



**EXCELSIUS**  
MEDICAL



## **MICRON M7** EXCIMER REFRACTIVE LASER

PRECISE, SAFE & COMPACT



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# EXCELSIUS MEDICAL

## LEADING LIGHT TO THE EYE



## Who We Are

**Excelsius Medical**, founded in 2013 is dedicated to developing safe, precise, and patient-focused ophthalmic laser systems. Our mission is to support ophthalmologists with reliable, high quality medical technology that enhances treatment outcomes and improves patients' quality of life.

In 2015, our German subsidiary was established as our center for R&D and technical service, enabling us to expand our innovative product development capabilities and provide responsive service to our global partners.

Partner with us in advancing ophthalmic care. Together, we can deliver innovative solutions and improve vision for patients worldwide.

## Our Goal

**Excelsius Medical**, based in Taiwan where technological innovation thrives alongside world-class capabilities in semiconductors, computing, and automation. Leveraging German high-end technology, we have developed a medical device brand driven by independent R&D and precision manufacturing.

With our proprietary femtosecond and excimer laser platforms, we deliver advanced refractive solutions that support ophthalmologists in treating wide range of visual conditions. We are dedicated to providing precise and reliable tools that protect and preserve the quality of sight.

Certified under ISO 13485 and CE standards, we ensure that every procedure is not only effective, but also safe, stable, and consistently dependable.



## Compact Laser Workstation

- The **MICRON M7** is designed for maximum patient comfort.
- Optimised optics design for precision and predictability.
- Designed for cost-efficiency and low gas consumption.

## Treatment Options

LASIK, PRK, and Trans-PRK with selectable zone sizes and depths, as well as Presbyopia, PTK, and optional Topography Guided Treatment.

## Unique Beam Delivery Design

By utilizing a robotic arm to position the applicator and microscope, the system achieves minimal dimensions and an adaptable working distance. This design facilitates unobstructed physician visualization for robust risk management and minimizes the influence of ambient air, ensuring superior laser beam precision and optimized surgical outcomes.

### **REVOLUTIONARY**

The first laser in refractive surgery leading the light right to the eye via a robotic applicator.

### **MORE PRECISION**

A high resolution infrared eye tracking continuously monitors eye movements to minimize fixation saccades.

## MICRON M7 Controls and Components

- 1 Large touchscreen monitor and keyboard for intuitive user operation.
- 2 Microscope and illumination and auxiliary beams on a robotic arm. Large working distance and natural colour LED for easy patient preparation and surgery control.
- 3 The unique robotic applicator delivers the laser beam close to the eye in order to minimize the impact of the ambient air.
- 4 Small footprint, light and mobile.
- 5 Joystick control for a simple alignment procedure and automated for patient eye centration.
- 6 Comfortable patient bed easily accessible, and helps reduce any claustrophobia feelings.
- 7 Footswitch to start laser treatment and activate surgical plume removal for a stable microclimate above the corneal surface and simultaneously eliminate ablated corneal particles during laser operation.
- 8 Optics design and laser energy management minimizes operating costs and gas consumption.

# MICRON M7

## EXCIMER REFRACTIVE LASER



PRECISE, SAFE & COMPACT

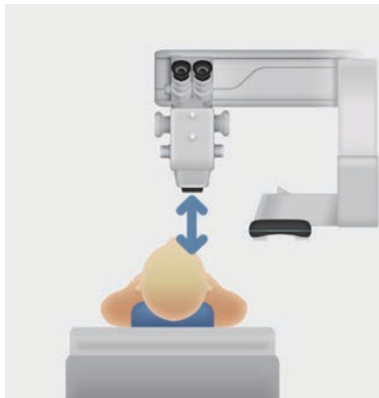
## Robotic Arm

**EXCELSIUS MEDICAL** is presenting the most compact excimer Laser platform. We have eliminated the need for a motorized patient bed. Instead of positioning the patient under the laser beam, a robotic arm positions the eye along the laser beam path.

The main advantage of this approach is the large working distance during patient preparation and a small distance during treatment, minimizing environmental influences.

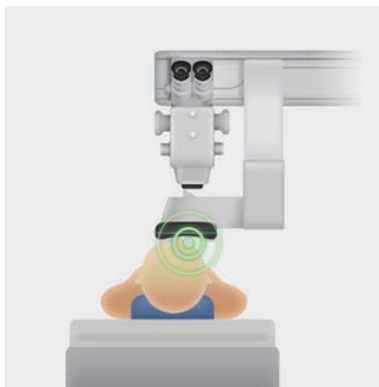
### Preparation

Adequate room for eye draping and flap creation



### Treatment

Close distance for maximum control and precision, excluding environmental influences.



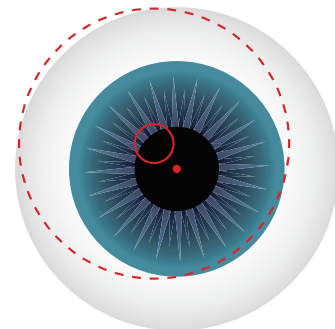
## Auto Centration

The high-speed infrared eye tracking system is linked to the robotic arm controls. Once the pupil is detected, it continuously locks onto the pupil center, monitoring eye movements and minimize fixation saccades within the tracking range.

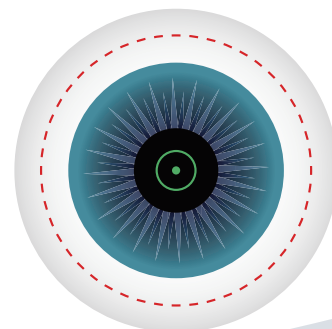
In case the eye moves out of eye tracking range during surgery, a recenteration just by pressing the center button of the joystick can be achieved rapidly and easily.

Manual repositioning of the bed by using the joystick is not necessary anymore.

**Pupil, slightly decentered, within Eye Tracking range**



**Robotic Arm moves to Pupil Center and Eyetracker works within Tracking Range determined by the green inner Ring**



# Customized Precision

The **Micron M7** integrates Topography Guided Treatment, Aspheric, and Presbyopia treatment modes and delivers a fully customized visual correction solution.

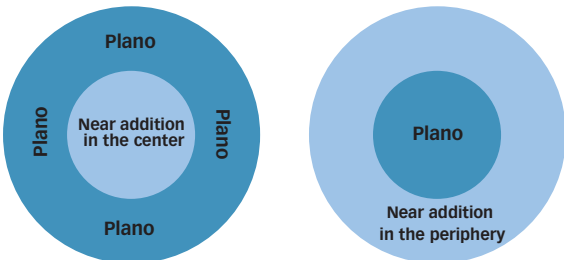
The **Topography Guided** Treatment system supports data import from multiple topography device manufacturers, seamlessly integrating topographic maps with the systems operation interface and surgical parameters. This enables surgical modes that more precisely match each patient’s individual corneal condition.

To achieve greater precision and versatility in refractive surgery, Aspheric and Presbyopia treatment modes have been incorporated.

The **Aspheric** mode, based on advanced aspheric algorithms, introduces a correction factor to control spherical aberration, resulting in a more natural postoperative corneal shape compared with standard treatments. It adaptively adjusts optical zone parameters and diopter values to minimize postoperative spherical aberration.

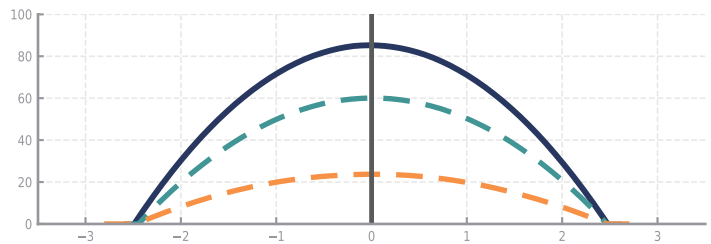
The **Presbyopia** mode provides two treatment options, providing the freedom to position the near addition in the center or in the periphery of the optical zone, enabling surgeons to customize ablation profiles based on each patient’s condition and visual needs. It supports both monocular and binocular configurations, enhancing clinical flexibility and adaptability.

## Correction Position for Near Addition in Both Presbyopia Modes



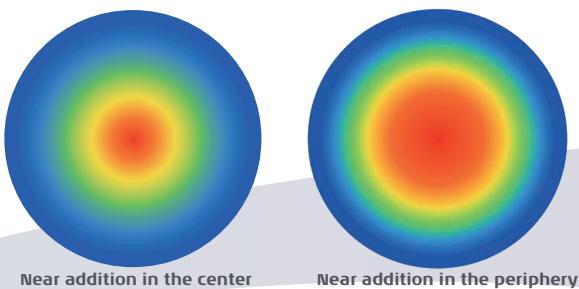
Near addition correction applied to the central zone (left) and the peripheral zone (right).

## Ablation profile amount in aspheric mode



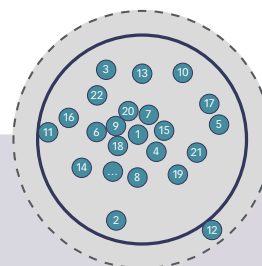
The blue line shows the Aspheric mode, the green line the Standard mode, and the red line their ablation depth difference.

## Ablation Depths of the Two Presbyopia Modes



Near addition in the center or in the periphery. Enabling customized ablation profiles and enhanced surgical flexibility.

## Optimized Flying Spot Technique



Low thermal impact is important. Each individual laser spot position is calculated in such a way, to never overlap with the previous pulses avoiding thermal accumulation.

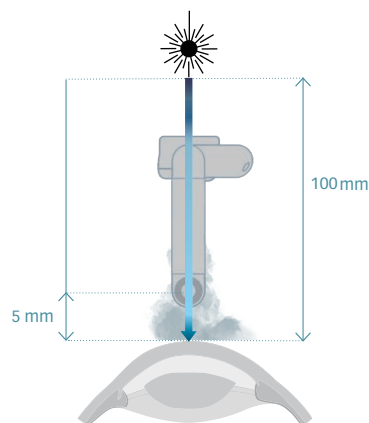
## Closed-up Operation & Surgical Plume Removal

The **MICRON M7** has been designed in such way that the applicator is only 100mm away from cornea. This short operating distance reduces the unpredicted ambient air particles interferences. As the eye tracking system module is located in applicator, its camera is close to the eye, resulting in best recognition and optimum IR illumination.

Furthermore, an optimally positioned air extractor, located just 10mm from the cornea, evacuates the laser beam working area. This prevents airflow interference and maintains stable stromal hydration.

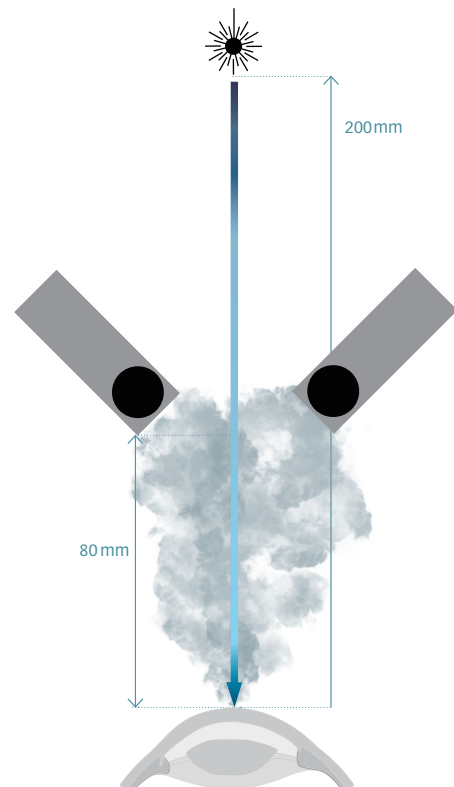
- Surgical plume evacuator close to the eye to remove debris at the highest density without affecting the stromal bed.
- No unpleasant smell from the ablation procedure.

### Short Operation & Aspiration Distance



#### EXCELSIUS Surgical Plume Evacuation

The laser beam travels a short distance through the environment and is minimally influenced, resulting in nearly no unpleasant odours.



#### Traditional Surgical Plume Evacuation

The laser beam is affected by dense surgical plume near the corneal plane, resulting in a noticeable "burnt tissue" smell.

## Patient Comfort

The slidable patient bed provides maximum patient comfort. When preparing surgery, the robotic arm is moved away from the patient. The patient will not experience the feeling of being "blocked and locked into a machine" and lies relaxed during the whole procedure.

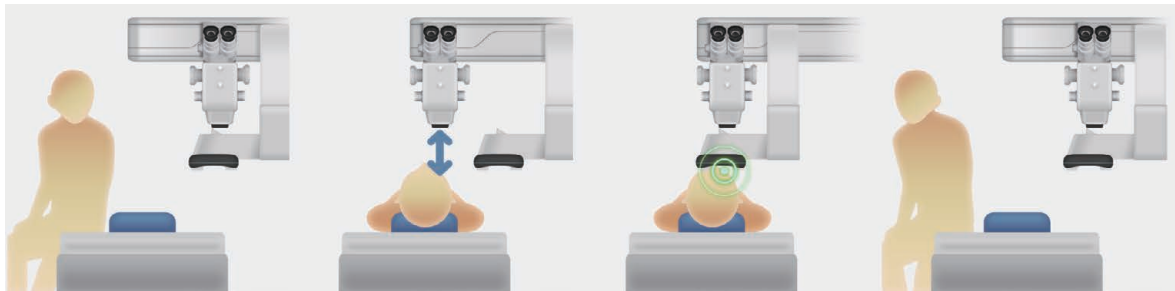
In the case of a femtosecond laser assisted surgery, there is no need to reposition the patient, as the applicator can be moved close to the patient, the femtosecond laser is added to the excimer laser for treatment and the microscope can be used for flap procedure and surgery controls.

### Patient Entry

### Preparation

### Treatment

### Patient Exit



1

#### Easy Entry.

No claustrophobic feeling,  
good patient-doctor contact.

2

Comfortable draping  
and surgery preparation.

3

Short working distance  
of the applicator for safety  
and accuracy.

4

#### Easy Exit.

## Cost Efficiency

The **MICRON M7** uses a unique designed laser source with large energy reservation for long active and passive gas lifetime.

The laser head generates a small and homogeneous beam. It is delivered along several small mirrors with a very low fluence. This results in high level of stability, low stress on the optics and long optics lifetime.

The laser startup time between surgeries only take a few minutes. This allows an optimized workflow with minimized patient waiting time.

Accepting Walk-In patients during the daily routine now becomes possible.

## Modular Design

The **MICRON M7** is a modularized design laser with slidable patient bed. The laser system weighs only 370 kg which makes it easy to handle and transport.

its small footprint enables flexible installation across a wide range of clinical space, minimizing overhead costs.

Micron M7 features a unique modular design that allow to be detached and share among users, offering flexible and optional mobile use.



## EXCELLENCE IN PURSUIT OF EXCELLENCE

At Excelsius Medical, our vision is driven by a dedication to precision. We do not just manufacture lasers; we redefine the future of refractive surgery. By constantly challenging the limits of ophthalmic technology, we ensure that every system delivers superior clinical outcomes.

# MICRON M7

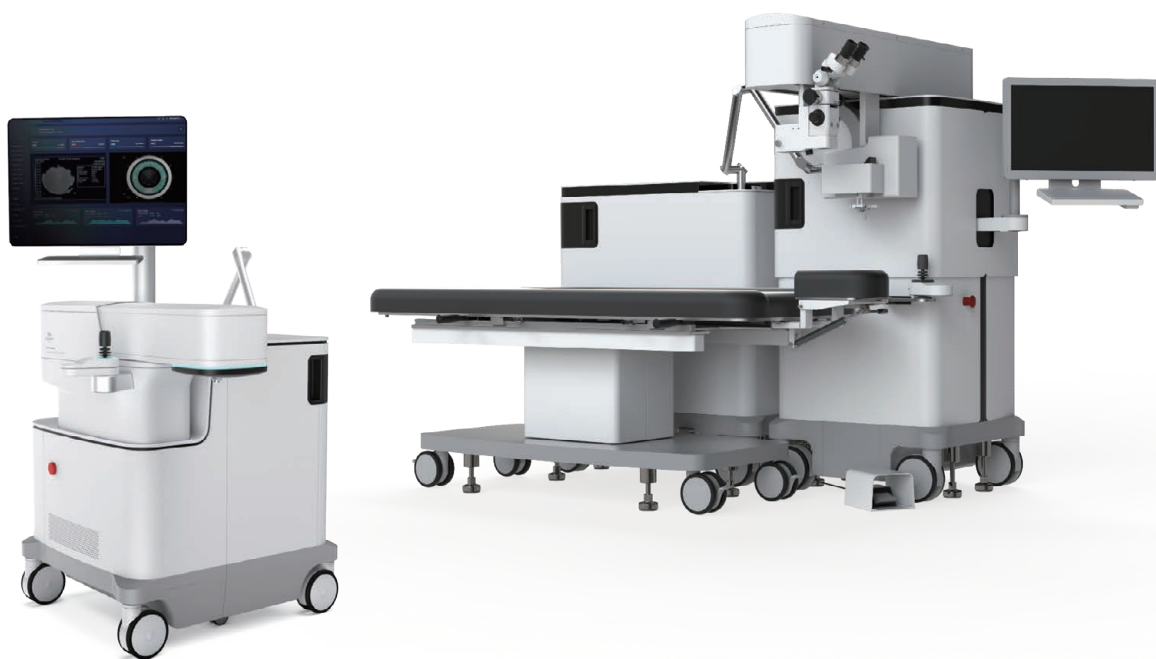
## VERSATILITY

### EXCELSIUS Ophthalmic Workstation

The **MICRON M7** Excimer Laser is designed to work in combination with our Femton F1 Femtosecond Laser as a refractive workstation. This enhances the scope of applications from refractive surface ablation techniques such as PRK all the way to Femto Laser Assisted Cataract Surgery (planned).

The large working space further enables the use of already present Femtosecond Lasers.

Please contact us for a current list of **MICRON M7** compatible Femtosecond Lasers.



Our commitment extends beyond engineering—it is a promise to empower surgeons with tools that define the leading edge of vision correction. We invite you to join us on this journey toward perfection. Contact us at [marketing@excelsius-medical.com](mailto:marketing@excelsius-medical.com)



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## SPECIFICATIONS

### MICRON M7 EXCIMER LASER

|                 |  |
|-----------------|--|
| Repetition Rate | 800 Hz   |
| Spot Size       | 0.5mm <sup>2</sup> (0.75mmx0.65mm)±10%(effective size)   |
| Energy Density  | 90~180 mJ / cm <sup>2</sup> at the Cornea  |
| Pulse Energy    | <1 mJ at the Cornea  |
| Ablation Method | Flying Sopt Scanning, Fractional Ablation  |
| Pulse Width     | 4~8 ns   |
| Cooling         | Air Cooler   |
| Input Voltage   | 230 VAC, 50/60 HZ ± 10%  |
| Input Current   | 7A (max)   |
| Dimensions      | Tower Box / Laser Box : 1045*1191*1486mm / 932*702*1040mm (Length*Width*Height)<br>Tower Box / Laser Box : 170 kg / 200 kg |

#### Correction Range \*

|             |                 |
|-------------|-----------------|
| Myopia      | -0.25D ~ -12.0D |
| Hyperopia   | +0.25D ~ +6.0D  |
| Astigmatism | -6.0D ~ +6.0D   |
| Presbyopia  | +0.5D ~ +3.5D   |

#### Ablation Area \*

|             |   |
|-------------|---|
| Myopia      | 5.0 – 8.0mm Optical Zone, 6.2-9.2mm Transition Zone |
| Hyperopia   | 5.0 – 8.0mm Optical Zone, 6.7-9.7mm Transition Zone |
| Astigmatism | 5.0 – 8.0mm Optical Zone, 6.7-9.9mm Transition Zone |
| Presbyopia  | 5.0 – 8.0mm Optical Zone, 6.3-9.3mm Transition Zone |

\* Note: The actual correction limit and ablation area are determined by the individual patient factors such as central corneal thickness, pupil size etc

#### Eye Tracking

|                  |               |
|------------------|---------------|
| Frequency        | 800 - 1000 Hz |
| Response time    | < 2 ms        |
| Pupil size range | 2 – 6 mm      |

#### Treatment Methods

LASIK, PRK, Trans-epithelial, PTK, Presbyopia, Topography Guided Treatment (optional)

|                   |   |
|-------------------|---|
| Therapeutic Laser | ArF Excimer Laser, 193nm, < 3 W, Class 4  |
| Line Laser        | Red Diode Laser, 652 nm, < 1mW, Class 2   |
| Fixation Laser    | Green Diode Laser, 532 nm, < 1mW, Class 2 |

