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Incubate the Future with You

# Time-Lapse Embryo Incubator

# CCM-CHRONOS™


astec

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CCM-CHRONOS™ delivers the value of "choice" to your workspace.

# Making success the standard in fertility treatment

With this vision, we developed CCM-CHRONOS™, our advanced time-lapse incubator.

Designed to create a stress-free environment, it maintains precise temperature while continuously observing the earliest stages of embryo development without interruption.




# High Resolution Engineering System

## “Emboss Contrast” – A New Observation Method Specialized for Embryo Imaging

In conventional bright-field observation, the delicate contours and structures of embryos often remain indistinct and difficult to define. To address this challenge, Astec’s CCM-CHRONOS™, in collaboration with Nikon, is introducing a breakthrough in illumination: a novel observation method known as Emboss Contrast.

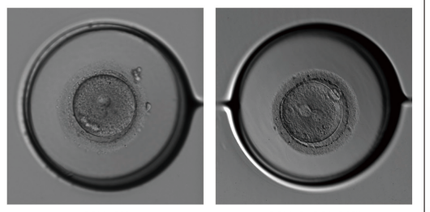
### Three Optimizations for Capturing Cell Division

Wavelength Selection:
Wavelengths were carefully selected to minimize phototoxic effects on embryos.

Optical System Design:
The optical system has been refined to ensure shadows and contours are rendered accurately, according to the embryo’s position and movement.

System Integration:
Observation reliability is enhanced through seamless integration of autofocus, depth stacking, and contrast adjustment.

**Comparison: CCM-iBIS VS CCM-CHRONOS™**

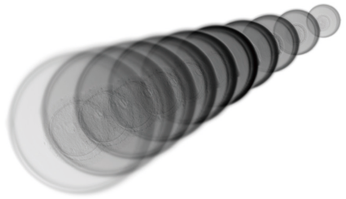


CCM-iBIS　　CCM-CHRONOS™

**Autofocus**

The autofocus function automatically adjusts to the optimal focal point.

**Depth Stacking Technology**



Multiple focal planes are then merged into a single, fully focused composite image.

# Drawer system Designed for Peace of Mind

## The Full-Slide Drop-Off System Minimizing handling risks during embryo culture

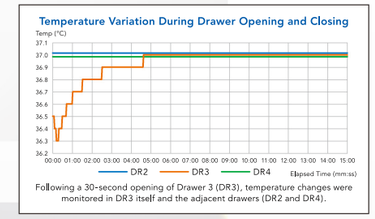
CCM-CHRONOS™ was carefully engineered to support the daily routine of inserting and retrieving dishes with the highest level of reliability and safety.

### 【 01 | Intelligent Drawer System Design 】

Secure Sealed Environment: Equipped with a gas-pressure-activated seal requiring deliberate operation to open, reducing risks during handling.
Full-Slide Extraction Capability: Allows complete and safe removal of culture dishes, minimizing potential contact with instruments or surfaces.
Silent Operation: Precision-engineered for ultra-quiet and smooth motion.

### 【 02 | Uninterrupted Temperature & Gas Stability 】

CCM-CHRONOS™ maintains environmental stability even during access.
Its advanced engineering minimizes thermal loss when drawers are opened and significantly reduces fluctuations in temperature and gas concentration.
Proprietary design ensures exceptional consistency.




Following a 30-second opening of Drawer 3 (DR3), temperature changes were monitored in DR3 itself and the adjacent drawers (DR2 and DR4).

### 【 03 | Enhanced Cleanability & Maintenance 】

Easy-Clean Modular Design: Rapid disassembly and sanitation capabilities support stringent hygiene protocols and effective contamination control.
Per-Drawer Management: Independent environmental control and monitoring for each drawer improve traceability, simplify audit compliance, and support precise log management.
Ten drawers are stored within a unified compartment.

# Optimized Incubator System

## Incubator that provides the optimal environment for embryos.

CCM-CHRONOS™ provides silent, precise monitoring of critical parameters that influence embryo culture and development.
CCM-CHRONOS™ addresses this by minimizing fluctuations in temperature and gas concentration to near-imperceptible levels, creating an incubation environment that consistently maintains stability.

### 【 01 | Minimized Temperature Fluctuation: ±0.2°C precision control 】

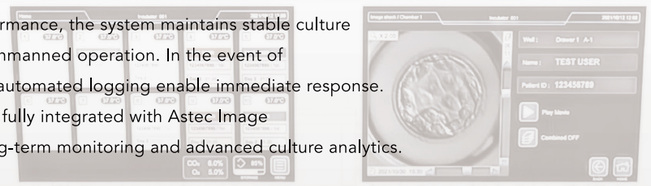
A heating system designed to maintain uniform temperature throughout the entire incubator, supported by precise temperature regulation for each drawer.
This ensures exceptional thermal stability and reduces stress on embryo culture.

### 【 02 | Precise Maintenance of $CO_2$/$O_2$ concentrations 】

Real-time monitoring and control via advanced sensors with automatic gas mixture adjustment.
Rapid recovery from temporary fluctuations caused by drawer access.

### 【 03 | Continuous Operation: Designed for constant reliability 】

Engineered for uninterrupted performance, the system maintains stable culture conditions even during extended unmanned operation. In the event of irregularities, intelligent alerts and automated logging enable immediate response.
The unified management interface, fully integrated with Astec Image Intelligence, supports seamless long-term monitoring and advanced culture analytics.




# Astec Image Intelligence

## High-Precision Image Intelligence Supporting Observation, Recording, and Analysis

The upgraded Astec Image Intelligence software goes beyond simple image capture and data storage. It integrates advanced capabilities — including image enhancement, auto-focus, and time-lapse analysis — to convert subtle changes into meaningful insights.

### 【 01 | Recording Time: Time-Lapse Mode 】

Continuously and chronologically records embryo development throughout the observation period, enabling quantitative tracking of events such as cleavage timing and division speed through an intuitive, dedicated user interface (UI).

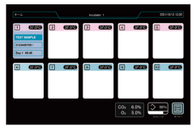
Timeline Functionality Added

Compiled Playback Mode Included

### 【 02 | Data Support: Observation Log & Sharing Function 】

Automatically records conditions such as time, focus, and magnification.
Enables easy comparison with past data and visualization of progression.
Images and videos can be shared externally via network connection.
This function is designed for use with Image Intelligence software and is not currently available with CCM-iBIS.

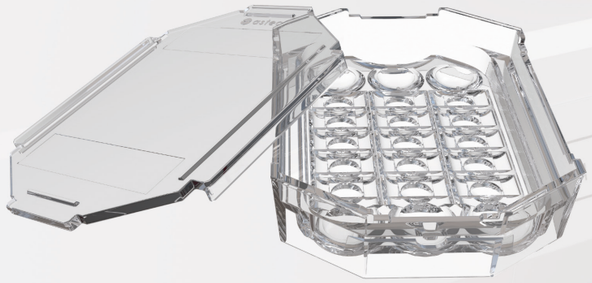
Allows for temporary pausing for each drawer.



Patient registration only requires patient information from the viewer.

# Individual or Group culture – Choose your dish –

## SureGrip™ EmbryoPod or EmbryoGrid IVF Dish



### SureGrip™ EmbryoPod

An Ergonomic, Non-slip dedicated dish with a secure grip to protect embryos

### EmbryoGrid IVF Dish

One IVF dish designed for all your needs

### 【 01 | The Evolution of Touch: SureGrip™ Design 】

The SureGrip™ EmbryoPod sets a new standard in ergonomic handling. Its sides feature a micro-ribbed, anti-slip surface that ensures a stable hold — even with gloved hands. The smooth, contoured silhouette fits naturally into the hand, combining ease of control with dependable safety.

### 【 02 | Enhanced Workflow Efficiency 】

The Embryopod includes 15 wells for high capacity. It also incorporates expanded labeling zones for clear marking and improved traceability. The distinct design enables quick identification during storage and transport, streamlining tray organization and handling. Dish trays are engineered for repeated use and cleaning, offering exceptional durability without compromising performance.

### 【 03 | Perfect Harmony with CCM-CHRONOS™ 】

Designed to integrate seamlessly with the dedicated incubator tray, this dish ensures precise alignment and enhanced stability. Its optimized construction absorbs even minor vibrations — providing superior consistency.

### 【 01 | Central Grid of Microwells 】

A central grid of 25 microwells allows embryos to share the same culture media while still providing individual monitoring of each embryo. The alpha-numeric labelling system facilitates easy and positive embryo identification.

### 【 02 | Lid Optimized for Oil Overlay Culture 】

The lid features a unique post design that increases the space between the dish rim and the lid, improving $CO_2$ exchange and minimizing the risk of the lid meeting the oil and sealing the dish.

### 【 03 | A “Work Area” of Six Outer Well 】

Featuring six outer wells that can serve as a working area to perform tasks such as embryo washing and transferring.

### 【 04 | Fully compatible with Astec Time Lapse models 】

Specifically designed to be used seamlessly with both the CCM-CHRONOS™ and CCM-iBIS time lapse models.

# Available in 5 Different Colors

The CCM-CHRONOS™ color variations harmonize with your environment and team — blending science with sensibility.

Black

Silver

Pearl White

Pearl Mint Green

Pearl Pink

**Dimensions:** W680mm × D588mm × H370mm **Weight:** about 55kg

## Culture

| | |
|---|---|
| Temperature Control Range | 36.0°C ~ 38.0°C |
| Temperature Accuracy | ± 0.1°C |
| Temperature Fluctuation Range | ± 0.1°C |
| Temperature Uniformity | ± 0.1°C |
| $CO_2$ Gas Control Range | 3.0% ~ 10.0% |
| $CO_2$ Gas Accuracy | ± 0.2% |
| $CO_2$ Recovery Speed & Fluctuation | ± 0.2% |
| $O_2$ Gas Control Range | 3.0% ~ 10.0% |
| $O_2$ Gas Accuracy | ± 0.2% |
| $O_2$ Gas Fluctuation Range | ± 0.2% |

## Imaging

| | |
|---|---|
| Image Save Resolution | 2,048 pixel × 2,048 pixel |
| Image Save Format | JPEG |
| Image Save Capacity | Approx 250 KB / image |
| Camera Resolution | 5 Megapixels ( 2,448 pixel × 2,048 pixel ) |
| Pixel Size | 3.45 μm × 3.45 μm |
| Sensor Size | 2 / 3 inch |
| Shutter Type | Global Shutter |
| Stage Position Accuracy | 2 μm |
| Minimum Capture Interval | Up to 150 embryos: 15 mins ; 151+ embryos: Maximum 30 mins |
| Maximum Number of Slices | 11 slices |

## Thermal Insulation Performance ( Room Temp. at 25°C )

| | |
|---|---|
| Temperature Warm-Up Time | 30 mins |
| Temperature Recovery after 30s Door Opening | 15 mins |
| Impact on Other Drawers ( 30s Door Opening ) | Within ± 0.1°C |
| $CO_2$ Concentration Stabilization Time | 15 mins |
| $CO_2$ Recovery after 30s Door Opening | 10 mins |
| Impact on Adjacent Drawers ( 30s Door Opening ) | ± 0.2% |
| $O_2$ Concentration Stabilization Time | 30 mins |
| $O_2$ Recovery after 30s Door Opening | 10 mins |
| Impact on Other Drawers ( 30s Door Opening, $O_2$ ) | ± 0.2% |

## Power Consumption ( CCM-CHRONOS™ Main Unit Only )

| | |
|---|---|
| Power Supply Voltage | AC 110 V ~ 120 V, AC 220 V ~ 240 V 50 Hz / 60 Hz |
| Rated Power Consumption | 320 W |
| Maximum Power Consumption | 320 W |
| Input Power | 320 W |
| Stabilized Power Consumption | 100 Wh |

## Gas Consumption

| | |
|---|---|
| $CO_2$ | 1 L / h |
| $N_2$ | 5 L / h |