

Digital Muffle Furnace, 1200 °C

Operating Manual

Laboratory Equipment

Intended use

Electrically heated laboratory muffle furnace with digital PID temperature control for ashing, loss-on-ignition, sintering, ceramic firing and heat treatment of small samples.

Intended users

Trained laboratory and QC personnel.

Read this manual completely before first use and keep it with the product. This document provides general operating, care and safety guidance. Where the product is supplied with manufacturer labeling or instructions, those take precedence. For questions, a replacement copy, or a digital copy of this manual, email sales@scimedstore.com.

1. Safety

Safety warnings and cautions

- Connect only to a properly grounded supply with the voltage marked on the unit, preferably on a dedicated circuit installed by a qualified electrician.
- Never exceed the 1,200 °C maximum temperature.
- Operate under a fume hood or with adequate ventilation; heating samples can release smoke and hazardous gases.
- Wear heat-resistant gloves, face shield or safety glasses, and use long tongs when loading or unloading.
- Use only crucibles and containers rated for the furnace temperature.
- Do not place flammable, explosive or sealed containers in the furnace.
- Keep the area around the furnace clear of combustible materials; the outer case can become hot.
- Switch off and unplug before cleaning or maintenance, and allow the furnace to cool fully.

2. Specifications

Maximum temperature	1,200 °C
Recommended continuous working temperature	1,100 °C
Chamber (internal)	225 x 100 x 100 mm (~2.25 L)
Heating elements	Kanthal (FeCrAl) wire, 4-side heating
Insulation	Ceramic fiber and refractory brick
Controller	Digital PID controller/indicator
Sensor	K-type thermocouple (S-type optional)
Over-heat protection	Silver fuse
Power supply	220 V or 110 V AC (as specified at order); dedicated circuit recommended
Rated power	2.5-3 kW
External dimensions	~500 x 450 x 550 mm
Weight	~40 kg

3. Unpacking and setup

- 1 Place the furnace on a stable, heat-resistant, level surface with clearance on all sides for ventilation.
- 2 Check that the supply voltage marked on the unit matches your supply and connect to a grounded outlet.
- 3 Make sure the thermocouple is correctly positioned in the chamber.
- 4 Before first use, run the empty furnace at a low temperature, then gradually higher, to dry the insulation, following the manufacturer's instructions supplied with the unit.
- 5 Ventilate the room during the first heat-up, as some odor is normal.

4. Operation

Heating a sample

- 1 Place the samples in suitable crucibles.
- 2 Open the door and place the crucibles in the center of the chamber using tongs; do not let them touch the walls or elements.
- 3 Close the door.
- 4 Switch on the furnace and set the required temperature on the PID controller.
- 5 Allow the furnace to reach and stabilize at the setpoint before starting timing.
- 6 Monitor the temperature display during the run.

Unloading

- 1 At the end of the run, switch off heating or lower the setpoint.
- 2 Allow the furnace to cool to a safe temperature where possible.
- 3 Wearing heat-resistant gloves and a face shield, open the door slowly and stand to one side.
- 4 Remove crucibles with long tongs and place them in a desiccator or on a heat-resistant surface.
- 5 Close the door and switch off the furnace when finished.

5. Cleaning and disinfection

- Allow the furnace to cool completely and unplug before cleaning.
- Remove loose ash and debris from the chamber floor with a soft brush or vacuum; do not scrape the elements or refractory.
- Wipe the outer case with a dry or slightly damp cloth.
- Do not use water or liquids inside the chamber.

6. Maintenance and storage

- Inspect heating elements and refractory for cracks or damage periodically.
- Replace Kanthal elements and the silver fuse with correct parts when needed; refer this work to qualified personnel.
- Check controller accuracy periodically with a calibrated reference thermocouple.
- Check the door seal and hinge for proper closing.
- Store in a dry place; if the furnace has been unused for a long period, dry it out at low temperature before high-temperature use.

7. Troubleshooting

Problem	Likely cause	What to do
Furnace does not heat	No power, blown silver fuse, or failed element	Check supply and fuse; have elements tested by qualified personnel.
Temperature reading incorrect	Thermocouple damaged or displaced	Check thermocouple position and condition; recalibrate or replace.
Slow heat-up	Low supply voltage or aging elements	Check supply voltage; have elements inspected.
Temperature overshoots setpoint	Controller settings need adjustment	Check controller settings; contact service for PID tuning.
Smoke or odor	Sample burning off or first-use drying	Ensure ventilation; this is normal at first use.
Controller display blank	Power fault or controller failure	Check supply; contact service.

8. Disposal

- Dispose of ash and residues per your laboratory's waste procedures.
- Dispose of the furnace as electrical equipment; refractory and insulation materials may require special handling under local regulations.

9. Warranty and support

Products are covered by SciMed's standard warranty (12 months from purchase unless a different period is stated on your invoice). Warranty terms: scimedstore.com/pages/warranty.

Support, spare parts and additional copies of this manual: sales@scimedstore.com. Please include your order number and a photo of the product or issue.

SciMed Scientific Equipment LLC · San Jose, California, USA · scimedstore.com