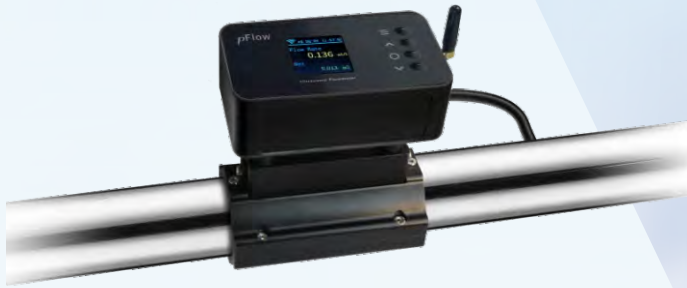


F3R Clip-On Ultrasonic Flowmeter

with LoRa communication



Product Overview



F3R adopts the principle of ultrasonic transit time measurement, combined with the patented flow algorithm technology, to make accurate measurement of fluid flow in the pipeline. The product is of all-in-one compact structure design, which makes the installation simple and convenient, only 4 steps are required. It does not contact with the fluid during installation, and the flow does not have to be shut off.

F3R comes with LoRa communication. LoRa is a long range and low power wireless communication system that can send small amounts of data over great distances. These two features make it an attractive solution for application in the IoT and IIoT industries. The technology can be utilized by public, private or hybrid networks and provides greater range than Cellular networks.

Features

- LoRa long-range low-power communication
- Easy installation, no pipe damaging
- LCD color display screen
- RS485 with Modbus/Fuji protocol

Applications

- Golf courses, grape vineyard, modern agricultural irrigation, garden irrigation
- Residential water, washing industries, bathing industry, swimming pool, HVAC
- Water in production process, industrial circulating water, reclaimed water, pure/ultra pure water
- Inland aquaculture, RAS, etc.



Architecture

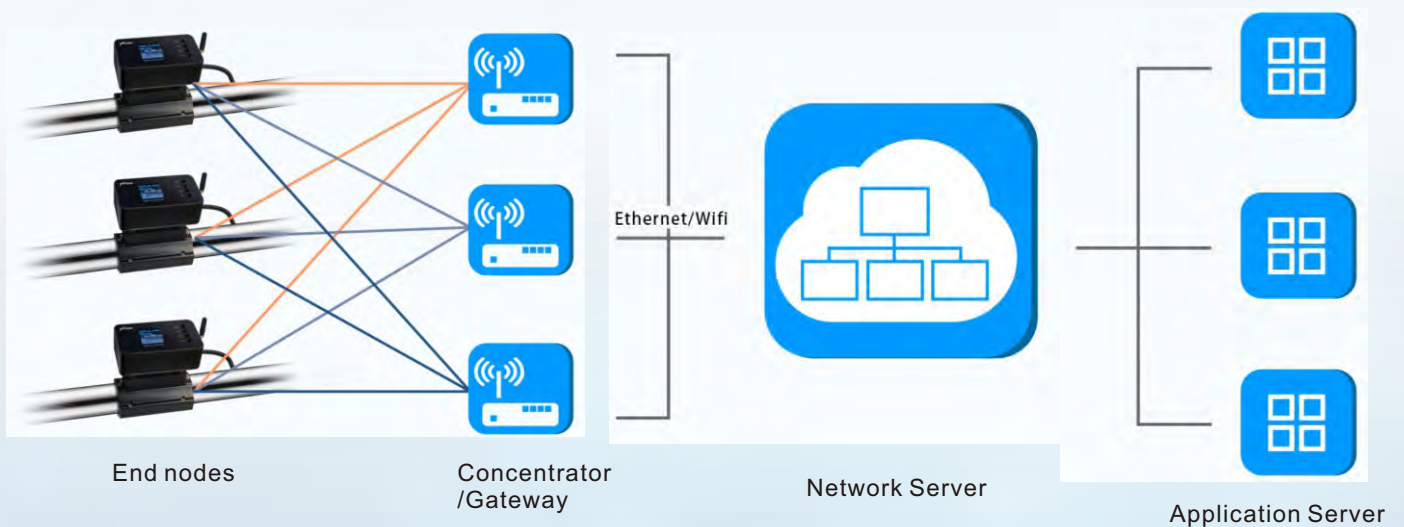
LoRa (from "long range") is a physical proprietary radio communication technique. LoRaWAN (Wide Area Network) defines the communication protocol and system architecture.

Together, LoRa and LoRaWAN define a Low Power, Wide Area (LPWA) networking protocol designed to wirelessly connect devices to the internet in regional, national or global networks, and targets key Internet of things (IoT) requirements such as bi-directional communication, end-to-end security, mobility and localization services.

The LoRaWAN architecture contains four major components:

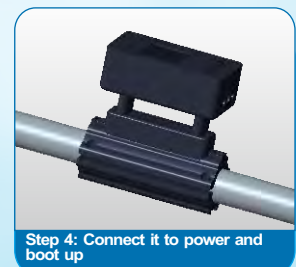
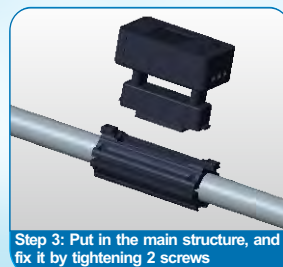
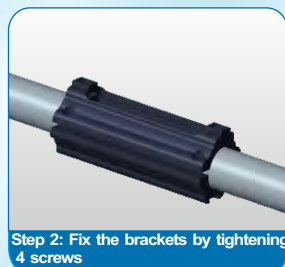
- End Nodes
- Gateway
- Network Server
- Application Server

In this architecture, you can see how LoRa and LoRaWAN allow wide and dense networks of edge devices to be connected. This allows you to capture and monitor data from thousands of nodes in a manageable way.



Installation Method

All-in-one design allows easy fast installation.
No need to damage pipe or shut down the flow.
Simple setting with the 4 buttons on panel.



Product Model

Format of type selection Model: F3R; Format: F3R-A-B-C

Model	Description of Transmitter				
F3R	Flow Range:	0.1 ft/s ~ ±16ft/s (0.03m/s ~ ±5m/s)	Housing Material:	ABS+PC	
	Accuracy:	± 2.0%	Power supply:	10~36VDC, max 500mA	
	Repeatability:	0.2%	Communication Interface:	LoRa (Theoretical max transmit power: 22dBm), RS485 with Modbus RTU, Fuji Protocol	
	Display:	LCD1.44"			
	Protection Rate:	IP54			
	Pipe Size(Optional):	DN20 ~DN80 (O.D. 21mm-91mm.)	Ambient Temperature:	14°F to 122°F(-10°C~50°C)	
	Cable Length:	6.6ft (2m)	Fluid Temperature:	32°F to 140°F(0°C~60°C)	

Specifications

A	LoRa Frequency SelectionI (7 modes)
1	EU868 Frequency: 863000000~865400000, unit: HZ
2	US915 Frequency: 902300000~914900000, unit: HZ
3	CN779 Frequency: 780100000~786500000, unit: HZ
4	EU433 Frequency: 433775000~434665000, unit: HZ
5	AU915 Frequency: 915200000~927800000, unit: HZ
6	CN470 Frequency: 470300000~489300000, unit: HZ
7	AS923 Frequency: 920000000~925000000, unit: HZ

B	Pipe Material (4 modes)
1	PVC (Plastic)
2	Carbon Steel (galvanized steel)
3	Stainless Steel
4	Copper (Brass)

C	Pipe Size
Pipe OD Range	For Pipe Material (PVC, Carbon Steel, Stainless Steel)

Nominal		Outer Diameter	
Metric	Inch	Metric	Inch
DN20	3/4"	21~29mm	0.827"-1.142"
DN25	1"	28~36mm	1.102"-1.417"
DN32	1-1/4"	35~43mm	1.378"-1.693"
DN40	1-1/2"	46~54mm	1.811"-2.126"
DN50	2"	59~67mm	2.323"-2.638"
DN65	2-1/2"	72~80mm	2.835"-3.150"
DN80	3"	83~91mm	3.268"-3.583"

For Pipe Material (Copper)

Nominal		Outer Diameter	
Metric	Inch	Metric	Inch
DN25	3/4"	21~29mm	0.827"-1.142"
DN32	1" or 1-1/4"	28~36mm	1.102"-1.417"
DN40	1-1/2"	35~43mm	1.378"-1.693"
DN50	2"	46~54mm	1.811"-2.126"
DN65	2-1/2"	59~67mm	2.323"-2.638"
DN80	3"	72~80mm	2.835"-3.150"

Selection Sample: F3R-7-1-DN20

Description: Model F3R with RS485 and LoRa communication for AS923 frequency band, applied to PVC pipe of DN20 nominal size.