

Instruction manual

pH Controller models -APc50



Product may vary from picture.

- To ensure safety, please read this manual carefully before installation and follow the instructions herein.
- Store this manual in a secure place for future reference
- WARNING: CHOKING HAZARD - Accessories contain small parts
- This manual is printed by color ink; water will smudge.

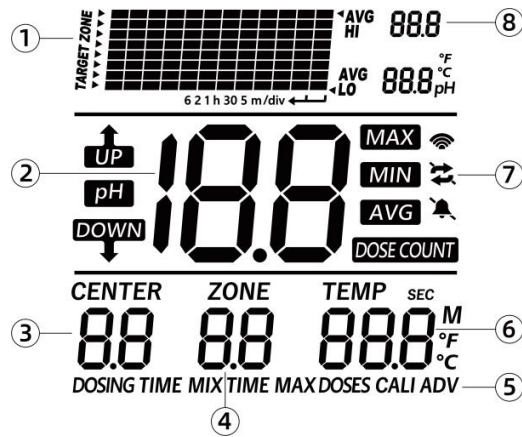
Basic Description

The APc50 is designed for accurately and reliably pH measure and control. Any aqueous (water-based) solution, including hydroponic nutrient mixes and fish aquariums. It does this by measuring the pH level of the water to be controlled and then it will automatically add pH adjustment (Either acid or alkali) to change the liquid's pH to the user's desired level.

Features at a Glance

- **CHART-** Indicate the status of pH and Temperature records up to 3 days.
- **THE LARGE LCD-**Clearly displays the pH and setting options.
- **DUAL RELAY OUTPUT-**Automatically switch between UP or DOWN modes.
- **HIGH PRECISION pH SENSOR -**With temperature compensation.
- **4 KEY OPERATION -**Easy to use and program, plug and play device.
- **MAX MIN AVERAGE -**Auto record MAX, MIN, AVERAGE data after power on.

LCD Display



1. pH and Temperature Chart
2. pH Reading
3. pH Center Setting
4. pH Zone Setting
5. Main Menu
6. Temperature Reading
7. Mix Icon
8. Max Reading of Chart

KEY Function

MENU-Short press to switch MENU function. Press and hold for 3 seconds to clear DOSE COUNT and E3/E4/E5 error code.

ENTER- Short press to switch LCD display of the MAX (maximum), MIN (minimum), AVG (average) values and DOSE COUNT. Press and hold 3 seconds to quickly return to default parameter settings.

UP- Short press to switch the Chart display of pH/Temperature. Press and hold 3 seconds to test dosing UP mode.

DOWN- Short press to switch Trend Chart Zoom function. Press and hold 3 seconds to test dosing DOWN mode.

Main Menu Introduction

Pressing MENU once will bring up the main menu, the current choice will flashing. To select function, press ENTER key.

Note that after 1min if nothing is pressed, the Main Menu will disappear and the device will return to the normal state.

HOLD HOME

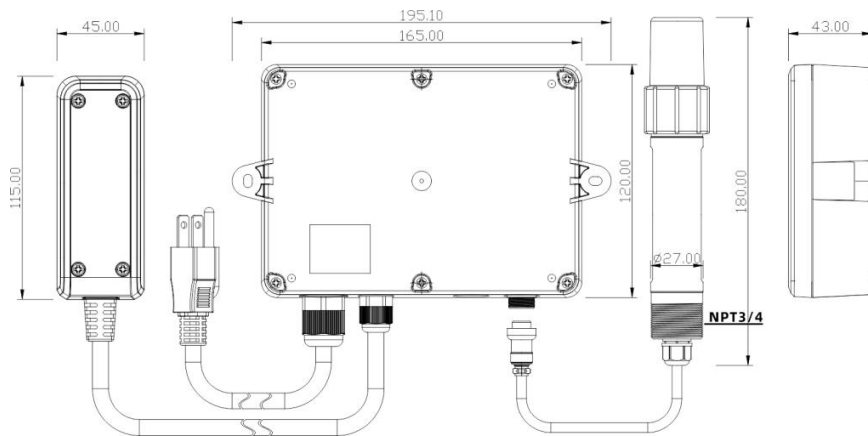
To revert to start up settings at any point, hold ENTER for 3 sec until an audible beep. The device will revert to Home Setting, as if the power was reset. Note that this is not the same as restore to factory settings.

Below is a table showing what main menu selection is made by pressing MENU multiple times as well as their functions.

Specifications

Typical test conditions, unless otherwise specified: Ambient Temp =23+/-3°C, RH=50%-70%,
Altitude=0~100 meter

Measurement	Spec
pH Control Range	Adjustable 4.5 – 8.5 pH
pH Resolution	0.1
pH Accuracy	+/- 0.2 pH
Temperature Accuracy	± 1°C, 1°F
Input Power	100-240VAC, 50/60HZ
Maximum Amperage	Max.10A, 100-240VAC
Input Power Cable Length	150 cm/5ft
Output Socket Cable Length	100cm/3.2ft
Dimension	195*120*43mm (7.7*4.7*1.7inch)
Weight	*****



Package Contents

pH Controller Unit (include socket unit)	The pH sensor probe	Instruction Manual
Peristaltic Dosing Pump (Optional)	pH sensor fixed mounts	

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Function	Directions
CENTER	By default, the pH center value is 6.0. Once CENTER is selected (by pressing ENTER), use either UP or DOWN to set the pH center value, press ENTER one more time to confirm and exit menu setting function.
ZONE	pH Dead band, By default, the pH Zone value is 0.2. Once ZONE is selected (by pressing ENTER), use either UP or DOWN to set the pH Zone value, press ENTER one more time to confirm and exit menu setting function.
DOSING TIME	Dosing relay working time, the factory default setting is 10 seconds. This function allows the user to set the dosing relay working time. Once DOSING TIME is selected (by pressing ENTER), use either UP or DOWN to set the DOSING TIME value, press ENTER one more time to confirm and exit menu setting function.
MIX TIME	Wait pH solution mix time, the factory default setting is 4 minutes. This function allows the user to set the MIX TIME. Once MIX TIME is selected (by pressing ENTER), use either UP or DOWN to set the MIX TIME value, press ENTER one more time to confirm and exit menu setting function.
MAX DOSES	User can set maximum number of dosing cycles before an error will be activated. The factory default setting is 40. NOTE: if the pH level does not get to the pH CENTER before the maximum does count is reached, an error will be activated.
CALI	pH Calibrate function Use this function to calibrate your device with 4.0 and 7.0 liquor. Firstly, Rinse the tip of the pH sensor with clean water to remove any accumulated dirt or debris. Shake or wipe excess water from the sensor. Then place the pH sensor tip into a satchel or cup of fresh 7.0 calibration solution. Wait the sensor reading stabilize. Operate the device to start the 7.0 calibration, If calibration is successful, LCD will display "PAS". If the user wants to calibrate to 4.0, Replace 4.0 calibration solution and repeat the above operation. In CALI mode, press up or down key to change 7.0 or 4.0 calibration function. Note: Calibrate to 7.0 pH first, then calibrate to 4.0 pH.
ADV	Advance setting. This function toggles between 3 things when selected: Setting High pH limit / Setting Low pH limit / setting C or F for temperature / restore factory setting. Once function is selected (by pressing ENTER), use either UP or DOWN to set value or switch, Press or hold ENTER one more time to confirm and exit menu setting function. Restore factory setting will reset the device to factory settings and erase all stored data in the chart. To use any of these modes, hold ENTER for 3 seconds until an audible beep.

The settings are listed below.

SETTING	FACTORY SETTING	SETTING RANGE
CENTER	6.0	4.5 – 8.5
ZONE	0.2	0.2 – 1.0
DOSING TIME	10 seconds	3 – 100 seconds
MIX TIME	4 minutes	1 – 20 minutes
Calibrate 7.0	7.0	Fixed at 7.0
Calibrate 4.0	4.0	Fixed at 4.0
High pH limit	7.5	6.0 – 9.5pH
Low pH limit	4.5	3.5 – 7.0 pH
C or F display	C	C or F

Manual Dose – Test

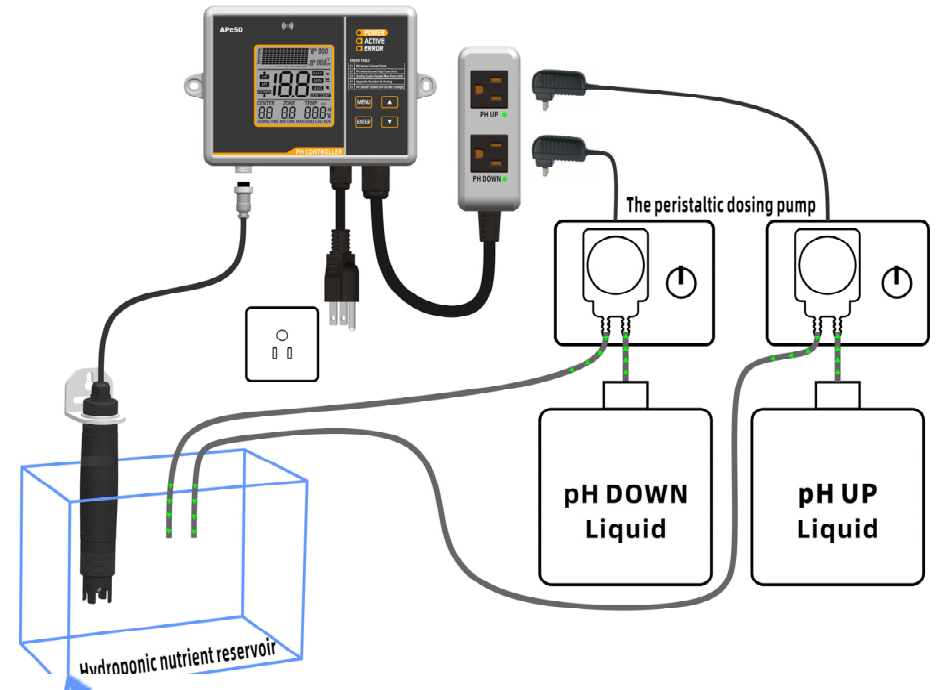
The user can manually test the dosing system by pressing hold UP or DOWN 3 seconds.

The controller will force the dosing pump to activate. The dosing timer and the mixing timer will cycle one time. When the test is complete, the unit resumes normal control mode.

Error codes and trouble-shooting

Symptom	Cause	Running status	Remedy
Error E1	There is a problem with the sensor interface, sensor connection or the sensors themselves	Termination control pH	Please check the pH sensor connect status and the cable, redo connect.
Error E2	The device reads the pH level below the low pH limit setting or over the high pH limit setting	Termination control pH	Please check the pH liquor, if it's normal, please modify the Hi/Low limit setting referring to Menu settings.
Error E3	DOSE COUNT over the MAX DOSES setting	Continue control pH	This error may be caused by the pH adjustment bottle being empty, or the flow rate of the dosing pump is too slow, The dosing time or the maximum number of doses setting may need to be increased.
Error E4	The unit in dosing down mode, but the measured pH goes up or in dosing up mode, but the measured pH goes down	Termination control pH	Please check the correct pH adjustment liquid is being used. And check the power plug of dosing pump into the correct pH control socket.
Error E5	The pH sensor reading does not change by at least 0.01 pH in a 48-hour period	Termination control pH	There could be something wrong with the sensor, or the sensor input. Please check the liquid and the pH sensor connect.

Installation diagram



How it works

The basic operation of this device is actually quite simple. The example below describes the operation of the device working.

Let's assume that the user has selected pH down control with the following settings:

pH CENTER= 6.0, ZONE=0.2, DOSING TIME=10 seconds, MIX TIME = 4 minutes

The pH sensor probe constantly measures the pH of the water to be controlled. In this example, when the pH levels rises beyond 6.1(CENTER+1/2 ZONE), the unit will activate the DOWN dosing pump for 10 seconds. After the dosing pump stops, MIX TIME will start to count down for 4 minutes. Once the mixing timer counts down to zero, the unit will again measure the pH level and determine if another dose is required and DOSE COUNT plus one.

If the pH levels rises below 5.9(CENTER-1/2 ZONE), the unit will activate the UP dosing pump for 10 seconds.