TEKTROL
Technology Solutions

TEK-THERMAL 1700B

Thermal Mass Flowmeter

FLOW

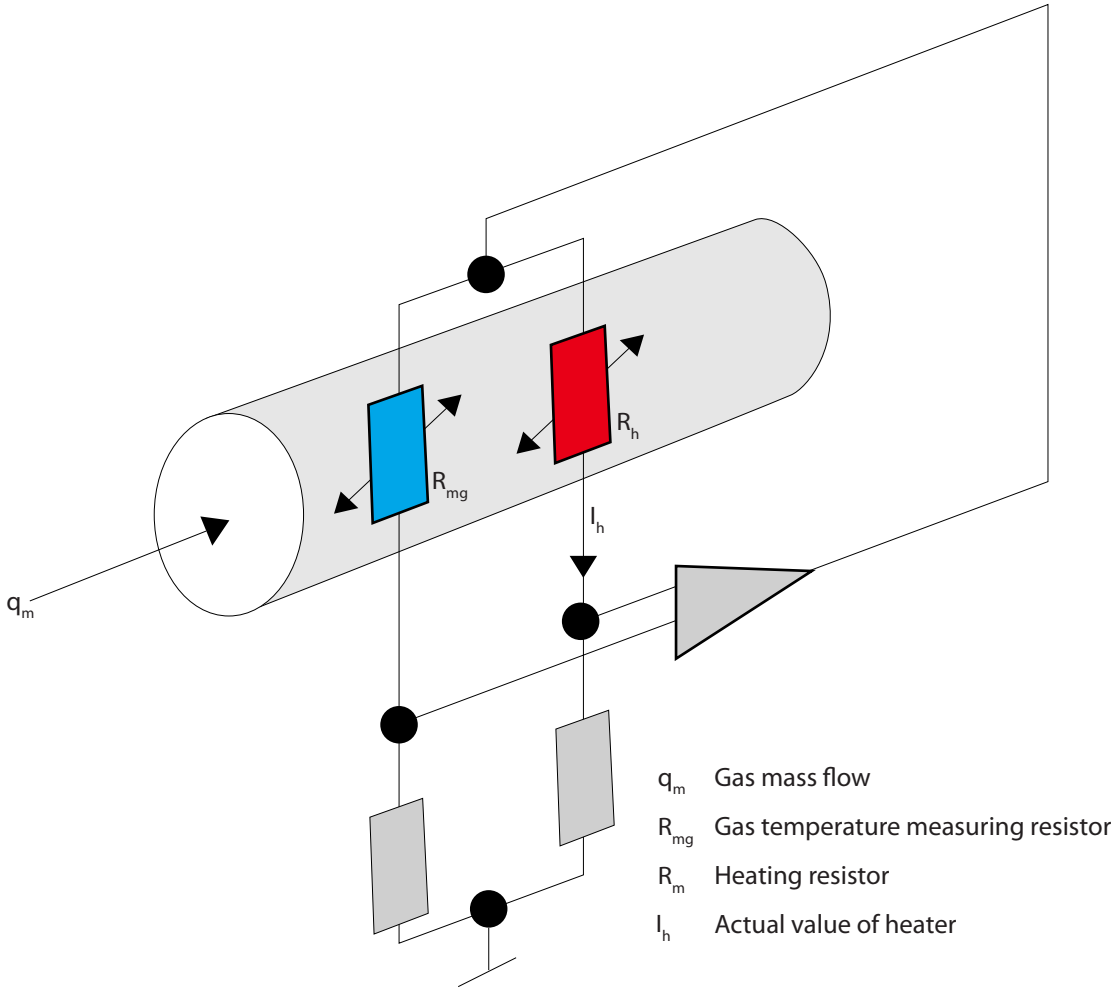
Flow | Level | Temperature | Pressure | Valves | Analyzers | Accessories | TekValSys

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_2) 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.

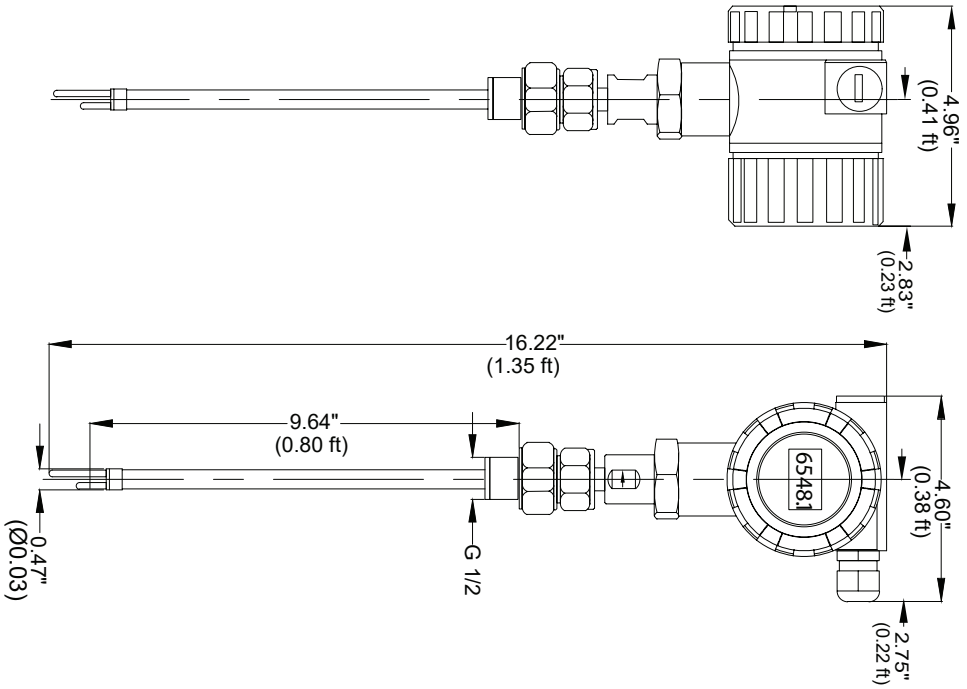
Features/Benefits

- 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_2) application, such as compressed air, venting air, aeration, process protection nitrogen (N_2), and combustion air
- It is used in high pressure applications

Dimensional Drawing



Specifications

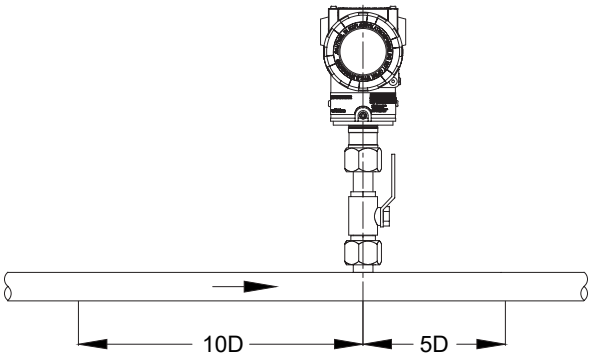
Media capability	Air, Nitrogen (N_2)
Pipe diameter	1" to 20"
Flow velocity range	0.98 to 98 ft/sec or 1.9 to 196 ft/sec or 2.9 to 295 ft/sec
Accuracy	±0.5% FS
Maximum Pressure	232 PSI
Temperature of medium	-40 °F to 302 °F (-40 °C to 150 °C)
Power supply	13.5 to 42 VDC
Response time	1 second
Output	Pulse 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

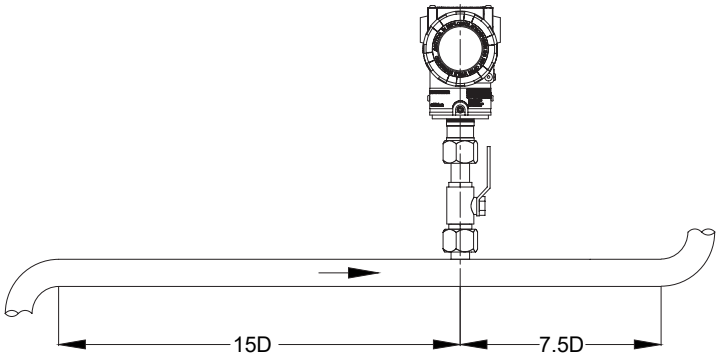
Note For flow ranges please refer manual

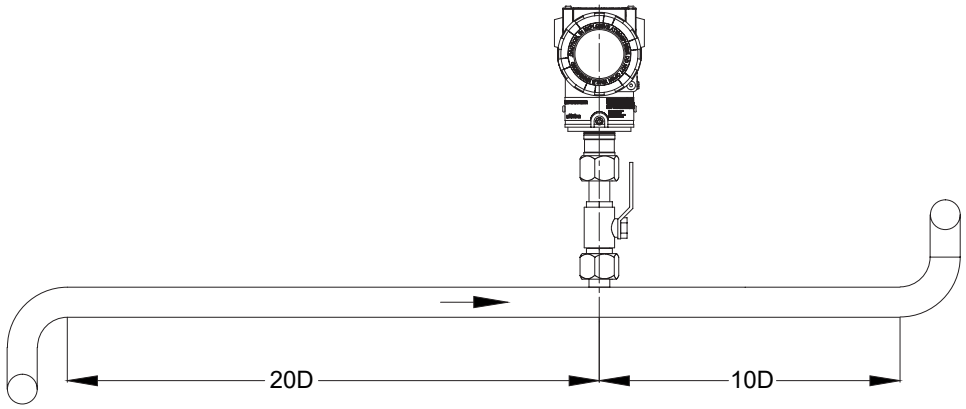
Installation

Requirement on straight pipe line

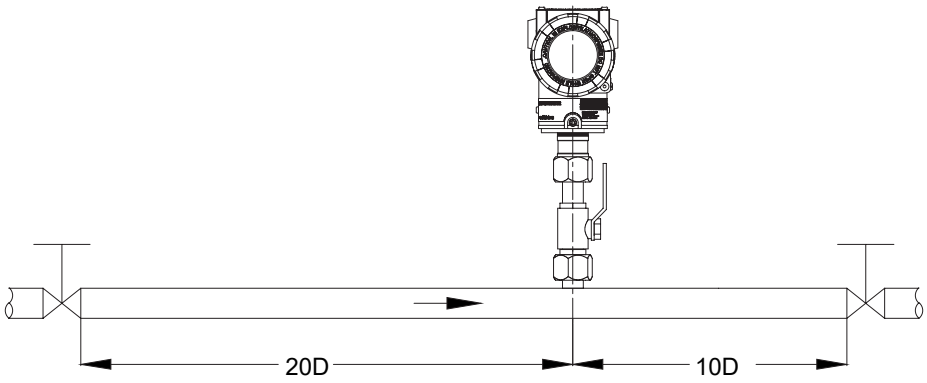
Standard Installation

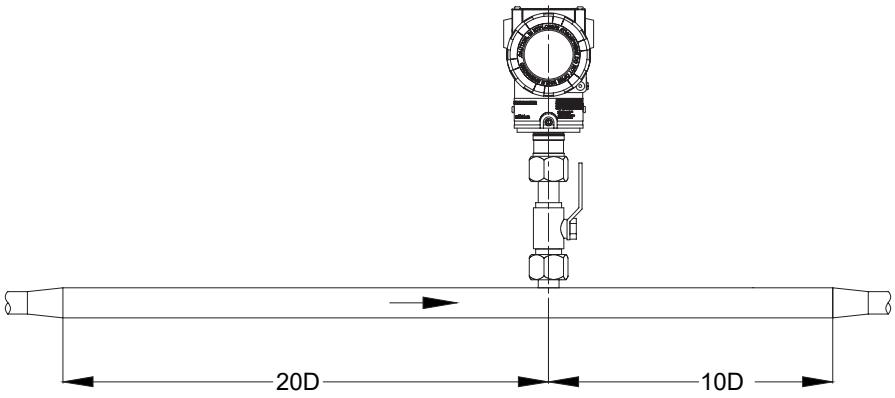




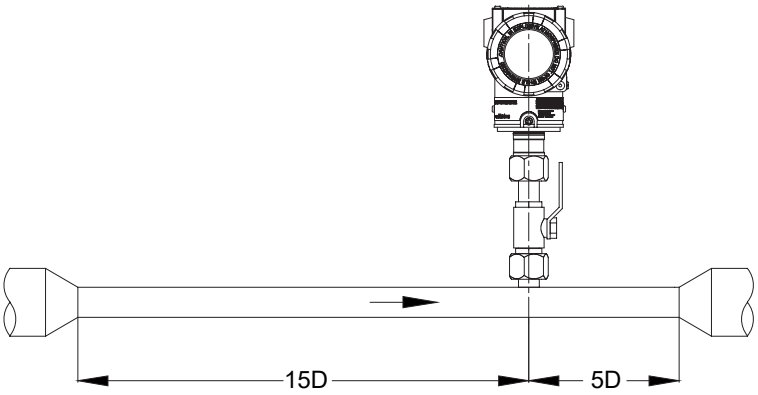


Installation when valves or pressure controller or any other device may cause turbulence in the upstream or downstream of the flowmeter



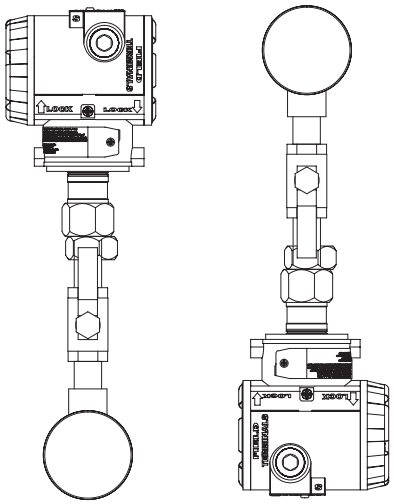


Installation for pipe reducer

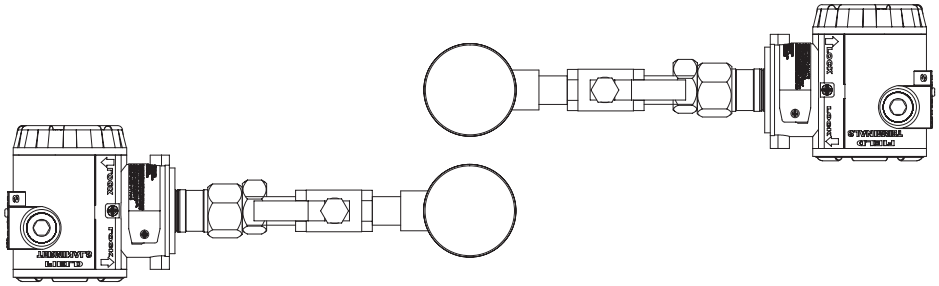


Requirement on insertion direction

On a horizontal pipeline, normal air or gas

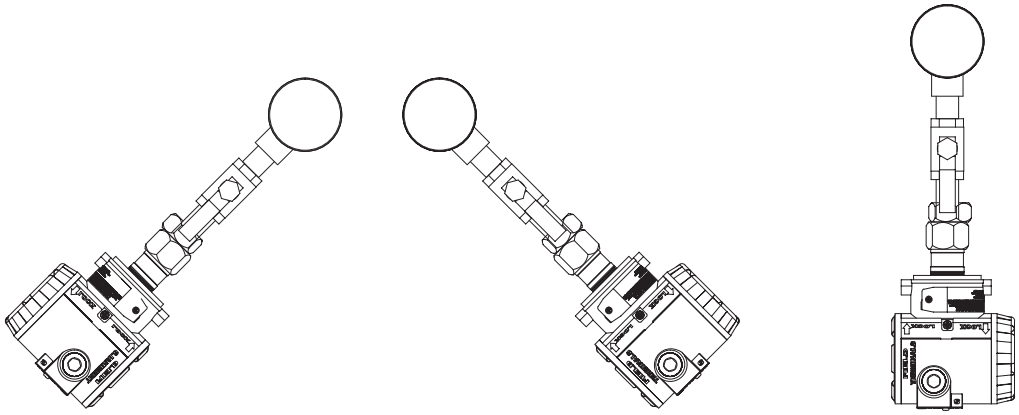


Above or under the pipeline

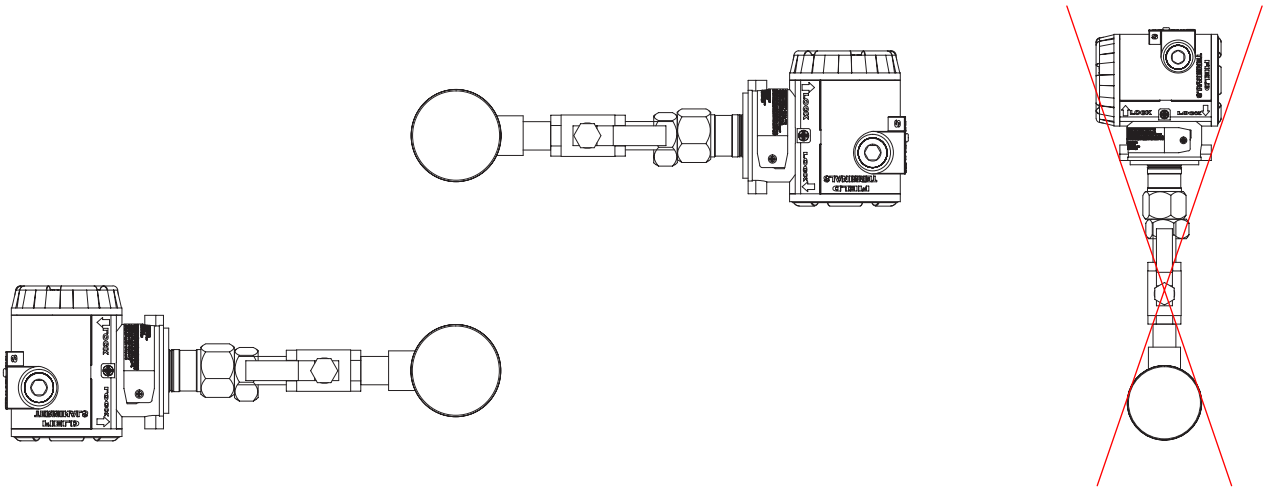


Side of the pipeline

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

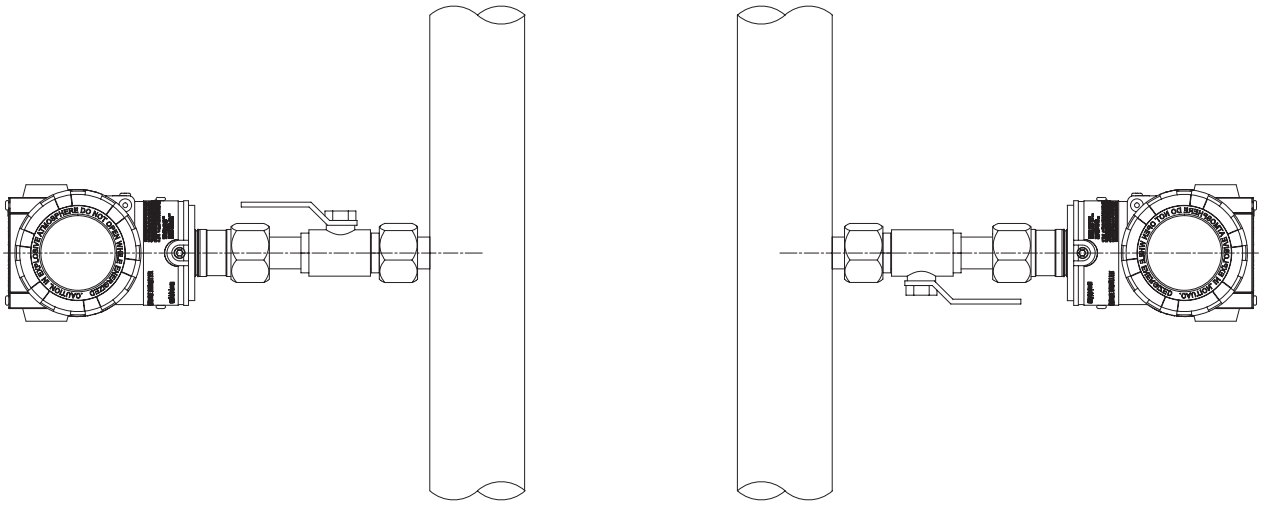


45° under the pipeline or just under the pipeline



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

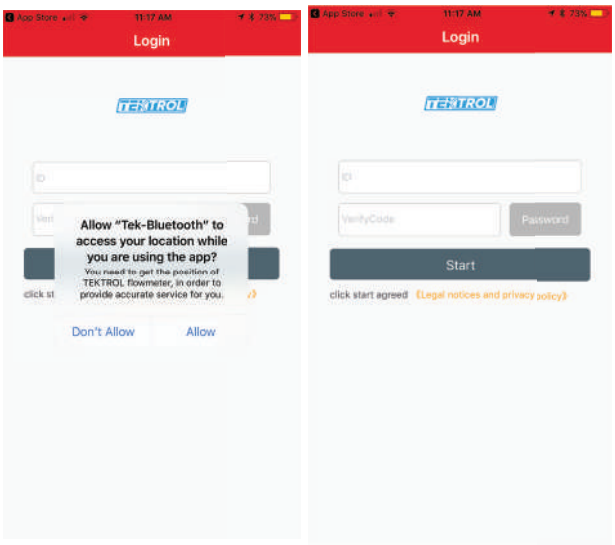
On a vertical pipeline, when the density of the gas is higher than air



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

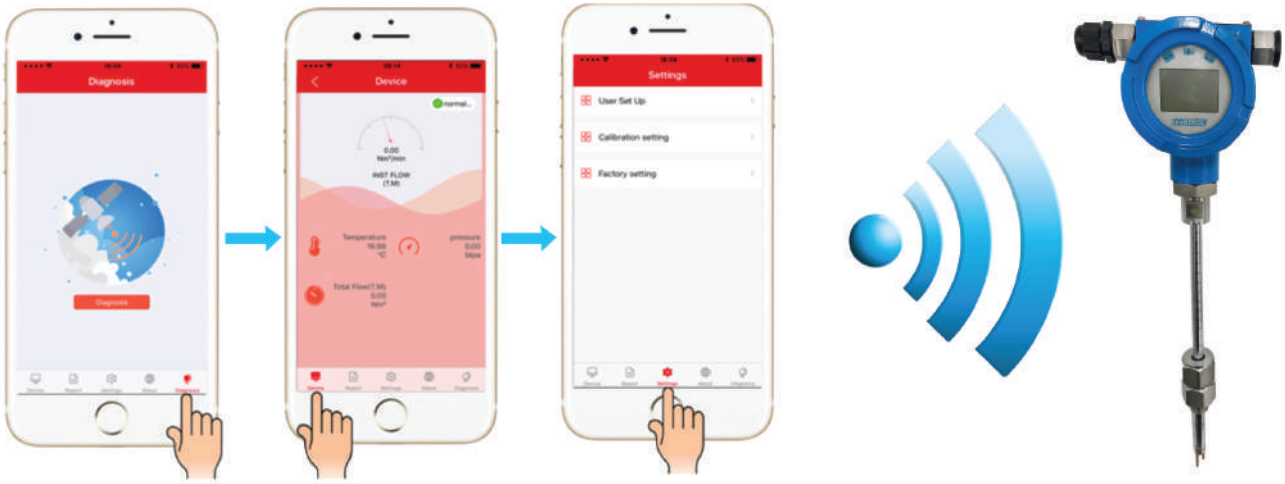


Access the application

- Open Application
- Enter login information
  (Example: ID: 00000000000, 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 2 3							1.96 to 196.8 ft/sec 0.98 to 98 ft/sec 2.9 to 295.2 ft/sec
Transmitter					T R						Direct Mount Remote Mount (comes with 16.40 ft of cable)
Material						2					316 SS
Pressure							1				232 PSI Max Pressure
Output								7 8			Pulse, 4-20 mA, HART 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