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# **PH/ORP CONTROLLER**

**INSTALLTION AND MAINTENANCE**

**INSTRUCTIONS MAUAL**

**CT-6658**

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## Technical Data

### 1 Introduction

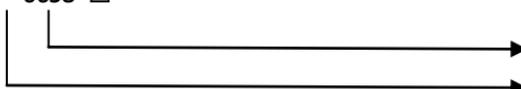
The pH/orp controller is used for measuring and controlling either PH or ORP parameters.

The controller is ideal for applications such as water treatment and monitoring, chemical processing, food processing, wastewater treatment, etc..

The controller is waterproof and acid/alkali resistant designed.

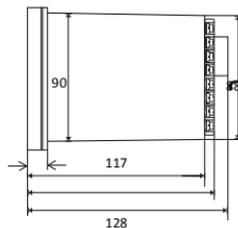
### 2 Order Code

PH/orp 6658



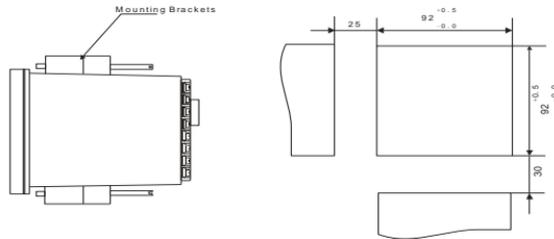
### 3 Mounting

#### 3.1 Outing Dimensions



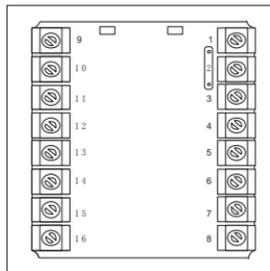
### 3.2 Mounting

- 1). Prepare a square cut-out in the mounting panel to the size shown below. if a number of controllers are to be mounted in the same panel they should be spaced as shown.
- 2). Insert the controller through the cut-out.
- 3). Catch the mounting brackets to the holes top and bottom of the case, and screw to fix.



## 4 Electrical Connections

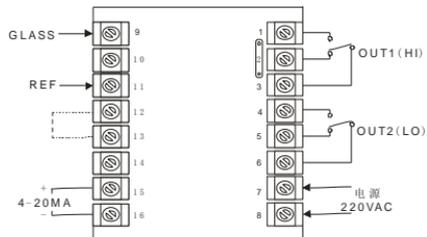
### 4.1 Rear Terminals Layout



※Notice

- In order to avoid electrical noise to the input signal, the signal line should be separated from the power and load lines.
- The electrode signal transmission to be used specific cables, can not be replaced arbitrarily.

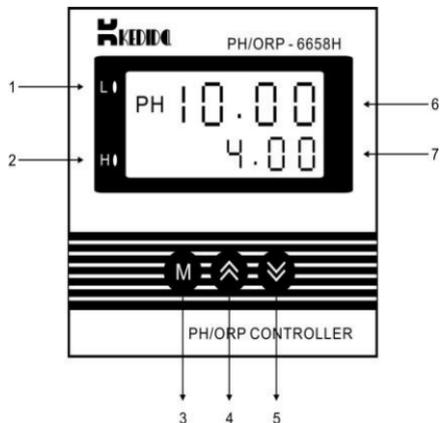
4.2 Wiring



## 4.3 Comments on Terminals

Terminal#	Comments
9	GLASS, connect the central line of the PH/ORP electrode
11	REF, connect the shield line of the PH/ORP electrode
15,16	4 ~ 20ma output, PV transmission, recorder connection, digital communication
1,2,3	OUT1(HI), PH high action relay
4,5,6	OUT2(LO), PH low action relay
7,8	Power supply, 200~240V AC

## 5 Operator Interface



FUN	Item	Description	FUN	Item	Description
①	LO	PH low indicator	②	HI	PH high indicator
③	M	Main key	④	⤴	Rise key
⑤	⤵	Lower key			
⑥	pV display	Indicates the Process Value and parameter mnemonic			
⑦	SV display	Indicates the set point, parameter values, alarm codes			

## 6 Operation

### 6.1 Overview

There are two LED displays indicate the operating parameters.

The upper display indicates the Process Value(PV) when in base condition. On selecting a parameter, the appropriate parameter abbreviation appears.

The lower display indicates the Setting Value(SV), and alarm codes, on selecting a parameter, the appropriate parameter value appears here.

When the controller is powered on, the upper display indicates the model code of the controller, and the lower display indicates the software version.

The LED indicators indicate the current status of the controller.

LO : lit when relay OUT1 activates.(adding acid)

HI : lit when relay OUT2 activates.(adding alkali)

### 6.2 Low Alarm Value(L O A L ) Adjusting

During the basic functioning, the upper display indicates the Process Value(PV), the lower display indicates the “Low Alarm value”.

Press keys  $\wedge$  or  $\vee$  to increase or decrease the “Low alarm value”(LOAL). Keeping it pressed results in a progressively faster variation.

### 6.3 Modifying the Operation parameter

When the controller is in the PV/SV displaying status, press **M** key and hold for 3 seconds reveals the first parameter. The parameter value can either be modified with the  $\wedge$  or  $\vee$  key, or left unmodified. Press **M** key again, the next parameter and its current value appears, the modified data has been saved in the memory.

If the last parameter is displayed or there's no key operation within 16 seconds, the menu times out automatically.

### Operation Parameter List

S.N.	Mnemonic	Parameter	Adjustable Range		Comments
			PH	Orp(Mv)	
1	H I A L	Full-scale High alarm	0.00~14.00	-999~999	
2	H b	High alarm Hysteresis	0.01~4.50	1~999	
3	L o A L	Full-scale Low alarm	0.00~14.00	-999~999	
4	L b	Low alarm Hysteresis	0.01~4.50	1~999	

5	FUN	Input Signal	PH	
			ORP	
6	CAL	Input Signal	P1	
		Calibration	P2	

### ※Notes on parameters

#### 1). Input Signal – Fun

The parameter Fun should be set to the correct sensor type the controller connected, otherwise the measured value will be incorrect.

For PH measurement, set Fun to value PH.

For ORP measurement, set Fun to value ORP.

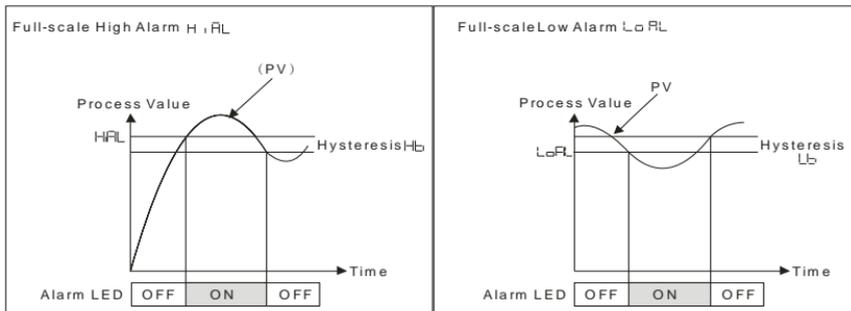
#### 2). High & Low alarm – HI AL, LO AL

- When  $PV > HI\ AL$ , relay OUT1 activates, indicator HI will be lit. In pH value control applications, OUT1 should be used to control the acid adding devices.
- When  $PV < LO\ AL$ , relay OUT2 activates, indicator LO will be lit. In pH value control applications, OUT2 should be used to control the alkali adding devices.

#### 3). Alarm Hysteresis – HB, LB

The hysteresis prevents relay rapid contact switching(chatter)if the process value is fluctuating near

the setpoint. See the figure below.



## 7 Calibration

### 7.1 pH calibration

The pH/orp controller uses two-points calibration.

Before calibration:

- 1). Set parameter Fun to PH
- 2). Prepare 3 to 4 beakers, wash with distilled water and dry with filter paper.
- 3). Wash and dry the electrode.
- 4). Pour the prepared buffer in the clean beakers respectively.

#### 1) P1 Calibration

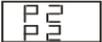
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Step	Button Operation	Display
1	Immerse the pH electrode in the buffer solution with pH value 4.00. Wait until the display stabilizes	
2	Press <b>M</b> key until CAL appears in the upper display	
3	Press <b>^</b> key, P1 appears in the lower display	
4	Press <b>M</b> key, the number in the lower display will be the value after adjustment assigned to the injected input signal	
5	Press <b>^</b> or <b>v</b> key to adjust the number in the lower display until it corresponds to the PH value of the buffer solution.(here is 4.00)	
6	Press <b>M</b> key	
7	Press <b>^</b> key to affirm	
8	Press <b>M</b> key, P1 appears in the upper and lower display at the same time	

9	5 seconds later, the scaling of the 1 <sup>st</sup> point is completed	
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**2) P2 Calibration**

Step	Button Operation	Display
1	Immerse the pH electrode in the buffer solution with pH value 9.18. Wait until the display stabilizes	
2	Press M key until CAL appears in the upper display	
3	Press ^ key, P2 appears in the lower display	
4	Press M key, the number in the lower display will be the value after adjustment assigned to the injected input signal	
5	Press ^ or v key to adjust the number in the lower display until it corresponds to the PH value of the buffer solution.(here is 9.18)	
6	Press M key	

7	Press $\wedge$ key to affirm	
8	Press M key, P2 appears in the upper and lower display at the same time	
9	5 seconds later, the scaling of the 2 <sup>nd</sup> point is completed	

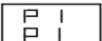
## 7.2 ORP-MV Calibration

Before the calibration, prepare a standard mv signal generator and set the parameter FUN to orp.

### 1) P1 Calibration

Step	Button Operation	Display
1	Connect source.(from signal generator or sensor to input terminals) Apply a signal equal to 0.0mV	
2	Press M key until CAL appears in the upper display	
3	Press $\wedge$ key, P1 appears in the lower display	

pH/ORP controller 6658H

4	Press <b>M</b> key, the number in the lower display will be the value after adjustment assigned to the injected input signal	
5	Press <b>↕</b> or <b>↔</b> key to adjust the number in the lower display until it equals 0	
6	Press <b>M</b> key	
7	Press <b>↕</b> key to affirm	
8	Press <b>M</b> key, P1 appears in the upper and lower display at the same time	
9	5 seconds later, the scaling of the 1 <sup>st</sup> point is completed	

**2) P2 Calibration**

Step	Button Operation	Display
1	Apply a signal equal to 500mV for second set up point(P2)	
2	Press <b>M</b> key until CAL appears in the upper display	

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3	Press $\wedge$ key, P2 appears in the lower display	
4	Press M key, the number in the lower display will be the value after adjustment assigned to the injected input signal	
5	Press $\wedge$ OR $\sphericalangle$ key to adjust the number in the lower display until it equals 500	
6	Press M key	
7	Press $\wedge$ key to affirm	
8	Press M key, P2 appears in the upper and lower display at the same time	
9	5 seconds later, the scaling of the 2 <sup>nd</sup> point is completed	