

## Ultrasonic Sludge Density Meter

# ENV200 SERIES

### DATA SHEET

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# Ultrasonic Sludge Density Meter

# ENV200 Series

CE



The ENV200 is an ultrasonic instrument measuring density of suspended solid in liquid. The ENV200 utilizes the EEA (Envelope Energy Average) measuring algorithm that profiles reception signal and then calculates its energy, rather than using the reception signal's amplitude change. ENV200 comprises of a controller and two types of sensors, such as spool-piece and clamp-on type to accommodate all field demands at various installations.

## Features

- Continuous and real-time measurement
- Reliable signal control EEAM(Envelope Energy Average Method) algorithm
- Two type of sensors to accommodate all field demands
- Offer several density units, %, g/l, ppm, kg/m<sup>3</sup>, g/cm<sup>3</sup>
- Maximum 400 days data logging and monitoring
- In-situ measurement and calibration

Conventional ultrasonic attenuation density meter just determines density by varying amplitude of received signals. Unlike this, ENV200 is able to measure changes of concentration in a more sophisticated manner by adopting the patented EEAM (envelope energy averaging method), which measures not only the amplitude of received signals but also observes the shape of signal. It takes all energy as envelope and then convert it into density.

## Application

- Water / Wastewater Treatment
- Pulp and Paper
- Food and Beverage
- Power Plant
- Semi-conductor
- Mining

# Product

ENV200 is composed of a controller and a pair of sensors, clamp-on or spool-piece sensors, along with optional items stated below

## ENV200-C

### Basic

Controller(C2S)

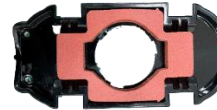


Sensor (S2C)



### Optional Items

Ingress Protection Pad(IPP)



Controller Mounting Kit (CMK)



## ENV200-S

### Basic

Controller (C2S)



Sensor (S2S)



### Optional Items

Pipe (IPX)



Controller Mounting Kit (CMK)



# Controller

The controller analyzes the transmitted/received ultrasonic signals to calculate the density. The screens of controller consist of numeric, echo profile, data, and information screen.

## C2S



### Specifications

Unit dimension [mm]  
252(W) x 238(H), 125(D)

Weight  
2.2 kg (± 0.2)

IP Rating  
IP67

Power Supply  
100 ~ 240V AC, 50/60Hz, ≤15W  
or 24V DC, ≤17W (Option)

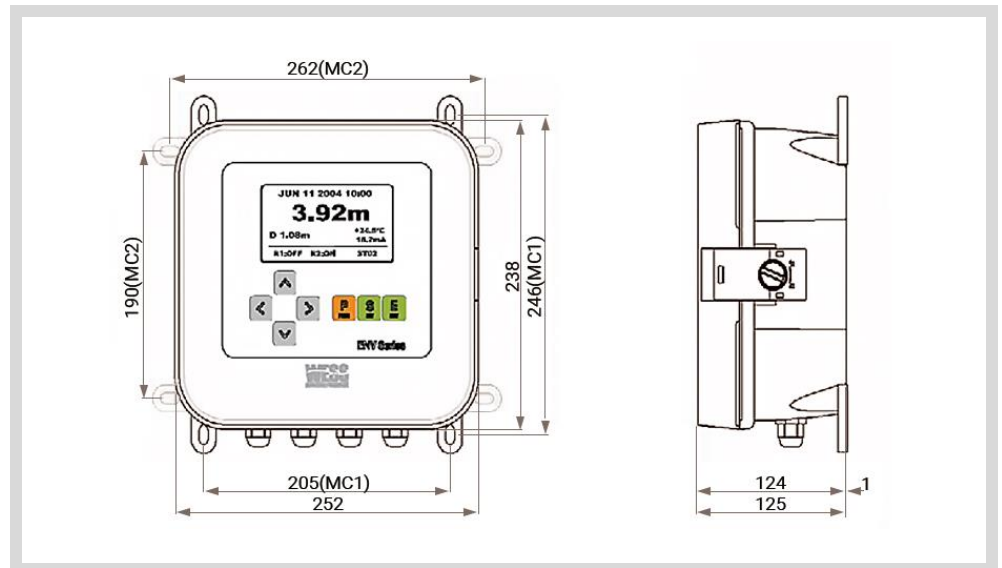
Certificate  
CE

Mount Dimension [mm]  
205(W) x 246(H) – Center Hole (Φ7.9 x 4ea)

Enclosure Material  
ABS

Operating Temp. [°C]  
-20 ~ 70°C (-4~158°F)

Applied Sensor  
S2C / S2S-Z / S2S-C



# Controller

## Function

Sludge Density measurement

Convert attenuated ultrasonic signal to density

Display

Graphic LCD (240x128)

Main Screen

Numeric, Echo profile, Information screen

Current Output

4~20 mA, nom. Load 250Ω (100~750 Ω)

Digital Communication

RS232 (Default) or RS485 (Option)

Data Saving

Maximum 400 days (10K point)

Customer Input

Membrane 7 keys - UP, Down, Left, Right, P (Program), S (Set), E (Exit)

Language

English (Korean, Chinese or Japanese)

Main Screen Information

Density, Time, Current output, Temperature, etc.

Relay

1 SPDT (5A, 250VAC)

Protocol

Standard

## Measurement

Measuring Range

0 ~ 500,000mg/l (0 ~ 50%)

1,000 ~ 3,000kg/m<sup>3</sup> (1.000 ~ 3.000g/cm<sup>3</sup>)

Resolution

0.1% or 0.01% (Selectable)

1kg/m<sup>3</sup>, 0.001 g/cm<sup>3</sup>

Frequency [kHz]

699 ~ 2,041 (47 steps)

Measuring Unit

%, PPM

kg/m<sup>3</sup>, g/cm<sup>3</sup>

Accuracy

±0.15% (±0.5% of F.S.)

±15 kg/m<sup>3</sup>, ±0.015 g/cm<sup>3</sup>

# Sensors

ENV200 offers two different type of sensors, clamp-on and spool-piece sensors. The clamp-on sensor is non-intrusive device applying any type of liquid and sludge without limitation. The spool-piece sensor has two types, S2S-Z and S2S-C.

## S2C

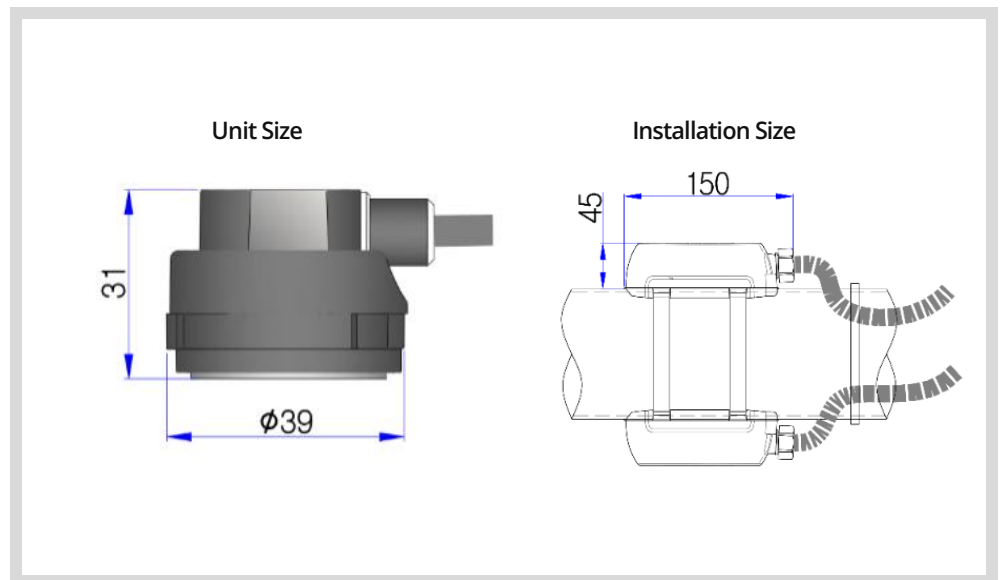
Clamp-On type sensor



### Specifications

IP Rating	Operating Temp.
IP68	-10 ~ 70°C (14~158°C)
Pressure	Cable Length
No limit	10m
Applied controller	Weight
C2S	0.8 kg (Include 2 sensors and 10m cable)
Applied Pipe [DN]	Material
50 ~ 300 (STS & Metal)	Body : Polycarbonate,
50 ~ 600 (PVC & Plastic)	Acoustic window : MC Nylon

\* The maximum pipe size depends on the sludge type or density.



# Sensors

The S2S-Z is standard spool-piece type sensor

## S2S-Z

Spool-Piece type Sensor (Standard)



### Specifications

IP Rating

IP68

Pressure

Max. 145 psig (10 bar)

Applied Controller

C2S

Applied Pipe [DN]

50 ~ 600

Operating Temp.

-0 ~ 60°C (0~140°C)

Cable Length

10m

Weight

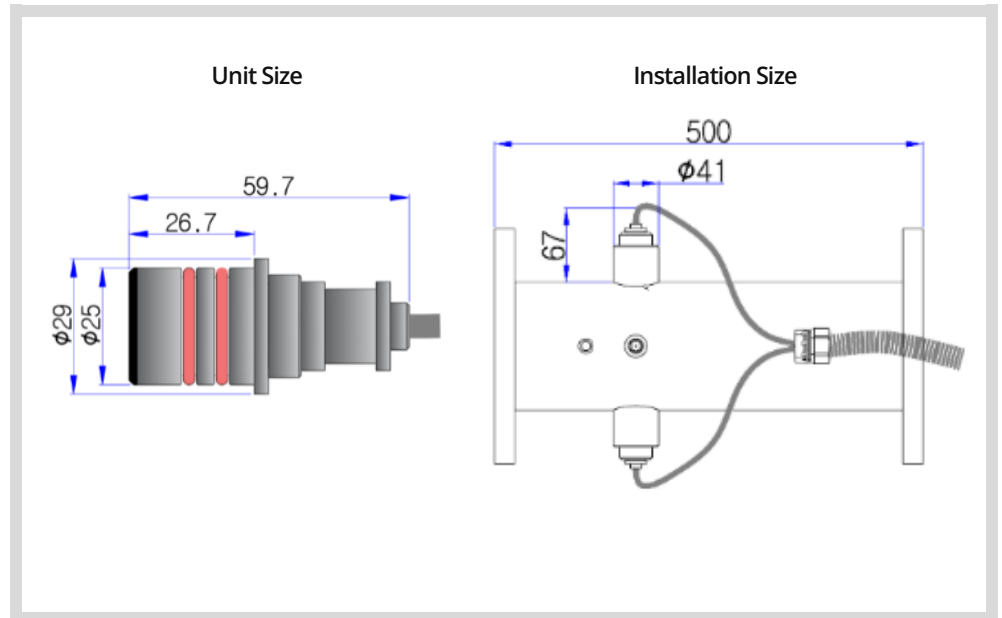
0.95 kg (Include 2 sensors and 10m cable)

Material

Body : STS304

Acoustic window : Epoxy

Seal : Silicone O-Ring



# Sensor

The S2S-C is specially designed for corrosive and abrasive applications

## S2S-C

Spool-Piece type Sensor (Special)



### Specifications

IP Rating

IP68

Pressure

Max. 145 psig (10 bar)

Applied Controller

C2S

Applied Pipe [DN]

50 ~ 600

Operating Temp.

-0 ~ 60°C (14~140°C)

Cable Length

10m

Weight

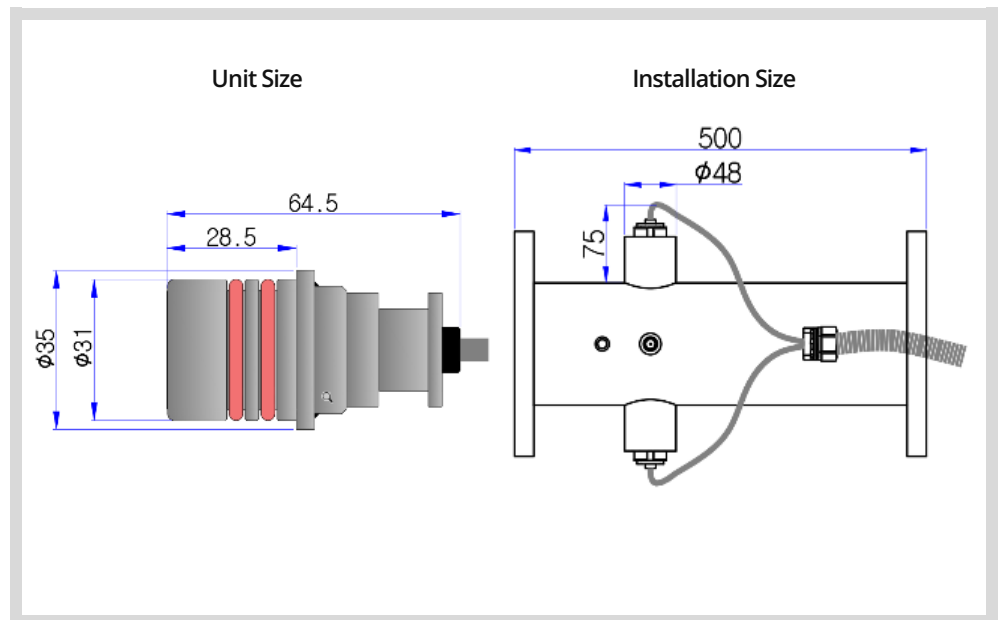
1.10 kg (Include 2 sensors and 10m cable)

Material

Body : STS304

Acoustic window : MC Nylon

Seal : Silicone O-Ring



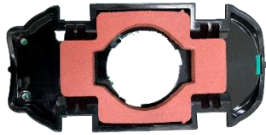


# Optional Items

ENV200 offers optional item for water ingress protection as well as couplant lifespan.

## IPP

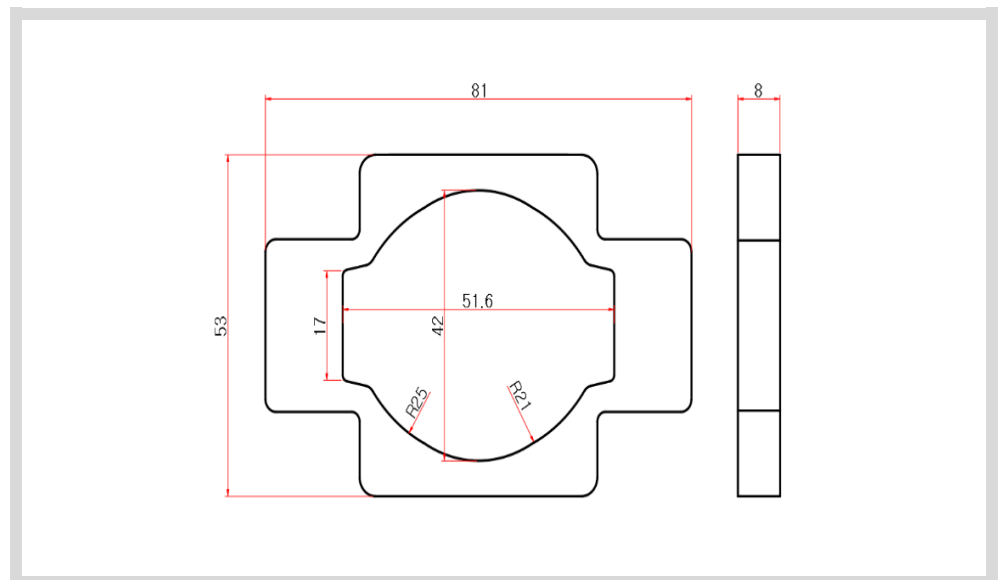
Ingress Protection Pad \* Clamp-on Sensor only



### Specifications

Dimension [mm]	Applied pipe	Material
81(W) x 53(H) x 8T	100A~600A	Silicon

\* For 50A to 85A, please contact your local distributor.



# Ordering Code

## Controller

Code	Description
C2S	ENV200 single controller, AC100~240V

## Sensor

Code	Description
S2C	Clamp-on type sensor
S2S-Z	Spool-piece type sensor (Standard)
S2S-C	Spool-piece type sensor (Special)

## Optional Items

Category	Code	Description
Accessory	IPP	Ingress protection pad
Others	DC2	Controller output : DC24V
	RS4	RS485 (STD. RS232)
	MOD	Modbus communication
	C_XX	Total sensor cable length (Unit: m), (STD. 10m) *Clamp-on sensor is not applied