

# Technical Data Sheet

Date of printing: 06/2009

## Leica CM1950

### Cryostat



Type	-1	-2	-3
Nominal voltage ( $\pm 10\%$ ):	100 VAC	120 VAC	230 VAC
Nominal frequency:	50/60 Hz	60 Hz	50 Hz
Power draw:	1900 VA	1900 VA	1900 VA
Max. start-up current for 5 sec.:	35 A eff.	35 A eff.	25 A eff.
Protective class:	I	I	I
Circuit breaker:	15A M3	15A M3	15A M3
(MDA made by Schurter)			
Pollution degree: ②	2	2	2
Overvoltage installation category:	II	II	II
Heat emission (max.):	1900 J/s	1900 J/s	1900 J/s
Approval:	CE/c_CSA_us	CE/c_CSA_us	CE/c_CSA_us

② according to IEC-1010; UL 3101

#### Microtome

Type:	Rotary microtome, encapsulated
Section thickness range:	1 to 100 $\mu\text{m}$
Trimming range:	
Clinic:	10–40 $\mu\text{m}$
Research:	1–600 $\mu\text{m}$
Total specimen feed:	25 mm + 1 mm
Vertical stroke:	59 mm $\pm 0.5$ mm
Specimen retraction:	20 $\mu\text{m}$ (can be deactivated)
Maximum specimen size:	50 x 80 mm
Cutting speed:	Slow: 0–50 strokes/min Fast: 0–85 strokes/min Vmax: 85–90 strokes/min
Specimen orientation:	8° (x, y-axis)

#### Electric coarse feed

Slow:	300 $\mu\text{m}/\text{s}$
Fast:	900 $\mu\text{m}/\text{s}$

#### Lamp

50/60 Hz-Version: Osram DULUX L 18W/840

#### Cryostat

Dimensions:	
Width (w/o handwheel)	700 mm
Width (with handwheel)	835 mm
Depth (cabinet only)	850 mm
Height (total)	1215 mm
Working height (armrest)	1025 mm

Weight:	
Weight (w/motor and suct.)	193 kg
Weight (w/motor, w/o suct.)	185 kg
Weight (w/o motor, w/ suct.)	183 kg
Weight (w/o motor, w/o suct.)	175 kg
Weight (w/ specimen head cool.)	165 kg
Weight (w/o specimen head cool.)	145 kg

#### General information

Operating temperature range:	18 °C to 35 °C
Temperature range during storage:	+5 °C to +55 °C
Relative humidity:	max. 60 %, non-condensing
Storage humidity:	< 60 %

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#### Refrigeration system

##### Cryochamber

Temperature range

#### CM1950, 50 Hz

0 °C to -35 °C ± 5 K, adjustable in 1K increments,  
at ambient temperature of 20 °C

#### CM1950, 60 Hz

0 °C to -35 °C ± 5 K, adjustable in 1K increments  
ambient temperature of 20 °C

Cooling time to -25 °C

approx. 5 h

approx. 5 h

Cooling time to -35 °C

approx. 8 h

approx. 8 h

Refrigeration capacity ①

690 W

690 W

Cut-out pressure

25 bar

25 bar

Safety factor

3

3

Refrigerant\*

300 g (± 5 g) refrigerant R -404A\*

300 g (± 5 g) refrigerant R -404A\*

Compressor oil\*

0.6 l EMKARATE RL22S, ICI\*

0.6 l EMKARATE RL22S, ICI\*

##### Defrosting of cryochamber

##### Automatic defrosting

Programmable:

Yes (hot gas defrost) Selectable time

Yes (hot gas defrost) Selectable time

Defrosting intervals

1 defrost in 24 h  
or manual hot gas defrost1 defrost in 24 h  
or manual hot gas defrost

Defrost time:

12 minutes

12 minutes

Automatic shut off Defrost:

at -5 °C chamber temperature

at -5 °C chamber temperature

##### Quick-freeze shelf

Minimum temperature:

- 42 °C (+ 5 K), at chamber temp. -35 °C

- 42 °C (+ 5 K), at chamber temp. -35 °C

Number of freezing stations:

15+2

15+2

Defrost:

Manual hot-gas defrost

Manual hot-gas defrost

##### Peltier element

Number of freezing stations:

2

2

Max. temperature difference:

17 K, at chamber temp. of -35 °C

17 K, at chamber temp. of -35 °C

##### Specimen cooling

Temperature range:

-10 to -50 °C ± 3 K

-10 to -50 °C ± 3 K

Refrigeration capacity: ①

320 W

320 W

Cut-out pressure:

25 bar

25 bar

Safety factor:

3

3

Refrigerant and quantity:

at 230V/50 Hz 130 g (± 5 g), refrigerant R-404A\*  
at 100V/50/60 Hz 140 g (± 5 g), refrigerant R-404A\*

at 120V/60 Hz 140 g (± 5 g), refrigerant R-404A\*

Compressor oil \*

0.4 l alpha 22, Kyodo\*

0.4 l alpha 22, Kyodo\*

##### Defrosting of specimen head

Automatic defrost:

No

No

Manual defrost, Defrost time:

15 min.

15 min.

① acc. to CECOMAF: liquid temperature 45 °C, evaporation temperature: -25 °C

\* Refrigerant and compressor oil must be replaced by qualified, authorized service personnel only.