

### Features

- Compact and light weight
- Economical price
- Parameter setting and verification by 4-push buttons
- Input power DC 8~36 V or AC 10~30 V .....( AC110~220 V optional)
- Low consumption power , less than 1.5 Watt
- High Accuracy :  $\pm 1.0\%$  FS
- Wide measuring range : DN15~DN6000
- High reliability , applied with low voltage, multiple pulse, long life cycle
- Dual balance signal differential receiver/driver circuit to avoid interference of converter, TV tower, high voltage line etc.
- Automatical record : totalizer 512 days / 128 months / 10 years
- Far transmission distance, RS485 support wireless network, GPRS module
- Support for heat/energy measurement by temperature sensor



### 1. General Description

MULF100 series is an advanced wall mount type ultrasonic liquid flow meter by the technology of time transit signal transmission and receiving using the clamp-on onto outer pipe while not cutting the pipe. It measures flow velocity of 0 to 10 meter per second of liquids.

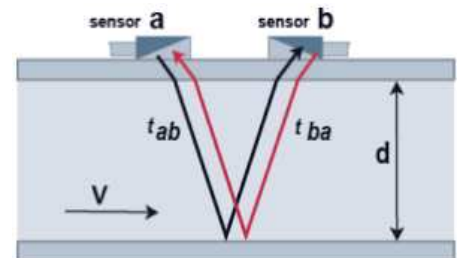
The module of ultrasonic flow meter is full-digitally designed to measure flow and heat/energy long-term on the line.

### 2. Measuring Principle

While the ultrasonic is transmitted into the pipe the fluid being flown, ultrasonic, which is rapidly transmitted by flow of fluid ( $t_{ab}$  Up-stream→Down-stream), is proportional as sound speed plus amount of fluid velocity. On the other hand the ultrasonic, which is transmitted reversely ( $t_{ba}$  Down-stream→Up-stream), is slowly transmitted by the difference of sonic and speed and fluid velocity, therefore there is a time difference  $\Delta t$  ( $t_{ab}-t_{ba}$ ) generated.

As delta time ( $\Delta t$ ) generated here is a relative coefficient of fluid velocity, while considering this as a basic, estimating of averaged velocity ( $V$ ), cross-sectional area of pipe ( $d$ ), and then the processing to make flow rate ( $Q$ ) again. Here ultrasonic has a sonic's property, and then pass through inside pipe depending on fluid's inherent velocity.

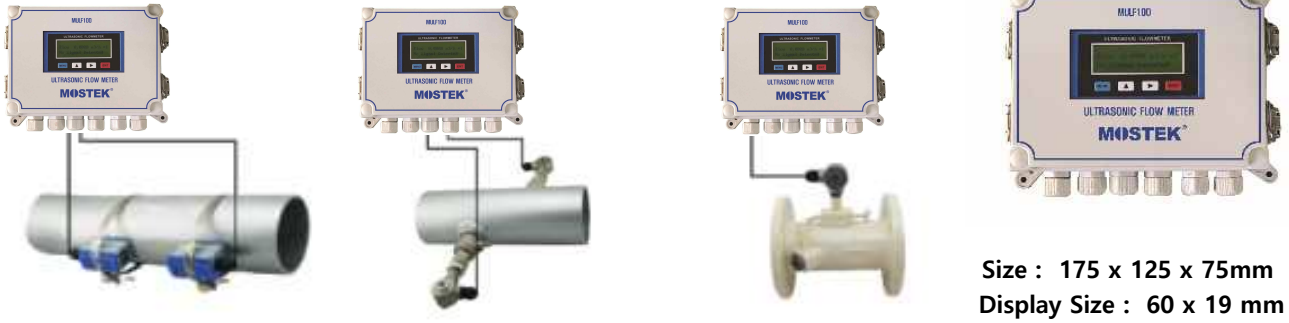
$$Q = A \times V_b$$



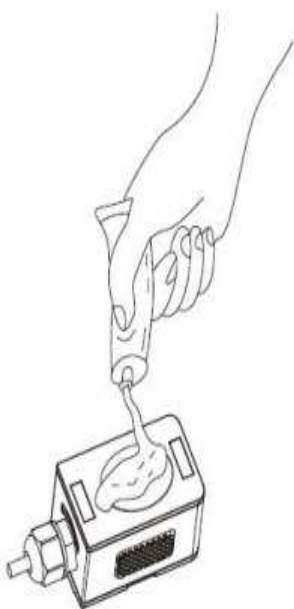
### 3. Technical Specification

- \* Principle : Ultrasonic Time Difference Transit Relative Coefficient
- \* Accuracy :  $\pm 1.0\%$  FS
- \* Repeatability :  $\pm 0.25\%$
- \* Operation : 4-key Push Buttons
- \* Output : 4-20 mA DC
- \* Communication Protocol : Mosdbus RS484 RTU
- \* Auxillary Output : OCT 1ea, Relay Output 1 ea
- \* Power Supply : DC 8~36 V or AC 10~30 V ( AC110-220V option)
- \* Consumption Power : < 1.5 Watt
- \* Velocity Range : 0.01 ~10.0 mps bi-directional
- \* Resolution : 0.25 mm/s
- \* Sensitivity : 0.003 m/s
- \* Measuring Liquid : Clean Liquid, or Somewhat turbidity Liquid (Turbidity <10000 ppm)
- \* Enclosure : Wall Mounting
- \* Display : Alphanumeric Character LCD
- \* Ingress Protection : IP66
- \* Enclosure Material : ABS Engineered Plactic / Others on option
- \* Working Temperature : -40~+90 °C Standard (-40~160 °C On Special Option)
- \* Data Logger : Totalize 412 days/ 128 months / 10 years. Last 64 times when power-off
- \* Long Distance Transmission : Wireless Network by RS485, Support GPRS Module
- \* Dual balance signal differential receiver/driver circuit to avoid interference of converter, TV tower, high voltage line
- \* Heat/Energy Measurement Function : Support for heat/energy measurement by temperature sensor
- \* Line Size :: DN15~DN6000
- \* Pipe Material : Steel, Stainless Steel, Cast Iron, Coper, PVC, Aluminum, and all other dense pipes

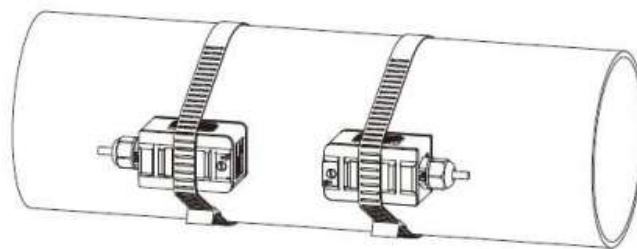
## 4. Configuration System of Flow Meter Installation



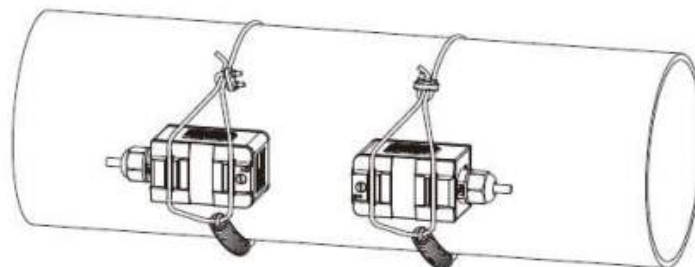
Sec	Sensor Picture	Specification	Model	Pipe Size	Temperature	Dim.(mm)	
Standard	Clamp-on		Small	TS-2	DN15~DN100	-40~90 °C	45x25x28
			Medium	TM-1	DN50~DN700	-40~90 °C	64x39x44
			Big	TL-1	DN300~DN6000	-40~90 °C	97x54x53
High Temperature	Clamp-on		Small	TS-2-HT	DN15~DN100	-40~160 °C	45x25x28
			Medium	TM-1-HT	DN50~DN700	-40~160 °C	64x39x44
			Big	TL-1-HT	DN300~DN6000	-40~160 °C	97x54x53



Sensor Pasting

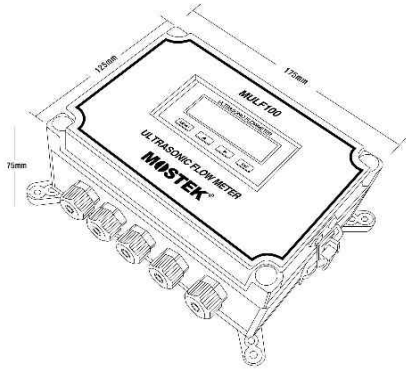


Steel Belt DN15~DN500

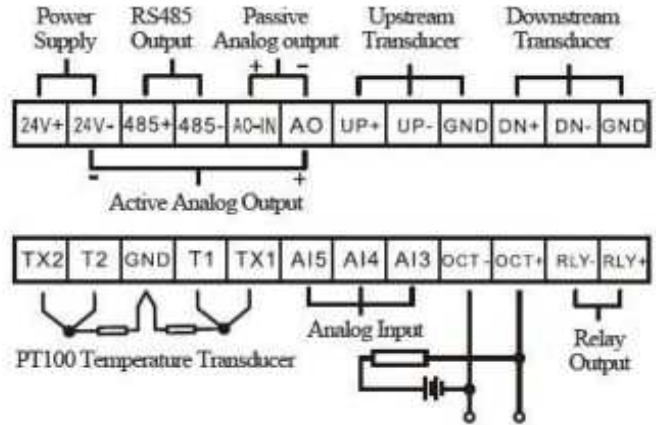


Steel Rope > DN500

## 5. Physical Dimension and Drawing

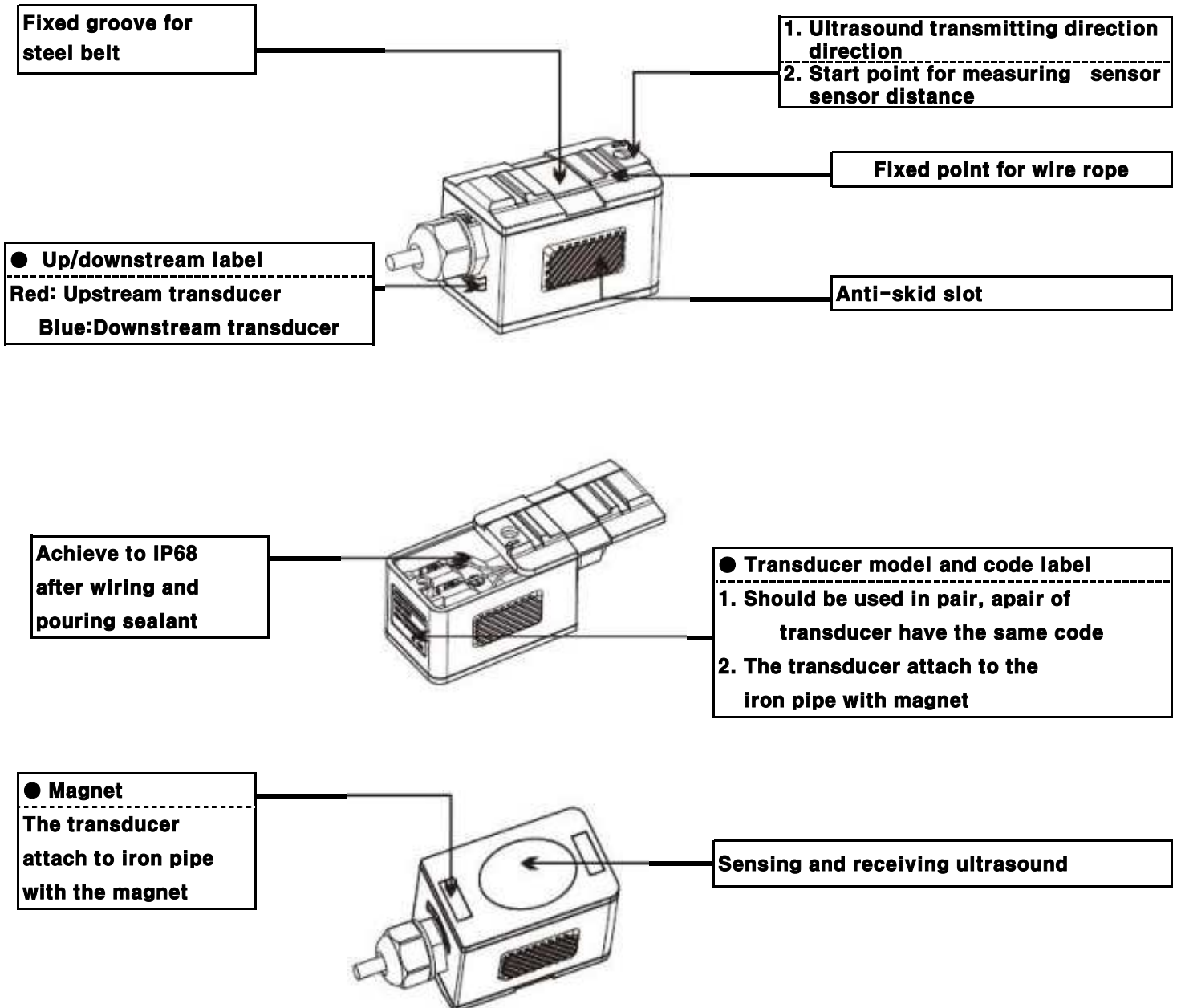


Converter Outer View



Electrical Wiring Diagram

*Mostek reserves the right to make changes without further notice to any products to improve reliability, function or design.*



## 6. Ordering Code Selection

Model Surfix Code							Code 7	Descriptions
MULF100	Code 1	Code 2	Code 3	Code 4	Code 5	Code 6		
Transducer	TS-2						DN15~100    -40~90°C	
	TM-1						DN50~700    -40~90°C	
	TL-1						DN300~6000    -40~90°C	
	TS-2-HT						DN15~100    -40~160°C	
	TM-1-HT						DN50~700    -40~160°C	
	TL-1-HT						DN300~6000    -40~160°C	
Diameter		DNXXXX					example : Size 100 mm..... DN0100	
Pipe Material			0				Carbon Steel	
			1				Stainless Steel	
			2				Cast Iron	
			3				Glass Fiber Reinforced	
			4				PVC	
			5				Cement	
			6				Others	
Pressure				XXX			Example : Pressure 1.6 mPa.... 1.6	
Cable Length					XX		Example : 10 meter..... 10	
Temperature Transducer						NT-0	None	
						CT-1	Clamp-On DN50~6000 -40~+160°C	
						TCT-1	Insertion DN50~6000 -40~+160°C	
						RCT-1	Insertion Under Pressure DN50~6000    -40~+160°C	
						SCT-1	Insertion Small Size <DN50 -40~+160°C	
Power Supply						PS1	DC8~36V, AC10~30V	
						PS2	110~220 VAC	

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