



RI
Hardware



The definitive micromanipulator



| Integra 3™

The world's most advanced micromanipulation system

*Integra 3™
Inspired
Intelligent
Indispensable*

No Cold Spots

Thermosafe™ maintains sample temperature with a gentle stream of warm air under the Petri dish

Practical

Motion sensor LED light underneath the stage for improved visibility when changing objectives

Integrated

Bigger built-in mechanical XY stage and controllers with easy access buttons and touch screen space

Super-fast

Improved rapid micropipette set-up with one-step angle adjustment

Safe

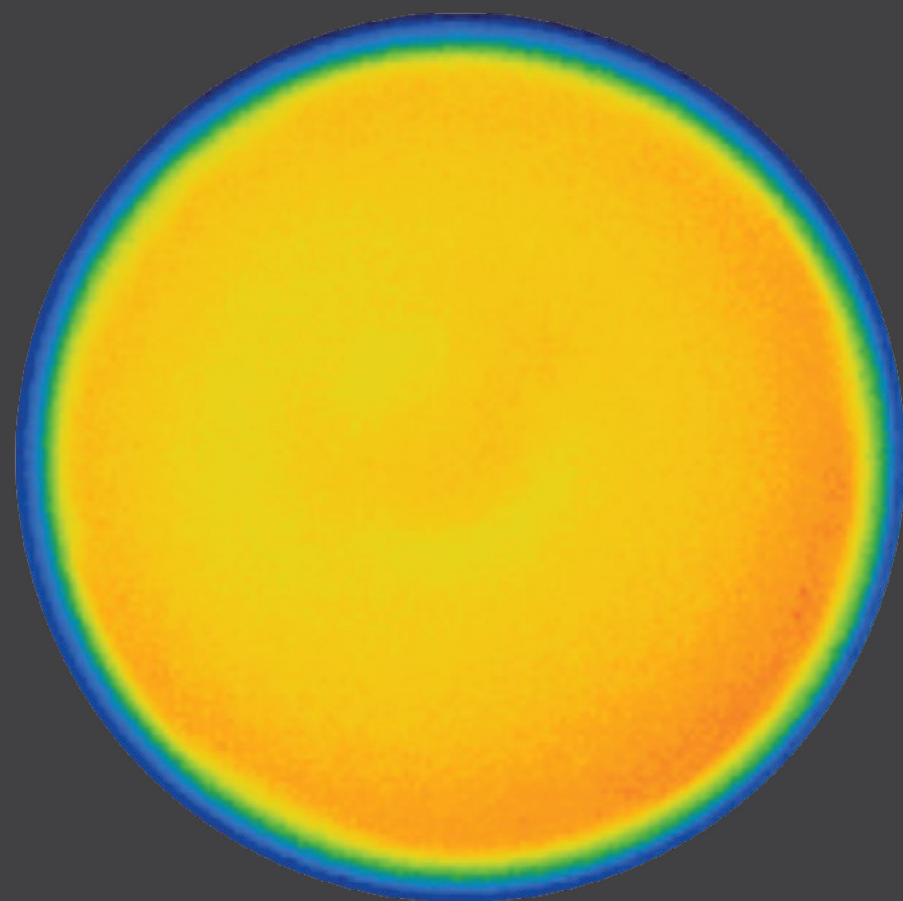
Stage temperature control status indicator light and alarm monitors every second of the process

Accurate

New extra fine XY mechanism for smooth and precise movement of the stage

43.0°C
43
42
41
40
39
38
37
36
35
34
33
32
31
30
29
28.0°C

THERMAL IMAGES TAKEN WITH 40X OBJECTIVE IN PLACE ON AN INVERTED MICROSCOPE



Ultimate Thermal Control

Thermal image of dish surface when placed on heated metal plate with Thermosafe™



Integra 3™

Featuring

Thermosafe™

Ultimate Thermal Control for Integra 3™

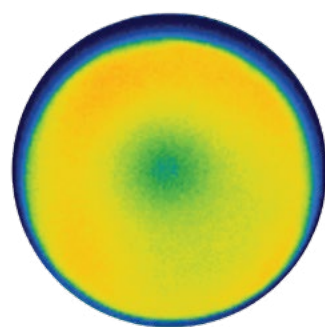
Designed for making life

Every detail of the Integra 3™ is geared towards one goal – to ensure you create the best possible conditions for ICSI and sample manipulation. One feature that makes this possible is our new and world-leading Thermosafe™ warm-air technology.

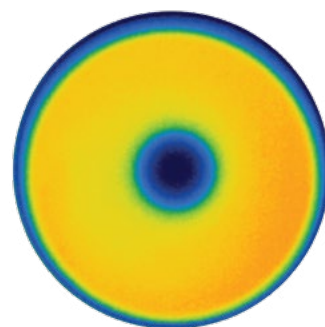
Put simply, this is an integral heating system that helps to keep samples at the optimum temperature. It emits warm air towards the Petri dish precisely and uniformly. The result of this is a fail-safe guarantee, with no more cold spots, no more hot spots and no more ambiguity. There is also a stage temperature health indicator light to reassure you that the integrated heated stage is functioning correctly.

Comparison with other systems

Thermal images, above and below, display the cooling effect of the objective in the centre of the dish with and without Thermosafe™



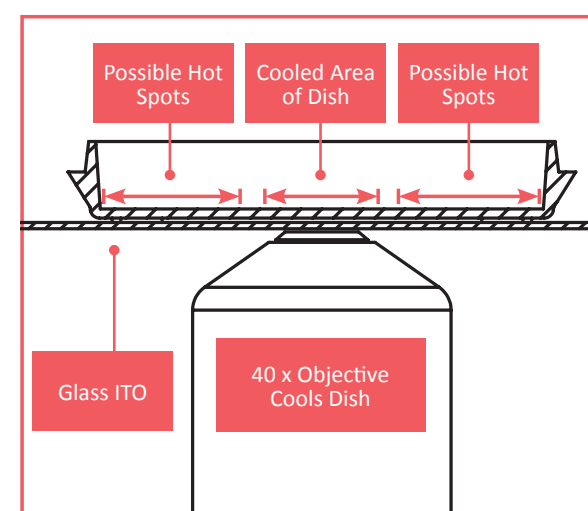
Dish surface when placed on market leading glass ITO **without Thermosafe™**



Dish surface when placed on heated metal plate **without Thermosafe™**

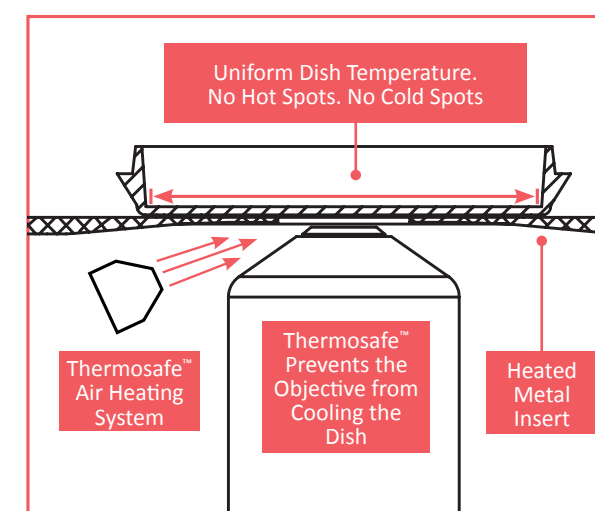
Without Thermosafe™

Market leading glass ITO insert with objective



With Thermosafe™

RI heated metal insert with Thermosafe™ air heating system with objective





Integra 3™



Integra 3™ takes micromanipulation to new heights

You push the boundaries. We try to remove them. Together, we're a pretty good team because we both believe in a pioneering approach. Integra 3™ is the latest evidence of our relentless desire at RI to maximise your expertise and make your day go as smoothly and successfully as possible.

Temperature is critical, but time is also crucial. Integra 3™ is ultra-responsive and effortlessly smooth, so it's quick and easy to use, thanks to RI's advanced mechanical design. You can change micropipettes in seconds which can transform the efficiency of your lab overnight.

We have increased the size of the integrated heated stage by 40% but kept the footprint to a minimum to keep your work area uncluttered.

More giant steps in the world of micromanipulation

We've added a whole spectrum of other functions and features that improve on our previous model, the Integra Ti™. You'll find they all add up to making the Integra 3™ the most intuitive and natural micromanipulation system the world has ever known.

Motion-triggered LED light

This shines up underneath the stage as soon as it sees your hand, to help you see when changing objectives.

Colour touch screen

A 3.5 inch touch screen display can check temperature, track time with a stopwatch and count the number of injections done. The electronic height gauges track the vertical movement of the fine controller.

Precise and intuitive control

When you perform ART micromanipulation procedures, accuracy is paramount. Integra 3™ offers the finest possible movement on the XYM stage and fine and coarse levers, centring knobs and a choice of oil or air syringes for the control of specimens.



Integra 3™ Touch Screen



SAS-SE Air Syringe

SOS Oil Syringe

SAS Air Syringe

Precise and Intuitive Control

Quick Pipette Set-up

Motion Triggered LED Light

Shortcut Functions

Shortcut video and images

If you need to keep track of samples or procedures, just hit the shortcut buttons to film or photograph any stage of the process. There's a stopwatch to keep track of timings too.

RI Viewer™ software

You can use the Integra 3™ as a stand-alone machine, or if it's connected to a computer, we can supply the RI Viewer™ software. With RI Viewer™ you can use the shortcut keys and sync up with Saturn™ laser and IMSI systems. Enjoy razor-sharp full screen imaging from the microscope, with digital magnification and a modern, clean user interface. It also offers line measurement tools and a built in simulator for training and demonstration purposes.

Syringes

The Integra 3™ includes two of our SAS air syringes as standard. These syringes offer superb control and eliminate the need for oil. Also available is the SAS-SE for superfine air control or our SOS oil syringe with a quick fill feature for minimum set-up time.



Integra 3™

Specifications

Great British Biotech Quality, since 1962

The Integra 3™ is very proudly built at our high-tech factory in the South West of Britain. We've made thousands of micromanipulators since the early sixties, each one assembled under the dutiful eye of the designers who developed them.

Our commitment to quality, durability and reliability has been there since day one. This is why our Integra™ has proven to be the micromanipulator of choice for ART clinics worldwide.

Microscope Compatibility

Nikon

TMD, D200 / 300
TE2000, TE200 / 300, Ti

Leica

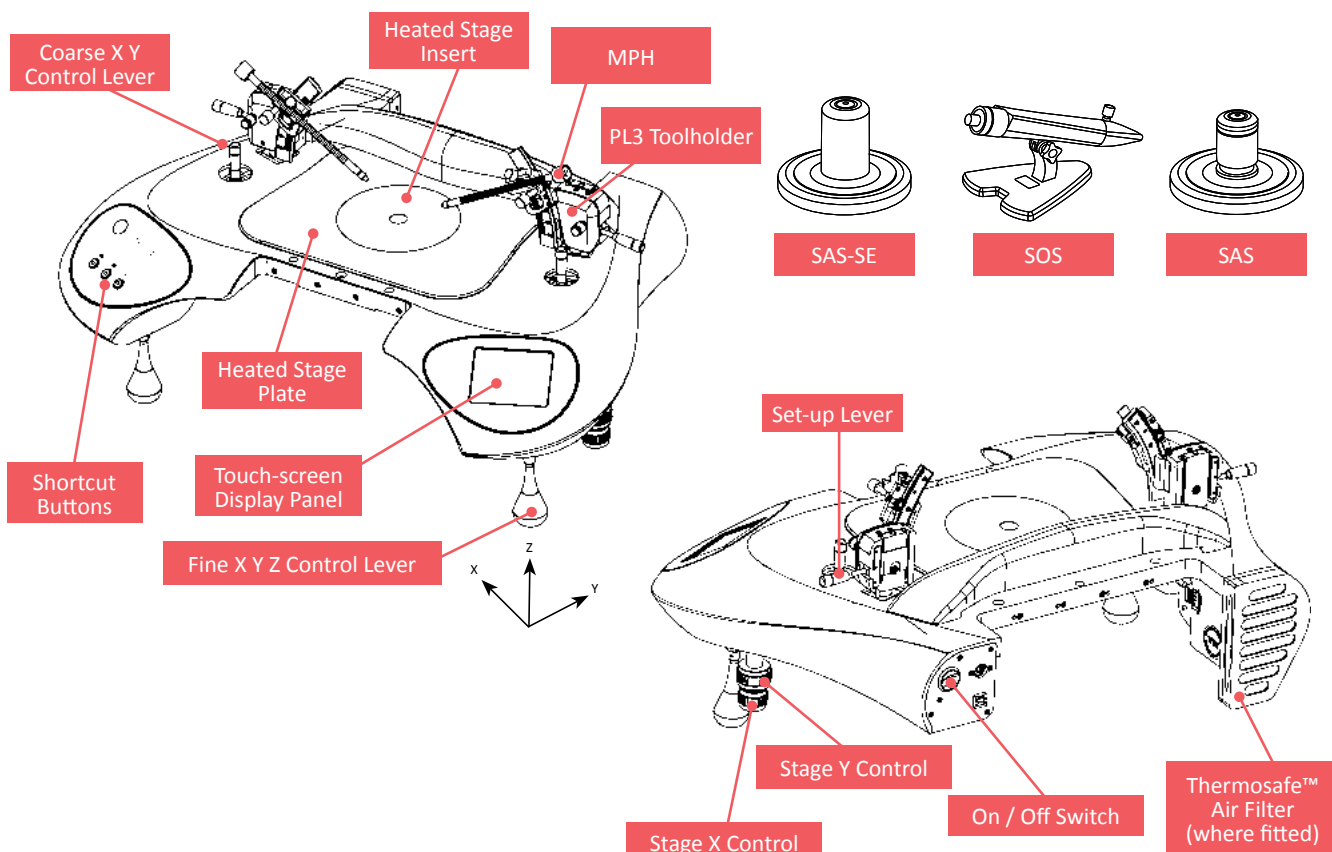
DMIRB, DMI3000B / 4000B / 6000B
DMIL

Olympus

IMT2, IX50 / 70,
IX51 / 71 / 81, IX53 / 73 / 83

Zeiss

Axiovert 40 / 100 / 200
Observer, Axiovert A1



Manipulators Fine Control

X, Y and Z movement from one lever
(X = side to side, Y = front to back, Z = up and down)
Sub-micron resolution
1.0mm Adjustable X and Y travel, 5mm Z travel

Manipulators Coarse Control

X and Y movement, 10 micron resolution, 4mm X and Y travel

Toolholders

Fast pipette location
Pipette angle adjustment - 16 to 40 degrees

Heating System

Thermosafe Air Heating System with:
Heated Metal Insert: 25mm (standard)
16mm (optional)
ITO Heated Glass Insert (optional)

Temperature Controller

Accuracy: better than $\pm 0.1^{\circ}\text{C}$ when calibrated against known reference
Resolution: 0.1°C

Displays

LCD touch screen displays for temperature control

Connectivity

USB Type B socket for connection to PC running RI Viewer™ software. Refer to software manual for further information
Connected PC to be compliant with IEC 60950-1

XY stage

Aluminium heated stage plate
40mm travel in X and Y, 28mm per turn

Syringes

Choice of SAS (air), SAS-SE (air) and SOS (oil)

Weight

Maximum weight of microscope mounted components
(excluding front and rear adaptors): 10.4kg
Actual weight is configuration dependent

Dimensions

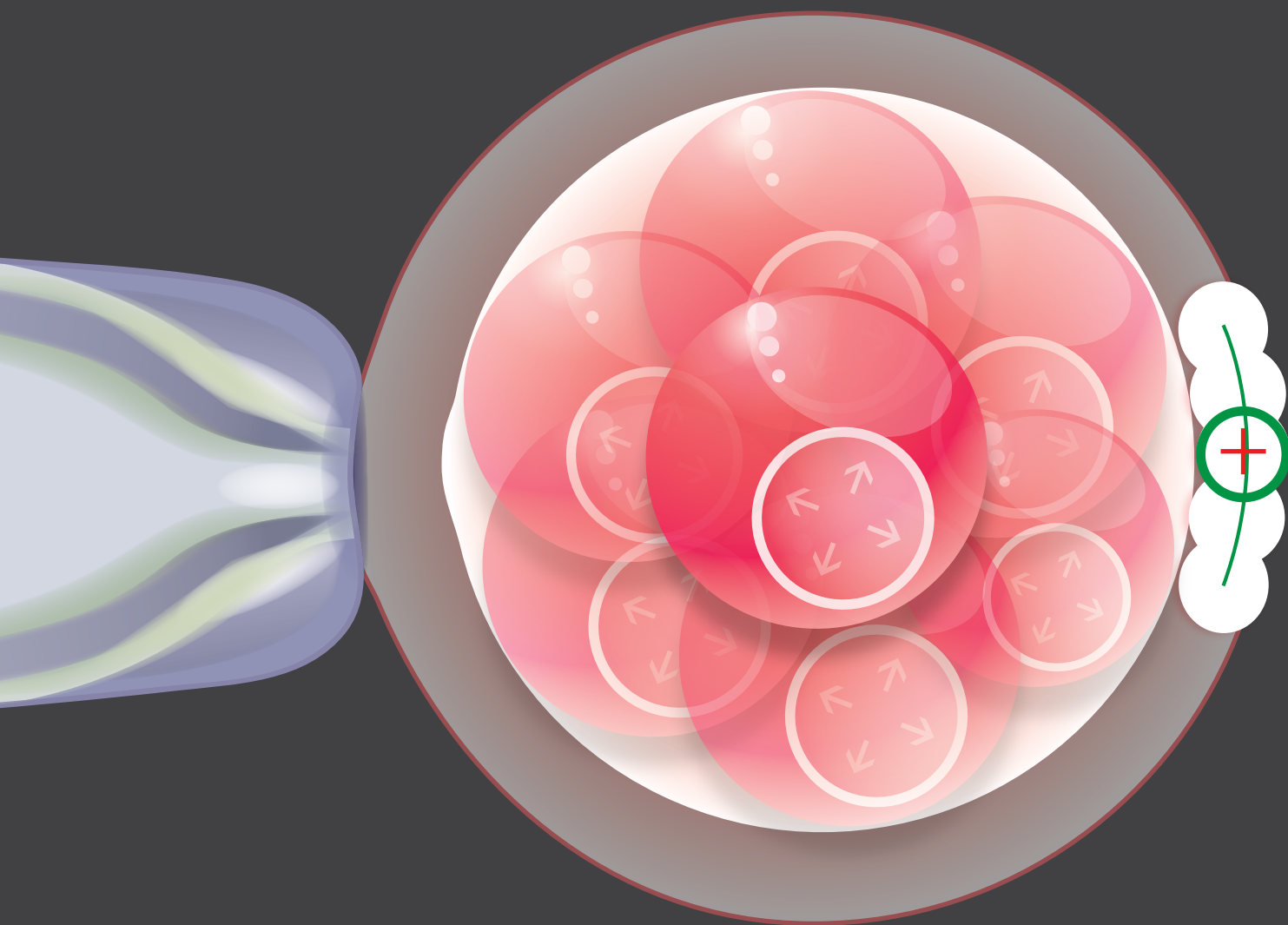
Footprint (not including microscope): width 56cm, depth 38cm

Power supply

Input: 100-240VAC, 50-60Hz, Max. 1.8A, Class I
Output: 12VDC, Min. 11A (132W)

Operating Range

Temperature: 15°C (59°F) to 40°C (104°F)
Humidity: 15% to 85% RH (non condensing)



Saturn 5™ Lasers

Fixed and Directional Laser Systems

*“The moveable
Saturn™ laser
means I can ablate
the zona exactly
where I want to,
without having to
move the embryo”*

Samantha Knight,
SPIRE London Fertility Clinic, UK

Precise

Sub-micron accuracy and unique computer controlled laser with guaranteed laser alignment

Curved Biopsy Mode

Biopsy Mode allows accurate laser drilling along a drawn straight or curved line

Easy to Use

Intuitive RI Viewer™ software with streamlined user interface. An optional programmable foot pedal controls software and laser functions

Rapid

Faster than ever directional laser increases functionality and decreases procedure times

Safest Power

Lowest laser pulse times for minimal energy near critical cells. Exclusion Zone™ feature ensures cell safety

Multi-Pulse Mode

Rapid fire options



Saturn 5™ Lasers

Faster Biopsies

Sub-micron Accuracy

Safest Laser on the Market

Intuitive Software

Faster biopsies

The Saturn 5™ Biopsy Mode is helping you to advance improvements in biopsy methods; potentially reducing procedure time, and lowering the incidence of blastocyst collapse and the need to mechanically tear off cells¹.

Using the Biopsy Mode, you can draw a straight or curved line along the sample and then select the number and size of the holes on it, then simply “fire”. The laser will ablate exactly along the chosen path. It means you no longer need to move the holding pipette at all. Indeed, for assisted hatching a holding pipette is not required. It is that easy.

The Saturn 5™ Biopsy Mode is quickly proving to be an essential tool in the practice of biopsying across the world.

¹Lloyd S, Doshi A, Harper J. Application note. A new method of biopsying TE cells using the latest Saturn 5 Active™ Laser System, offers several potential ways to improve your procedures - Available on request.

²Chatzimeletiou, K., Picton, H.M & Handyside, A.H., 2001. Use of non-contact, infrared laser for zona drilling of mouse embryos: assessment of immediate effects on blastomere viability. Reproductive biomedicine online, 2(3), p.178. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/12537793>.

Totally committed to embryo safety

Multiple safety features reassure you that the Saturn™ laser is the safest laser on the market. To keep your embryos safe, features include the Exclusion Zone™².

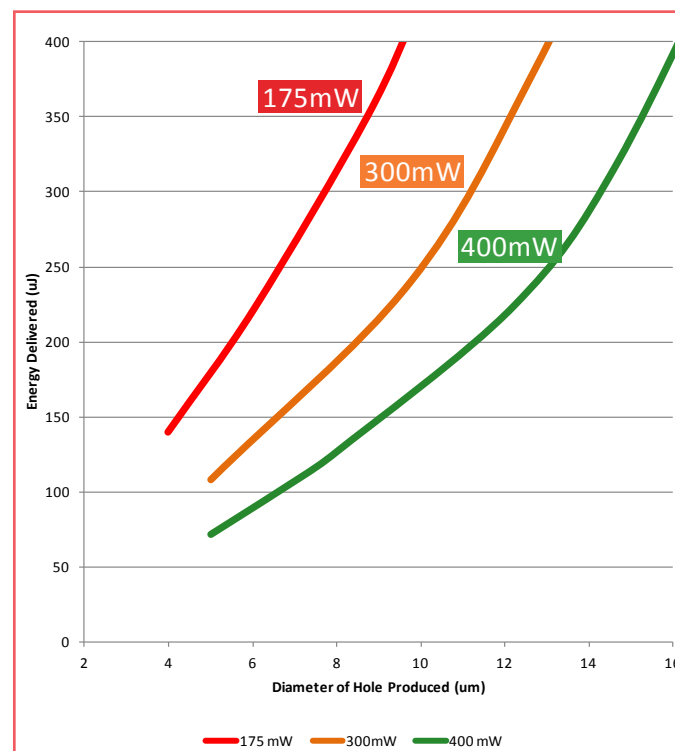
The Saturn™ employs a higher laser power to apply less total energy to make a specified hole size, in comparison to lower power laser systems³.

Always spot-on

As Saturn 5™’s pilot laser travels down the same fibre optic path as the ablation laser, it guarantees consistent positioning. You can calibrate and verify hole size and firing position with sub-micron accuracy simply and quickly, leaving more time for your procedures.

Intuitive software as standard

Energy delivered vs. hole diameter³



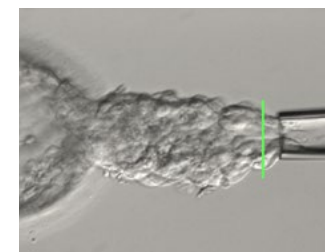
³RI White Paper – “A comparison of different power levels used by laser systems in the IVF laboratory” – Available upon request.

⁴The applicability of procedures is dependent on the regulations of the country into which the device is sold.

⁵In the USA, FDA cleared for clinical use for Laser Assisted Hatching (LAH) only.

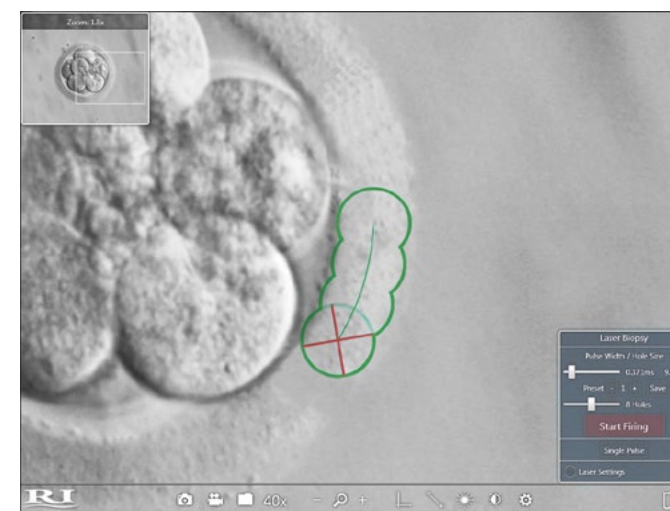


Directional Laser Target



Blastocyst Biopsy

Biopsy Mode allows ablation along a drawn curved line



Biopsy Mode

In addition to its intuitive use and safety assurances, the new Saturn 5™ features class-leading software, RI Viewer™. The software offers uncluttered full screen imaging from the microscope, digital magnification and a modern, clean user interface. RI Viewer™ also offers a recording function, line measurement tools which are visible on-screen and are printable, plus a built-in laser simulator for training and demonstration purposes. RI Viewer™ is available in a range of languages.

Applications⁴

For **Blastocyst/Trophectoderm Biopsy**, the Saturn 5 Active™ is unparalleled in its ease of use. The directional laser allows the user to make multiple ablations across the trophectoderm cells without needing to move the blastocyst. This gives the user superb accuracy, safety and incredible speed.

For **Blastomere Biopsy, Polar Body Biopsy** and **Blastocyst Collapsing (for vitrification)**, the Saturn 5 Active™ directional laser allows the embryo to stay in the desired position and focus so that ablations can be made wherever required without additional manipulation. Our unique Biopsy Mode also allows safe multi-pulse drilling along a predetermined line.

For **Assisted Hatching**, the directional laser means that accurate ablations can be made without the need to hold the embryo, making it very quick and accurate, with no additional consumable costs.

Using Saturn 5 Active™, you will find these procedures are almost effortless and can be performed quickly and accurately. These procedures can require difficult embryo manipulation when performed using fixed lasers. Using a Saturn 5 Active™ has clear advantages to the welfare of the embryo.

Saturn 5™ Laser Systems are Class 1 laser products as defined by international laser safety standards. They are CE-marked and FDA cleared⁵.

As the only moveable laser for ART, Saturn™ lasers are spearheading a revolution in hatching and biopsy techniques in labs all over the world.



Saturn 5™ Lasers

Specifications

Microscope Compatibility

Nikon

TMD, D200/300
TE200/300, TE2000, Ti

Leica

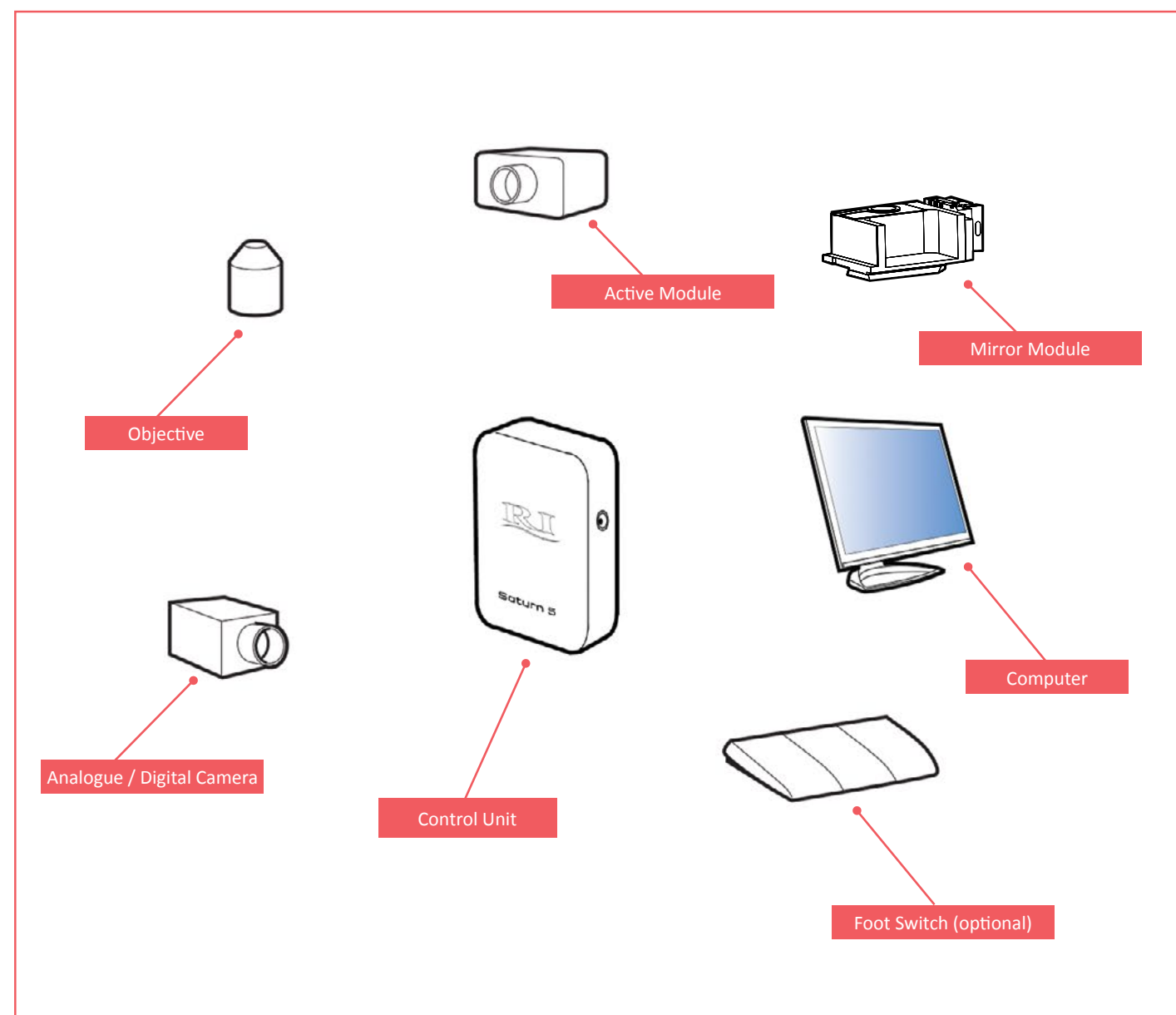
DMIRB, DMI3000B/4000B/6000B
DMIL

Olympus

IMT2, IX50/70,
IX51/71/81, IX53/73/83

Zeiss

Axiovert 40/100/200,
Axio Observer



Microscope Compatibility	Nikon: TMD, D200/300, TE200/300, TE2000, Ti Leica: DMIRB, DMI3000B/4000B/6000B DMIL Olympus: IMT2, IX50/70, IX51/71/81, IX53/73/83 Zeiss: Axiovert 40/100/200, Axio Observer
Pilot Laser	630-650nm spot targeting solid state diode laser - red pilot beam guarantees the position of the invisible ablation laser
40x Objective	Custom designed objective for optimum laser transmission, crystal clear imaging and minimal laser pulse times. Tested and proven not to exhibit astigmatism with Saturn 5™ Laser Systems
Ablation Laser	1480nm / 400mW solid state diode laser. Pulse length range 0.001-2.0ms / 1-2000 µs Class 1 laser product (IEC 60825-1:2007) Tested and proven not to exhibit thermal lensing
Laser Unit Dimensions (WxDxH)	220mm x 180mm x 34mm
CRi Oosight™ Compatibility	Compatible with CRi Oosight™ and SpindleView™ systems
Operation Software	RI Viewer™ imaging software included – with digital laser targeting
PC System Requirements	Operating systems: Windows 8, Windows 7, Windows Vista, Windows XP
Mains Input	100-240VAC, 50-60Hz



RI IMSI™

Clinical IMSI

The RI IMSI™ solution allows morphological screening of sperm cells at very high magnification and in real time. Studies suggest that this can lead to higher pregnancy rates^{1,2}

Fast

Uses 60x air objective with larger field of view than traditional IMSI, resulting in much quicker procedure times

Quality Imaging

Up to 7000x magnification with high contrast and high resolution

Speed and affordability are important to you and with this in mind RI has developed a carefully chosen package for Intracytoplasmic Morphologically-selected Sperm Injection (IMSI) for routine clinical use.

Practicality first

Offering the perfect compromise between image quality and ease of use, RI IMSI™ is designed for real lab conditions. With the RI set-up you can perform IMSI with sufficient image clarity to detect large or numerous vacuoles and the morphological details necessary to select the sperm. The set-up means you can use plastic Petri dishes and dry objectives, avoiding the inconvenience and expense of traditional IMSI, to ensure fast and efficient use of the technique.

¹Bartoov, B et al, 2002. Real-time fine morphology of motile human sperm cells is associated with IVF-ICSI outcome, Journal of Andrology, Vol. 23, No. 1, January/February 2002

²Cassuto, N et al, 2009. A new real-time morphology classification for human spermatozoa: a link for fertilization and improved embryo quality, Fertility and Sterility, Vol. 92, No. 5, November 2009

High tech solutions

RI IMSI™ includes a high-sensitivity camera, medical-grade monitor and versatile imaging software. Working with Modulation Optics Inc., RI provides a unique, highly sensitive optical system with a 60x objective ensuring a high-resolution source image. The monitor offers colour depth and accuracy superior to standard PC monitors, and is perfect for accurately reproducing the subtle details in moving sperm images.

The camera's large sensor has high-sensitivity pixels for bright, high-contrast images. The pixel count is a perfect match for the resolution of the optics, and allows smooth video at 15 frames per second.

RI IMSI™ is supplied with the easy to use RI Viewer™ software – the only application you need for ICSI and IMSI. Capture, record, annotate and measure, with intuitive zoom and pan.

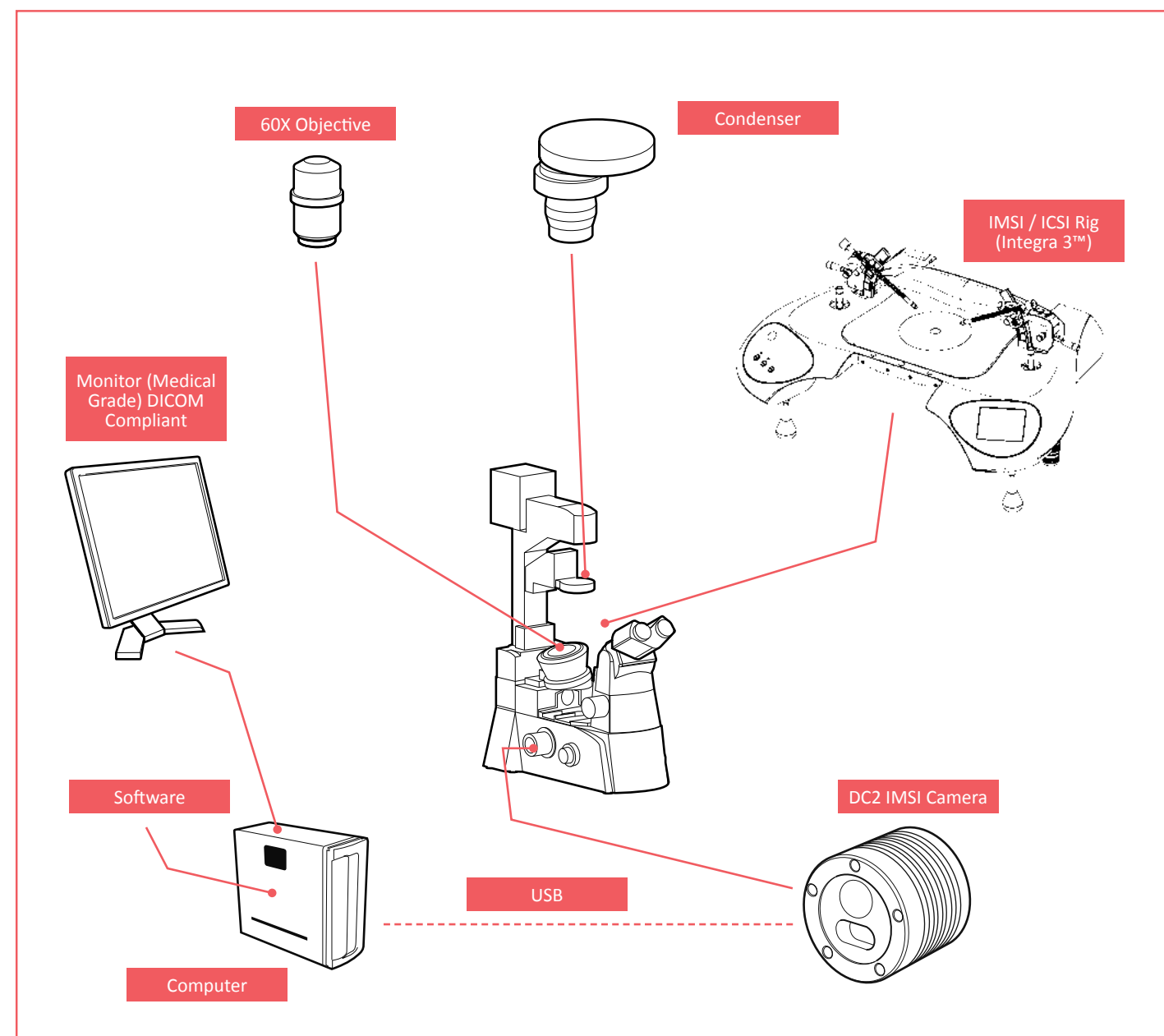
RI IMSI™ Microscope Compatibility

Nikon

Leica

Olympus

Zeiss



Objective	RI - HMC® 60x/0.7 or 63x/0.7 (Depending on Microscope)
Condenser	RI - HMC® WD45mm, NA-0.6 (Depending on Microscope)
Contrast	RI - HMC® Hoffmann Modulation Contrast System
DC2 Digital Camera	High sensitivity, 1.4MP, 2/3" colour CCD
Monitor	21" 1600 x 1200, DICOM compliant medical imaging monitor
Software	Imaging software included
Magnification	Up to 7000x without loss of resolution

Quality Assurance

Device Approval

All RI medical devices carry the CE mark.

The CE mark shows that RI's products comply with the Essential Safety Requirements of the European Medical Device Directive (93/42/EEC) as amended.

Many of our medical devices also have USA FDA market clearance, Health Canada medical device licenses and certification in Taiwan and China.

We are continuously working to expand our registration with the relevant medical device authorities across the world.

Quality Control

Within RI a dedication to quality permeates all that we do.

Quality Management System for Medical Devices - ISO 13485

All RI products are designed, developed and manufactured within an ISO 13485 environment.

All materials and packaging used within the manufacturing process of RI medical devices are comprehensively tracked and logged to ensure full traceability.

We hold certification to ISO9001, ISO13485 (including CMDCAS and FDA GMP) and Medical Device Directive 93/42/EEC as amended. Continual evaluation of our products has led to the creation of the finest range of devices on the market that clinics aspire to own and use.

For further information, please refer to our website.

