Čeština
Dansk
Deutsch
Eesti
Ελληνικά
English
Español
Français
Italiano
Latviski
Lietuviškai
Magyar
Nederlands
Norsk
Polski
Português
Slovenčina
Slovenski
Suomi
Svenska

Leica MATS

User manual

Leica
MICROSYSTEMS

Contents

Description

MATS = Microscope-stage Automatic Thermocontrol System

Purpose

The Leica thermocontrol system MATS is a heating system for microscopes and stereomicroscopes and allows the viewing of sensitive microscopic specimens under accurate temperature conditions.

User manual

The present user manual describes the assembly and operation of the Leica thermocontrol system MATS. Your instrument is supplied with a printed user manual in English.

Additional languages and information can be found on the interactive CD-ROM that is supplied with your Leica stereomicroscope or macroscope. User manuals and updates are available for download on our homepage at www.stereomicroscopy.com.

Detailed information about the microscope, stereomicroscope or macroscope can be found in the separate user manual to each instrument.

Safety concept

Before assembling and commissioning the Leica thermocontrol system MATS, read the present user manual and observe all safety notes.

Legal requirements

Adhere to general and local regulations relating to accident prevention and environmental protection.

Conformity with European Community directive

The Leica thermocontrol system MATS is constructed in accordance with the latest technologies and is provided with a statement of conformity with EC requirements.

Permitted uses

The Leica thermocontrol system MATS is a heating system for microscopes and stereomicroscopes and intended for viewing sensitive microscopic specimens under accurate temperature conditions. The thermoplate heating stage can be heated up to 50 °C.

The Leica thermocontrol system MATS consists of a control unit, a power cable and various thermoplate stage types for Leica stereomicroscopes (transmitted light stands) and microscopes (upright & inverted). Thermoplate and control unit are matched to each other.

Always use thermoplate and control unit from the same packaging, never from different packagings.

Prohibited uses

If the Leica thermocontrol system MATS differently than described in this user manual, it may lead to personal injuries or property damage.

- Do not fit different plugs or cables.
- Do not change or convert the Leica thermocontrol system MATS.
- Do not dismantle any part of the motor-focus system unless instructions for doing so are given in the user manual.
- The Leica thermocontrol system MATS may not be opened and maintained by unauthorized personnel.

Safety regulations

Place of use

The Leica thermocontrol system MATS may only be used in closed facilities. The following installation sites must be excluded:

- Where flammable gas, corrosive gas oil mist and particles that can deteriorate electrical insulation are generated or are abundant.
- Where highly intense vibration or impact is generated or transferred.
- Near high voltage power lines or where inductive interference can affect the operation of the Leica thermocontrol system MATS.
- Sites which create condensation water or humidity or are exposed to direct sunlight.

Temperature control

The process value displayed at the control unit corresponds to the temperature of the table surface. If the specimen in a petri dish or on a slide glass indicates a lower temperature compared to the displayed process value, adjust the set value to obtain a proper specimen temperature. Otherwise, the specimen could be damaged.

If the sensor malfunctions, the surface may become very hot.

Protective measures of the manufacturer

- Dielectric strength: 2 sec. at 1350 V AC between power supply terminal and ground terminal
- Insulation resistance: 500 V Mega more than 100 MΩ minimum between power supply connection and ground connection
- Fire protection: Temperature cannot be set higher than 50 °C
- Fuse: T AC250V 1.6 A
- The Leica thermocontrol system MATS is electromagnetically compatible in accordance with the directive 89/336/EEC and can be operated at the same time as other electrical appliances.

Requirements for the user

Ensure that

- the Leica thermocontrol system MATS is operated, maintained and repaired only by authorized and trained personnel.
- the operating personnel has read and understood this user manual for the stereomicroscope or microscope and particularly all safety regulations and applies them.

Repairs and servicing

- Repairs may be performed only by service technicians trained by Leica Microsystems.
- Only original Leica Microsystems spare parts may be used.
- Disconnect the power supply for maintenance and repair work, otherwise there is a risk of injury through electric shock.

Power cable

- Only use the power cables listed on page 16.
- Inspect the power cable regularly for damage. If it is defective, replace it immediately, because it could cause the instrument and ancillary equipment to become energized and thereby endangering personnel.
- Observe proper cable routing so that no one can become entangled in it or fall over it. The instrument could tip over and be damaged.
- Avoid pulling at the power cable.

Liquids

Be careful when handling liquids. Spilled liquids on electrical devices can energize the instrument and ancillary equipment, possibly causing personal injuries or damage to instruments.

Cleaning, care Handle your Leica thermocontrol system MATS with care and avoid anything that may scratch the thermoplate.

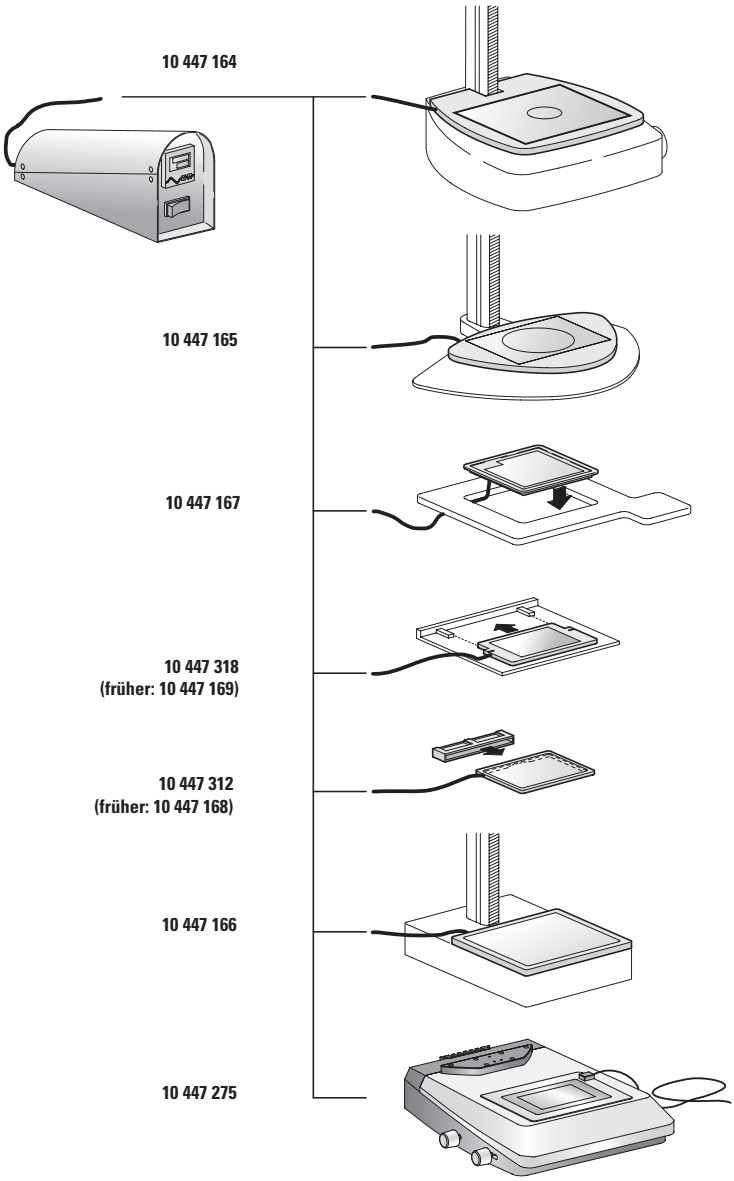
- Disconnect the power cable before cleaning the instrument.
- Never open or dismantle the control unit.
- Respect the warning signs relating to the handling of liquids.
- Do not soak into water or into solvent.
- Never use any solvents such as gasoline or thinner to wipe the instrument. The color of the surface could change or flake, or imprinted characters could be removed.

In case of dirt accumulation, carefully clean the control unit and thermoplate with a soft piece of cloth moistened with a solution of neutral cleaning agent dilluted in water.

Assembly

The components

1 Control unit
2 Thermoplate 10 447 164 for Leica M stereomicroscopes with transmitted light base HL
3 Thermoplate type 10 447 165 for Leica M stereomicroscopes with transmitted light base (lightfield/darkfield)
4 Thermoplate type 10 447 167 for inverted microscopes Leica DMIRB (3-plate x/y stage)
5 Thermoplate type 10 447 318 (previously: 10 447 169) for inverted microscopes Leica DMIRB & DMIL
6 Thermoplate type 10 447 312 (previously: 10 447 168) with adapter for upright microscopes, general
7 Thermoplate type 10 447 166
8 Thermoplate type 10 447 275 for Leica M stereomicroscopes with transmitted light base TL ST, TL BFDF, TL RC™ or TL RCI™


10 447 164
10 447 165
10 447 167
10 447 318
(früher: 10 447 169)
10 447 312
(früher: 10 447 168)
10 447 166
10 447 275

Assembly

Thermoplate

- ▶ Remove the existing glass insert from the base of a stereomicroscope to reach the correct temperature.
- ▶ Place the thermoplate on the object stage of the microscope/ stereomicroscope according to Fig. 1-6.

Fig. 1: Heating stage 10 447 164
for Leica M stereomicroscopes
with transmitted light base HL

- ▶ Tighten attachment screws on both sides of the thermoplate.

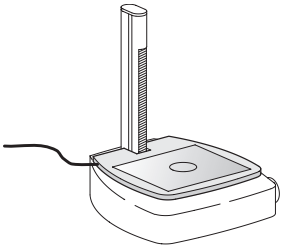


Fig. 2: Heating stage 10 447 165
for Leica M stereomicroscopes
with transmitted light base
(lightfield/darkfield)

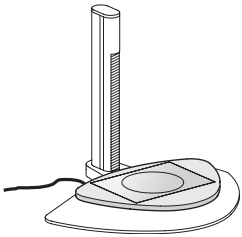


Fig. 3: Heating stage 10 447 167
for inverted microscopes
Leica DMIRB
(3-plate x/y stage)

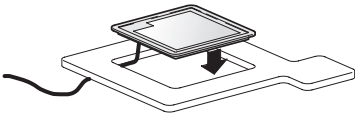


Fig. 4: Heating stage 10 447 318 for inverted microscopes Leica DMIRB & DMIL

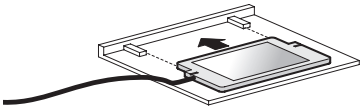


Fig. 5: Heating stage 10 447 312 for upright microscopes, general

▶ Attach heating stage with adapter according to the figure.

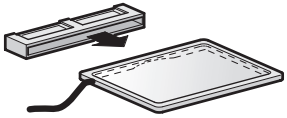


Fig. 6: Heating stage 10 447 166

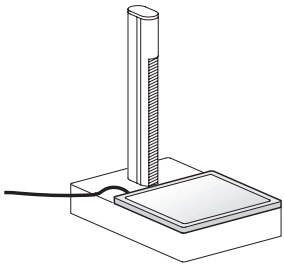
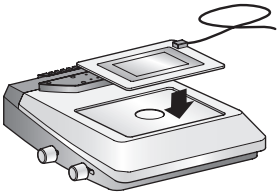


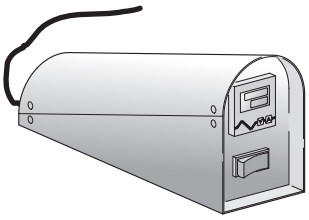
Fig. 7 Heating stage 10 447 275 for Leica M stereomicroscopes with transmitted light base TL ST, TL BFDF, TL RC™ and TL RCI™



Control units

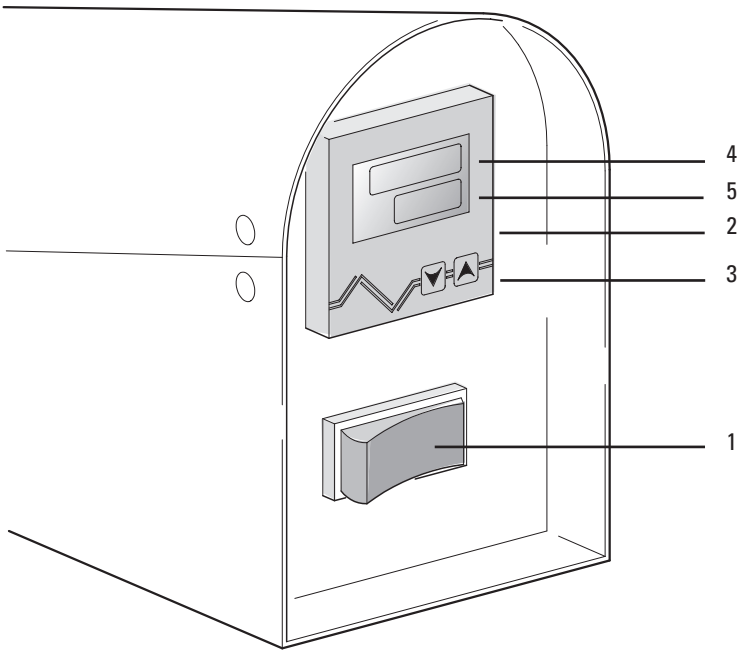
▶ Connect the thermoplate with the control unit.
▶ Plug the power cable connector into the input receptacle of the heating unit.

Approved power cables see p. 16.



Operating controls

1 Power switch
2 Temperature control
3 Setting the temperaturs: Up/Down keys
4 PV display shows the process value and various symbols
5 SV display shows different settings values



Before commissioning the Leica thermocontrol system MATS, read the safety regulations on p. 4-7.

- ▶ Press the power switch (1).
- ▶ When you finish operating, turn off the power switch and disconnect the plug of power supply cord.

Control of the Temperature

The thermoplate heating stage can be heated up to 50 °C. The process value displayed at the control unit corresponds to the temperature of the table surface. If the specimen in a petri dish or on a slide glass indicates a lower temperature compared to the displayed process value, adjust the set value to obtain a proper specimen temperature. Otherwise, the specimen could be damaged.

With stereomicroscopes it must be ensured that the existing glass insert is removed from the base before the heating stage is placed. Otherwise, the correct temperature is not guaranteed.

Setting the temperature

To adjust the temperature, press the Up/Down keys. When the key is pushed for 1 sec or more, the indicated temperature changes continuously. 2 seconds after above adjustment, the temperature controller starts operating to obtain set temperature.

- ▶ Set the temperature control to the desired temperature using the keys (2).
- ▶ Wait 10 minutes until the temperature of the thermoplate stabilizes.

Dimensions and weight

Control unit

– Weight: about 1.3kg
– Dimensions: width 113 mm, length 210 mm, height 128-74 mm

Thermoplate 10 447 164 for Leica M stereomicroscope with transmitted light base HL

– Weight: about 420 g

Thermoplate 10 447 165 for Leica M stereomicroscope with transmitted light base (lightfield/darkfield)

– Weight: about 540 g

Thermoplate 10 447 167 for inverted microscopes Leica DMIRB (3-plate x/y stage)

– Weight: about 100 g

Thermoplate 10 447 318 for inverted microscopes Leica DMIRB &DMIL

– Weight: about 80 g

Thermoplate 10 447 312 for upright microscopes, general

– Weight: about 100 g

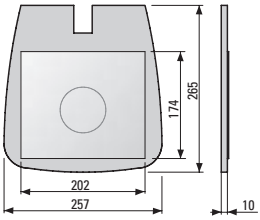
Thermoplate 10 447 166

– Weight: about 300 g

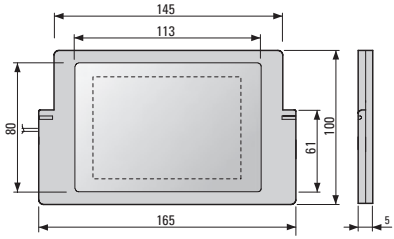
Thermoplate 10 447 275

– Weight: about 170 g

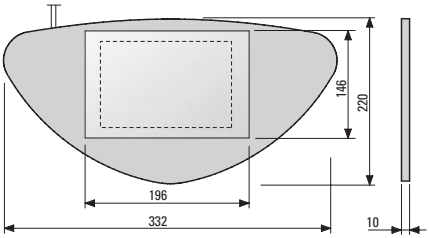
10 447 164



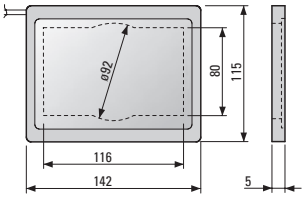
10 447 318



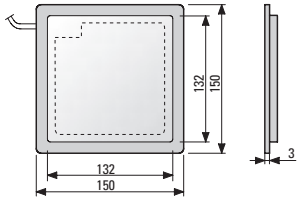
10 447 165



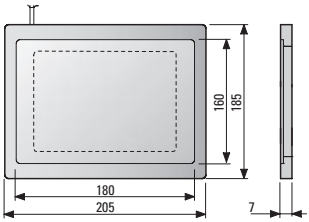
10 447 312



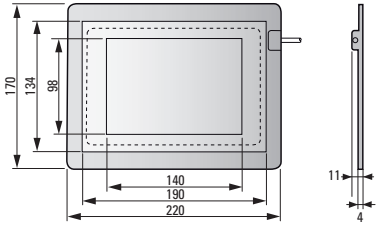
10 447 167



10 447 166



10 447 275



Dimensions in mm

220

Technical Data

Leica thermocontrol system MATS

Power supply

100-240 V ±10 % AC, 50/60 Hz, 0.68 A, protection class I

Operating Environmental Conditions

- indoor use only
- temperature: 5 °C to 40 °C
- maximum relative humidity: 35% to 80%
- altitude: up to 2000 m max.
- environmental conditions: installation category II according to IEC 664, degree of pollution 2

Power cable

For mains supplies with 100 to 120 V, use only the following power cables:

- UL listed, detachable cord set, 3 conductor grounding type SVT No.18 AWG rated at 125 V, 7 A minimum
- if an extension cord is used, use only a power supply cable with PE (protective earth) connector

For mains supplies with 220 V to 240 V:

- inside the EU, use only 3-wire power cable, plug and connector
- according to EU/EN standards
- Class 1 equipment should be connected to PE (protective earth) terminal
- if an extension cord is used, use only a power supply cable with PE (protective earth) connector

Control of the Temperature

- method: The temperature control is based on the PID controller with solid state relay
- achieved accuracy: T (actual temperature) in the middle of the heating stage lies within a range of [t > T > t-1] °C, whereby t represents the set temperature (under the condition that the set value t = 37 °C)
- step: 0.1 °C
- setting method: with Up and Down key
- setting range: room temperature to 50 °C
- achievable temperature accuracy: ±0.3 °C (with indicator temperature)
- sensor: thermocouple
- connection to heating stage: 4-pole connector (cable length: 1000 mm)

Temperature Indicator

- instructions method: 7-segment digital display and single-lighting indicator
- step: 0.1 °C
- indicating accuracy: ±0.5%

Duration 50 °C within 10 minutes

Notes

Notes

Leica Microsystems – the brand for outstanding products

Leica Microsystems' mission is to be the world's first-choice provider of innovative solutions to our customers' needs for vision, measurement and analysis of microstructures.

Leica, the leading brand for microscopes and scientific instruments, developed from five brand names, all with a long tradition: Wild, Leitz, Reichert, Jung and Cambridge Instruments. Yet Leica symbolizes innovation as well as tradition.

Leica Microsystems – an international company with a strong network of customer services

Australia:	Gladesville	Tel. +61 2 9879 9700	Fax +61 2 9817 8358
Austria:	Vienna	Tel. +43 1 486 80 50 0	Fax +43 1 486 80 50 30
Canada:	Richmond Hill/Ontario	Tel. +1 905 762 2000	Fax +1 905 762 8937
Denmark:	Herlev	Tel. +45 4454 0101	Fax +45 4454 0111
France:	Rueil-Malmaison	Tel. +33 1 47 32 85 85	Fax +33 1 47 32 85 86
Germany:	Bensheim	Tel. +49 6251 136 0	Fax +49 6251 136 155
Italy:	Milan	Tel. +39 0257 486.1	Fax +39 0257 40 3475
Japan:	Tokyo	Tel. + 81 3 5421 2800	Fax +81 3 5421 2896
Korea:	Seoul	Tel. +82 2 514 65 43	Fax +82 2 514 65 48
Netherlands:	Rijswijk	Tel. +31 70 4132 100	Fax +31 70 4132 109
People's Rep. of China:	Hong Kong	Tel. +852 2564 6699	Fax +852 2564 4163
Portugal:	Lisbon	Tel. +351 21 388 9112	Fax +351 21 385 4668
Singapore		Tel. +65 6779 7823	Fax +65 6773 0628
Spain:	Barcelona	Tel. +34 93 494 95 30	Fax +34 93 494 95 32
Sweden:	Sollentuna	Tel. +46 8 625 45 45	Fax +46 8 625 45 10
Switzerland:	Glattbrugg	Tel. +41 44 809 34 34	Fax +41 44 809 34 44
United Kingdom:	Milton Keynes	Tel. +44 1908 246 246	Fax +44 1908 609 992
USA:	Bannockburn/Illinois	Tel. +1 847 405 0123	Fax +1 847 405 0164

and representatives of Leica Microsystems in more than 100 countries.

In accordance with the ISO 9001 certificate, Leica Microsystems (Switzerland) Ltd, Business Unit Stereo & Macroscope Systems has at its disposal a management system that meets the requirements of the international standard for quality management. In addition, production meets the requirements of the international standard ISO 14001 for environmental management.

The companies of the Leica Microsystems Group operate internationally in three business segments, where we rank with the market leaders.

• Microscopy Systems

Our expertise in microscopy is the basis for all our solutions for visualization, measurement and analysis of microstructures in life sciences and industry. With confocal laser technology and image analysis systems, we provide three-dimensional viewing facilities and offer new solutions for cytogenetics, pathology and materials sciences.

• Specimen Preparation

We provide comprehensive systems and services for clinical histo- and cytopathology applications, biomedical research and industrial quality assurance. Our product range includes instruments, systems and consumables for tissue infiltration and embedding, microtomes and cryostats as well as automated stainers and coverslippers.

• Medical Equipment

Innovative technologies in our surgical microscopes offer new therapeutic approaches in microsurgery.

Winner 2005

Innovationspreis
der deutschen Wirtschaft
The World's First Innovation Award

www.leica-microsystems.com/MATS

Leica
MICROSYSTEMS

M2-227-0en • © Leica Microsystems (Switzerland) Ltd • CH-9435 Heerbrugg, 2002 • Printed in Switzerland – II.2006 – RDV