

# S451 Thermal Mass Flow Meter for heavy duty and explosion application

## 1 Introduction

This quick user guide contains all instructions and safety information for operating and using the S451 Thermal Mass Flow Meter.



This guide is intended for qualified personnel involved in the operation of the S451.

If this is the first time installing and using a flow meter, read the full instruction manual first by scanning QR code to download.



For more information, scan the QR code to see the instruction manual.

### Symbols conventions

Symbol	Description
	<b>Warning!</b> Explosions or sudden releases of compressed air may occur.
	<b>Warning!</b> Electricity. Take care to avoid coming into contact with electricity.

## 3 Delivered components

S451



Alignment key



Sealing ring



Quick User Guide



Calibration Certificate



The additional components are included as per your order.

### WARNING

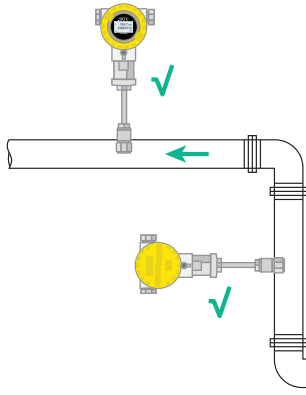
Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

## 2 Safety instructions

### WARNING

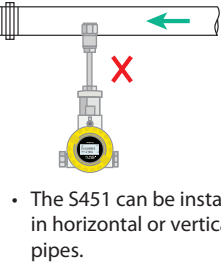
- Only authorized and qualified personnel are permitted to install the device.
- Never disassemble the device.
- Always use proper tools for the installation of the device.
- Always observe the direction of the flow when installing the sensor. The direction is indicated on the housing.
- Do not exceed the maximum operation temperature at the sensor tip.
- Use the high-pressure installation device when installing with pressures higher than 16 bar.
- Avoid direct UV and solar radiation.
- Always keep the storage humidity of the device < 95% rH with no condensation.

## 4 Installation orientation



### ⚠ ATTENTION

- The flow meter must be protected from solar radiation and rain at an outdoor installation.
- Do not install the flow meter in a wet environment such as the place after a compressor outlet.



- The S451 can be installed in horizontal or vertical pipes.

## 5 Installation

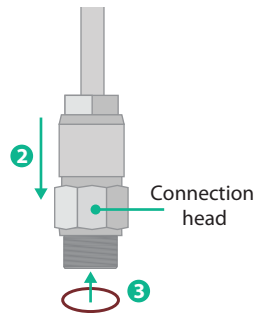
### Step 1 Preparation

A male foundation and a ball valve are required for installation.

- The foundation is G3/4" male thread nipple with an inner diameter  $\geq 19$  mm.
- The ball valve is the full-pass type with G3/4" female thread.

### Step 2 Install the flow meter

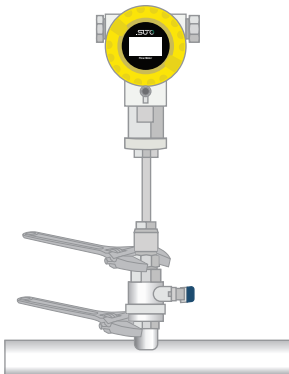
- 1 Close the ball valve.
- 2 Move the connection head to the end of the shaft to cover the sensor tip.
- 3 Place the sealing ring in the groove.



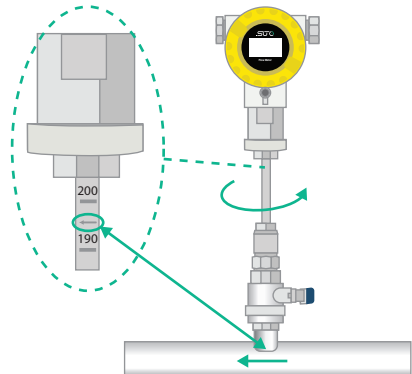
### ⚠ ATTENTION

G3/4" connection installation on a 3/4" thread or ball valve.

- 4 Tighten the connection head onto the ball valve with two wrenches



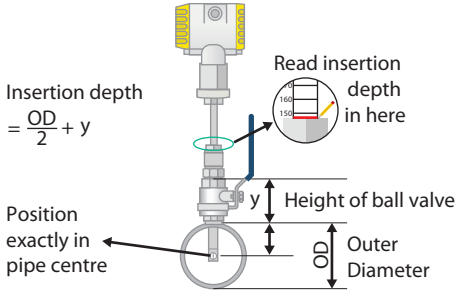
- 5 Rotate the flow meter head and make the flow direction of the gas in the pipeline is consistent with that of the flow meter.



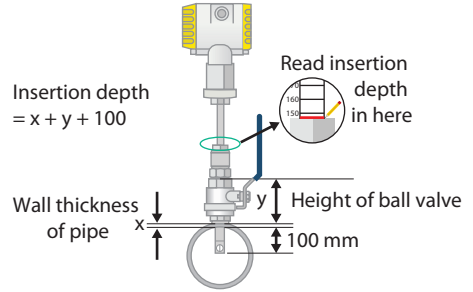
# 5 Installation

- 6 Open the ball valve.
- 7 Calculate the insertion depth.

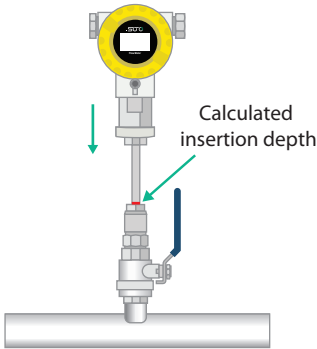
**A** Center installation  
for pipe diameter < 200 mm



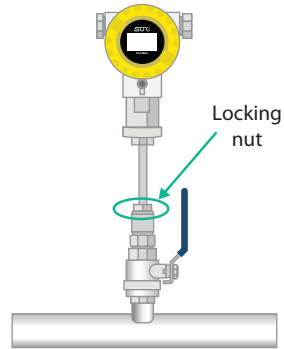
**B** 100 mm-depth installation  
for pipe diameter > 200 mm



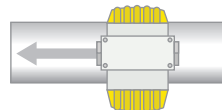
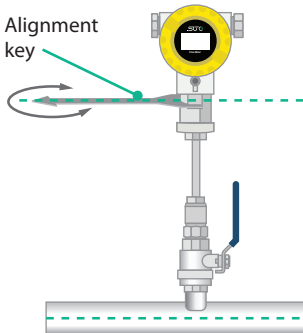
- 8 Press the flow meter down until it reaches the calculated insertion depth.



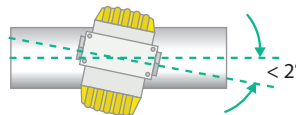
- 9 Tighten the locking nut, but allow flow meter shaft to rotate slightly by hand.



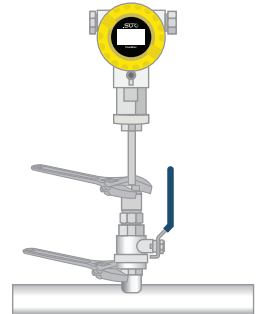
- 10 Use the alignment key to align the flow meter parallel to the pipe.



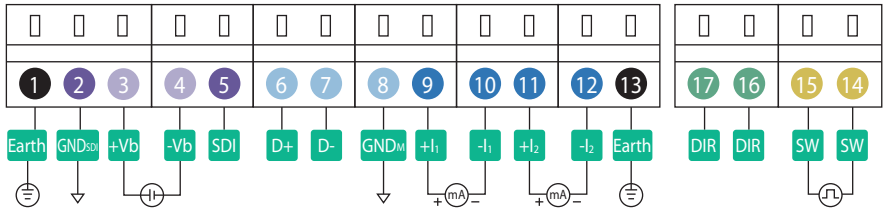
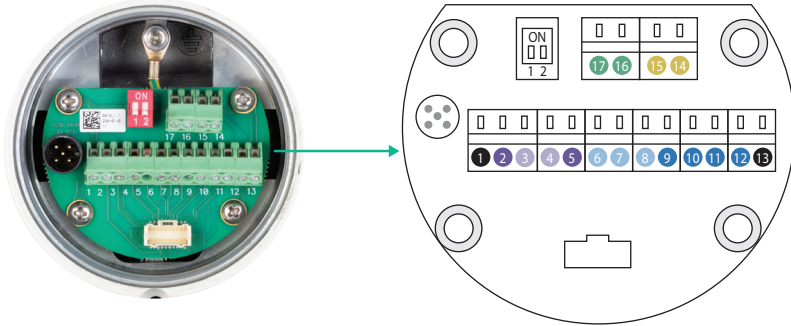
Maximum deviation  $< \pm 2^\circ$



- 11 Use two wrenches to tighten the locking nut firmly with a clamping torque of 20~30 Nm.

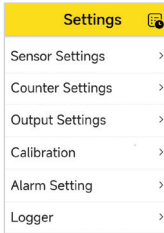


## 6 Electrical connection



## 7 Configuration

### Option 1 - Configure via the S4C-FS App



### Option 2 - Configure via the display



**ATTENTION** The following items must be set or checked:

- Ensure that the inner diameter is set correctly in the flow meter.
- Configure the signal output according to your needs.
- Observe the flow units and reference conditions, and change them if necessary.

[www.suto-itec.com](http://www.suto-itec.com)

#### EMEA Office

Heitersheim, Germany  
+49 (0) 7634 50488 00  
sales@suto-itec.com

#### Asia/Pacific Office

Hong Kong  
+852 2328 9782  
sales.asia@suto-itec.com

#### China Office

Shenzhen, China  
+86 (0) 755 8619 3164  
sales.cn@suto-itec.com

#### North America Office

Grand Rapids, USA  
+1 (616) 800-7886  
sales.us@suto-itec.com