

# OPERATION MANUAL

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## BEHJOO Controller CNT 100F

### pH Transmitter Wall Mounted



# Technical Specifications BEHJOO Controller CNT100F

## pH Transmitter

### 1-General specifications:

- pH Measurement RANGE  
2/00 Up to 16/00 With the pH accuracy of 0/01
- Electrode voltage measurement in the range of 490 up to 490 Millivolts with an accuracy of 1mV
- Automatic calibration:
- MTC - Manual Temperature Compensation
- Two separate commands for starting the solenoid valve, pump or contactor up to 2 Amps 250 volts
- Display specifications E0, Slope electrode
- Ability to select two-point calibration or three-point calibration
- Flow output 4 up to 20 mA or 0 up to 20 mA non-isolated (By order)
- Body Material ABS, Degree of protection IP54
- Ability to work at temperatures of -10 to 50 degrees Celsius and relative humidity 0-90%

### 2- Lateral Equipment:

- Types of pH electrode
- Types of electrode conduction

## Introducing the different parts of the device



Figure No.1

### 3-Front view of the device (Figure No.1)

1- LCD Display

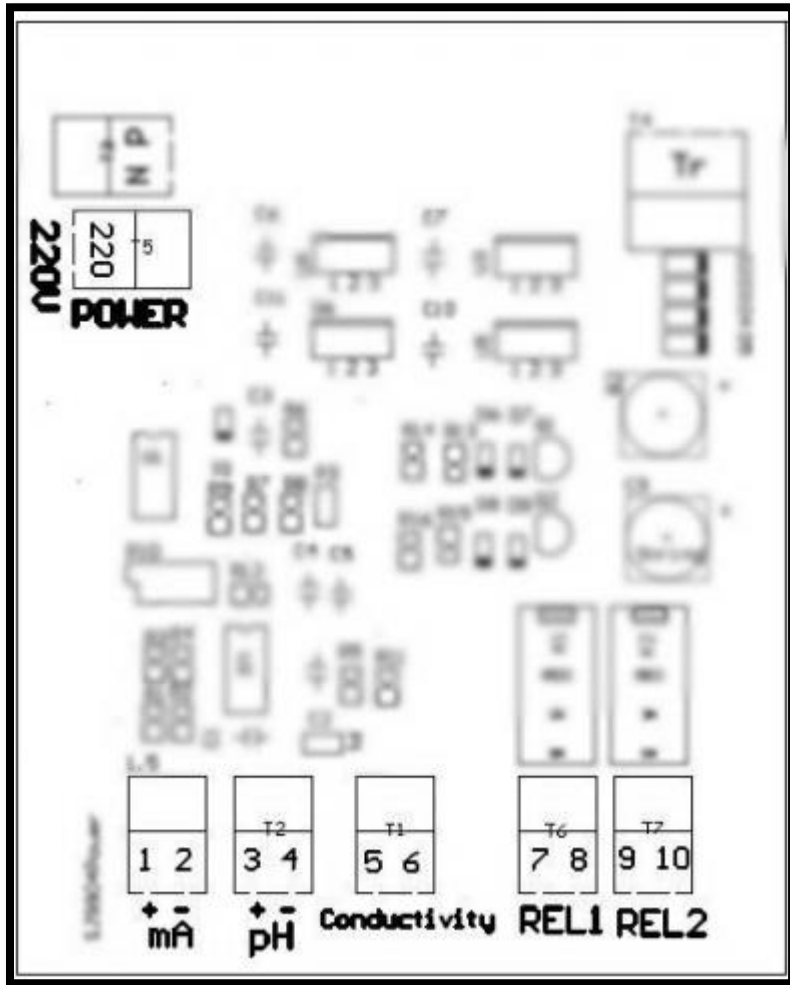
2-The Enter key is used to enter the menu or save the values displayed

3- The Key ▼ to lower the menu and reduce the displayed values

4-The key ▲ to increase the menu and increase the displayed values

5-Escape key to Exit the displayed menu or delete the steps or resetting

#### 4-Behind View of the device and terminals (Figure No.2)



1 and 2- Location of Output connection Fluid (Non-isolated)

3 and 4- Location of pH electrode (Connect the Cable wire core shield to + and Shield cable body to -)

5 and 6-Location of connection Conductor electrode or TDS

7 and 8- Output terminals for relay command 1

9 and 10- Output terminals for relay command 2

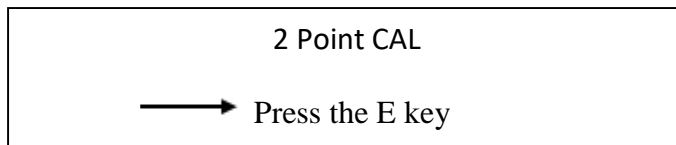
POWER: Location of Input power

## 6- Main menus

- 1- Menu of the select two-point calibration or three-point calibration (2/3 point CAL)
- 2- Menu of the Select the automatic or manual compensation system for temperature change ATC: OFF/ON
- 3- Menu of the Manual temperature adjustment (MTC)
- 4- Menu of the Calibration (Calibration Mode)
- 5- Menu of the displaying the electrode specifications (Electrode Eo , Slope)
- 6- Menu of the setting the on and off points for the relay 1
- 7- Menu of the setting the on and off points for the relay 2
- 8 – Menu of the Flow output set point (By order)

### 1- Menu of the Calibration point selection

Press the E key once, use the key ▼ and ▲ to select the above menu,



This means that the display must show above value.

Press the E key once, use the key ▼ and ▲ to selection of the two-point or three-point calibration.

(Two-point to use the buffer Ph4, Ph 7 and or three-point to use the buffer Ph4, Ph 7 and Ph10)

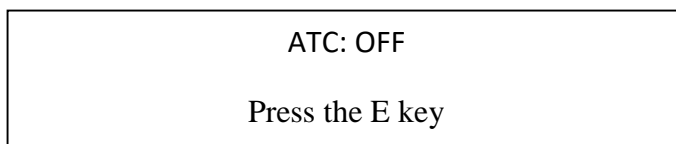
After selecting, once press the E key to save information.

Use the Escape key to exit the main menu.

### 2- ATC Selection menu

If you do not use the temperature sensor (ATC=OFF)

Press the E key once, use the keys ▼ and ▲ to select the above the menu,





This means that the display must show above value.

To enter this the menu, press the key E once.

Use the keys ▼ and ▲ to select OFF mode. (ATC OFF)

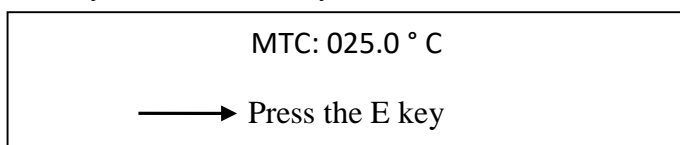
After selecting, once press the E key to save information.

Use the Escape key to exit the main the menu.

### 3- Menu of the Manual temperature adjustment MTC

If you do not use the temperature sensor (ATC=OFF), you can enter the desired temperature in this section

Press the E key once, use the keys ▼ and ▲ to select the above the menu,



This means that the display must show above value. To enter this the menu, press the key E once.

Use the keys ▼ and ▲ to select the proper temperature.

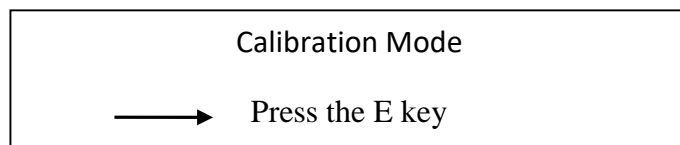
After selecting, once press the E key to save information.

Use the Escape key to exit the main the menu.

### 4- Menu of the Calibration (Calibration Mode)

This the menu is used to calibrate the device, according to the selection of two-point or three-point calibration, First prepare the 4/00 pH ,7/00 pH and 10/00 pH buffer solutions and after connecting the electrode to the transmitter and placing the electrode and temperature sensor(in case of use ATC) inside the standard solution, enter this part.

To enter this the menu, press the key E once. Press the E key once, use the keys ▼ and ▲ to select the above the menu,



This means that the display must show above value.

To enter this the menu, press the key E once.

Placing the electrode into the buffer 1(7/00 pH), If your buffer is not exactly the number 7/00, you can select your Intended pH with the keys ▼ and ▲, for instance (6/86 pH).

After the solution is balanced and the changes in the electrode signal are fixed, press the E key. If there is a problem in the work steps, the error message will appear.

Calibration ERROR!!!
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If your standard solution is not exactly equal to the number shown, you can select your Intended number with the keys ▼ and ▲, for instance (1413µS)

After the solution is balanced and the changes in the electrode signal are fixed, press the E key. If there is a problem in the work steps, the error message will appear

Calibration ERROR!!!
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Exit this the menu with the ESC key and Check that the buffer and connections are intact.

If the device is calibrated correctly with buffer 1, we will enter buffer stage 2. In this case, after rinsing the electrode with distilled water, place the electrode in buffer 2(4/00pH) and after the solution is balanced, press the E key. If there is a problem in the work steps, the error message will appear and Check that the buffer, electrode and connections are intact.

If the buffer 2 calibration is correct, we move on to the next step. To calibrate with buffer 3(1000 Ph), repeat the previous step. Finally, press the ESC key.

### **5- Menu of the displaying electrode specifications Electrode Eo ,slope**

After the calibration is completed, the electrode specifications such as Slop, Eo for values that are less than 7/00 Ph and Slop 2 for values greater than 7/00 Ph are displayed. You can enter the measurement mode by pressing the Escape key.

### **6- Menu of the setting the on and off points for the relay 1**

Press the E key once, use the key ▼ and ▲ to select the above the menu,

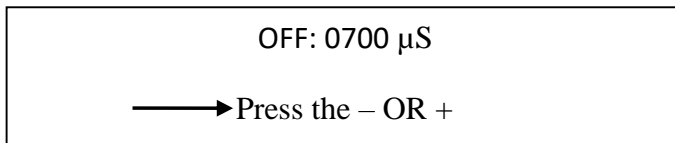
REL 1: ON: 0800 µS OFF: 0700 µS
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This means that the display must show above value.

In this the menu, you can select the desired pH to turn on and off on relay 1

Press the E key once to change the above values. .

The display should be show the amount of pH to turn off the relay.



By Using the keys ▼ and ▲, you can select the appropriate pH value to send the off command, this means that the device by reaches to this pH value, Issues the command to turn off relay 1. It is best to select the on and off values at appropriate intervals so that the device does not fluctuate (More than a few hundred pH). After selecting the appropriate number, press the E key once to save the information.

To adjust the amount of pH and to turn on the relay 1 Follow the previous steps. At the end of this step, the Recorded values off and on relay 1 are displayed. Exit this the menu by pressing the Escape key

## **7-Menu of the setting the on and off points for the relay 2**

In this the menu, you can select the desired pH to turn on and off on relay 2

The steps are the same as in step 6.

## **8 – Menu of the Flow output set point (By order)**

After entering this menu, first enter the desired Ph amount then enter the type of acid or base injection. The steps are the same as in step 6.

To control the process, minimize the amount of acid or base injection and minimize the concentration to avoid the Ph rapid changes

By turning on the device If the solenoid valve is not isolate, we will see unacceptable changes in mode, the display and to avoid the Ph rapid changes Minimize the concentration. To prevent this be sure to use a current insulator at the output of the device



## Tips for installation and calibration

- Disconnect all device output connections
- After installing the transmitter and electrode connections, turn on the device and adjust and calibrate by steps 1 to (7 part 6)
- Turn off the device and install the electrode and holder in the right place and connect it to the transmitter
- After reassurance the fluid passes properly in the pipeline or tank and properly connect it to the electrode, carefully connect the input power Turn on the device for 10 minutes to reach equilibrium. The device display should show the actual fluid pH with a difference of 0/05.
- If the situation is favorable, connect the output systems (pumps or alarm circuit)
- If the output commands are turned on and off sequentially, disconnect the output keys and reset the relays
- Under normal circumstances, calibrating the electrode twice a week is sufficient
- For every 10 °c temperature change, approximately 3% errors in pH is obtained. In cases where the error due to temperature changes cannot be ignored, use ATC System and the relevant temperature sensor