



# MANUAL

## MS pH 97

### pH INDICATING CONTROLLER TRANSMITTER



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## 1. INTRODUCTION

### **Item Supplied :**

1. pH Indicating Controller Transmitter MS pH 97
2. Manual
3. Calibration Certificate (Page No. 17 of manual)
4. Test / Warrantee Certificate (Page No.19 of manual)

### **Inspection :**

Check for mechanical damage due to possible improper handling during shipment. All claims for damage are to be made promptly to the shipper.

### **Device Identification :**

The Model No. is mentioned on the front plate of the instrument. Terminal configuration and Serial Number are mentioned on the back plate of the instrument.

### **Warranty Terms :**

The terms of this instrument that are warranted are described in the techno commercial offer. We will make any repairs that may become necessary during the warrantee term free of charge against manufacturing defects only.

Please contact us if this instrument requires any repair.

If the instrument is faulty, contact us with concrete details about the problem and the length of time it has been faulty, and state the model and serial number. We would appreciate the inclusion of images or additional information.

The results of our examination will determine whether the indicator will be repaired free of charge or on an at-cost basis

## **2. SAFETY INSTRUCTIONS**

### **General Instructions :**

This pH Indicating Controller Transmitter was carefully calibrated at the factory before shipment. When pH Indicating Controller Transmitter is delivered, visually check that no damage has occurred during transportation.

Read this Manual carefully and understand instructions provided herein.

In general, instruments from the manufacturer may only be installed, commissioned, operated and maintained by properly trained and authorized personnel.

Look at the ordering detail to ensure that the device is delivered according to your order.

Check for the correct supply voltage printed on the back plate.

Before powering up the instrument, consider the following:

1. Check if the supply voltage is correct.
2. Do not give power supply to any other terminal.

### **Storage Precautions :**

Store the device in a dry, dust-free location.

Avoid continuous direct sunlight.

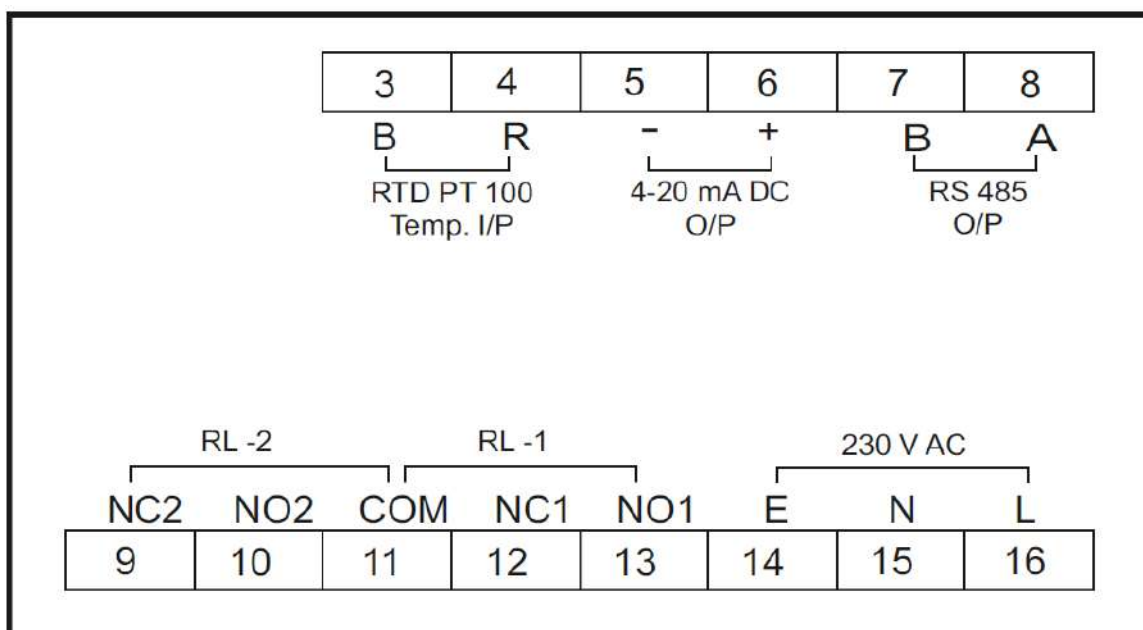
Store the device in its original packing.

Storage temperature: 0 to 55°C.

### 3. TECHNICAL SPECIFICATIONS





<b>Instrument Name</b>	pH Indicating Controller Transmitter
<b>Make</b>	MicroSet
<b>Model No</b>	MS pH 97
<b>Types of Input</b>	1. pH Sensor through BNC 2. RTD PT 100 Temp. Sensor through Terminals 3 & 4
<b>Supply</b>	230V AC, 50 Hz
<b>Output</b>	4-20 mA DC, MODBUS RS485 (Optional)
<b>Temperature Compensation</b>	Manual / Auto through PT 100 Range 0-149.9 °C
<b>Accuracy</b>	± 0.01 pH
<b>Calibration</b>	2 and 3 Point Calibration
<b>Display</b>	4 digit LED display
<b>Sensitivity</b>	± 0.01 pH
<b>Response Time</b>	< 1 Sec
<b>Mounting</b>	weatherproof
<b>Dimensions</b>	120 x 200 x 75 mm

## 4. TERMINAL CONNECTONS



1. Connect Power Supply 230 V AC to Instrument on back plate at Terminals 16, 15, 14(L,N,E).
2. Connect pH Sensor to BNC Connector on back plate.
3. Connect RTD PT 100 Temperature Sensor (if required) to Terminals 3 & 4 on back plate.  
(Please connect RTD PT100 Temperature Sensor **AFTER** Calibration Procedure.)
4. Connect 4- 20 mA retransmission output at Terminal 5, 6( - , +).
5. Connect RS485 RTU retransmission output at Terminal 7,8(B, A).

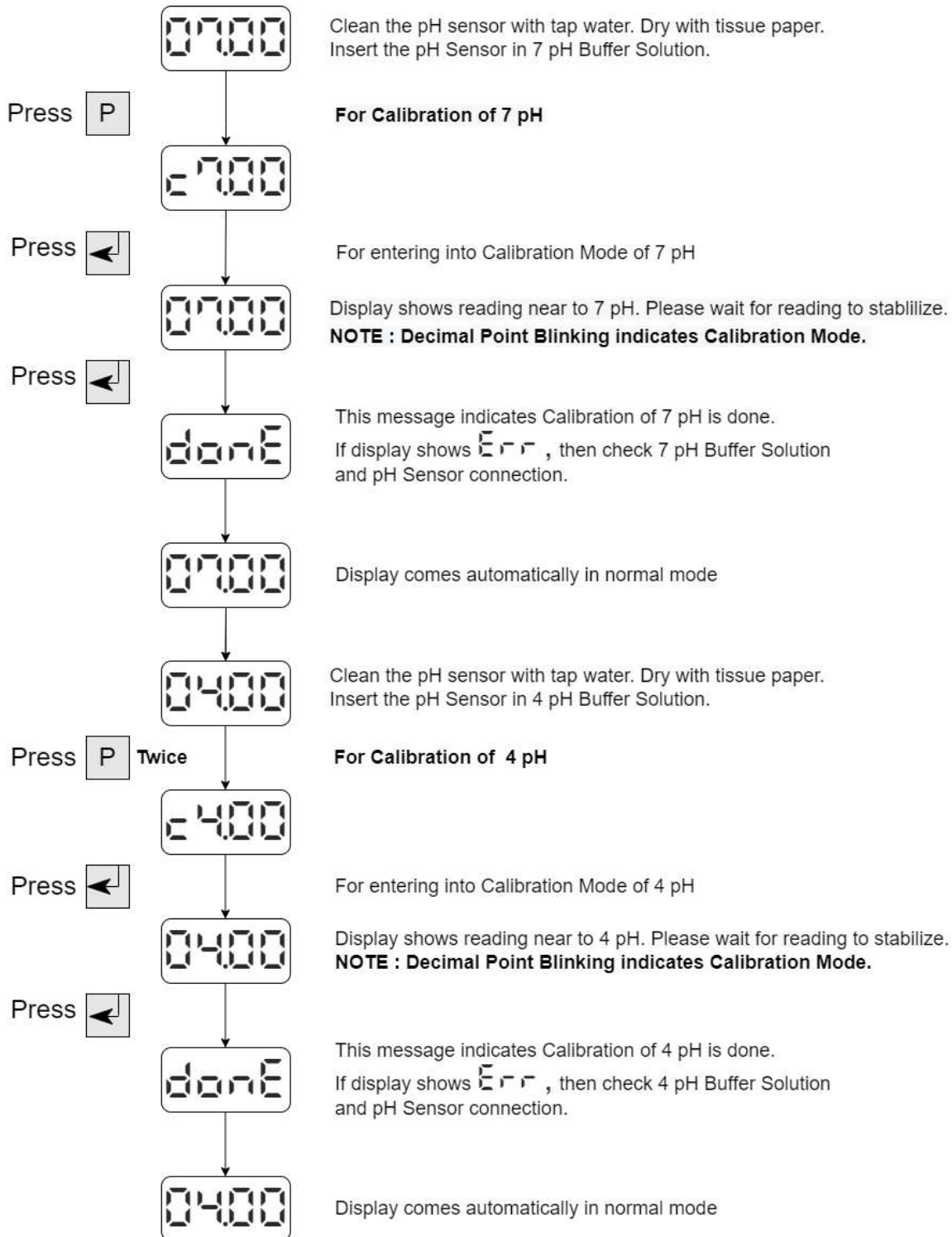
## 5. KEY DETAILS

<b>Program Key</b>		- This key is used for 1) Calibration and setting of Setpoints. 2) Setting of password.
<b>Increment Key</b>		- This key is used for 1) Temperature Display, Temperature setting in manual mode 2) Increment the numerical value of any digit, from 0 to 9.
<b>Shift Key</b>		- This key is used for 1) Setpoints Display. 2) Shift the cursor to the next digit.
<b>Enter Key</b>		- This key is used for 1) Validate the function or value of parameter 2) See the SLOPE.

## 6. CALIBRATION PROCEDURE

**Before starting Calibration Procedure, make sure Temperature is in Manual Mode at 25°C**  
(When RTD PT100 Temperature Sensor is NOT connected, Temperature is in Manual Mode)  
Remove Protective cum storage cap of pH Sensor containing Storage Solution.

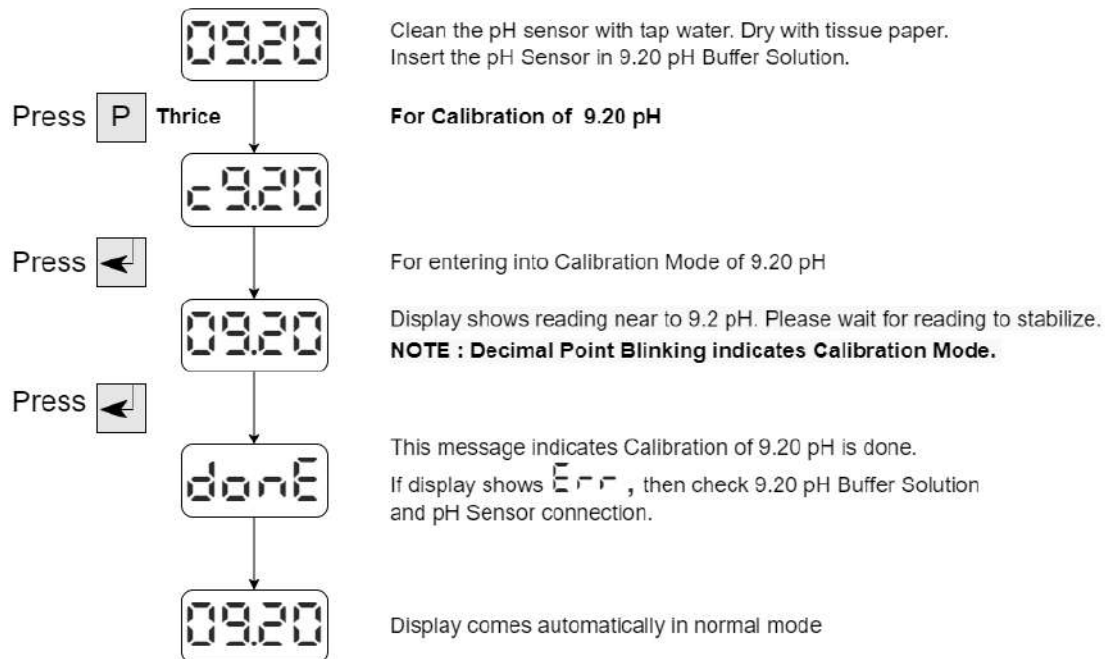
**For 2 Point Calibration :**





**For 3 Point Calibration ( If required ) :**

Follow Above Mentioned Procedure for Calibration of 7 pH and 4 pH. Then for 3rd Point Calibration as follows :

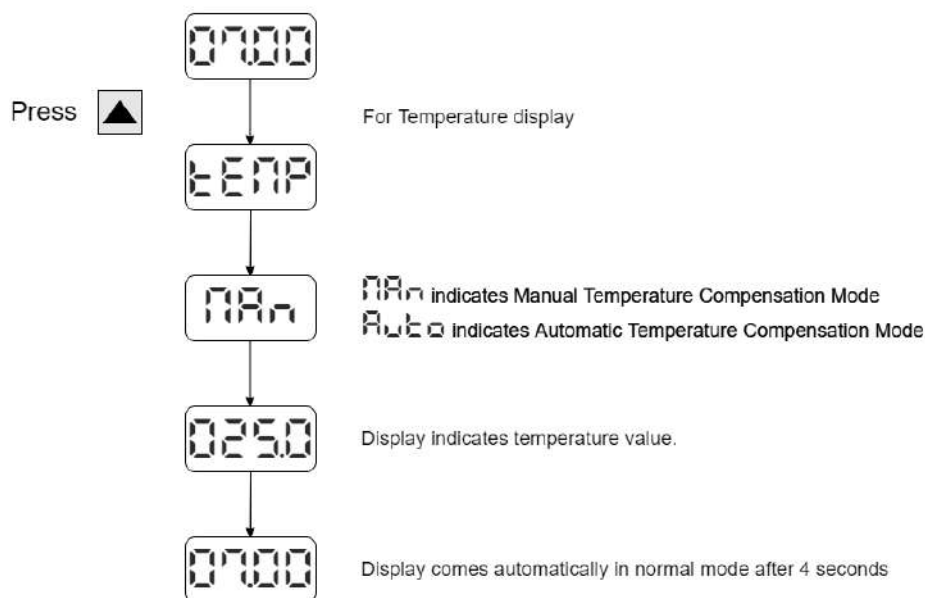


## 7. TEMPERATURE COMPENSATION

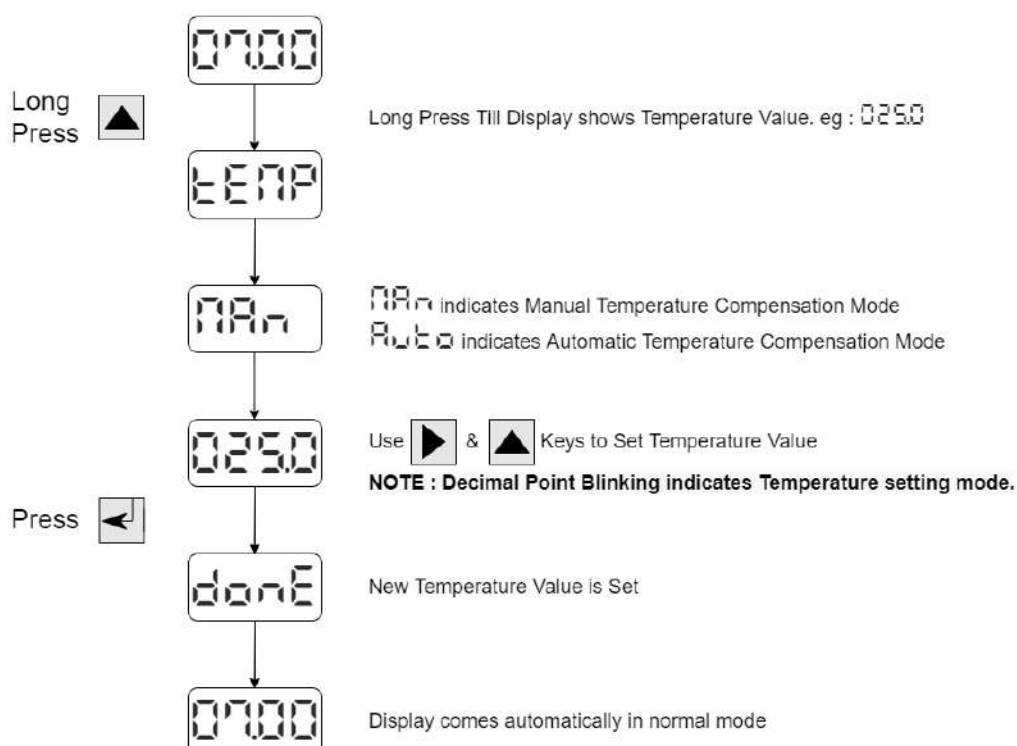
When RTD PT 100 Temperature Sensor **is Connected**, pH Indicating Controller Transmitter MS pH 97 automatically goes in **Automatic Temperature Compensation Mode**.

When RTD PT 100 Temperature Sensor **is Not Connected**, pH Indicating Controller Transmitter MS pH 97 is in **Manual Temperature Compensation Mode**.

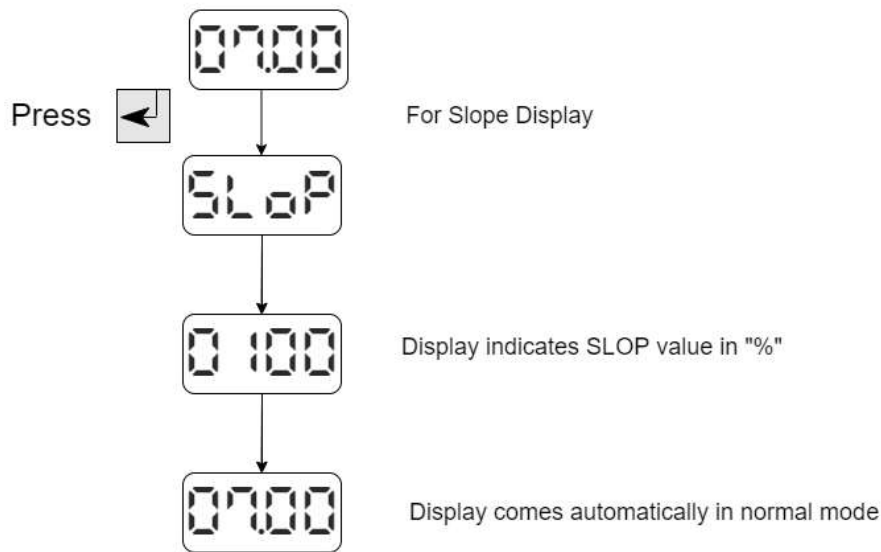
**For Temperature Display :**



**For Temperature Setting in Manual mode:**



## 8. SLOPE



Slope indicates health of pH Sensor. Generally slope between **70 and 115%** is acceptable. If slope is below 70% or above 115%, you need to change the pH Sensor.

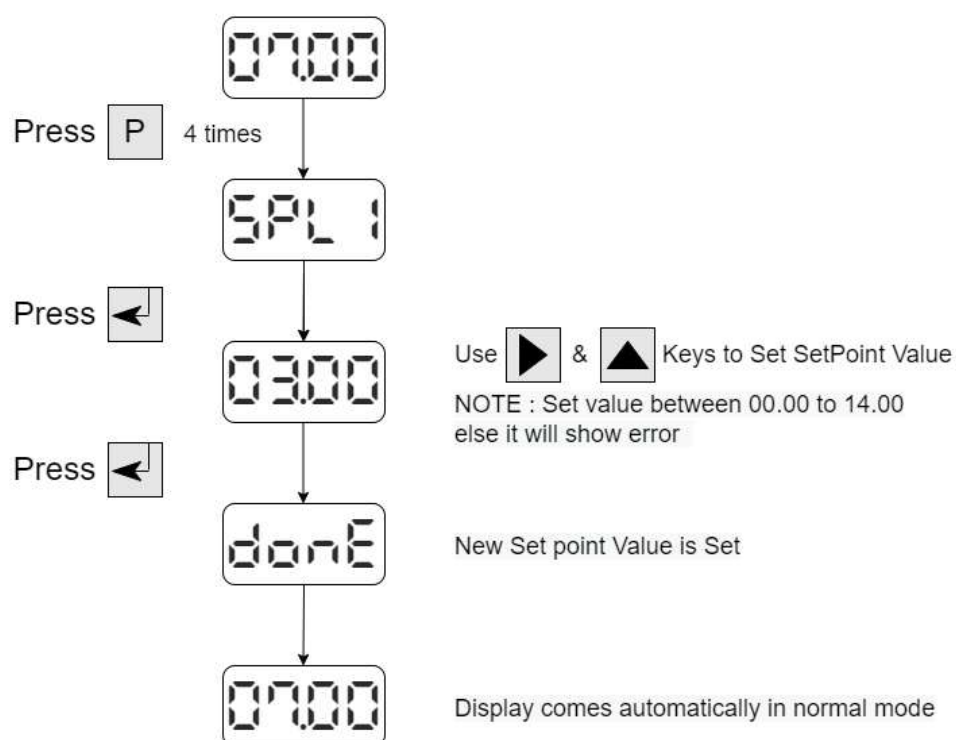
## 9. SETPOINT

1. You can use SPL1 & SPH1 for **Low range controlling of pH**  
If you enter SPL1 = 3.00 & SPH1 = 4.00,  
Then in this case Relay will get ON when pH value goes below 3.00 pH & Relay will get OFF when pH value goes above 4.00 pH
2. You can use SPL2 & SPH2 for **High range controlling of pH**  
If you enter SPL2 = 7.00 & SPH1 = 8.00,  
Then in this case Relay will get ON when pH value goes above 8.00 pH & Relay will get OFF when pH value goes below 7.00 pH

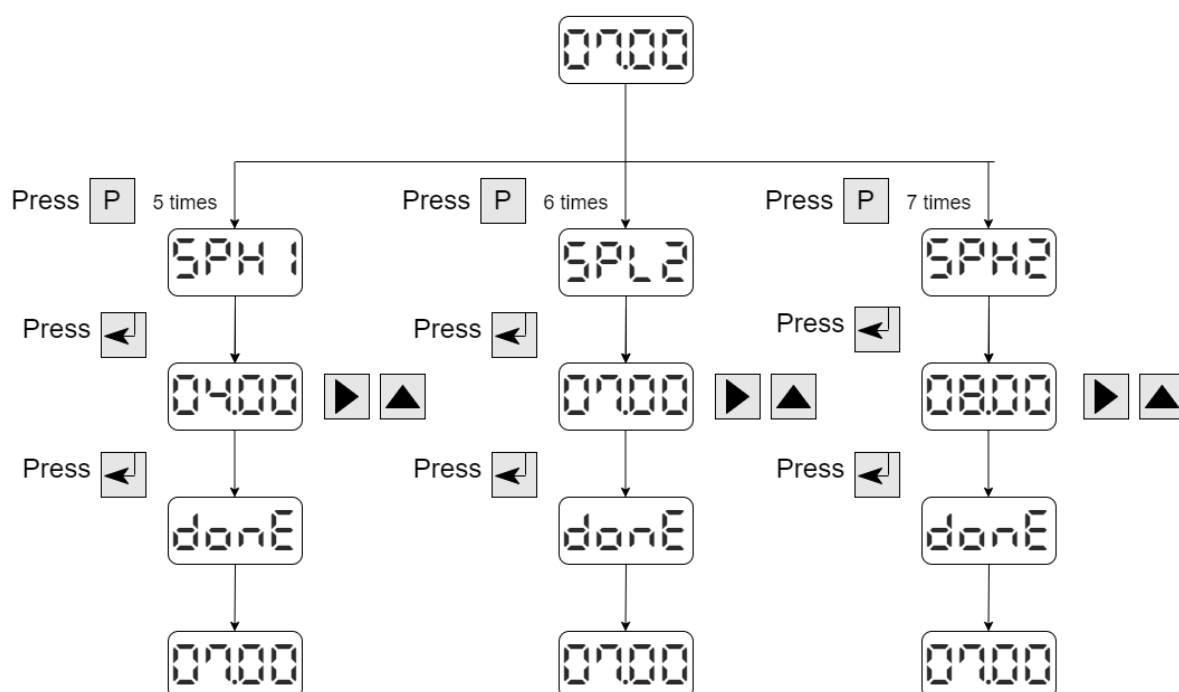
- **Denotations :**

SPL1	=	SetPoint Low for RL-1
SPH1	=	SetPoint High for RL-1
SPL2	=	SetPoint Low for RL-2
SPH2	=	SetPoint High for RL-2

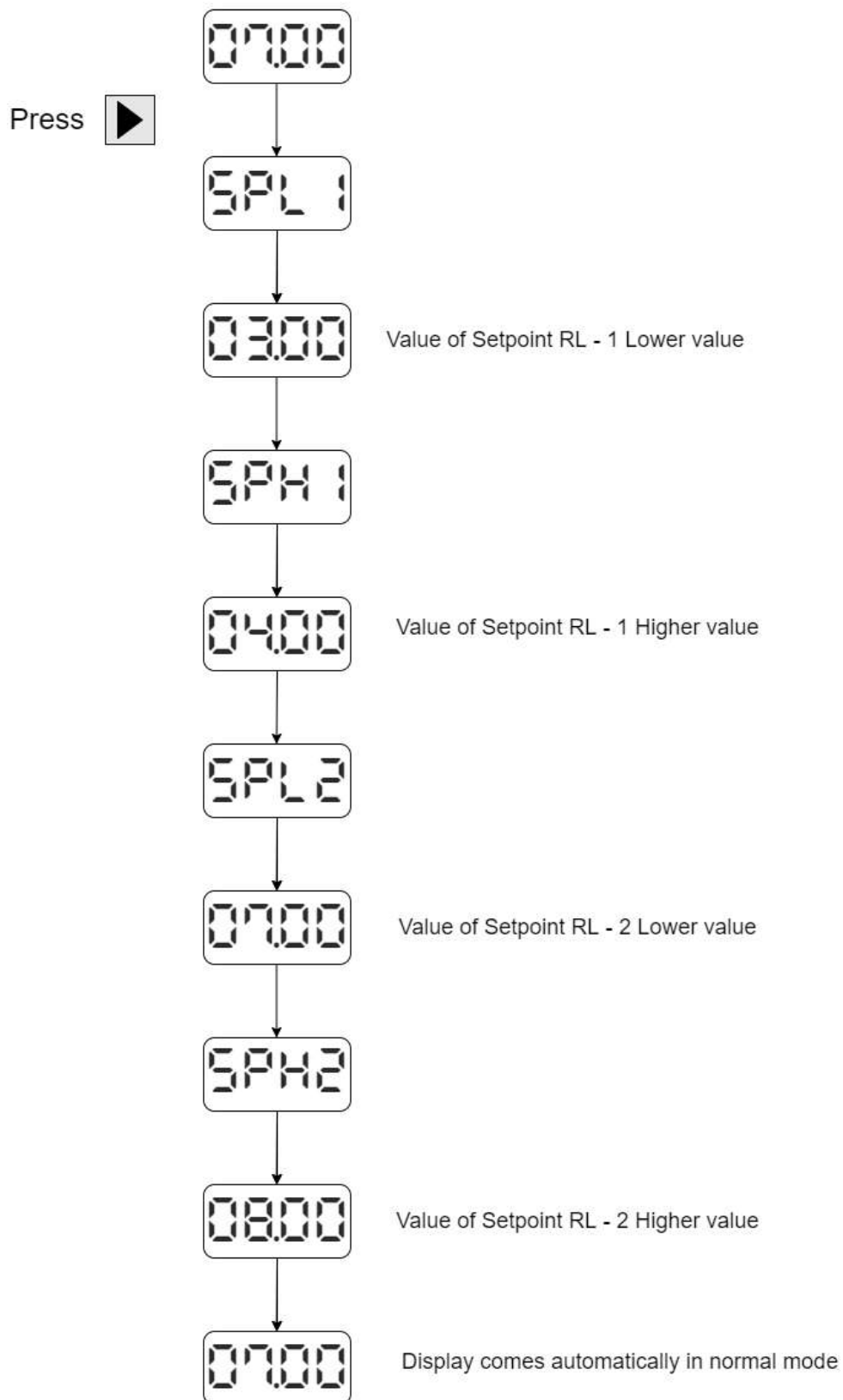
**For Setting of Set points SPL1 :**



Similarly for setting of Setpoint SPH2, SPL2, SPH2. please refer below flow chart :



**For Setpoint Display :**

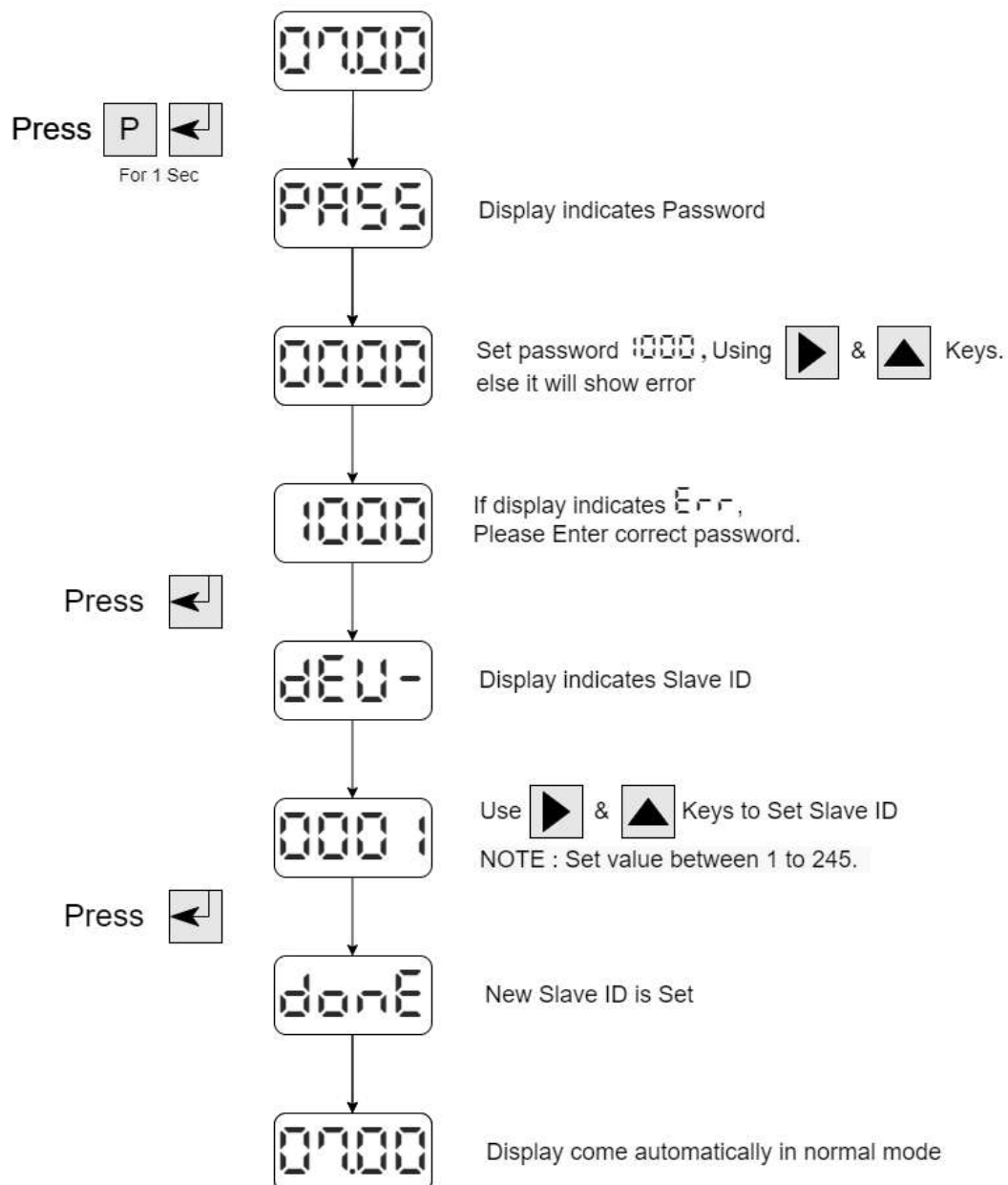


## 10. MODBUS RS485 (Optional)

This pH Indicating Controller Transmitter MODBUS communication is based on RS485 RTU. User can set the slave ID as per the requirement with following Specification,

<b>Baud Rate</b>	<b>9600</b>
<b>Slave ID</b>	<b>1 (default)</b>
<b>Start Bit</b>	<b>1</b>
<b>Data Bit</b>	<b>8</b>
<b>Parity</b>	<b>NONE</b>
<b>Stop Bit</b>	<b>1</b>

For setting of Slave ID :-





## 10. SAFETY WARNING

1. Read Manual carefully and understand instructions & directions provided in this manual.
2. Installation, connections, commissioning and service shall be carried out by only qualified and authorized person.
3. To protect instrument from any external hazards, customer should take necessary care while preparing site ready before installation.
4. Ensure proper supply voltage (230 VAC) with proper polarity to the instruments, before Powering ON instrument.

## TROUBLE SHOOTING PROCEDURE

SYMPTOMS	CAUSE OF FAILURE	ACTION TO BE TAKEN
No display indication	1.Absence of 230 V AC at terminal block. 2. Loose connection on terminals.	1.Check 230 V AC power supply & rectify the fault. 2.Tight the terminal connections.





## 10. TEST / CALIBRATION CERTIFICATE

Calibration Date: \_\_ \_\_ / \_\_ \_\_ / 20 \_\_ \_\_

### ITEM DETAILS

Name : pH Indicating Controller Transmitter

Make : MicroSet

Model : MS pH 97

Serial No. : \_\_ \_\_ \_\_ \_\_ \_\_

Input : ☐ pH Simulator

☐ pH Sensor Model : MS pH \_\_ \_\_ SN : \_\_ \_\_ \_\_ \_\_

### READING

Standard Buffer Solution pH	Observed Reading Before Calibration pH	Observed Reading After Calibration pH	Observed Reading After Calibration mA
7.00			
4.00			

Relay RL – 1 Working OK ☐ YES

Relay RL – 2 Working OK ☐ YES

Calibrated By,

Seal



## 11. WARRANTY CERTIFICATE

MicroSet warrants each instrument to be free from defects in material & workmanship. This obligation to servicing or part returned to the company for that purpose & making good any parts thereof which shall be within warranty period, returned to the company under a written intimation & which to the company's satisfaction to be found defective. The company reserves the right to decide the workplace for the repair work. The freight for defective material will have to be borne by the buyer, & the transit risk for such material will rest with the buyer.

The warranty is applicable only if the instrument is used within its specification.

**THIS WARRANTY IS VALID UP TO 12 months from date of Tax Invoice (Sensors Carry No Warranty since Consumables)**

### ITEM DETAILS

Name	:	pH Indicating Controller Transmitter
Make	:	MicroSet
Model	:	MS pH 97
Serial No.	:	— — — — —

For **MicroSet Instrumentation & Controls**

Seal

Authorized Signatory