ENV120

Ultrasonic Sludge Blanket Monitoring System

The ENV120 Ultrasonic Sludge Blanket Level Meter, utilises enhanced ultrasonic technology to measure the sludge interface level in various types of clarifiers, settling tanks and thickeners with superior accuracy and reliability.

The instrument continuously provides the user with important information which includes numeric and graphic screens representing the distance to the blanket, an echo profile image to ensure correct configuration during commissioning and saved data analysis. Additional features such as ASF (Abnormal Signal Filter), allows elimination of irregular field noise which can result from moving structures intermittently obscuring the signal. The ENV120 technology additionally incorporates a compressed air cleaning system to maintain the sensor in optimum condition and guarantee maintenance-free measurement. Specially designed mounting kits are also available.

ENV120 FEATURES

- Continuous and Real-time Measurement
- 4 Sensors Measurement with One Controller Enables Economic Operation
- Maximum 400 Days Data Logging and Monitoring
- Wireless Option Avoids Cabling Cost
- Automatic Sensor Cleaning Guarantee Maintenance-free Measurement
- Built-in Unique Algorithm Eliminates Stationary and Moving Structures
- Free WESSWARE Software Enables Field Data Analysis and Menu Setup

APPLICATIONS

The ENV120 is designed to monitor the levels of solid contents (sludge) in various types of liquids (water, liquor, etc.), to control the pumps engaged in the processes, and to initiate events based on measured process conditions.

SOME APPLICATIONS

- Water & wastewater treatment clarifiers
- Water & wastewater gravity & DAF thickeners
- Raw water clarifiers
- Sumps, lagoons, settling ponds
- Industrial process thickeners
- Salt brine tanks
- Material inventory tanks
- Process thickeners

PRODUCT FEATURES

1. VARIOUS SCREENS: The instrument continuously provides the user with important information which includes numeric and graphic screens representing sludge level, current output, temperature, and an echo profile image to ensure correct configuration.

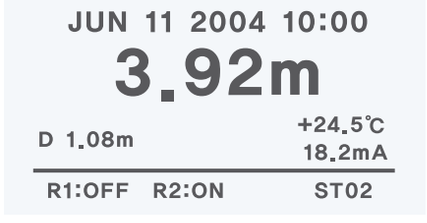
2. HIGH TEMPERATURE SENSOR & CHEMICAL RESISTANCE SENSOR

3. LIGHT SLUDGE LEVEL MEASUREMENT: The ENV120 is designed to measure not only heavy sludge (above 2,000mg/l) but light sludge at a drinking water sedimentation tank by selecting type of sludge from a menu section.

4. DATA ANALYSIS SOFTWARE: Free WESSWARE that can analyze the logged data and download the set parameters.

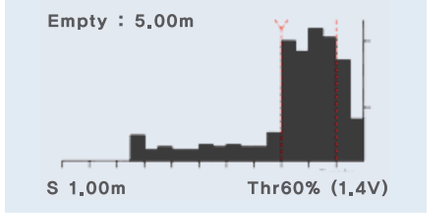
5. WIRELESS BLUETOOTH MODULE(WESS-RF): WESS-RF is a Bluetooth based wireless data communication system consisting of a master and a transmitter module. This system can be applied along with a controlling part of our measuring instruments such as ultrasonic sludge blanket level meter, density meter, level meter, etc. The WESS-RF system is normally used to reduce cabling cost and to apply where the bridge (walkway) moves. The WESS-RF offers not only mA output but also RS232 output.

Numeric



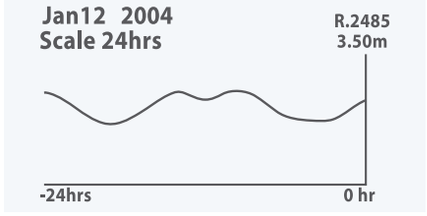
NUMERIC SCREEN
LEVEL, TEMPERATURE, CURRENT OUTPUT, TIME, ETC.

Echo Profile



ECHO SCREEN
SLURRY SETTLEMENT PROFILE

Trend Screen



DATA TREND SCREEN
LOGGED DATA TREND

OPTIONS

SWING BRACKET

The swing bracket is to secure skimmer passage at clarifiers. Once it has passed, the bracket is free to fall, re-immersing the sensor into the clarifier water by a damper. The swing bracket is needed when the rotating skimmer hits a sensor. It has limited guarantee period since it's mechanical device.

CLEANING UNIT

Periodical sensor cleaning is recommended as a precaution since floating debris and biological material are in contact with the ultrasonic sensor. The cleaning unit consists of a 10-meter length Ø6 air hose and an air compressor with terminal connection. The AC power source is given by a controller. For DC operation, additional power source or solenoid valve may be required for independent usage.

CABLE LENGTH

The standard cable length of sensor is 10m(33ft). To accept field requirements, the cable can be extended to 100m(330ft).

WIRELESS MODULE

The blue-tooth based wireless module is needed where additional cabling costs is much higher than wireless network. The communication range is maximum 200m at an open field. Since transceiver module is mounted inside of a controller, no additional enclosure is required for outdoor installation. The WESS-RF offers not only analog output but also RS232 output.

MOUNTING KITS

We offers several types of mounting kits, such as sensor mounting kit, controller mounting kit, and cleaning unit mounting kit.

DIGITAL COMMUNICATION

ENV120 provides RS232C digital communication as standard. RS485 and Profibus-DP are available as an option.

INSTALLATION

PROBE

Do not inflict impact or unnecessary external force on the probe during handling. The ultrasonic head, which transmits and receives sound waves, should be handled with extra care and stored wrapped in sponge or other soft materials to absorb the impact of an external blow.

Attach and secure the probe using the 3/4" PF male thread located on the upper section of the probe. Pipe length selection should be based on the lowest liquid level. The pipe's material should be chosen in consideration for material strength or application fluid characteristics. STS 304 20A, 10S pipe is the preferred choice in most applications. The cleaning air supply tube connects to the probe's one- touch fitting only if the cleaning device is used.

Position the probe at a location where the ultrasonic signal from the bottom of the pool or tank is not blocked by surrounding structures (agitator, pipe, etc.). Additionally, to ensure stable measurement, the probe should be positioned away from air bubbles and active floating solids resulting from sudden changes in velocity. For tank or rectangular pool applications, maintain at least 1m of separation distance from the wall to minimize interference and try to avoid a hopper area where the shape of sludge blanket varies upon pumping activity.

CONTROLLER

Protect the controller from impact and unnecessary external force until it is installed. Install the controller on a panel/handrail or wall using the mounting holes (Φ 8) located at the back of controller.
Located on the bottom of the controller are four cable glands the user can use selectively for his/her specific application. Each cable gland should be connected using a cable of correct diameter (Φ 4.5 ~ 10mm) to ensure IP67.

Most products generally use the direct cable connection method, in which stripped wires connect directly to a terminal block (TB). This makes for a difficult wiring process because of the sheer number of wires in a confined space.

ENV100, on the other hand, utilizes a new wiring method that uses an additional plug connector for the primary wiring and then it connects to TB stationed on PCB.

POWER, WIRING & CONNECTIONS

POWER REQUIREMENTS

AC 100 to 240V, 50/60Hz, <6W. Use copper conductors only. A user-supplied disconnect switch on a separate 15A circuit breaker should be located near the processor unit. Power line noise and interference are filtered by a built-in EMI filter.

PROBE WIRING

A 10m (33ft) of probe telemetry cable is supplied as standard. Contact your authorized distributor for extensions. The maximum length of cable extension is up to 100m (33ft) when authorized cable is in use.

USER CONNECTIONS

The controller supports up to 5 parts of connections. Connections include Probe, mA and Serial Outputs, Relay Output, Cleaning Device, and Power. The controller accommodates up to 5 parts of connections.

PROBE CONNECTION

Connect the five respective colored wires from the probe cable to a 5- position PHOENIX connector and then put it into the PCB board.

SERIAL COMMUNICATION

Serial communication (RS232/485) users may connect the serial wires to a 5-position PHOENIX connector and put it into the PCB board. The 5-position connector is composed of serial communication and analog output connections.

ANALOG OUTPUT

4 to 20mA current output users may connect the wires to a 5-position PHOENIX type connector and put it into the PCB Board.

RELAY OUTPUT

Relay users may connect the wires to a 9-position PHOENIX type connector and put it into the PCB board.

CLEANING DEVICE

The cleaning device is activated using the controller's power source. Connection is made using a 2-position PHOENIX connector. Use AC power.

POWER CONNECTION

An external power source (100 to 240V, 50 to 60Hz) activates the ENV100. Connection is made using a 3-position PHOENIX connector.

SPECIFICATIONS

CONTROLLERS

The control device has two types. One is for single measurement and the other is for multi measurements.

C1-S (1CHANNEL)
C1-M (4CHANNELS)

MODEL	C1-S	C1-M
Measuring Principle	Ultrasonic echo flight time	Ultrasonic echo flight time
Measuring Range	0.35~10m	0.35~10m
Resolution	1cm	1cm
Measuring Pulse	5~25 times/sec	5~25 times/sec
Measuring Density	Heavy/ Light	Heavy/ Light
Accuracy	+/- 1 % of measuring range	+/- 1 % of measuring range
Operational Temp.	-20 ~ 10°c	-20 ~ 10°c
Sensor Control	1 channel	Multiple channel (Max. 4 channel)
Data Logging	Max. 400 days	Max. 400 days
Screen	Numeric, Echo Profile, Data Trend, Parameter	Numeric, Echo Profile, Data Trend, Parameter
Display	Level.Distance, Temperature, Time, Current, Echo profile, Measuring status	Level,Distance, Temperature, Time, Current, Echo profile
Outputs	Current: 4~20mA, nom. Load 250Ω (load range : 100 ~ 750Ω) Relay : 3 SPDT (5A, 250VAC) Digital: RS232C(Standard), RS485	Current: 4~20mA, nom. Load 250Ω (load range : 100 ~ 750Ω) Relay : 3 SPDT (5A, 250VAC) Digital: RS232C(Standard), RS485
Power Supply	Standard : 100 ~ 240V AC, 50~60Hz, ≤6W Option : 20~30V DC	Standard : 100 ~ 240V AC, 50~60Hz, ≤6W Option : 20~30V DC
Enclosure Material	Body/Cover : Polycarbonate	Body / Cover : ABS Window : Polycarbonate
Weight	3 kg	3.2 kg
IP Rating	IP67	IP67
Certificate	CE	CE

SENSORS

ENV100 has 3 types of sensors to accommodate most field demands. S1G is one of the most widely used sensor model. S1T is used to corrosive chemicals and S1H is used to high temperature liquid.

S1/G/T

S1/H

MODEL	S1G/T		S1H
Material	S1G Body: S.S. 304 Head: Epoxy	S1T Body: S.S. 316 Head: Teflon	Sensor Body: Teflon Head: Teflon
Cleaning	Air-jet (built-in cleaning nozzle)		Air-jet (built-in cleaning nozzle)
Mounting Thread	3/4" PF Female Thread		Optional
Cable Length	10m		10m
Operational Temp.	-10~60°C		-10~100°C
Beam Angle	3 degree		3 degree
Frequency	160/380kHz		160/380kHz
Weight	2.2kg (incl.10m Cable)		4kg (incl.Junction Box)
IP Rating	IP68		IP68