

# KWS200

Ultrasonic Sludge Density Meter



**Sophisticated measurement of sludge density  
with new calculation principles and algorithms**

# KWS200 Ultrasonic Sludge Density Meter

KWS200 is an ultrasonic instrument that measures the density of suspended solid in liquid.

It comprises of sensors, a controller, and a junction box.

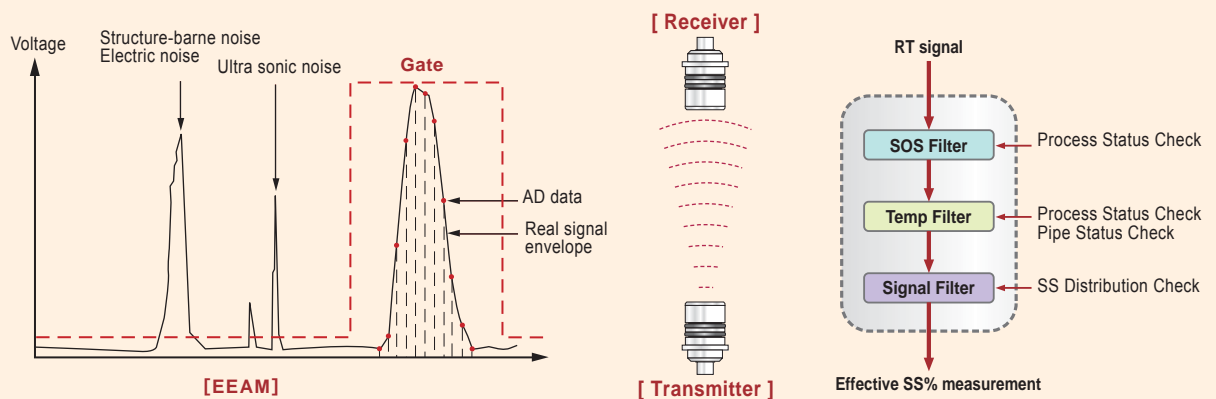
KWS200 with PCM (Process Condition Monitoring) algorithm measures not only the size of received signal, which is often measured by conventional ultrasonic density meters but also observes changes in sound velocity and temperatures in the process. As it monitors operational status and water status in pipe and then decides the validity of each measurement, it contributes to increasing stability and reliability of the measurement.

## EEAM (Envelope Energy Average Method)

Conventional ultrasonic attenuation density meter just determines density with amplitude of received signals. Unlike this, KWS200 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.

## PCM (Process Condition Monitoring)

PCM algorithm consists of SOS filter that measures sound velocity of measuring fluid (S.S. mixed water); temp filter that measures temperature; and signal filter that monitors quality of received signals. Operational status (process run /stop, pipe full /empty) is determined by the combination of SOS filter and Temp filter. Signal filter helps to decide the valid S.S. distribution. Since the PCM algorithm assimilates many measurements identifying changes of process condition (water status in pipe, and S.S. distribution pattern), its intelligence is designed to measure only valid S.S. concentration. Consequently, the performance is much more reliable and accurate, compare to conventional measurement.



## Product Features

- Continuous measurement
- Process monitoring possible (run, stop, full, empty)
- 10,000 points Data Logging & Trend Mode
- EEAM (Envelope Energy Average Method)
- Various types of sensors
- In-situ measurement and calibration

## Application Industry

- Water, wastewater treatment
- Pulp and paper
- Food and beverage
- Chemical
- Mining



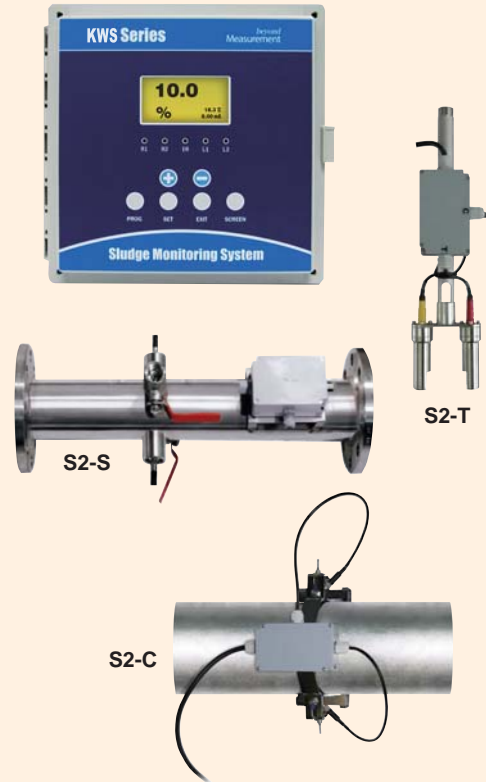
## Benefits

- Automates sludge discharge.
- Reduces the amount of polymers used in the dewatering process.

## Specification

### Controller

<b>Model</b>	<b>KWS200</b>	
Measuring Principle	Ultrasonic Attenuation and EEAM	
Range	Standard : 2,000 ~ 200,000mg/ℓ (0.2~20%) Option : 2,000 ~ 400,000mg/ℓ (0.2~40%)	
Measuring Mode	Process Mode, Real-time Mode	
Resolution	100mg/l (0.01%)	
Accuracy	±1% or ±2000mg/ℓ (whichever is greater)	
Repeatability	±1% of reading	
Data Storage	400 days Max.	
Display	Density, Time, Pipe condition, Temperature, Flow condition, mA, Self testing, etc	
Temperature	-20 to 60°C	
Output	Analog	4-20mA max. 750Ω
	Relay	3 SPD (5A, 250VAC), ER, R1, R2
	Digital	RS232C, RS485 (Option)
Power Source	Standard	AC100~240V 50/60Hz ≤6W
	Option	DC24V
Material	Housing	FRP (237W×241H×125D)
	Window	Polycarbonate
Enclosure	IP67	
Certificate	CE	



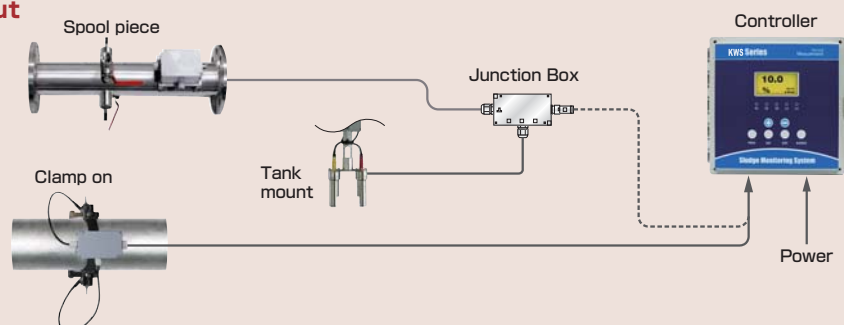
### Sensor

Model	S2-S (Spool piece)	S2-T (Tank Mount)	S2-C (Clamp on)
Material	316SS	316SS	316SS & aluminium
Transmitter & Receiver	epoxy	epoxy (standard) 304SS (option)	epoxy
Pipe Size	50 - 600mm	_____	50 - 200A
Frequency	1MHz	1MHz	1 to 1.4MHz
Max. Pressure	10 bar max	10 bar	_____
Cable Length	10m (100m max.)	10m (100m max.)	10m (100m max.)
Temperature	-10 to 60°C	-10 to 60°C	-10 to 60°C
Enclosure	IP68	IP68	IP68
Cleaning Device	Option	_____	_____

### Junction box

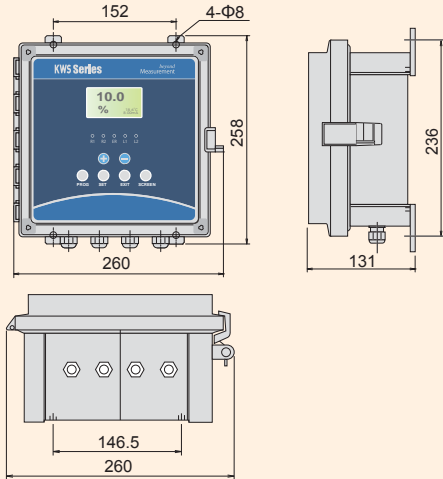
Housing	ABS	
Temperature	-10 to 80°C	
Weight	450g	
IP Rating	standard	IP65
	Option	IP68

### System Layout

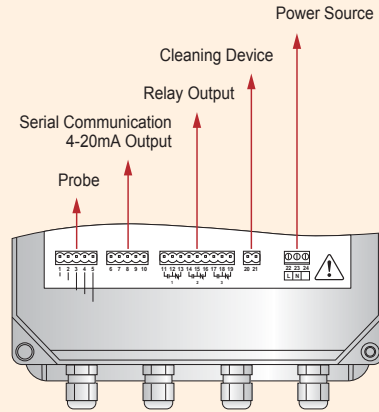


## General Drawings / Controller Crossline Drawing

### ● General Drawings



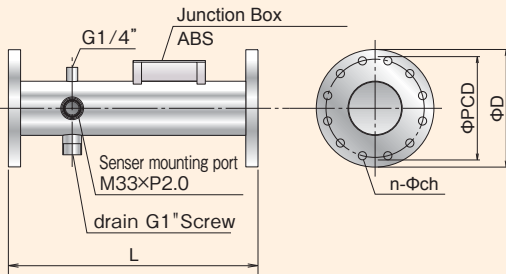
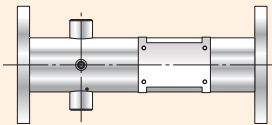
### ● Controller Crossline Drawing



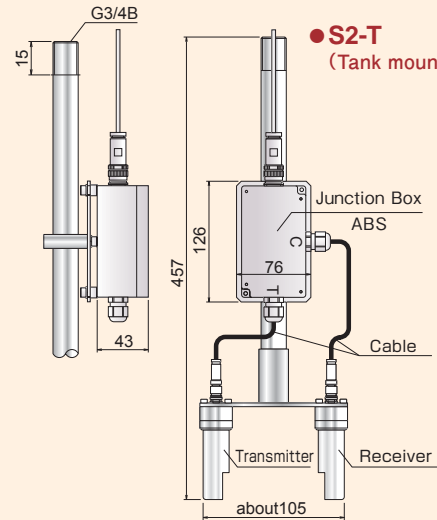
## センサ 外形寸法図

### ● S2-S (Spool Piece type)

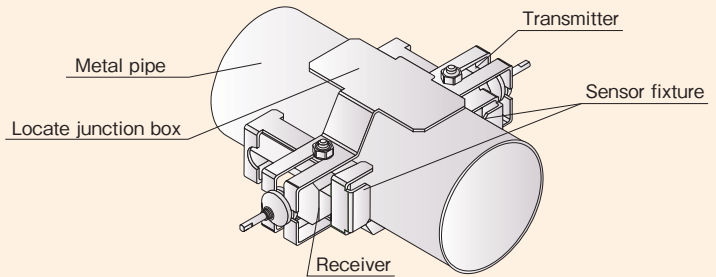
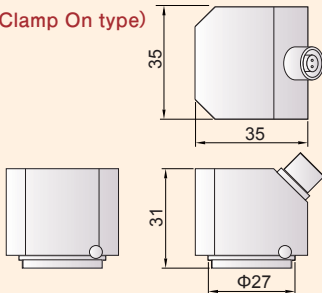
MODEL	φD	φPCD	L	n-φch	Bolt
E200-50A	155	120	400	4-19	M16
E200-65A	175	140	400	4-19	M16
E200-80A	185	150	400	8-19	M16
E200-100A	210	175	500	8-19	M16
E200-125A	250	210	500	8-23	M20
E200-150A	280	240	500	8-23	M20
E200-200A	330	290	500	12-23	M20
E200-300A	445	400	500	16-25	M22
Material	304SS(stander)				



### ● S2-T (Tank mount)



### ● S2-C (Clamp On type)



## Line of business

- Rotary Paddle Type Level Switch
- Vibration Type Level Switch
- Swing Type Level Switch
- Acoustic Level Switch
- Capacitance Type Level Switch
- Capacitive Proximity Sensor
- Capacitance Type Level Indicator
- Diaphragm Type Level Switch
- Tilt Switch
- Leak Type Level Switch
- Microwave Type Switch
- Sounding Bob Type Level Indicator
- Flow Switch
- Conductance Type Level Switch
- Float Switch
- Float Type Level Indicator
- Ultrasonic Type Level Indicator
- Equipments For Conveyor Lines
- Dust Monitor System
- Zirconia Oxygen Analyzer
- Laser Type Level Indicator
- RADAR Type Level Indicator
- On-line Sensors for Accurate Liquid Analysis
- Ultrasonic Flow meter

\*Please be sure to read USER'S GUIDE, Installation & Operation Instructions before using the instrument.

\*The specifications herein may be subject to change without advance notice.

All-round Manufacturer of Level Controllers for Powder, Granules and Liquid

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