



Technology Solutions

# TEK-THERMAL 1700B

## Thermal Mass Flowmeter



FLOW



[www.tek-trol.com](http://www.tek-trol.com)

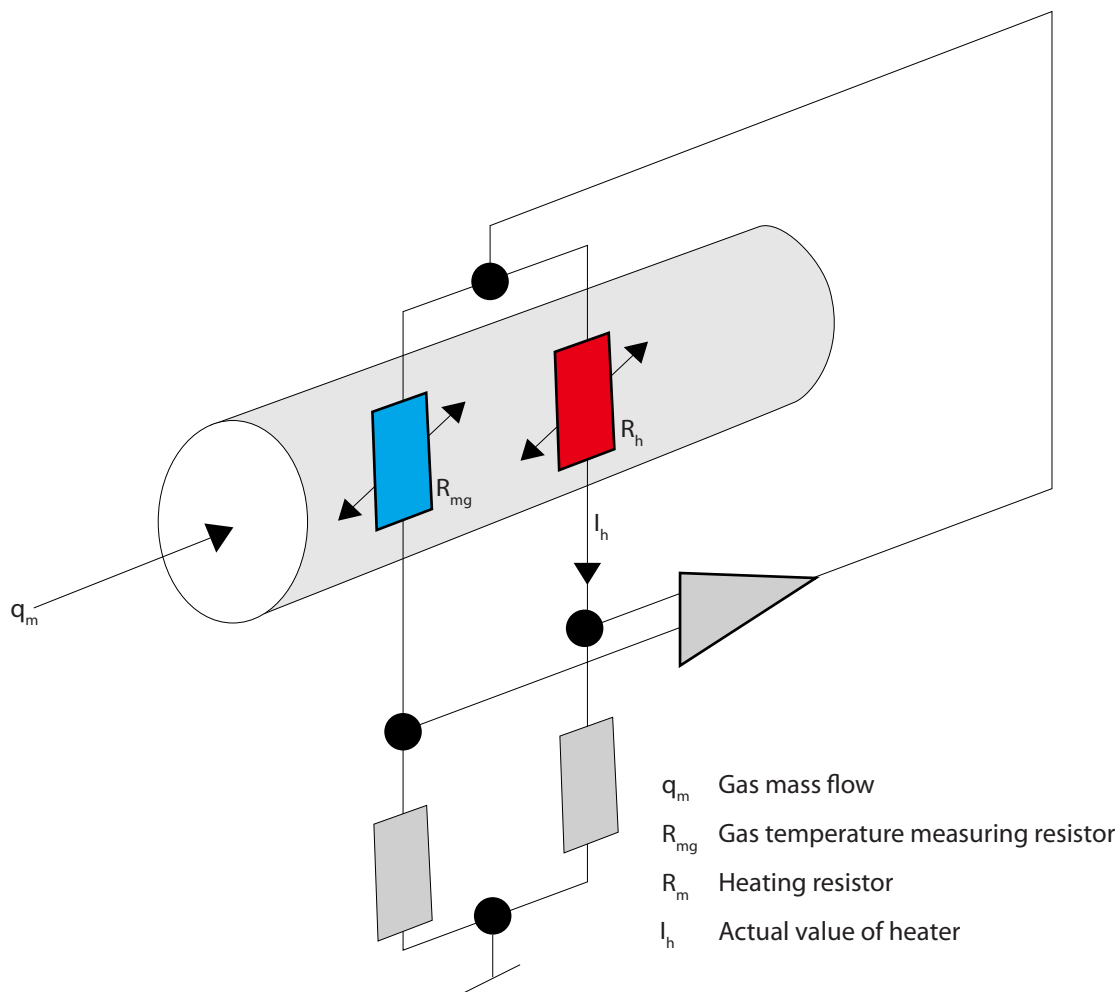
Flow | Level | Temperature | Pressure | Valves | Analyzers | Accessories | TekValSys

## Introduction

Tek-Thermal 1700B Thermal Mass Flowmeters, also known as thermal dispersion or immersible mass flowmeters, are the precision instruments to measure mass flow of fluid flowing in a closed channel like a pipe or duct. Tek-Thermal 1700B is specially designed for air and nitrogen (N<sub>2</sub>) applications. It has more compact design. It has small enclosure and thin insertion probe tube. It is used in high pressure applications.

## Measuring Principle and Operation

Tek-Thermal 1700B measures the gas mass flow based on Thermal Diffusion theory. One sensor measures the velocity of gas flow ( $R_h$ ) and the other sensor detects the temperature shift of gas flow ( $R_{mg}$ ). When there are two RTDs in gas flow,  $R_h$  will be heated and  $R_{mg}$  will sense the temperature difference. As the velocity of gas flow increases, more heat will dissipate and so the temperature read by  $R_h$  will decline.



Tek-Thermal 1700B Thermal Mass Flowmeter design is based on constant power measuring method, thus the RTD is heated on a consistent power and will be more durable and stable. Due to that, Tek-Thermal 1700B has less problem of zero-off which may cause a function failure of RTD due to overheating the term.

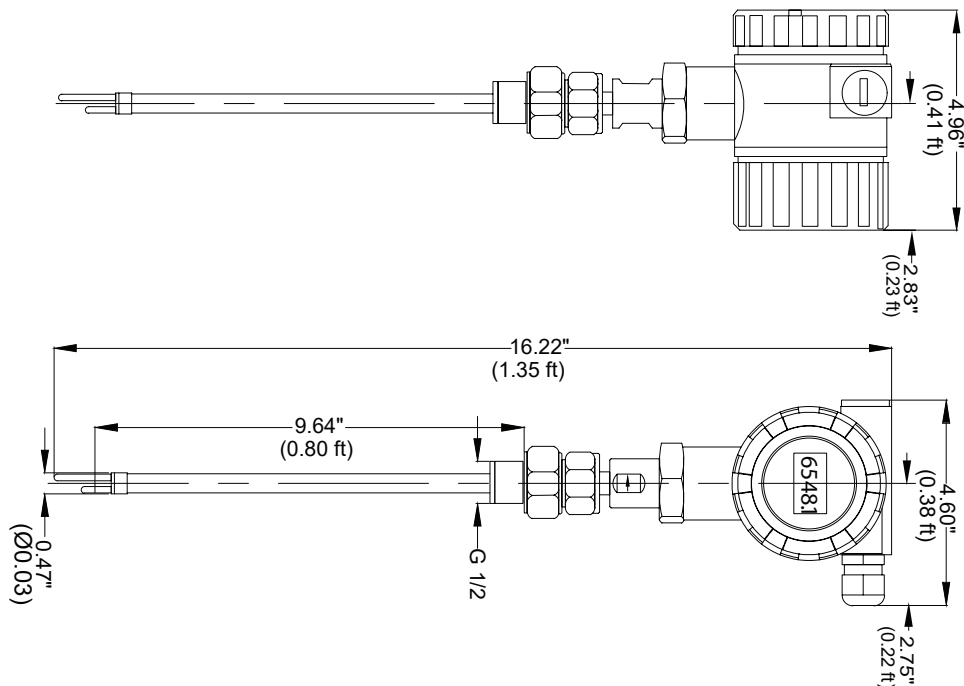
## Features/Benefits

- Dual line LCD display with 3 setting button
- Wide Turndown ratio 100:1
- No pressure loss and it can be used on pipes from 1" to 20"
- It has more compact design, which means smaller enclosure and thinner insertion tube probe
- Measure mass flow and standard flow directly
- It has self diagnostic function
- It has high accuracy data acquisition circuit
- High effective design of power supply
- It can be installed/removed without stopping process
- Cost-effective model

## Applications

- Tek-Thermal 1700B is specially used for air and nitrogen (N<sub>2</sub>) application, such as compressed air, venting air, aeration, process protection nitrogen (N<sub>2</sub>), and combustion air
- It is used in high pressure applications

## Dimensional Drawing



## Specifications

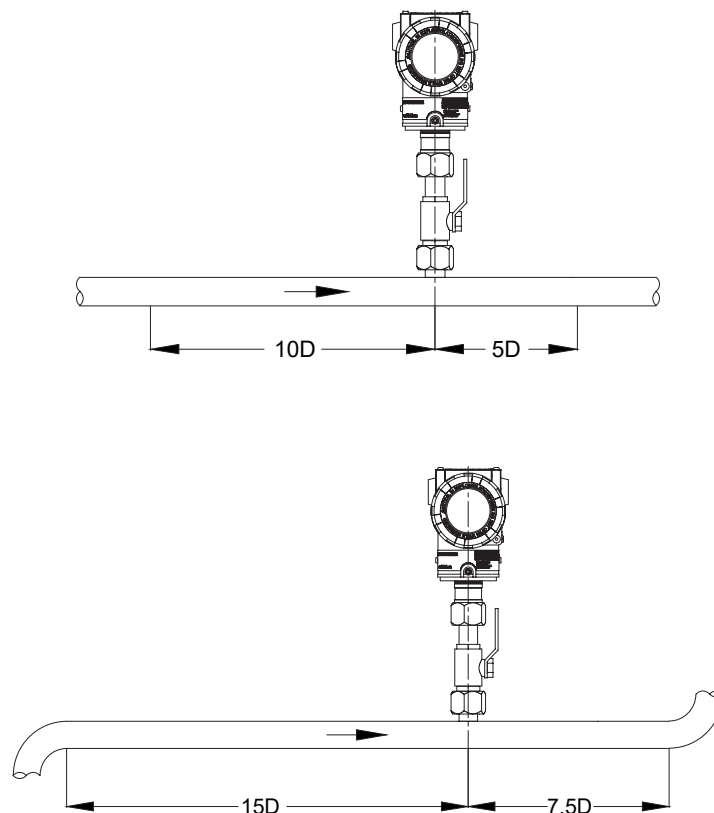
Media capability	Air, Nitrogen (N <sub>2</sub> )
Pipe diameter	1" to 20"
Flow velocity range	0.98 to 98 ft/sec or 1.9 to 196 ft/sec or 2.9 to 295 ft/sec
Accuracy	±0.5% FS
Maximum Pressure	232 PSI
Temperature of medium	-40 °F to 302 °F (-40 °C to 150 °C)
Power supply	13.5 to 42 VDC
Response time	1 second
Output	Pulse and 4-20 mA
Communication	RS485 or HART
Display Indication	Mass flow, Volume flow in normal condition, Total flow, Temperature of medium, Velocity
Ingress Protection	IP65

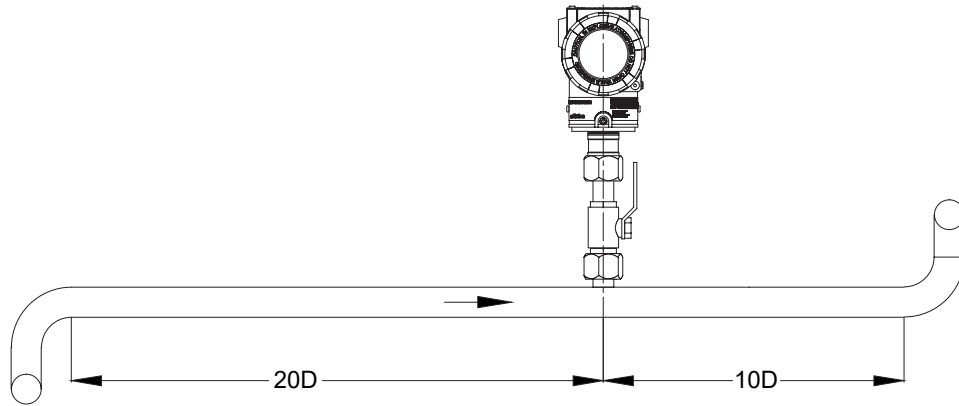
**Note** For flow ranges please refer manual

## Installation

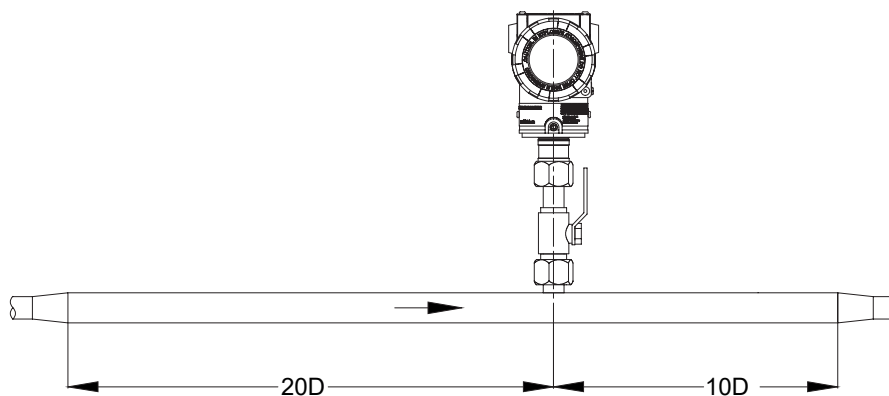
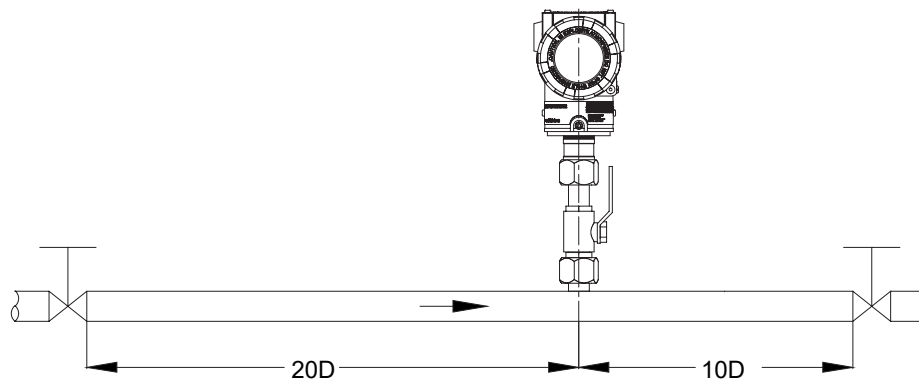
### Requirement on straight pipe line

#### Standard Installation

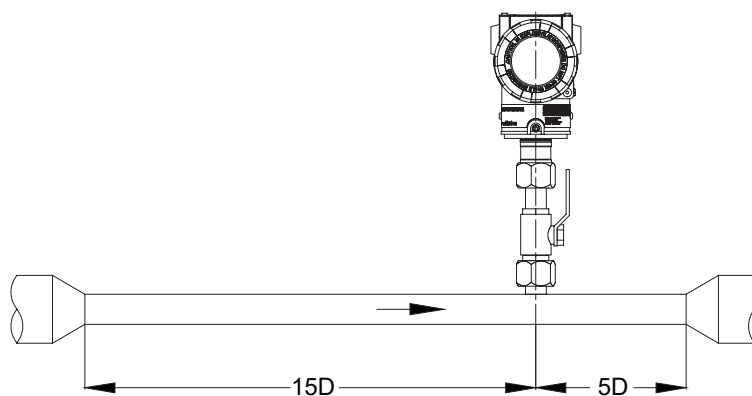




Installation when valves or pressure controller or any other device may cause turbulence in the upstream or downstream of the flowmeter

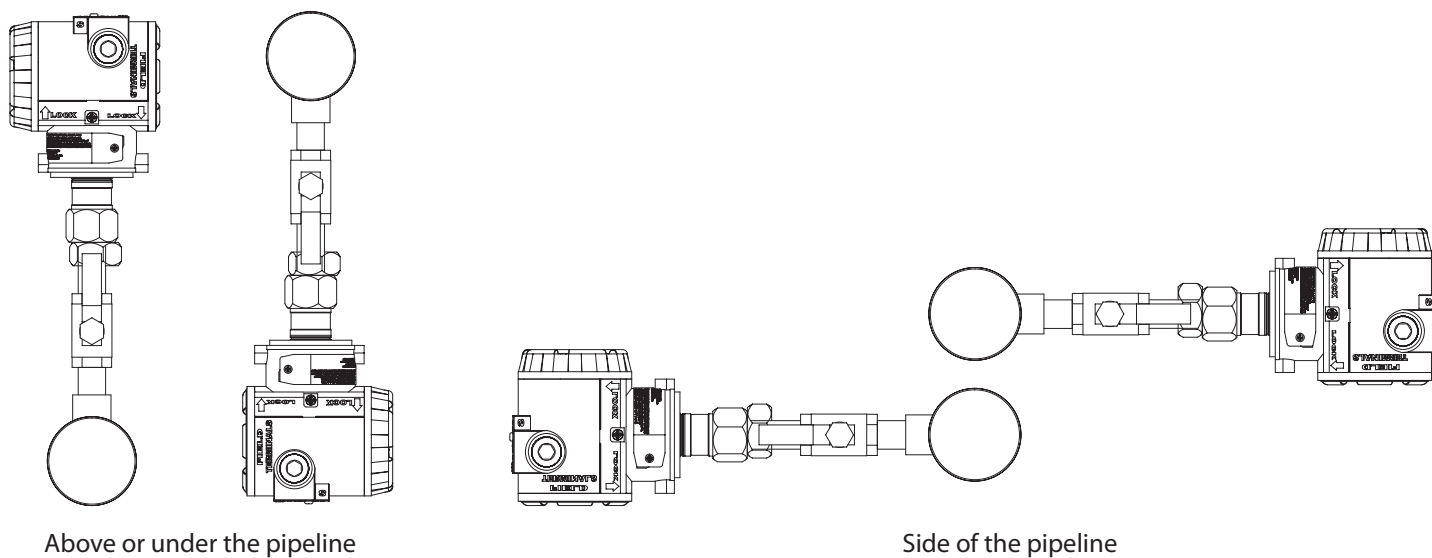


## Installation for pipe reducer

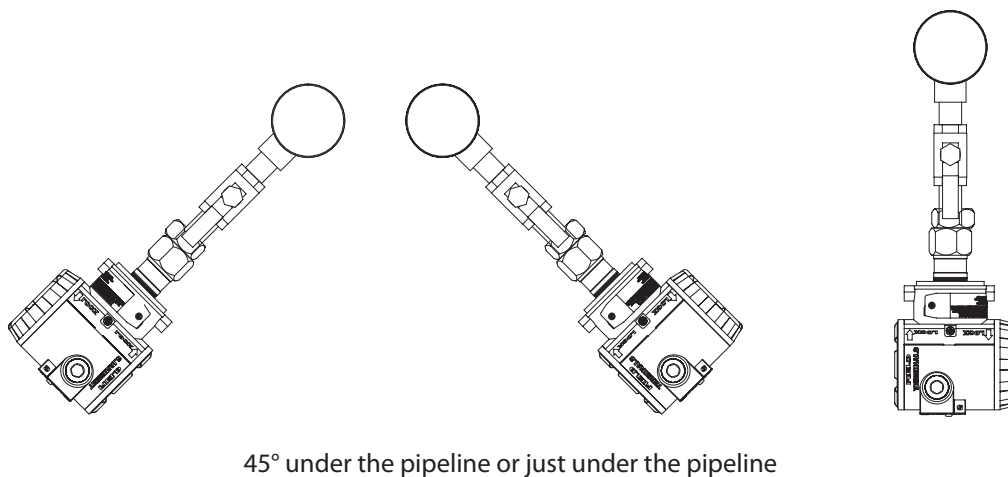


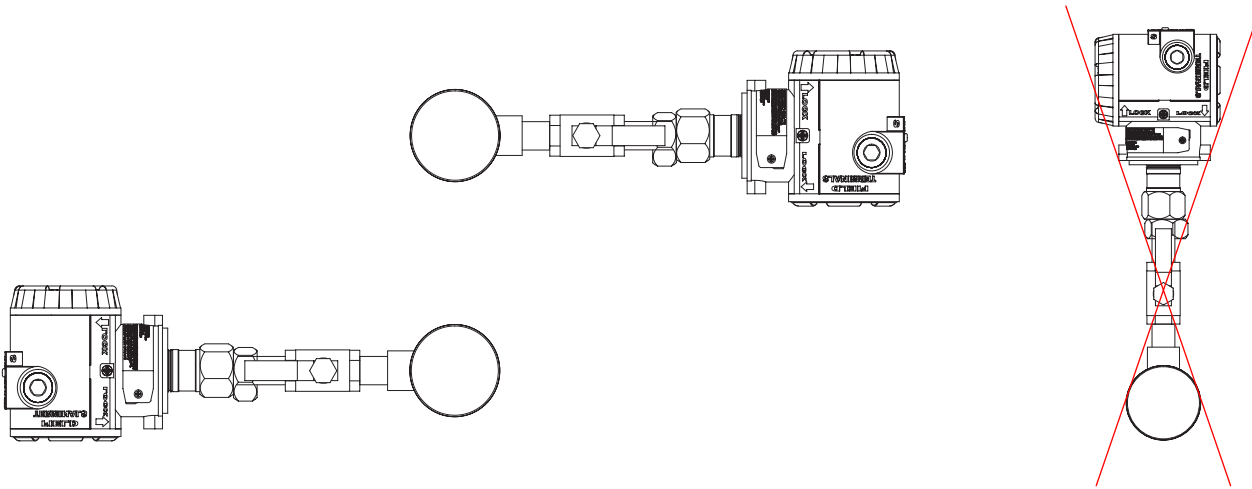
### Requirement on insertion direction

On a horizontal pipeline, normal air or gas



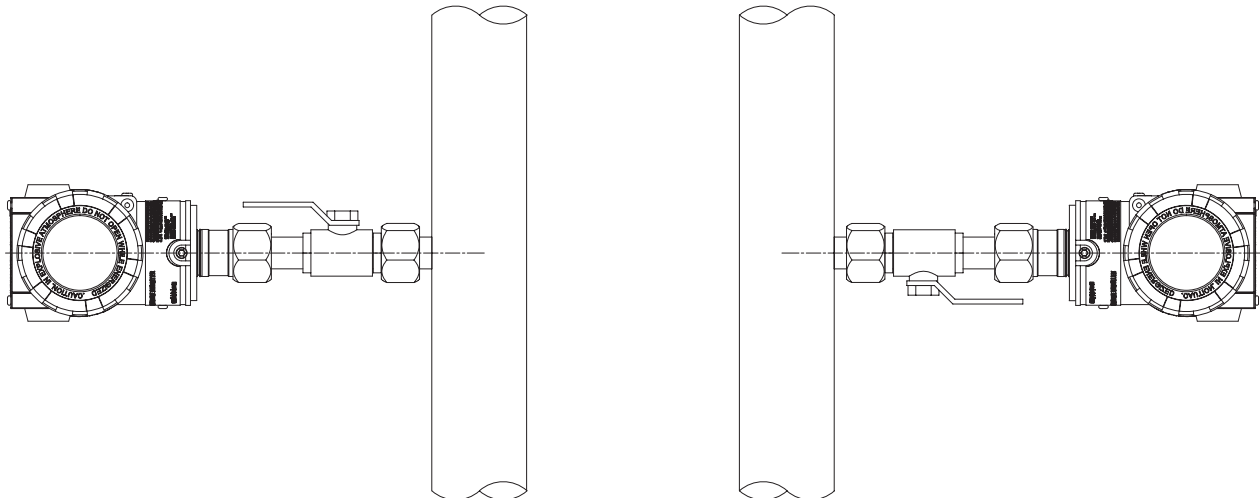
On a horizontal pipeline, high humidity air or wet natural gas





On the side of the pipe. Not recommended to install the meter above the pipeline

On a vertical pipeline, when the density of the gas is higher than air



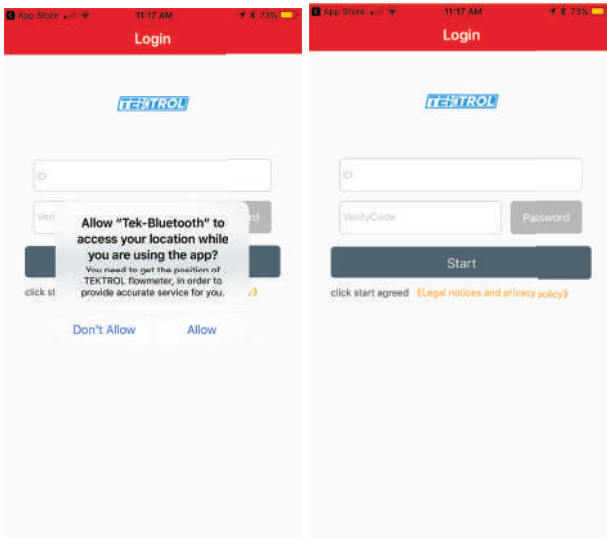
## Tek-trol Bluetooth or Tek Bluetooth

### How to download the application

- Visit Apple's app store
- Search "Tek-trol Bluetooth" or "Tek Bluetooth"
- Download the application



**Visit Apple's app store and search for tek-bluetooth, download and you're set!**

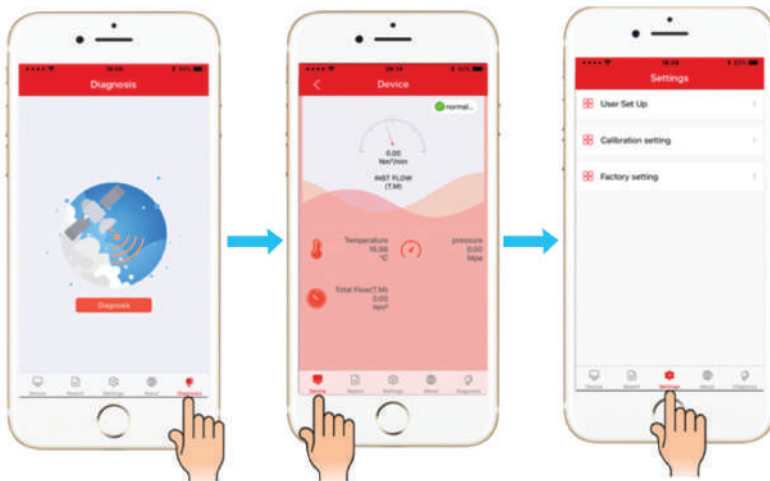


### Access the application

- Open Application
- Enter login information  
(Example: ID: 000000000000, Verify code: 000000)
- This will take you to "device list" where your phone will automatically sync with your product (you have to be close enough)

### Utilize the application

Follow prompts and menu to navigate through the many features of our Bluetooth application.





## Model Chart

Example	Tek-Thermal 1700B	C	4	1	T	2	1	8	1	B	Tek-Thermal 1700B-C-4-1-T-2-1-8-1-B
Series	Tek-Thermal 1700B										Thermal Mass Flowmeter
Process Connection		C									Insertion (NPT)
Insertion Probe			4								10" Probe Length, 0.5" Diameter, 1" to 20" Pipe Diameter
Range				1							1.96 to 196.8 ft/sec
				2							0.98 to 98 ft/sec
				3							2.9 to 295.2 ft/sec
Transmitter					T						Direct Mount
					R						Remote Mount (comes with 16.40 ft of cable)
Material						2					316 SS
Pressure							1				232 PSI Max Pressure
Output								7			Pulse, 4-20 mA, HART
								8			Pulse, 4-20 mA, RS485
Power Supply									1		13.5-42 VDC
Diagnostics										B	Bluetooth

## Popular Models

Model Number	Description
1700B-C-4-1-T-2-1-7-1-B	1" to 20" Pipe, 0.44 to 44 ft/sec

# Customer Service and Support



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