

Ultrasonic Sludge Blanket Level Meter



– ENV120 SERIES



The ENV120 Ultrasonic Sludge Blanket Level Meter manufactured by WESS, utilizes 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 & 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.

2 SLUDGE MEASUREMENT

Features

- Continuous and real-time measurement
- High temp. & chemical resistive sensor
- Implementation superior signal control and tracking algorithms
- Light and heavy layer level measurement with dual frequencies
- Apply abnormal signal filtering algorithm
- Maximum 400 days data logging and monitoring
- Automatic sensor cleaning guarantee maintenance free measurement
- Wireless option avoids cabling cost
- Free WESSWARE software enables field data analysis and menu setup
- Provide portable ultrasonic sludge level meter

Applications

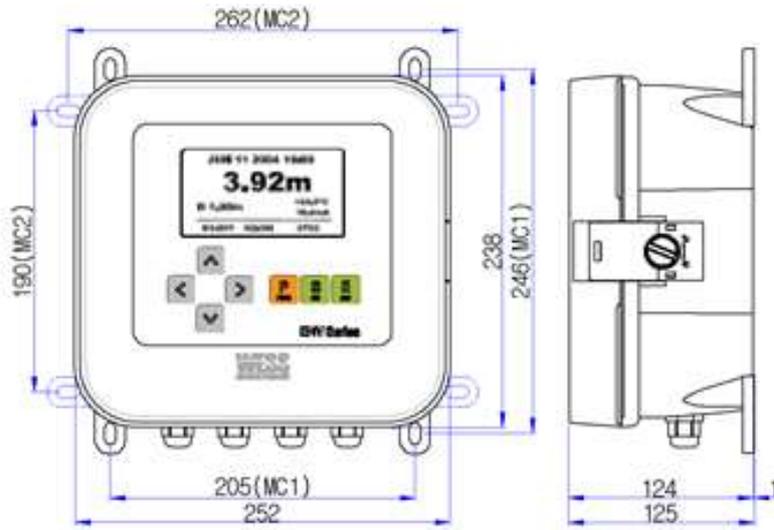
- WWTP primary clarifier / secondary clarifier / thickener
- Sewage treatment settling basin / thickener
- Industry water treatment
 - Power plant
 - Refining process
 - Ethanol oil manufacturing process
 - Coal mine



3 SLUDGE MEASUREMENT

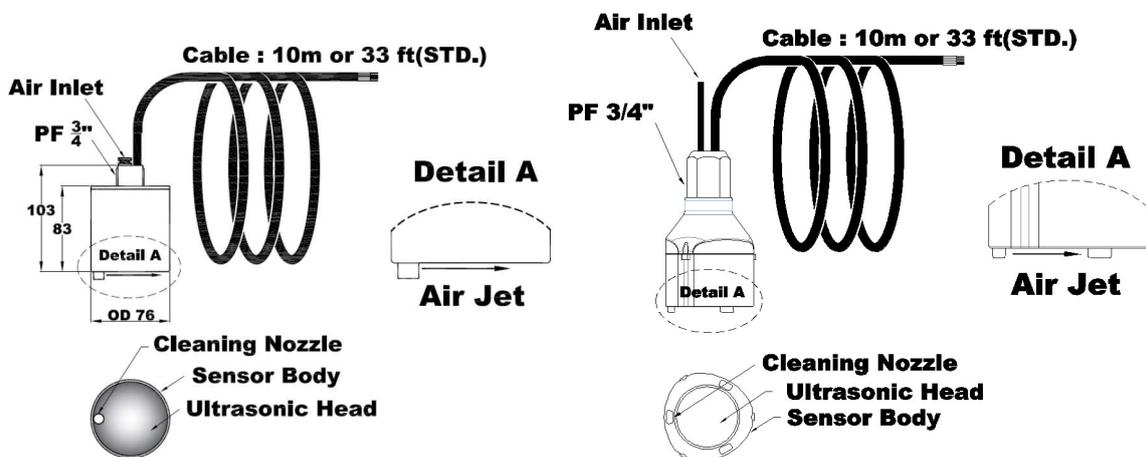
Dimensions (mm)

Controller



C1S

Sensor



S1G

S1T / S1H

Technical Data

Controller

The controller analyzes the transmitted/received ultrasonic signals to calculate the distance, and controls pump and actuator. The screen of control consists of numeric, echo profile, data trend and parameter screen. The controller model is divided into C1S which controls one sensor, and C1P which is applied to the portable sludge level meter.

Fixed type – C1S

Measuring Principle	: Ultrasonic Echo Flight Time
Measuring Range	: 0.35 ~ 10m
Resolution	: 1cm
Measuring Pulse	: 5~25times/sec.
Measuring Density	: User programmable density (Heavy or Light)
Display	: Graphic LCD (Interface level, Distance, Echo amp., Time, Current output, Trend, Temperature)
Accuracy	: +/- 1% of F.S.
Operating Temp.	: -20 ~ +70°C
Sensor Control	: 1 Channel
Sensor Cleaning	: Built-in automatic air-jet
Outputs	: Current : 4~20mA, nom. Load 250Ω (load range : 100 ~ 750Ω) Relay : 3 SPDT(5A, 250VAC) Digital: RS232(STD.), RS485, MODBUS(Option)
Power Supply	: 100 ~ 240V AC, 50~60Hz, ≤6W(STD.), 20 ~ 30V DC(Option)
Enclosure Material	: Polycarbonate
Dimension	: 252(W) x 238(H) x 124(D)mm
Mounting	: Hole center 152(W) x 236(H) mm (Ø8 x 4ea)
Weight	: 2.2 kg
IP Rating	: IP67
Data Saving	: Max. 400 days data logging and trend
Screen	: Numeric, Echo profile, Data trend, Parameter
Certificate	: CE

Technical Data

Portable type – C1P

ENV120P is the only portable blanket level meter in the world that allows to input and manage up to 4 different field information. So it can be useful in many sedimentation sites.

Measuring Principle	: Ultrasonic Echo Flight Time
Measuring Range	: 0.35 ~ 10m
Resolution	: 1cm
Measuring Pulse	: 5~25times/sec.
Measuring Density	: User programmable density (Heavy or Light)
Display	: Graphic LCD (Interface level, Distance, Echo amp., Time, Current output, Trend, Temperature)
Accuracy	: +/- 1% of F.S.
Operating Temp.	: -10 ~ +60°C
Sensor Control	: 1 Channel
Sensor Cleaning	: Built-in automatic air-jet
Output	: Digital: RS232
Power Supply	: 3EA X AA Lithium ion rechargeable battery
Enclosure Material	: Aluminum
Dimension	: 143(W) x 195(H) x 56(D)mm
Weight	: 3 kg
IP Rating	: IP65
Data Saving	: Programmable Memory
Screens	: Numeric, Echo profile
Certificate	: CE, KC

Technical Data

Sensor

A sensor is mounted at the bottom of the tank and transmits a signal.

General Type – S1G

Sensor Structure	: Ultrasonic sensor with built-in air cleaning nozzle
Frequency	: 160/380 kHz
Beam Angle	: 3 degree
Operating Temp.	: -10 ~ +60°C
Cable Length	: 10m(STD.), Max. 100m extensible on request
IP Rating	: IP68
Material	: Body: SUS304 , Head: Epoxy
Dimension	: 2.2kg (Included 10m cable)
Mounting Thread	: 3/4" PF Female Thread
Cleaning	: Air-jet (Built-in cleaning nozzle)

General Type – S1T

Sensor Structure	: Ultrasonic sensor with built-in air cleaning nozzle
Frequency	: 160/380 kHz
Beam Angle	: 3 degree
Operating Temp.	: -10 ~ +60°C
Cable Length	: 10m(STD.), Max. 100m extensible on request
IP Rating	: IP68
Material	: Body & Head : PP
Dimension	: 1.2kg (Included 10m cable)
Mounting Thread	: 3/4" PF Female Thread
Cleaning	: Air jet (Built-in cleaning nozzle)

High Temperature Type – S1H

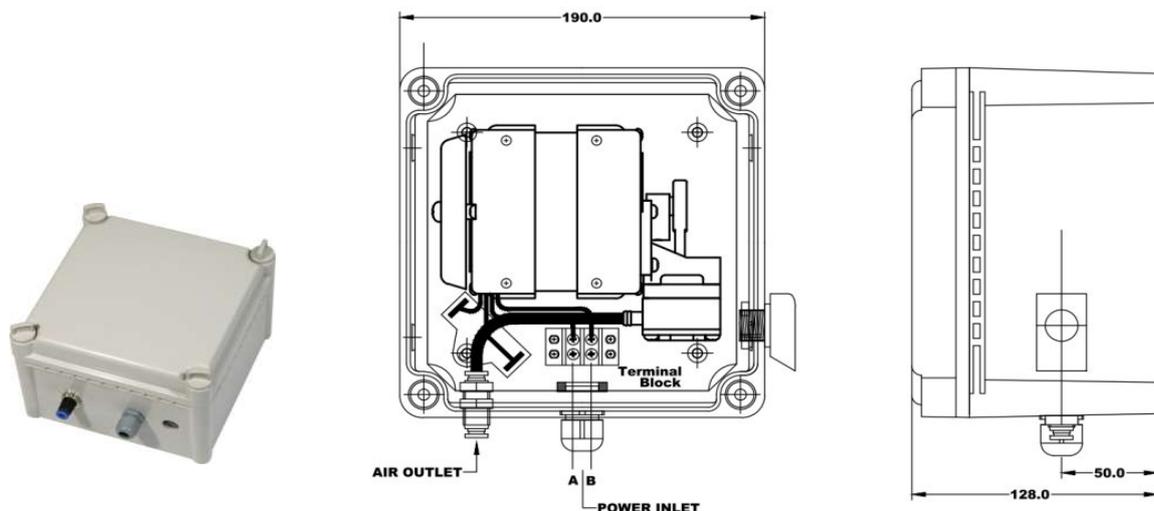
Sensor Structure	: Ultrasonic sensor with built-in air cleaning nozzle
Frequency	: 160/380 kHz
Beam Angle	: 3 degree
Operating Temp.	: -10 ~ +90°C Other specification is the same as S1T

Portable Type – S1P

Operating Temp.	: -10 ~ +60°C
Cable Length	: 5m
IP Rating	: IP68
Material	: Body: Clean PVC, Face: Epoxy
Weight	: 1kg (Included 5m cable)
Mounting	: Self-Floating

Optional Devices

Sensor cleaning device – CD1(110V AC) / CD2(220V AC)/CD3(24V DC)

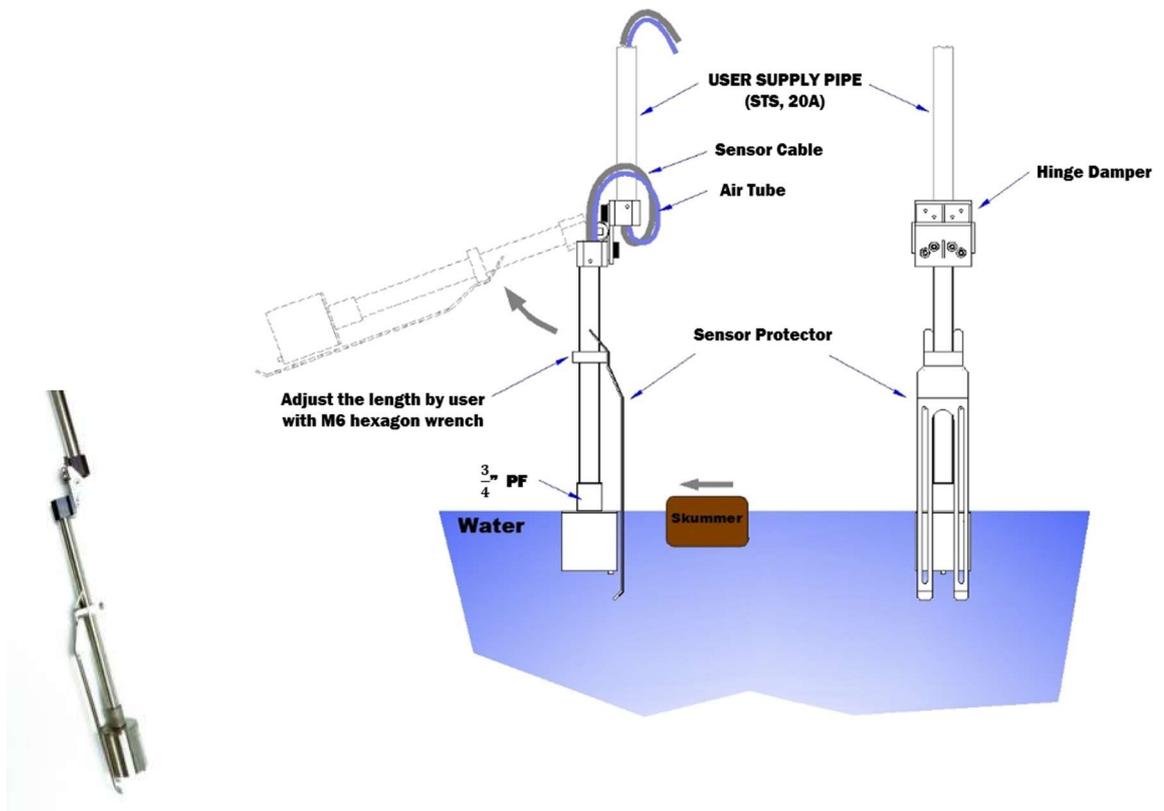


ENV120 is equipped with a cleaning nozzle inside the ultrasonic sensor to automatically clean the sensor surface. Periodical sensor cleaning is recommended as a precaution since floating debris and biological material is in contact with the ultrasonic sensor. When using the air-line on site, a sensor cleaning device equipped with a solenoid valve is supplied.

Free Flow Rate	: 25L/min
Max Pressure/Vacuum	: 4.5bar
Operating Temp.	: -10 ~ 60°C
Power supply	: Standard : 220V AC \pm 10% , 50~60Hz, \leq 50W Option: 110V AC \pm 10% , 50~60Hz
Enclosure Material	: ABS
Dimension	: 190(W) x 190(H) x 130(D)mm
Mounting	: Center hole 155(W) x 100(H) (M5 x 4ea)

Optional Devices

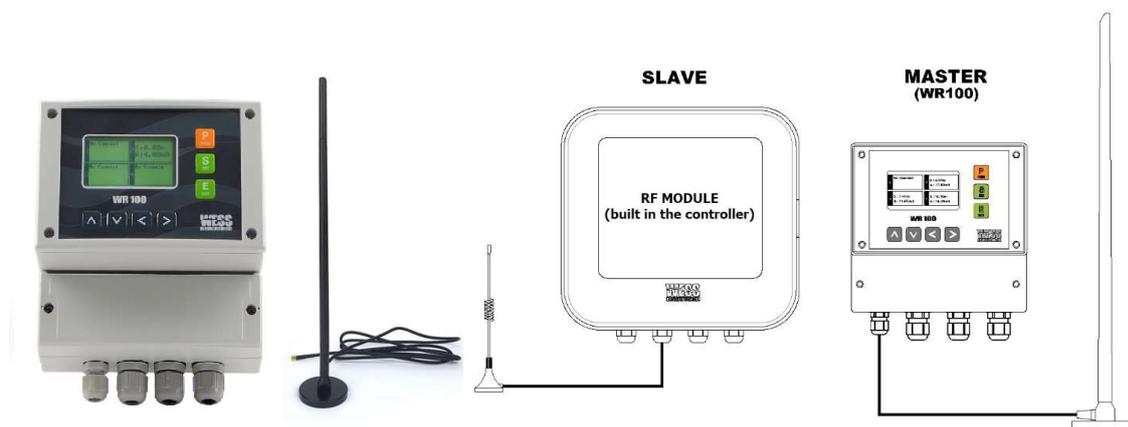
Swing bracket - SB



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.

Optional Devices

Wireless RF module (WESS-RF)



WESS-RF is a Bluetooth based wireless data communication system consisting of WR-100 and antennas. 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 communication distance between WR100 and transmitting antenna is from 200m to 1km. This RF system is normally used to reduce cabling cost and to install where measurement places move continuously. The WESS-RF offers not only mA output but also RS232 output. Since pairing work between a transceiver and a receiver is done by us, user only needs to supply power after installation.

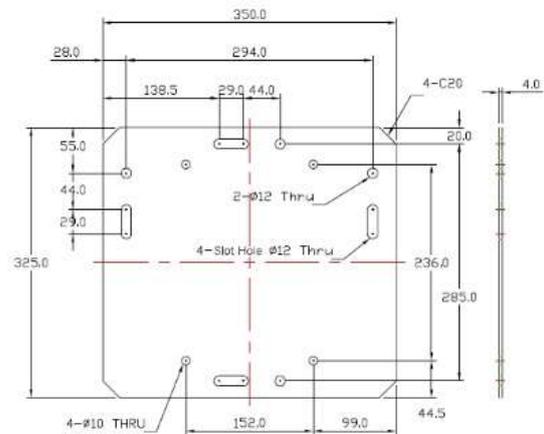
Optional Devices

Cable extension – C_XXm

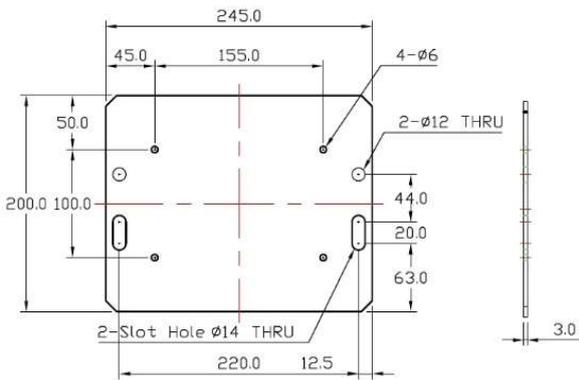
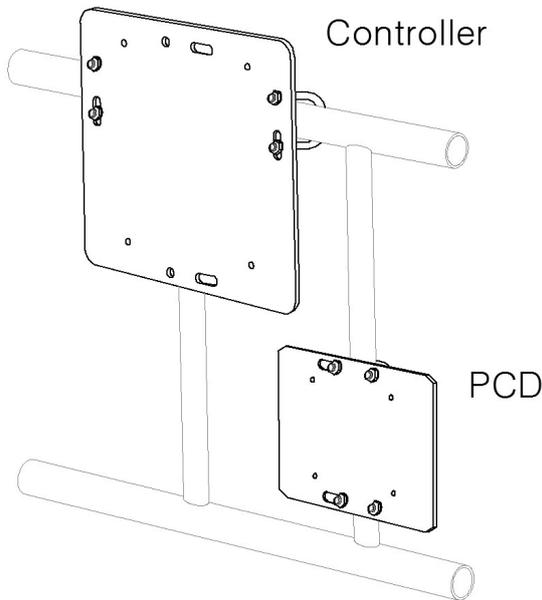
Standard sensor cable length is 10m and can be extended up to 100m to optimize installation and the measuring according to the site.

Installation mounting kits – CMK / CDMK

Hand rail type of controller and cleaning device mounting kit is provided to make installation and maintenance easier.



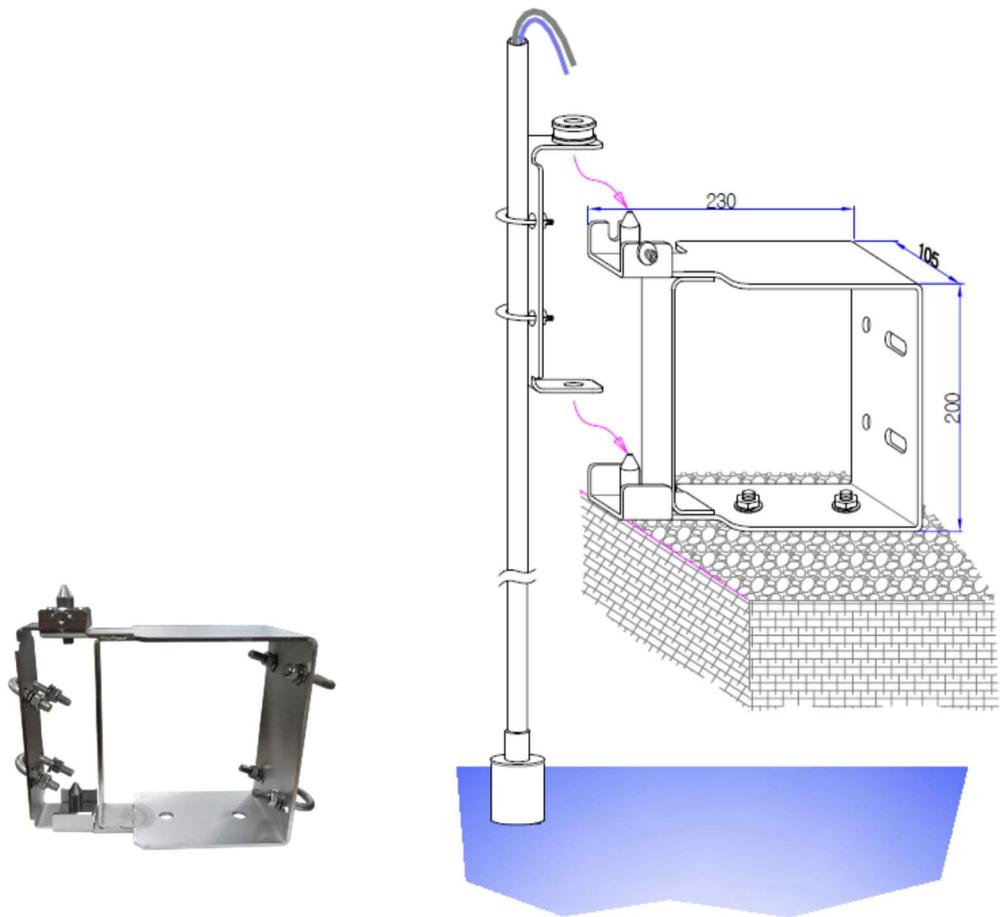
Controller Mounting Kit - CMK



Cleaning Device Mounting Kit - CDMK

Optional Devices

Sensor mounting kit – SMK



Sensor mounting kit is used for the secure fixing and installation of sensor to their place of operation.

Ordering Code

Fixed Type

ENV120 SERIES		CODE	DESCRIPTION	
Controller		C1S	ENV120 single controller	
Sensor		S1G	General sensor (Body: STS304, Face: Epoxy)	
		S1T	PP sensor (Body and Face: PP)	
		S1H	High temperature sensor (Body and Face: PP)	
Optional items	Others	DC2	DC22~26V	
		RS4	RS485 (STD. RS23)	
		MOD	Modbus communication	
	Sensor	C_XX	Total sensor cable length (Unit: m), (STD. 10m)	
	Cleaning Device	CD1	Sensor cleaning device - AC110V, 0.3bar	
		CD2	Sensor cleaning device - AC220V, 0.3bar	
		CD3	Sensor cleaning device - DC24V, 0.3bar	
		SV1	Solenoid valve - 110V	
		SV2	Solenoid valve - 220V	
		SV3	Solenoid valve - DC24V	
	Etc.	SB	Swing bracket : SUS pipe length - 300mm	
		CMK	Controller mounting kit (Hand-rail)	
		CDMK	Cleaning device mounting kit (Hand-rail)	
		SMK	Sensor mounting kit (Hand-rail)	
		WMM	Wireless Module Master (4 CH)	
		WMS	Wireless Module Slave (Dipole antenna, 500m)	
	Note			Ex) C1S-S1G-C_20-CD2-SMK Controller, General sensor, Total sensor cable length 20m, Cleaning device(220V), Sensor mounting kit

Portable Type

ENV120P	CODE	DESCRIPTION
Controller	C1P	ENV120P Controller
Sensor	S1P	ENV120P Sensor (Body: PVC, Face: Epoxy)