

*Let's*



precision-mat.com



**Precision Mat**  
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User Guide



Designed by Precision Mat, Portland, Oregon USA

## Packing list

1. MAT-lab console
2. M2 and M4 mat with temperature sensor
3. Optional mats M1-M6
4. 240VAC/10A or 120VAC/10A power cord
5. External type-T temperature sensor
6. Manual



## Technical specifications

Rated Voltage: Europe and UK- 240 VAC / 50 Hz / 10 Amps,  
 Rated power 1985W, fuse FS-F20 (25A)  
 North America – 120VAC / 50 Hz / 15 Amps, rated power 1500W, fuse FS-F20 (15A)

Caution: Always ensure that the operating voltage and frequency shown on the Mat-lab console is suitable for use with your mains supply.

Dimensions: **Mat-lab** console - 12.5 x 19 x 12.5 cm

### Mats:

- M1** 2.5 x 12.7 cm | 1" x 5" | 120 VAC only
- M2** 5 x 12.7 cm | 2" x 5" | 120 or 240 VAC
- M3** 10 x 38 cm | 4" x 15" | 120 or 240 VAC
- M4** 22 x 28 cm | 8.5" x 11" | 120 or 240 VAC
- M5** 64 x 76 cm | 25" x 30" | 120 or 240 VAC
- M6** 76 x 102 cm | 30" x 40" | 240 VAC only

**Caution:** all mats are fitted with heating elements rated either for 120VAC or 230VAC, the relevant rating is clearly marked on the mat. Verify that the voltage of the mat, the Mat-lab and the mains supply are matched.

Operating temperature range: ambient c. 20° – 70°C

For indoor laboratory use  
 Operating environments: 15° – 40° C  
 Optimal indoor humidity: 50 – 80 RH%

14. The included external temperature sensor may be used as an alternative to the integrated thermal sensor, to measure the heating in a thermally representative location, based on conservator's judgment and treatment needs.

**Caution:** When using the external temperature sensor (TC), it is extremely important that the sensor is securely placed in contact with the mat or other the desired surface, (not loose and detached from heating treatment), since the thermal sensor relays to the console the need to heat to achieve the set temperature. To secure the sensor (TC), pressure sensitive tape could be used. We recommend using pressure sensitive Kapton tape with a silicone adhesive.

**Statement:** the Mat equipment is for use by a competent trained laboratory personnel, familiar with the lab safety standards. It is the responsibility of the conservator or other laboratory personnel to use their sound judgment and experience to ensure that the MAT device and mats are used safely for the artwork or other object under the treatment and to the personnel, and the environment. Precision Mat, LLC cannot be liable for the user's actions and Precision Mat, LLC standard terms of business apply in all circumstances.

**Guarantee:** Precision Mat, LLC products are hand built, all components are guaranteed for a period of 12 months from the day of delivery. Damages to the equipment from the use by not (strictly) observing the operation manual instructions, as well as mechanical damages, such as impact, cuts, dents, cut or broken leads are exempted from Precision Mat, LLC warranty.

**Disclaimer:** Precision Mat, LLC is not liable for any damage or harm caused by not (strictly) following the the operational and safety requirements in this manual. Precision Mat, LLC cannot be liable for any damage, injury or loss resulting from the use or servicing by unqualified personnel and from incorrect operation or modification of the equipment, as well as use of third party heating mats that were not supplied by Precision Mat, LLC.

## Contact for information and questions:

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6. The set temperature may be selected using the buttons located at the center bottom of the display. To raise the set temperature, press the double arrow up ↑. To lower the set temperature, press the double arrow down ↓. While making the selection, the mat will remain inactive, but the actual temperature PV will be measured in the mat in real time continuously, indicating the PV value on the screen.



7. When the set temperature is selected and the conservator is ready to begin the heat transfer, the heating mat may be activated by depressing the round “mat power” pushbutton, which will illuminate blue, indicating that the power is being supplied to the mat.

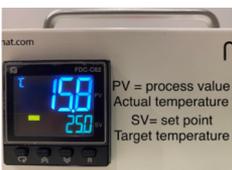
(Inversely, to stop heating at any time, the pushbutton may be depressed to the non-illuminated state)



8. The mat will begin warming until it reaches the SV (set point – target temperature).

9. To increase or decrease the SV value (the target temperature value) press the double arrow up ↑ and down ↓.

The conservator may raise the set temperature incrementally to slow the heating process.



10. To pause or end the heat transfer process, press the “mat power” pushbutton switch on the front. The pushbutton switch illumination will turn off. The PID display will show the PV temperature going down.

11. To turn the power console off, press the “main switch” to the “O” position.

12. When the conservator turns the “main switch” on again, the SV will be at the value last used. Set a new SV value and press “mat power” to supply the power to the mat.

13. If there is any malfunction to the thermal sensor, the display on the heating console will show an “ER” or error message, and heating will be automatically cease.

## Operation manual

MAT precision heat transfer technology in the form of flexible silicone-clad heating mats and associated temperature control consoles was developed specifically for art conservation applications. The mats provide the conservator with novel control in the low temperature range (ambient to 40°C) making prolonged heat transfer possible to implement a “low and slow” approach, which allows conservators to innovate safe and nuanced treatments. The mats are designed to deliver heat to the temperatures slightly above those used customarily to activate thermoplastic adhesives (to 70°C).



## IMPORTANT SAFEGUARDS

- For professional use only, following the provided instructions.
- Before commencing please read the user guide.
- Make sure that the MAT-lab console is connected to a power source that is grounded, safe, and matches your console's power rating.
- Mat-lab console can be used only with original mats by Precision Mat. Any other mats may be incompatible and unsafe, their use is prohibited.
- Do not touch unit, mat, cord or plug with wet hands.
- Protect the console, cables and the mat from mechanical impact, cuts, dents, which may cause mechanical problems.
- Keep the mat flat (smaller or large mats) or when rolling, provide sufficient diameter, similar to the one as the mat was delivered to you.
- Do not use the MAT-lab if the power cord or plug is damaged in any way.
- Do not use the MAT heating mat if the silicone cladding is cut, punctured or damaged in any way.
- Make sure that the power cord is not twisted, bent or pinched.
- Make sure the thermal sensor wire isn't kinked or broken.
- Always turn the power "off" before disconnecting the mat from the MAT-lab console.
- Unplug the MAT-lab from the wall power source when not in use and during storms.
- Do not pull on the cord when unplugging the MAT-lab in operation from the wall power. Always push the front illuminated button "mat power" first, and "main switch" second.
- Do not store or use the MAT in an environment with high humidity, dusty or close to potential source of spray water, such as a sink, or solvents, other flammable or hazardous materials.
- Keep the MAT-lab away from other heat sources.
- Always unplug the MAT-lab before cleaning. Do not spray water and avoid chemical cleaning products directly on the unit.
- Keep the power cable and connector prongs free of dust and water.
- If you detect noise or smell smoke coming from the MAT-lab or it's components, unplug immediately.
- Do not disassemble or attempt to repair the unit.
- Always turn off the "mat power" (1) and "main switch" (2) before changing the mat.
- Do not allow the mat in operation to cover the power cable
- Please contact Precision Mat with any concerns and questions
- Use of the MAT system in any way not intended by the manufacturer compromises the safety of the equipment.

## Let's MAT:

1. Attach the AC power cable (blue) to the "main switch" connector.



2. Insert the mat cable connector into the "mat" terminal on the console and gently twist the connector clockwise until it clicks into the "engaged" position. To disconnect the cable, unlock the connector by pulling the silver button back and turn the connector counter clockwise.



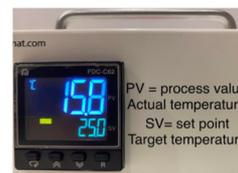
3. Insert the temperature sensor plug (blue with silver and copper color pins) into the "sensor" terminal. The shape of the prongs and openings only allow the connection of the prongs in the correct position. If the male connector does not fit, turn it round to match the prongs to the correct openings.



4. Press the "main switch" on the side to the "I" position to supply the input power to the MAT-lab console.



5. The screen will turn on and will briefly cycle through three booting displays until it will show two values seen here:



**PV** (process value = **actual temperature**, as measured by the temperature sensor inside the mat, or by an external temperature sensor).

**SV** (set point = **target temperature**, selected by the operator).

While setting the target temperature, the "mat power" pushbutton switch should not be illuminated, indicating that the heating mat is not active.

