

Operation Manual

Isotemp RT Digital Hotplate



9240-11-012 V01 12/01/17

This manual cover the model is shown below

NA Model	EU Model	Voltage	Description
11676257	15306607	230V-EU, UK, ANZ/CN	Isotemp RT Dgtl HP230V
11676258	N/A	120V-US	Isotemp RT Dgtl HP120V



Important Before using this product, read this entire operation manual carefully. Users should follow all of the operational guidelines contained in this manual and take all necessary safety precautions while using this product. Failure to follow these guidelines could result in potentially irreparable bodily harm and/or property damage.

Caution All internal adjustments and maintenance must be performed by qualified service personnel.

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This manual contains important safety and operation information. You must carefully read, understand, and follow all the instructions in this manual prior to operating this instrument. Keep this manual in a safe place nearby for reference and make it easily available to all users.

- 1) This manual highlights DANGER/WARNING/CAUTION/NOTICE alerts to prevent injury or property damage and also to achieve optimum performance of your instrument.
- 2) These alerts are classified into four types in this manual depending on the importance and the risk levels as described below:

Symbols	Meaning
	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
	Ignoring this warning could cause serious injury or even death.
	Ignoring this caution could cause injury or property damage.
	Ignoring this notice could cause operational problems.

- 3) The claim which is out of the quality guarantee published by the Manufacturer is out of Manufacturer's responsibility.
- 4) The damage which is from unexpected fault or damage of user by Acts of God is out of Manufacturer's responsibility.

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Section 1 Warnings and Cautions

WARNING

Ignoring the following warnings could cause serious injuries or even fatal accidents.

Understand all alert labels prior to operating this equipment. Never remove or damage the alert labels.

Never move this equipment while under operation.

Never install or use this equipment in explosive or flammable atmospheres.

Never use or store flammable or hazardous substances near to this equipment.

Never use the equipment to heat flammable or hazardous substances.

Always wear proper protective gear (such as goggles, gloves, masks or an apron) when using this equipment.

Never allow water, organic solvents, dust, or corrosive gases to get inside the equipment.

Never immerse this equipment in water or operate it under water. Never reach for this equipment if it has fallen into water.

Check electrical requirements described in this operation manual or on the ID plate of this equipment before use. Connect this equipment to a dedicated power outlet nearby.

Connect this equipment only to properly grounded power outlets to protect you and your instrument. Do not ground to gas pipes or water pipes.

Never install this equipment closer than 30 cm (12 inches) to a wall of combustible material. Observe minimum distances (in general, 30 cm) from other devices.

If you observe a strange smoke, odor or noise from the instrument, unplug the power cord immediately and turn off the main power switch. After the smoke or odor disappears, contact your dealer or Fisher Scientific if any repair is required.

Do not disassemble, repair, or modify this instrument on your own. Doing so will void your warranty and may result in injuries or product damages.

 **CAUTION**

Ignoring the following cautions could cause injuries or property damages.

Do not touch the top plate or any object near it even when the heater is turned off. You may get burned due to residual heat.

After using this equipment, make sure to turn off the main power switch and also to disconnect the power cord from the power outlet for the safety of other users.

Do not place heavy objects, including this equipment, on top of the power cord and do not strip, scratch, bend, twist, pull, or heat the power cord. A damaged power cord is a fire and electrical shock hazard.

Make sure to set up your instrument on a flat, stable, clean, non-slip, dry, and fireproof surface inside a lab with proper safety measures.

Do not place any device which can be affected by the motor vibrations near this equipment.

Do not touch the power outlet, power socket, or power cord with wet hands. And make sure to connect the power cord directly and firmly to the power outlet and power socket.

Do not put or insert any objects (especially if conductive or flammable) inside this equipment.

Do not expose this equipment to any heat sources including direct sunlight.

Mechanical shock or vibration can damage this equipment. Pay extra attention while moving it. Damages caused by mechanical shock or vibration may result in injury or fire.

Do not impact the heat sink. You can damage the equipment or get injured.

Do not install this equipment near any device that generates high frequency noise such as high frequency welding machines, high frequency sewing machines, or SCR power controllers.

Before cleaning, make sure to unplug the power cord to avoid electric shock or fire.

Do not use chlorine bleach, ammonia-based cleaners, abrasives, ammonia, or metal scouring pads. Wipe with a soft damp cloth or a sponge soaked in water or diluted neutral detergent.

Section 2 General Description

Congratulations on your purchase of a Fisher Scientific Isotemp digital hotplate which is specially designed to maximum your investment with respect to performance, safety, ease of use, and durability.

This Fisher Scientific Isotemp digital hotplate boasts quick heat-up time thanks to ample heating capacity (600W) as well as the superb heat transfer rate enabled by the tightly integrated structure of the heater and the ceramic-coated aluminum alloy top plate.

Item/Model	Isotemp digital hotplate
Dimension (W x D x H, mm)	161 x 290 x 100
Top plate dimension (Ø)	140 mm (5.5")
Maximum heating capacity	600W
Current consumption (230V)	3A
Current consumption (120V)	5A

Features

Performance

- Microprocessor PID Feedback Control
Fast and precise temperature control is provided by the microprocessor PID controller.
- Quick Heat Up Time
Ample heating capacity and superb heat transfer rate of the tightly integrated structure of heater and ceramic-coated aluminum alloy top plate allow quick heat up time (up to 350°C).
- Selection of the Temperature Control Modes
Three user-selectable temperature control modes are provided for your convenience:

Features (continued)

Optimal Mode	Providing optimal balance between the heat-up time to reach the target temperature and the allowed fluctuation range of temperature overshoot and undershoot (factory default)
Fast Mode	Providing the fastest heat up time but wide fluctuation range of temperature overshoot and undershoot
Slow Mode	Providing the slowest heat up time but the narrowest fluctuation range of temperature overshoot and undershoot.
User Mode	Allowing linear heating up to the target temperature using the maximum heating rate and switching on and off the heater based on the target temperature. Note that this mode shows the widest fluctuation range of temperature overshoot and undershoot.
User Mode	Allowing the auto-tuned parameters to be used for temperature control

- Adjustment of the Heating Rate
If needed, you can adjust the heating rate ranging from 0 to 100% at 1% intervals. [Refer to Temperature Setting (r mode) in Section 4.]
- Selection of the Timer Mode
Immediate Activation - The timer starts immediately after setting the timer.
Delayed Activation -The timer is activated only when the set temperature is reached.
- Auto-tuning (Calibration)
Automatic tuning of the PID parameters provides more accurate temperature control. [Refer to Auto-tuning (PID Parameter Calibration) in Section 4.]
- Temperature Offsetting
In case your own thermometer is to be used for temperature control for specific applications, there can be some differences between the temperature of your thermometer and the displayed temperature of this unit. If needed, such temperature differences ranging from -10°C to 50°C at 0.1°C interval can be offset. See Temperature Offsetting in Section 4.

Safety

- High and Low Temperature Limits

The high temperature limit of the top plate is set to 350°C to protect you and your media. However, you can set your own high and low temperature limits to reduce operation time and also to avoid inadvertent mistakes.

If the temperature of the top plate exceeds the set temperature range, the heater will be automatically turned on and off and the Heater LED will be turned on and off accordingly.

- Multiple Overheat Prevention Measures

Built-in overheat prevention circuit will turn off the heater if the plate temperature reaches 450°C for any reason. In addition, if the temperature of the main body exceeds 85°C the overheat prevention circuit also stops heating to protect the motor and the PCB. You will be alerted by both audible and visible signals will be activated.

In such cases, turn off the power switch and disconnect the power cord first. Allow your unit to cool down completely before operating it again.

- Hot Top Warning Indicator



The top plate temperature can remain very hot for some time even after the heater is turned off. To prevent injury or fire under such circumstances, this equipment has a hot top warning indicator on the control panel. This indicator will illuminate if the top plate temperature is over 50°C. Even so, do not rely on this indicator alone for your safety.

- Heating Bath (Patent Pending, , optional)

A specially designed non-slip heating bath shown above is available. (optional) To prevent unintentional slips of the bath during operation, this bath has concavo-convex bottom so that it fits snugly on top of the heating plate.

Safety (continued)

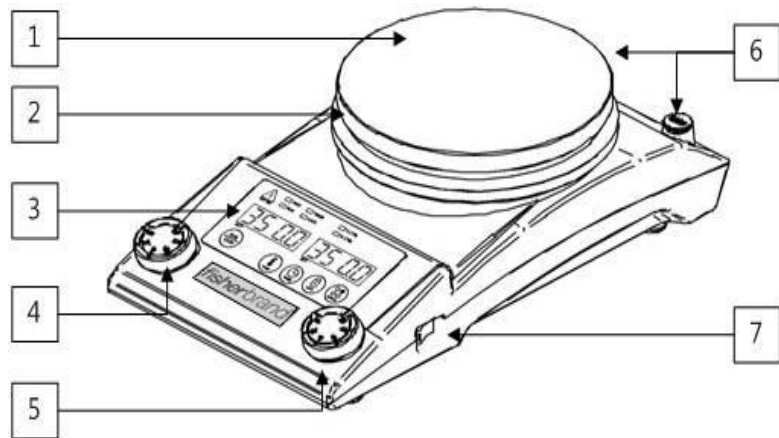


Figure 2-1. Heating Bath

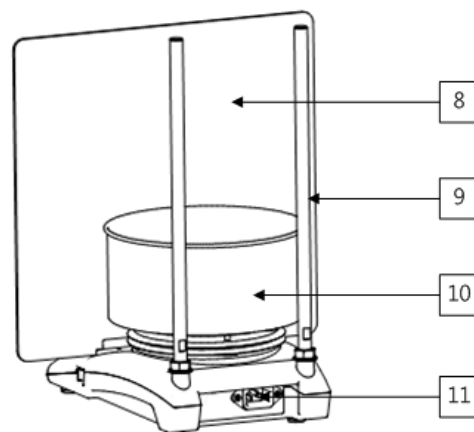
- Lock Button
Inadvertent or accidental changes during operation can be prevented by using this feature.
- Transparent Shield
An optional transparent shield is available to allow you to monitor your operations more safely by shielding you against liquid splashes.
- Spill-proof Body Design
Spill-proof design of the main body protects the inner parts of the equipment and the elevated control panel reduces the chances of contact with liquid spills or leakage.

Convenience

- Two large digital displays on the control panel clearly show both set and actual temperatures of the top plate side by side.
- Easily set your own temperature limit at any value between 0 and 350°C.
- Heating rate can be set from 0 to 100% at 1% interval for delicate temperature control.
- Up to two support rods (optional) can be attached to hold various kinds of devices such as temperature sensors, thermometers, laboratory glassware, and so on.
- The ceramic-coated top plate is highly resistant to heat and corrosion. In addition, its white color is optimal for monitoring color changes of the media during operation.

Construction**Figure 2-2. Front Components**

- (1) Ceramic-coated Top Plate
- (2) Heat Sink
- (3) Control Panel (see Control Panel section)
- (4) Heater Knob
- (5) Control Knob
- (6) Threaded Holes for Support Rods
- (7) Main Power Switch

**Figure 2-3. Back Components**

- (8) Transparent Shield (optional)
- (9) Support Rod (optional)
- (10) Heating Bath (optional)
- (11) Power Socket

Section 3 Unpacking and Installation

Upon receiving the instrument, check to ensure that no damage has occurred during shipment. It is important that any damage that occurred during shipment must be detected before unpacking. If such damage is found, notify the carrier immediately.

After unpacking, check to ensure that all the following parts and accessories are included in the package. If not, contact your dealer or Fisher Scientific immediately.

Item	Quantity
Main body	1
Operation Manual	1
Power Cord	1
Transparent Shield (optional)	1
Heating Bath (optional)	1
Support Rods (optional)	2

Installation Environment

It should be installed in suitable environment as described below.



Avoid direct sunlight



Room temperature should be 5°C ~ 40°C



Relative Humidity (RH%) should be less than 80%.



Altitude should be less than 2,000m.

Location Conditions

⚠ WARNING

- Never install or use this equipment in explosive atmospheres.
- Never install or use this equipment with or near to hazardous or flammable substances.
- Never expose this equipment to any heat sources including direct sunlight.
- Never install this equipment closer than 20 cm (8 inches) to a wall of combustible material.
- Never install this equipment near any device that generates high frequency noises.
- Set up this equipment on a flat, stable, clean, non-slip, dry, and fireproof surface inside a lab with proper safety measures.
- Observe the minimum distances (in general, 30 cm or 12 inches) from other devices. In addition, any device which can be affected by the motor vibrations should not be placed near this equipment.

Connecting to Power Supply

When connecting power, use only the power cord that came with your instrument. The power connection procedures are as follows:

- (1) Before connecting the power cord, make sure that the main power switch is turned off.
- (2) Plug the power cord into the power socket at the back of your instrument as shown in the diagram below.
- (3) Plug the other end into a properly grounded and dedicated power outlet nearby.

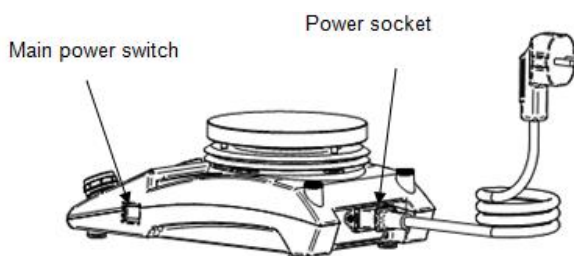


Figure 3-1. Connect Power Cord

Connecting to Power Supply (continued)

WARNING

- Check electrical requirements in the operation manual or on the ID plate attached to the bottom of this equipment before use.
- Make sure to connect this equipment only to properly grounded as well as dedicated power outlets to protect you and your equipment.
- In order to prevent fire or power cord damage due to overloading, do not use power strips or improper extension cords.

Section 4 Operation

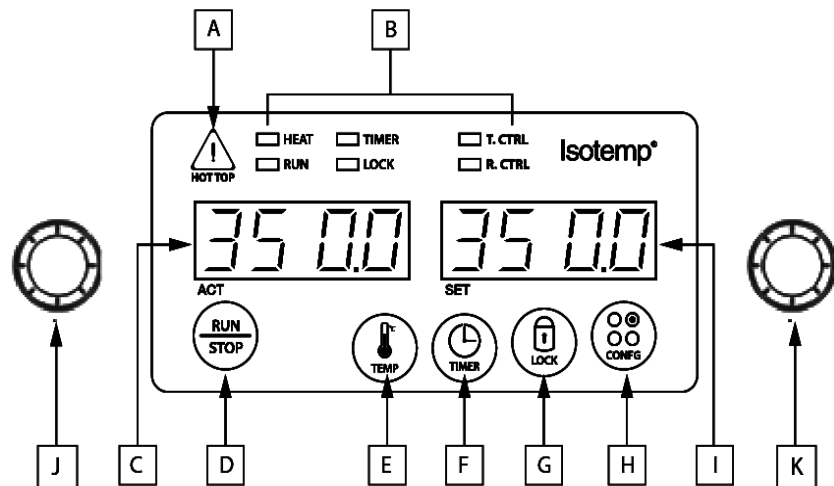


Figure 4-1. Control Panel

- A. Hot Top Warning Indicator
- B. Operational Status LEDs
- C. Actual Temperature Display
- D. RUN/STOP Button
- E. Temperature Setting Button
- F. Timer Setting Button
- G. Lock Button
- H. Configuration Button (see Configuration Mode)
- I. Set Temperature Display
- J. Heater Knob
- K. Control Knob

Check Power Status and Heating Mode

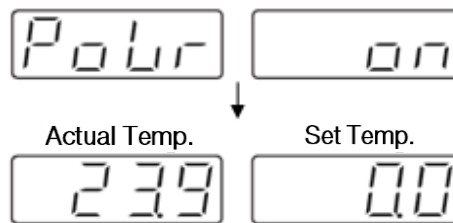
(1) The following displays will appear in sequence together with a beep sound when the power cord is connected:



(2) Note that the following display will also appear momentarily if the main power switch is off:

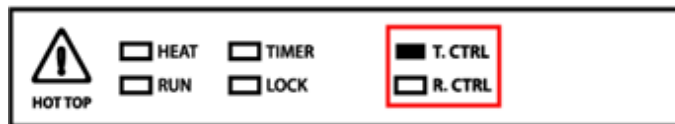


(3) If you turn on the main power switch, the following display will appear in sequence:



4) You can easily check the selected heating mode by checking the LED.

The T. CTRL LED illuminates under the temperature priority mode:



The R. CTRL LED illuminates under the heating rate priority mode:



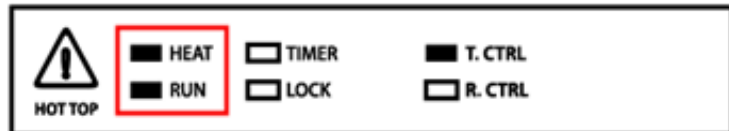
Run/Stop Button

Even if the main power switch is turned on, you have to press the RUN/STOP Button to start or to finish the operation.

The RUN LED illuminates only when the unit is operating and the HEATLED blinks only when the heater is activated.

Run/Stop Button (continued)

If you press the RUN/STOP Button to start the operation and the current temperature is below the set temperature, both the HEAT and the RUN LEDs will light up as shown below:



Note, however, that the HEATER LED will be turned on and off during the operation because the heater is automatically activated or deactivated to maintain the set temperature.

⚠ CAUTION

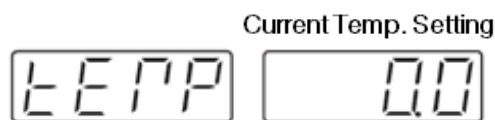


- Hot Top Warning Indicator will illuminate if the top plate temperature is over 50°C.
- Surface temperature may be hot!
- Even if the instrument is turned off, the surface of the top plate and the vessel on top of it will remain very hot for some time. Never leave your instrument accessible to others while it is hot and never touch it unless you are absolutely sure.

Temperature Setting (t mode)

The temperature setting procedures under temperature priority mode (t mode) are as follows:

- (1) Press the Temperature Setting Button and check the display showing the current temperature setting:

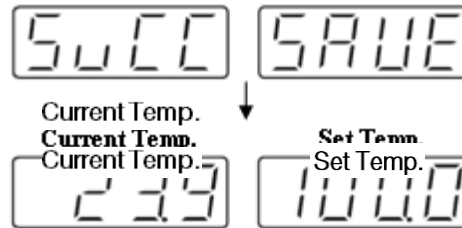


- (2) If you want to change the temperature setting, select the desired temperature by turning the Control Knob:



**Temperature Setting
(t mode) (continued)**

(3) Push the Control Knob to save the desired temperature setting. The following displays will appear in sequence:

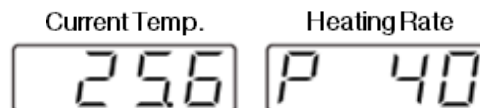
**NOTICE**

- You can change the temperature setting even during operation.
- You can cancel the temperature setting any time before pushing the control knob.
- Changing the temperature setting is allowed only within the low and high temperature limits. If changing the temperature setting cannot be done properly, check the low and high limits first. See Changing the High and Low Temperature Limits.
- You can set the low and high temperature limits at any value between 0°C and 350 °C.

**Temperature Setting
(r mode)**

The temperature setting procedures under heating rate priority mode (r mode) are as follows:

(1) Select the desired heating rate by turning the Heater Knob:



(2) Select the desired temperature as described in 'r mode' above.

NOTICE

- You can change the heating rate even during operation.
- Note that wide temperature fluctuation (overshoot and undershoot) may happen if the heating rate is high.
- You can adjust the heating rate ranging from 0 to 100% at 1% interval.

Timer Setting

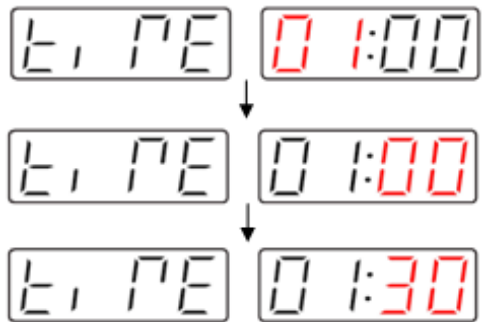
This unit provides two types of timer mode: immediate timer activation and delayed timer activation. (For selecting the timer mode, see Selection of the Timer Mode.)

For both timer modes, the timer setting procedures are the same:

- (1) Press the Timer Button to begin the timer setting and also to check the display showing the current timer setting. Note that the hour frame is blinking first as shown below:



- (2) If you want to change the timer setting, select and then save the desired values into the hour frame and the minute frame by turning the Control Knob and pushing it for confirmation as shown below:



- (3) As soon as you confirm the timer setting, the unit will display the set temperature for verification as shown below:



- (4) If the set temperature is correct, press the Control Knob for confirmation. If not, turn the Control Knob to select the desired value and then press it for confirmation. The following display will appear momentarily:

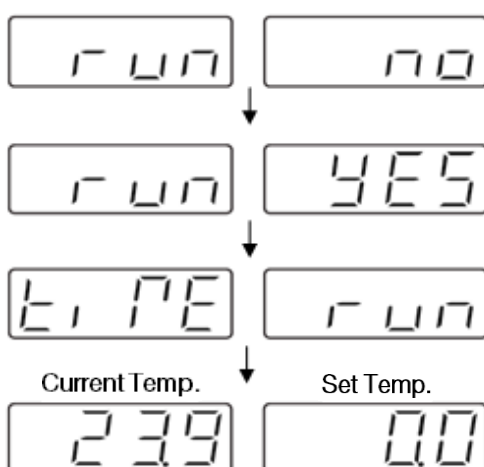


**Timer Setting
(continued)**

(5) Then, the following display will appear asking whether you want to start the timer operation or not:



(6) If you want to save the new timer setting and to start the timer operation, you are required to change 'NO' to 'YES' by turning the Control Knob and press it for confirmation as shown below:



(7) When the timer operation ends, you will be alerted by audible signals as well as the following display:



Terminate the timer operation either by pressing the RUN/STOP Button or by turning off the main power switch.

NOTICE

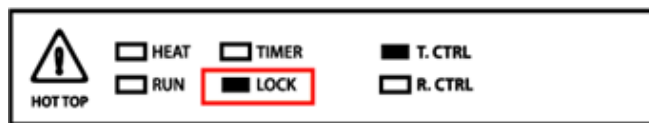
- The allowed timer range is between 1 minute and 99 hour 59 minutes.
- You can cancel the timer setting any time.
- You can check the current timer setting by pressing the timer button when the unit is not operating.
- If you press the timer button during operation, the elapsed time of the timer operation will be displayed for 20 seconds. If you press the timer button once again, then a new timer setting mode will begin.
- You can terminate the timer operation at any time by pressing the RUN/STOP button.

Lock Button

You can activate the locking function by pressing the LOCK Button for more than two seconds. When locked, the following display will appear:



When the locking function is activated, the LOCK LED will illuminate as shown below:



When locked, note that all other buttons are deactivated.

To cancel the locking function, press the LOCK Button for more than two seconds or turn the main power switch off and then on. The following display will appear with audible alert when the locking function is cancelled:



Enter/Terminate Configuration Mode

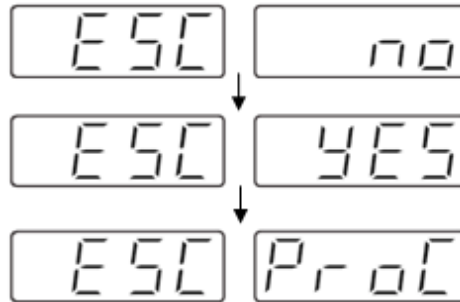
Various configuration settings can be adjusted under Configuration mode such as heating mode, timer mode, maximum heating rate, low and high temperature limits, temperature unit, temperature offsetting, temperature control mode, and so on.

You can **enter** this configuration mode by pressing the CONFIG Button when the unit is properly connected to a power outlet but not operating.

You can **terminate** the configuration mode by using one of the following methods:

- (1) Press the RUN/STOP Button to get the following ESC NO display. Then turn the control knob to select YES and push it to confirm the termination as shown below:

**Enter/Terminate
Configuration Mode
(continued)**



(2) Or turn the control knob clockwise until you get the following ESC display and then push it to confirm the termination as shown below:



NOTICE

- Note also that the configuration mode is automatically terminated if there is no button operation for more than 20 seconds.

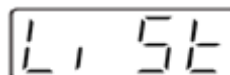
**Check Configuration
Settings**

As mentioned earlier, the default configuration settings are as follows:

	Display	Default Setting
Heating Mode	type	Temperature Priority Mode [t]
Temperature Unit	unit	Celsius [Cels]
Timer Mode	time	Immediate Timer Activation [ti1]
Temperature Offsetting	offS	0.0°C
Maximum Heating Rate	LiMt	100% [100]
High Temperature Limit	t-h	350.0°C
Low Temperature Limit	t-L	0.0°C
Temperature Control Mode	CoEF	Optimal [Opti]

You can check the current configuration settings as follows:

- (1) Press the CONFIG Button and select the configuration checking mode [LiSt] shown below by turning the Control Knob:



Check Configuration Settings (continued)

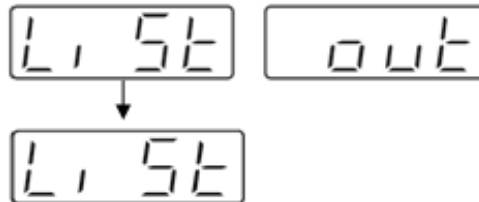
NOTICE

- The [LiSt] display for the configuration checking mode shown above and the [LiMt] display for the maximum heating rate setting shown in 4-13 look similar but should not be confused.

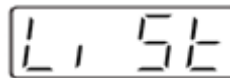
(2) Press the Control Knob and check the current settings by turning the Control Knob.

(3) After checking the settings, terminate the checking mode

[either by pressing the Control Knob]:



[or by pressing the RUN/STOP Button]:

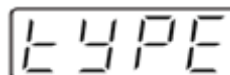


(4) Terminate the configuration mode as described in Enter/Terminate Configuration Mode.

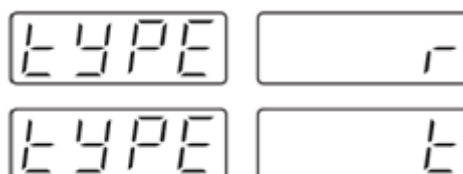
Selection of Heating Mode

You can select the heating mode (either the Temperature Priority Mode denoted by 't' or the Heating Rate Priority Mode denoted by 'r') as follows:

(1) Press the CONFIG Button and select the heating mode [type] shown below:

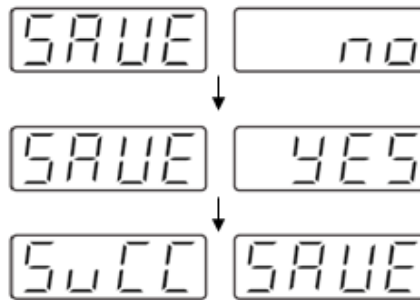


(2) Press the Control Knob and select either 'r' or 't' mode by turning the Control Knob:



**Selection of Heating
Mode (continued)**

- (3) Save selected heating mode by using Control Knob as shown below:

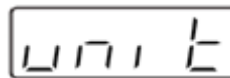


- (4) Terminate the configuration mode as described in Enter/Terminate Configuration Mode.

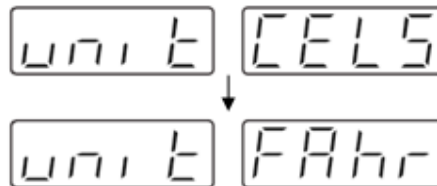
**Temperature Unit
Conversion (°C ↔ °F)**

The desired temperature unit can be selected as follows:

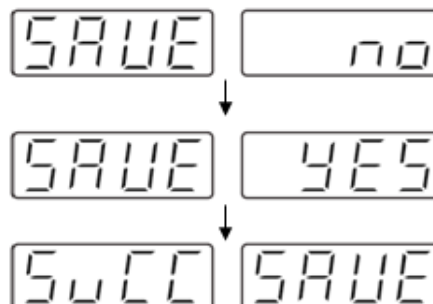
- (1) Press the CONFIG Button and select the temperature unit conversion by turning the Control Knob as shown at right:



- (2) Press the Control Knob and select either Celsius (°C) or Fahrenheit (°F) by turning the Control Knob:



- (3) Save the selected temperature unit by using the Control Knob as shown below:



- (4) Terminate the configuration mode as described in Enter/Terminate Configuration Mode.

Selection of Timer Mode Two different timer modes are provided: Immediate Timer Activation (ti1) and Delayed Timer Activation (ti2). In case of the Immediate Timer Activation, timer starts immediately after setting the timer. In case of the Delayed Timer Activation, on the other hand, timer is activated only when the set temperature is reached.

The timer mode selection procedures are as follows:

- (1) Press the CONFIG Button and select the timer mode shown below by turning the Control Knob:

The LCD display shows the text "t, ne" in a digital font, indicating the current timer mode is set to Immediate Timer Activation (ti1).

- (2) Press the Control Knob to check the current timer mode.

The LCD display shows "t, ne" on the left and "t, 1" on the right, indicating the current timer mode is ti1.

- (3) If you want to change the timer mode, then turn the Control Knob.

The LCD display shows "t, ne" on the left and "t, 2" on the right, indicating the current timer mode is ti2.

- (4) Save the desired timer mode by using the Control Knob as shown below:

The sequence of LCD displays is as follows:
 1. "SAVE" on the left and "no" on the right.
 2. An arrow points down to "SAVE" on the left and "YES" on the right.
 3. An arrow points down to "SUCC" on the left and "SAVE" on the right.

- (5) Terminate the configuration mode as described in Enter/Terminate Configuration Mode.

Temperature Offsetting

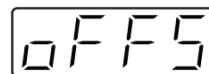
The temperature shown on the Actual Temperature Display is measured by a temperature sensor inside the unit. However, this temperature can be different from the temperature of your own thermometer which you may use as a standard for your specific applications. If needed, you can offset such temperature differences at 0.1°C interval.

NOTICE

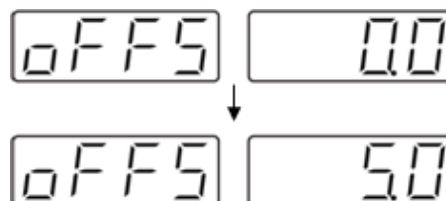
- The allowed range of the temperature offsetting is -10 ~ +50C.
- See Technical Specification for the temperature difference depending on the top plate temperature.

If, for example, the actual temperature of the top plate is 100°C but the displayed temperature is 95°C, you can match the displayed temperature with the actual temperature of the unit by selecting the offset value of +5°C and save it as described below:

- (1) Press the CONFIG Button and select the offsetting mode by turning the Control Knob as shown below:

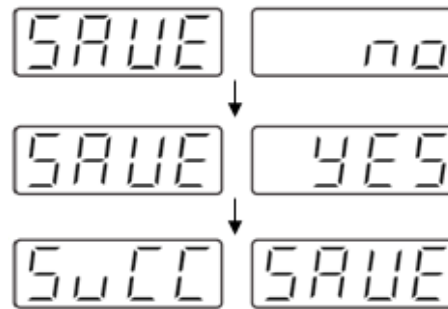


- (2) Press the Control Knob and select the offset value by turning the Control Knob:



- (3) Save the desired offsetting value by pressing the Control Knob as shown below:

Temperature Offsetting (continued)



- (4) Terminate the configuration mode as describe in Enter/Terminate Configuration Mode.

Maximum Heating Rate Setting

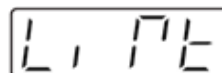
The higher the heating rate, the faster the heat up time but the wider the temperature overshoot and undershoot. Therefore, if you want to reduce the temperature fluctuation, you need to limit the heating rate to a certain degree by limiting maximum heating rate.

NOTICE

- When the heat up time is too slow, check whether the maximum heating rate is set too low.

If, for example, the current heating rate is 100% but you want to set the heating rate limit at 60%, do as follows:

- (1) Press the CONFIG Button and select the heating rate limit mode by turning the Control Knob:



NOTICE

- The [LiMt] display for the maximum heating rate setting shown above and the [LiSt] display for the configuration checking mode shown in 4-9 look similar but should not be confused.

- (2) Press the Control Knob and check the current heating rate limit:

L, Pt 1000

Maximum Heating Rate Setting (continued)

(3) Change the limit to the desired value by turning the Control Knob.

L, Pt 600

(4) Save the desired limit by using the Control Knob as shown below:

SAVE no
↓
SAVE YES
↓
SUCC SAVE

(5) Terminate the configuration mode as described in Enter/Terminate Configuration Mode.

Change the High/Low Temperature Limits

Note that the default setting of the low temperature limit [t-L] is 0°C and the high temperature limit [t-h] 350°C. If needed, however, you can set your own temperature limits. If, for example, you want to set the high temperature limit at 200°C, do as follows:

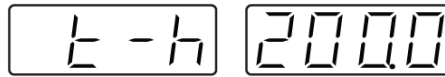
(1) Press the CONFIG Button and select the temperature limit mode shown below by turning the Control Knob:

t-h

(2) Press the Control Knob and check the current high temperature limit:

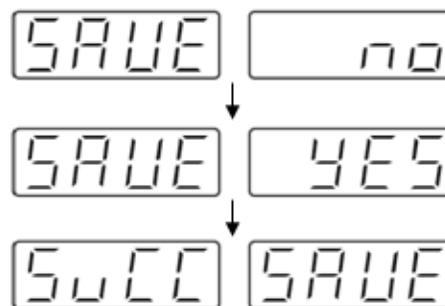
t-h 3500

(3) Change the limit to the desired value by turning the Control Knob.



(4) Save the desired limit by using the Control Knob as shown below:

**Change the High/Low
Temperature Limits
(continued)**



(5) Terminate the configuration mode as described in Enter/Terminate Configuration Mode.

NOTICE

- The allowed range of the temperature limit setting is 0°C ~ 350°C.

Temperature Control Mode Selection

Three user-selectable temperature control modes are provided for your convenience:

Optimal Mode	Providing the optimal balance between the heat up time to reach the target temperature and the allowed fluctuation range of temperature overshoot and undershoot (factory default)
Fast Mode	Providing the fastest heat up time but the widest fluctuation range of temperature overshoot and undershoot
Slow Mode	Providing the slowest heat up time but the narrowest fluctuation range of temperature overshoot and undershoot
Point Mode	Allowing linear heating up to the target temperature using the maximum heating rate and switching on and off the heater based on the target temperature (Note that this mode shows the widest fluctuation range of temperature overshoot and undershoot.)
User Mode	Allowing the auto-tuned parameters to be used for temperature control

If, for example, you want to change from Optimal Mode to Slow Mode, do as follows:

Temperature Control Mode Selection (continued)

- (1) Press the CONFIG Button and select the temperature control mode selection [CoEF] shown below by turning the Control Knob:

A rectangular LCD display showing the text "CoEF" in a digital font.

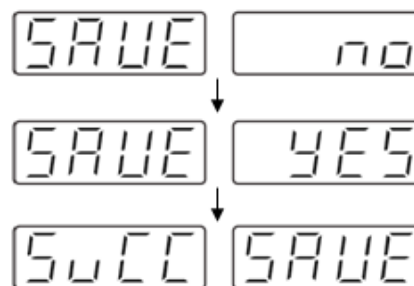
- (2) Press the Control Knob and check the current temperature control mode:

Two rectangular LCD displays side-by-side. The left display shows "CoEF" and the right display shows "Opti".

- (3) Select the Slow Mode by turning the Control Knob.

Two rectangular LCD displays side-by-side. The left display shows "CoEF" and the right display shows "Slow".

- (4) Save the desired mode by using the Control Knob as shown below:

A vertical sequence of three LCD displays. The first display shows "SAVE" and "no". A downward arrow points to the second display, which shows "SAVE" and "YES". Another downward arrow points to the third display, which shows "SuCC" and "SAVE".

- (5) Terminate the configuration mode as describe in Enter/Terminate Configuration Mode.

Auto-tuning (PID Parameter Calibration)

The PID parameters for temperature control can be automatically tuned to take your specific operating circumstances into consideration.

NOTICE

- Before starting the auto-tuning process, make sure to place the load you want to use on the top plate.
- To cancel the auto-tuning during the process, turn off the main power switch. If cancelled, the Optimal Mode will be selected automatically.
- Note that the auto-tuning process takes approximately 40 to 60 minutes.
- If you want to control the temperature using calibrated parameters, select the user mode [uSEr] under temperature control mode [CoEF] described previously.

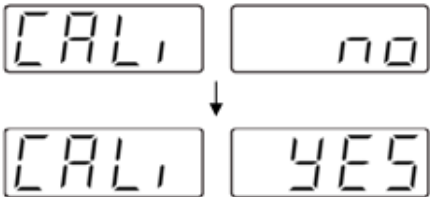
**Auto-tuning (PID
Parameter Calibration)
(continued)**

The auto-tuning (calibration) procedures are as follows:

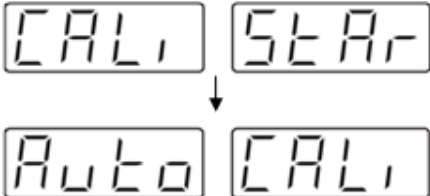
- (1) Press the CONFIG Button and select the auto-tuning mode [CALi] shown below by turning the Control Knob:



- (2) Press the Control Knob and select YES by turning the Control Knob:



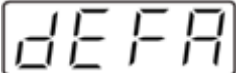
- (3) Press the Control Knob again to start the auto-tuning:



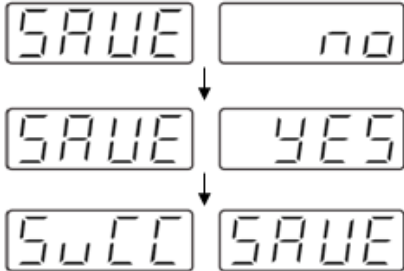
**Restoring the Default
Settings**

To change the current settings back to the default settings, do as follows:

- (1) Press the CONFIG Button and select the default setting [dEFA] shown below by turning the Control Knob:



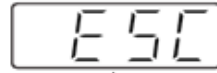
- (2) Press the Control Knob and confirm the change to the default settings by using the Control Knob as shown below:
- (3) Terminate the configuration mode as described in Enter/Terminate Configuration Mode.



Escape Mode

If you want to terminate the configuration mode, do as follows:

- (1) Press the CONFIG Button and select the escape mode [ESC] by turning the Control Knob:



- (2) Then press the Control Knob to confirm the termination of the configuration mode. The following display will appear:



NOTICE

- You can also terminate the configuration mode using the RUN/STOP Button. (Refer to Enter/Terminate Configuration Mode.)
- In addition, the configuration mode is automatically terminated if there is no button operation for more than 20 seconds.

Section 5 Maintenance

Item	Inspection Interval	
	Daily	Weekly
Connection status of power cord or plug.	●	
Damages in power cord or plug.	●	
Damages or cleanliness of top plate.		●
Cleanliness of main body and accessories.		●
Damages in switches, buttons, LED's, dial knobs.	●	
Heating capability check (up to 350°C).	●	
Assembly status of all parts or accessories.		●

WARNING

- Never immerse this unit in water or any other liquid.
- Do not allow any liquid or wet material to get inside the unit when cleaning.
- Do not reconnect this unit to power outlets until all cleaned surfaces have dried.
- Do not use chlorine bleach, ammonia-based cleaners, abrasives, ammonia, or metal scouring pads when cleaning.
- During cleaning and general operation, take care not to scratch the surface of the ceramic-coated top plate as this could result in subsequent thermal breakage.

Cleaning Product

Always make sure to keep top plate, main body, and accessories clean. Dirt and other foreign substances can cause fire or electric shock. Before attempting cleaning,

- (1) Disconnect the power cord from the power outlet and ensure that the instrument is cool enough,
- (2) Wipe with a soft dry cloth first to remove any foreign matter and, if not enough,
- (3) Wipe with a soft damp cloth or a sponge soaked in water or diluted neutral detergent when necessary.

Note that cleaning is made much easier if spills are attended to promptly.

Relocation

If you need to move the instrument to another place,

- (1) Disconnect the power cord from the power outlet,
- (2) Pack the instrument and its accessories into the original packaging or any other suitable container before moving.

CAUTION

- Pay attention to avoid mechanical shock or vibration while moving the instrument. Damages caused by mechanical shock or vibration may result in injury or fire.

Keeping Product

If you know you will not use this unit for an extended period of time,

- (1) Disconnect the power cord from the power outlet and
- (2) Clean the instrument with soft cloth.
- (3) Pack the instrument properly and make sure to store it in dry place.

Section 6 Trouble Shooting

Electrical Trouble	Causes	Solution
No power	Unsuitable power supply.	Meet the electrical requirements of this instrument before use.
	Power cut-off by a circuit breaker or power blackout.	Find out why blackout or cut-off happened and restore power. If there is a short circuit or leakage, trace the source of the problem and fix it.
	Loose power connection.	Reconnect the power cord firmly to the power outlet as well as to the power socket at the back of the instrument.
	Damages in power cords, power outlets or plugs.	Replace the damaged part with a proper one.
	Internal circuit failure.	Contact Fisher Scientific for service.
Repetitive tripping of the circuit breaker	Electrical overload.	Disconnect all the appliances connected to the breaker first and reconnect them one by one to find the reason for the overload.
	Internal circuit failure.	Contact Fisher Scientific for service.
No operation with power on	Power cut-off by built-in overheat prevention circuit.	If the temperature of the main body exceeds 85°C, the built-in overheat prevention circuit stops heating to protect the instrument. In such cases, let the instrument cool down for some time before power reconnection.
	Internal circuit failure.	Contact Fisher Scientific for service.

Section 6
Trouble Shooting

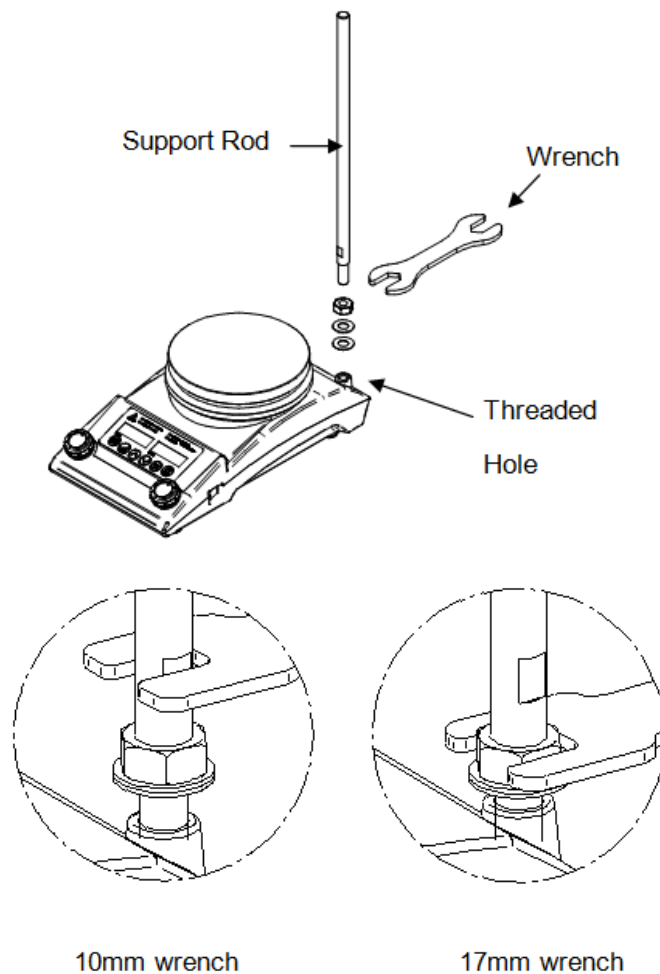
Trouble During Operation	Causes	Solution
No heat	Failure to push the RUN/STOP Button.	Push the RUN/STOP Button.
	Power cut-off by built-in overheat prevention circuit.	Turn off the main power switch and wait until the heater cools down. Then, turn on the main power switch.
	Too low setting of the high temperature limit.	Change the temperature limit.
	Internal circuit failure	Contact Fisher Scientific for service.
No or too slow temperature change during heating	Too low setting of the heating level.	Turn the heater knob clockwise to increase the heating level.
	Too much media.	Reduce the media volume.
	Internal circuit failure.	Contact Fisher Scientific for service.
Button malfunction	Activation of locking.	Unlock by pressing the LOCK Button for 2 seconds.
	Damaged button.	Contact Fisher Scientific for service.
Knob malfunction	Damaged knob	Contact Fisher Scientific for service.
LED display malfunction	Damage due to chemical spill or overheat	Contact Fisher Scientific for service.

Section 7 Accessories

NA Model	EU Model	Description
11676269	15366607	FS Heating Bath
11676270	15376607	FS Transparent Shield (PC)
11676271	15386607	FS Support Rod (12Ø support, 400mm, M10)
11676276	15346617	FS Clamp Holder (PP body, Ø12mm)
11676277	15356617	FS 3 Prong Clamp (60mm grip)

Assembly of Support Rod

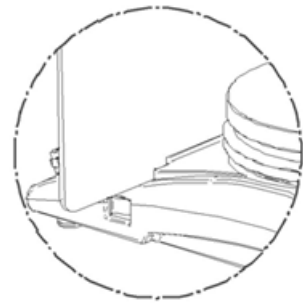
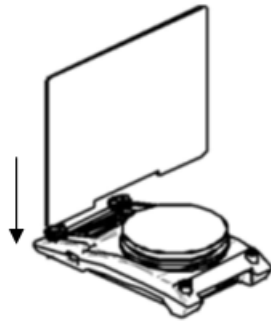
Hand-screw the support rod(s) into the threaded hole(s) as shown in the diagram. To firmly tighten the rod, use a proper wrench.



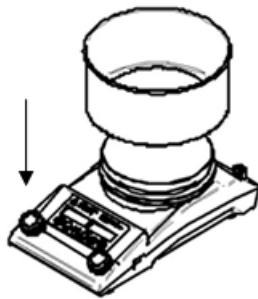
Section 7
Accessories

**Transparent Shield &
Heating Bath Assembly**

When necessary, the transparent shield and/or the heating bath can be easily assembled as shown below:



Transparent Shield



Heating Bath

Section 8 Technical Specifications

Item / MODEL		Isotemp RT Digital Hotplate
120V	US Catalogue Number	11676258
	EU Catalogue Number	N/A
230V	US Catalogue Number	11676257
	EU Catalogue Number	15306607
Heater	Temperature Range (°C/°F)	Max. 350 / 662
	Temperature control	Feedback Control with PID
	Temperature display	up to 350°C (0.1°C resolution)
	Maximum heater output	600W
Timer range		1 min to 99 hr 59 min
Timer modes		Immediate activation & Delayed activation
Safety	Hot top warning (°C/°F)	Warning lamp (50 / 122)
	Overheat Prevention	Top plate, Main body, PCB
Main Body		Aluminum
Top plate		Ceramic coated aluminum
Dimension of top plate (Ø, mm / inch)		140 / 5.5
Overall Dimension (W x D x H, mm/ inch)		161 x 290 x 100 / 6.34 x 11.42 x 3.94
Weight (kg/lbs)		2.2 / 4.9
Electric Requirements (230V, 50/60Hz)		3A
Electric Requirements (120V, 60Hz)		5A
Maximum load (kg/lbs)		25 / 55.1

※ Unless otherwise specified, the above-mentioned data represent values at 25°C and 60% relative humidity.

※ Fisher Scientific reserves the right to make changes in design and specification without prior notice.

Disposing of the Unit

Disposing of your instrument must be done in an environmentally responsible way if it has been potentially exposed to bio-agents or radioactive samples. Failure to follow stringent requirements for instrument disposal may lead to actions against you and your organization.

- (1) First, check with your laboratory or organization to ensure that you are following all the policies and procedures for disposal of laboratory equipments.
- (2) If not possible, contact your local governing body for regulations regarding disposal of laboratory equipments. It is highly recommended that you to find a local service provider that can properly dispose of your instrument.

FISHER SCIENTIFIC STANDARD PRODUCT WARRANTY

When used in laboratory conditions and according to these operation instructions and maintenance, this product is warranted for 24 months against defective materials or workmanship.
The 24 month warranty period begins from the delivery date of this product.
For product quality or performance issues, contact Fisher Scientific Customer Service.

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