



Leica EM UC6

Leica EM FC6

The new Ultramicrotome for
Room Temperature and Cryosectioning

Leica
MICROSYSTEMS

Leica EM UC6

Ergonomic design and innovative technology are the accents of the new Leica EM UC6 Ultramicrotome and its new cryochamber the Leica EM FC6. Form and function together in an uncompromising beautiful design.



Leica EM UC6 & E

The New Ultramicrotomy Standard



M F C 6

Discover the EM UC6 features...

Ultramicrotome for ultrathin sectioning of biological and industrial specimens

In addition to the exceptional quality and excellent characteristics of Leica Ultramicrotomes, the new Ultracut UC6 offers a range of additional features and benefits of use for the ultramicrotomist, whether they are highly skilled or an absolute beginner.



Leica EM UC6



- Ergonomic design provides fatigue-free operation for left- and right-handed users.
- Eucentric movement – optimised stereo microscope positioning for specimen approach with glass and diamond knives.
- Eucentric movement for section observation at low water levels and cryosectioning.
- Fully motorized knife stage is the prerequisite for the E-W Measuring-System and Autotrim Function.
- Quick familiar operation with the touch screen and displayed hints

Discover the EM UC6 features...

Ergonomic Concept



Poorly designed workstations can lead to medical problems. Hours of sitting motionless at the ultramicrotome can put strain on the human body.

Leica Microsystems has given more thought than any other ultramicrotome manufacturer to this subject and has created ergonomic adaptations which minimize the strain placed on the user. These adaptations allow quick and simple adjustments to accommodate multiple users of one ultramicrotome.

In close co-operation with well-known industrial designers, an optimal operating concept has evolved allowing the Leica Ultracut UC6 to be used easily and fatigue-free for both left and right-handed operators.



Ergonomics for fatigue-free operation is an integral part of the Leica product design. For example, armrests attached to the instrument table, adjustable in latitude and height, offers a comfortable, fatigue-free posture during operation.

This, in conjunction with the ergonomically arranged control elements of the Ultracut UC6, enhances comfort and fatigue-free operation.



Leica EM UC6

Optimal Positioning of the Stereo Microscope

The **Eucentric Movement** of the Leica EM UC6 viewing system allows examination of sections, even with a lowered water level (e.g. for Lowycryls and dry sections) without loss of ergonomic posture. Defined position marks provide optimum positioning of the stereo microscope for alignment with glass and diamond knives.

Two independent positioning systems of the stereo microscope provide unparalleled ergonomics and maximum visibility of the knife-specimen area:

- The eucentric movement allows positioning to the required viewing angle.
- Equipped with an MZ6 stereo microscope and the „ErgoWedge“, the Ultracut UC6 adapts to the operators height and position
- When approaching the knife towards the specimen the viewing angle must be set to the optimum position. Two defined positions of the eucentric movement for either glass or diamond knife are available to achieve the maximum approach accuracy.

Sample observation with lowered water level **without** eucentrically moveable stereo microscope.



Sample observation with lowered water level **with** eucentrically moveable stereo microscope.



Discover the EM UC6 features...

Non-Interfering Cables



An annoying problem when using a camera system has always been the cables getting in the way of the stereo carrier movement. Not any more. The integrated cable canal guides the cables to the rear of the instrument, safely and conveniently.

The easily accessible multiway connector allows convenient plug-in plug-out connections..

Hot Plugs allow connection and disconnection while the instrument is connected to the mains.

Optimised Antistatic Device Improves Section Quality



The Adjustable Antistatic electrode is a helpful accessory for sectioning at room temperature.

The ioniser avoids electrostatic charging of the sample surface, thus eliminating static effects associated with climatic changes and sectioning of various materials.

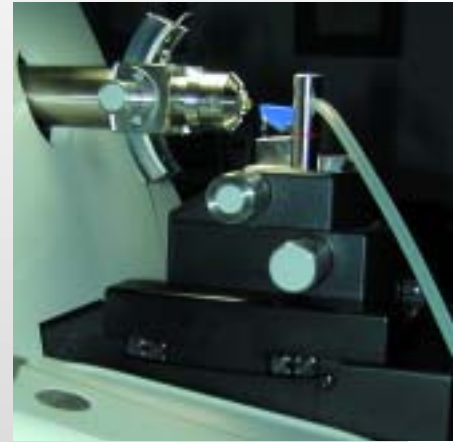
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Sectioning Without External and Internal Vibrations

„Let Gravity Pull“

The Integrated Antivibration System prevents influence from external vibrations.

The Gravity Stroke of the specimen arm allows unrivalled insulation from external vibrations. Together with the high precision bearings, this guarantees outstanding section quality as well as the highest blockface quality for AFM or SEM examination.



Fully Motorized Knife Stage

Motorized North-South movement of the knife stage is a unique feature of Leica Ultramicrotomes. The additional implementation of motorized East-West movement of the Leica EM UC6 was a logical step forward. But not only simple motorization of the stage has been realized. It has enabled many useful features to develop hand in hand with it. For example, in conjunction with the touch-sensitive control panel we have realised an Autotrim mode and a measuring function.



Discover the EM UC6 features...

Brightness-Controlled Multi-LED-Illumination

Three independent brightness-controlled LED light sources provides outstanding illumination for toplight, backlight and specimen transillumination.



L e i c a E M U C 6

... and Touch the Future

Key-pad Control Unit

① **Graphic display** indicates temperature of the EM FC6, LN₂ level of the dewar and selected step size of the step approach.

② Buttons for **step size** setting for using step approach.

③ **Graphic display** indicates FEED and SPEED setting, amount of the feed used and motor ON/OFF.

④ The **cutting speed** starts and ends instantaneously and can be set in the extremely wide range from 0.05 to 100 mm/sec.

⑤ **Section thickness** setting with ultrathin feed from 1 nm to 2.5 µm and semithin from 2.5 µm to 15 µm.



⑥ **E-W coarse wheel** allowing 25 mm travel of the knife stage left and right.

⑦ **Start and stop motorized sectioning**

⑧ **EM FC6 control buttons** with 3 memories and storage of temperature, ioniser control, START, HEAT, LN₂ STOP and Alarm OFF buttons

⑨ **Multi-LED-illumination.** 3 independent LED light sources provide outstanding illumination for toplight, backlight and specimen transillumination.

⑩ The **cutting window** is precisely set by two buttons from 0.2 to 15 mm.

⑪ **Four memories** and storage of cutting speed and feed.

⑫ The 10 mm **approach** can be carried out either with the **N-S coarse wheel** or continuously or in steps of 0.1 to 15 µm

⑬ **Reset of the specimen arm**

Touch-Sensitive Control Unit

The innovative touch-sensitive control unit of the Ultracut UC6 enables fast and safe alignment of knife and specimen with help files and prompts to hand for beginners. Programmable knife and cutting movements offer significant ease for trimming.

The built-in antistatic device and EM FC6 control as well as the possibility of storing up to seven different user-settings defines the outstanding performance parameters of the Ultracut UC6 Touch Screen.

- ① The **cutting window** is precisely set by two buttons. Window range from 0.2 to 15 mm.
- ② **Five permanently displayed memories** and storage of cutting speed and feed. Change from semi- to ultrathin with one touch...
- ③ The **rocking** mode for trimming enables fast up and down movements of the specimen arm in conjunction with an automatic advance of the selected feed.
- ④ Integrated **antistatic** control allows convenient access as well as more space on the instrument table. The transformer of the ioniser may be placed beneath the table. The ioniser part of the screen fades out when it is disconnected.
- ⑤ The **cutting speed** starts and ends instantaneously and can be set in the extremely wide range of 0.05 to 100 mm/sec.
- ⑥ **Section thickness** setting with ultrathin feed from 1 nm to 2.5 μm and semithin from 2.5 μm to 15 μm
- ⑦ **Start and stop motorized sectioning**



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⑧ **Section counter** and **feed totalizer, count down** and **integrated E-W measuring system** as well the **auto trim function** are useful for morphometric studies and trimming.

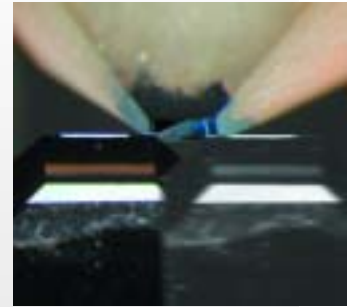
⑨ **Ten indication marks** show the amount of the 200 μm ultrathin specimen feed used. Resets automatically or by pressing reset button.

⑩ Three different **return speeds** can be selected according to sectioning demands.

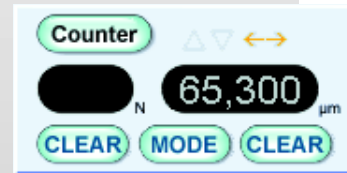
⑪ **Multi-LED-illumination**
Three independent **brightness-controlled** LED light sources provide outstanding illumination for toplight, backlight and specimen transillumination.

⑫ The 10 mm **approach** can be carried out either with the **N-S coarse wheel** or continuously or in steps of 0.1 to 15 μm .

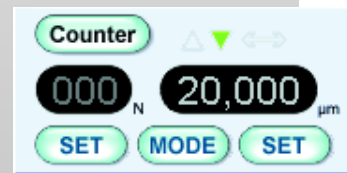
⑬ The **E-W coarse wheel** for 25 mm travel range of the knife stage.



Using the **Auto Trim** function the knife moves to its predefined positions and automatically trims the sample to size.



The **Integrated E-W measuring system** offers the possibility to determine the size of the block face and inclusions.



The **Count down** function enables sectioning and trimming to a predefined total thickness of up to 200 μm .

The Ultracut UC6 control panel can be navigated using a mouse. The mouse buttons can be designated with various commands according to the requirements of the user. For example left click set start of the cutting window, right click set end of the cutting window.

Leica EM FC6

Improved Ergonomics by Innovative Design

**Low Temperature Sectioning System
for ultrathin cryosectioning of biological
and industrial specimens.**

Intuitive touch screen operation integrated into Ultracut UC6 Control Unit for greater ease of operation and more work space.

LED chamber illumination for improved visibility of the knife-specimen area.

Integrated Ioniser control allows single handed operation of all controls



Leica EM FC6

Cryo – Make it your Routine

Improved Results by Modern Technology



The EMFC6 cryo ultramicrotome is designed for state-of-the-art biological, clinical and industrial applications.

First, choose your individual ergonomic working position, whether you are a beginner or an experienced user, left or right handed, tall or small, ...

... then choose your specimen type from cryoprotected Tokuyasu samples to high pressure frozen tissue, from polymers and rubbers to ice cream and cheese, ...

... select your instrument settings: temperature range from - 15 °C to -185 °C for specimen, knife and gas, brightness controlled LED chamber illumination, loading and sectioning position on rotating knife holder, ioniser control, ... and section ...

... and finally, produce the highest quality sample face or sections compatible with your imaging technique of choice. From routine TEM and LM to cryoTEM, cryo tomography, SEM, cryoSEM as well as AFM and cryo AFM.

Discover the EM FC6 features...

Innovation Meets Excellence



A combination of several unique features provides unparalleled comfort and ease of use.

Improved ergonomics

- All-in-one touch screen control unit
- Includes ioniser control for single handed operation
- 2 handrests for left and right hand operation
- Right handrest with GN2 gap to ensure warm surface for longer worktime
- Adjustable armrests for operator comfort
- Heated chamber walls to prevent ice condensation for prolonged worktime and operator comfort
- Optional Dewar filling system

Improved convenience

- FC mount function and hot plugs provide maximum safety for electronic and mechanical parts when mounting/dismounting
- Threaded connection of LN₂ hose for safe and convenient connection
- Low noise pump does not disturb operator
- 4 memories for temperatures make changing from trimming to sectioning temperatures and back quick and easy
- 5 level indicators for Dewar with reserve warning inform operator precisely of LN₂ status
- Automatic bake-out switch-off function

Improved visualisation

- 3 different LED light sources, including
- Internal chamber illumination
- All individually brightness controlled

Leica EM FC6

Improved sectioning quality

- Contact free through the wall specimen arm for vibration free sectioning
- Eucentric knife rotation with centre click stop from outside for easy alignment of knife and blockface
- Temperature range from - 185 to -15 °C
- Individual temperatures for specimen, knife and gas
- Automatic rapid cooling function to save time when cooling down to temperatures below -165°C
- Specimen loading position provides easy access and maximum safety for knife and specimen
- Specimen holder is locked with torque limited screw to provide optimum locking of sample without damage to the screw
- Cryochamber is mounted on chassis of the UC6 to prevent any external vibrations to the knife even when resting on it
- Rotating knife holder takes 2 glass or diamond knives with individual knife angle settings. Rotation allows quick and safe changing from trimming to sectioning and back and ensures the backlight is precisely below the knife
- Optional cryotools mounted on knife holder to ensure fast and safe transfer of frozen hydrated sections to grids

All features and benefits of the Ultracut UC6 also apply to the EM FC6 for cryosectioning:
improved ergonomics, illumination, visualisation, automation.



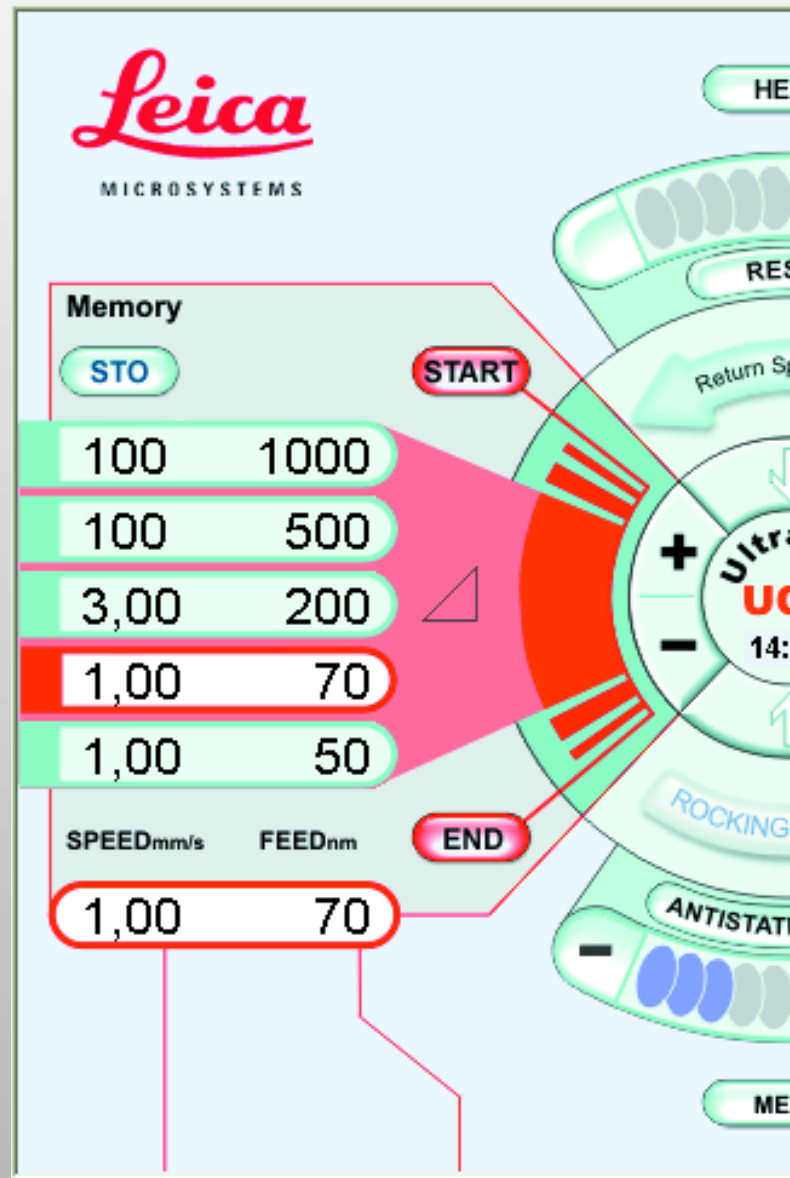
Discover the EM FC6 features...

The all-in-one touch screen control unit also includes the ioniser control. With the Dewar next to the anti-vibration table and all power packs on an out-of-the-way shelf, this provides more workspace and improves ergonomics.

LED chamber illumination for improved visualisation of sections during cutting, section manipulation and pick up. With individual brightness control.

Pump On/Off function together with the optional Dewar refilling system allows easy refilling of LN₂.

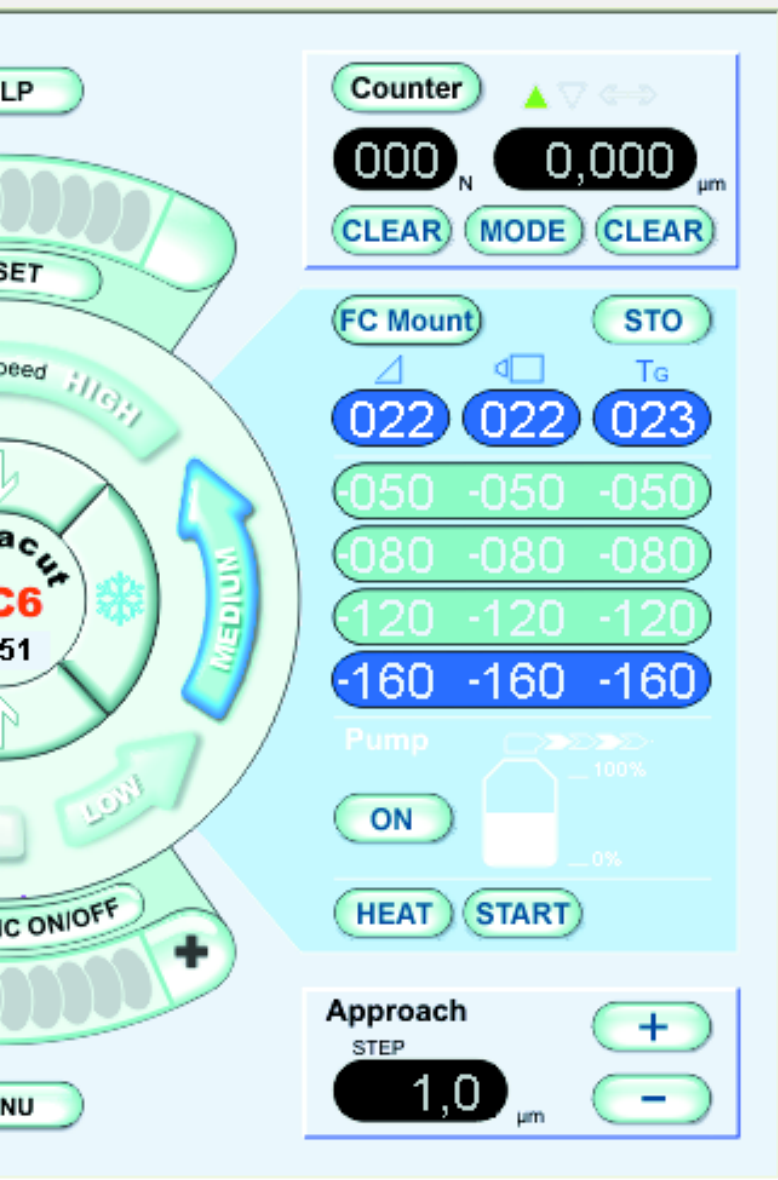
The **integrated ioniser control** for single handed operation of the antistatic device. 10 indication marks show the power setting. The ON/OFF function allows switching off of the power for pick up of sections or manipulations in the cryochamber.



Leica EM FC6



The **FC Mount function** and the **threaded hose connector** allow you to mount and dismount the FC6 chamber within seconds. Connection and Disconnection of **Hot Plugs** can be carried out while the instrument is connected to the mains.



The **STO function** for storing preset temperatures into the memory.

3 individual readings for set and actual specimen, knife and gas temperature provide immediate information and control.

4 memory fields for fast and convenient changing from trimming to sectioning temperatures and back.

LN2 level indicator with reserve warning.

The **START button** begins the cooling process and can be used to activate the **Automatic RC mode** for faster cooling of the chamber.

Automatic bake out function for a frost free chamber at the end of your working day.

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, lithography 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

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and representatives of Leica Microsystems
in more than 100 countries.

The companies of the Leica Microsystems Group operate internationally in four 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.

● Semiconductor Equipment

Our automated, leading-edge measurement and inspection systems and our E-beam lithography systems make us the first choice supplier for semiconductor manufacturers all over the world.

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