

FIXED TYPE ULTRASONIC FLOWMETER

MULTI-CHANNEL CLAMP-ON
ULTRASONIC FLOWMETER

ETRANS – BF-2 Datasheet

Precise Measurement,
Ultimate Control



Ultrasonic Flowmeter

MODEL Etrans- BF-2



Application Areas

Clean water
Clean chemicals
Treated water
River water
Tap water
Wastewater
Cooling fluids
Agriculture/Irrigation etc.

Features

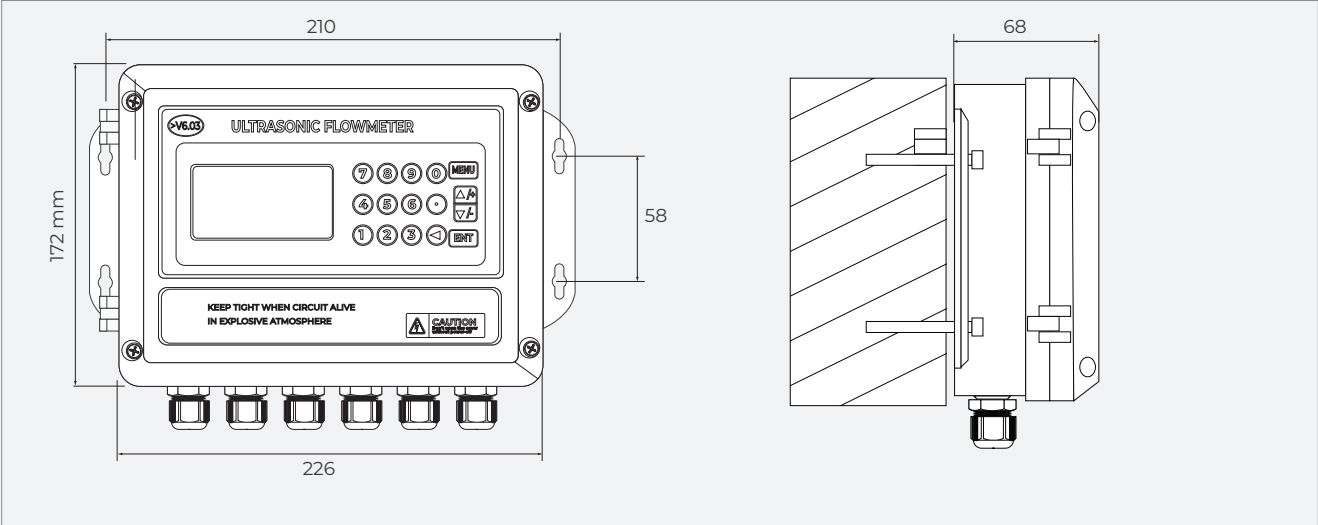
- Flexible Installation: Clamp-on, insertion, and flanged options ensure full compatibility with all pipeline types.
- Integrated Heat Measurement: External temperature sensors transform flow measurement into a precise calorimeter function.
- Wide Temperature Range: Operates with high accuracy and continuity in fluids from -30 °C to +160 °C.
- High Protection Class: IP68-rated design provides total reliability in harsh field and environmental conditions.
- Uninterrupted Flow: Measures without causing pressure loss due to its non-intrusive design.
- Full Automation Compatibility: Integrates seamlessly into control systems via Modbus RTU and 4-20 mA outputs.

Description

Equipped with advanced ultrasonic measurement technology, this fixed-type flowmeter offers a professional solution combining flexibility and high precision for industrial flow control and energy efficiency projects. Thanks to clamp-on, insertion, and flanged mounting options, the device can be integrated into existing lines without interrupting production processes, delivering stable performance even in the harshest field conditions within a wide temperature range of -30 °C to +160 °C and under the assurance of IP68 protection class. Capable of functioning as a precise calorimeter by connecting PT100 or PT1000 temperature sensors, this system ensures seamless integration into your automation infrastructure via RS485 (Modbus RTU) communication protocol and 4-20 mA outputs. Designed to meet the technical and economic expectations of modern facilities across a wide range of applications from power plants to chemical processing, the product features zero pressure loss and low maintenance costs.



Structure



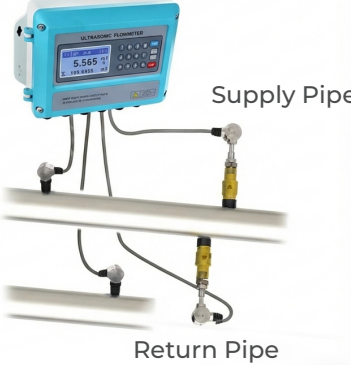
TECHNICAL FEATURES

Measurement Principle	Transit-time (ultrasonic) principle
Accuracy	Better than $\pm 1\%$
Repeatability	Better than 0,2%
Velocity	0 to ± 32 m/s (bi-directional measurement).
Measurement Period	500ms (twice per second).
Analog Output	1 channel 4-20mA output, impedance 0-1K Ω
Digital Output	1 channel OCT pulse output and 1 channel Relay output.
Analog Input	3 channels 4-20mA input (used for capturing signals like temperature, pressure, or liquid level).
Communication	RS485 interface, supporting MODBUS-RTU protocol.
Pipe Material	Steel, Stainless Steel, Cast Iron, Copper, PVC, Aluminum, Cement, etc.
Pipe Size	DN15mm to DN6000mm (depending on the transducer selected)/ DN6–DN2000 (Inline)
Temperature Sensors	PT100 / PT1000 (3 or 4 wires)
Liquid Types	Virtually all clean liquids such as Water, Sea Water, Sewage, Alcohol, and Oils.
Power Supply	DC 8-36V or AC 85-264V.
Protection Class	IP67 for the main unit, transducers can be IP68.
Display	2x20 backlit LCD.
Mounting	Wall-mount design with specific dimensions: 210mm horizontal and 58mm vertical hole spacing.
Dimensions	226 x 172 x 68 mm (matching your provided technical drawing).
Weight	Approximately 1.5 kg – 2.0 kg (main unit only)

Ultrasonic Flowmeter
MODEL Etrans- BF-2



MEASUREMENT DIAGRAM

Flow Measurement	Heat (Calorie) Measurement	Features
	 Supply Pipe Return Pipe	Clamp-on • Installed without stopping the flow. • No pressure loss occurs. • Can be used as a calorimeter (heat meter) by connecting a temperature sensor. • Easy to install.
	 Supply Pipe Return Pipe	Insertion • Installed without stopping the flow. • No pressure loss occurs. • Can be used as a calorimeter (heat meter) by connecting a Pt100 sensor. • Easy to install. • Suitable for long-term use.
	 Supply Pipe Return Pipe	Flanged • Installed by cutting/stopping the flow. • Provides high accuracy and stability. • Can be used as a calorimeter (heat meter) by connecting a Pt100 sensor. • Easy to install. • Suitable for long-term use.

TECHNICAL DIFFERENCES AND ADVANTAGES BETWEEN MOUNTING TYPES

	Mounting Type	Advantages	Best Use Cases
Clamp-on		No pipe cutting required; no flow interruption during installation. Low maintenance cost and zero pressure loss.	Ideal for existing lines where flow cannot be stopped, temporary measurements, or clean fluids.
Insertion		Pipe is not cut (installed via hot-tapping), but sensors contact the fluid. Provides higher signal quality and is unaffected by pipe scaling.	The most economical and reliable solution for large diameter pipes, old/rusty pipelines, and long-term fixed measurements.
Flanged (Inline)		Offers the highest accuracy and stability. Comes with a factory-calibrated body.	Suitable for precise billing points, industrial processes requiring high accuracy, and newly installed lines.

Technical Comparison Analysis

Accuracy: The Flanged (Inline) type provides the highest accuracy; for the Clamp-on type, pipe wall condition and material quality can affect precision.

Ease of Installation: The Clamp-on type offers the fastest and easiest installation, while the Flanged type requires cutting the line and making flange connections.

Pressure Loss: There is no pressure loss in Clamp-on and Insertion types as there are no obstructions inside the pipe.

Maintenance: Insertion sensors can be removed and cleaned even while the line is under pressure, thanks to their special ball-valve apparatus.

Ultrasonic Flowmeter

MODEL Etrans- BF-2



INDUSTRIAL APPLICATION AREAS

Energy and Heat Management: Preferred for precise energy consumption calculation and calorimeter applications in heating-cooling (HVAC) lines.

Water and Wastewater Industry: Used for flow measurement and leak detection in municipal networks, treatment plants, and large-scale water distribution lines.

Chemical and Petrochemical: Safe for monitoring aggressive or corrosive chemicals thanks to its ability to measure without fluid contact (clamp-on).

Food and Beverage Production: Ideal for sterile flow processes where hygienic standards are critical and the line must not be interrupted.

Building Automation: Integrated into central heating-cooling systems (malls, hospitals, hotels) for efficiency monitoring and billing purposes.

Power Plants: Used in the control of high-flow systems such as condenser cooling water lines and boiler feed water.



STRUCTURE

Classification		Visual	Model	Measurement range	Temperature
Clamp Type	Normal Temperature		S1 (Small)	DN15-100	-30~90℃
			M1 (Medium)	DN50-700	
			L1 (Big)	DN300-6000	
	High Temperature		S1-HT (Small)	DN15-100	-30~160℃
			M1-HT (Medium)	DN50-700	
			L1-HT (Big)	DN300-6000	
Bracket Type	Normal Temperature		HS1 (Small)	DN15-100	-30~90℃
			HM1 (Medium)	DN50-300	
	High Temperature		HS1-HT (Small)	DN15-100	-30~160℃
			HM1-HT (Medium)	DN50-300	
Immersion Type			ATC-1 (standard)	DN50-6000	-30~160℃
			ATC-2 (Extended)		
			ATP-1 (parallel)	DN200-6000	
In-line type	Small Size		Threaded / flange quick connector	DN6-10	-30~160℃
	Medium Size			DN15-40	
	Big Size		Threaded / flange connector	DN50-2000	

Types of temperature transducers

Classification	Visual	Model	Measurement range	Temperature range	Turn off the water.
Clamp Type		CT-1	≥DN50	-40~160	It's not necessary
Immersion Type		TCT-1	≥DN50	-40~160	Necessary
Immersion under pressure		PCT-1	≥DN50	-40~160	It's not necessary
Immersion for Small Sizes		SCT-1	≥DN50	-40~160	Necessary

Contact us

Enelsan Istanbul Office Address
Şerifali, Barbaros Cd. No: 60, 34775 Ümraniye/İstanbul

Enelsan Factory 1 Address
Çerkeşli OSB Mahallesi İmes 4 Bulvarı No: 11 Dilovası/Kocaeli

Enelsan Factory 2 Address
Çerkeşli OSB Mahallesi İmes 14. Cadde No: 17 Dilovası/Kocaeli

Phone: +90 262 754 63 13
Fax: +90 262 754 93 93
sales@enelsan.com