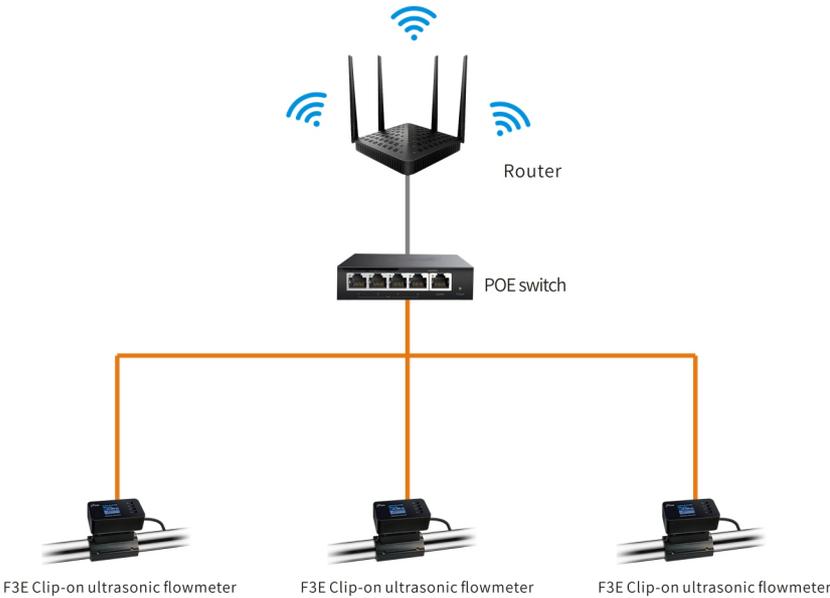


Clip-on Ultrasonic Flowmeter Instructions Manual

Model:F3E



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Updated Information:

1 Overview

The F3E Clip-on ultrasonic flowmeter adopts the ultrasonic time difference measurement principle, and is combined with Gentos ultrasonic signal processing technology and unique flow algorithm, to achieve accurate measurement of fluid flow in the pipeline. The product has an integrated clamp-on structure design, which is simple and convenient to install. After four steps of operation, it can be powered on for measurement. During the installation process, there is no need to contact the fluid medium, and there is no need to stop production.

The instrument adopts POE power supply and Ethernet communication to realize cloud data storage. Users can access cloud data anytime and anywhere through mobile terminals or PC terminals to manage, analyze and query measurement data information.

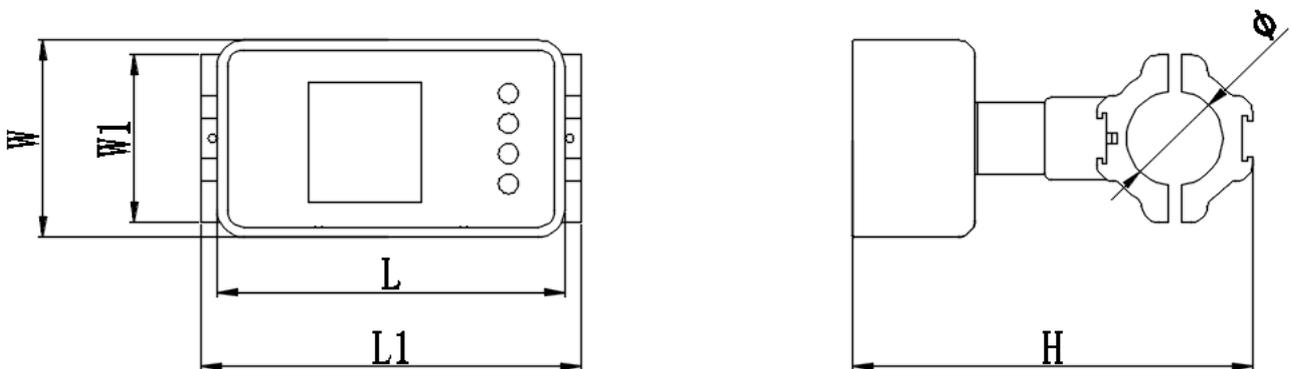
2 Product Features

- ┆ Easy installation, No break pipeline
- ┆ No adjust, Clip on to measure
- ┆ LCD color display screen
- ┆ 360° rotation adjustable display screen
- ┆ POE network cable power supply, safe and convenient.

3 Technical Parameter

3.1 Dimension

3.1.1 Transmitter Dimension



F3E Outline Dimension Drawing

Pipe Diameter Comparison Table								Unit: mm
Model	Nominal Inner Diameter of Pipe	W	W1	L	L1	H	ϕ	
F3E	DN20	60	51	105	118	121	29	
	DN25	60	56	105	118	128	36	
	DN32	60	63	105	118	135	43	
	DN40	60	74	105	118	146	54	
	DN50	60	89	105	153	159	67	
	DN65	60	102	105	153	172	80	
	DN80	60	113	105	153	183	91	

3.2 Technical Index—F3E Series Clip-on Ultrasonic Flowmeter

Performance Index	
Flow Velocity	0.1~16ft/s (0.03~5.0m/s)
Accuracy	±2%, (1.0~16ft/s)
Repeatability	0.2%
Pipe Size	DN20~DN80
Medium	Water
Pipe Material	Carbon Steel, Stainless Steel, Copper, PVC (Select one of them as per customer's requirements. The details are subject to the instrument display.)
Functional Index	
Support Protocol	HTTP、MQTT Protocol
Power Supply	POE network cable power supply
Key	4 keys
Display Screen	1.44 "LCD color screen, resolution 128 * 128
Temperature	Transmitter: 14 °F to 122 °F (-10°C ~ 50°C) Transducer: 32 °F to 140 °F (0°C ~ 60°C).
Humidity	Relative humidity 0~99%, No condensation
IP	IP54
Physical Characteristics	
Transmitter	Integrated
Transducer	Clamp on
Cable	POE waterproof tail line, standard length: 0.5m

- I The accuracy obtained by Gentos flow standard device. Errors may occur due to the type of pipeline, fluid and temperature used by the customer.

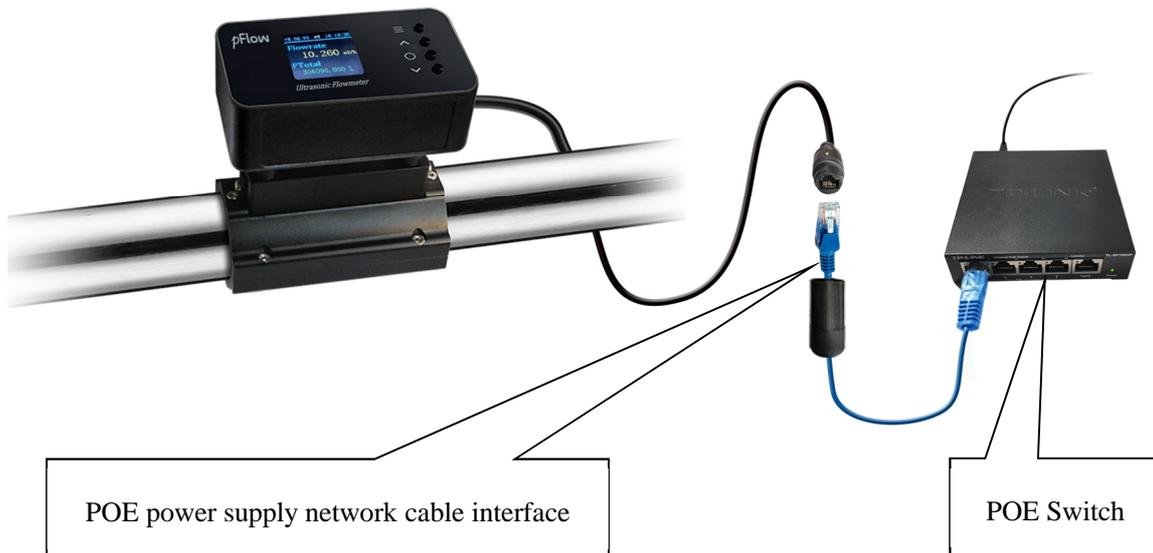
4 Installation and Wiring

4.1 Installation Description

1. Carefully read "Section 7. Choose Measurement Point". After the designated location is selected, the area outside the pipe to be installed must be cleaned, and the dense part of the pipe must be selected for installation.
2. The special coupling sticker of the company is pasted on the center of the sensor, which will be squeezed during installation to ensure that the sensor and the pipe wall are closely fitted without bubbles. It comes with coupling compound and replaceable coupling pads. The coupling compound can be applied to the coupling pads.
3. **The direction of the arrow** on the nameplate of the instrument shall be consistent with the direction of the fluid in the pipeline.

4.2 Meter Wiring

The F3E instrument is connected to the customer's POE switch through the POE network cable, and then connected to the Internet through the router connected to the POE switch. The instrument flow data is uploaded to the ECS through the Internet. Users can use the Meter Tube APP to access cloud data through mobile phones or PC terminals for operation.



4.3 Fast installation steps of F3E series clip-on ultrasonic flowmeter

This meter adopts integrated design. It is easy to install and set parameters in four steps. It can be directly clipped on the pipe section. After connected to the power supply, the meter can realize flow measurement.

Step 1

Take out this device from the package and clip the upper and lower pipe clamps on the selected position of the pipe.



Step 2

Tighten the screws.



Step 3

Install the transmitter part into the slot of the upper pipe clamp and tighten the screws.



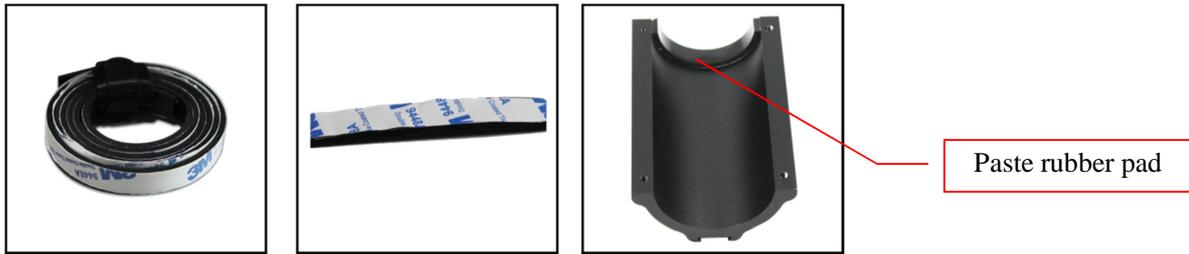
Step 4

Connect the device to a POE switch, with a network cable, power on the instrument, and start the measurement

User can set the actual pipe outer diameter, wall thickness and pipe parameters through the Pipe Parameter Setting menu item to make the measurement more accurate.



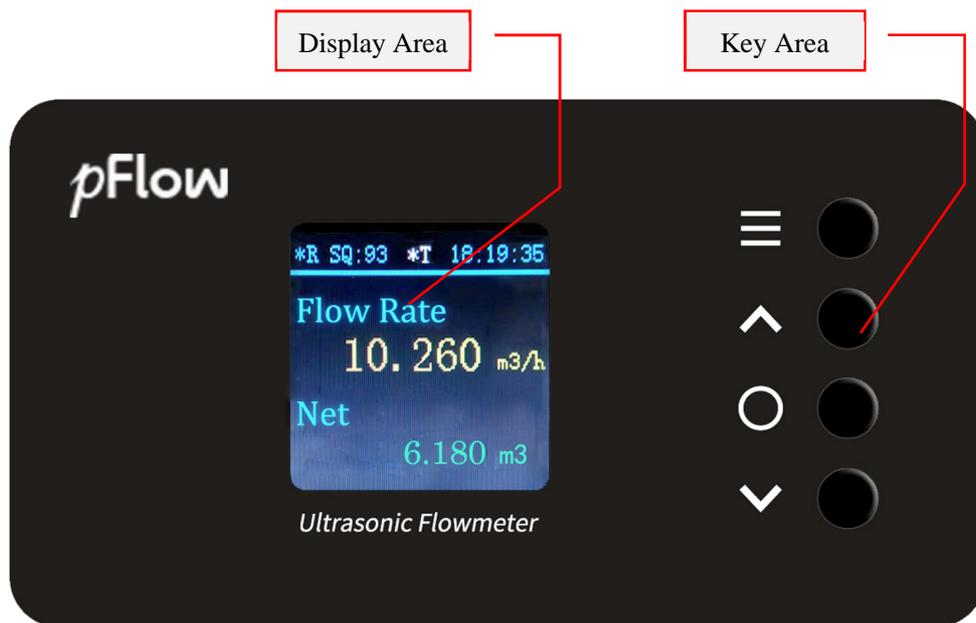
- I If the pipe clamp is still loose after locking, the black rubber pad (2mm thick) attached to the accessory bag can be pasted on both sides of the inner wall of the pipe clamp.



5 Display and Setting

5.1 Display Description

Upper part of display area	*R	Indicates the measurement status (*R indicates normal measurement, *I indicates no signal, *G indicates searching for signal)
	SQ	93 indicates signal quality. It is consistent with Section 6.1 "Display Interface V".
	*T	Indicates that the network is communicating normally. For details, please refer to Section 6.1 "Display Interface V".
	18:19:35	The display is the current time, which is consistent with Section 6.1 "Display Interface III".
Lower and middle part of display area	/	See Section 6.1 "Display Interface I~ Display Interface V" for details.



5.2 Key Description

The clip-on flowmeter comes with four buttons, and the operation instructions are shown in the following table:

Menu Key	Up Key	Down Key	Confirm Key
			
<ol style="list-style-type: none">1. Switch between display interface and menu interface;2. Exit to the main interface	<ol style="list-style-type: none">1. Used to select menu items;2. When inputting a value, the \wedge key is for increasing the value number, and the \vee key moves the position to the right.	<ol style="list-style-type: none">1. Used to confirm menu items;2. Data input confirmation and exit	

6 Menu Window Description

6.1 Display Interface

Press  key on the instrument panel to switch between the display interface and the menu interface. After switching to the display interface, press the  key and the  key to display from Interface I to Interface V in sequence.

Display Type	Display Content	Description
Display Interface I	Instantaneous Flow Accumulative Flow	Display instantaneous flow and accumulative flow When accumulative flow rolls up to 99999999m ³ , it will start zero clearing automatically.
Display Interface II	Instantaneous Velocity Accumulative Flow	Display instantaneous velocity and accumulative flow When accumulative flow rolls up to 99999999m ³ , it will start zero clearing automatically.
Display Interface III	Date Time	Display current date and time
Display Interface IV	Serial Number Version Number	Display the instrument factory serial number and software version number
Display Interface V	Measurement Status Signal Quality	Display measurement status: *R: normal measurement; *G: searching signal; * I: no signal Display signal quality: The signal quality is represented by numbers from 00 to 99. 00 represents the worst and 99 represents the best. The signal quality is greater than 60 in normal working condition. Display network connection status: *X: indicates that the network cable is not connected or the network cable is in poor contact *D: unable to obtain IP *N: Unable to access the server *T: normal network communication

6.2 Menu Interface

Select  key on the instrument panel to switch between display interface and menu interface. After switching to the menu interface, press the  key and the  key to display 5 items of the first level menu in sequence. Press  key to enter the corresponding secondary menu to display or set relevant parameters. After setting, select Back to exit or press  key to exit to the display interface.

When inputting the value, use the  key to increase the number, the  key to shift the number to the right, and the  key to confirm the data input and exit.

First Menu	Secondary Menu	Function Description	Remark
1.Pipe Parameter	1.Pipe Diameter	Input outer diameter of pipe	20mm≤outer diameter of pipe≤99.99mm
	2.Wall Thickness	Input wall thickness of pipe	1.0mm≤wall thickness of pipe≤9.99mm
	3.Pipe Material	Select the pipe material as per customer's requirements before delivery.	Carbon steel, stainless steel, copper, PVC are optional, the details are subject to the instrument display.
	4.Back		
2.System setting	1.System Unit	Select metric and imperial units	Metric unit, imperial unit
	2.Flow Unit	Select the flow unit and time unit of instantaneous flow	Optional flow unit: m ³ 、 L、 Gal Optional time unit: h、 m
	3.Totalizer Unit	Select cumulative flow unit	Optional flow unit: m ³ 、 L、 Gal
	4.System Time	Set the current time	Year-Month-Day, Hour-Minute-Second
	5.Screen Mode	Set rotation display direction	Optional 0 °, 90 °, 180 °, 270 °
	6.Reset	Clear all setting parameters and restore to the original factory default values	Select "Yes", this operation will clear all the user's data and change it to the factory default value. Please be cautious.
	7.Clear Totalizer	Clear cumulation flow	Select "Yes" to clear Cumulation Flow.
	8.Language	Chinese and English optional	
	9.Upgrade	Upgrade the software version through Ethernet. Ensure that the network is in good condition.	Select "Yes" to upgrade the firmware
	10.Back		
3.Select setting	1.Damping	Input the damping coefficient, it's used for smoothing the displayed data.	The damping coefficient ranges from 0 to 99 seconds

First Menu	Secondary Menu	Function Description	Remark
	2.Low Flow Cutoff	Cut off the low flow. To enable the system to display the "0" value when the flow is low, so as to avoid invalid accumulation.	Cut off value $\leq 0.25\text{m/s}$, factory default is 0.03m/s
	3.Set zero	When the fluid is static, the indication of the instrument is called "zero". When the "zero point" of the flowmeter is not zero, the zero point will be superimposed on the true value of the flow at any time, so that there is a deviation in the measurement of the flowmeter, which must be removed.	Select "Yes" to wait for the process to complete.
	4.Reset zero	Reset the set zero point	Select "Yes" to clear the "zero point" set by the user.
	5.Manual Zero	Set zero shift	An offset superimposed on the measured value can be entered.
	6.Back		
4.Calibration	1.Scale factor	Also known as the instrument K-factor, it is used to correct the flow measurement results.	Calibrated at the factory
	2.Back		

7 Choose Measurement Point

The flowmeter is simple and convenient to install. As long as a suitable measuring point is selected, Clamp the product sensor surface on the pipe section directly and fix the pipe clamp, and then the power is turned on, the flow measurement can be realized.

When selecting measuring points, it is required to select pipe sections with uniform fluid flow field distribution to ensure measurement accuracy. The following principles shall be followed during installation:

- I Select a pipe segment that is filled with fluid, such as the vertical part of the pipe line (the fluid is better to flow upward) or the horizontal pipe segment that is filled with fluid.
- I The measuring point should be on a uniform straight pipe section with 10 times the diameter (10D) from the upstream and 5 times the diameter (5D) from the downstream. There are no valves, elbows, reducers and other devices interfering with the flow field within this range. The length of the straight pipe section is recommended to use the values shown in the following table.
- I Ensure that the temperature at the measuring point is within the working range.
- I Fully consider the scaling condition on the inner wall of the pipe, try to select the pipe section without scaling for measurement, and select the pipe section of uniform and dense pipes so as to make ultrasonic transmission easier.

Name	Straight length of Upstream piping	Straight length of Downstream piping
90° bend		
Tee		
Diffuser		
Reducer		
Value		
Pump		

8 Appendix 1 - Comparison Table of Pipe Diameter

Model	Pipe Material	Nominal Inner Diameter of Pipe	Applicable Range of Pipe Outer Diameter (mm)		Flow Measurable Range (0.03~5m/s) (m ³ /h)
			A Level	B Level	
F3E	PVC	DN20	25~29	21~25	0.04~6
		DN25	32~36	28~32	0.05~9
		DN32	39~43	35~39	0.09~15
	Stainless Steel	DN40	50~54	46~50	0.13~23
		DN50	63~67	59~63	0.20~35
	Carbon Steel	DN65	76~80	72~76	0.35~60
		DN80	87~91	83~87	0.55~90

Note: B Level needs to be achieved by pasting attached rubber pads on both sides of the inner wall of the pipe clamp

Model	Pipe Material	Nominal Inner Diameter of Pipe	Applicable Range of Pipe Outer Diameter (mm)		Flow Measurable Range (0.03~5m/s) (m ³ /h)
			A Level	B Level	
F3E	Copper	DN20	25~29	21~25	0.04~6
		DN25			0.05~9
		DN32	32~36	28~32	0.09~15
		DN40	39~43	35~39	0.13~23
		DN50	50~54	46~50	0.20~35
		DN65	63~67	59~63	0.35~60
		DN80	76~80	72~76	0.55~90

Note: B Level needs to be achieved by pasting attached rubber pads on both sides of the inner wall of the pipe clamp

9 Appendix 2 - F3E Connection to Meter Tube APP

9.1 F3E Connection to POE switch

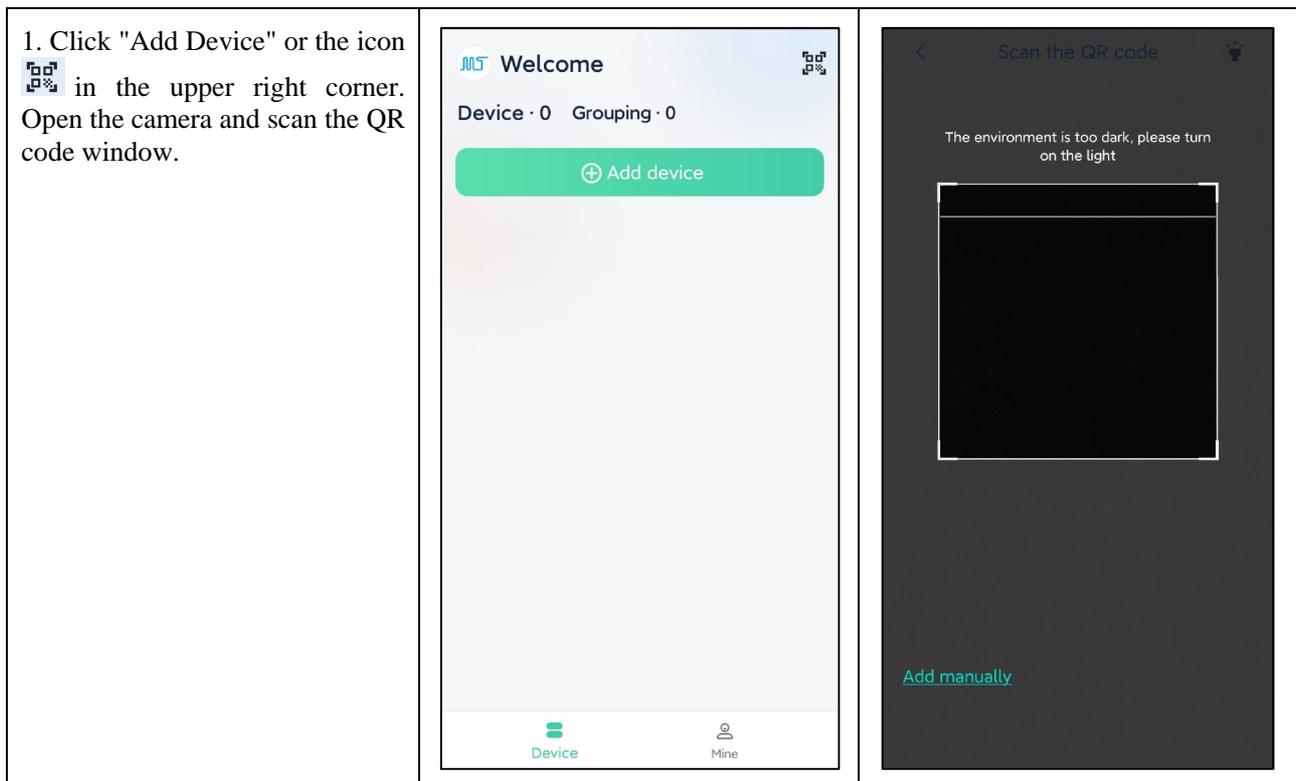
Connect F3E to an RJ45 (POE) interface of the POE switch that has been connected to the network through the network cable. At this time, F3E should be powered on.

9.2 Add Meter Tube APP to mobile phone

The user scans the QR code of the meter APP with an Android phone and installs the Meter Tube APP according to the prompts.

9.3 Add Device

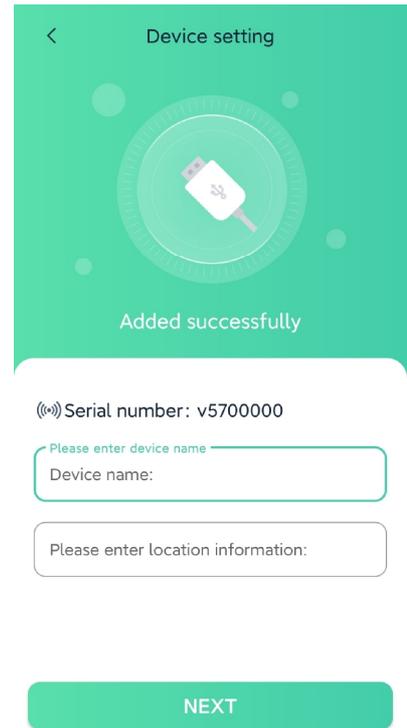
Method 1: Open the meter APP software, click the icon in the upper right corner, and scan the QR code of the F3E transmitter. Follow the prompts to add F3E flowmeter device.



2. Scan the QR code of the F3E transmitter, and each device has a corresponding QR code. After scanning the QR code, the Add Successfully interface will appear. Enter the device name and location information, and click Next to add the device successfully.

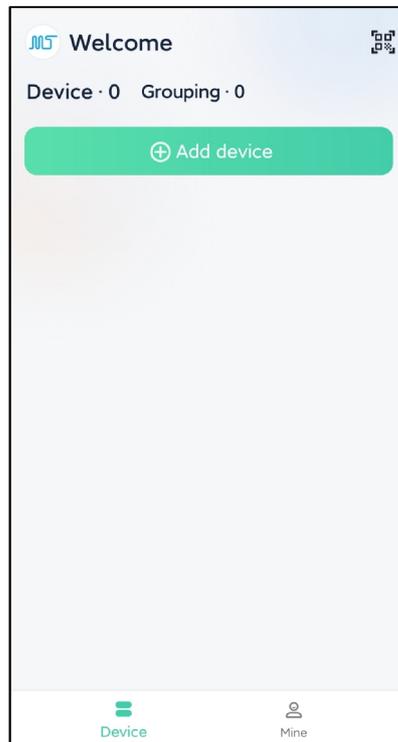


Each device has a corresponding QR code on the side of the device.

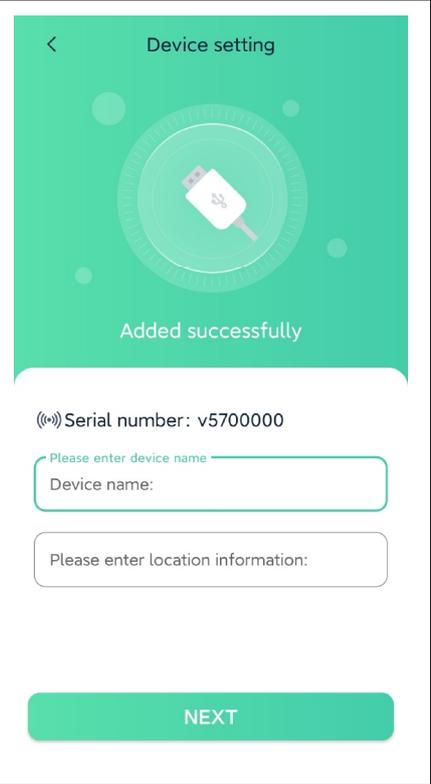


Method 2: Manually add the device. On the F3E scanning QR code interface, click "Add Manually" in the lower left corner. Follow the prompts to add the F3E Ultrasonic Flowmeter.

1. Click "Add Device" or the icon  in the upper right corner and open the camera. In the scan QR code window, click "Add Manually" at the lower left corner.



2. The device setting interface appears, click the F3E flowmeter, and enter the instrument serial number (on the instrument nameplate). Click Next again, input the device name and location information, and click Next again to add the device successfully.



9.4 Meter Tube APP Management Equipment.

After the device is successfully added, user can manage the device on the meter tube APP and view the data related to the instrument flow. For specific operations, please refer to the Operating Instructions of the Meter Tube APP.