ISO 13485 Certified

ISO 9001 Certified

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CE

LabTech

OPERATION MANUAL

Digital Water Bath

Covers Model LWB-306DS / LWB-311DS / LWB-322DS

주식회사 대한랩테크

DAIHAN LABTECH GROUP

1.1. Tables of Contents

1.2. Getting Started

Thank you very much for purchasing Daihan Labtech

LWB Digital Water Bath.
Your Digital Water Bath has been designed with function, reliability, and safety in mind. It is your responsibility to install it in conformance with local electrical codes. For safe operation, please pay attention to the alert symbols through the manual.

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 alert you to a possibility of damage to the equipment.

Note
Notes alert you to pertinent facts and conditions.

HOT

Hot
Hot sign alert you possibility of burning injury by hot surface, steam or air of the instrument

Explosive
Explosive alerts you to possibility of explosion by high pressure.

1.3. Product Overview

LabTech LWB-Series digital water bath is excellent for general laboratory and industrial use.

Precision microprocessor based PID controller provides accurate and uniform temperature control of ±1.0℃ uniformity and ±0.5℃ accuracy under normal operating conditions. Temperature range from ambient to 99℃.

The water bath offers specially designed safety thermoregulation features - an automatic safety shut-down mechanism. The automatic safety shut-down mechanism will automatically disable the water bath heater in the event that the unit is either turned on without water, or it is left on for an extended period of time, and the water is allowed to completely evaporate. This safety feature prevents permanent heat damage to the water bath.

The water bath includes a perforated heater cover and lid. The heater cover protect heater and sensor from unexpected damage and stainless steel lid reduces heat loss during operation, and also assists in keeping the water bath clean while not in use.

HOT

SAFETY PRECAUTIONS

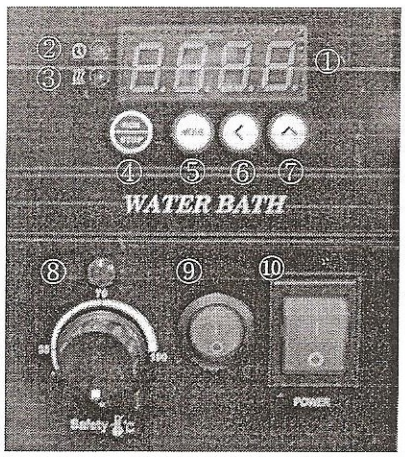
DO NOT OPERATE WITHOUT WATER IN BATH

IF THERE IS NO WATER IN THE PAN DURING OPERATION THE WATER BATH WILL MOMENTARILY OVERHEAT. TOUCHING THE HEATER COVER OR HEATER UNDER THESE CONDITION COULD RESULT IN SEVERE BURNING.

DO NOT REMOVE THE GROUND PRONG (THIRD PIN) (IN CASE OF 110V) FROM THE POWER CORD, OR USE AN UNGROUNDED ADAPTER. THE WATER BATH REQUIRES A 3-WIRE RECEPTACLE. IF ONE IS NOT AVAILABLE, CONSULT WITH AN ELECTRICIAN FOR INSTALLATION.

TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT OPEN THE BODY. NO USER SERCICEABLE PARTS INSIDE.

1.4. Parts and Functions



1.4.1. Main Controller

① Digital LED Readout

Displays present temperature, set temperature, timer and mode

② TIME Lamp

Timer On Indicator. When user set timer and start operation, lamp blinks until the temperature reaches up to set temperature. Once timer activated, the lamp stop blinking.

③ OUTPUT Lamp

Heat On Indicator. Lamp continuously on and off during operation to maintain user set temperature.

④ START/STOP BUTTON

Start and stop operation

⑤ MODE BUTTON

User can set parameters such as temperature and time by press MODE BUTTON.
Press MODE -> TEMP -> Press MODE -> Set Temperature (00.0) -
Press MODE -> TIME -> Press MODE -> Set Timer (00.00)

⑥ SHIFT BUTTON (Auto-Tuning Button)

1) Move to digit number to be changed
2) AT (Auto-Tuning) function automatically set P, I & D values of the controller to reach the required temperature fast and accurately. User do not need to auto-tuning frequently. (factory set)

Press and hold SHIFT BUTTON for 5 seconds to start auto-tuning. Temperature display blinks while auto-tuning. Once auto-tuning is finished display stop blinking.

⑦ INC (INCREMENT) BUTTON

Change set values during setting mode.
Alternatively display Temp. and Time during normal display mode.

⑧ SAFETY DIAL

Over temperature protection. SAFETY breaks electrical supply to heater to protect instrument from over heating. Set temperature about 10% higher than the operating temperature.

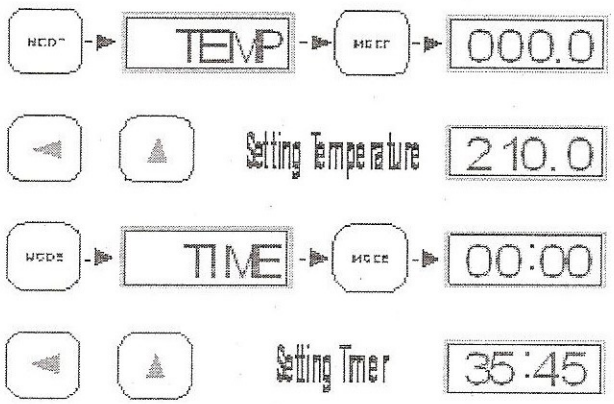
⑨ **PUMP ON/OFF SWITCH**

Circulation water pump On/Off Switch

⑩ **POWER ON/OFF SWITCH**

Main Power On/Off Switch

※ **Example**



1.5. Operating

① Before Operation

1) The main voltage must correspond to the voltage given on the name-plate. 100 ~ 110VAC, 60Hz or 220/230V, 50/60Hz
2) Place your Incubator on the flat and leveled surface
3) Do not use Incubator in flammable, volatile, explosive environment.

② Getting Started

1) Remove all packing materials.
2) Remove any material which can be damaged by heat.
3) Plug supplied AC connector to wall mount consent and Incubator.
4) Turn the ⑩**POWER ON/OFF** switch on.
5) The ①**Digital LED READOUT** displays current temperature of the Bath.

③ How to Set Temperature

1) Press ⑤**MODE BUTTON** to set operating temperature. ①**Digital LED READOUT** displays TEMP.
2) Press ⑤**MODE BUTTON** again.
3) Temperature (00.0 or 000) blinking and prompt user input.
4) Change operating temperature using ⑥**SHIFT** and ⑦**INC BUTTON.**
5) Press ⑤**MODE BUTTON** to set timer.
Press ⑤**MODE BUTTON** five times to back to normal display mode.

④ How to Set Timer

1) After setting temperature Press ⑤**MODE BUTTON** to set timer.
2) ①**Digital LED READOUT** displays TIME
3) Press ⑤**MODE BUTTON** again.
4) Timer (00.00 : min.sec) blinking and prompt user input.
5) Change timer using ⑥**SHIFT** and ⑦**INC BUTTON.**
Press ⑤**MODE BUTTON** to back to normal display mode.

※ Important Parameter List

To set parameters, press and hold MODE Button for 5 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 6 seconds.

Parameter Symbol	Name of Parameter	Setting Range and Descriptions	Factory Default	User Value
ALH	ALAPM LIMIT HIGH	00.0 ~ 99.9	0	
	No Function for LWB-Series			
ALL	ALAPM LIMIT LOW	00.0 ~ 99.9	21	
	No Function for LWB-Series			
adj	Temperature Adjustment (Displayed Temp. = Actual Temp. + Adj.)	-99.9 ~ 299.9 °C	0	
rnt	Maximum temperature limit to set	-99.9 ~ 299.9 °C	101	Do Not Alter
LoC	Data Lock N3 = RESERVED (1: 0:) N2 = RESERVED (1: 0:) N1 = PARAMETER DATA LOCK (1:LOCK 0:UNLOCK) N0 = TEMP. & TIME DATA LOCK (1:LOCK 0:UNLOCK)	N3 N2 N1 N0 0 0 0 0 1 1 1 1	0000	
Prd	Period (Output Interval)	1 ~ 99 sec.	Auto-tuned value	Do Not Alter
P	Lock Proportion	0 ~ 9999	Auto-tuned value	Do Not Alter
I	Integral	0 ~ 9999	Auto-tuned value	Do Not Alter
D	Differential	0 ~ 9999	Auto-tuned value	Do Not Alter
Mode0	OPERATING MODE CONTROL		0001	
	N3 N2 N1 N0 Available value to set 0 or 1,2 0 or 1 0 or 1 0 or 1 N3 : TYPE OF SENSOR 2 : CA<K> 1 : DIN Pt 100 ohm 0 : KS, JIS Pt 100 ohm N2 : ALARM HIGH DATA TYPE 1 : ABSOLUTE 0 : RELATIVE N1 : ALARM LOW DATA TYPE 1 : ABSOLUTE 0 : RELATIVE N0 : TEMP.DECIMAL DISPLAY 1 : 000.0 0 : 000			
Mode1	OPERATING MODE CONTROL		0111	
	N3 N2 N1 N0 Available value to set 0 or 1 0 or 1 0 or 1 or 2 0 or 1 Where N3 : TYPE OF OUTPUT 1 : COLD COMPRESSOR 0 : HEATER (NO FUNCTION FOR THIS MODEL) **N2 : TIMER FUNCTION 1 : AVAILABLE 0 : NOT AVAILABLE** (If the value set at 0, timer setting mode is not displayed in the controller)			

	N1 : TIME SCALE 2 : DD:HH (00.00 ~ 99 days 23 hours) 1 : HH :MM (00.00 ~ 99 hours 59 min) 0 : MM:SS (00.00 ~ 99 min 59 sec) N0 : POWER ON RESTORE 1 : ON 0 : OFF (During operation, if the electrical supply is turn out and get back again, restore the last operating condition and resume operating when POWER ON RESTORE function is ON)			
Mode2	OPERATING MODE CONTROL		0000	
	No Function for LWB-Series			
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 ~ 99.9 °C	0	
Hys	Hyteresis		0.1	Do Not Alter

BEEP	BEEP ON TIME	0 ~ 99 SEC	30	
	Beep on time in seconds after timer is over. If the value is set at 0, continuously beep until press RPM button			
DrAn	Fix drift of temperature display within the set value		0.2	
	Temperature drifts during operation owing to several reasons. To elimiate temperature drift, set DrAn value to fix temperature within the value			

1) rnt : Maximum temperature limit to set.
User cannot set temperature higher than this value.
Do not alter the value. Factory default is 101

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 in the bath with ASTM standard thermometer.
2) Read LED display
3) Change Adj value

Actual Water Temperature	Displayed Temperature	Adj Value
50 °C	49 °C	1
50 °C	51 °C	- 1

1.6. Trouble Shooting

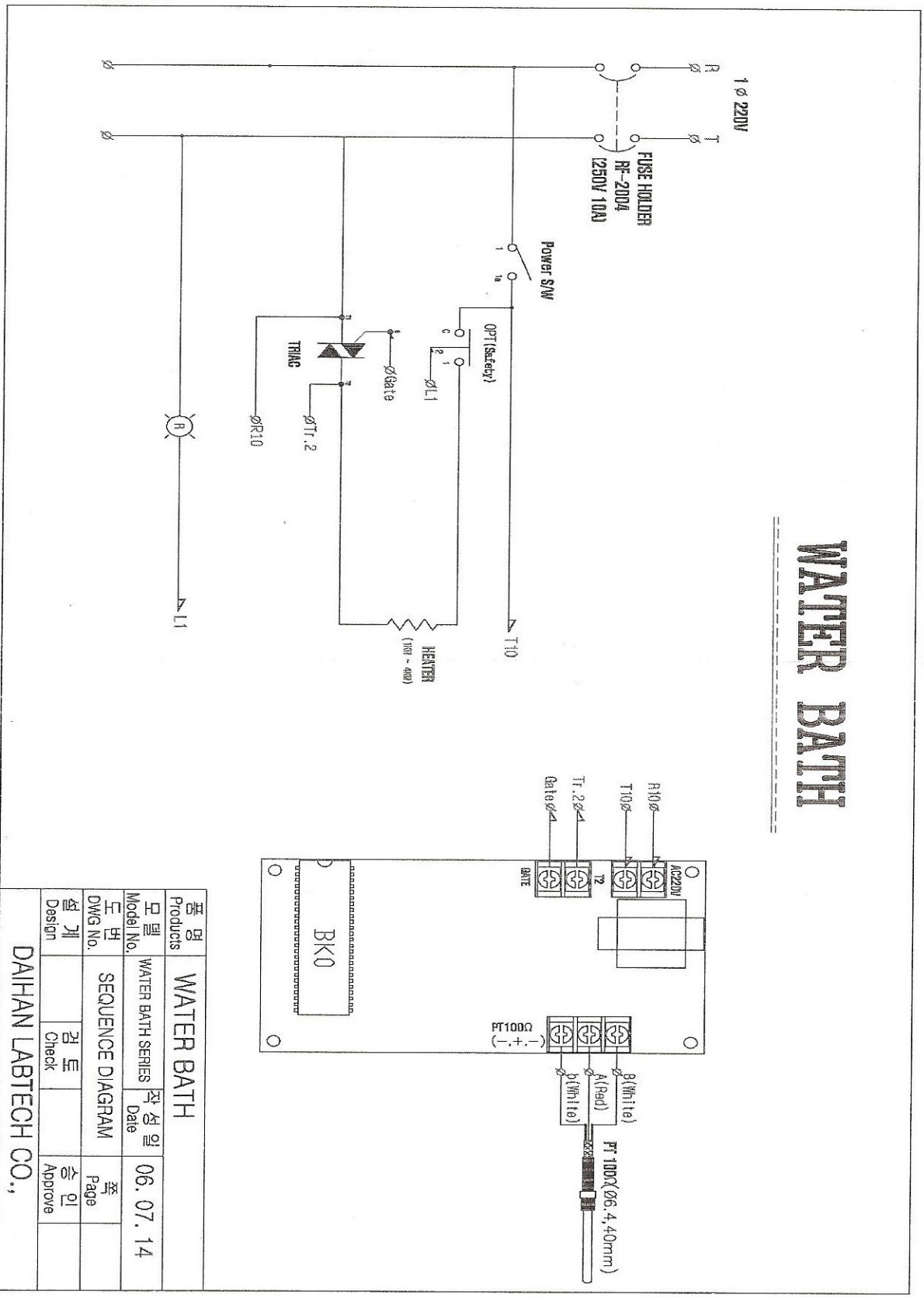
Trouble	Check First	Trouble Shooting
Power Failure	Check Electric Supply	Plug firmly into the electric supply
	Check Circuit Breaker	Turn circuit breaker off and press red button to activate circuit breaker again.
Temperature Control Failure	Check set values	Change set values
	Check Over Temperature Protection Value	Set protection temperature 10% higher than the usual operating temperature

Contact sales representative or customer service department

1.7. Part List

	PART CODE	NAME	SPECIPICATION		UNIT	Q'ty
1	LWB-E001	CONTROLLER	LWB-001		EA	1
2	LWB-E002	HEATER	LWB-306DS	500W	EA	1
			LWB-311DS	700W	EA	1
			LWB-322DS	1.4KW	EA	1
3	LWB-E003	FUSE	LWB-306DS	250V 5A	EA	1
			LWB-311DS	250V 5A	EA	1
			LWB-322DS	250V 5A	EA	1
4	LWB-E004	PT SENSOR	1/8*φ4*20*700mm		EA	1
5	LWB-E005	OTP SENSOR	TS-120S		EA	1
6	LWB-E006	TRIAC	TG 25C60 100Ω 35A		EA	1
7	LWB-E007	LAMP	TN-71 RED		EA	1
8	LWB-E008	POWER SWICH	E104190(S)		EA	1
9	LWB-E009	PLUGE CABLE	220V 12A 1.5SQ		EA	1
10	LWB-E010	PLUGE CABLE CONSENT	RF-2004 10A 250V		EA	1
11	LWB-H001	SILICON HOSE	INSIDE: 8mm, OUTSIDE: 12mm		M	1
12	LWB-H002	DOOR HANDLE	SK-100		EA	1
13	LWB-H003	HEAT SINKER	70*80*24		EA	1
14	LWB-H004	THERMOSTATE NIPPLE	PT 1/4		EA	1
15	LWB-H005	KNOB HANDLE	H-2		EA	1
16	LWB-H006	ACETAL HOSE CORK	35Ø, 10mm0H 11HOSE		EA	1
17	LWB-H007	HOSE CORK MAGNETIC	27Ø, 12.7Ø 5mmH		EA	1

1.8. Wiring Diagram



DHP 04-002-02 DAIHAN LABTECH CO., A4(210mm*297mm)

품명 Products	WATER BATH		
모델 Model No.	WATER BATH SERIES	작성일 Date	06. 07. 14
도번 DWG No.	SEQUENCE DIAGRAM	쪽 Page	
설계 Design	검토 Check	승인 Approve	
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