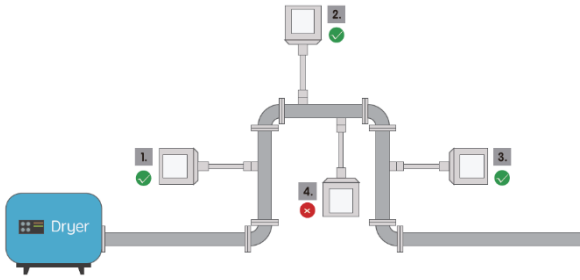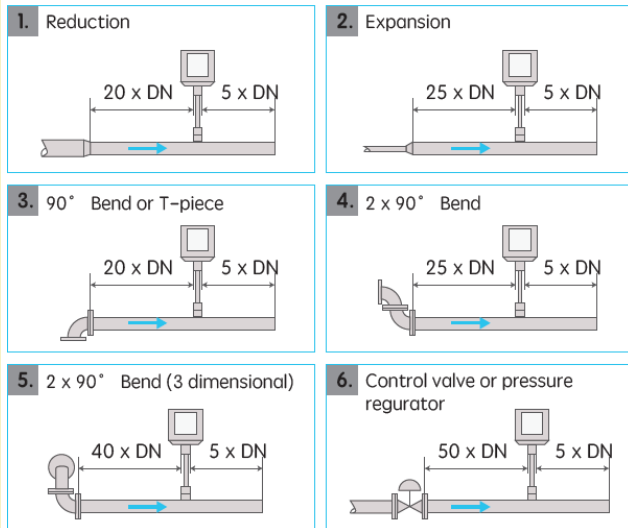# Thermal Mass Flow Meter
Quick Installation Guide

1   Install sensor

1. Gas humidity should be <80% RH
2. Do **NOT** install upside down
3. Do **NOT** install before a dryer

2   Install away from bends / changes in pipe size / other obstructions

1. Reduction — 20 x DN / 5 x DN
2. Expansion — 25 x DN / 5 x DN
3. 90° Bend or T-piece — 20 x DN / 5 x DN
4. 2 x 90° Bend — 25 x DN / 5 x DN
5. 2 x 90° Bend (3 dimensional) — 40 x DN / 5 x DN
6. Control valve or pressure regurator — 50 x DN / 5 x DN
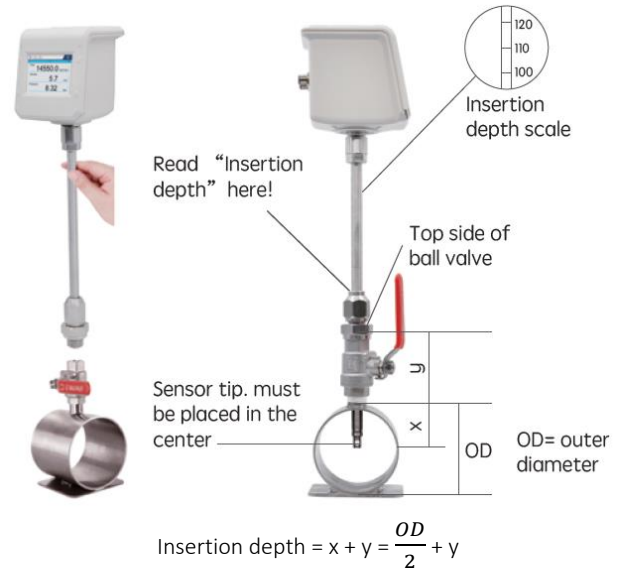
DN = Outer Pipe Diameter

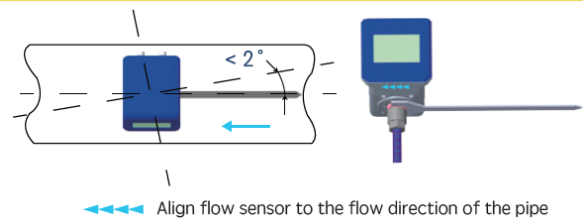## 3   Insertion Requirements

To install the sensor, a ball valve and a nipple is needed

- The ball valve inner thread must be G1/2"
- The diameter of the hole must be ≥13mm, otherwise the shaft can not be inserted

≥13 mm   ≥13mm   G1/2"   Welded nipple on pipe vertically

4   Install sensor tip in the centre of the pipe

- Insertion depth scale
- Read "Insertion depth" here!
- Top side of ball valve
- Sensor tip. must be placed in the center
- OD= outer diameter

$$\text{Insertion depth} = x + y = \frac{OD}{2} + y$$

5   Maximum Angle Deviation of Installation

< 2°

Align flow sensor to the flow direction of the pipe

6   Electrical Connection

The flow sensor is equipped with two connector plugs "A" & "B"

Connector plug A   Connector plug B

7   Pin Assignment of M12 Connector

Connector A:		Connector B:
Pin1: RS485 D+ (A)		Pin1: 20mA+
Pin2: RS485 D− (B)		Pin2: 20mA−
Pin3: N/A		Pin3: Pulse
Pin4: V+		Pin4: Pulse
Pin5: V−		Pin5: N/A

Please turn over …….

8	Pitot Tube Flow Meter Settings

Before you use the flow meter, you must set:

- Inner Pipe Diameter
- Unit of Measurement
- Gas Type
- Communication settings (RS485 or Analog)

Step 1 – Unlock the screen. Drag the padlock icon 🔒 from the left to the right of the screen

Step 2 – Press 'Settings' icon ⚙ (on top right of screen).

Step 3 – Select "**Pipe Diameter**" and enter the <u>inner</u> pipe diameter measurement (in mm). Press the arrow button ⬅ to save your settings and return to the previous screen

Step 4 – Select "**Unit Setting**" and select your units of measure. Press the arrow button ⬅ to save your settings and return to the previous screen

Step 5 – Select "**Gas Type**" and select your gas type. Press the arrow button ⬅ to save your settings and return to the previous screen.

Step 6 – Scroll down and select "**RS485 Setting**" and/or "**Analog Output**". Enter your Modus settings. Press the arrow button ⬅ to save your settings and return to the previous screen.
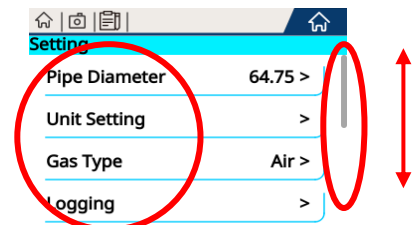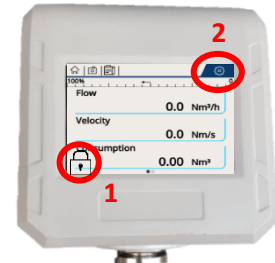
Default Modbus Settings

Settings can be changed to suit system requirements.

Default Modbus RTU (RS485) Settings					
Address	**Baud Rate**	**Frame / Parity / Stop Bit**	**Response Time**	**Response Delay**	**Frame Spacing**
1	9600	8 / N / 1	1 Sec	0 Milliseconds	7 Characters

Modbus Registers						
Holding Register	**Address**	**Data Type**	**Byte Length**	**Description**	**Unit**	**Read/Write**
1	0	FLOAT	4	Flow	m³/min, m³/hr, CFM	Read
3	2	FLOAT	4	Velocity	m/sec or f/sec	Read
23	22	UNSIGNED INTEGER	4	Consumption/ Totaliser	m³ or CF	Read
9	8	FLOAT	4	Temperature	°C or °F	Read