

# EC PRO Controller

The device provides automatic control of fertilizers' concentration of nutrient solution (EC level) in hydroponic systems and water preparing units



## Complete Set




EC PRO regulator - 1 pcs.

EC electrode - 1 pcs.

Calibration solution 1413 mS - 1 pcs.

Tube with micro-fittings - 6 pcs.

Wall Fixture - 2 pcs.

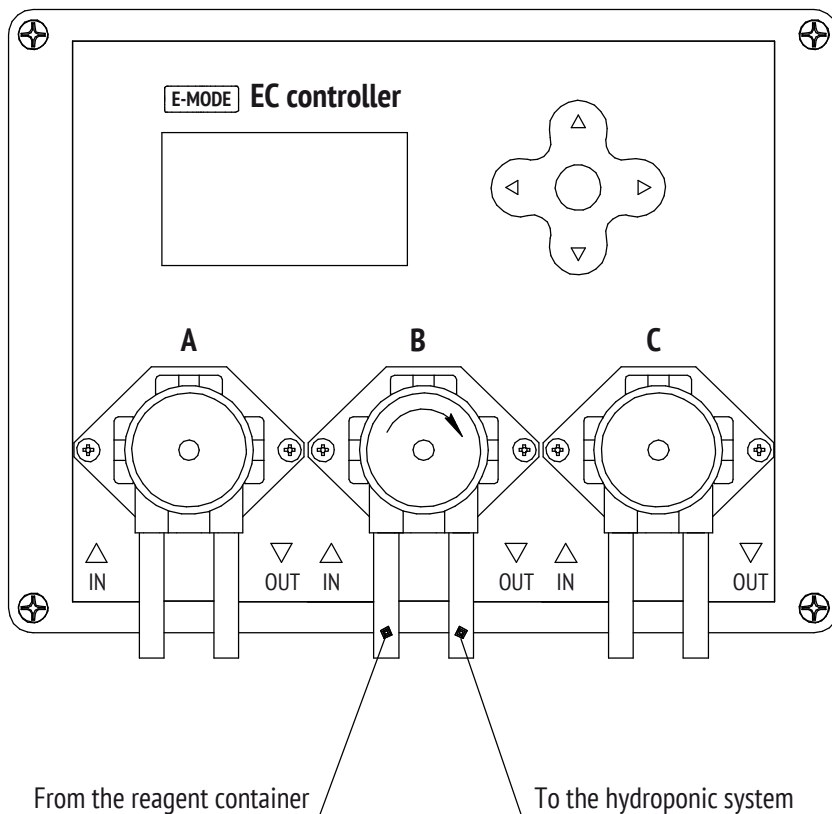
-  Microprocessor control
-  EC level control
-  Hydroponics automation

Made in a lab E-Mode.pro

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

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Accuracy of measurements:  
10~200mS/cm

Operating temperature: 0~80°C

Measuring range : 0.01~5.0 mS

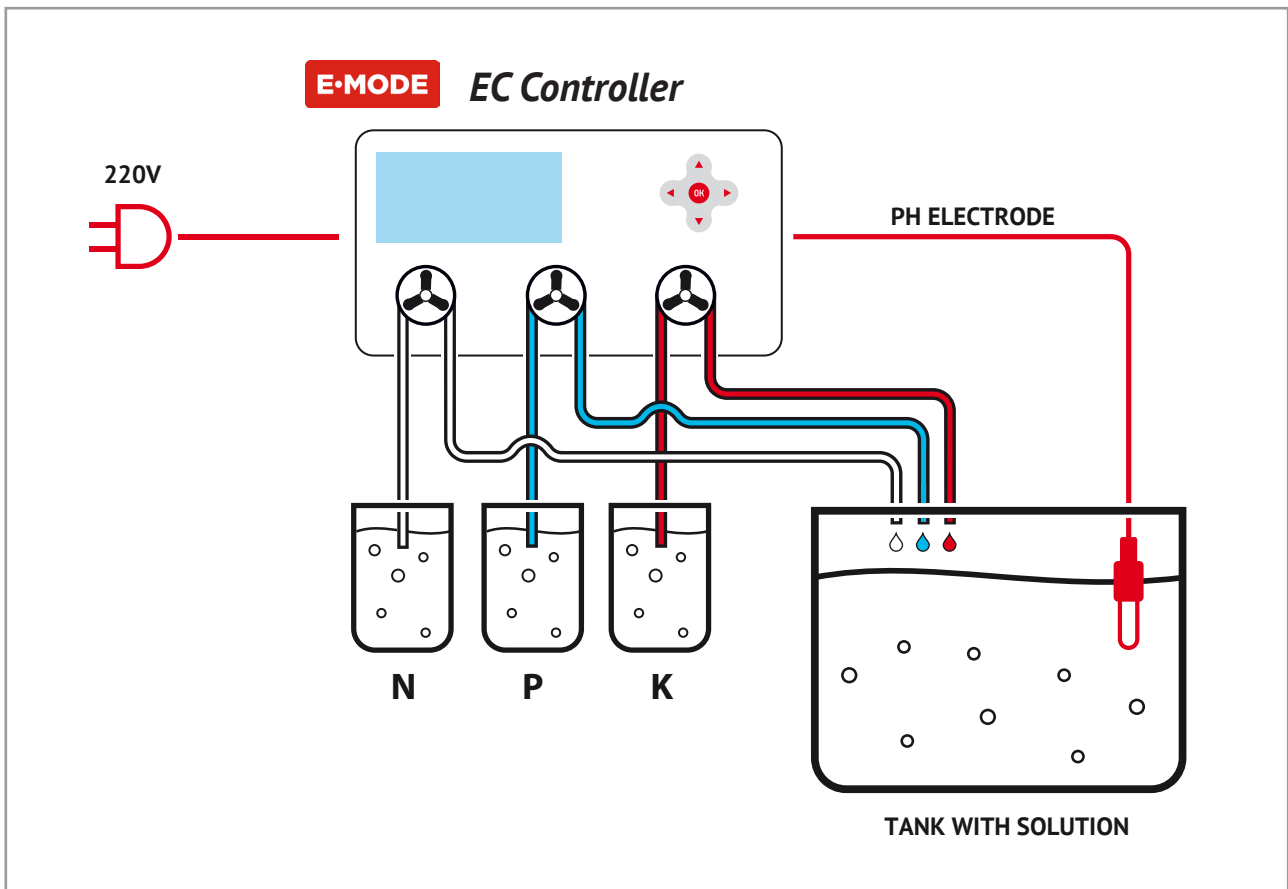
Store electrodes in a special solution to avoid their drying. To clean electrodes from sediments use electrode cleaner. Not to damage the electrode use a sampler. Do not place electrode's cable into a solution. Sampler's pump should work continuously.

**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.

## Settings by default

Fertilizers' dosage is setup in ml/10L (Table1)  
 Fertilizers: **Flora series by General Hydroponics**  
 Tank volume: **40 L**  
 Dosing pause: **1 h**  
 Protection: **on**  
 Regulation: **on**  
 Menu language: **Russian**

Fertilizer	Sprout	Vegetation	Flowering
EC (mS)	0,4	1,0	1,4
Comp. A	2,0	15,0	5,0
Comp. B	2,0	10,0	10,0
Comp. C	2,0	5,0	15,0



### Technical feature

Tank volume: 10 - 2000 L

Dosing pause: 0,5 - 720 h.

EC level: 0.1 - 5.0 mS

Programs by default: Seedling, Vegetation, Flowering

Manual dosing: 1 - 50 ml (single press of a button)

Dosing time: 1 - 60 sec. (regulation mode according to timer «T»)

Menu language: Russian, English

Voltage: 220-240 V

Current frequency: 50 hz

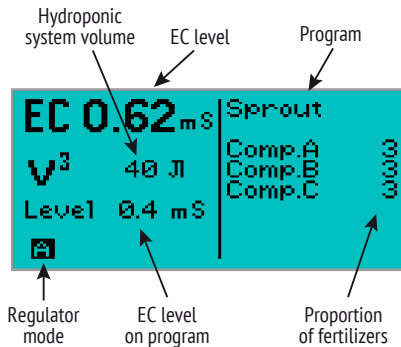
Power consumption: 10 W

Dimensions: 100 x 200 x 150 mm

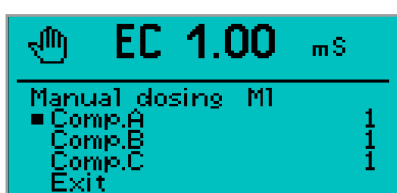
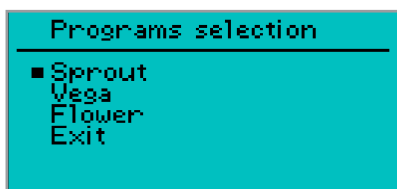
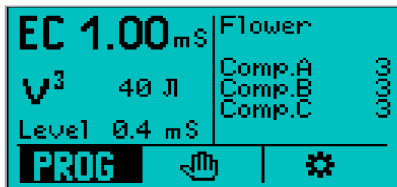
Protect: IP64

Weight: 1,9 kg

# E-MODE



The pump can be removed by pressing the clamps on the sides.



## Connection

Place the device anywhere 1,5m far from the tank (pH sensor cable – 2 m). 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 (Table1)

Then plug in the device (220V). Fertilizer dosing program is to be selected and setup: seedling, vegetation and flowering, tank volume V3 (point 3.2.1).

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

## Main Window

Main window displays the current EC level. In

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

In «Timed dosing» mode «T» is displayed. Below current EC level readings hydroponic systems volume is displayed (L) «V3», then goes EC level of the solution maintained by the device. In the picture it is shown that the device is setup to maintain EC 1,4 mS.

EC level setting is described in point 3.5.2.

## Menu selection


On the right «Flowering» mode is displayed, and fertilizers' dosage is setup for this mode.

To enter menu press «OK», menu bar comes at the bottom, and the first tab «PROG» is highlighted. To move in the bar use ← and →. Press «OK» again in the «PROG» tab to enter programs by default: Seedling, Vegetation, Flowering.

## 1. Mode selection

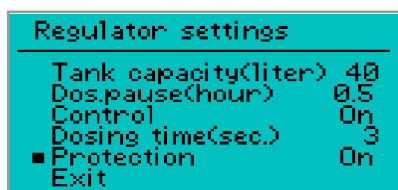
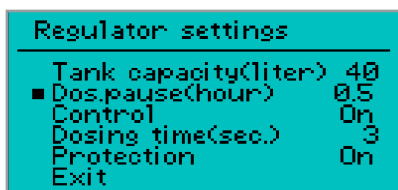
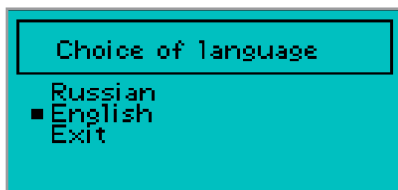
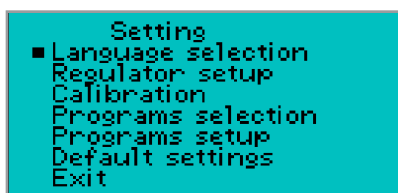
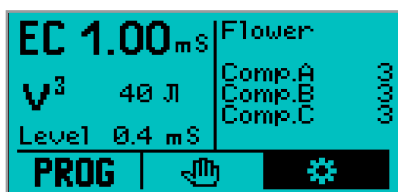
Press «OK» to turn to another window displaying set program settings. To turn to other programs use ↓. To confirm a selected program press «OK».

## 2. Manual dosing


Turn to the second menu  item with the right arrow and press «OK» to enter manual dosing.

Top line shows current EC level, below necessary fertilizer is chosen.

Use ← and → to set up fertilizer's dosage (fertilizer will get into the tank) and press «OK».



## 3. Settings

Turn to the third menu  tab and press «OK» to enter settings menu.

### 3.1. Select language

Russian and English are available to choose.

Russian by default.

### 3.2. Controller's settings

To setup:

#### 3.2.1. Tank volume

(V3): 10 - 2000 L.

#### 3.2.2. Dosing pause

The interval is setup in hours: 0,5 h (30min) - 720 h (30 days).

#### 3.2.3. Regulation

On: Dosing in automatic mode.

Off: automatic mode is off; the device shows current EC level.

Timer: dosing is carried out on by means of timer; EC sensor data are not used. The device takes a pause (mentioned in point 3.2.2. «Dosing pause» (h)) and adds fertilizer within a time period mentioned in point 3.2.4. «Dosing time» (sec).

#### 3.2.4. Dosing time

It is carried out if "Time" mode is on. This setting states how many seconds the pump is working. EC sensor data are not used.

#### 3.2.5. Protection

On/off protection is to be selected.

**On:** protection is activated.

If the solution in the tank id over (EC electrode gets dried, readings become zero), after adding 3 doses of fertilizer, the device turns off automatic regulation until other mode/command is confirmed.

The window «Continue regulation?» comes out. Choose "NO" to stop automatic regulation («A» symbol changes for «M»). To get back top automatic mode, enter «Regulation» (point 3.2.3.)

If you are sure everything is normal and the EC level of solution is really zero (reverse osmosis water), choose «Yes», and the device adds fertilizer three times after a set pause (point 3.2.2.).

If EC level does not increase, the window with command selection is displayed again.

**Off:** protection is off. If the EC level is zero, selection window does not come out. The devices regulates automatically, and it can lead to over-fertilizing, over-drying and disabling EC electrode in case there is no solution in the tank.

**IMPORTANT:** when calibrating the device, use temperature compensation table.

Calibration ( 798) EC 4.30
■ Calib.LevelsOut. 798
Low EC level 1.4
Upper EC level 2.8
Save?
Initial calibration
Exit

### 3.3. Calibration

**NOTE!** The device is calibrated and use-proven before sell! Calibration is not required for a long time!

The device can be calibrated on the basis of 1 or 2 points (depending on the number of solutions you have).

Prepare EC calibration solutions: 1,1 up to 4,5.

#### 3.3.1. Setting zero

Wipe the electrode and get stable reading of the indicator (18 - 20) and press «Down» button.

#### 3.3.2. Lower EC point

Place the electrode into calibration solution No 1, set the datum of calibration solution No 1 with «Left» and «Right» buttons. Wait until reading of the indicator stops changing. Press «Down». Take out the electrode and shake it off. Turn to point 3.3.3. Upper EC point.

#### 3.3.3. Upper EC point

Place the electrode into calibration solution No 2, set the datum of calibration solution No 2 with «Left» and «Right» buttons. Wait until reading of the indicator stops changing. Press «Down». Take out the electrode and shake it off. Turn to «Save?»

#### 3.3.4. Save?

Press «OK», the device is calibrated. Place the electrode into nutrient or calibration solution to see the current EC. Press «Down». Turn to Factory calibration.

#### 3.3.5. Factory calibration

Leave out this step with «Down» button.

Important: when calibrating the device, use temperature compensation table.

#### 3.3.6. Exit

Press «OK», the device is calibrated. it turns to the main window and shows current readings.

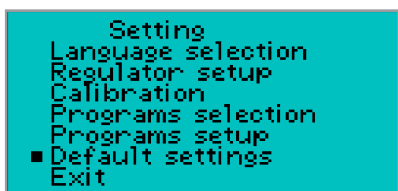
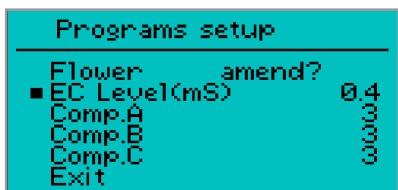
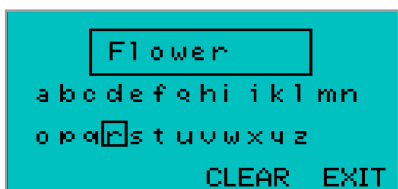
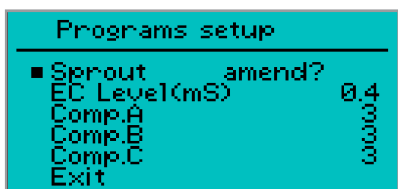
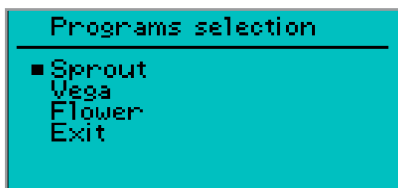
#### 3.3.7. One point EC calibration

Pass step 3.3.2 «Low EC point». Turn to step 3.3.3., «Upper EC level», with «Left» button set calibration solution = 0.

Save? - OK

Exit - OK

The device is calibrated!



### 3.4. Program selection

It is used to choose and change the setup feeding program by default.

### 3.5. Program Setup

It is used to setup the parameters of feeding program, chosen in 3.4.

#### 3.5.1. Changing program names

Press «OK», window asking to confirm changes come out. Chose «Yes» to see the window and choose Russian or English alphabet. If you choose Russian, Cyrillics is on. If you choose English, window with Latin alphabet comes out. Choose letters with arrows and confirm with «Ok» button. Choose «CLEAR» and press «OK» to delete a letter. To choose small letters press down arrow. Numbers and symbols are also available.

To exit this menu chooses «EXIT» and press «OK».

#### 3.5.2. Setting EC level

Admissible values: 0,1 - 5 mS.

With next 3 tabs of submenu it is possible to change fertilizers' names and dosage in ml/10L with «OK» buttons and arrows ← and →.

### 3.6. Settings by default

To get back to settings by default, press «OK». In the window «Return Default Settings» choose «Yes» or «No» with buttons «Left» or «Right». Press «OK» to confirm.

«Yes» - the device turns to settings by default and to the main window.

«No» - the device turns to menu 3 (Settings).

### 3.7. Exit

Press «OK» to get to the main window and see main parameters.



**RECOMMENDATIONS:**

Check all parts of device and grow system and keep it clean.

Valves, pumps, relays, fittings, tubes and connectors are easily clogged, and the system can work incorrectly.

The system should be checked and cleaned each 6 months or after each harvest.







**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 – 2240 V.  
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 \_\_\_\_\_