



Digital Mini Rotator

88882007 & 88882008

In the United States:

For customer service, call 1-800-766-7000
To fax an order, use 1-800-926-1166
To order online: thermofisher.com

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Operating Manual

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Section 1 Important Information

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

Check the voltage, phase and capacity of power supply on the ID plate before installation. Connect properly.

Power supply must be properly grounded. Abnormal grounded connection causes serious damage. Grounded connection must not be on the water pipe and gas pipe.

Use provided power cord. Power cord: Wall outlet with grounded terminal power cord 250V 10A.

Do not install the product in a place that gas could leak. Do not use in a place that has industrial oil smoke or metallic dust. It causes fire or electric shock. Do not use the machine near to places where explosion could happen due to organic evaporating gases.

Explosive materials: acid, ester, nitro compound.

Inflammable materials: salt peroxides, inorganic peroxide, salt acids.

Check equipment for permissible environmental conditions when using inside of Temperature and Humidity Chamber or Incubator. It can be the cause of fire or trouble by stirrer electricity, electronic, and damage of motor.

Rotator's permissible environmental condition. Temperature 5°C to 40°C, Maximum relative humidity 80%.

Unplug if there is a strange sound, smell and/or smoke from the product. Stop

operating and request the service.

Keep out of the direct sunlight. It may influence product life and proper operation.

Do not use the machine at places where moisture is high and flooding can happen.

Do not assemble, repair, modify on your own. The product may not work well and electric shock is possible with changes in the efficiency of the product. Also this will void the warranty.

Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.

Do not put heavy things on the power cord. Do not put the machine on the cord. It may take off the wire coating and cause electric shock or fire.

Do not touch it with wet hands and place the main plug correctly. It could cause the electric shock or injuries.

Installing power outlet near instrument may be convenient

Do not install the stirrer near machinery generating high frequency noise. Avoid installation close to high frequency-welding machine, sewing machine, or mass SCR controller.

Do not inject any liquid and inflammable things inside of product.

Do not pour water or put liquid on the top of the product when cleaning. Disconnect the main power immediately and request the service if water may be in the product.

Do not let the product take any strong shock or vibration. It could cause abnormal operation or trouble. It may deteriorate the ability of the product operation and not obtain correct results.

Do not sprinkle insecticide or flammable spray on the product. Use smooth cloths. Cleaning with solvent can cause fire and deformity.

Power off while product cleaning. It may cause electric shock or fire.

Do not drop or allow the machine to fall. It will cause wrong operation and malfunction.

Disposing of Product

Dispose the unit with separating plastic mold, and motor.

Section 2 Inspection and Installation

Before unpacking the unit, first check for damages in the package of the unit.

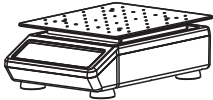






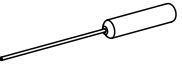
Then unpack the unit. Check carefully to see if there were damages incurred during transit.

After unpacking, check that all unit parts and accessories are as listed below.

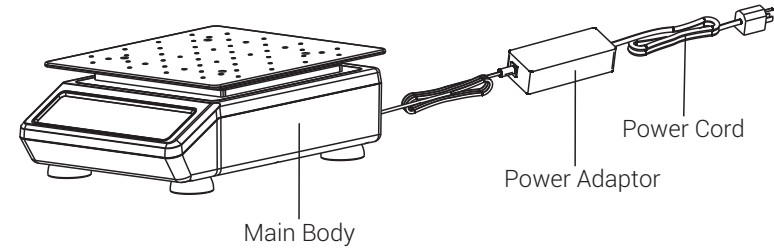
Contact us or the agent from which you purchased the unit if any components were omitted.

2.1 Packing List

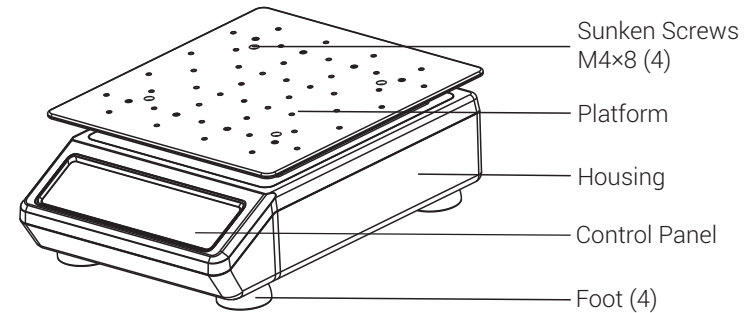
Table -1. Packing List

Description	Catalog Number		Figure
Digital Mini Rotator	88882007	88882008	
Universal (Aluminum) Platform (Installed)	1	1	
General Power Adaptor	1	1	
US Plug	1	N/A	
CN Plug	N/A	1	
EU Plug	N/A	1	
UK Plug	N/A	1	
Screw Driver	1	1	

2.2 Connections



2.3 Structure Diagram



Section 3 Overview

3.1 Specifications

Rotation Speed	Speed Range.....	50 to 500rpm
	Orbit Diameter.....	∅ 10mm
	Speed Accuracy.....	±1rpm(≤100rpm) ±1%(101~500rpm)
Load	Maximum Load (Centered on tray).....	4.5kg@300rpm 3kg@500rpm
	Time Timing Range.....	0, 1min.~99h59min.
Size	Overall Dimensions.....	383×284×130mm
	Tray Dimensions.....	310×284mm
	Packaging Dimensions.....	487×387×264mm
Weight	Net Weight.....	14.4Kg(31.8lb)
	Gross Weight.....	16.4Kg(36.2lb)
Power Supply	Requirement.....	AC100-240V, 50/60Hz, 40VA
Others	Certification.....	RoHS, WEEE, cCSAus, CE Mark

3.2 Environmental Conditions

Application Environmental Conditions: indoor use	
Temperature.....	5 to 40°C
Voltage Fluctuation.....	±10% of the nominal voltage
Altitude.....	≤2,000 m
Humidity.....	20% to 85%
Storage Environmental Conditions	
Temperature.....	0 to 60°C
Altitude.....	≤2,000 m
Humidity.....	20% to 90%, non-condensing

3.3 Safety Instructions

Please read the entire instruction manual before operating the Digital Mini Rotator.

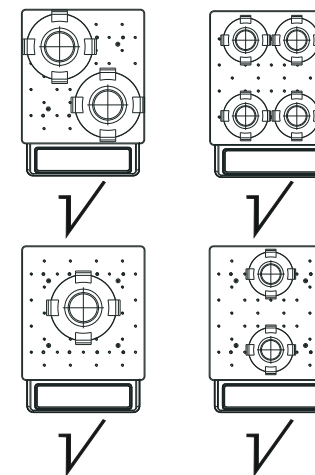
⚠ WARNING DO NOT use the Digital Mini Rotator in a hazardous atmosphere or with hazardous materials for which the unit was not designed. Also, the user should be aware that the protection provided by the equipment may be impaired if accessories used are not provided or recommended by the manufacturer, or are used in a manner not specified by the manufacturer.

CAUTION ! To avoid electrical shock, completely cut off power to the unit by disconnecting the power cord from the unit or unplug from the wall outlet. Disconnect unit from the power supply prior to maintenance and service. Any spills should be removed promptly. Bio hazard spills should be cleaned using approved liquid promptly. Solvent spills are a fire hazard. Stop the unit immediately, and DO NOT operate until clean up is complete and vapors have dissipated.

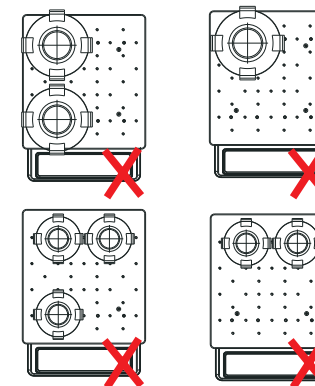
DO NOT immerse the unit for cleaning.
DO NOT operate the unit if it shows signs of electrical or mechanical damage.

Position of Loads
Please place loads symmetrically during operation.

Symmetrical placement



Asymmetrical placement



Warning: It may affect the normal operation of the instrument or even cause damage if placing loads asymmetrically.

3.4 Capacity and Speed

Conical Flask Size (ml)	≤Capacity (ml)	Max Speed(rpm)		
		With Flask Clamp	With Sticky Pad	With Nonslip Rubbet Mat
50	5	500		160
	25	500	450	180
	50	450		210
100/125	10	500		170
	50	450	400	210
	100	400		230
250	25	500		160
	125	400		200
	250			210
500	50	500		200
	250	370	400	210
	500	360	380	200
1000	100	500		220
	500	320		210
	1000	300		220
2000	200	500		210
	1000	300		190
	2000	300		190

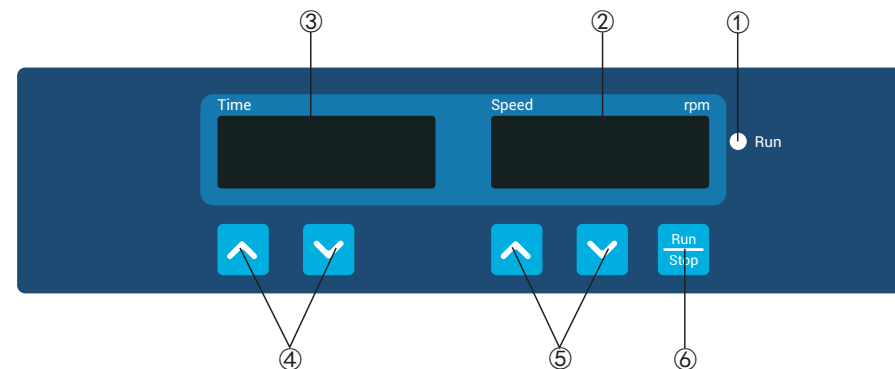
Note: Unit may have up to a +/- 5% RPM variability. The ultimate speed

maybe different as the clamp is from different brand.

Section 4 Operation

This chapter covers the control panel and its operation.

4.1 Control Panel



- ①. Run indicator: The light is on when the instrument is running and off when the instrument is in standby.
- ②. Speed display window: The window displays set speed (when the instrument is in standby) or current speed (when the instrument is running).
- ③. Time display window: The window displays cumulative time (in continuous mode) or remaining time (in timer mode).
- ④. Time setting buttons: UP/DOWN arrow buttons are used to increase/decrease the set time of the instrument.
- ⑤. Speed setting buttons: UP/DOWN arrow buttons are used to increase/decrease the set speed of the instrument.
- ⑥. Run/Stop button: Start or stop the instrument.




4.2 Installation

1. Connect all the components according to the figures shown on page 4 of this manual. Use grounded power outlet.
2. Press the power switch "I" side and switch on the instrument.





4.3 Settings

Time Settings



1. Continuous mode



Press the "" or "" arrow button below the Time display window. When the number shown on the Time display window starts flashing, press "" arrow button to decrease the time to 00:00 and then release the button. The time setting is finished after the number shown on the Time display window flashed twice.



2. Timer mode

Press the "" or "" arrow button below the Time display window. When the number shown on the window starts flashing, press "" or "" arrow button to increase or decrease the time value. Release the button when the time shown on the Time display window reaches the set value. The time setting is finished after the number shown on the Time display window flashed twice.


Speed Settings

Press the "" or "" arrow button below the Speed display window. When


the number shown on the Speed display window starts flashing, press "" or "" arrow button to increase or decrease the speed value. Release the button when the speed shown on the Speed display window reaches the set value. The speed setting is finished after the number shown on the Speed display window flashed twice.

Note: press the "" or "" arrow button for a longer time to accelerate the setting.

Run and Stop

Press "" button and the instrument will start running with the specified settings and the Run indicator light will be on.

The Time display window will show the cumulative time (Continuous Mode), or remaining time (Timer Mode) and the Speed display window will show the current speed.

Press "" button again and the instrument will slow down until it stops. The instrument will then be in standby and the two display windows will show the set values.

Note: To ensure shaking operation smooth and steady, it may take 1 minute for the microprocessor control system to accelerate the tray to the set speed.

Finish Operation

After the operation is finished, press the power switch at the back right side of the instrument and put it into the "O" state. Unplug the instrument and store the instrument according to the storage guide.

Alarm System

Exceed the speed limit: After entering the operation mode for 5s, if the actual speed of the instrument is 0 or more than 500rpm, the instrument will alarm immediately.

Err1: After entering the operation mode for 10s, and the instrument runs steadily (Running stability means that the actual speed of the instrument is within the set value of ± 10 rpm and lasts for 2s). If the speed exceeds the set speed of ± 20 rpm, the instrument stops running and buzzes to alarm, and "Err1" is displayed in the SPEED window.

End of timer: The instrument buzzing alarm, the "End" is displayed in the SPEED window.

When the instrument alarms, press any key, the instrument is back to the standby mode.

Power Recovery

If the power supply is cut off suddenly while the instrument is in operation, the unit will automatically run at the previously set parameter upon power restoration. The display windows will flash. Press any button to stop flashing.

4.4 Accessory Installation

Installation of Platform

1. Remove Universal (Aluminum) Platform as shown in the figure 1.
2. Align counter bores and nut columns, and fasten the screws as shown in the figure 2.
3. Place Rubber Mat onto the Flat Platform as shown in the figure 3.

Note: Rubber Mat is only used for low-speed shaking.

Installation of Test Tube Rack

1. Place the test tube rack holder at the corresponding position on the aluminum platform and fasten the 4 sunk screws as shown in the figure 4.
2. Vertically clamp the tube rack into the tube rack holder and make sure the bottom of the tube rack is closely attached to the holder as shown in the figure 5.
3. Insert test tubes.

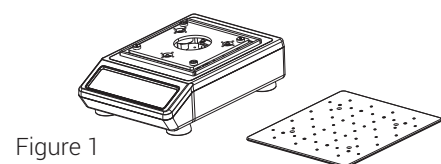


Figure 1

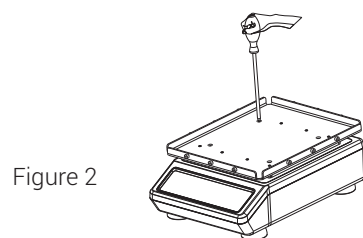


Figure 2

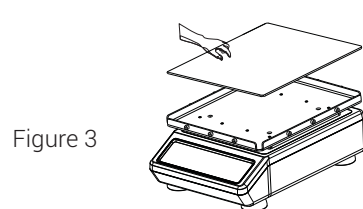


Figure 3

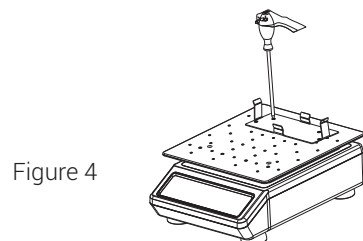


Figure 4

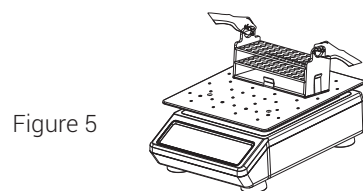


Figure 5

Installation of Flask Clamp and Infusion Bottle Clamp

1. Fasten flask clamp and infusion bottle clamp onto the platform with screws as shown in the figure 6.
2. Put corresponding flask and infusion bottle into the clamp.

Note: To prevent splashing, containers should not be full of liquid during shaking. It is recommended to fill the container up to 2/3 of the maximum capacity.

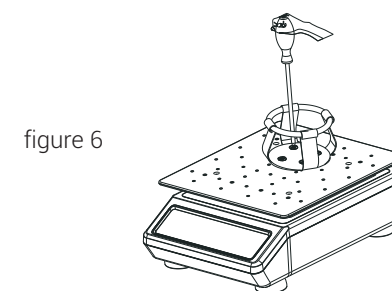


figure 6

Installation of Universal Attachment

1. Fasten Universal Attachment onto the platform with screws as shown in the figure 7.
2. Place nonslip rubber mat onto the flat surface of Universal Attachment.
3. Install wheel and fixed handle. Do not fasten the screw to make sure the wheel can move back and forth along the waist-shaped long hole on Universal Attachment as shown in the figure 8.
4. Place conical flask between the wheels, adjust the position of the wheels to fasten the flasks, and tighten the fixed handle as shown in the figure 9.

Note: The rotation speed is inversely proportional to the load. When the instrument is used to shake test tubes, it is recommended to adjust the rotation speed from low to high step by step and run the machine at an appropriate speed.

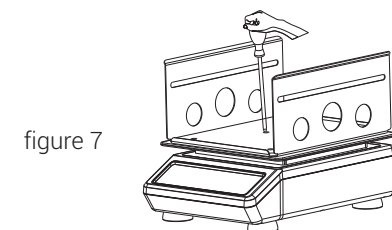


figure 7

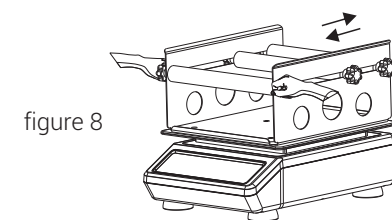


figure 8

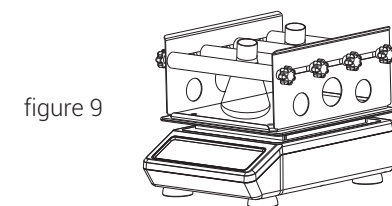


figure 9

Section 5 Safety Tips and Maintenance

Safety Tips

1. Use independent power supply.
2. Check if the local power supply voltage is suitable for use.
3. Do not drag the power supply cable when unplugging.
4. Do not use non-specified power cable or damage cable.
5. Service should only be performed by a qualified professional.
6. The power supply must be unplugged under the following situations:
 - (1). When the unit is moved
 - (2). When the electrical cabinet or the moving component is opened
 - (3). When the equipment is malfunctioning
 - (4). When the equipment is not in use

Maintenance

- a. This instrument uses brushless DC motor. It is maintenance free and has a long service time, high quality, and low noise level.
- b. Surface can be cleaned with a mild detergent and water.

Clean Spill

If accidental spillage of liquids caused by mishandling or contained breakage occurs on the surface of the instrument, please shut down the instrument and clean up the liquid immediately.

If the liquid has already spilled into the unit, cut off the power supply first and immediately clean up the liquid at the surface of the instrument. Place the instrument in a ventilated and dry environment for 24 hours before reuse. If the instrument is not functioning after drying for 24 hours, please contact the manufacturer.

Warning: Disassembling/Assembling without a qualified professional's guidance may cause malfunctioning of the instrument.

Section 6 Troubleshooting

Please refer to the following table to troubleshoot if any malfunction occurs.

If the problem still exists, contact your local sales representative.

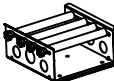



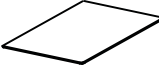



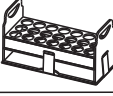
Error	Cause	Solution
Cannot start instrument, LED display window off	Power disconnected	Connect the power
	Power switch off	Switch on power
	Power adaptor failure	Replace power adaptor
No shaking of the tray	Over-weighted or unbalanced load	Adjust the weight and position of load, decrease rotation speed
	Electrical malfunction	Contact Thermo Scientific
	Mechanical malfunction	Contact Thermo Scientific
Loud noise	Housing loose	Fasten housing screws
	Tray loose	Fasten screws
	Load moving	Fix load position
Other	Keep record for maintenance	

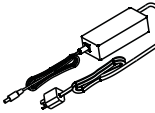


Note:

Err1 – Speed alarm

If Err1 occurs, please contact Fisher Scientific Customer Service for solutions.

Section 7 Optional Accessories

Description	Cat. No.	Dimensions	Max. Qty.	Figure
Universal Attachment	88882104	307×303×145mm	1	
Universal (Aluminum) Platform	88882105	310×284mm	1	
50ml flask clamp	88882106	Φ59×38mm	20	
100/125ml flask clamp	88882107	Φ66×43mm	8	
250ml flask clamp	88882108	Φ85×55mm	8	
500ml flask clamp	88882109	Φ105×59mm	6	
1000ml flask clamp	88882110	Φ130×77mm	4	
2000ml flask clamp	88882111	Φ168×91mm	2	
Sticky Mat 14x14 cm	88882112	140×140mm	1	
Flat Platform w/ Rubber Mat	88882113	330×270×19mm	1	
Fixed Tube Rack 50×Ø11mm 1.5ml tube	88882117	197x86x102mm	2	
Fixed Tube Rack 40×Ø18mm 15ml tube	88882118	262x112x140mm	2	
Fixed Tube Rack 21×Ø30mm 50ml tube	88882119	262x112x140mm	2	

Description	Cat. No.	Dimensions	Max. Qty.	Figure
General Power Adaptor w/US plug	88870126	125VAC 10A 1.8m	1	
General Power Adaptor w/AUS, CN plug	88870127	250VAC 10A 1.8m	1	
General Power Adaptor w/EU plug	88870128	250VAC 16A 1.8m	1	
General Power Adaptor w/UK plug	88870129	250VAC 13A 1.8m	1	
Screw GB/T819.1 M4×8 (Platform installation)	88882130	4ea/pack	/	
Screw GB/T819.1 M5×10 (Clamp, Tube rac installation)	88882131	4ea/pack	/	
Screw GB/T9074.4 M5×10 (Universal attachment installation)	88882133	6ea/pack	/	

Section 8 Warranty

THERMO FISHER SCIENTIFIC STANDARD PRODUCT WARRANTY

The Warranty Period starts two weeks from the date your equipment is shipped from our facility. This allows for shipping time so the warranty will go into effect at approximately the same time your equipment is delivered. The warranty protection extends to any subsequent owner during the first year warranty period.

During the first two (2) years, component parts proven to be non-conforming in materials or workmanship will be repaired or replaced at Thermo's expense, labor included. Installation and calibration are not covered by this warranty agreement. The Technical Services Department must be contacted for warranty determination and direction prior to performance of any repairs. Expendable items, glass, filters and gaskets are excluded from this warranty.

Replacement or repair of components parts or equipment under this warranty shall not extend the warranty to either the equipment or to the component part beyond the original warranty period. The Technical Services Department must give prior approval for return of any components or equipment. At Thermo's option, all non-conforming parts must be returned to Thermo Fisher Scientific postage paid and replacement parts are shipped FOB destination.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER WRITTEN, ORAL OR IMPLIED. NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY.

Thermo shall not be liable for any indirect or consequential damages including, without limitation, damages relating to lost profits or loss of products.

Your local Thermo Sales Office is ready to help with comprehensive site preparation information before your equipment arrives. Printed instruction manuals carefully detail equipment installation, operation and preventive maintenance.

If equipment service is required, please call your Technical Services Department at 1-866-984-3766, option number 2. We're ready to answer your questions on equipment warranty, operation, maintenance, service and special application. Outside the USA, please contact local Thermo Technical Services Department or local distributor for warranty information.