

for Embryo Culture Incubation



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About Esco



Welcome to Esco

Since the establishment of Esco in 1978, we never stopped developing, providing, and delivering innovative solutions. From one, we have progressed into four business units with a worldwide presence, namely Esco Scientific, Esco Healthcare, Esco Medical, and Esco Aster—remaining true to our tagline "World-class. Worldwide."

Last 2020, we shifted from Esco Group of Companies to *Esco Lifesciences Group*, carrying a new tagline "*Improving lives through science*". The transformation of the company name and brand signifies Esco's vigor in keeping up, responsive, and adaptive with the fastchanging world while keeping focused on its mission to deliver enabling technologies and provide service all over the world - and improve lives through science.

At Esco Medical, life has begun

Esco Medical is one of the divisions of the Esco Lifesciences Group, apart from Esco Scientific, Esco Healthcare and Esco Aster. Esco Medical provides innovative technological solutions for fertility clinics and laboratories.

The slightest deviation, usually considered as insignificant, often result in non-optimal conditions for embryo growth and lowered pregnancy success. In Esco, we understand that even the smallest details affect the *In Vitro* Fertilization process. Thus, Esco Medical's primary focus is to provide fertility technologies and solutions to help the world's leading IVF centers to improve, standardize and automate their processes in order to achieve better clinical outcomes and patient satisfaction.

Esco Medical is the leading manufacturer and innovator of high-quality equipment such as Time-Lapse Incubator, Multiroom Embryo Incubators, IVF Workstation, CO₂ Incubator, Anti-Vibration Table, and Gas Analyser. Most of our medical products are designed in Denmark and made in the EU.



About Embryo Culture

Embryo incubation is a crucial step in all In Vitro Fertilization (IVF) procedures. The process involves the development of embryos in culture dishes using a suitable media, in a specific incubator, through different stages such as fertilization, cleavage, and blastocyst.

IVF is an Assisted Reproductive Technology that requires incubators to provide a temporary environment for embryos before they are implanted back into the female. IVF incubators are designed to mimic the woman's uterine environment, which is essential for embryo development.

Therefore, IVF laboratories consider culture incubators as critical equipment as they provide a stable and suitable environment, reducing environmental stress to gametes.

The incubators control parameters such as carbon dioxide levels/pH, oxygen concentration, humidity/evaporation/media osmolality, and temperature, which affect embryo development. Esco Medical offers a range of incubator models suitable for the needs of IVF laboratories and clinics.

This catalogue will guide and inform you about Esco Medical's different incubators.





MIRI® Time-Lapse Incubator



MIRI® TL is a Time-Lapse incubator that monitors embryo development. The MIRI® TL, optimized for clinical and IVF procedures, is designed to support existing work and quality assurance routines. This value-added treatment provides the most unique incubation environment with the market's most secure and safest procedures. It lessens disturbance and minimizes stressful factors that may be introduced when taking the dishes out of the incubator. This incubation system also ensures predictability in the daily handling and currently offers the market's lowest cost of ownership.



Unique Incubation Environment

- Has independent multi-chamber system.
- · Gas recirculation through VOC/HEPA filters and UV light.
- Built-in gas mixer. Premixed gas is not required.



MIRI® TL6: 6 Individual chambers. MIRI® TL12: 12 Individual chambers. Gas recovery: less than three (3) minutes.*
Temperature recovery: less than one (1) minute.*

*When the lid has not been opened for more than 30 sec

Unprecedented Faster Recovery

- Excellent recovery time for both temperature and gas parameters.
- Opening one chamber will have no impact on the rest of the system.
- Heated upper lid and bottom plate for excellent temperature regulation and uniformity.



2 Temperature Mode Options:

• Single: Uniform setpoints for all 6 (six) or 12 (twelve) chambers. • Multi: Individual setpoints for each chamber

Sophisticated Annotation Tools

- Freedom to personalize instrument and parameter settings.
- Do a side-by-side comparison and compare actual timings to ideal.



Quality checking an easy breeze!

- Has 12 or 24 temperature sensors to ensure constant temperature stability.
- Independent PT1000 sensors and gas sample ports for external validation.
- Built-in pH measuring system.
- · Data logging system.

This equipment is a CE-marked device and is in conformity with the essential requirements of the medical devices EU regulation 2017/745.

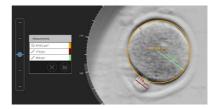


Embryo Analysis and Evaluation System

The MIRI® TL Viewer Software is a simple yet sophisticated information-providing tool that can help embryologists process the data generated. You can review, annotate and compare the morphokinetic parameters of each embryo to select or deselect embryos for transfer and export data for retrospective analysis.



Navigation through the stacked timeline is easy and intuitive as the revolver shows the videos of the 14 wells of one single CultureCoin®. You can play the individual videos, annotate and compare each single embryo. Shown on the image is a magnified view of embryo #8



Measurement tool

The user can now conduct precise measurement procedures to ensure the most optimal embryo development.

General Specifications

MIRI® TL Multiroom IVF Incubators

Specifications	TL6	TL12
Overall Dimensions (W x D x H)	805 x 590 x 375 mm (31.7 x 23.2 x 14.8")	950 x 685 x 375 mm (37.4 x 27.0 x 14.8")
Chamber Dimensions	120 x 90 x 26	5 mm (4.7 x 3.5 x 1")
Temperature Control Range	28.	7 - 41.0 °C
*Gas Consumption (CO ₂)		< 2 L/h
**Gas Consumption (N ₂)	< 5 L/h	
CO ₂ Control Range	2.9% - 9.9%	
O ₂ Control Range	2.0% - 20.0% 5.0% - 20.0%	
Input Gas Pressure	0.4 – 0.6 bar (5.80 – 8.70 PSI)	
Built-in Microscope	Zeiss 20x, objective has numerical aperture of 0.35, specialized for 635 nm illumination	
Embryo Illumination	0.064s per image, using 1W single red LED (635nm)	
Camera Resolution	1280 x 1024. Monochrome, 8-bit, IDS system	
Optics Tube Ratio	2.22 px/µm	
Imaging Focal Planes	5, 10 and 20 min intervals in 3, 5 and 7 focal planes	

^{*} Under normal condition (CO₂ setpoint reached at 6.0%, all lids closed).

Ordering Information

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ITEM CODE	MODEL CODE	DESCRIPTION
Unit		
2070091	MRI-TL-MN-6C-8	MIRI® Time-Lapse Incubator, Mini, 6 Chambers, 230 V, 50/60 Hz
2070092	MRI-TL-MN-6C-9	MIRI® Time-Lapse Incubator, Mini, 6 Chambers, 115 V, 50/60 Hz
2070100	MRI-TL-12C-8	MIRI® Time-Lapse Incubator, 12 Chambers, 230 V, 50/60 Hz
2070101	MRI-TL-12C-9	MIRI® Time-Lapse Incubator, 12 Chambers, 115 V, 50/60 Hz
MIRI® TL Viewer Software		
2070042	MRI-VIEWER	MIRI® Time-Lapse Viewer
1320095	MRI-SERVER	MIRI® Time-Lapse Server
Accessories		
1320011	MRA-1007	HEPA + VOC filter (to be replaced every 3 months)
1320088	MRI-CC	CultureCoin® for Time-Lapse of 14 embryos (25 pcs. per pack)
1320045	MRI-GA	MIRI® GA CO ₂ /O ₂ & Temperature Validation Unit, 115V/ 230V



CultureCoin® for MIRI® TL

- Holds up to 14 embryos with individual numbered wells (1-14)
- For single and separated culture where each embryo are cultured in its own environment
- Ergonomic design for easy handling and location of embryos
- Separate well for pH measurements
- Oxygen plasma treated for high wet-ability (hydroscopic)
- Packed in 1 dish pouches and delivered in boxes of 25 pcs.

General Specifications

Overall dimensions (Diameter x Height)	Ø 71 x 10 mm	
Empty weight	13.8 grams	
Material	Styrene Methyl Methacrylate (SMMA)	
Incubation Temperature range	28.7 – 40.0 °C	
Incubation CO ₂ range	1.9 – 10%	
Incubation O ₂ range	4.9 – 20.0%	
Sterilization method	d Gamma Irradiation	
Lifetime	2 years	
Biocompatibility Tests	Mouse Embryo Assay (MEA) test with thawed 1-cell mouse embryos. Acceptance criteria: at least 80% of embryos developed to the blastocyst stage. Limulus Amebocyte Lysate (LAL) test. Acceptance criteria: < 20 EU/device	

ITEM CODE	MODEL CODE	DESCRIPTION
1320088	MRI-CC	CultureCoin® for Time-Lapse of 14 embryos

^{**} Under normal condition (O2 setpoint reached at 5.0%, all lids closed).

Multiroom Incubator

MIRI® Incubation System

The Top-of-the-Line Features of the MIRI® Incubation System

• Heated Lid

• Completely Independent Chambers

• Direct Heat Transfer

A Complete Incubation Environment



MIRI® Multiroom Incubator

The MIRI® is a revolution, in form and functionality, of CO, incubators for *In Vitro* Fertilization (IVF). With 6 chambers, the MIRI® is a Multiroom Incubator that allows users to access their cultures in one chamber without affecting the neighbouring chambers. Thus, the harmful effects of fluctuations in temperature and gas caused by frequent incubator access are avoided. Built specifically to equip IVF laboratories and clinics to provide the best standard of care, it boasts a unique set of features that cannot be found elsewhere.

Key Features

Fast Recovery

- <1 minute temperature recovery.</p>
- <3 minutes gas recovery. *If the lid has not been opened for more than 30 sec
- Built-in pH meter

For accurate validation.

Solid Validation System

- Six (6) PT1000 sensors and Gas ports for validation outputs
- External Data Logging.
- · Alarm relay contact.

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This equipment is a CE-marked device and is in conformity with the essential requirements of the medical devices EU regulation 2017/745.

Supreme Capacity

• Total capacity of up to 48 standard culture dishes.

Excellent Gas System

- Separate CO, and O, regulation, expensive mixed gases not required!
- Air is continuously cleaned by VOC/HEPA filters, and UV light. (not applicable to MIRI® Humidity)

Stacking Frames



MRA-DRAW - MIRI® Stacking Frame for 2 units with a



MRA-1014 - Stacking Frame for 2 units

MIRI® II-12 Multiroom Incubator



The MIRI® II-12 is an incubator that provides unique features for every IVF laboratories and clinics. The chambers are specially designed to accommodate one patient ensuring personal space for each embryo. Having an excellent footprint, MIRI® II-12 is made to perfectly fit every IVF lab.

Independent Chambers

Each chamber is specially designed for one patient. Hence, there is no disturbance to other chambers even when a lid is opened/closed.

Excellent footprint

With its compact size, it can perfectly fit in every IVF Lab.

Low gas consumption

The built-in gas mixer and efficient recirculation system allows you to save on gas consumption.



This equipment is a CE-marked device and is in conformity with the essential requirements of the medical devices EU regulation 2017/745.

Just a fitting solution...

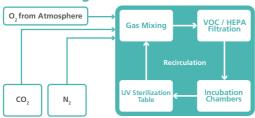
MIRI® II-12 comes with specific heating optimization plates matching the type of dishes used in the laboratories.

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

• There is a choice between various heating optimization plates.



Airflow Diagram



Total control of the gas phase environment is provided. The built-in gas mixer and the high-performance ${\rm CO_2}$ and ${\rm O_2}$ sensors allow accurate control of gas composition in the chambers.

General Specifications



MIRI® Multiroom IVF Incubator

Model	MIRI® Dry	MIRI® Humidity
Overall Dimensions (W x D x H)	700 x 585 x 165 mm (27.6 x 23.0 x 6.5")	700 x 645 x 280 mm (27.6 x 25.4 x 11.0")
Chamber Dimensions	200 x 176 x 25 n	nm (7.9 x 6.9 x 1")
Power Supply	115 / 230	V, 50/60 Hz
Power Consumption	30	0 W
Temperature Control Range	24.9 - 40°C	
* CO ₂ Gas Consumption	<2 L/h	<4 L/h
**N ₂ Gas Consumption	<12 L/h	
CO ₂ Control Range	2.0 - 9.9%	
O ₂ Control Range	5.0 - 20%	
Input Gas Pressure (CO ₂)	0.4 - 0.6 bar (8.70 PSI)	
Input Gas Pressure (N ₂)	0.4 - 0.6 bar (8.70 PSI)	
Net Weight	40 kg (88.2 lbs)	
Shipping Weight	45 kg (99.2 lbs) (Including the pallet's weight)	
Shipping Dimension	Dimension 824 x 724 x 489 mm (32.4 x 28.5 x 19.3") (device on the pallet)	

^{*} Under normal condition (CO₂ setpoint reached at 5.0%, all lids closed)
** Under normal condition (O₂ setpoint reached at 5.0%, all lids closed)

MIRI® II-12 Multiroom IVF Incubator

Overall Dimensions (W x D x H)	740 x 575 x 215 mm (29.1 x 22.6 x 8.5")
, ,	, ,
Chamber Dimensions	120 x 90 x 26 mm (4.7 x 3.5 x 1")
Power Supply	115V 50/60 Hz or 230V 50/60 Hz
Power Consumption	500 W
Temperature Control Range	25 - 40° C
*CO ₂ Gas Consumption	<2 L/h
**N ₂ Gas Consumption	<12 L/h
CO ₂ Control Range	3.0 - 10%
O ₂ Control Range	5.0 - 10%
CO ₂ Input Gas Pressure	0.4 – 0.6 bar (5.80 – 8.70 PSI)
N ₂ Input Gas Pressure	0.4 – 0.6 bar (5.80 – 8.70 PSI)
Net Weight	47 kg
Shipping weight	57 kg (121.3 lbs) (Including the pallet's weight)
Shipping dimension	890 x 710 x 480 mm (35 x 28 x 18.9") (device on the pallet)

^{*} Under normal condition (CO₂ setpoint reached at 5.0%, all lids closed)
** Under normal condition (O₃ setpoint reached at 5.0%, all lids closed)

ITEM CODE	MODEL CODE	DESCRIPTION
MIRI® Multiroom Incubator		
2070047	MRI-6A10-8	MIRI® Incubator, 230V, 50/60Hz
2070048	MRI-6A10-9	MIRI® Incubator, 115V, 50/60Hz
1320045	MRI-GA	MIRI® GA CO $_2$ / O $_2$ & Temperature Validation Unit, 115V / 230V
MIRI® II-12 Multiroom Incubator		
2070164	MRI2-12C-8	MIRI® II-12 Incubator with 12 chambers, 230V, 50/60Hz
2070165	MRI2-12C-9	MIRI® II-12 Incubator with 12 chambers, 115V, 50/60Hz

Mini MIRI® Incubator



Built on the strong and reliable MIRI® Multiroom, the Mini MIRI® is an incubator that provides a stable culture environment. It has two chambers that prevent cross-contamination while VOC/HEPA filtration cleans the incoming airstream. The compact design and direct heat regulation further translate to faster temperature and gas recovery.

Comes in two models:



Mini MIRI® Humidity

- The water bottle is located on the side of the device for easy refilling and control of the water level.
- Passive humidification system.



Mini MIRI® Dry

- Has a built-in gas mixer. Premixed gas is not required
- Comes with a UV module and VOC/HEPA filter.

This equipment is a CE-marked device and is in conformity with the essential requirements of the medical devices EU regulation 2017/745.

General Specifications

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Model	Mini MIRI® Dry	Mini MIRI® Humidity
Overall Dimensions (W x D x H)	525 x 420 x 230 mm (20.7 x 16.5 x 9.1")	
Chamber Dimensions	200 x 176 x 25 mm (7.9 x 6.9 x 1")	
Power Supply	115 / 230)V, 50/60 Hz
Power Consumption	160 W	
Temperature Control Range	24.9 – 40.0 °C	
*CO ₂ Gas Consumption	<2 L/h	< 4 L/h
**N ₂ Gas Consumption	<8 L/h	<12 L/h
Input Gas Pressure	0.4 – 0.6 bar (5.80 – 8.70 PSI)	
CO ₂ Control Range	1.9 – 9.9%	
O ₂ Control Range	3.9 – 19.9%	
Net weight	22 kg (48.5 lbs)	
Shipping weight	30 kg (66.1 lbs) (Including the pallet's weight)	
Shipping Dimensions	630 x 525 x 500 mm (24.8 x 20.7 x 19.7") (device on the pallet)	

- * Under normal condition (CO₂ setpoint reached at 6.0%, all lids closed).
 ** Under normal condition (O₂ setpoint reached at 5.0%, all lids closed).
- ITEM CODE
 MODEL CODE
 DESCRIPTION

 2070155
 MRI-MINI-H-8
 Mini MIRI® Humidity, 230V, 50/60Hz

 2070156
 MRI-MINI-H-9
 Mini MIRI® Humidity, 115V, 50/60Hz

 2070143
 MRI-MINI-D-8
 Mini MIRI® Dry, without Humidification, 230V, 50/60Hz

 2070144
 MRI-MINI-D-9
 Mini MIRI® Dry, without Humidification, 115V, 50/60Hz

Heating optimization plates for MIRI® family's multiroom IVF incubators



Extensive list of the heating optimization plates for MIRI®, MIRI® II-12, and Mini MIRI®

When placing an order for MIRI®, MIRI® II-12 or Mini MIRI®, all you have to do is select the appropriate heating optimization plate(s) that match the dishes used in your laboratory. There are no limitations to the choice you make, giving you the freedom and flexibility to choose as per your requirements. The MIRI®, MIRI® II-12 and Mini MIRI® can easily be incorporated into your existing work routine.

All heating optimization plates are optimized for the direct transfer of heat to the dishes and are totally removable for easy cleaning. This is to ensure optimal conditions for your embryos.













Nunc™

Falcon®

Vitrolife

LifeGlobal® GPS Dishes

BIRR

SparMED Oosafe®

ITEM CODE	MODEL CODE	DESCRIPTION
For MIRI® and Mini MIRI®		
1320003	MRA-FD	Insert for Falcon® Dishes
1320004	MRA-ND	Insert for Nunc™ Dishes
1320070	MRA-VD	Insert for Vitrolife Dishes
1320099	MRA-NID	Insert for Nipro™ Dishes
1320100	MRA-LD	Insert for LifeGlobal® GPS Dishes
1320101	MRA-PD	Insert Without Footprint for Plain Dishes
1320118	MRA-OD	Insert for SparMED Oosafe®
1320507	BIRR	Insert for BIRR Dishes
For MIRI® II-12		
1320429	MRA2-FD	Insert for Falcon® Dishes
1320430	MRA2-ND	Insert for Nunc™ Dishes
1320431	MRA2-VD	Insert for Vitrolife Dishes
1320433	MRA2-LD	Insert for LifeGlobal® GPS Dishes
1320436	MRA2-OD	Insert for SparMED Oosafe®
1320434	MRA2-PD	Insert for Plain Dish
1320505	BIRR	Insert for BIRR Dishes

Quality Assurance and Validation Units





MIRI® GA Gas and Temperature Validation Unit

MIRI® GA is a tabletop device intended to make external incubator validation easier and safer. It is capable of monitoring the temperature (PT1000 connector) & gas concentration, flow and pressure. It can validate up to 6 chambers simultaneously 24 hours a day. It also has an adjustable flow rate which gives it the ability to properly sample small volume incubation chambers. Moreover, MIRI® GA comes with a full Data Logger software which is helpful in monitoring each parameter. The MIRI® GA can connect to any brand of incubator and is a perfect accessory to MIRI® TL and MIRI® Multiroom Incubators.

Key Features

- Constantly validate up to 6 x CO₂
 / O₂ incubators.
- CO₂ / O₂ incubators controllable flow rate Monitor up to 6 x PT 1000 sensors.
- 6 ports for sequential gas samples.
- Gas feedback returns sampled gas to incubator or exhaust.

General Specifications

Input ports	6 x PT1000 ports for temerature monitoring 6 x gas sampling ports
Output ports	1 x gas feedback port, 1 x USB port
Shipping dimensions and weight	440mm x 430mm x 240mm (17.3" x 16.9" x 9.4"), 15kg (33.1lbs)

Ordering Information*

ITEM CODE	MODEL CODE	DESCRIPTION
1320045	MRI-GA	MIRI® GA CO_2 / O_2 / Temp validation Unit, 115/230V, 50/60Hz

^{*}Includes data logger software, 1pc PT1000 cable, 1pc Gas connection tube, 1pc Gas feedback tube

Accessories

ITEM CODE	MODEL CODE	DESCRIPTION
1320063	MRA-1101	1pc PT1000 cable
1320064	MRA-1102	Set of 6pcs PT1000 cables
1320065	MRA-1103	1pc Gas connection tube
1320066	MRA-1104	Set of 6pcs Gas connection tubes

ESCO LIFESCIENCES GROUP





Esco Medical Products

MIRI® Multiroom Incubator MIRI® Humidity Multiroom Incubator MIRI® II-12 Multiroom Incubator Mini MIRI® Dry Incubator Mini MIRI® Humidity Incubator MIRI® TL6 Time-Lapse Incubator MIRI® TL12 Time-Lapse Incubator Multi-Zone ART Workstation Airstream® Laminar Flow Bench

MIRI® Evidence RFID Traceability System CelCulture® CO₂ Incubator MIRI® GA (Gas and Temperature Validation Unit)

MIRI® AVT CultureCoin®

Infertility is a problem that has a significant social, psychological, and economic impact on afflicted individuals and couples. It is a global concern that knows no race or creed. It has been estimated that 1 in 6 couples struggle with infertility at least once in their

Esco Medical is one of the divisions of the Esco Lifesciences Group. We provide innovative technological solutions for fertility clinics and laboratories. We aim to become the leading manufacturer of high-quality equipment such as long-term embryo incubators, ART workstations, anti-vibration tables, and time-lapse incubators.

Our products are designed 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. Most of our products are designed in Denmark and made in the EU. Our primary focus is to increase pregnancy success rates and patient satisfaction.





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Designed in Denmark





















