

**Covered Model**

**DMF- 05/12/27/24/125/216**

## Digital Muffle Furnace



Before operating this unit,  
please read and understand  
this manual completely  
and keep it for future  
reference.



**HumanLab Instrument Co.**



## Table of Contents

---

- 1 Features
- 2 Setup
- 3 Cautions
- 4 Description of the parts
- 5 Temperature Controls
- 6 Maintenance and Storage
- 7 Troubleshooting
- 8 Warranty
- 9 Technical Specifications




## • Safety warnings











Before operating, read and understand safety warnings thoroughly and use this equipment properly.

Keep these warnings in mind for your safety.

### Safety Warnings: Danger!, Warning!, Caution!

-  **Danger** : Failure to observe this instruction can result in a personal injury or death.
-  **Warning** : Failure to observe this instruction may cause a fatal injury
-  **Caution** : Violation of this instruction and improper use may cause a serious injury and property damage.

 <p>Do not contact</p>	<p> <b>Caution</b></p> <p>Fire or burns may occur. Do not place objects near the ceramic blocks. These blocks are very hot after operation.</p>
 <p>High Voltage</p>	<p> <b>Warning</b></p> <p>Electric shock may occur. Unplug the power before you open the covers.</p>
 <p>Explosion</p>	<p> <b>Danger</b></p> <p>Explosion or fire may occur due to improper handling. Do not put flammable, explosive materials in the oven.</p>
 <p>Electric Shock</p>	<p> <b>Warning</b></p> <p>A risk of electric shock exists. Make sure to install a ground wire. Electric shock may occur without a ground wire installation.</p>

## 1. Features

This product is ideally suited to various applications such as developing advanced materials, super conduction material experiment, ceramic sintering, heat treatment, glass melting, metal melting, and shaping molding sand, etc. This product has following features for user's safety and convenience.

- 1) High temperature up to 1000 .
- 2) High performance heat insulation by the molded ceramic block and quick reach to high temperature.
- 3) The grounded circuit prevents a short circuit and over current.
- 4) Accurate temperature controls by the Digital PID controller.
- 5) Stable standing with uniquely designed leveling foot.
- 6) Equipped door springs for smooth operation of door.

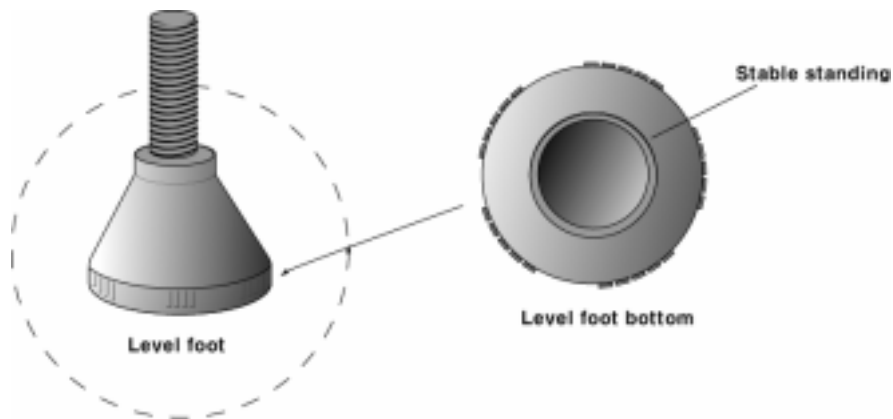
## 2. Setup



### Caution

- Improper set up can cause a malfunction or an accident.

- 1) Install the equipment on a firm area avoiding heat, humidity, dust, and vibration.
- 2) Place it in a well-ventilated area with enough space.
- 3) Install it horizontally on a firm and stable surface.
- 4) The door can opens to an angle of 180 degree, please consider enough space.



Confirm that the equipment is leveled by using of leveling feet.

## 3. Cautions



### Danger

- Do not put flammable, explosive materials in the chamber. Explosion or fire may occur due to improper handling.



### Warning

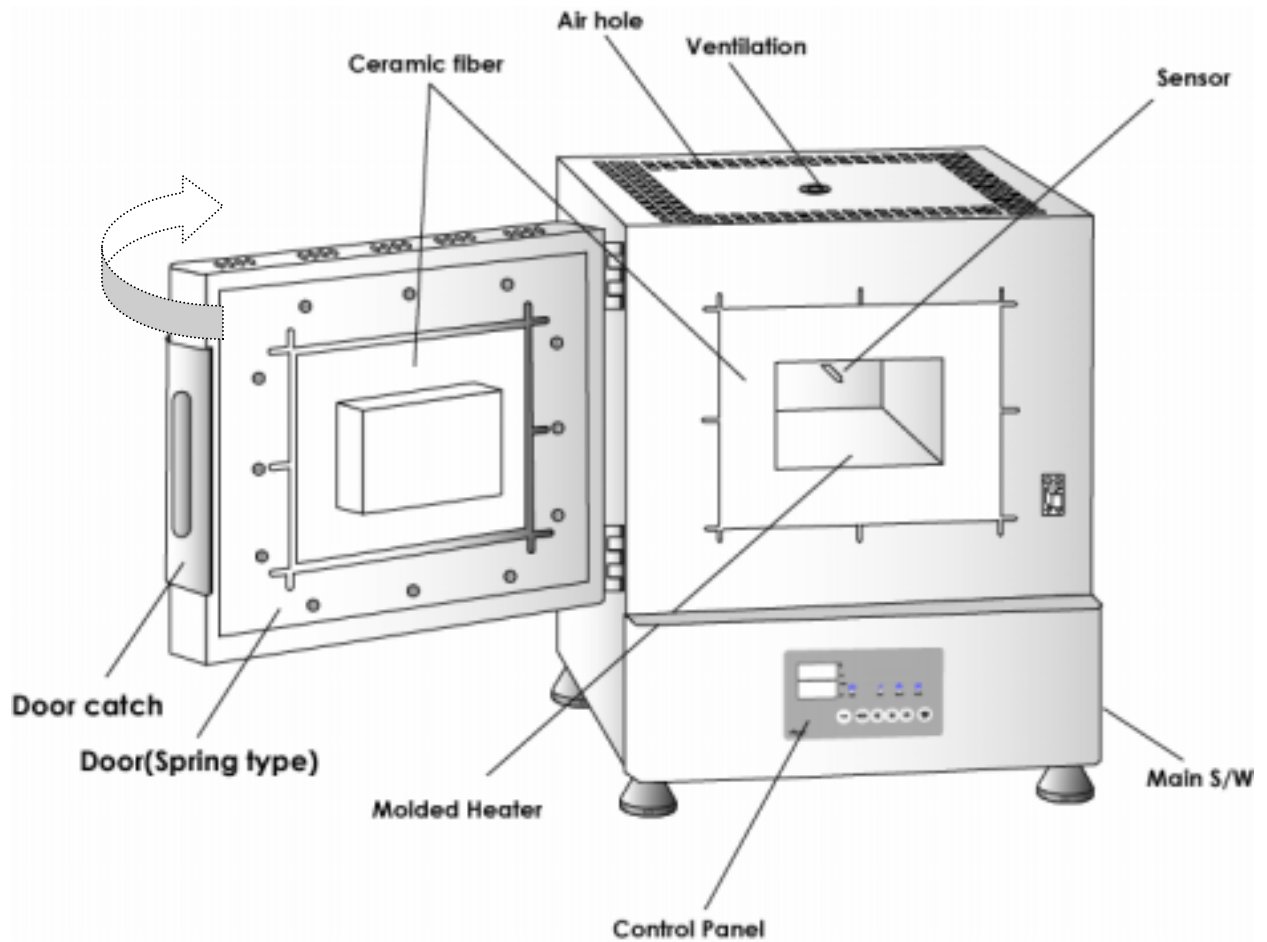
- Do not place flammable materials near the equipment. Fire may occur.
- Do not touch the power cord with wet hands. Electric shock may occur.
- Do not plug too many equipment into the same electric outlet. Overload may cause a fire..
- Make sure to connect a ground wire. Electric shock may occur without a ground wire.



### Caution

- Before plugging into the electric outlet, make sure that the power voltage is **220VAC, 50/60Hz**.
- Avoid using other electric equipment with high voltage current near this equipment.
- Do not pour water on this equipment directly.  
A short circuit may occur. .
- Do not use acid solution, benzene, and sharp objects, to clean the equipment. It may cause changes of color or damage. Rubber and plastic parts are likely to change easily. Do not use any volatile material. If you use any detergent, clean it with water thoroughly
- Unplug from an outlet by holding the plug. Do not unplug it by pulling on the power cord.
- If this unit is not going to be used for a long period of time, remove the plug from an outlet.
- Damaged power cord can cause a short circuit or a fire.
- Avoid putting too many objects in the chamber.  
It will block normal air circulation.

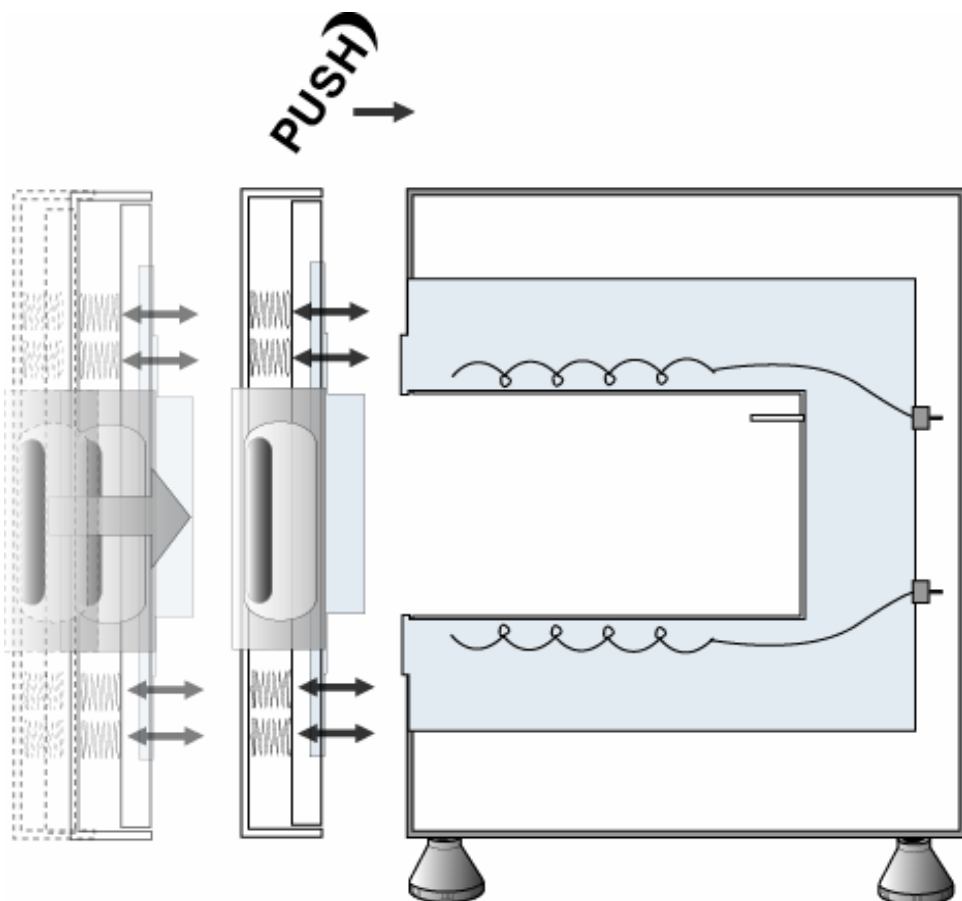
## 4. Description of the parts



MUFFLE FURNACE

Push the door firmly to close.

## 4. Description of the parts

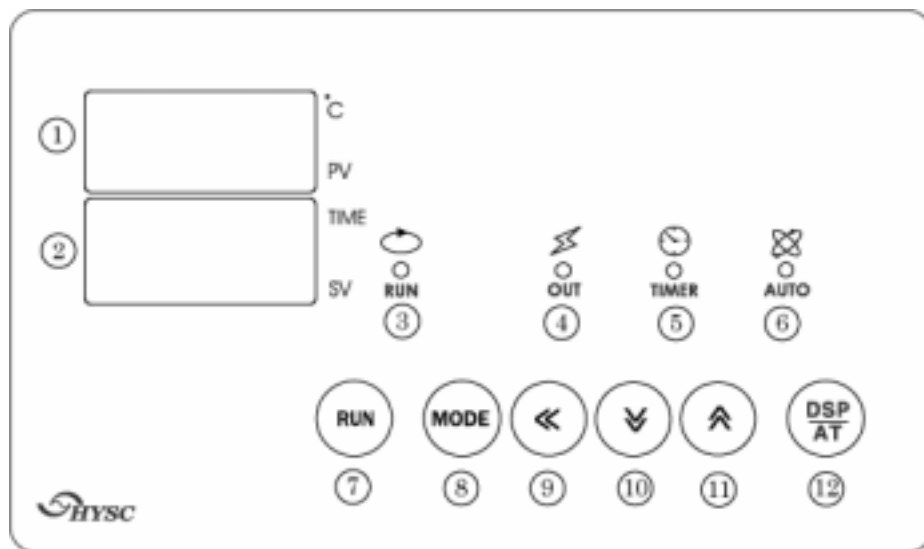


Push the door firmly to close.

### Caution!

- The door springs are installed for airtight closeness and smooth operation of door. Push the door firmly to close.

## 5. Controls



### (1) Functions and Features of the control panel

Displays actual oven temperature & each mode

Displays set temperature & data of each mode

Displays the system is running (START)

Displays the heater is operating (OUT)

Displays the timer is working (TIMER)

Displays Auto Tuning is functioning.(AUTO)

Start/Stop running key (RUN)

Parameter setting key (MODE)

Digit position movement key ( )

Decrease value key ( )

Increase value key ( )

DSP Auto tuning key (AUTO)

### (2) ) Indicator lights



Will be lit when the system is running/ Turns off when it stops running



Will be lit when the heater is operating.



Begins flashing until set temperature is reached. After set temperature is reached, it will be lit. Turns off at the end of set time. (If timer set is 00:00, it will not be lit.)



Begins flashing during Auto tuning. Turns off at the end of Auto tuning. .



## (3) Operating Procedures

Start



Turn the power switch on.

The PV display shows the actual temperature in the oven.

The SV display shows set temperature.

'TEMP'



'0000'



Press the "Mode" key to enter temperature set mode. 'TEMP' appears in the PV display. Set temperature display (SV display) begins flashing to set desired temperature.

'TIME'



'00.00'



Press the "Mode" key once again to enter timer mode. 'TIME' appears in the PV display. The SV display begins flashing to set the timer.

Default time format is **Hour/ Minute(HH.MM)**. Other time formats are Date.Hour / Hour.Minute / Minute.Second (DD.HH/HH.MM/MM.SS)

## (3) Operating Procedures



Press the “Mode” key to enter the temperature set mode. ‘TEMP’ appears in the PV display . Set temperature display (SV display ) begins flashing to set desired temperature.



Press the “ ” key to move to the next digit position.



Press the “up ” key to increase value.  
Press the “down ” key to decrease value.



Press the “**Mode**” key to enter timer mode. ‘**TIME**’ appears in the PV display . The SV display begins flashing to set timer.



Set the timer as the same way of temperature set by using of the arrow keys. If timer set is 00:00, the timer will not function. Only set temperature will operate.



Press the “**Mode**” key to complete setting. The set value stops flashing. The displays return to PV/SV mode..

## (4) Operating Procedures & Function

### Start



RUN



OUT



TIMER

Press "START" key for **2 seconds**.

The RUN and the OUT indicator lights turn on and the heater begins operating.

The timer does not begin operating as the timer indicator blinks until set temperature is reached. The timer starts working as the indicator turns on after set temperature is reached.

### Stop



RUN

The RUN light will blink and the 'end' will appear with "beep" tone for 30 seconds.  
To stop "beep" tone immediately, press "START/STOP" key.

### Auto Tuning



AUTO

Auto tuning function calculates the most effective integer for PID and ARW automatically. Auto Tuning can start while temperature is rising or after set temperature is reached. To start Auto tuning, press "Auto" key for 5 seconds until the "beep" tone. It begins to function with the AUTO indicator light flashing and completes its function as the AUTO light turns off. If you want to stop Auto Tuning, press the "AUTO" key for 5 seconds during Auto tuning function.

- Auto-tuning factory default set is between 300 ~ 400 .  
(Higher than 400 auto-tuning is not permitted within the factory for the maximum quality of the product.)  
Perform the Auto-tuning properly to your testing condition for more accurate and stable temperature operation.

## 6. Maintenance and Storage

---



### Warning

- Make sure to unplug the unit from an outlet before cleaning the unit to avoid an electric shock.



### Caution

- Pull the plug when disconnecting from an outlet. Do not pull the power cord.
- Do not use acid solution, benzene, and sharp objects to clean the equipment. It may cause changes of color or damage of the equipment.

- 1) To clean the inside of the chamber.
  - . Remove the plug from an outlet.
  - . Remove the shelves and shelf hangers from the chamber.
  - . Wipe the inside with a soft cloth using a neutral detergent.
  - . Clean the inside once more with a soft towel.
- 2) To clean the surface of the equipment.
  - . Use a sponge or a soft cloth with a neutral detergent
  - . Wipe the unit with a dry cloth.
  - . Do not use organic solvent.
- 3) To clean the electric parts.
  - . Always use a dry cloth.
- 4) If this system is not going to be used for a long period of time.
  - . Remove the plug from an outlet.
  - . Clean the unit with a soft towel.
  - . Wrap and store it.

## 7. Troubleshooting



### Warning

- Switch off the unit before any maintenance and make sure to disconnect the power.
- If you are not authorized personnel, do not try to open, repair, or modify the unit. It can cause a fire or malfunction inflicting an injury upon people.

Symptom	Corrective Actions
The unit does not operate	<ul style="list-style-type: none"> <li>- . Make sure the power cord is plugged.</li> <li>- . Make sure the switch is on.</li> <li>- . Check a power outage.</li> </ul>
Decrease of heating ability	<ul style="list-style-type: none"> <li>- . Check the heater</li> </ul>
Temperature does not rise	<ul style="list-style-type: none"> <li>- . Check the set temperature</li> <li>- . Check the heater</li> </ul>
Malfunctions of the controller	<ul style="list-style-type: none"> <li>- . Check whether other high voltage electric equipment is working nearby.</li> </ul>

## 8. Warranty

1) We provide free repair service for this product against defects in material or workmanship for a period of one year from the date of purchase, if only it is used under appropriate conditions. Before requesting service, check the followings. (The molded ceramic blocks are expendable item. These are not repairable.)

- . Malfunctioned part and conditions (a detailed explanation is required)
- . Model Number
- . Purchased date

\* Customer will pay for the delivery charges of the product for repair service.

2) In case of followings, the repair service will be charged.

- . Damage due to improper operation, modification, or unauthorized attempt to repair
- . Damage due to inappropriate handling or transportation.
- . Damage due to acts of God such as fire, flood, and wrong voltage supply.
- . Damage due to not following operating instructions.

3) Contact authorized service center or your dealer for additional information.

# MUFFLE FURNACE

## 9. Specifications

Model		DMF-05(H)	DMF-12(H)	DMF-27(H)	DMF-64(H)	DMF-125(H)	DMF-216(H)
Capacity		4.5 liter	12 liter	27 liter	64 liter	125 liter	216 liter
Chamber (WxDxH)mm		150x300x100	200x300x200	300x300x300	400x400x400	500x500x500	600x600x600
Temp.	Range	100 - 1200℃ / H series : 300 - 1500℃					
	Sensor	CA type thermocouple / H series : R type thermocouple					
Timer		Digital / 99hr,59 min, Pre-set & self-diagnosis function					
Heating	Element	2.6 Kw	4.4 Kw	6.2 Kw	11.1 Kw	21 Kw	40 Kw
	Time	16 min.	19 min.	20 min.	23 min	22 min	22 min
Material	Interior	Stainless steel plate					
	Exterior	Powder coated steel plate					
	Insulation	Ceramic fiber / H series : Ceramic mold & board					
Door		Magnetic closure, silicon rubber packing					
Control & Display		Microprocessor control & LCD display / Temp,Time, Heater On/Off, Alarm					
Safety Device		Over temp. limiter & alarm					
Electric Power		220VAC, 50/60Hz, single phase			220VAC,50/60Hz, 3 phase		
Overall (WxDxH)mm		420x560x535	500x550x580	580x590x740	680x690x840	780x790x940	880x890x1040
Weight (Kg)		35	45	65	100	140	180

Specifications are subject to change without notice.

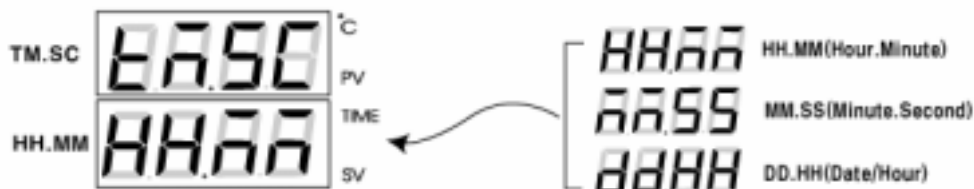
## \* Change of time format

Default time format is Hour / Minute (HH.MM).  
You can change it with the following procedure.

1. Turn the power "On"
2. Press the "Mode" key for 2 seconds until the 'beep' sound.  
(Entering Parameter Set mode)
3. Press the "Mode" key and the "<" key at the same time  
for 2 seconds until 'beep' sound.(Entering Main Menu of Factory Mode).



4. After P.SYS displayed, Press the "Mode" key continuously  
until TM.SC(time format set ) displays.
5. Use the "Up/ Down" arrow keys to set time format (TM.SC).  
HH.MM(Hour.Minute)/DD.HH(Date/Hour)/MM.SS(Minute.Second)



6. Press the "Mode" key to store the input.  
(LED stops flashing after input completed)
7. Press the "Mode" and the "<" keys at the same time for 2 seconds  
to exit to the initial stage.

## \* storing the factory default setting

To restore the default setting from system memory, follow the procedure.  
Use it only when set values get too complicated.

1. Turn the power on
2. Press the "Mode" key for 2 seconds until the 'beep' sound.  
(Entering Parameter Set mode)
3. Press the "Mode" key to display 'LOC'.



4. Change to '1000' by using of the "Left / Down" arrow keys and press the "Mode" key once to complete the input. (LED stops flashing after input completed)



5. Press the "Mode" key to change to 'LOAD' display.  
Use the arrow keys to change 'NO' to "YES" and Press the "Mode" key once to complete the input. (LED stops flashing after input completed)



6. Press the "Mode" and the "<" keys at the same time for 2 seconds to exit to the initial stage.



[illegible]



## **HumanLab Instrument Co.**

B-401, Jaeun Bldg, #417-33,  
Younghwa-dong, Jangan-gu,  
Suwon-si 440821, Korea

Tel : +82-31-256 3403

Fax : +82-31-256 3404

Email : [sales@humanlab.co.kr](mailto:sales@humanlab.co.kr)

[www.humanlab.co.kr](http://www.humanlab.co.kr)



Made in Korea