SUB MENU 3
Home	Nor Flow, Nor Velocity, Nor Consumption, Flow, Temperature, Pressure		
Settings	Pipe Diameter		
	Unit Setting	Flow unit	M³/h, M³/min, M³/s, I/min, I/s, CFM ,Kg/h, Kg/min, Kg/sn
		Velocity unit	M/s, ft/s
		Consumption unit	M/s, ft³, Kg
		Pressure unit	Pa, hPa, kPa, mPa, mbar, bar, PSI
		Temperature unit	°C, °F
	Gas Type	Air, Oxygen, Nitrogen, Hydrogen, Carbon Mono., Carbon Dio., Sulfur Hexa, Argon, Helium, Methane Nitrus Oxide, Ethane, Propane, Butane, Biogas, Natural Gas	
	Logging	Logging, History	
	ScreenShot		
	Normalization	Flow unit Prefix	
	RS 485 Setting	Baud Rate	1200, 2400, 4800, 9600, 14400, 19200, 38400, 56000, 57600, 115200
		Parity	None, Odd, Even
		Stop Bits	1, 2
		Response Delay	
		Device Address	
	Analog Setting	4-20 MA Channel	Flow, Velocity, Pressure, Temperature, Nor Flow, Nor Velocity
		4-20 MA Scaling Low	
		4-20 MA Scaling High	
		Pulse Output	
		Cubic meter/pulse	
	System Setting	Screen Setting	Rotation, Brightness, Screen Timeout
		System Information	
		System Update	
	Advanced Setting Password ▢ ▢ ▢ ▢	Velocity Offset Ratio	
		Velocity Filter Grad.	
		Consumption	Act - Consumption, Nor - Consumption
		Anti Condensation	
		Constant Temperature	
		Pressure Calibration	
		Cutoff Velocity	
		New Password	
		Password Reset	

● **Default Modbus Settings**

Settings can be changed to suit system requirement

Modbus Register				
Holding Register Address	**Data Type**	**Byte Length**	**Description**	**Read / Write**
0	Float	4	Flow	Read
2	Float	4	Velocity	Read
4	Float	8	Consumption	Read
8	Float	4	Temperature	Read

Default Modbus RTU (RS 485) Settings					
Address	**Baud Rate**	**Frame / Parity / Stop Bit**	**Response Time**	**Response Delay**	**Frame Spacing**
0	9600	8 / N / 1	1 Sec	0 ms	7 Character

Communication Configuration					
Holding Register	**Address**	**Byte Length**	**Description**	**Default**	**Read / Write**
51	50	2	Restart Device (write 1 to restart device)		Write
52	51	2	Device Address (1 ~ 247)	1	Read / Write
53	52	2	Baud Rate 12 - 1200 bps 24 - 2400 bps 48 - 4800 bps 96 - 9600 bps 144 - 14400 bps 192 - 19200 bps 384 - 38400 bps 560 - 56000 bps 576 - 57600 bps 1152 - 115200 bps	9600	Read / Write
54	53	2	Parity 0 - None 1 - Odd 2 - Even	0	Read / Write
55	54	2	Stop Bit 1 - 1 bit 2 - 2 bit	1	Read / Write
56	55	2	Response Time Out 0 ~ 255 mm; 1 ms/ step; Value range : 0 ~ 255	0	Read / Write

Warranty

WiseAir Technologies provides a 12-month warranty for all Flow Meters. The warranty covers material and workmanship under the stated operating conditions from the date of delivery. Please report any issues immediately and within the warranty time.

If faults occur during the warranty period WiseAir Technologies will repair or replace the defective unit, without charge for repair labor and material costs but there is a charge for other services such as labor to remove or reinstall the instrument, transport and Warranty repairs do not extend the period warranty.

The following damage is excluded from this warranty:

- Improper use and non-adherence to the user manual.
- Use of unsuitable accessories. External influences (e.g. damage caused by vibration, damage during transportation, excess heat or moisture).

The warranty is cancelled when one of the following situations occurs:

- The user opens the measurement instrument without a direct request written in this manual. Repairs or modifications are undertaken by third parties or unauthorized persons. The serial number has been changed, damaged or removed.
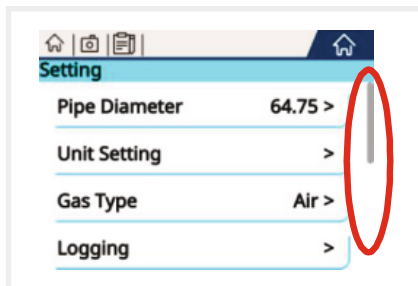
Technical Support

- **Questions :**
  - I can't see all menu items
  - The touch screen doesn't work
  - Help! My sensor is in the wrong language.
  - My sensor isn't reading correctly
  - How do I clean the sensor?

- **I Can't See all Menu Items**
  - On some menus, you will need to scroll up and down to see all items. This is indicated by a scroll bar on the right side of the screen.

Calibration

The sensor is calibrated before delivery. The calibration date is printed on the certificate which is shipped with the sensor.

Flow meters require calibration to remain accurate. The frequency of calibration depends greatly on the level of contamination within your system. By using insertion style flow meters wherever possible, you can install and remove them without the need for shutting the system down, virtually eliminating any lost production time caused by periodic maintenance.

We recommend you calibrate the sensor every 2 years. The calibration is excluded from the product warranty. For more information, please contact **WiseAir Technologies.**

Need Help ?

Contact your local dealer. Alternatively, contact **WiseAir Technologies**

- **Call Us**
  Asia   : **+91 90477 78715**
  Europe : **+45 36 99 04 22**

- **Email Us**
  Asia   : **info@wiseair.asia**
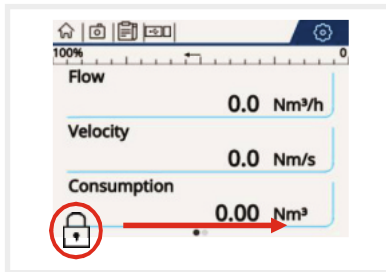 Europe : **info@wiseair.asia**

- **Help ! My sensor is in wrong language**
  - If you need to change the language :
    - Step 1 - Unlock the Screen If the lock Screen symbol (🔒) is Present, press the symbol, hold and drag it to the right of the screen.
 - If the screen lock symbol is not present, skip this step.
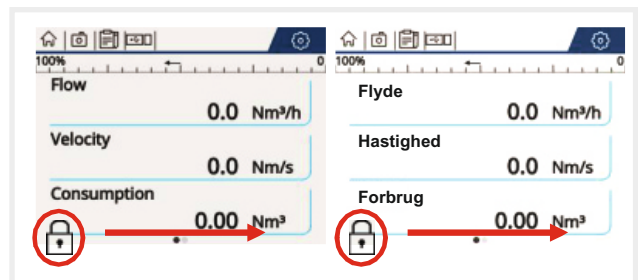
● **The Touch Screen Doesn't Work**

  ● If the touch screen doesn't work:

    ● Clean the screen

    ● Make sure the Screen Lock is off.

  ● If the lock screen symbol is present, press the symbol, hold and drag it to the right of the screen.

    ● Use your finger to touch the screen.

    ● The touch screen does not work if you use finger nails or pens.

    ● Try pressing harder, or softer

● **Go to the home page**

  ● Click on the Menu Icon on the top left of the screen, then click on the home icon ⌂

● **Go to Settings**

  ● Click on the Settings Icon ⚙ on the top right of the home page.

● **Go to System Settings**

  ● Scroll to the bottom of the setting screen.
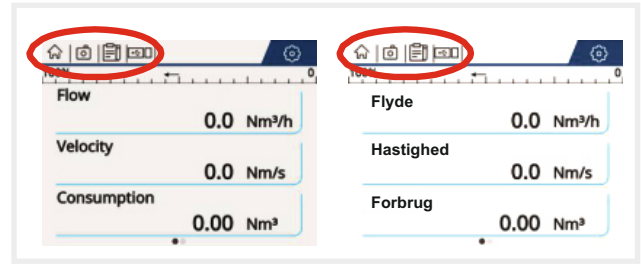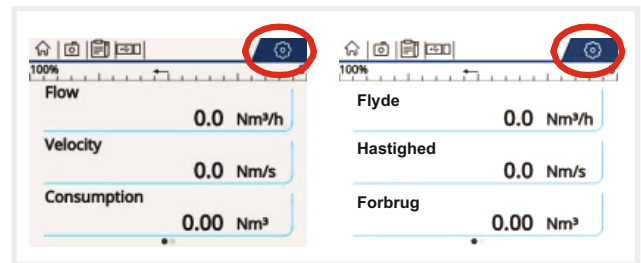
  ● Press the "System Setting" Menu 2nd menu from bottom

2nd menu from bottom of page
You may need to scroll down to find this setting
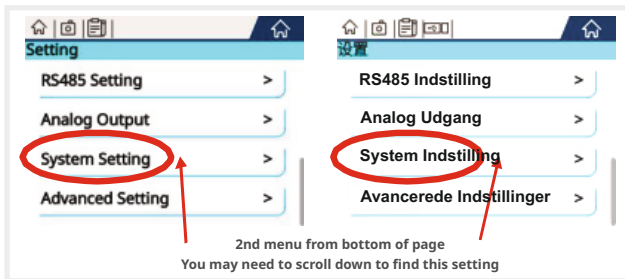
● **Select desired language**

  ● Press the Arrow button (⇐) to save your selection and return to the previous screen

● **Go to Language Settings**

  ● Scroll to the top of the system setting screen.

  ● Press the "Language Setting" Menu **2nd menu from top**

2nd menu from top of page
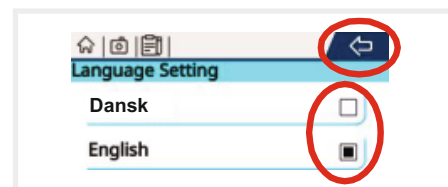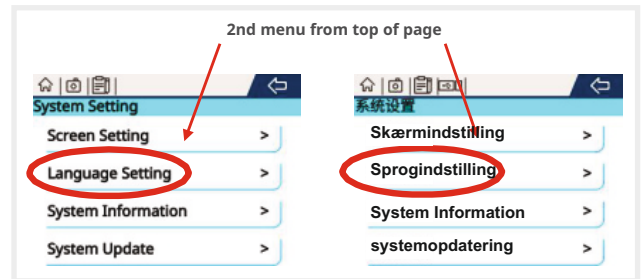
● **My Sensor Isn't Reading Correctly**

● If your sensor is not reading the correct values, follow these steps.

1. Make sure the sensor is suitable for your system. Refer to the "Specifications" section for details.

2. Make sure the sensor is calibrated. Sensors should be calibrated every 2 years. Contact your local dealer or WiseAir Technologies for calibration.

3. Make sure the sensor tip is free of contamination.

4. Make sure the sensor is installed correctly. Refer to "Installation — Mechanical" lor more information. The sensor should be installed vertically to the pipe, away from obstructions. Typical installation errors include:

● Installing sensor upside down or at an angle

● Installing sensor too close to bends and other obstructions

● Sensor tip is not in the center of the pipe, eg its too low or too high

● Installing sensor in the opposite direction to the gas flow

● Installing sensor directly on the outlet of the compressor

● Gas flow rate too low. Note: below 10 Nm/s the flow meter reading will be zero.

5. Make sure the sensor is wired correctly. Refer to "Installation — Electrical(Wiring)" section for more information.

6. Make sure the following sensors settings are correct:

● Inner Pipe diameter (not outer diameter)

● Unit of Measurement

● Gas Type

● Communication settings (RS485 or Analog) Refer to the "Setting Up the Flow Meter" and "Communication Settings' sections for more information.

7. If you have adjusted Normalization or Advance Settings, reset these to factory default.

● Normalization default setting: Temperature = 20°C and Pressure = 100 kPa.

8. Is your associated equipment compatible with the flow meter?

If you are still having problems, contact your local dealer or **WiseAir Technologies.**

How Do I Clean the Sensor?

● If you need to clean the sensor it is recommended to use a clean, dry cloth. For stubborn marks, use distilled water or isopropyl alcohol only.

Please note: contamination on the sensor tip will affect calibration and accuracy of the sensor. Removal of the contamination may not fix the issue.

Commissioning Report

● **About the Sensor**

Part Number **WAFS - 107**	
Serial Number	
Installed by	**Installed on (date)**	
Calibration (Valid till)	**Warrenty (Valid till)**	

● **Installation**

Step	Task	Yes	NA	No	Comments	Sign
1	Flow meter installed in correct location and orientation?					
2	Flow meter installed away from obstructions					
3	Sensor tip aligned with center of pipe					
4	Sensor aligned with direction of gas flow					
5	Electrical wiring checked					
6	Sensor setting configured for : inner pipe diameter unit of measurement gas type and communication				inner pipe Diameter : Gas Type : Unit of Measurement :	
7	Modbus settings ckecked					
8	Readings (flow, velocity, consumption & temperature) visible on display					

Initials of WISEAIR Representative   **Initials of Customer**

Understand Compressed Air System Dynamics
with Our Advanced Measurement Solutions

Measure - Manage - Save - Sustain

Our Network

Copenhegan

California

Dubai

India

Kuala Lumpur

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