



Technology Solutions

TEK-THERMAL 1700B

Thermal Mass Flow Meter



FLOW



www.tek-trol.com

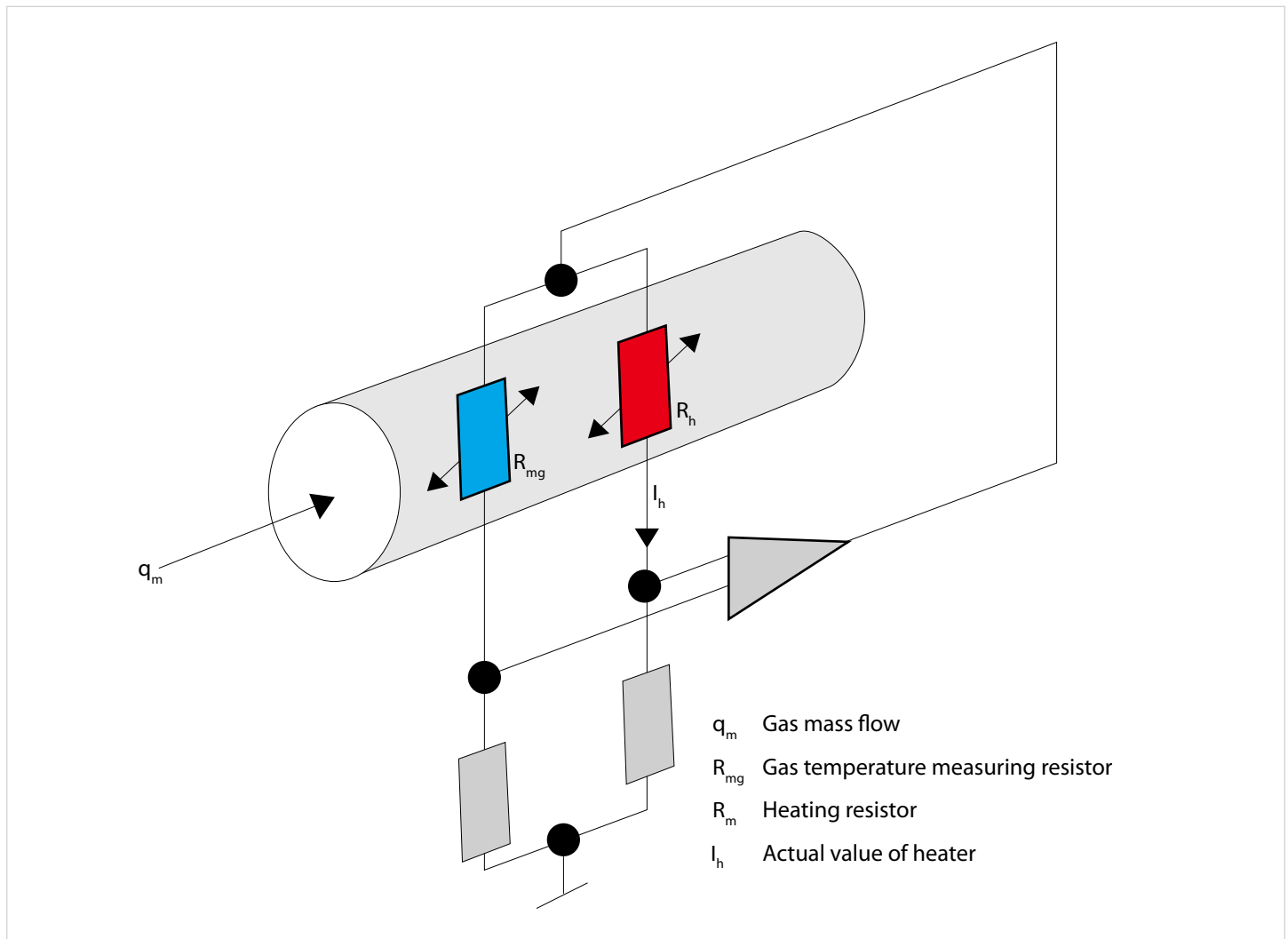
Flow | Level | Temperature | Pressure | Valves | Analyzers | Accessories | TekValSys

Introduction

Tek-Thermal 1700B Thermal Mass Flow Meters, also known as thermal dispersion or immersible mass Flow Meters, 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 (N₂) 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 Flow Meters 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.

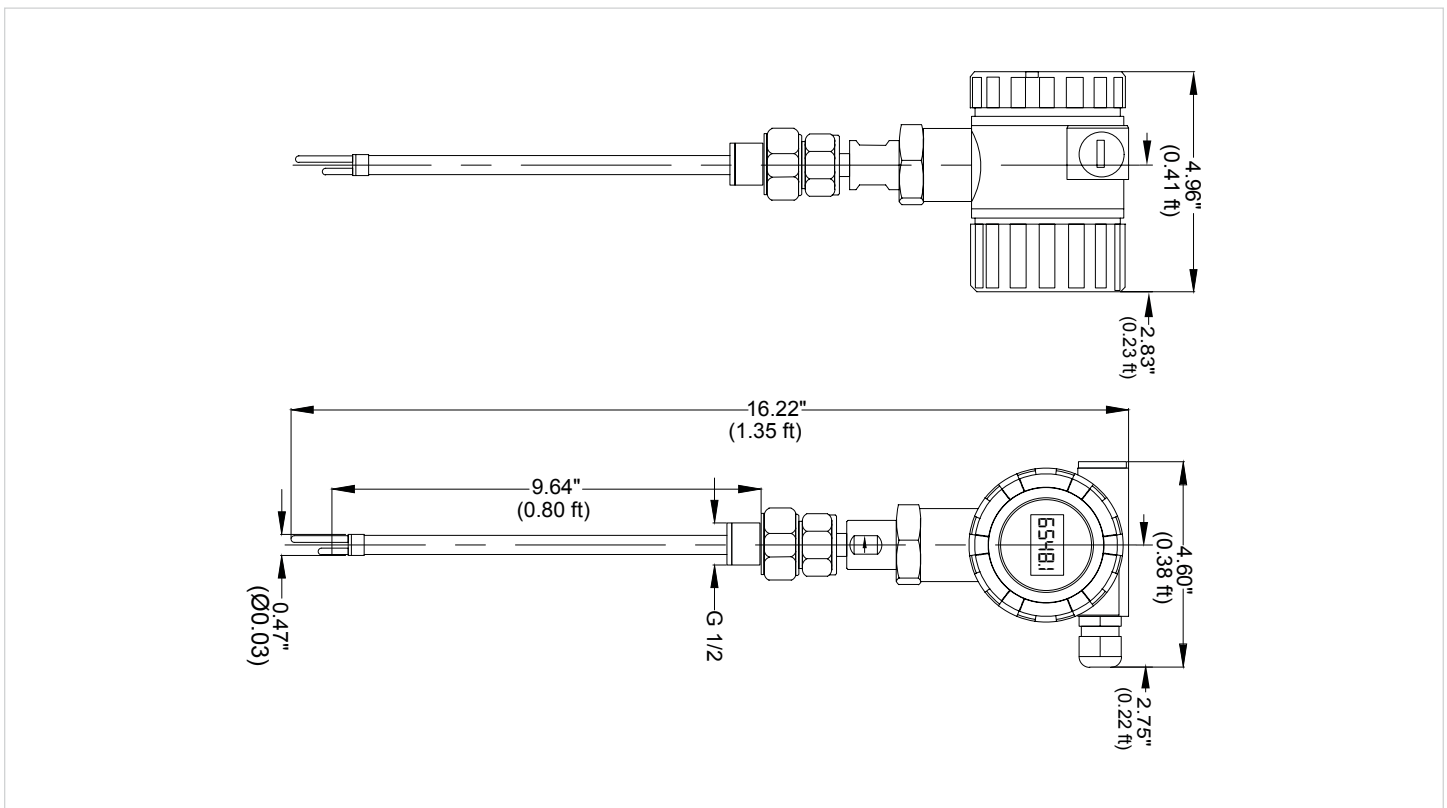
Features/Benefits

- 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 (N₂) application, such as compressed air, venting air, aeration, process protection nitrogen (N₂), and combustion air
- It is used in high pressure applications

Dimensional Drawing



Specifications

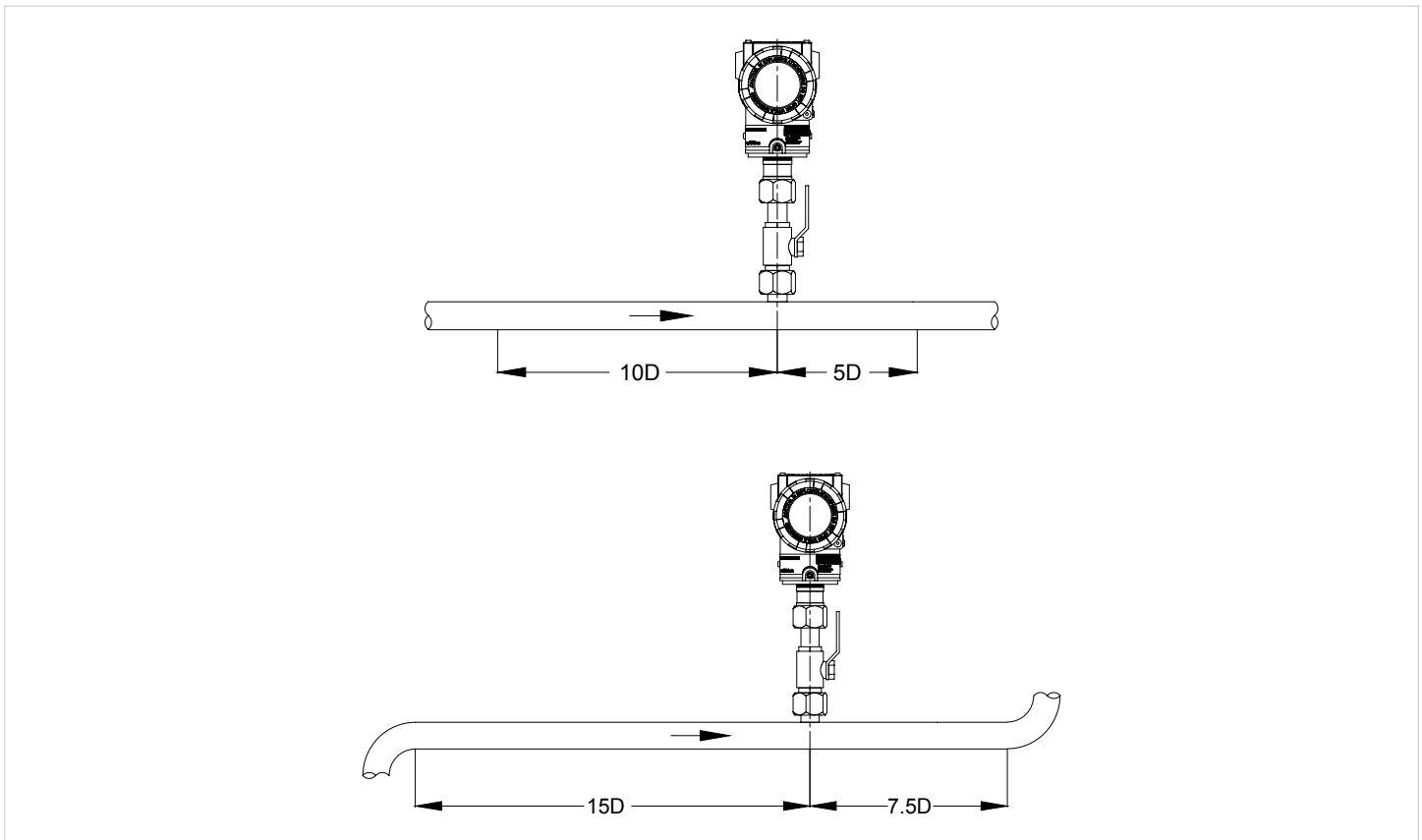
Media capability	Air, Nitrogen (N ₂)
Pipe diameter	1" to 20"
Flow velocity range	2 to 200 ft/sec or 1 to 100 ft/sec or 3 to 300 ft/sec
Accuracy	±0.5% FS
Maximum Pressure	232 PSI
Temperature of medium	-40 °F to 302 °F (-40 °C to 150 °C)
Power supply	13.5 to 42 VDC or 85 to 265 VAC
Response time	1 second
Output	4 to 20mA and Pulse standard
Communication	Modbus RS485 or HART optional
Display Indication	Mass flow, Volume flow in normal condition, Total flow, Temperature of medium, Velocity
Ingress Protection	IP65

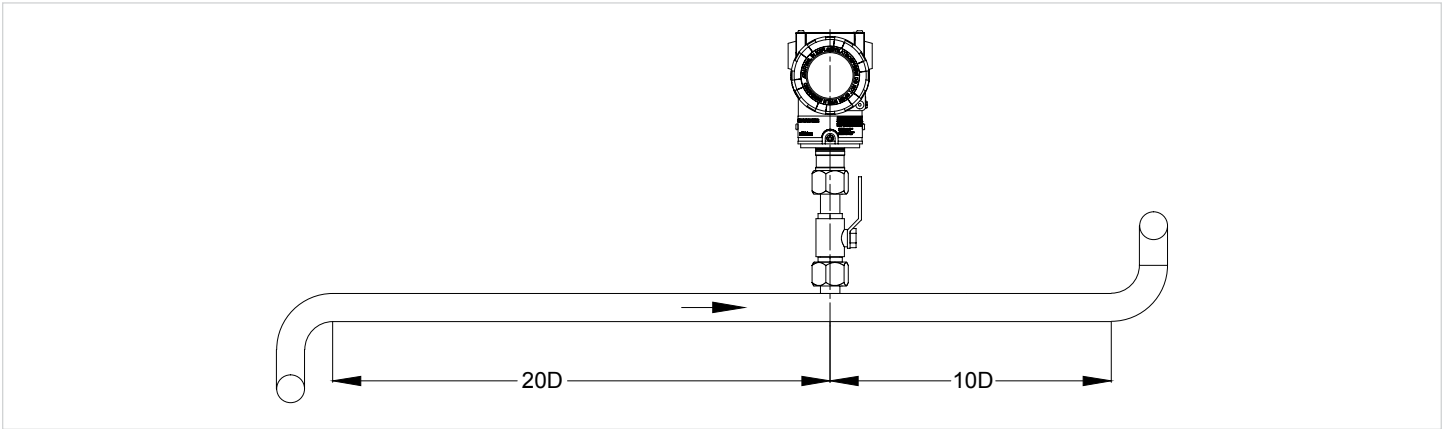
Note For flow ranges please refer manual

Installation

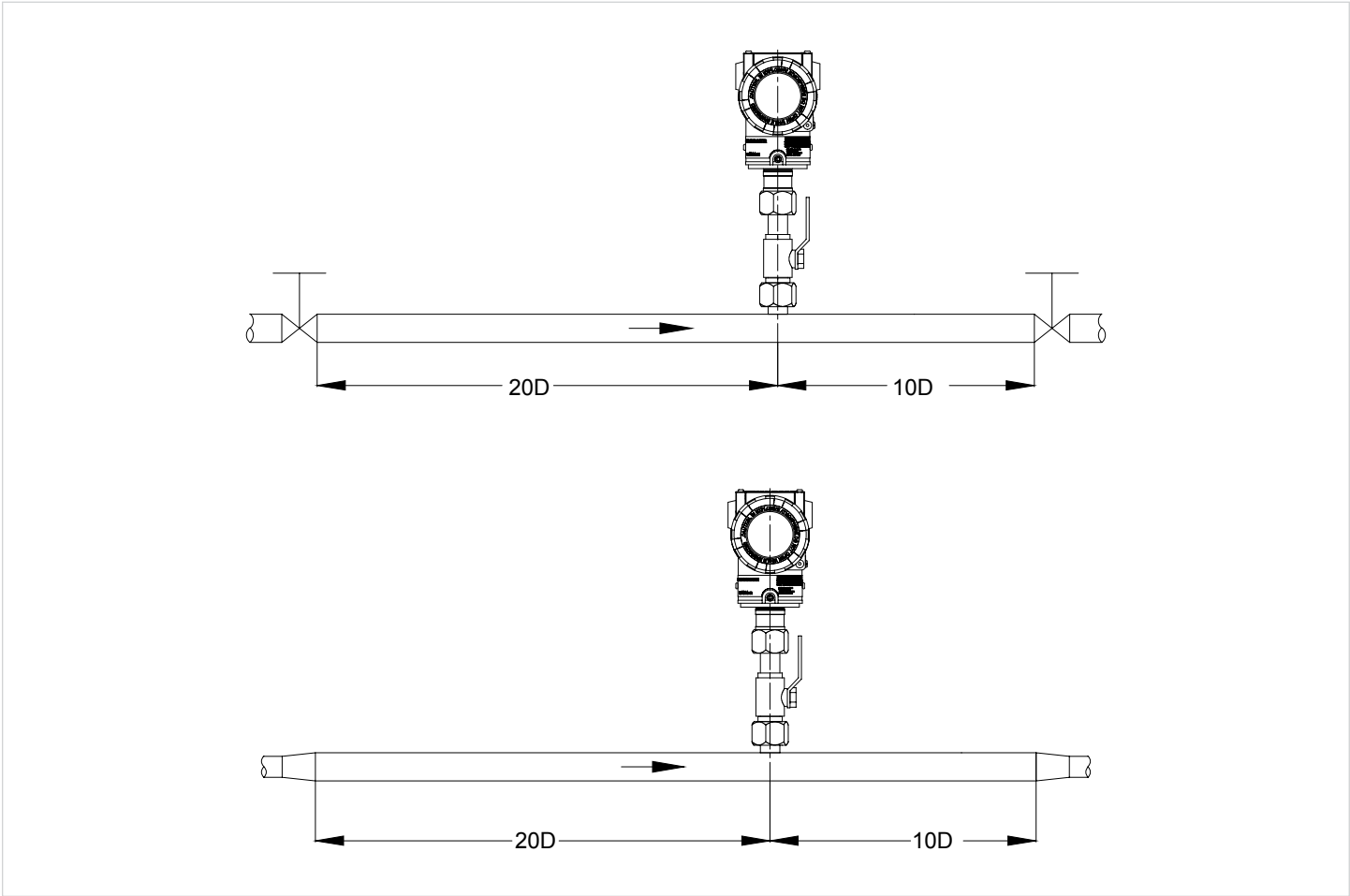
Requirement on straight pipe line

Standard Installation

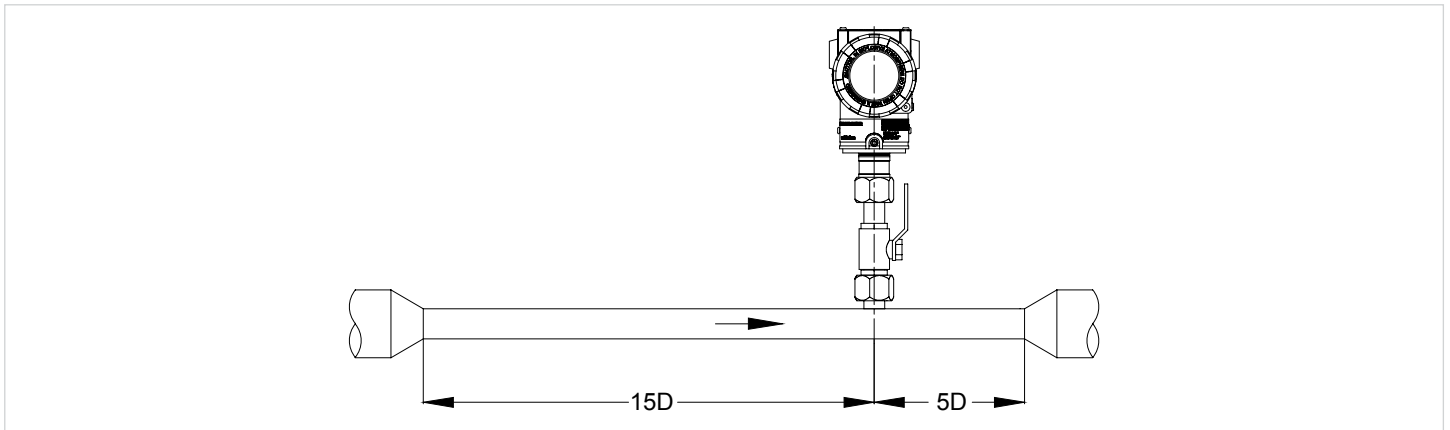




Installation when valves or pressure controller or any other device may cause turbulence in the upstream or downstream of the flow meter

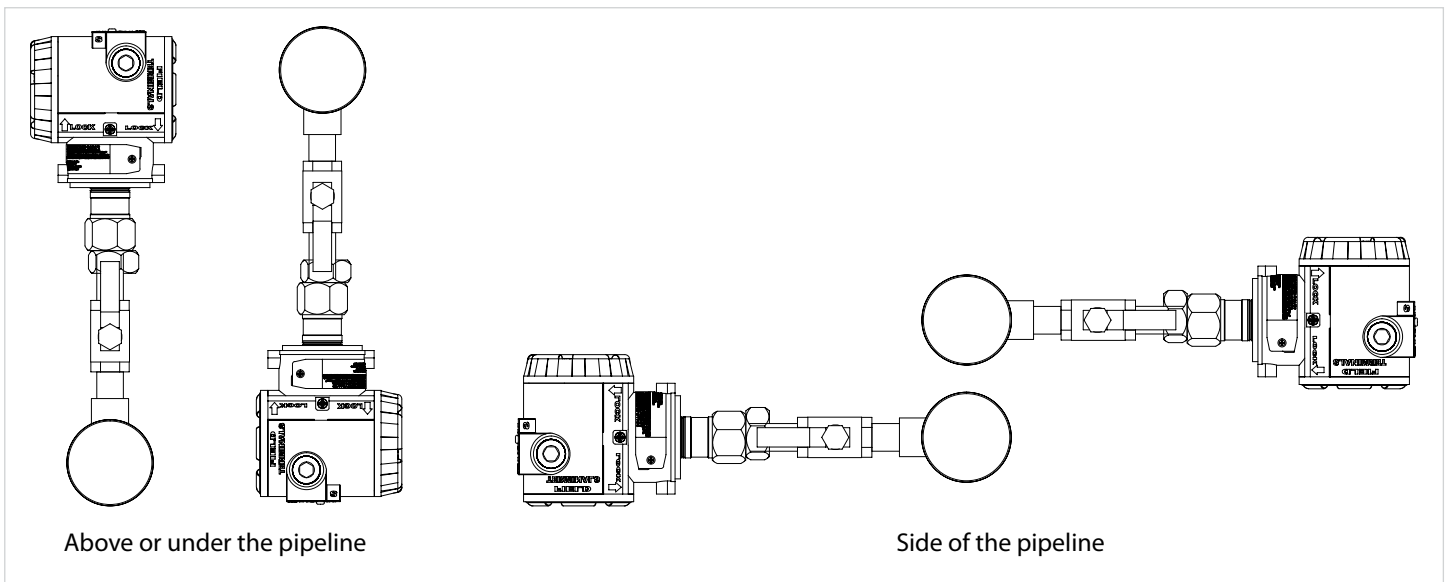


Installation for pipe reducer

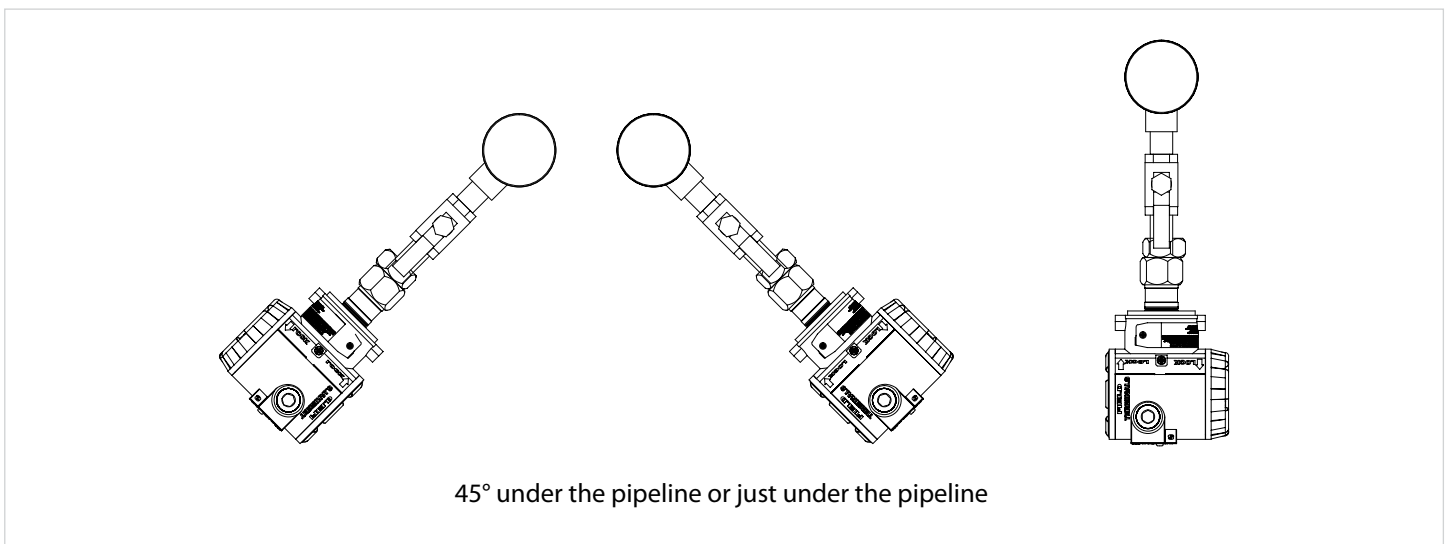


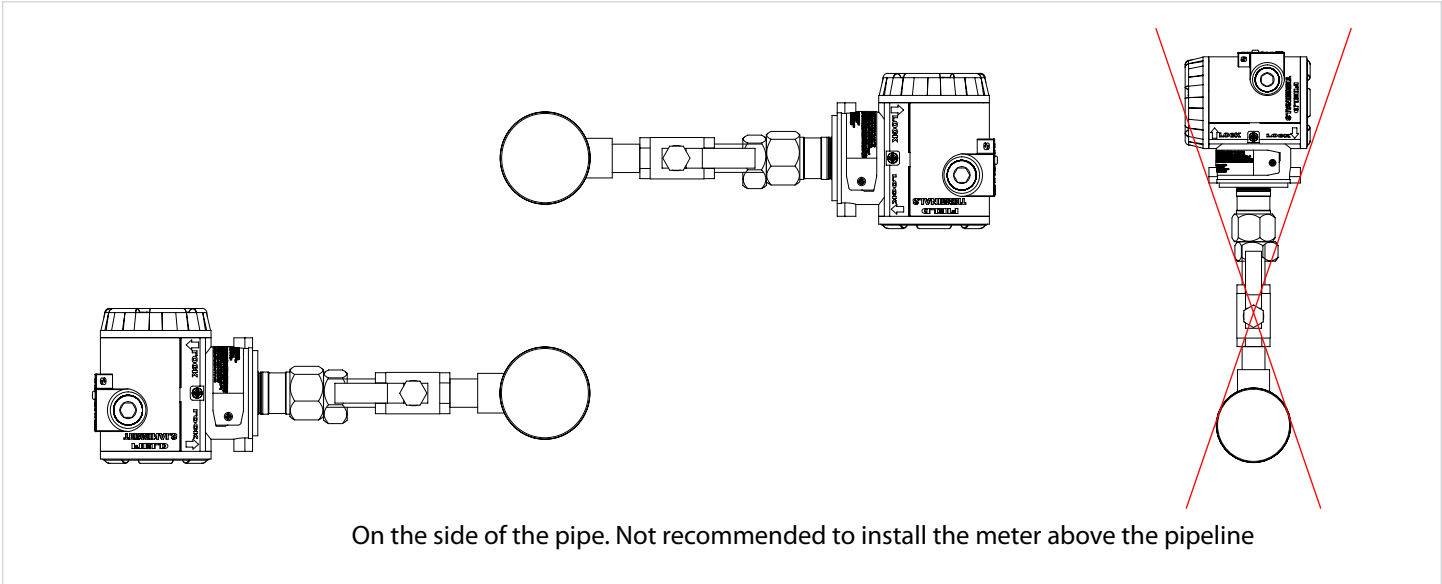
Requirement on insertion direction

On a horizontal pipeline, normal air or gas

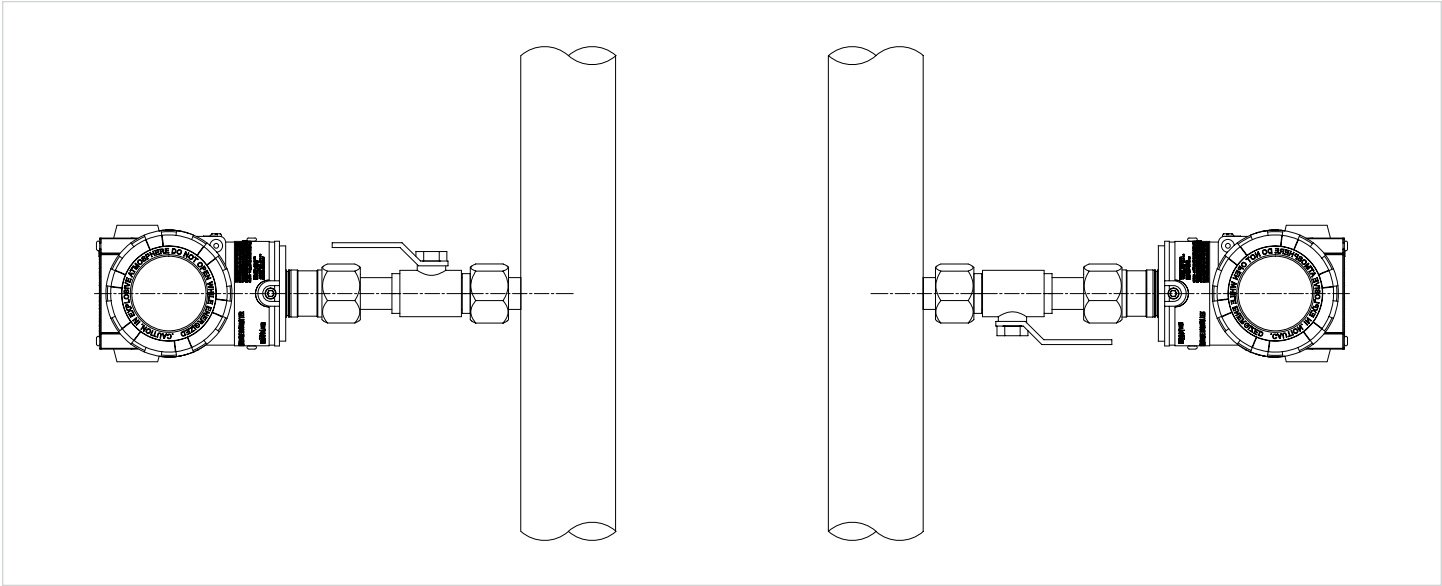


On a horizontal pipeline, high humidity air or wet natural gas





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



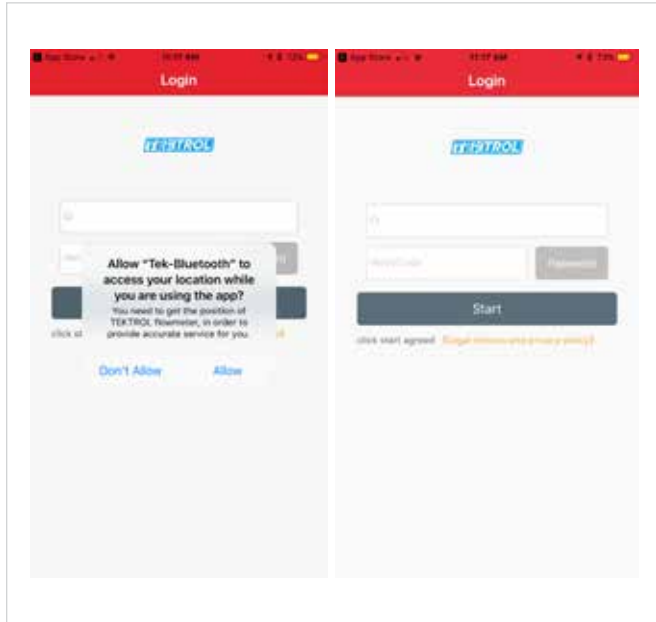
Tek-trol Bluetooth or Tek Bluetooth

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!

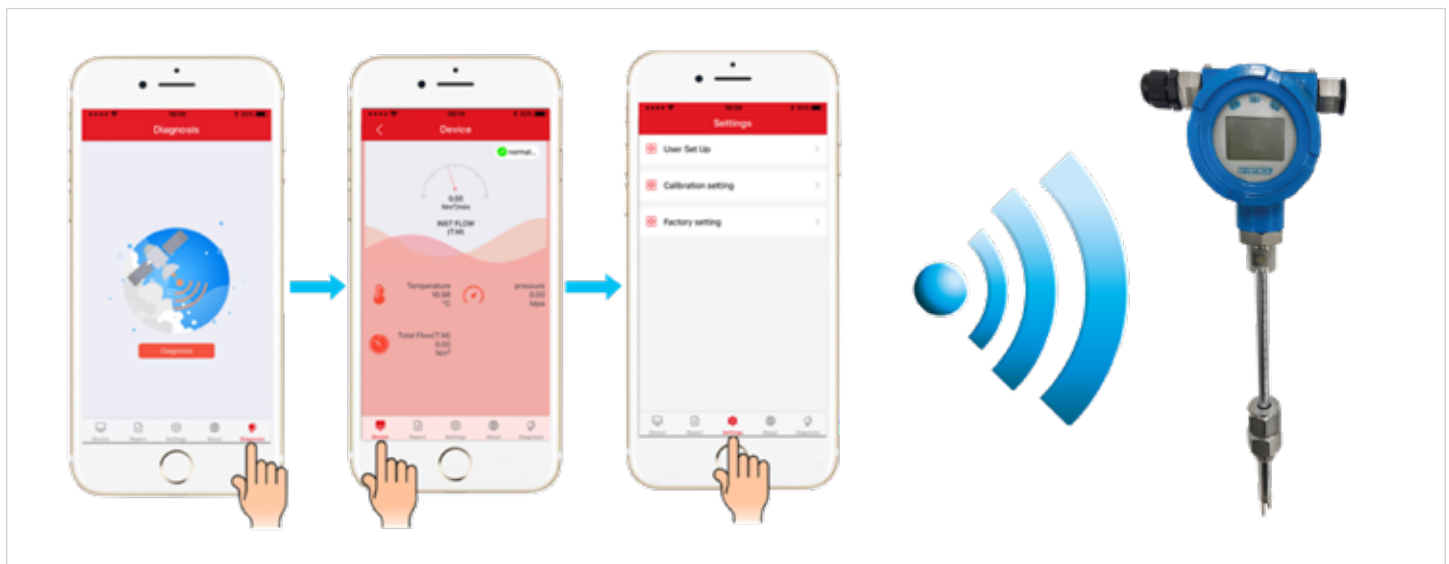


Access the application

- Open Application
- Enter login information
(Example: ID: 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 Flow Meter
Process Connection		C									Insertion (NPT)
Insertion Probe			4								10" Probe Length, 0.5" Diameter, 1" to 20" Pipe Diameter
Range				1							2 to 200 ft/sec
				2							1 to 100 ft/sec
				3							3 to 300 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
									2		85-265 VAC
Diagnostics										B	Bluetooth

Popular Models

Model Number	Description
1700B-C-4-1-T-2-1-8-1-B	1" to 20" Pipe, 2 to 200 ft/sec

Customer Service & Support



TEK-TROL LLC reserves the right to change the designs and/or materials of its products without notice. The contents of this publication are the property of TEK-TROL LLC and cannot be reproduced by any other party without written permission. All rights reserved. Copyright © 2020 TEK-TROL LLC
TEK-TROL LLC
DOC # TEK/PO/CAT/200606/1700B/02



www.tek-trol.com

Tek-Trol LLC

796 Tek Drive Crystal Lake, IL 60014,
USA
Sales: +1 847-655-7428

Tek-Trol Solutions BV

Florijnstraat 18, 4879 AH Etten-Leur,
Netherlands
Sales: +31 76-2031908

Tek-Trol Middle East FZE

SAIF Zone, Y1-067, PO BOX No.
21125, Sharjah, UAE
Sales: +971-6526-8344

Support: +1 847-857-6076

Email: tektrol@tek-trol.com

www.tek-trol.com

Tek-Trol is a fully owned subsidiary of TEKMATIION LLC. We offer our customers a comprehensive range of products and solutions for process, power and oil & gas industries. Tek-Trol provides process measurement and control products for Flow, Level, Temperature & Pressure measurement, Control valves & Analyzer systems. We are present in 15 locations globally and are known for our knowledge, innovative solutions, reliable products and global presence.