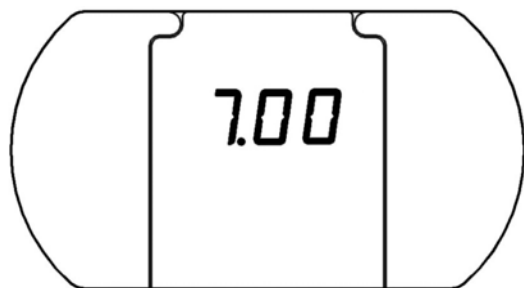


# OPERATION MANUAL

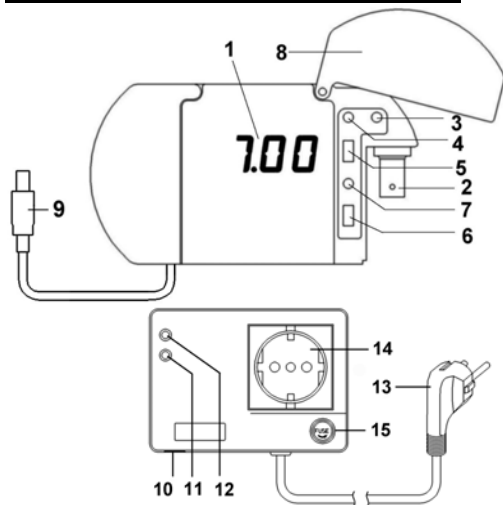
## pH CONTROLLER

(WITH HI/LO ACTION OPTIONAL)



Please read the attached instructions carefully before use.

### FRONT PANEL DESCRIPTION



- 1) Display
- 2) electrode BNC input terminal
- 3) pH4 slope adjustment knob
- 4) pH7 calibrate adjustment knob
- 5) pH/SET function switch
- 6) HI/LO action function switch

- 7) Set adjustment knob
- 8) Waterproof cover
- 9) Power system connector
- 10) Power system socket
- 11) Indicator of output in action
- 12) Power indicator
- 13) Power plug
- 14) Control output power socket
- 15) Fuse (5 Amps rate)

### OPERATING (CALIBRATION)

- 1) Connecting AC power supply. (Make sure the correct voltage.)
- 2) Connecting the pH electrode into the pH input terminal socket.
- 3) Turn the pH/SET switch to "pH" position.
- 4) Put the pH electrode into the standard buffer solution pH7.00. Waiting a few seconds for stable reading and adjust the "pH7" knob until the display reading is exact on 7.00. Then take away the pH electrode from buffer solution, and clean the electrode with distilled water.
- 5) Put the pH electrode into the standard buffer solution pH4.01, Waiting for a few seconds and adjust the "pH4" knob until the display reading is exact on the buffer 4.01. (You also can calibrate pH10.00 by using the buffer solution pH10.00 instead of pH4.00 buffer solution.) (Make sure the step 4 to 5 are carried out when use a new pH electrode.)
- 6) After calibrating the pH electrode, put the electrode into the water of tank.
  - A. For water plant tank, usually use CO<sub>2</sub> to lower the pH value.
  - B. For salt water tank, usually use Calcium Reactor to raise the pH value.

### pH SETTING

- 1) Turn the pH/SET switch to "SET" position. (The output will turn off automatically.)
- 2) Adjust the "SET" knob until the display reading exact meet your requirement. (If turn the HI/LO switch to "HI" position, the output control will operating when pH measuring value goes above the setting value. If turn the HI/LO switch to "LO" position, the output control will operating when pH measuring value goes below the set value.) Then turn the pH/SET function switch to "pH" position for measuring.
- 3) When use for water plant tank, usually turn the switch to "Hi" position. Use for salt water tank, usually turn the switch to "Lo" position.

### INSTRUCTION FOR CLEANING AND MAINTENANCE

- 1) The immersed level for electrode should not be higher than the electrode cap. (When use the refillable electrode, the level should be lower than filling open to avoid the water entering into the open and cause damage.) It had better cleaning the pH electrode sensor with soft brush and calibrating the pH electrode every 2-3 weeks to keep the test accuracy. Please keep the electrode in the storage bottle with 3M KCL buffer (or standard buffer solution pH4.0) solution, the crystallization is normal for the keeping.
- 2) pH electrode is accurate glass product, please do not knock it, and do not use finger, cloth and alcohol to clean it to avoid the damage.
- 3) There is protection "dead band" which will delay to switch on output control when the pH measuring value goes above 3-5

- digits of the set value. The output control will switch off when the pH measuring value goes below 3-5 digits of the set value. (HI/LO switch in "HI" position.)
- 5) The output control will automatically turned off when slide the pH/SET function is switched in "SET" position to adjust the setting valve.
- 6) Indoor uses only.

### GENERAL SPECIFICATION

Power Supply : AC100V - AC240V

Measurement : 0 to 14 pH

Resolution : 0.01 pH

Accuracy at 25°C : ±(0.1%+ 2 digits)  
after calibrating

Impedance : 10<sup>12</sup> ohms

Set Range : 3.5 to 10.5 pH

Calibration Knob : External pH7 (CAL.) and pH4 / pH10(SLOPE)

Relay Contact : 5A for 240VAC

Control Output Voltage : Same as plug in AC voltage

Display : 0.56" LED, 3 1/2 digits

Operating Temperature : 0 to 50°C  
(32 to 122°F)

Operating Humidity : Max. 90%

Power Consumption : Approx. 2 watts

Dimension : 130 x 70 x 20 mm  
(5.1 x 2.7 x 0.8 inch).

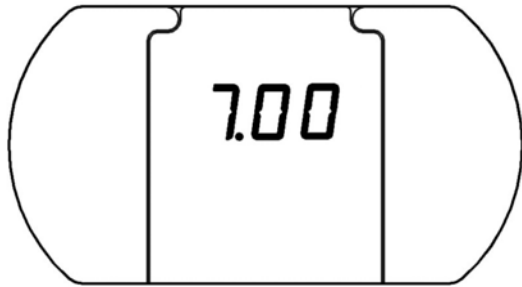
Standard Accessories : Instruction Manual, Adjustment Sticker, Electrode Holder, Instrument Holder, Power System Box, pH4, pH7 calibrating buffer each one.



pH electrode input BNC terminal can only connect with pH electrode, it is not allowed to connect with any other electrode.

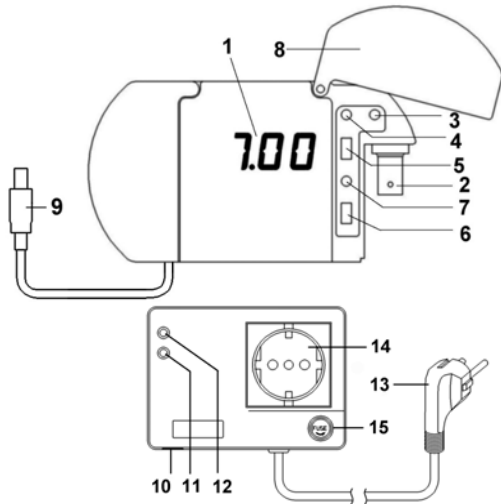
# pH 監控器使用說明書

## (可選擇高/低啟動控制)



使用本 pH 監控器前，請詳細閱讀說明書，正確使用及確保測試值的準確度

### 各部名稱說明



- 1) pH 顯示器
- 2) pH 電極 BNC 接頭
- 3) pH4 校正鈕
- 4) pH7 校正鈕
- 5) pH/SET 測量與設定開關
- 6) HI/LO 設定啟動選擇開關

- 7) 設定值調整鈕
- 8) 防塵防潑水蓋
- 9) 電源系統連接頭
- 10) 電源系統連接座
- 11) 控制啟動指示燈
- 12) 電源指示燈
- 13) 電源插頭
- 14) 控制輸出電源插座
- 15) 保險絲 (5 A)

### 操作說明(校正步驟)

- 1) 依電壓規格指示接上電源。(請確定電壓規格符合)
- 2) 將 pH 電極裝入 pH 輸入端 (BNC 接頭插入後，右轉到底)。
- 3) 將選擇開關位置切到 "pH" 位置。
- 4) 將 pH 電極以蒸餾水稍作清洗擦乾後放入 pH7 校正液中，等數秒鐘顯示值穩定後，調整 "pH7" 旋鈕，使顯示的數值為 7.00。
- 5) 將 pH 電極從 pH7 校正液中取出以蒸餾水稍作清洗擦乾後，將 pH 電極放入 pH4 校正液中，等數秒鐘顯示值穩定後，調整 "pH4" 旋鈕，使顯示的數值為校正液值 4.01。  
**(此步驟 4、5 為新電極使用前必須的校正步驟，最好重複2次以上)**
- 6) 將校正完的 pH 電極放入魚缸中
  - A. 如為水草缸，可透過二氧化碳 (CO<sub>2</sub>) 系統來降低 pH 值。
  - B. 如為海水缸，可透過鈣反應器來提升 pH 值。

### pH 啟動設定

- 1) 將功能開關位置切到 "SET" 設定位置(控制電源自動關閉)。
- 2) 利用小型 "-" 字起子調整 SET 的旋鈕，使顯示的數字到達到所需要設定的 pH 值。(若開關置於 "HI-A"，測試值高於設定值時會啟動控制電源。若開關置於 "LO-A"，測試值低於設定值時會啟動控制電源)，設定完後請將開關切回 "pH" 測量位置。
- 3) 選擇高於設定值啟動控制電源者，請將 HI/LO 開關切於 "HI-A" 位置(一般為淡水缸)。若選擇低於設定值啟動控制電源者請將 HI/LO 開關切於 "LO-A" 位置(一般為海水缸)。

### 清潔及保養

- 1) pH 電極置於水中不可超過電極帽高度，(如為可填充式電極，置於水中不可超過填充孔高度，以免水進入電極內而損壞)且定期(2~3星期)以軟毛牙刷輕刷清洗感應頭所附著之藻類或雜質，且作校正，以確保測量的準確性。不用時，電極請置於有 3M KCL 保存液(或 pH4 校正液也可)之封套內，若有結晶乃屬正常現象。
- 2) pH 電極為一精密之玻璃製品，請勿敲擊。電極請勿用手及布類或酒精擦拭電極前端玻璃球，以免玻璃球及內管玻璃破裂損壞。
- 3) 為保護所控制設備不受頻繁啟動而損壞，設有延遲啟動功能。
- 4) 本儀器僅供室內使用。

### 電器規格

使用電源：AC100V~240V 50/60 Hz。  
測量範圍：pH 0 ~ pH 14。  
解析度 (讀值)：0.01 pH。  
精確度 (25°C 校正後誤差)：±(0.01 pH + 2位)。

設定控制範圍：pH 3.5 ~ pH 10.5。  
外部校正：pH7 (CAL.) 和 pH4 / pH10 (SLOPE) 兩點校正。  
顯示器：0.56" LED, 3 1/2 位數。  
輸入阻抗：10<sup>12</sup> 歐姆。  
耗電：大約 2 瓦。

使用溼度：低於 90%  
控制電源規格：一組與使用電源相同電壓之 5A 容量。

控制電源啟動指示：LED 亮燈指示。  
控制選擇："HI-A" 測量值高於設定值時，啟動控制電源。  
"LO-A" 測量值低於設定值時，啟動控制電源。

外觀尺寸：130 x 70 x 20 mm  
(5.1 x 2.7 x 0.8 inch).

標準附件：說明書、調整起子、電極支架、儀器掛架、電源控制盒、pH4、pH7 校正液各一。



電極輸入插座除了 pH 電極外，不可插入其它插頭。



pH 電極置於水中不可超過電極帽高度，避免電極受損。



控制器使用時請盡量遠離電子式安定器電燈，及不要使用同一電源插座，避免干擾本儀器。