

# **DIGITAL WATER BATH**



## **Instruction Manual**



**Model : LWB-22T**

**Please read this manual carefully before using the instrument**

**Labnics Equipment**

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## CHAPTER1. BEFORE USE:-

- Thank you for choosing **LABNICS** Laboratory Products.
- Please read this operation manual carefully before using the instrument for your safety and optimum operating performance.
- If you have any query, please contact our sales representatives or service department.

## CHAPTER 2. SAFETY PRECAUTION:-

This manual contains important operating and safety information. You must carefully read and understand the contents of this manual prior to the use of this equipment.



### **Warning:-**

Warning alert you to a possibility of personal injury



### **Caution:-**

Caution alerts you to a possibility of damage to the equipment.

### 2.1 Power Connection:-



### **Caution**

1. Your Digital Water Bath is designed for 110VAC/60 Hz 1P or 220VAC 50/60 Hz 1P.
2. Check electrical requirement on the name plate before use.
3. Connect to receptacle with ground connection.
4. Be sure to supply enough electrical current.

## 2.2 Installation:-



**Caution**

1. Do not use in high humid environment
  - May cause Electrical leakage.
  - Corrosion may occur.
2. Do not use in high temperature environment or so not use besides instrument which generates heat.
3. Place flat, rigid and leveled surface.

## 2.3 Operation :



**Warning**

1. Hot surface may cause serious injury.
2. Hot liquid in the bath may cause serious injury.
3. Do not put volatile, flammable and explosive material inside the bath.
4. Do not place volatile, flammable and explosive material nearby bath.



**Caution :**

1. Be careful not to spill liquid on the control panel.

## 2.4. Maintenance:-



**Caution**

1. Do not pour water or any liquid when you clean bath.
2. Do not use highly organic solvent for cleaning surface of bath.
3. Do not modify or alter electrical circuit or hardware.



## CHAPTER 3. FEATURE AND ADVANTAGE :

Digital Water Bath is ideal for general laboratory use requires constant temperature range from ambient +5°C to 99°C.

**Controller** Digital micro processor PID Controller.

**Performance** **Temperature Range:**  
Ambient + 5°C ~ 99°C  
Resolution: ± 0.1°C

**Material** **Inner Bath:** Seamless Stainless Steel 304 (AINSI 304)  
**Outer Cabinet:** Steel with epoxy powder coating  
**Lid:** Stainless Steel 304 (AISI 304)

**Safety** Over current cut-off fuse  
Over temperature cut-off

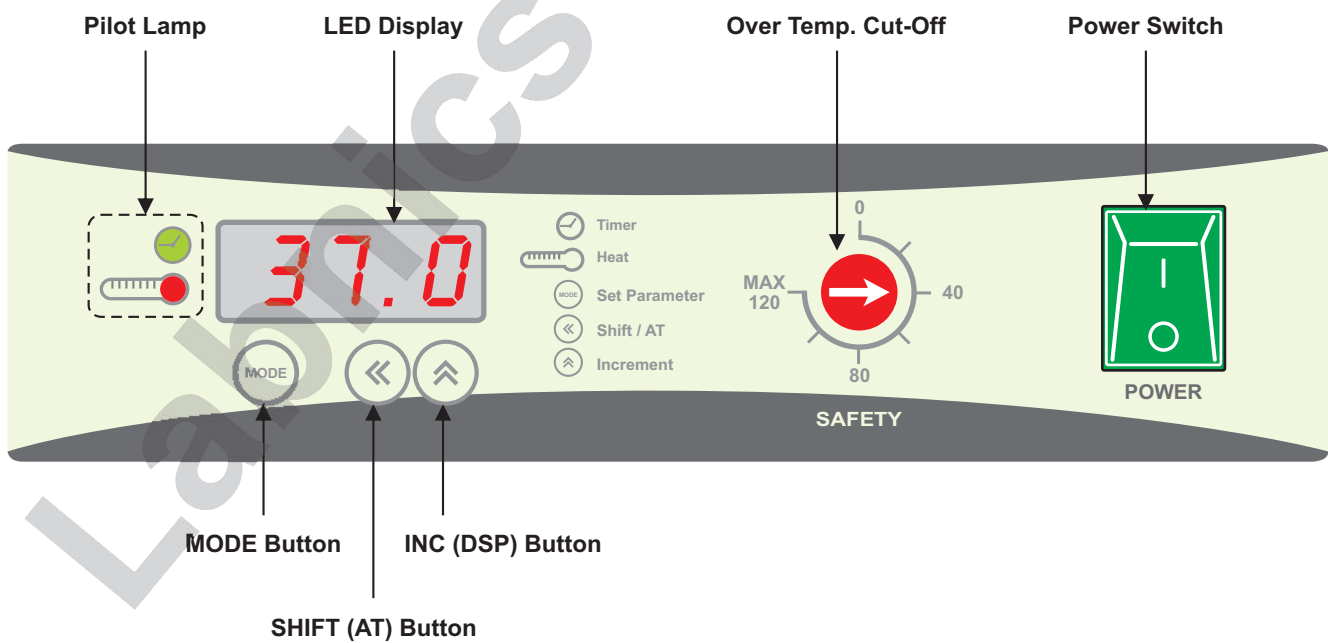
## CHAPTER 4.SPECIFICATIONS:-

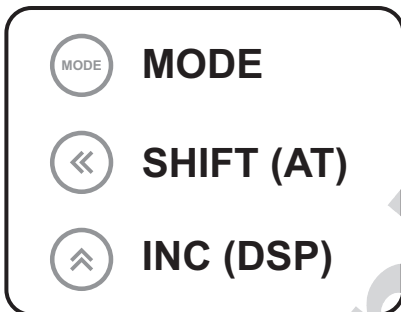
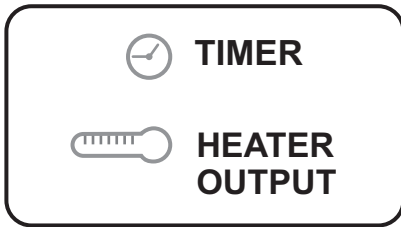
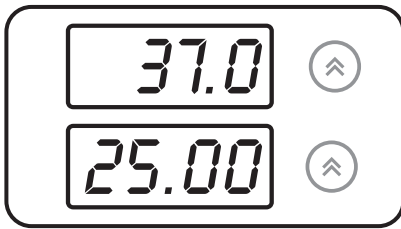
Model		LWB-22T
Bath Volume		22 Liter
Dimensions W x D x H mm	Inner	500 x 300 x 150
	Usable	500 x 300 x 130
	Outer	570 x 380 x 255
Temperature	Range	Ambient + 5°C ~ 99°C
	Accuracy	± 0.1°C
	Uniformity	± 0.5°C
Heater		1.6 kw
Controller		Digital PID Controller with Timer and Auto-Tuning
Wait off Timer		mm:ss / hh:mm / dd:hh / Continuous Selectable
Sensor		PT 100
Safety Device	Temperature	Hydraulic Over Temperature Protection Safety Device
	EL Leakage	Electrical Leakage Breaker or CG Fuse
Material	Bath	Seamless Stainless Steel 304 (ANSI 304)
	Body	Powder Coated Steel
Lid		Stainless Steel 304 (ANSI 304)
Electrical Requirement		120VAC 60Hz or 220VAC 50/60 Hz

## CHAPTER 5. PARTS AND FUNCTIONS



## CHAPTER 6. CONTROLLER & FUNCTIONS





## [DISPLAYS]

### PV LED Display

- Displays current bath temperature when turned on.
- Press INC (DSP) button to display temperature and time alternatively

## [PILOT LAMPS]

### TIMER

Lamp blinks or turned on when wait-off timer activated

- Lamp blinks until temperature reach to operating temperature.
- Lamp turned on to start count down.

### HEATER OUTPUT :

Red lamp on and off when controller heat up Oil Bath

## [ BUTTONS ]

### MODE Button

- Push to Change temperature and time
  - Push to change parameters
- Push and hold for 20 seconds to enter parameter mode (Remarks) Operating parameters are properly set before shipment. Do not change without understanding of each function of parameters.

### SHIFT (AT) Button

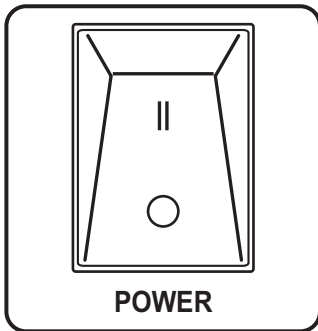
- Shift to left digit

### AUTO-TUNING Function

- Press and hold for 30 seconds to start auto-tuning.
- Auto-tuning was finished before shipment.

### INC (DSP) Button

- Increase value when setting temperature and timer.
- Press to display temperature and timer alternatively in normal display mode.



### **SAFETY**

- Safety dials for over temperature cut-off.
- Set dial 10 ~ 20% higher than operating temperature.
- If temperatures rise over operating temperature, safety automatically cut-off heater output to prevent over heating.

### **POWER SWITCH**

Main power switch.

## **CHAPTER 7. OPERATION:-**

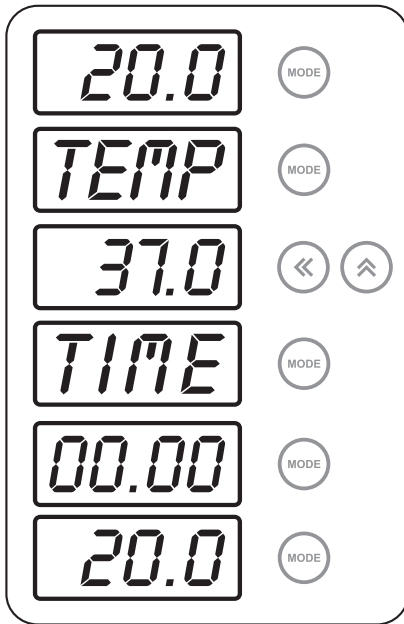
### **Before Operation:-**

- 1) Check electrical requirement on the name plate before connecting to consent.
- 2) Place your Water Bath on the flat and leveled surface.
- 3) Remove packing material in the bath.
- 4) Connect power plug between AC inlet consent on the left side panel and wall mount receptacle.

### **Getting Started:-**

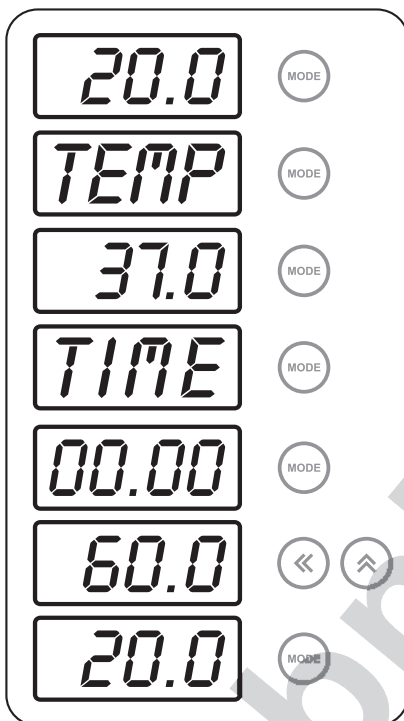
- 1) Place heater cover on the bottom of your water bath.
- 2) Pour water into the bath. Do not fill water over 70% of bath height.
- 3) Distilled Water highly recommended.
- 4) Turn the circuit breaker present at the back of the bath. Turn the **POWER** switch on. The Digital **LED READOUT** displays current temperature of the bath.





### How to Set Temperature

- 1) Normal display mode (Current Temp. displayed).
- 2) Press **MODE** button.
- 3) LED displays "**TEMP**" symbol and prompt user input.
- 4) Press **MODE** button again.
- 5) LED displays set temperature to operate.
- 6) Input new operating temperature by using **SHIFT** and **INC** button.
- 7) You can input operating temperature range from ambient +5°C to 99°C.
- 8) Press **MODE** button to set timer.
- 9) Press **model** button three times to skip timer setting.
- 10) Back to normal display mode and controller starts temperature control.



### How to Set Timer

- 1) Press **MODE** button three times to set timer.
- 2) LED displays "**TIME**" symbol and prompt user input.
- 3) Press **MODE** button again.
- 4) **LED** displays current timer setting (ex. 00:00).
- 5) Input new wait-off timer value by using **SHIFT** and **INC** button.
- 6) Default time scale is HH:MM.
- 7) For continuous operation set timer at 00.00.
- 8) You can input timer range from 1min to 99hr 59min.
- 9) Press **MODE** button back to normal display mode.

**(Remarks) Timer can be changed in different scale by changing Parameter**

- 1) mm : ss     99min 59sec
- 2) hh : mm     99hr 59min
- 3) dd : hh     99day 23hr

Refer parameter setting to change time scale

**MODE 0, N1:** time scale selection parameter

- 0 : MM:SS
- 1 : HH:MM
- 2 : DD:HH



## Over Temperature Protection

User must set the over temperature protection before operation.

Turn over temperature protection dial with screw driver.

Set temperature about 10~20% higher than the operating (user set) temperature.

If over-temp protection value is under the operating temperature, temperature cannot be reach up to operating temperature.

### Temperature range of Safety Thermostat is

0°C - 40°C - 80°C - 120°C Max.

## Start Temperature Control

1. After setting temperature and timer, Bath start heat up water in the bath to operating temperature.
2. Put samples in the bath.
3. Close lid if necessary.

## CHAPTER 8. FREQUENTLY ASKED QUESTION

### 8.1 Why temperature keep increasing and decreasing under operating temperature?

**Cause:** SAFETY setting is lower than operating temperature.

**Solution:** Turn SAFETY setting clockwise higher than operating temperature.

### 8.2 What if temperature overshoots?

**Cause:** High room temperature.

**Solution:** Your immersion circulating bath has no cooling system. If room temperature is higher than 30°C, your water bath cannot maintain 37.0°C. Use water bath in optimum operating condition.

### 8.3 Why LED displays uuuu and beep?

**Cause:** Over heat higher than 100°C. Check water level.

**Solution:** Your water bath cannot be used over 100°C. If temperature increase over 101°C, controller warning high temperature and cut-off heater.

## CHAPTER 9. TROUBLE SHOOTING

Error Symbol	Cause	Solution
uuuu	Over heat higher than 100°C	Call for Service
nnnn	Sensor disconnection	Call for Service

## CHAPTER 10. SETTING PARAMETERS:-

### 10.1 Parameter

- To set parameters, press and hold **MODE** Button for 5 seconds.
- Press **SHIFT** and **INC** Button to change values.
- Press **MODE** Button to go to next parameter.
- To escape from Parameter mode to normal display mode, press and hold **MODE** Button for 5 seconds.

#### Factory Parameter A

Parameter Symbol	Name of Parameter	Setting Range and Descriptions	Factory Default	User Value
ALH	Alarm Limit High	00.0 ~ 99.9°C	2.0	
ALL	Alarm Limit Low	00.0 ~ 99.9°C	21.0	
HYS	Hysteresis	00.0 ~ 99.9°C	0.2	
BEEP	Beep On Time	0 ~ 9999 Sec.	30	
ADJ	Temperature Calibration	-99.9 ~ 299.9°C		
LOC	Key, Data, Parameter Lock	0000 ~ 1111	0000	

### 10.2 Parameter 2

- To set parameters, press and hold **MODE** Button for 30 seconds.
- **LED** Display turns to ALH after 5 seconds. Keep pressing the button for 25 seconds.
- Press **SHIFT** and **INC** Button to change values.
- Press **MODE** Button to go next parameter.
- To escape from Parameter mode to normal display mode, press and hold **MODE** Button for 5 seconds.

## Factory Parameter B

Parameter Symbol	Name of Parameter and Descriptions	Setting Range	Factory Default	User Value
rnt	Maximum temperature limit to set	-99.9 ~ 299.9°C	251	Do Not Change
ACTP	Temp. where timer activate (Parameter can be changed only when the N2 value of Mode0 is 1) Timer starts count down when, (current temp. - set temp.) > ACTP	-00.0 ~ 99.°C	0	
Prd	Period (Output Interval)	1 ~ 99 sec.	2	Do Not Change
P	Proportion	0 ~ 6999	Auto-tuned value	Do Not Change
I	Integral	0 ~ 6999	Auto-tuned value	Do Not Change
A	Anti-Intergran	0 ~ 6999	Auto-tuned value	Do Not Change
D	Differential	0 ~ 6999	Auto-tuned value	Do Not Change
Mode0	Operating Mode Control 0 N3 0 = KS, JIS Pt 100 1 = DIN Pt 100 N2 0 = ALH (Relative) 1 = AALH (Absolute) N1 0 = ALL (Relative) 1 = AALL (Absolute) N0 0 = 000°C 1 = Decimal display (000.0°C)	N3 N2 N1 N0 0 0 0 0 1 1 1 1	0001	Do Not Change
Mode1	Operating Mode Control 1 N3 0 = PID Control 1 = ON/OFF Control N2 0 = Timer Disable 1 = Timer N1 0 = Time Scale (mm:ss) 1 = Time Scale (hh:mm) 2 = Time Scale (dd:hh) N0 0 = Power on restore disable 1 = Power on restore	N3 N2 N1 N0 0 0 0 0 1 1 1 1	0111	
Mode2	Operating Mode Control 2 No Function 1 1 1 1	N3 N2 N1 N0 0 0 0 0	0000	Do Not Change
DrAn	Fix drift of temperature display within the set value Temperature drifts during operation owing to several reasons.		0.5	
LbAT	No Function		0000	

- 1) **RNT:** Maximum temperature limit to set.  
User cannot set temperature higher than this value.  
Do not alter the value. Factory default is 100.
  
- 2) **ADJ:** Temperature adjustment.  
Sometimes the actual temperature of the water is slightly the different from displayed temperature.  
User can adjust the displayed temperature by compensate the difference by Adj value.

**Example :**

- 1) Measure temperature of Water Bath with calibrated thermometer.
- 2) Read LED display.
- 3) Change Adj value.

Thermometer Temperature Reading	Controller Temperature Reading	Adj Value
38.0°C	37.0°C	1
36.0°C	37.0°C	-1

## Chapter 11: Inspection Log For Digital Water Bath

Model # : LWB-22T                      Serial # : \_\_\_\_\_                      Client : \_\_\_\_\_

Date & Time: \_\_\_\_\_                      Amb. Temp. : \_\_\_\_\_                      Electricity : VAC Hz

**Labnics Pretest check list (Initial after each Checkpoint)**  
**If Non-Applicable enter N/A**

Termination of each electrical connections	Surge protection termination
No Water Leakage	Control panel key switch tight
Equipped with proper accessories	Esthetics ok

**Labnics TEST AREA, TEST LOG (NOTE) If units fails any portion of the test enter "NG" in the blank space adjacent to that check point**

Technician		Setpoint security verified	
Volts at plug / terminal strip / Hz		Labeling on components correct	
Cut in voltage		Molded plug not overheated	
Surge		Leak check while running	
Verify over temp. protection			
Temperature Stability @ 37.0°C	± °C		
Temperature Stability @ 50.0°C	± °C		
Maximum Temperature @ 99.0°C			
Auto-tuning			

Released from test by :  
 From#QCF001frm  
 Approval :

**CHAPTER 12. MAINTENANCE AND SERVICE CHECK LIST:-**

Model	<b>LWB-22T</b>			
Descriptions	Digital Water Bath			
Serial No.				
<b>Date</b>	<b>Check</b>	<b>Technician</b>	<b>Remarks</b>	<b>Sign</b>
ie 200	Shipment			

Article	Every 6 Mo.	<input type="radio"/> Check <input checked="" type="radio"/> Clean-Up <input type="radio"/> Replace	
		Every Yr.	Every 2 Yr.
Controller		<input type="radio"/>	
PT Sensor		<input type="radio"/>	
Heater		<input type="radio"/>	
TRIAC		<input type="radio"/>	<input type="radio"/>
OPT		<input type="radio"/>	<input type="radio"/>
MAIN S/W		<input type="radio"/>	

## CHAPTER 13. LIMITED WARRANTY:-

### WARRANTY COVERAGE

**Labnics's** warranty obligations for the products are limited to the terms set forth below:

**Labnics** warrants the product against defects in materials and workmanship for a period of one (1) year from the date of original purchase ("Warranty Period"), providing that the unit is operated according to the instruction in the operating manual.

The guarantee comprises removal of all damages that arises during the guarantee period and that are proven to be due to faulty material or poor workmanship.

If a defect arises and a valid claim is received by **Labnics** within the Warranty Period, at its option, **Labnics** will (1) repair the product at no charge, using new or refurbished replacement parts, (2) exchange the product with a product that is new or which has been manufactured from new or serviceable used parts and is at least functionally equivalent to the original product.

If a defect arises and a valid claim is received by **Labnics** after the first one hundred and eighty (180) days of the Warranty Period, a shipping and handling charge will apply to any repair or exchange of the product undertaken by **Labnics**.

**Labnics** warrants replacement products or parts provided under this warranty against defects in materials and workmanship from the date of the replacement or repair for ninety (90) days or for the remaining portion of the original product's warranty, whichever provides longer coverage for you. When a product or part is exchanged, any replacement item becomes your property and the replaced item becomes **Labnics's** property. When a refund is given, your product becomes **Labnics's** property.

### EXCLUSIONS AND LIMITATIONS

This Limited Warranty applies only to the product manufactured by or for **Labnics** that can be identified by Name Plate.

**Labnics** is not liable for any damage to or loss of any products or material stored or tested in the instruments or programs, data, or other information stored on any media contained within the product, or any non-Labnics product or part not covered by this warranty. Recovery or reinstallation of programs, data or other information is not covered under this Limited Warranty.

#### **This warranty does not apply:**

- (a) to damage caused by accident, abuse, misuse, misapplication, or non-Labnics products;
- (b) to damage caused by service performed by anyone other than **Labnics**;
- (c) to a product or a part that has been modified without the written permission of **Labnics**; or
- (d) if any **Labnics** serial number has been removed or defaced; or
- (e) if the unit is not used according to its purpose; or (f) no original spare parts are used.

TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS WARRANTY AND THE REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. **LABNICS** SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IF **LABNICS** CANNOT LAWFULLY DISCLAIM OR EXCLUDE IMPLIED WARRANTIES UNDER APPLICABLE LAW, THEN TO THE EXTENT POSSIBLE ANY CLAIMS UNDER SUCH IMPLIED WARRANTIES SHALL EXPIRE ON EXPIRATION OF THE WARRANTY PERIOD.



No **Labnics** reseller, agent, or employee is authorized to make any modification, extension, or addition to this warranty.

TO THE MAXIMUM EXTENT PERMITTED BY LAW, **LABNICS** IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY, INCLUDING ANY COSTS OF RECOVERING OR REPRODUCING ANY PRODUCT OR MATERIAL STORED OR TESTED IN THE INSTRUMENTS, PROGRAM OR DATA STORED IN OR USED WITH THE **LABNICS** PRODUCT, AND ANY FAILURE TO MAINTAIN THE CONFIDENTIALITY OF DATA STORED ON THE PRODUCT. **LABNICS** SPECIFICALLY DOES NOT REPRESENT THAT IT WILL BE ABLE TO REPAIR ANY PRODUCT UNDER THIS WARRANTY OR MAKE A PRODUCT EXCHANGE WITHOUT RISK TO OR LOSS OF MATERIAL, PROGRAMS OR DATA.

FOR CONSUMERS WHO HAVE THE BENEFIT OF CONSUMER PROTECTION LAWS OR REGULATIONS IN THEIR COUNTRY OF PURCHASE OR, IF DIFFERENT, THEIR COUNTRY OF RESIDENCE, THE BENEFITS CONFERRED BY THIS WARRANTY ARE IN ADDITION TO ALL RIGHTS AND REMEDIES CONVEYED BY SUCH CONSUMER PROTECTION LAWS AND REGULATIONS. TO THE EXTENT THAT LIABILITY UNDER SUCH CONSUMER PROTECTION LAWS AND REGULATIONS MAY BE LIMITED, **LABNICS'S** LIABILITY IS LIMITED, AT ITS SOLE OPTION TO REPLACEMENT OR REPAIR OF THE PRODUCT OR SUPPLY OF THE REPAIR SERVICE AGAIN.

**Note:**

- Before you deliver your product for warranty service it is your responsibility to remove all products or materials stored in the instrument.
- Before returning a defective unit, please contact local representative or **Labnics** Support Center at [info@labnics.com](mailto:info@labnics.com).
- **Labnics** will issue RGA number for authorized return ;  
If we agree to the unit being returned, arrange for careful packing and send the unit to

**LABNICS**

# SERVICE REPORT

Customer's Address : _____ _____	Tel.No.: _____ Fax No.: _____ Weekly Off.: _____
Contact Person / Designation : _____	Dept.: _____

Date	Time		System Configuration	Model	Serial No.	Date :	SR. No.	
	From	To					Status : OK <input type="checkbox"/>	Not OK <input type="checkbox"/>
						Installation <input type="checkbox"/>	Warranty <input type="checkbox"/>	
						Demonstration <input type="checkbox"/>		
						Maintenance <input type="checkbox"/>	Contract <input type="checkbox"/>	
						Repairs <input type="checkbox"/>		
						Application <input type="checkbox"/>	Billable <input type="checkbox"/>	
						Calibration <input type="checkbox"/>		
						Validation <input type="checkbox"/>	Courtesy <input type="checkbox"/>	

Nature of Problem : \_\_\_\_\_  
\_\_\_\_\_

Observation & Action Taken : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_

Customer's Remarks : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Parts Replaced : \_\_\_\_\_  
\_\_\_\_\_

Parts Recommended / Action Required : Yes <input type="checkbox"/> No <input type="checkbox"/>		Requisition Number :
Service Engineer's Name & Signature	Customer's Name, Signature, Date & Stamp	