

MICROSAMPLER MS10P

Portable Composite Sampler

User Manual



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□ *Foreword*

In today's age of environmental awareness and sensitivity analysing of waste water becomes a compulsory legal requirement. The necessity of taking water samples and specifically doing this automatically by a sampling device renders essential need for sampling units.

In general, automated sampling devices used in water and waste water industries reached the position to meet today's expectations and requirements optimally. Waste water drained off into stream especially in industrial areas may contain substances that can pose potential risk to the public health and the environment. Related companies and municipalities are obligated and responsible for supervising dangerous chemicals in waste water, substances that could interfere with soil or harmful fluids thrown overboard. For this reason, these institutions and organizations should pay attention to use sampling device in the risk-bearing factories and should show the importance and care of taking samples according to waste water flow rate and time.

MICROLEVEL one of the industry's most profitable companies of industry equipment and service produces locally the own brand MICROSAMPLER as Portable Composite Sampler with years of experience and in regard to demand and needs and put it successfully on the worldwide market .

□ General

Thank you for purchasing our Microsampler 10. All functions of this product have been checked by our pre-sales technical staff. If you find out any technical glitch, please inform your dealer as soon as possible.

1- Box content

- a- Microsampler 10 portable sampling device
- b- 12V / 7A battery
- c- 12V / 2A operating/charging unit
- d- 4-pin socket cable for pulse input and alarm output (optional)
- e- 10 liter PE specimen container
- f- Filtered suction hose
- g- User manual

2- Device Definition

MICROSAMPLER MS10P is a portable composite sampler used for taking samples of liquids from waste water, factory drains and manholes, valleys, water canals and of all kind of liquids that need to be examined. Smart type of electronic control unit with microprocessor operateable with rechargeable battery and adapter, can be programmed to take samples by time in a multiple or single way and has a special structure to work with an external pulse.

Thanks to different language options, menu interface and keypad the amount of samples, the sampling intervals and the time of sampling can be programmed by the user. After taking each sample the pump drains the water remained in the suction hose by working in reverse and allows the line to remain clean for the next sampling process. Reverse operating time can be adjusted according to the suction hose length.

Due to the standardly delivered level switch an early warning such as "Sample container is full" is given when the sample container is full to prevent overflowing. In the same time an alarm will be outputted. If necessary use the concomitant cable.

Microsampler MS10P device is equipped with a special measuring system which allows to take samples just by entering the desired amount without keying any suction height, hose diameter and length thanks to its flowmeter system which is being founded and developed for the first time by Microsampler.

Outer housing of Microsampler MS10P is made of material which is highly durable against bumps and weather conditions. If needed, it can be locked against persons with malicious intent.

3- Preparations before start-up

Microsampler 10 is operateable with the standard battery delivered as standard as well as with an adapter. The device is ready to work after plugging the adapter cable into 2-pin socket which is outside the box. At the same time the battery will be charged. While charging the green LED on the adapter goes off. After the battery is fully charged the green LED lights up again. It takes approximately 14 hours to complete charging.

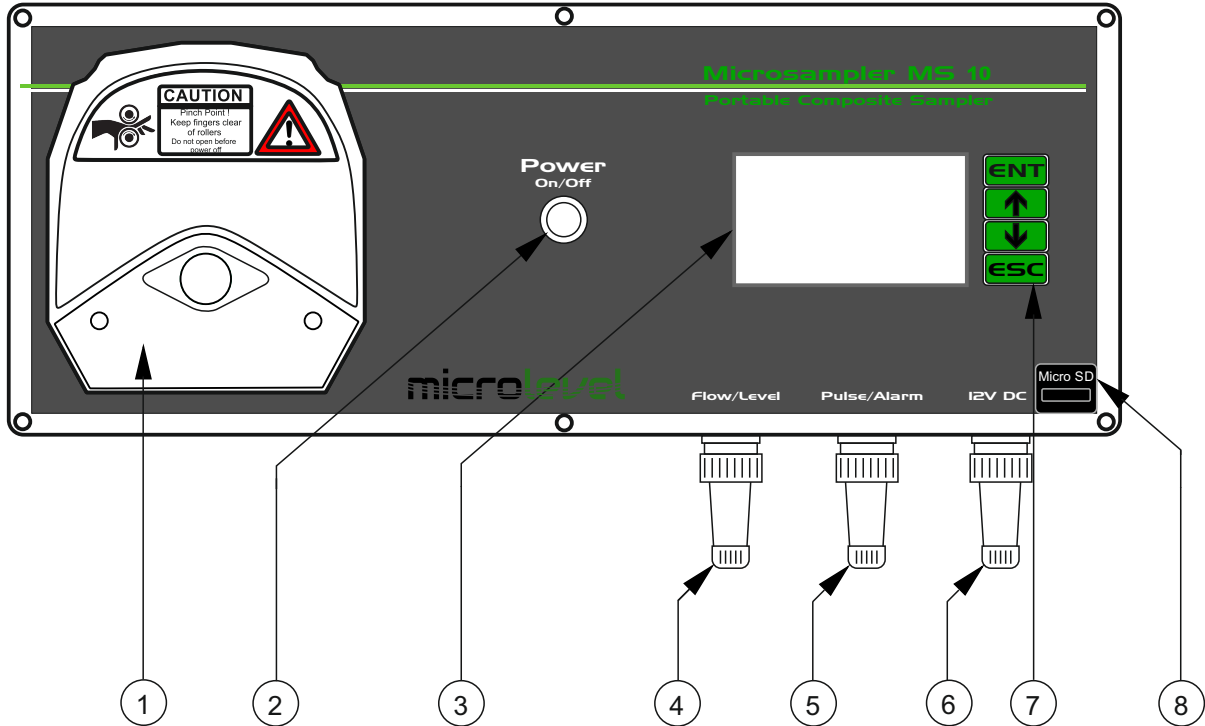
For first run and sampling place the device is in an upright position. Due to constant internal structure and system it must be run in an upright position.

a- Open the device by pressing the power button, after a short time the "MICROLEVEL" logo appears on the screen and the device is ready to take samples.

b- Make sure that the pump hose is in the container and keep the red lid closed.

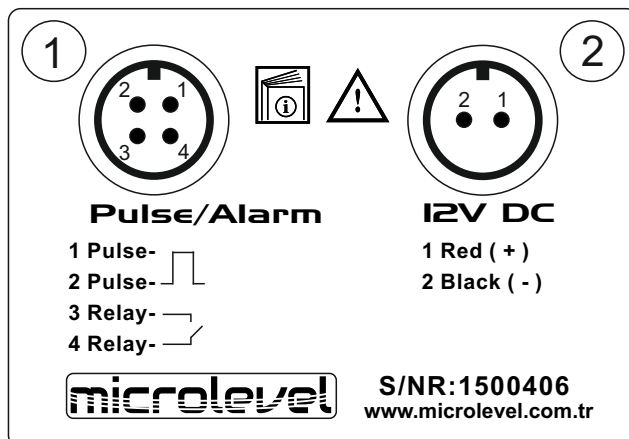
c- Immerse the filtered part on the section line delivered with the device into the water from which a sample will be taken and insert the other end by pressing down into the hose entrance placed on the left side of the box. As there is no screw or damp, unplug the hose by pressing from side. Now by following the instructions on the page 7, take the required amount of samples in the required range.

4- Control Unit



- 1- Pump
- 2- Power switch
- 3- Backlighted LDC display
- 4- Internal flowmeter / sample container full switch socket
- 5- External pulse input / alarm output socket
- 6- 12V DC power input socket
- 7- Control buttons
- 8- SD card slot (Optional)

5- Outer box label, inputs and outputs



1- Pulse input and alarm output

The device can be operated with an optional socket cable through a pulse comes from outside for example from a flowmeter.

Terminal 1 and 2 is used for pulse input. Terminal 3 and 4 should be used for alarm output that provides warning and alerts.

2- Charging/Power Supply Input

The battery can be charged through 12V DC adapter socket which is delivered with the device. The use of the device during charging is possible. Full charging of the battery takes approximately 14 hours. Depending on the amount of sampling interval and samples fully charged device provides approx. 2 days of usage.

6- Composite Sampling

Composite (mixed) sampling is a process of sampling within the same specimen at certain times. MICROSAMPLER MS10P takes sample according to several methods. Water samples can be taken according to user-specified amount and time intervals and as well as through a pulse received from an external flow measuring device. In addition, the user can also take single samples in case of need.

6-1 Time-based Sampling

Time-based sampling is the most preferred sampling method. Both time interval and sampling amount can be set to the desired values. After entering time and amount the sampling process can be started instantly or initiated after an adjustable delay time.

To give an example, if the user wants to take sample with an amount of 250ml once every hour throughout 24 hours, in total 6 liter sample would be taken throughout 24 hours. If the user try to take more than the total amount of the specimen vessel, the smart software of MICROSAMPLER MS10P does not allow to take more than 10 liters of sample and to programm this way. For example, if the user sets sampling amount as 500ml per hour throughout 24 hours and chooses the sampling number as 24, the device will automatically restrict the max. amount of samples as 416ml per hour and the software prevents users from entering more than the quantity value. When programming the device the number of samples to be entered should not exceed a maximum of 100 pcs. When entering this value, the number of each taken sample will be 100ml. (100 pcs. x 100ml = 10lt). Depending on time, the number of sampling is between 1 and 100 pcs.

6-2 Flow-based Sampling

MICROSAMPLER MS10P sampling device has a digital entrance. Thanks to this entrance, the sampling process can be performed by external control. For example, if sampling is desired that is proportional to the waste water, sample can be taken according to the pulse (digital contact) value received from waste water flowmeter within the plant. Sampling process begins with every received pulse. In addition, if the pulses are flowing too often, it is also possible to put a time delay. Sample could not be taken if there is no flow. When a pulse is received to take a sample per hour, an instantly intake may follow during this time intervals as well as a subsequent intake after 60 minutes at pulses which occur frequently in every minute might be desirable.

6-3 Single Sampling

User may want to take a single sample except in the cases described above. Without entering a time limit, user can take a single sample just by entering the desired amount from the device menu "Single".

7- To be considered

- It should be kept in an upright position due to the mode of operation and structure.
- Handle with care so that the device does not tip over due to extreme wind or human error. In case of tipping over the liquid sample in the specimen vessel will be poured out and can cause permanent damage. In such a case please return the device for repair after preliminary purification.
- Before taking a sample make sure that no residues remain in the sampling vessel. Otherwise it will be mixed with new samples to be taken and when the total amount of sample is more than 10 liters "container is full" warning will be issued and sampling process will be stopped.
- To avoid product spoilage especially in hot weather conditions, water samples should be sent to the lab without waiting too long.
- Cylinders within the pump cover are designed for absorbing water by suppressing the hose and they will be rotated through a powerfull engine. Please do not open the cylinder housing without de-energizing before. There is a risk of getting your fingers caught in between when suddently a sampling process begins.

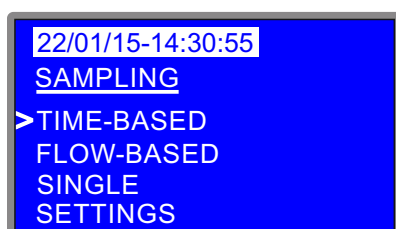


8- Device Menu

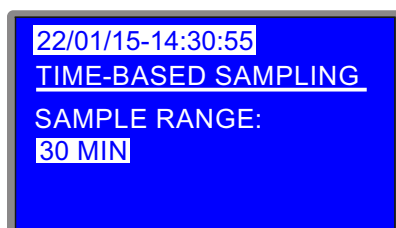


After pressing the "Power" key the MICROLEVEL logo and down below the software version appears on the screen. In case of version update, the software will be updated by a service technician through the USB socket on the control unit. After 3 sec. sampling menu appears automatically. Sampling method is selected by using the "UP and DOWN" keys. Press "ENTER" to confirm.

8-1 Device programming for time-based sampling

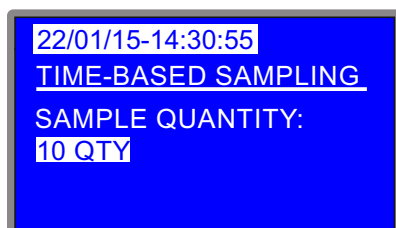


The most widely used method of sampling. Time-based program can be adjusted. Sampling can be started at the desired time by entering time and date. Press "ENTER" after moving the cursor to the "OVER TIME" option ".



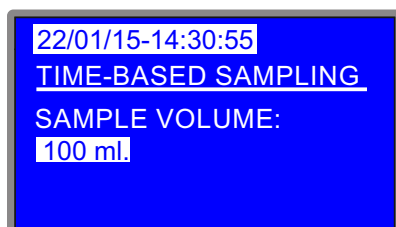
Sampling interval will appear automatically as 30 minutes. Use "UP and DOWN" keys to change this and to set the desired time. Hold the "ENTER" key pressed for 3 sec. to record. Press and hold the "ESC" key for 3 sec. to return.

Note: You can take samples from 1min to 24 hours.



The number of samples will automatically appear as 10 pieces. The number of samples to be taken can be changed by using the "UP and DOWN" keys. Hold the "ENTER" key pressed for 3 sec. to record. Press and hold the "ESC" key pressed for 3 sec. to return.

Note: You can take samples from 1 to 100 sample.

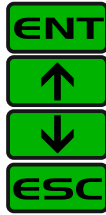
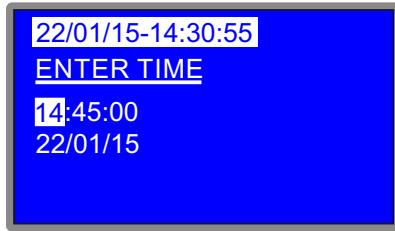


Sample quantity will automatically appear as 100 ml. The number of samples to be taken can be changed by using the "UP and DOWN" keys. Hold the "ENTER" key pressed for 3 sec. to record. Press and hold the "ESC" key for 3 sec. to return.

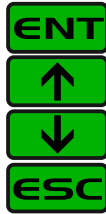
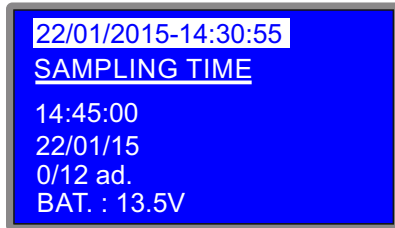
Note: You can get samples from 10ml to 10 liters. However, the system calculates the amount you want with the one from the previous menu, it could not exceed 10 liters in total.



The system has two options available as "ENTER TIME" and "NOW" for first sample to be taken. A certain time and date can be entered or "NOW" option can be chosen to start immediately. In this case sampling will start immediately. The system based on start time will continue with the interval you selected.

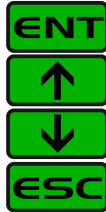
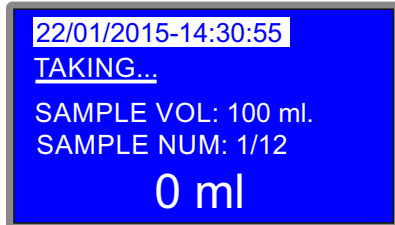


To enter time and date use "UP and DOWN" keys. Press "ENTER" to go to the next option. After entering all press "ENTER" to complete the system program. When a date is entered that is earlier than the current date, a warning message will appear. *Note: If you need to cancel following the start of the sampling process hold the "ESC" key pressed for 5 sec, intake will be stopped and not continued.*

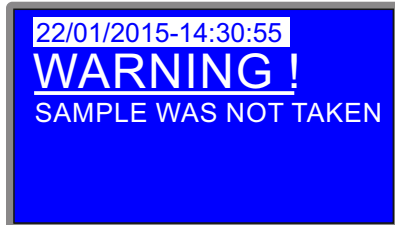


After entering time and while waiting for sample intake the following window will appear on the screen. If you need to change a value or to cancel before or after sampling process hold the "ESC" key pressed for 5 sec.

Note: According to the sample on the screen, the first of the 12 selected samples will be taken at 14:45, there were no sampling up to this point.

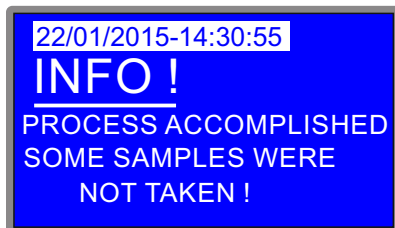


When the sampling begins the following window will appear on the screen. Pump starts to work towards filling direction and the amount appears on the screen. Upon completion of the requested quantity, pump drains the line by working in reverse order and the system waits for the next intake time.



Either there is no water within 3 min. the pump stops and a warning message "Sample was not taken" will appear on the screen. At the same time the device relay is energized thus gives a digital alarm output.

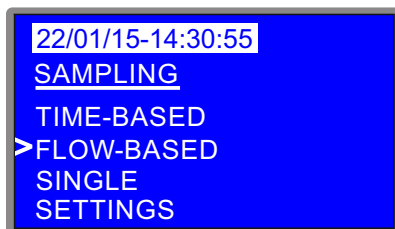
Note: Pump time out as stated on the page 11 can be changed under "SETTINGS" / "SYSTEM SETTINGS" / "PUMP TIMEOUT". Standard is set as 3 min.



When the sampling program is completed, samples that were not possible to take will appear on the screen. At the same time the information about taken and untaken samples is being recorded onto the SD memory card.

Note: SD card unit is optional.

8-2 Device programming for flow-based sampling



Sample proportional to the flow can be taken with a pulse received from an external flow meter. Press "ENTER" after moving the cursor to the "FLOW-BASED" option.

22/01/15-14:30:55
FLOW-BASED SAMPLING
SAMPLE VOLUME:
100 ml.



Depending on flow the sample quantity will automatically appear as 100 ml. Use the "UP and DOWN" keys to change the quantity. Hold the "ENTER" key pressed for 3 sec. to record. Press and hold the "ESC" key pressed for 3 sec. to return.

Note: You can take samples from 1min to 24 hours.

22/01/15-14:30:55
FLOW-BASED SAMPLING
SIGNAL INCOME RANGE
15 MIN



If the pulse coming from an external flow meter is too high, a range of pulse must be entered into the device in order to accommodate the first pulse after a certain time. 30 minutes will automatically appear. Use the "UP and DOWN" keys to change that time. Hold the "ENTER" key pressed for 3 sec. to record.

22/01/15-14:30:55
NEXT SIGNAL INCOME
15:00:00
22/01/15
0/100 ad.
AKU: 12.0V



The appearance of this information on the screen means that a pulse is waiting from an external flow meter. Pump starts working after receiving of pulse. After that intake takes place and waited for the next incoming pulse. If the pulse range is chosen as 30 min., sample is taken again with the first pulse after 30 min.

8-3 Single Sampling

22/01/15-14:30:55
SAMPLING
TIME-BASED
FLOW-BASED
> SINGLE
SETTINGS



If an instant single sampling is desired, the sample can be taken simply without programming. Press "ENTER" after moving the cursor to the "SINGLE" option ".

22/01/15-14:30:55
SINGLE SAMPLE
SAMPLE VOL. :
100ml



The sample quantity will automatically appear as 100 ml. Use the "UP and DOWN" keys to change the quantity. Hold the "ENTER" key pressed to start the sampling process directly.

Note: You can take samples from 10 ml to 1000 ml.

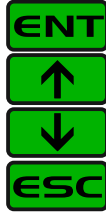
8-4 Settings

22/01/15-14:30:55
SAMPLING
TIME-BASED
FLOW-BASED
SINGLE
> SETTINGS



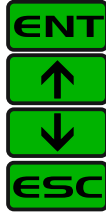
In this menu, there is the possibility of changing time, date, pump test and system settings.

22/01/15-14:30:55
SETTINGS
> SET TIME
SET DATE
PUMP TEST
SYSTEM SETTINGS



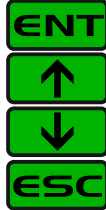
Press "ENTER" after moving the cursor to the "TIME SETTING" option to set the time.

22/01/2015-14:30:55
SET TIME
14:45:00



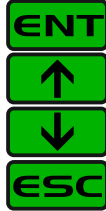
Use the "UP and DOWN" keys to change the time. Press "ENTER" to go to next step. Once all the settings have been entered time setting is finished.

22/01/15-14:30:55
SETTINGS
SET TIME
> SET DATE
PUMP TEST
SYSTEM SETTINGS



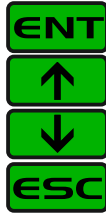
Press "ENTER" after moving the cursor to the "DATE SETTING" option to set the date.

22/01/2015-14:30:55
SET DATE
22/01/15



Use the "UP and DOWN" keys to change the date. Press "ENTER" to go to next step. Once all the settings have been entered date setting is finished.

22/01/15-14:30:55
SETTINGS
SET TIME
SET DATE
> PUMP TEST
SYSTEM SETTINGS



The pump operation is controlled in this menu.

22/01/15-14:30:55
PUMP TEST
PUMP IS READY
^ FORWARD
v REVERSE



Pump rotates in the fill direction after pressing "UP" key. In order to reverse the direction of movement press "DOWN". When the pump is running "PUMP FORWARD" or "PUMP REVERSE" notice appears on the screen.

Note: Pump continues to run as the keys are pressed.

22/01/15-14:30:55
SETTINGS
SET TIME
SET DATE
PUMP TEST
> SYSTEM SETTINGS



This menu is a system menu that is protected by the device password.

22/01/15-14:30:55
PASSWORD
000



The password for the login system is 123. With "UP" key the first digit "1" is entered and passed on to the next digit by pressing "ENTER". Enter "2" for the next digit and press "ENTER" to pass on to the last digit option. Enter "3" and hold the "ENTER" key pressed to enter the system menu.

22/01/15-14:30:55
SYSTEM SETTINGS
> FLOWMETER SETTINGS
BACKLIGHT
PUMP TIME OUT
PUMP REVERSE TIME



This setting is used for calibration of sample quantity to be taken by processing with a coefficient of a signal received from internal flow meter.

22/01/15-14:30:55
FLOWMETER SETTINGS
11500 PI / It



If a certain amount of sample is taken continuously and if it is desired to be exactly right, a sample in this value will be taken and measured and be compared with the amount of ml seen on the screen. In case of a difference the correct value is retrieved by changing the value next to it. As coefficient of each flow meter is different, it is recommended to realize a calibration for exactly values in case of flow meter changes.

22/01/15-14:30:55
SYSTEM SETTINGS
FLOWMETER SETTINGS
> BACKLIGHT
PUMP TIME OUT
PUMP REVERSE TIME



Used to set the backlight while setting or device programming.

22/01/15-14:30:55
BACKLIGHT
120 SEC.



Time is counted after the last press of keys. When the time has expired the backlight doesn't switch off completely, it lights softly so that it can be seen at night. In this case, the backlight lights up after pressing any key.

Note: Can be set between 30 sec. and 120 sec. within 15 sec. intervals.

22/01/15-14:30:55
SYSTEM SETTINGS
FLOWMETER SETTINGS
BACKLIGHT
> PUMP TIME OUT
PUMP REVERSE TIME



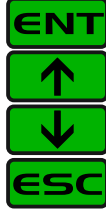
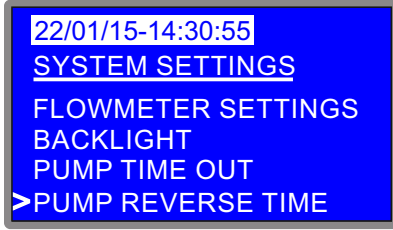
This setting determines the time of drawing water in case of that pump cannot draw water during the sampling process.

22/01/15-14:30:55
PUMP TIME OUT
3 MIN.



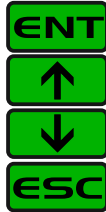
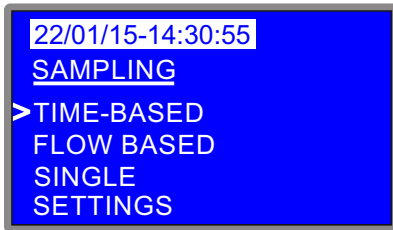
Sometimes the suction tank could be out of water during the sampling process. In this case in order to avoid abrasion of hoses, it should be stopped at the end of a certain period of time. After the period of time has expired, if the measurement values from the flow meter are unreadable, the system will give the information "SAMPLE WAS NOT TAKEN" after stopping the pump.

Note: Can be set between 1 min. and 10 min. within 1 min.

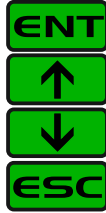
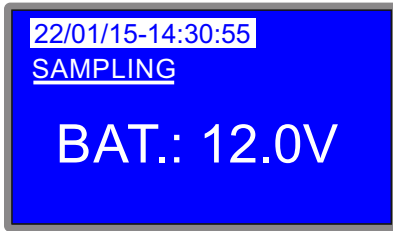


This setting is used for determining of pump reverse time for discharging of the water remained in the suction line after taking sample. Can be chosen between 10 and 60 sec.

9- Menu Shortcuts



Battery voltage is seen on the screen if you hold "ESC" key in the main menu pressed for 5 sec.



If battery voltage drops under 10V, low voltage warning appears on the display. In this case a charger adapter should be used or battery must be charged for 14 hours to be fully charged.

Note: While charging the green LED on the adapter goes off. After the battery is fully charged the green LED lights up again

10- Technical Specifications

Model	: MICROSAMPLER MS10P portable composite sampling device
Type	: Micro-processed smart type, programmable
Mode of operation	: Time-based, flow-based- manual
Operation record	: SD card (optional)
Version upgrade	: Possible, with USB by service
Operating temperature	: 0...70°C
Power supply	: 12V 2A adapter or internal 12V battery
Battery	: Internal 12V 7A
Sample container	: Polyethylene, 10 liter
Housing	: Polypropylene
Weight	: 11.2 kg
Pump type	: Peristaltic
Pump hose	: Neoprene
Suction height	: 8m
Suction line	: Standard 5m, optional 10m, filtered 8x12 PVC hose
Exterior dimensions	: Height: 610mm, Width: 430mm, Depth: 260mm
Sampling interval	: Programmable between 1 min. and 24 hours
Sampling quantity	: Programmable between 10ml and 10000ml
Number of samples	: Programmable between 1 pc. and 10 pcs.
Pulse input	: Available, digital input from outside
Alarm output	: Available, 1 x normally open relay output
Low battery warning	: Available, if battery voltage is under 10V

11- Warranty and maintenance

The device is guaranteed during the first 2 years after purchase, covering manufacturer defects excepting possible battery and pump hose defects. The interior box cover of the device must be opened only by authorized service. The faults occur as a result of user interventions won't be valid under warranty terms. In case of failure, please send the device to the manufacturer for repair.

To avoid absorption of muddy, bulky and sandy particles do not insert the suction hose completely to the bottom. Otherwise, permanent damages can occur. Use original pump hose as needed to change. Different types of hoses will affect performance.

If necessary, clean and oil the overwhelming cylinders inside the pump, ensure that cylinders and chambers are clean before change the hose.

-Not long after the start of working sampling, sampling container will start to fill up with water depending on the suction height after 15-20 sec.

If the water cannot be drawn;

- 1-Check whether the suction line is in the water.
- 2-Check any crushing, breaking and folds on hose.
- 3-Make sure that the suction filter is not clogged.
- 4-Make sure that the pump hose is not ripped or is in the correct diameter, if you have changed new.

-The flow meter unit of the device is turbine type flow meter with pulse output. Provides the water flow, rotation of airfoil inside and hence to read the flow rate. In suction filter unused cases any solid piece squeezed in the airfoils will prevent you from reading the flow rate.

If the water is filling the sample container but the flow rate does not change, the reason may be a solid piece squeezed or mud accumulated between airfoils. In such a case, clean the inner part of flow meter by removing the six screws on it. Make sure that the fan is mounted in the right direction.



-Undrawing of water although pump is functioning or in case of unchangeable flow rate, the pump continues to run for three minutes and if there is no change on flow rate, "Sample was not taken" warning will appear. In this case, execute the required maintenance by following the instructions above.



Microlevel Ölçü ve Kontrol Cihazları A.Ş

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