

# pH PRO Controller

The device is used to control and regulate pH level in hydroponic systems and water preparing units automatically



## Complete Set




pH PRO Controller - 1 pcs.

pH electrode - 1 pcs.

Calibration solution pH 4.01 and pH 7.01

Tube with micro-fittings - 4 pcs.

Suspended fixture - 2 pcs

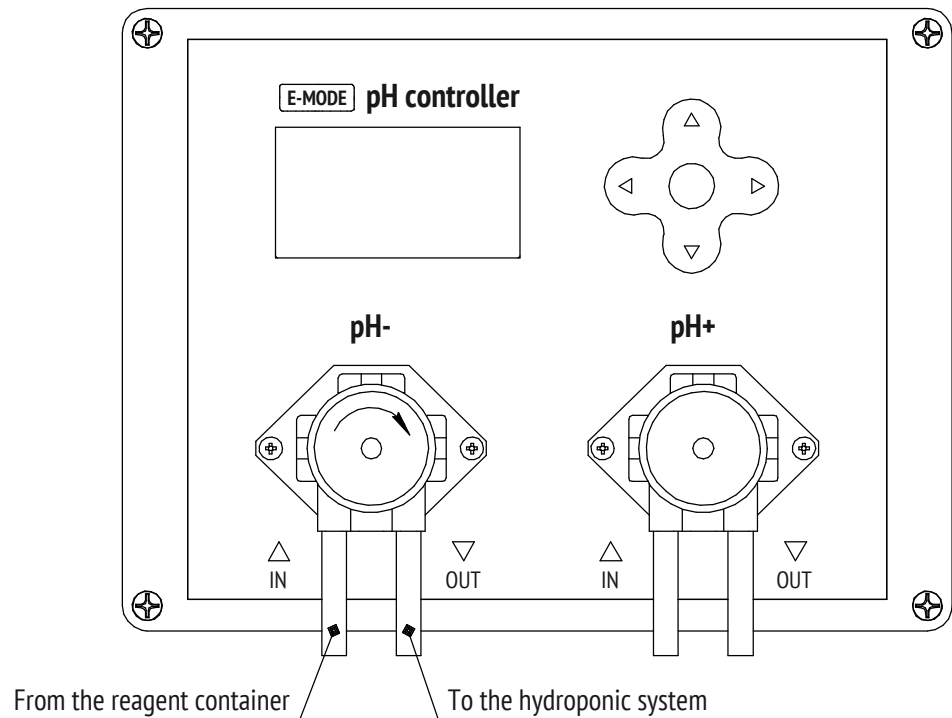
-  Microprocessor control
-  Automatic pH level control
-  Automation of hydroponics

Made in a lab E-Mode.pro

[www.E-Mode.pro](http://www.E-Mode.pro)

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Measuring range: 0~14 pH  
Operating temperature: 0~80°C

Store electrodes in a special solution to avoid their drying. To clean electrodes from sediments use electrode cleaner.

Not to damage the electrode use a sampler. Do not place electrode's cable into a solution. Sampler's pump should work continuously.

**WARNING!** It is important to check peristaltic pump operation with the first start in the manual mode.

To turn to automatic mode it is necessary to fill in pH regulators tubes in a manual mode.

## Device

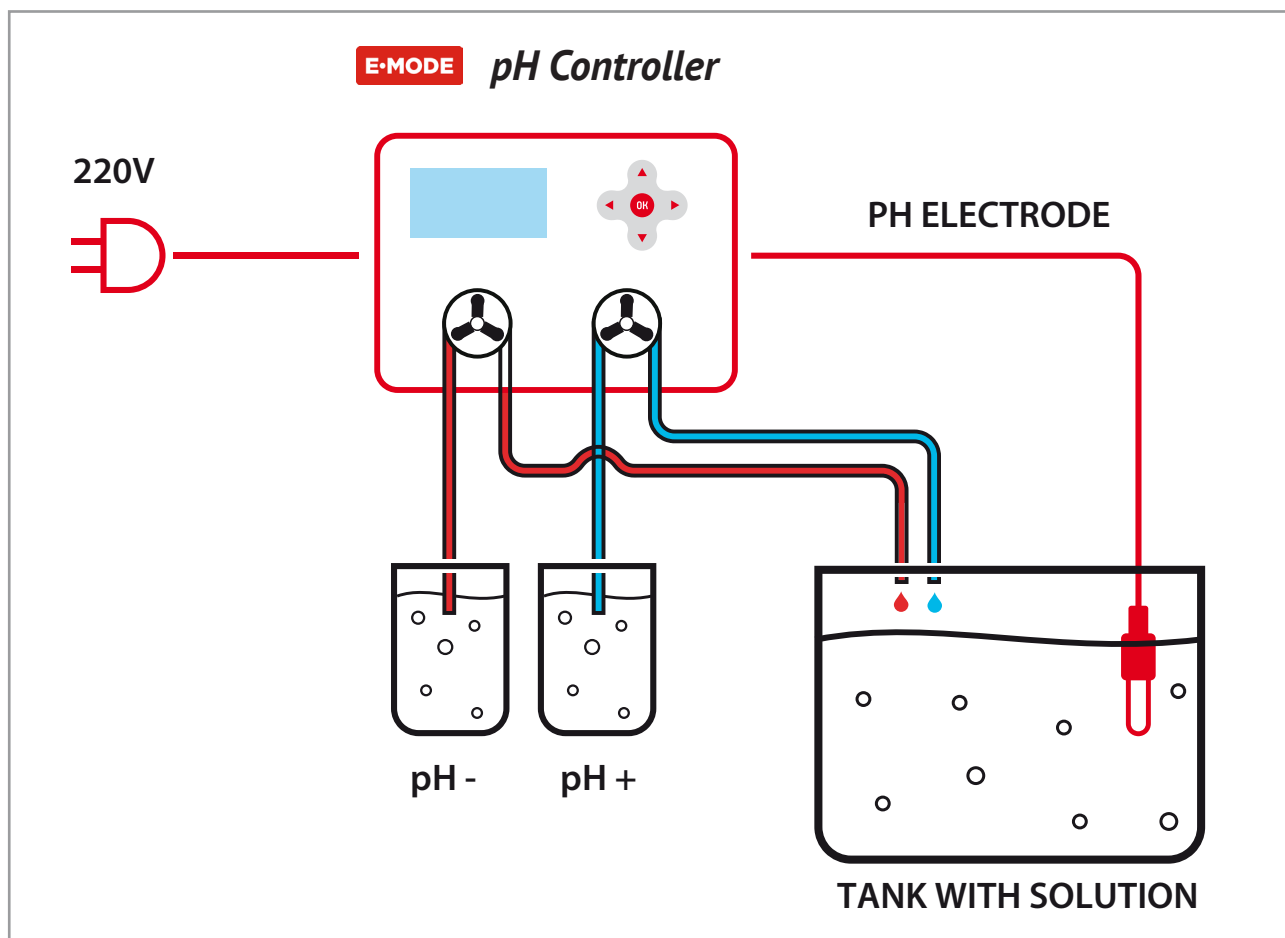
- 2 peristaltic pumps
- Graphic display and keyboard – to set the device
- Traditional PI-regulator
- pH electrode – to measure pH level

## Functions

- pH level measurement and its regulation (with any liquid on the basis of PI-law and peristaltic pump)
- Displaying current pH level measurements
- Manual addition of reagents (pH up and pH down) according to set dosing

## Technical feature

Tank volume - 10 -2000 L  
Dosing pause - 0,5 - 48 h.  
Уровень pH - от 3.0 до 14.0  
Manual dosing - up to 50 ml  
Language: Russian, English  
Voltage: 220 - 240 V  
Current frequency: 50 hz  
Power consumption: 10 W  
Dimensions: 100 x 200 x 150 mm  
Protection: IP64  
Weight: 1,8 kg



**WARNING!**

Reagents (acid pH down, alkali pH up) should be used as solution 20% - 30%. More concentrated reagents can disable the device!

**Recommendations:**

Do not setup pH hysteresis below 0.5, as it can complicate nutrient absorption, even lead to plants death and reagents overuse.

**Connection**

Place the device anywhere 1,5m far from the tank (pH sensor cable – 2m). Place the electrode into the tank (see pic.)

If the system is more than 200L make active circulation inside the tank with a nutrient solution.

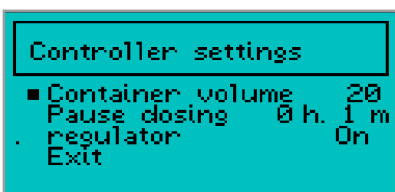
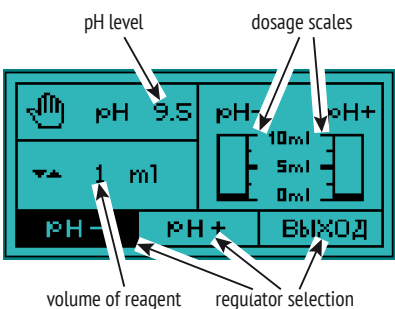
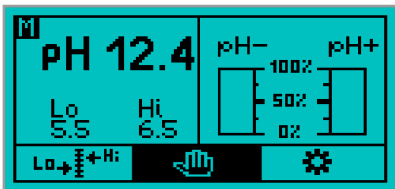
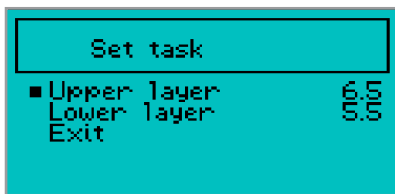
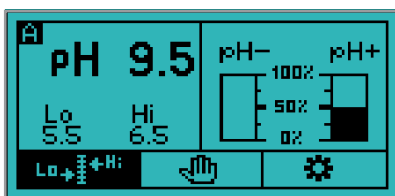
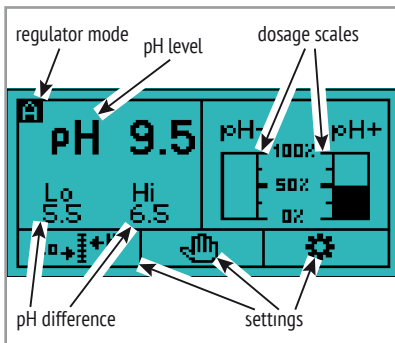
Place the pumps' hoses into the tank with solution/water. Connect the other 2 hoses with the pumps' input; the other ends of the hoses should be placed into the bottles with acid and alkali according to the pumps marking on the panel.

Then plug in the device (220V). Then setup a necessary to maintain pH level (point 2) and tank volume (point 4.2).

**Settings**

When the device is plugged in, then the display shows logo, and operating mode is on.





## 1. Display Symbols

«A» in the upper left corner means the device is in automatic mode and reagents are added automatically when needed. If automatic mode is off, «A» is changed for «M», and the reagents will not be added, only current pH level is displayed.

Under the current pH level on the display it is shown the pH level maintained by the device.

The picture shows the device is set to maintain hysteresis (lower and upper pH levels) from «LO» - 5,5 to «HI» - 6,5 (recommended by default). Hysteresis setup is described in point 2.

The scales of reagents dosing are displayed on the right. If both scales are empty, then pH level is fine. If one of the scales is colored (see pic.), then one of the reagents is periodically added (in this case – pH up).

The extent of scale coloring indicates the dose volume of the reagent.

At the bottom of the screen there is a menu bar.

To enter menu, press «OK», the first window in the menu bar is highlighted. This window is to enter pH hysteresis setup. To move in the menu bar, use ← and →.

## 2. Setting pH (hysteresis)

Select pH level setting window in the menu bar and press «OK» again.

Set upper pH level, then with ↓ button turn to lower pH level setting and set a lower pH level. Upper pH level should be higher than the lower one. The pH range of the solution is maintained within this range.

You can move in the menu with ↓ button only.

To exit pH level settings place cursor on «Exit» and press «OK» button.

## 3. Manual control

Manual control mode is used to dose reagents manually. Available dosing: 1 - 10ml.

Highlight the line with → in the menu bar (middle window).

Press «OK» to open the window of manual control. The window on the left displays current pH level, and below – selected dosage. 2 graphic scales on the right show selected dosage for both reagents. Select a necessary reagent and its dosage, press «OK», a corresponding pump turns on to add a selected reagent into solution.

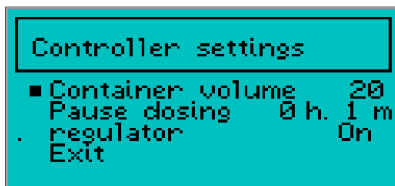
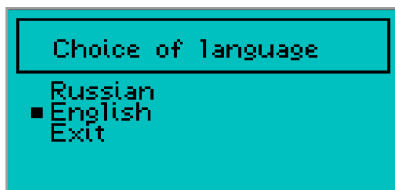
To exit this mode, turn to “Exit” in the menu bar and press «OK».

## 4. Settings

With → in the menu bar select middle window and press «OK» to open Settings window.

### 4.1. Select language

You can select Russian or English.



**NOTE!** The device is calibrated and use-proven before sell!

**IMPORTANT:** operating temperature should not exceed 27°C when calibrating.

**RECOMMENDATIONS:** To calibrate with the calibrating solutions included open the packs with those calibrating solutions. Pour the solutions into the bottles with hermetic plugs and mark their pH level. Sink the electrode into the First solution and keep it there for one minute. Compare the pH level of the solution with the data of the device. Rinse the electrode with tap water and wipe it dry. Then do it step by step again with the second solution. If the data you get and those of the device differ no more than +/- 0.3 pH, then the readings of the device are correct.

**NOTE!** While calibrating do not touch the electrode or its cable. Exactly follow the instructions in the user manual. Do not take the electrode from the first calibrating solution until «Upper pH level» gets to the second menu point.

## 4.2. Controller settings

You can setup parameters and modes for control and regulation.

The first line is to setup tank volume to maintain a set pH level in. Available volume: 20 - 200L.

The second line is to setup dosing interval: 0,5 - 48 hours.

The third line is to select controller's mode: on/off.

## 4.3. Calibration

It is recommended to check the accuracy of the device readings once in half a year.

To calibrate and check the device different solutions can be used, but their pH level should not be lower than 3.5 and higher than 12. It is recommended that the difference of upper and lower levels of solutions should not to be less than 3.

The complete set includes 2 calibration solutions: pH 4,01 and pH 7,01.

### Calibration

Select «Low pH level» in the menu and sink the electrode into the solution with the lower pH, then with ← and → pH buttons set the pH level of the solution you use, wait until the readings of the indicator (upper line) stops changing or changes within minimum levels.

Take the electrode out of the calibrating solution, rinse and wipe it.

After that, pressing ↓ button, select «High pH level» and sink the electrode into the solution with high pH. Set the readings of the second solution. Also wait till the readings of the indicator stops changing and select «Save», press «OK» button. The pH level of the solution the electrode is put in should be displayed near the indicator.

If you want to get back the initial settings, then get to a corresponding option and press «OK».

Calibration is finished.

**Settings by default:**

Tank volume:	20L
Dosing pause:	1 min
Automatic mode:	on







**Warranty**

Warranty period: 1 year since the day of purchasing. Free service and warranty repair is carried out by the specialists of E-mode laboratory.

The address of the authorized service center: Russia, 614099 Perm, Dzerzhinskii Str. 59, office 405.

The warranty is valid in case the operation conditions are complied with and there is a seller's stamp with the date of purchasing.

**Operation conditions**

-  Working with fertilizers and pH regulators use personal protection equipment.
-  Operation temperature (of the environment): 0°C - 45°C
-  Operation humidity level: 0% - 90%.
-  The device is not waterproof, protect it from moisture. Use voltage regulator to avoid power surges in the mains.
-  Voltage (admissible range): 220 – 2240V.  
AC frequency (admissible range): 50 hz / 47...63 hz.
-  Keep the device and its spare parts out of reach of children.

Sale date/stamp \_\_\_\_\_

Serial number \_\_\_\_\_