

FUF8300

Ultrasonic Flow Meter



± 1.0%

Accuracy

25 – 1200 mm

Clamp-on pipe size

0.01 – 5.0 m/s

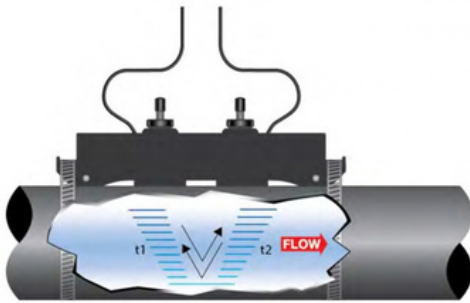
Flow range

IP65 / IP68

Transmitter / transducer

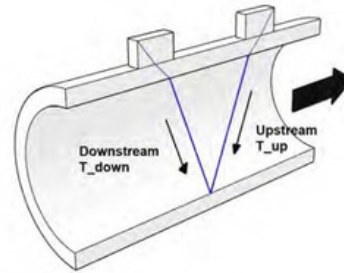
This ultrasonic flow meter adopts the time-difference measurement principle. Ultrasonic waves emitted by the sensor travel faster in the downstream direction and slower in the upstream direction, so they cover different distances in the same transmission time. The flow rate is measured from the difference in transmission time and the fluid flow velocity.

When the ultrasonic signal is transmitted through the flowing liquid, there will be a difference between the upstream and downstream transit time (travel time or time of flight), which is proportional to flow velocity, according to the formula below.



Transit-time measurement

Ultrasonic pulses travel between the two transducers with and against the flow (t1, t2); the difference between the two transit times is measured.



Flow Velocity V

$$V = K \cdot \frac{(T_{up} - T_{down})}{(T_{up} + T_{down})}$$

Flow velocity formula

$V = K \cdot (T_{up} - T_{down}) / (T_{up} + T_{down})$, where T_{up} and T_{down} are the upstream and downstream transit times and K is a meter constant.

Advantages of Ultrasonic Flow Meters

High Accuracy

Ultrasonic flow meters are generally known for their high accuracy, particularly in reading low flow rates.

No Moving Parts

Ultrasonic flow meters have no moving parts, ensuring a longer service life by avoiding wear and tear.

Minimal Maintenance and Low Operating Costs

These meters require minimal maintenance and boast low operating costs.

Good Dynamic Response

Ultrasonic flow meters provide an excellent dynamic response, enhancing their effectiveness in various applications.

Versatility with Non-Conductive Media

They excel in measuring non-conductive media and serve as an excellent alternative to magnetic flow meters requiring conductive liquids.

Low-Pressure Drop

They offer a low-pressure drop, making them energy-efficient.

Chemical Compatibility

Many models are chemically compatible with various substances, expanding their applicability.

Handling Dirty Media

Ultrasonic flow meters can handle dirty media, surpassing certain technologies with limitations.

Features

- Transmitter protection IP65 and sensor protection IP68
- Bi-directional flow measurement, cumulative flow
- 50,000 hours test without trouble
- Flow statistics by period
- Keyboard key life of more than 200,000 times
- RS485 communication interface, 4-20mA current signal, pulse output, MODBUS protocol
- SLSI technology designed: fewer hardware components, low voltage broadband pulse transmission, low power consumption, high reliability, anti-jamming and outstanding applicability

Applications



Water Treatment and Water Supply

Used to monitor the flow of potable water and wastewater, helping to optimize water resource management and distribution.

Construction and HVAC Systems

Used in heating, ventilation, and air conditioning systems to measure water flow, ensuring the efficient operation of the system.

Chemical Industry

Used to measure the flow of various chemicals and corrosive fluids to ensure control in chemical reactions and production processes.

Food and Beverage Industry

Used to monitor the flow of liquid raw materials and products in the production process, ensuring product quality and safety.

Agriculture and Irrigation

Used to measure the flow of water in irrigation systems to optimize the use of water resources.

Oil and Gas Industry

Used for monitoring the flow of oil and gas in pipelines, ensuring accurate measurement of these resources, and supporting production optimization and energy management.

Urban Drainage Systems

Real-time monitoring of drainage flow to help detect and resolve issues such as pipeline leaks or blockages.

Rivers, Canals, and Reservoirs

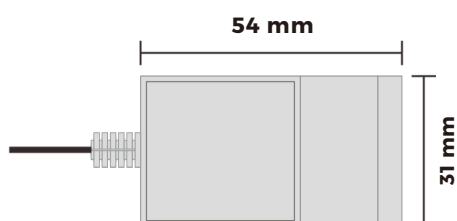
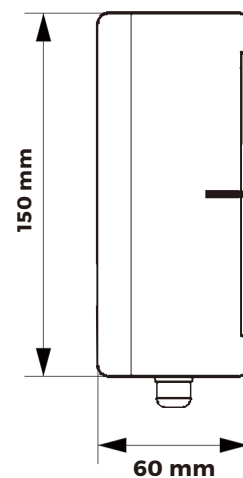
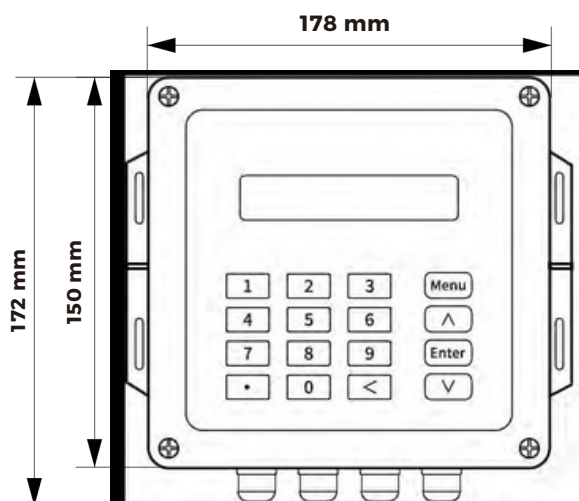
Measuring the volume of water in natural water bodies to provide data support for water resource management and flood warnings.

Environmental Monitoring

Measuring the flow velocity of rivers, lakes, and other water bodies to help scientists understand ecological changes.

Have a different application?

Tell us your pipe size, liquid and site conditions and we will confirm the right meter for your requirement.
sales@mycelectric.com | +604-502 1894



Package Contents



Transmitter



Transducer



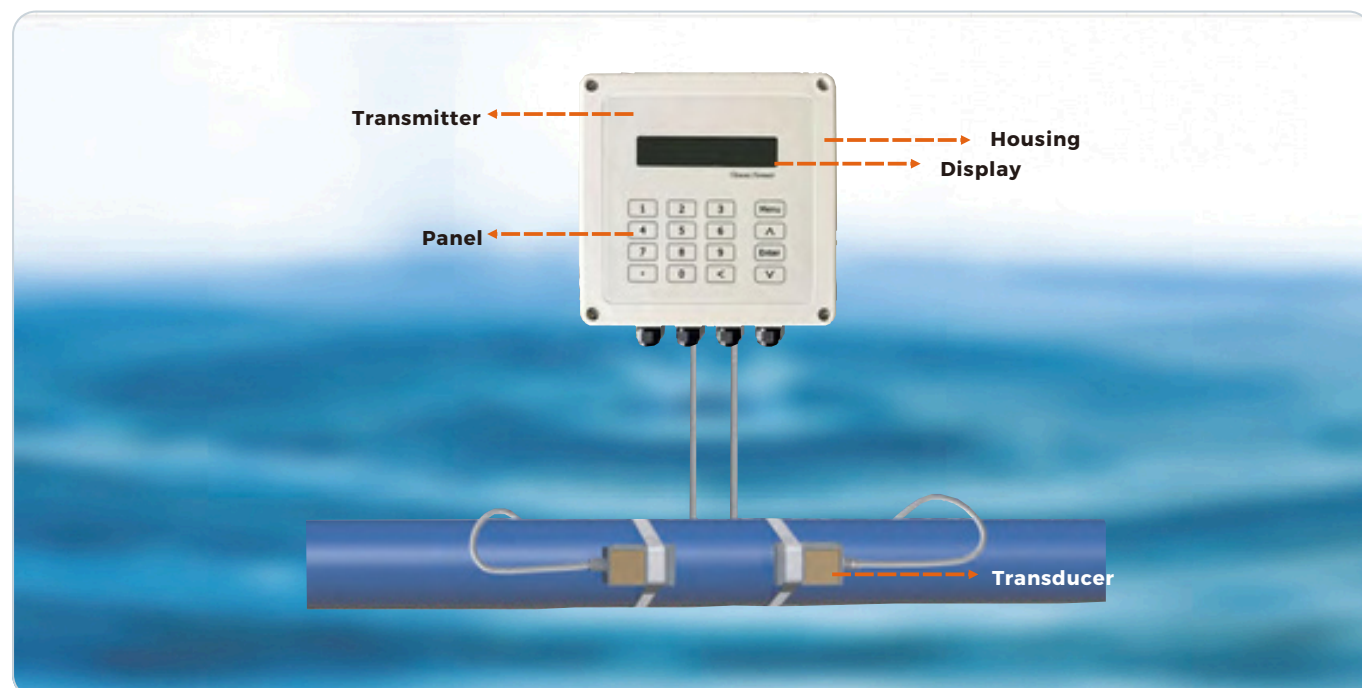
Pipe Strips



Coupling Compound

Performance Specifications	
Flow Range	0.03 ~ 16 ft/s (0.01 ~ 5.0 m/s)
Accuracy	± 1.0%
Pipe Size	Clamp-on: 1" ~ 48" (25mm ~ 1200mm)
Fluid	Water
Function Specifications	
Outputs	Analog output 4-20mA, OCT Pulse output: 0-5000Hz
Communication Interface	RS485 MODBUS
Power Supply	10 ~ 36VDC/1A
Keypad	16 (4x4) key with tactile action
Display	20x2 lattice alphanumeric, back lit LCD
Temperature	Transmitter: 14°F to 122°F (-10°C ~ +50°C); Transducer: 32°F to 176°F (0°C ~ 80°C)
Humidity	Up to 99% RH, non-condensing
Physical Specifications	
Transmitter	PC/ABS, IP65
Transducer	Encapsulated design, IP68
Transducer Cable	Standard cable length: 5m
Weight	Transmitter: approximately 0.7kg; Transducer: approximately 0.4kg

Structure

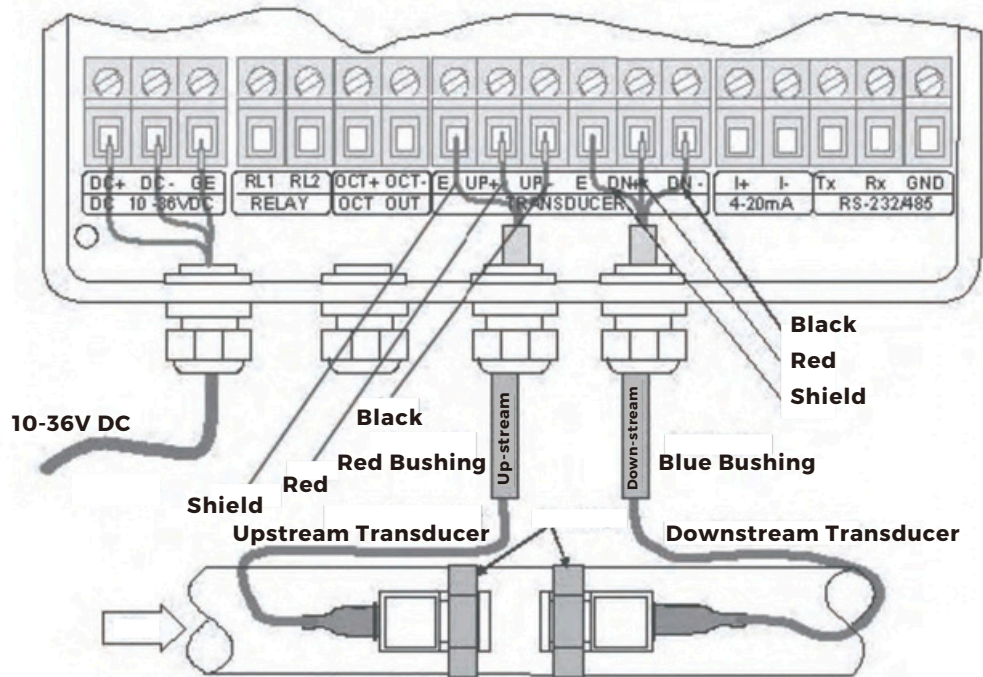


Power Supply

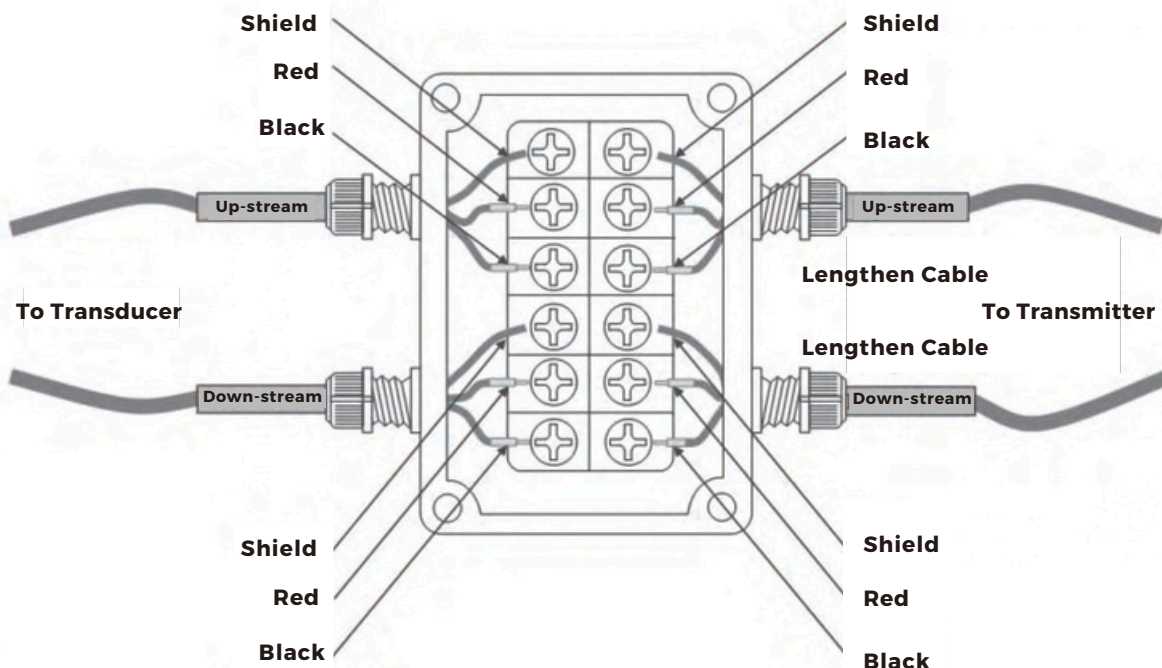
Pay special attention to specifying the required power supply when wiring. The factory standard power supply is 10~36 VDC / 1 A max. To ensure the transmitter works normally, make sure the power connections are made in accordance with the specifications shown on the transmitter.

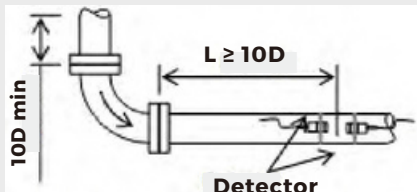
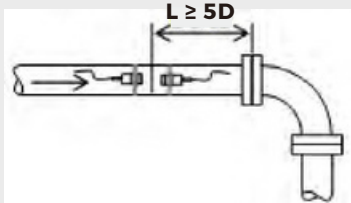
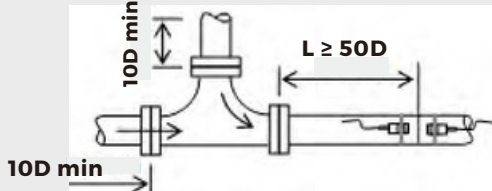
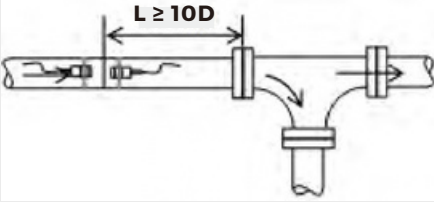
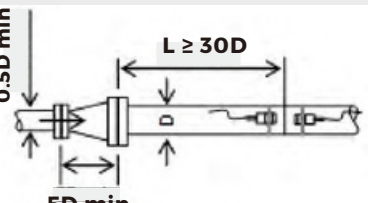
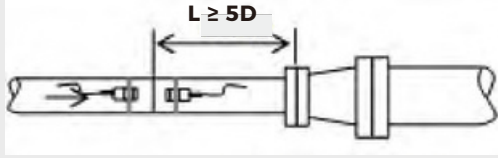
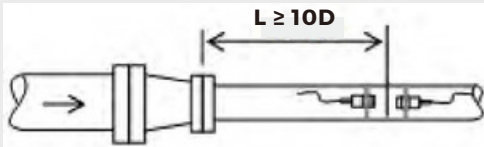
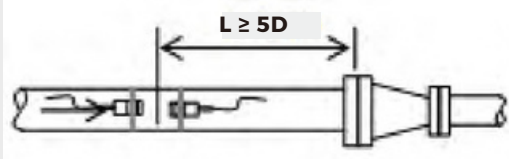
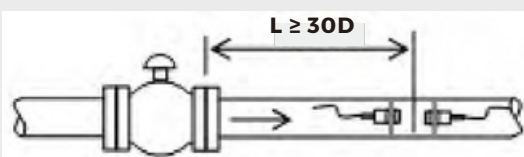
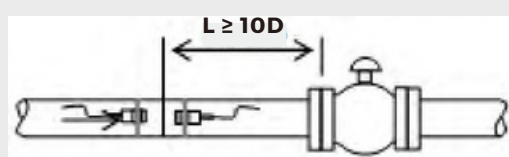
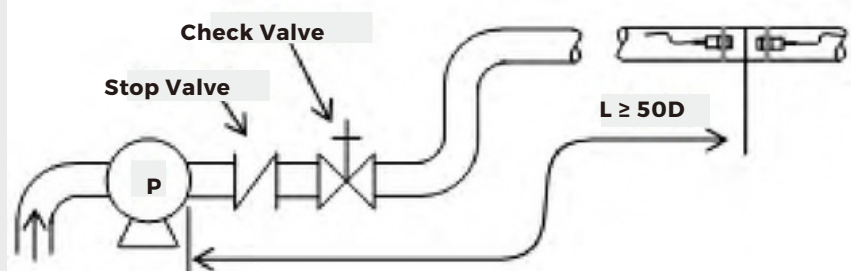
Transmitter Wiring

Once the electronics enclosure has been installed, the flowmeter wiring can be connected. Open the case and you will find the transmitter interface labels, from left to right: Power supply, Relay output, OCT output, Upstream transducer, Downstream transducer, 4-20mA, RS485 interface. Refer to the diagram below for the specific connections.



Sketch of Lengthened Cable



Name	Straight length of upstream piping	Straight length of downstream piping
90° Bend		
Tee		
Diffuser		
Reducer		
Valve	 Flow Controlled Upstream	 Flow Controlled Downstream
Pump		

Installation Notes

- Ensure that the pipe surface temperature at the measuring point is within the transducer temperature limits.
- Consider the inside condition of the pipe carefully. If possible, select a section of pipe where the inside is free of excessive corrosion or scaling.

How to Read the Table

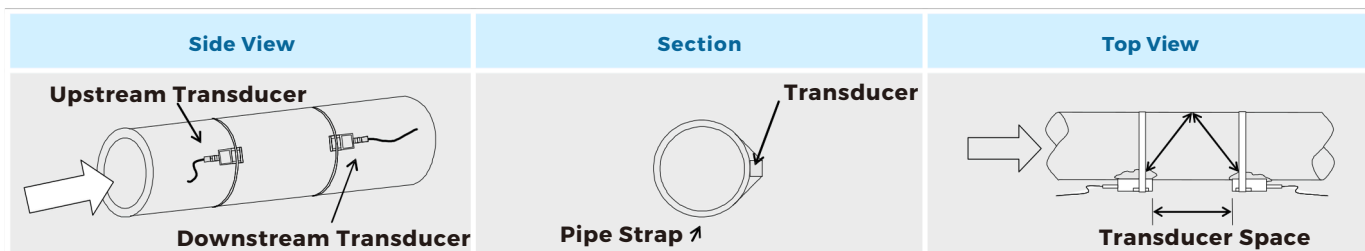
- L is the minimum straight pipe length required between the fitting and the transducers.
- D is the nominal pipe diameter.
- Example: $L \geq 10D$ on a 100 mm pipe means at least 1,000 mm of straight pipe.

Three transducer mounting methods are available: the V method, the Z method and the N method.

The V method is primarily used on small diameter pipes (DN100~300mm, 4"~12"). The Z method is used in applications where the V method cannot work due to poor or no signal, and generally works better on larger diameter pipes (over DN300mm, 12") or cast iron pipes. The N method is uncommonly used, on smaller diameter pipes (below DN50mm, 2").

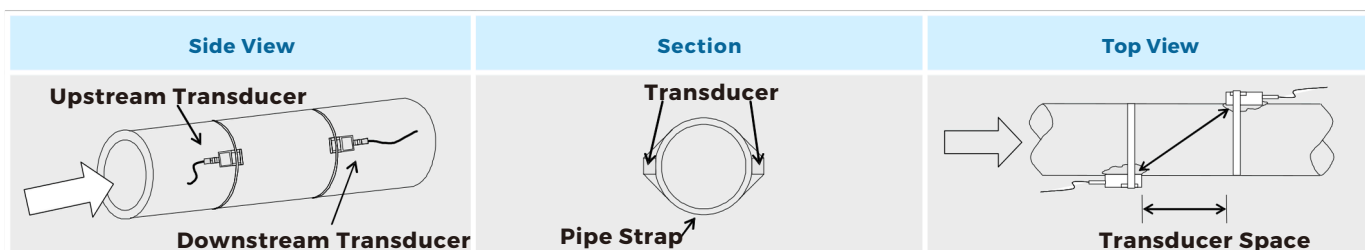
V Method

The V method is considered the standard method. It usually gives a more accurate reading and is used on pipe diameters ranging from 25mm to 400mm (1" ~ 16") approximately. It is convenient to use, but still requires proper installation of the transducers: contact on the pipe at the pipe's centerline and equal spacing on either side of the centerline.



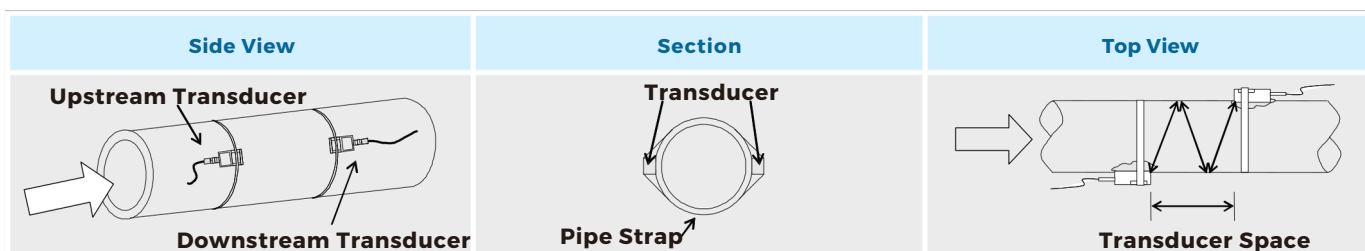
Z Method

The signal transmitted in a Z method installation has less attenuation than a signal transmitted with the V method, because the Z method utilizes a directly transmitted (rather than reflected) signal which traverses the liquid only once. Use it when the pipes are too large, when there are suspended solids in the fluid, or when the scaling and liner are too thick. The Z method is able to measure on pipe diameters ranging from 100mm to 800mm (4" ~ 32") approximately; we therefore recommend the Z method for pipe diameters over 300mm (12").



N Method (not commonly used)

With the N method, the sound waves traverse the fluid three times and bounce twice off the pipe walls. It is suitable for small pipe diameter measurement. The measurement accuracy can be improved by extending the transit distance with the N method.



Quick Selection Guide

Method	Typical pipe size	When to use it
V method	25 ~ 400 mm (1" ~ 16"); primarily DN100 ~ DN300	Standard method. Usually gives the most accurate reading and is convenient to install.
Z method	100 ~ 800 mm (4" ~ 32"); recommended above DN300 (12")	When the V method gives a poor signal or no signal: large or cast iron pipes, suspended solids, thick scaling or liner.
N method	Below DN50 (2")	Not commonly used. Small pipes, where extending the transit distance improves accuracy.

A Process Instruments Company

Celectric is an industrial process instruments distributor based in Penang, Malaysia. Founded in 2008 on the belief that no single brand can cover every application, we work across brands to match the right instrument to each customer requirement.

OUR MISSION

We don't sell products. We solve customer requirements.

OUR VISION

Southeast Asia's most trusted instrumentation partner.

Request a Quotation

Send us the details below and we will confirm the right FUF8300 configuration for your requirement.

- Pipe outer diameter and wall thickness
- Pipe material and lining, if any
- Liquid type and temperature
- Expected flow range
- Output required: 4-20mA, pulse or RS485 MODBUS
- Power supply available on site
- Cable length between transducers and transmitter
- Quantity and delivery location

1 Share your requirement

Send us your pipe, liquid and site details by email or WhatsApp.

2 We match the instrument

We check the application and confirm the suitable model and options.

3 Receive your quotation

You receive a quotation with the confirmed configuration.

Contact Us

Celectric Sdn Bhd

12, Lorong Industri Ringan Permatang Tinggi 5,
Kawasan Industri Permatang Tinggi,
14100 Simpang Ampat, Penang, Malaysia

Monday to Friday, 8.30am to 5.00pm

Tel: +604-502 1894

WhatsApp: +6016-551 9084

Email: sales@mycelectric.com

Website: www.mycelectric.com



Control to Success