



**VIP treatment** for cultured embryos in IVF

# Miri®

Multi-room Incubator for IVF



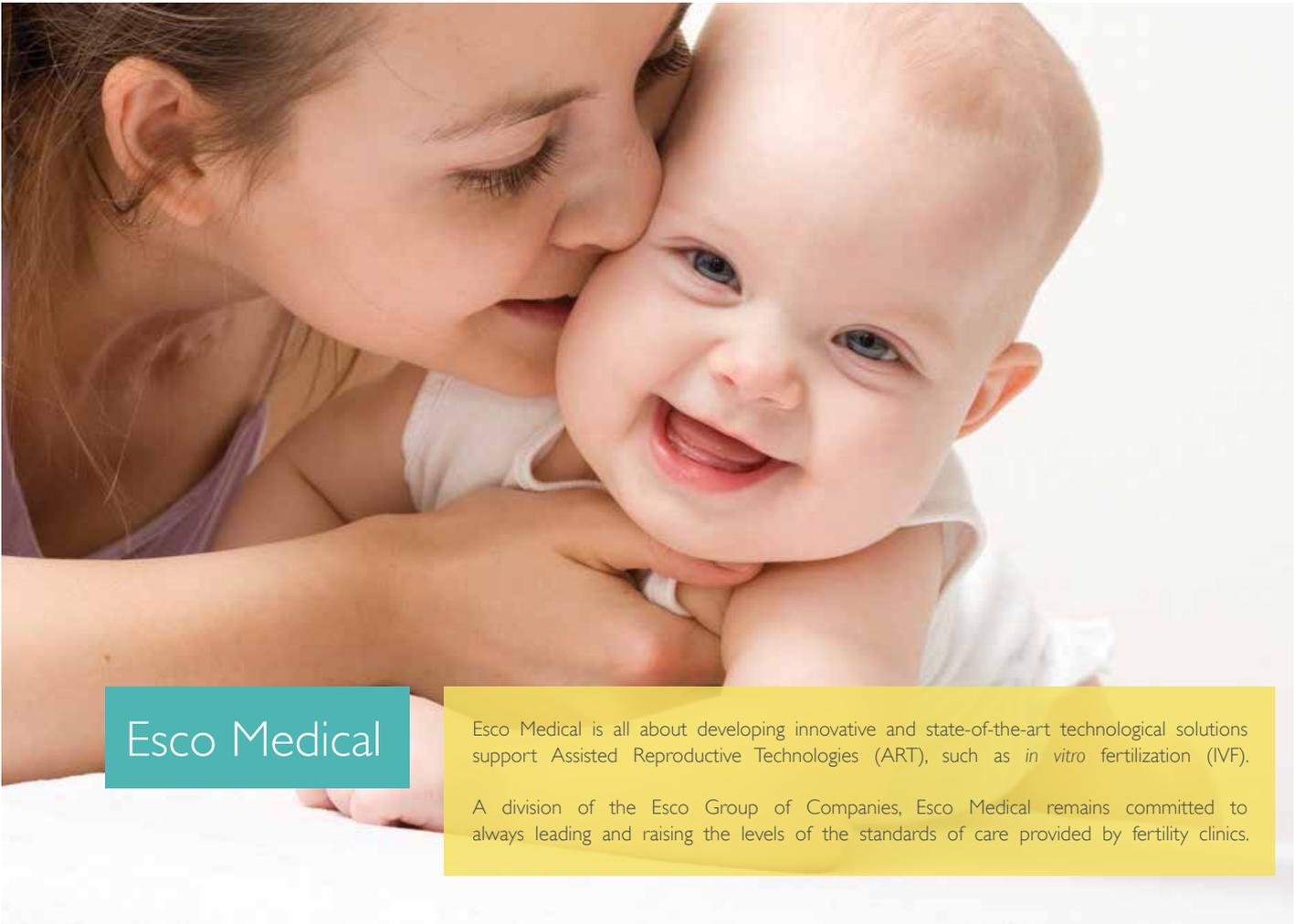
Designed in Denmark



Made in the E.U.

**EU MDD Class IIa**  
Medical Device

tested and certified



Esco Medical

Esco Medical is all about developing innovative and state-of-the-art technological solutions support Assisted Reproductive Technologies (ART), such as *in vitro* fertilization (IVF).  
A division of the Esco Group of Companies, Esco Medical remains committed to always leading and raising the levels of the standards of care provided by fertility clinics.

“When controlled environment solutions are important to you, depend on Esco equipment for proven safety and performance”



**Esco Medical** the Better Choice

A range of innovative products for the IVF laboratory available worldwide



# Miri® Multi-room Incubator for IVF



## A ground-breaking design for IVF

Designed for the fertility laboratory, the new Escó Miri delivers features that not only make sense, but that deliver top performance making it the perfect choice for routine incubation of embryos during IVF.

### 6 chambers

Advanced temperature regulation

### Embryo-Safe

HEPA/VOC filtered air  
UV sterilization  
MEA-tested

### CO<sub>2</sub>+N<sub>2</sub> mixing

Pre-mixed gas is not needed

### Certified Medical Device

IEC/EN 60601-1 (3rd Edition)  
EU MDD Class IIa Medical Device

## i Maximize embryo growth potential by providing “VIP treatment”



Oxygen range: 4.9-20%  
Carbon dioxide range: 1.9-10%  
Temperature: Ambient to 40°C  
Gas recovery: 3 minutes  
Temperature recovery: 1 minute

### Common Stressors:

- Temperature fluctuations
- Gas concentration fluctuations
- Non-optimal pH
- Volatile Organic Compounds (VOCs)

### Oxygen isn't always a good thing

While oxygen (O<sub>2</sub>) is necessary for normal aerobic metabolism, it is a double-edged sword as it can harm the developing embryo through oxidative damage. Recent studies highlight the benefit of having suppressed oxygen levels when incubating human embryos reflecting the natural low oxygen conditions in the womb.

### Shhh... Do not disturb

The Miri's overall design provides cultured embryos a minimum-stress environment. The 6-chamber format prevents cross-contamination while ULPA/VOC filtration cleans the airstream. The small chamber volumes and direct heat regulation further translate to faster temperature and gas recovery.

### The Silent Embryo Hypothesis

The Miri works on the principle of the Silent Embryo Hypothesis. This states that the hallmark of an embryo with maximum developmental potential is low metabolism. That is, a compromised embryo acquires an elevated metabolism to respond to effects of stress or other developmental issues, for example: DNA damage repair, and so on.

“Hand in hand to provide only the best in embryo incubation”



## An advanced temperature regulation system for routine/long-term embryo incubation at your fingertips

At the heart of any incubator is its temperature regulation and the Miri boasts one of the most advanced systems available for IVF.

The Miri's 6 chambers are completely independent from each other. This is ideal because any disruption (e.g., temperature drop after opening the lid) has zero impact on the rest of the system. Furthermore, calibration is so much simpler because there is no crossover of heat from adjacent chambers.

Temperature regulation is thus completely independent per chamber. The Miri features a total of 12 temperature controlled points, that is 2 points for every chamber: one on the bottom and another on the heated lid. The heated lid is another great feature of the Miri as it prevents condensation and enhances temperature uniformity across cultured dishes.



### Heated Lid

- Prevents condensation.
- Enhances temperature regulation/recovery.
- Excellent uniformity between chamber top and bottom.

### Heated Bottom

- Provides direct heat to the cultures through the heating optimization plates.

### Control Panel Buttons

- The simple 4-button control panel allows for easy and intuitive operation.

### Mute Button

- Temporarily mutes alarm message and sound for 5 minutes.

## FAST RECOVERY

There are many advantages to using benchtop multi-room incubators. One important benefit is the speed of recovering temperature and gas parameters after opening a chamber.

Miri temperature recovery: 1 minute

Miri gas composition recovery: 3 minutes

## THE LITTLE DETAILS COUNT



IVF practitioners deal with precious and fragile little things (embryos) and often, the little details make a big difference. The Miri has a large LED display that can be easily seen from a distance. Also, the glass lid tops, while acting as chamber insulators, can be written on a very useful feature for organization.

## HEATING OPTIMIZATION PLATES

Each chamber contains a heating optimization plate to facilitate heat transfer directly to the culture dishes.

- Has inserts to fit various dish sizes
- Removable for easy cleaning



# The Miri's reliable gas mixing system allows for gas phase flexibility

Do you prefer pure, pre-mixed, or just plain CO<sub>2</sub> control? The Miri's gas mixer gives total control over CO<sub>2</sub> and O<sub>2</sub> concentration levels while also giving flexibility over what gas input is desired. Moreover, the HEPA/VOC filter and UV sterilization ensure only the highest quality of air is circulated to the cultures.



## Stress-free validation of chamber parameters



Top row: 6 x PT1000 validation sensors

Bottom row: 6 gas sample ports

PT1000 temperature sensors are built-in, which are completely independent from the main circuitry. Gas sampling ports are likewise available for all 6 chambers.

## Pre-mixed gas is NOT required



Miri can accept pure gas (and even pre-mixed gas if desired).

The use of 100% CO<sub>2</sub> and 100% N<sub>2</sub> as input gas is much cheaper and easier to source than using pre-mixed gas.

## A suite of IVF-essential features



BNC connection for pH monitoring, USB communication port, and port for external alarm monitoring

The Miri can be connected to a PC for avail of data logging via the supplied software included. Connections to external alarm monitoring systems and pH measurements are also possible.

## High quality airstream via HEPA/VOC filter + UV



The filter module can easily be replaced once used up.

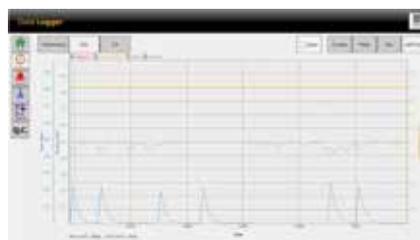
The gas in the Miri is continuously recirculated through a HEPA/VOC filter; 185-nm filtered UV-C light sterilizes the airstream before passing through the filter.

# Full-featured and user-friendly

Control panel, display, and data logging software



Complete parameters are displayed. Histories of any alarm events are logged.



The data-logger stores continuous performance data of the machine throughout its use. These can be viewed in graphs.



pH measuring can also be monitored and stored in the data logging software.



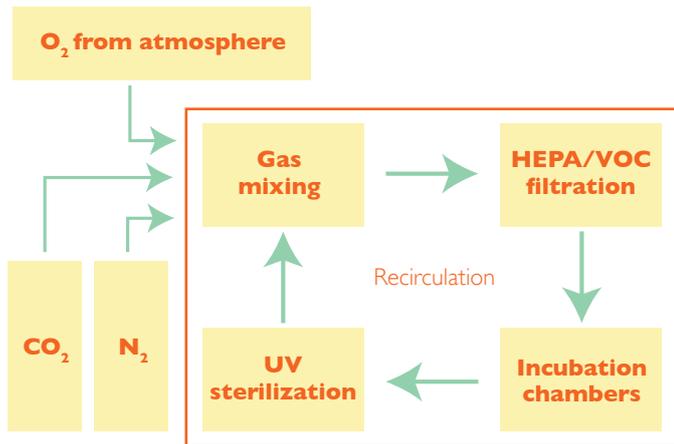
Conditions that put the Miri into alarm state are recorded. It is possible for the software to send email alerts as well.

The Miri can be connected to an easy-to-use, feature-packed data logging software installed on any ordinary PC and connected via USB.

Multiple machines can be connected and managed from a single computer. All real-time parameters of the machine can be conveniently viewed. These include the temperature of all monitored points (2 per chamber), gas input pressures, gas flow rates, current gas readings, and all set points.

All performance data of the machine are continuously logged and can be viewed in convenient graphs. Details of any alarm events, such as out-of-range parameters, are also stored for retrieval.

## Airflow Diagram



### Provide total control of the gas phase environment

The built-in gas mixer and the high-performance CO<sub>2</sub> (non-dispersive infrared) and O<sub>2</sub> (medical-grade MOX-1) sensors allow accurate control of gas phase composition in the chambers.

## Product features

- **Number of compartments**

6 completely separate heating chambers

- **Heating method**

Direct heat transfer via heated bottom.  
Also with heated lid and heating optimization plate

- **Total capacity**

Heating plates customized for several types of dishes, for example Falcon® or Nunc®  
24 x IVF 4-well dishes  
24 x Petri dishes Ø 60 mm  
48 x Petri dishes Ø 35 mm

- **Input gas**

100% O<sub>2</sub>, 100% N<sub>2</sub>  
(pre-mixed gas NOT required)

- **Simulated humidification**

- **HEPA/VOC filtered airstream**

YES

- **UV sterilized airstream**

YES, optional via 185nm filtered UV-C light

- **Data logging**

YES, optional via supplied software

- **Alarms**

YES, audible+visible, for out-of-range parameters temperature, gas concentration, and gas pressure (can be connected to external monitoring systems)

- **Stackable**

YES

## Ordering Information

ITEM CODE	DESCRIPTION
MRI-6A10	Esco Miri Multi-Room Incubator
MRA-1007	VOC/HEPA filter
MRA-1014	Stacking frame for 2 units



**MRA-1014** - Stacking frame for 2 units

## General Specification

### Miri® MULTI-ROOM INCUBATOR PRODUCT CODE: XQ-1(MRI-6A10)

Overall dimensions (WxDxH)	700 x 580 x 150 mm ( 27.6" x 22.9" x 6")
Power supply	115/230V, 50/60Hz
Power consumption	280 W
Temperature range	25 - 40°C
*Gas consumption (CO <sub>2</sub> )	< 2 L/h
**Gas consumption (N <sub>2</sub> )	< 12 L/h
CO <sub>2</sub> range	1.9 - 10%
O <sub>2</sub> range	20 - 5%
Input gas pressure (CO <sub>2</sub> )	0.6 bar
Input gas pressure (N <sub>2</sub> )	0.6 bar
Net Weight	35 kg (77.2 lbs)
Shipping Weight	40 kg (88.2 lbs)
Shipping Dimension	840 x 735 x 300mm (33.1" X 29" x 11.9")

\* Under normal condition (CO<sub>2</sub> set point reached at 5.0%, all lids closed)

\*\* Under normal condition (O<sub>2</sub> set point reached at 5.0%, all lids closed)

## Certification

IEC/EN 60601-1 (3<sup>rd</sup> Edition)

EU MDD Class IIa Medical Device



IEC/EN60601-1  
3rd Edition

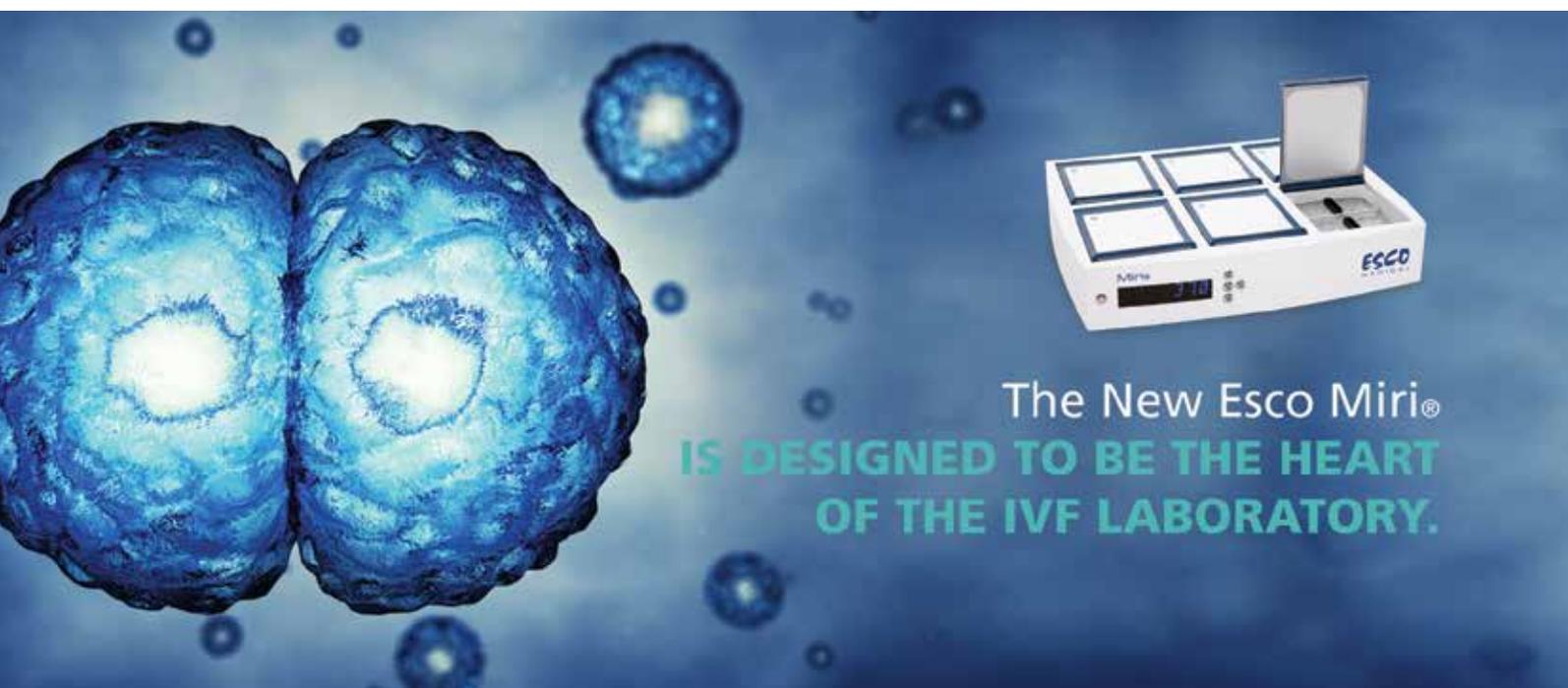
MDD Class IIa



Medical Devices



1609



The New Esco Miri®  
**IS DESIGNED TO BE THE HEART  
OF THE IVF LABORATORY.**

# GLOBAL NETWORK



 Global Offices  
 Distributors



**Esco Medical Product:**  
 ART Workstations  
 Upright CO<sub>2</sub> Incubators  
 Bench Top Incubators

*Infertility is viewed as a problem that has social, psychological, and economic impacts to the afflicted individuals and couples. It is a global concern that knows no race nor creed. It has been estimated that 1 in 6 couples would struggle with infertility at least once in their lifetime.*

*The vision of Esco Medical is to support Assisted Reproductive Technologies (ART), such as IVF, by developing practical and state-of-the-art technological solutions for improving clinical success rates and patient satisfaction. All Esco Medical products are designed with the IVF clinic in mind and developed with the Silent Embryo Hypothesis as a guiding principle. The Silent Embryo Hypothesis states that the less disturbed an embryo can remain, the better its developmental potential will be.*

*It is on these foundations that Esco Medical remains committed to providing world class ART, worldwide. At Esco Medical, life has begun.*



21 Changi South Street 1 • Singapore 486 777  
 Tel +65 6542 0833 • Fax +65 6542 6920  
 csis-medical@escoglobal.com • www.medical.escoglobal.com

