



Laboratory Equipment Manufacturer
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Operation Manual for TOU-50/120 SERIES

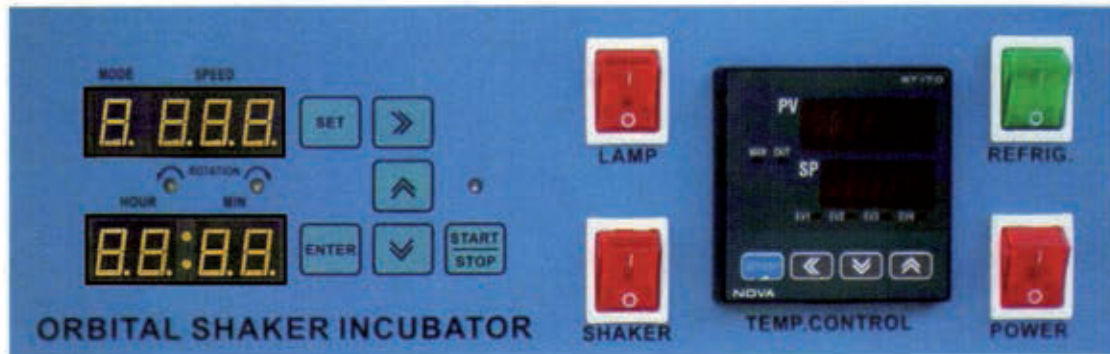
LOW-TEMP. SHAKER INCUBATOR



PLEASE READ THIS MANUAL CAREFULLY BEFORE OPERATION

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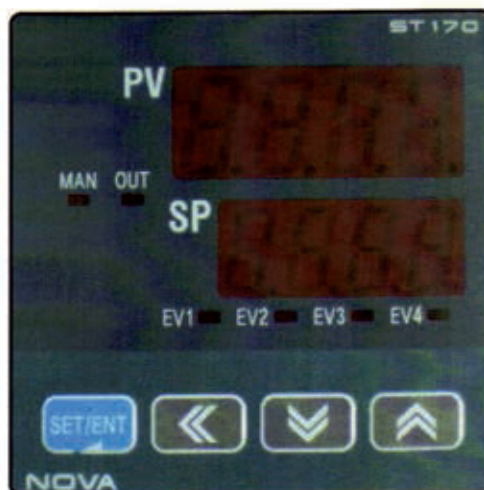
INSTRUCTIONS TO BE USED:

Setup Instructions

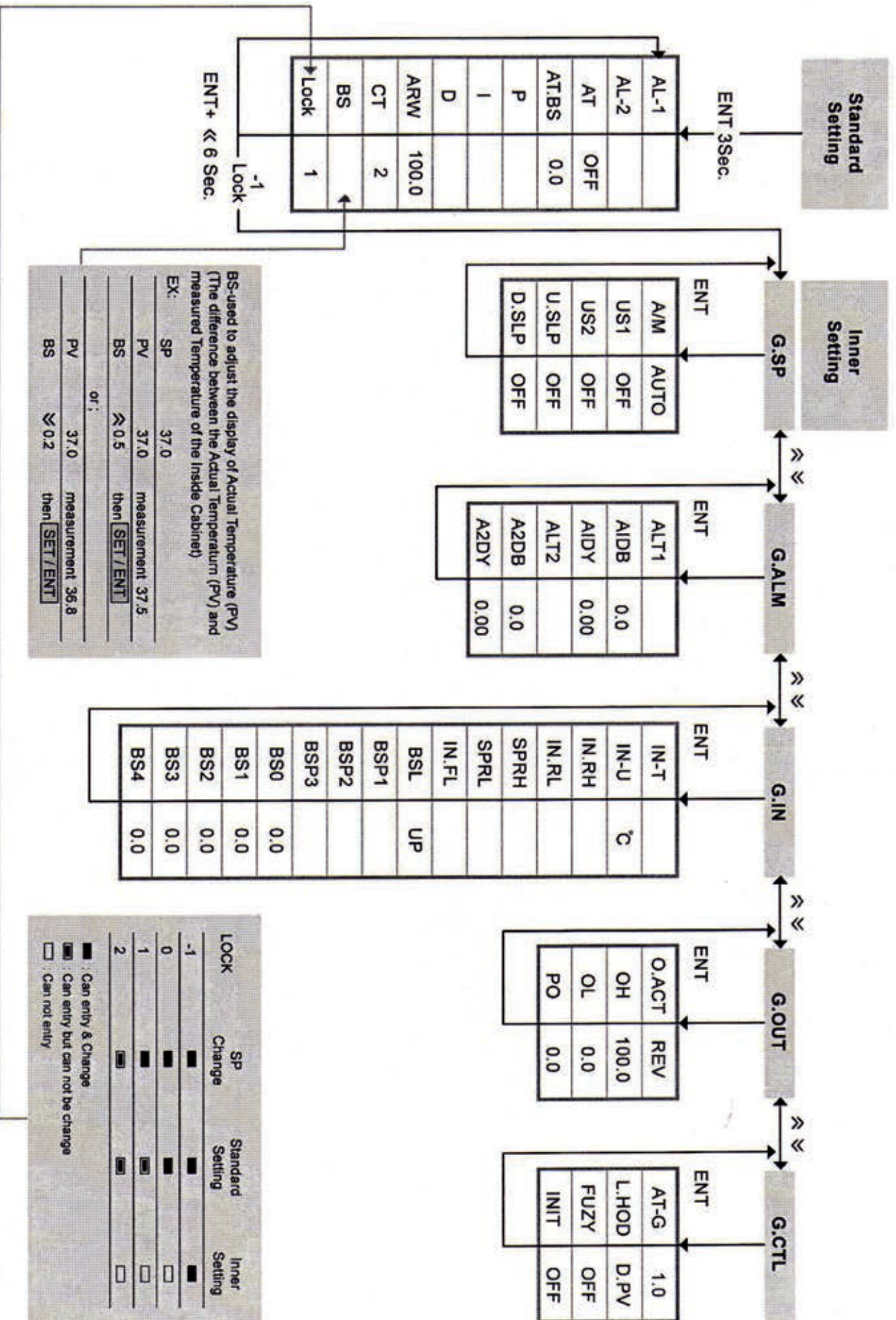
- Remove all the packaging and position.
- Make sure there is enough ventilation around the instruments' grills.
- Adjust bolts next to castor feet to make level.
- Plug in and turn on the Power Switch.

OPERATIONS:

TEMPERATURE CONTROLLER



TEMPERATURE CONTROLLER(INSIDE SETTINGS) ST-140 / 160 / 170



Temperature Control

Temperature Control is controlled by a digital P.I.D controller which shows the internal temperature and required set temperature. Holding down the SET/ENT button will take you into the programming and calibration of temperature control unit.

Key Pad Functions

● PV	Temperature inside the chamber.
● SP	Required temperature of the chamber.
● EV1	Over-Heat Temperature; Lights on when the set temperature is over 3°C and turns off the heater.
● EV2	Over-Low Temperature; Compressor will off when the set temperature is Lower to 10°C and turns on the light.
● EV3	Not activated
● EV4	Not activated
● MAN	Lights on when manual mode operates or; LED blinks during auto-tuning process.
● OUT	Light on when heater is activated.
● SET/ENT	Save data, move between functions.
● ⏪ ⏩ ⏴ ⏵	Arrow Keys is used to change the set and numbers on screen.

Refrigerator Control

Do not operate refrigerator when room temperature is over 40°C, as this will increase the work load of the compressor and will reduce its life span. The compressor will automatically off when the room temperature is 40°C.

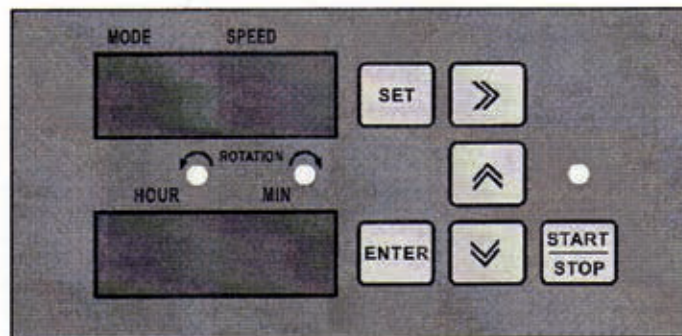
Light Control

The equipment has an internal light and front view window that allows the user to view the inside chamber without opening the front door.

Speed Control

Turn on the shaker switch to start the operation.
The speed of the shaker is displayed on the screen.
The shaker stops when the lid is open.

NAME AND FUNCTION OF SPEED CONTROL PANEL



• START/STOP	Light will on when shaker starts to operate. Light blinks when shaker stop to operate.
• SET	Used to change the set on screen.
• <<	Right arrow key is used to shift the position when modifying value.
• $\uparrow \downarrow$	Upward and downward arrow key is used to change the time and speed of the shaker.
• ENTER	Lock/used to proceed to the next step.
• MODE	Segment of the Program (1-9 segment).
• SPEED	Displays the speed of the moving shaker.
• ROTATION	Shaker's movement Left light will on when the shaker rotates to left side. Right light will on when the shaker rotates to right side.
• HOUR/MIN	Displays the shaker's rotation period.
• C	The cycle of set MODE.

OTHER FUNCTIONS :

- **» C** **CYCLE**
When the shaker stops, Press **»** for 10 seconds to check the **CYCLE** of the shaker (can be set 1-999/ set 000, the shaker's rotation is continuous) then press **ENTER**.

- **^ H-L** **Maximum and Minimum Speed**
When the shaker stops, Press **^** for 10 seconds to check the maximum and minimum speed of the shaker (speed can not be changed) then press **ENTER**.

- **∨** **Speed Measurement**
When the shaker stops, Press **∨** for 10 seconds to check the speed of the shaker.
Ex. Speed 300 rpm; measurement 295 rpm, change the green LED to 295 rpm then press **ENTER**.

Press **SET** key (hold down) then turn on the power switch.

MODE

0 . 2 6 7 Gear Ratio (Please don't change.)

ENTER

H 4 0 0 Maximum Speed.
L 2 7 Minimum Speed.

ENTER

H 4 0 0 Maximum Speed (can be change.)

ENTER

C o n 1 Continues the operation after power failure.
C o n 0 Doesn't continue the operation after power failure.

ENTER

A 1 1 1 Buzzer 0 Buzzer Off
1 Buzzer On
→ The buzzer beeps when the set C (cycle) time ends.
→ All key pads have buzzer.
→ Only **START/STOP** key have buzzer.

ENTER

SAMPLE SETTING

ROTATION: CONTINUOUS SINGLE DIRECTION 300 rpm TIME 00:00 MIN.

POWER → SET = 1 0 0 0 → MODE SPEED = 1 3 0 0 → MODE SPEED → ENTER = 0 0 : 0 0 → HOUR MIN → ENTER = 0 0 : 0 0 → START

ROTATION: SINGLE DIRECTION WITH TIMER 300 rpm TIME 12:30 MINS.

POWER → SET = 1 0 0 0 → MODE SPEED = 1 3 0 0 → MODE SPEED → ENTER = 0 0 : 0 0 → HOUR MIN → >> = 1 2 : 3 0 → HOUR MIN → ENTER → MODE SPEED = 2 0 0 0 → MODE SPEED → ENTER = 0 0 : 0 0 → HOUR MIN → ENTER = 0 0 : 0 0 → START

ROTATION: PROGRAMMED

- ① 400 rpm Time 01:30 MINS.
- ② 300 rpm Time 00:50 MINS.
- ③ 0 rpm Time 00:30 MINS.
- ④ 0 rpm Time 00:00 MIN.
- ⑤ L:000
- ⑥ 400 rpm Time 01:30 MINS.
- ⑦ 300 rpm Time 00:50 MINS.
- ⑧ 0 rpm Time 00:30 MINS.
- ⑨ 0 rpm Time 00:00 MIN.
- ⑩ L:010

POWER → SET = 1 0 0 0 → MODE SPEED = 1 4 0 0 → MODE SPEED → ENTER = 0 0 : 0 0 → HOUR MIN → >> = 0 1 : 3 0 → HOUR MIN →

→ ENTER = 2 0 0 0 → MODE SPEED = 2 3 0 0 → MODE SPEED → ENTER = 0 0 : 0 0 → HOUR MIN → ROTATION → >> = 0 0 : 3 0 → HOUR MIN → ENTER = 0 0 : 0 0 → HOUR MIN →

→ ENTER = 3 0 0 0 → MODE SPEED = 3 0 0 0 → MODE SPEED → ENTER = 0 0 : 0 0 → HOUR MIN → >> = 0 0 : 3 0 → HOUR MIN →

→ ENTER = 4 0 0 0 → MODE SPEED = 4 0 0 0 → MODE SPEED → ENTER = 0 0 : 0 0 → HOUR MIN →

→ ENTER = C 0 0 0 → MODE SPEED = C 0 0 0 → MODE SPEED → ENTER = 0 0 : 0 0 → HOUR MIN → START

= C 0 0 0 → MODE SPEED → >> = C 0 1 0 → MODE SPEED → ENTER = 0 0 : 0 0 → HOUR MIN → START