for Leica Microsystems

www.tokaihit.com

From the foot of Mt. Fuji to the WORLD

Tokai Hit Official character
Tokai Twins Mikan & Charly

TOKAI HIT will...

Pursue the joy of inspiring our customers.

Manufacture products conscientiously.

Contribute to our community and society.

TOKAI HIT Co., Ltd.

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It is essential to read the instruction manual when using this device.

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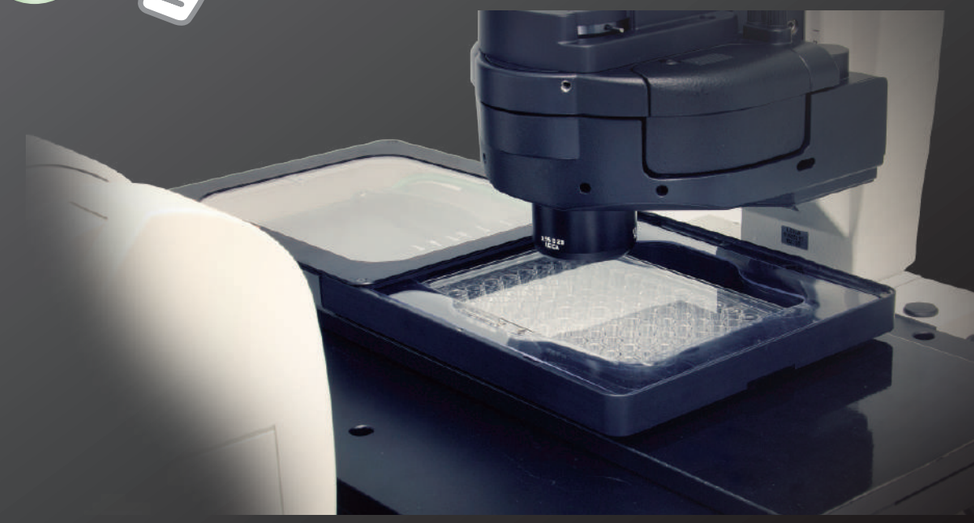


Incubation System for microscopes
Stage Top Incubator®

ThermoBox for microscopes
ThermoBox

Clean Box for microscopes
PureBox SHIRAITO®

Glass/Metal Heater for microscopes
ThermoPlate®

Regenerative Medicine Solution
Bioreactor／Perfusion Pumps

All for Living cells for your imaging®

Incubation System for microscopes

STX
Stage Top Incubator®

Offers precision temperature, humidity and CO_2 control for cell culture on a microscope.
Enables to conduct short and long term (more than 2 weeks) Time-Lapse Imaging.

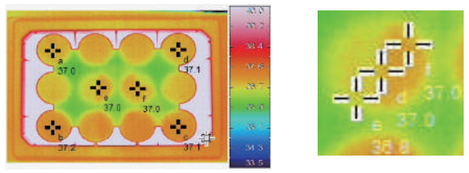
Happiness for Cells, Success for Researchers

TEMP.

Accurate and uniform temperature control

TOKAI HIT Heating Quality

Tokai Hit's original Top Heater is proven to distribute heat uniformly within the Chamber regardless of the type of vessels.

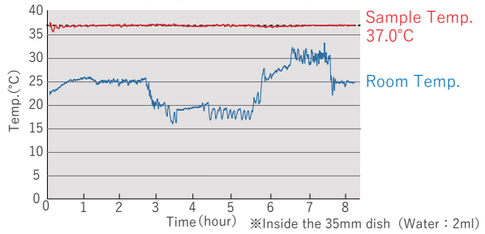


Uniform temperature distribution between wells and within a well.

Real-time Sample Feedback Regulation

Sterilized temperature sensor and magnetic lids make it easy to measure the temp. of culture media upon research needs. The controller regulates the heater based on the sensor signal to keep sample at the target temp. accurately.

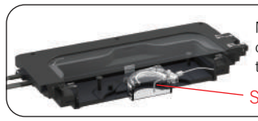
Sample temp. against room temp. chanbe



※Inside the 35mm dish (Water : 2ml)

No interference by objective

With unique Top Heater Heating regulation, the bottom of Chamber is access-free for variety of objectives. (No metal plate on the bottom.)



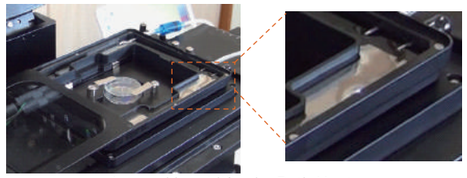
Measure the actual temp. of the culture media with the attached sterilized sensor.

Sensor

HUM.

Keeps high-humidity

Keeps high humidity level inside the chamber by heating the distilled water of the water reservoir. The internal humidifier minimizes the change of concentration of the media by keeping the humidity inside the chamber.



Internal humidifier by Bath Heater

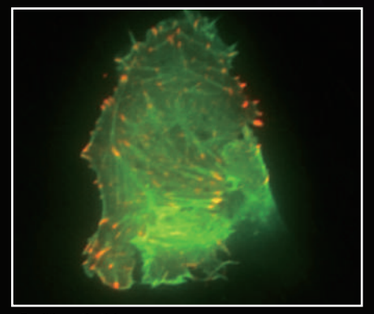
CO_2

Stable CO_2 environment

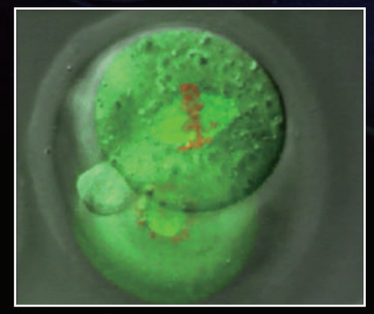
The controller mixes 100%CO_2 gas and the surrounding air automatically. Stable gas concentration inside the Chamber is kept by sending the mixed gas continuously.
(※example of controller with a built-in digital gas mixer)

100%CO_2 gas cylinder — Controller (with built-in digital gas mixer) — Chamber

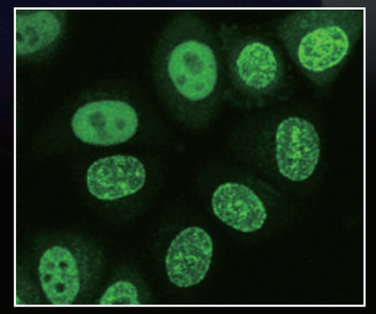
※CO_2 concentration can be adjusted from 5.0～20.0%.



Paxillin actin tirf
Simon Watkins and Claudette St. Croix
Center for Biologic Imaging, University of Pittsburgh



Courtesy of Dr. Kazuo Yamagata
Department of Genetic Engineering,
Kindai University



Courtesy of Dr. Hiroshi Kimura
Tokyo Institute of Technology

Stage Top Incubator Culture Results

Attribute	Name	Details	Period
Cultured Cell	STO	Embryo; fibroblast, mouse	Over 5 days
Cultured Cell	PC12	Pheochromocytoma; adrenal gland, rat (male)	Over 5 days
Cultured Cell	Hela	Adenocarcinoma; crvix, human (female, 31 years)	Over 5 days
Primary	Human Embryo	Human embryo in vitro; form fertilization to hatching blastocyst	Over 7 days
Primary	Neurons	Development of rat cerebral cortical neurons	Over 4 days
Primary	Neural Stem Cells	Proliferation of neural stem cells of 14-day-old rat embryo	Over 7 days
Primary	Neural Stem Cells	Differentiation of rat neural stem cells to neurons and glial cells	Over 7 days
Primary	Hippocampal Neuron	E18 rat hippocampal neurons, cultured in CO2 incubator for the first day	Over 3 days
Primary	Cardiac Myocite	Neonatal rat heart, fetal mouse, heart beat synchronization	Over 3 days

Chamber Components

Top Heater
Main heater which heats the specimen uniformly from above by radiation heat. The transparent glass heater prevents condensation and supports clear visibility.

Dish Fixing Lid
Easy setting of vessels with magnetic lid.

Dish Attachment
Supports 35mm dish, 60mm dish, chamber slide, slide glass, chambered coverglass and wellplate by changing the mangetic holder.

Water Reservoir
Bath Heater is embedded under the water reservoir and generates high humidity inside the chamber.

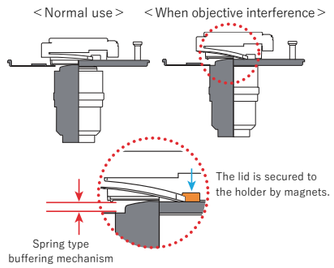
Access Ports
For temperature sensor and tubing for media exchange and drug delivery.

Lens Heater
Prevents the sample temperature from escaping to the objective lens. Especially effective under high magnification, oil/water immersion observation.
* Possible to accommodate objectives up to ϕ40mm. Thin type and wide type are optional.

■ Stable and easy fixing

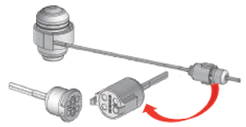
Stable and easier “Magnetic” fixing

Even when the objective interferes with the bottom of the dish, a spring type buffering mechanism prevents breakage of the dish/objective.



■ Detacnable Lens Heater

Easy attachment and detachment with magnet relay connector prevents tanglement of the objective revolver and lens heater. It is also possible to lock by twisting the connector.

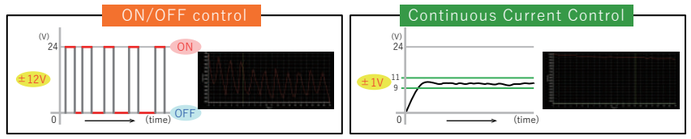


Features

Intuitive operation and varieties of new functions are included to support cell culturing without stress.

■ Prevent the focus drift

In addition to PID control, Continuous Current Control minimizes the focus drift generated by thermal expansion and it also prevents light intensity change compared to the conventional ON/OFF control.

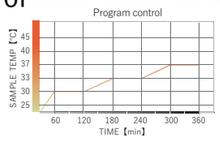


■ STX-APP (Software)

Simple operation of GUI will assist to visualize the system preparation and lead your cell culture to success.

■ Programmable Control

The system includes the software to program temp. and CO2/O2 concentration as this function allows to expand the variety of experiments.



■ Screen Capture

Captures the PC screen to transfer images to smart-phones and tablets. Enables to see the image at home.
＊PC must be connected with internet.

■ Data Logging

Logs the temperature of each heaters, sample temperature and gas concentration and saves the data in CSV format.

Line-up

WSKMX series

■ For Leica manual/motorized stage
■ Sample temp.：30 - 40°C
■ For well-plate and small vessels use

Multi Well Plate | 35mm dish | 60mm dish | Slide Glass | Chamber Slide | Chambered Coverglass

100%CO2 gas cylinder use Model **STXG-WSKMX-SET**

Premixed gas cylinder use Model **STXF-WSKMX-SET**

DMIWX series

■ For Leica manual/motorized stage (For Laser Safety Hood)
■ Sample temp.：30 - 40°C
■ For well-plate and small vessels use

Multi Well Plate | 35mm dish | 60mm dish | Slide Glass | Chamber Slide | Chambered Coverglass

100%CO2 gas cylinder use Model **STXG-DMIWX-SET**

Premixed gas cylinder use Model **STXF-DMIWX-SET**

GSI2X series

■ For Leica SP8/SP5 Super Z Galvo stage
■ Sample temp.：30 - 40°C
■ Small vessels use

35mm dish | 60mm dish | Slide Glass | Chamber Slide | Chambered Coverglass

100%CO2 gas cylinder use Model **STXG-GSI2X-SET**

Premixed gas cylinder use Model **STXF-GSI2X-SET**

SCANPZX series

■ For Z-Piezo 158204121
■ Sample temp.：30 - 40°C
■ For well-plate and small vessels use

Multi Well Plate | 35mm dish | 60mm dish | Slide Glass | Chamber Slide | Chambered Coverglass

100%CO2 gas cylinder use Model **STXG-SCANPZX-SET**

Premixed gas cylinder use Model **STXF-SCANPZX-SET**

＊No water reservoir, instead External Humidifier is included as standard.

WELSX series

■ For manual/motorized stage
■ Chamber size is the same as well pla
■ Sample temp.：30 - 40°C
■ Small vessels use

35mm dish | 60mm dish | Slide Glass | Chamber Slide | Chambered Coverglass

100%CO2 gas cylinder use Model **STXG-WELSX-SET**

Premixed gas cylinder use Model **STXF-WELSX-SET**

■ Options

・Stage Adapter

型式 **GSI2X-K**
For GSI2X
For XY motorized stage
with 160×110 (mm) opening

型式 **WELSX-K**
For WELSX
For XY motorized stage
with 160×110 (mm) opening

・Dish Attachments

Model **UNIV2-D35-2**
For 35mm dish ×2

Model **UNIV2-D35-3**
For 35mm dish ×3

Model **UNIV2-D35-4**
For 35mm dish ×4

Model **UNIV2-D35-5**
For 35mm dish ×5

Model **UNIV2-D35-6**
For 35mm dish ×6

System Components

■ SET model

All Dish Attachments and Dish Fixing Lids are included as standard. No more complicated selection.

・Temperature Controller

Model **STXG** With built-in digital gas mixer
Size：W151×D263×H196

or

Model **STXF** With built-in analog flow meter
Size：W151×D298×H196

・Chamber

Model (Example) **WSKMX**

・Feedback Sensor

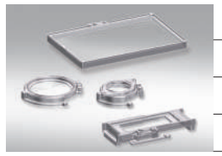
Model **TSU-200F**

・Extension Wire ・USB cable
・Software STX-APP ・Gas tube

・Dish Attachments

Model	
ATX-W	For well-plate
ATX-A	For ATX-D, ATX-CSG
ATX-D	For 35mm/60mm dish
ATX-CSG	For slide glass, chamber slide, and chambered coverglass

・Dish Fixing Lids



Model	
LX-W	For well-plate
LX-D35	For 35mm dish
LX-D56	For 60mm dish
LX-CSG	For slide glass, chamber slide, and chambered coverglass

Add-on options

Digital Gas Mixer

Digital Gas Mixer for Stage Top Incubator. You can choose depending on the gas cylinder usage.

For **STX** series

Model **STX-CO2O2**
For low oxygen (Hypoxia)
O_2 concentration：0.1 - 18.0%
CO_2 concentration：5.0 - 20.0%
Gas cylinder：100%CO_2 & 100%N_2
Dimensions：W160×D271×H250 (mm)

Model **STX-CO2**
For CO_2 concentration
CO_2 concentration：5.0 - 20.0%
Gas cylinder：100%CO_2
Dimensions：W115×D271×H250 (mm)
※For STXF controller

Model **STX-O2**
For O_2 concentration
O_2 concentration：0.1 - 18.0%
Gas cylinder：100%N_2
Dimensions：W115×D271×H250 (mm)
※For STX-CO2 controller only

Independent Controller

Model **GM-8000**
For low oxygen (Hypoxia)
O_2 concentration：0.1～18.0%
CO_2 concentration：5.0～20.0%
Gas cylinder：100%CO_2 & 100%N_2
Dimensions：W160×D260×H187 (mm)

Model **GM-3000**
CO_2 concentration & flow rate
CO_2 concentration：1.0 - 20.0%
Flow rate：50 - 200 ml/min
Gas cylinder：100%CO_2
Dimensions：W121×D174×H157 (mm)

Mini CO_2 regulator

* MG1 is only available in US and Japan at this moment.

There is no need to prepare a large gas cylinder, and no regulator operation is required.
The gas is supplied at the optimal flow rate for the Tokai Hit incubator.

Model **MG1**

【Specification】
Output gas pressure: 0.1 MPa
Usable time: about 3 days / 1 cartridge
Dimensions: W135 x D182 x H237 (mm)
Weight: 2.5 kg

■ Consumable gas cartridge

Consumable gas cartridge is available.
Please contact LELAND with the part number: **88100Z**.
- Cartridge size: 74 g
- Thread design: 5/8 - 18UNF

LELAND web site

Cooling/Heating Chamber

＊ Cooling/Heating Chamber is not complied with CE.

Sample temp.: 15 - 40°C (with dry lens)／20 - 40°C (with oil/water immersion lens)

KRiX series

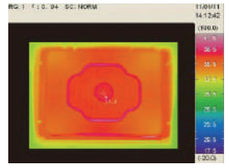
- For Leica manual/motorized stage
- With Chiller Unit
- Sample Feedback regulation
- For small vessels use 35mm dish / Slide Glass / Chamber Slide / Chambered Coverglass

100%CO_2 gas cylinder use	Model	**STXGC-KRiX-SET**
Premixed gas cylinder use	Model	**STXFC-KRiX-SET**

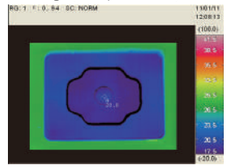
■ Uniform Temperature Distribution

Normally, it is difficult to control the sample around room temp. because the difference between room temp. and sample temp. is small.
Since KRi series has both cooling and heating function independently, it can control temp. precisely.

Heating（Sample：37°C）



Cooling（Sample：20°C）



・Dish Attachments

For 35mm dish
Cooling/Heating Model **KRiX-D35**
Heating only (optional) Model **ATX-D**
For slide glass, chamber slide, and chambered coverglass
Cooling/Heating Model **KRiX-CSG**
Heating only (optional) Model **ATX-CSG**
＊One of Dish Attachment (For Cooling/Heating)is included as standard.

・Dish Fixing Lids

For 35mm dish
(Included to the system as standard) Model **LX-D35**
For slide glass, chamber slide, and chambered coverglass
(Included to the system as standard) Model **LX-CSG**

For upright microscopes

Sample temp.：37°C

UKX series

- For general XY stages and fixed stage
- For small vessels use 35mm dish / 50mm dish / 60mm dish / Slide Glass

100%CO_2 gas cylinder use	Model	**STXG-UKX-SET**
Premixed gas cylinder use	Model	**STXF-UKX-SET**

■ Opening/Closing Top Heater

Metal Top Heater with this function make it easy to set the object positioning before imaging.

・Dish Attachment

For 35mm dish	**UKX-D35**
For 50/60mm dish	**UKX-D56**
For slide glass	**UKX-SG**

＊One Dish Attachment is included as standard

・Bracket

For manual stage	**UKX-STD**
For Narishige fixed stage	**UKX-FNS**
For Prior Z-deck	**UKX-ZD**
For stages with 160×110mm opening	**UKX-SPC-3**

＊One-set is included as standard

・Lens Heater

Lens Heater	**UKX-LHD**

＊Lens Heater is included as standard

・Lens Heater Options

Lens Heater Adapter	**UKX-LHA-□□**
Seal Ling	**TMU-□□**

＊□□ contains the diameter of the objective
＊One-set is included as standard

Add-on options

We offer the suitable solutions depending on your experiments.

Program fluidic control system

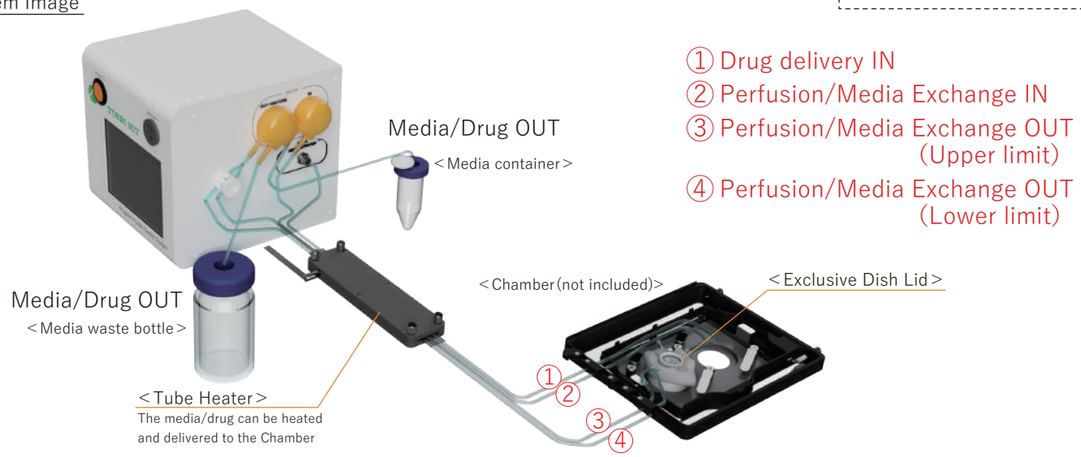
Perfusion, Media Exchange, Drug Delivery and Mixing can be easily programmed and done without disturbing your sample.

Model **PMD-D35**
※For STX/STR/INU Chamber
※For 35mm dish

【Specification】
Continuous Perfusion：40 - 100 μL/min
Media Exchange volume：0.6ml - 5.0ml
Media Exchange Number：Maximum 10 times
Drug Delivery：20 μL -
Controller size：W175×D175×H195 (mm)

Perfusion / Media Exchange / Drug Delivery / Mixing

System Image



① Drug delivery IN
② Perfusion/Media Exchange IN
③ Perfusion/Media Exchange OUT (Upper limit)
④ Perfusion/Media Exchange OUT (Lower limit)

【Components】
・Controller
・Exclusive Dish Lid（**PMD-D35FME**）
・Tube Heater
・Tubes
・Media containers
・PC software (for Windows10)
※Media waste bottle is not included

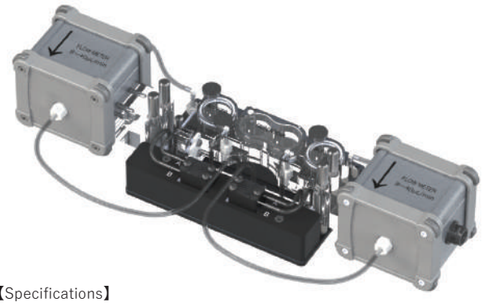
■ Enables to mix the media and drug to be uniform after the drug delivery.
■ Setting of suction / supply liquid volume at a precise flow rate is possible.
■ Regulates the system with TTL IN/OUT.
■ High-repeatability experiments are possible by keeping the media level evenly.
■ Tube heater is included.
■ Supports general 35mm dish.
■ Manages each user' s program individually by using USB memory.

Micro perfusion system

Allows μ-orders of perfusion incubation both on a microscope and inside the CO_2 conventional incubator.

Perfusion

Model **MKS8-SG**（FB：0.5 - 8.0 μL/min）
MKS40-SG（FB：8.0 - 40.0 μL/min）



【Specifications】

Feedback mode	Flow-rate range： **MKS8-SG**：0.5 - 8.0 μL/min **MKS40-SG**：8.0 - 40.0 μL/min
Manual mode	Flow-rate range： 0.03 - 40.0 μL/min

【Components】
・Pumping unit
・Controller
・Slide glass attachment
・Tubes

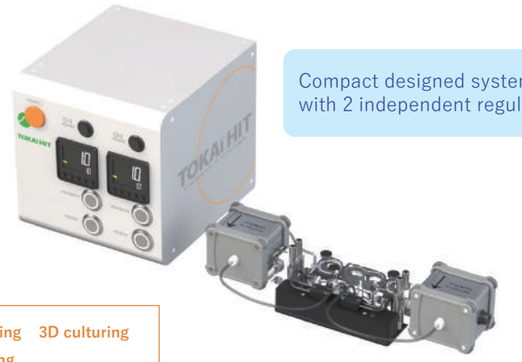
【Application】
Constant flow control　Perfusion culturing　Tissue-engineering　3D culturing
Organoid　Biomimesis　MPS　Micro-flow　Time-lapse imaging

【Key features】

① Time-Lapse imaging with Stage Top Incubator
Possible to accomplish time-lapse imaging, while cell-culturing with micro-flow application on the microscope.

② Constant flow control and Monitoring
The "flow-rate feedback" function maitains the perfusion flow-rate even under changes of states of channels

③ Compatible with CO_2 conventional Incubator
The system is designed moisture-proof and is possible to use inside the conventional CO_2 incubator



Compact designed system with 2 independent regulations.

Perfusion/Media exchange system

Perfusion/Media exchange without removing a dish lid is possible.
Prevents media evaporation and contamination during long-term imaging.

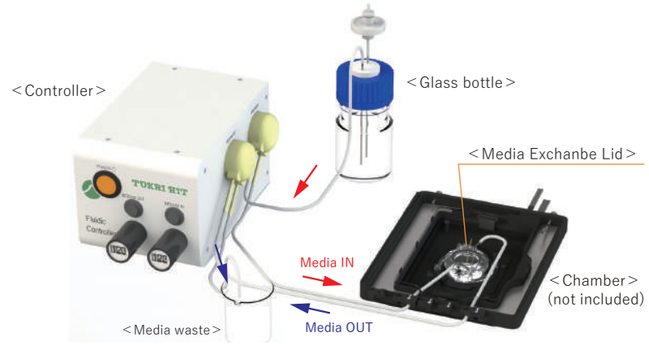
Perfusion / Media Exchange

Model **KSX-Type1**　＊For STX/STR Chamber
KS-Type1　＊For INU Chamber

【Components】
・Controller
・Media Exchange Lid（**LX-D35FME**／**D35-200FME**）
・Diamond Insert（**KS-DIA**）
・Glass bottle with air filter（**KS-BOTTLE**）
・Tubes
＊Media waste bottle is not included

【Specification】
Pump flow rate：0 - 2.9 ml/min
(by using the attached tube)
Pump dimensions：W121×D175×H117 (mm)
Silicon tube：OD 3.0mm, ID 1.0mm（Consumable item）

【Application】
・Medium Exchange for long-term time-lapse imaging
・For perfusion during calcium measurement or washing



One-push drug delivery system

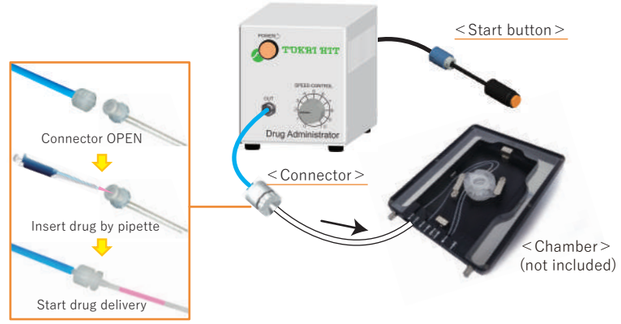
Rapid and vibration-free drug delivery is possible.
Prevents media evaporation and contamination during long-term imaging.

Drug Delivery

Model **KSX-Type2**　＊For STX/STR Chamber
KS-Type2　＊For INU Chamber

【Components】
・Controller
・Media Exchange Lid（**LX-D35FME**／**D35-200FME**）
・Cord with a drug administration start button
・Tubes

【Specification】
Dosage：20 - 100 μℓ
(Contact us if different dosage needed)
Controller dimensions：W100×D165×H116 (mm)
Silicon tube：OD 3.0mm, ID 1.0mm
(Tube of the dish side is consumable item)



Add-on options

We offer the suitable solutions depending on your experiments.

External Humidifier

Possible to decrease the frequency of refilling internal/external water for more than 3 - 4 days.
By using this system with internal humidifier, it covers edge to edge of 96-well plate with stable and high humidity throughout the experiment.

Model **TPiDE-HUMID**

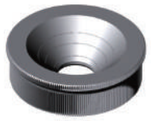
【Components】 Temp. Controller, Bottle Heater, Watter Bottle, Gas tube

＜STX controller (not included)＞ ＜External Humidifier＞ ＜Chamber (not included)＞

Reusable 35mm dish ＊Cyto-cell Chamber (Auto-clavable)

＜Collaborative development with Prof. Takafumi Inoue, Waseda Univ.＞

For a small amount of medium



Model **SCC12-D35-SET**
Cover glass size：ϕ12.0 mm
Observation area：ϕ9.6 mm

For wide range observation

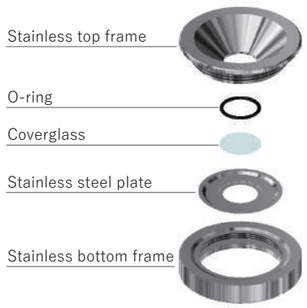
Model **SCC25-D35-SET**
Cover glass size：ϕ25.0 mm
Observation area：ϕ21.0 mm

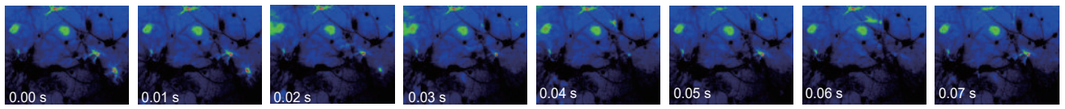
【Features】

1. Whole bottom observation is possible.
   No interferes with an objective even under high magnification.
2. Running costs can be reduced.
   By changing the coverglass, the dish can be reused repeatedly.
3. Observe with small amount of media.

※Consumable parts (Stainless steel plate, cover glass etc.) are also available.

【Assembly】





Calcium imaging captured with Cyto-cell chamber. (Fura-2 Fluorescent image)

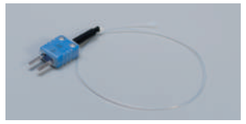
Courtesy of：Prof. Takafumi Inoue, Department of Life Science and Medical Bioscience, Faculty of Science and Engineering, Waseda University

Digital Thermometer for research

Precise temperature measurement is possible by using a thin sensor with Teflon coating and excellent chemical resistance.

Model **MC1000**
Indicate temp. by 1°C or 0.1°C
K-type thermocouple

＜Components＞
・Digital Thermometer
・Thermo Probe (TSU-200F)



■ Thermo Probe (sensor type) Model **TSU-200F**
■ Extension Wire (1.5 m) Model **HD1500**

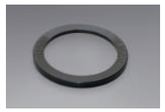
IN/OUT Pipe for Media Exchange/Drug Delivery

For media exchange and drug delivery with incubation system for upright microscopes etc..

Model
PSBD1 Pipe OD 1.1mm
PSBD1H Pipe OD 1.1mm (with side holes)
PSBD2 Pipe OD 2.1mm
PSBD2H Pipe OD 2.1mm (with side holes)

35mm Dish Spacer

When using the 35mm dish from Greiner and Nunc, recommended to use Dish Spacer at the bottom of the dish.



Model **35DI-BS**
For 35mm dish from Greiner and Nunc

Enclosure for microscopes ThermoBox

Maintains a stable cell culturing environment at places where the temperature fluctuation occur. By isolating the microscope from the environment, it also prevents the focus drift caused by the thermal expansion of microscope itself.

ThermoBox for DMi8

Duct free design

Compact design but keeps the temperature performance by using anti-vibration fan heaters.

As a simple dark box

The black type has the property of light shielding and can be used as a simple dark box.

Anti-vibration heater

With anti-vibration design, the system can be used under confocal without image drift.

Anti-vibration test movie

Easy setup

Special tool is not required during installation and most of fixing is done by thumb screws.

Specifications

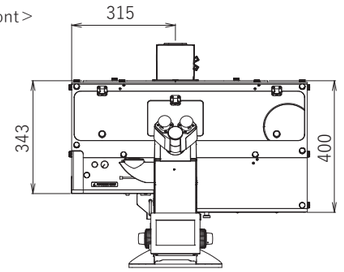
・Box size：W715×D440×H400 (mm)
・Controller size：W81×D305×H211 (mm)
・Temp. setting range：Ambient - 40°C (With heater)

Line-up

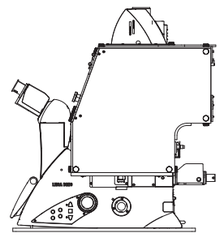
Microscope	Stage	Color	Heater	Model
DMi8	Motorized stage	Black type	With Heater	Model **DMI8TB-BK**
			Without Heater	Model **DMI8TB-BK-NH**
	3 plate stage (motorized)	Black type	With Heater	Model **DMI8TB-3E-BK**
			Without Heater	Model **DMI8TB-3E-BK-NH**

＊Depending on the accessories (camera, stage etc.), the model may be a customized model. Please contact us for details.
＊Front panel transparent model is also available.

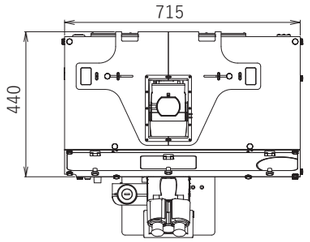
＜Front＞



＜Side＞



＜Top＞



Clean Enclosure for microscopes

PureBox SHIRAITO®

For clean operation during imaging

PBS series for Leica DMi8

Model **DMI8PBS**

CLOSE…Culturing

OPEN…Operation

As good cleanness as clean bench (ISO Class 5)

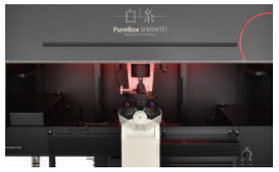
	Maximum particles/m³			
	Size of the particles			
	0.3 μm	0.5 μm	1.0 μm	5.0 μm
ISO Class 5	10,200	3,520	832	29
PureBox SHIRAITO®	220	1	0	0

Tokai Hit Evaluation Condition:

Detective sensor: BM300C (from Sharp Life science)
Evaluation Time: 24 hours
*Measuring area: Around stage and shelves
*This data is just for reference. It is not assured of the same performance.

【Application】

iPS cells Organoid Pharmaceuticals Food research Fertile ovum

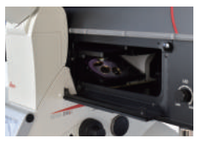


Red LED light

Long-wavelength light is switchable depending on the sample and application.

Compatible with 3 plate stage

Supports the protrusions of the 3-plate stage.
Access to the objective and stage is also possible.



Suitable when...

- Image the sample after cell-manipulation at clean bench
- Wish to conduct contamination-free media exchange & drug delivery during the imaging
- Transplant the sample after the imaging
- Not satisfied with the cleanness of current microscope environment
- Run time-lapse imaging without antibiotics
- Image temperature sensitive samples

The same cleanness level as a clean bench

Equivalent performance as ISO 14644-1 Level 5 (Unit: Particle/m³). Supports clean operation during imaging.

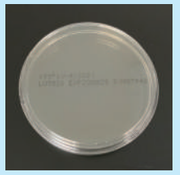
Air curtain function

The air flow increases when the front door is open.
It prevents dusts/particles getting into the box.

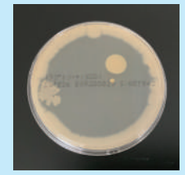
＜Minimizes the contamination＞

Comparison

Dish with agar media left :
for 30 minutes without lid on and cultured for 48 hours



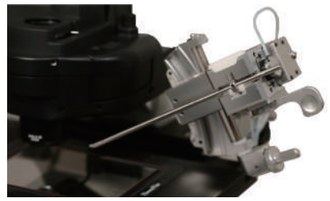
Inside **PureBox** SHIRAITO® — No contamination



Outside **PureBox** SHIRAITO® — Contamination

Great Expandability

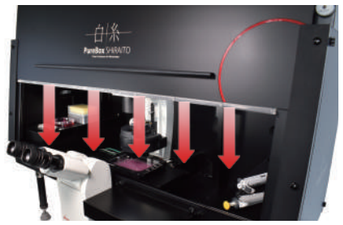
Optical devices (e.g. confocal unit) can be installed on PureBox.



Compatible micromanipulator： Eppendorf TransferMan/InjectMan
Narishige SETAGAYA, TAKANOME

37°C temperature uniformity

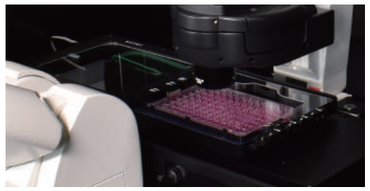
It allows to maintain uniform temperature inside the box optimally.

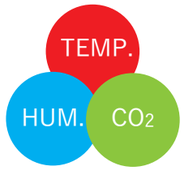


＜Image of heating inside the box＞

Combination with Stage Top Incubator®

By using Stage Top Incubator® together, it can maintain optimal cell-culture condition under clean condition during live-cell application.

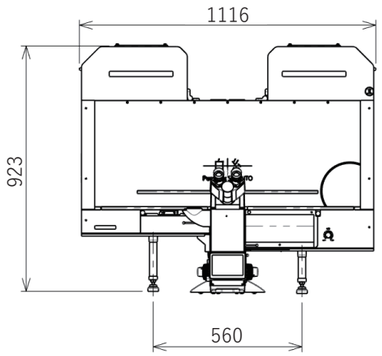




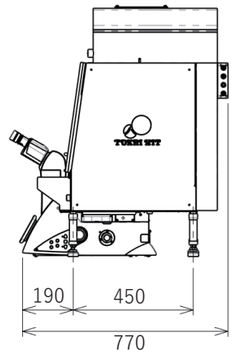
Large working space

Similar operation of a clean bench can be done on a microscope.
＜Size＞ Right ：197×458 mm Left：197×458 mm Hight：(Right) 347 mm (Left) 291 mm

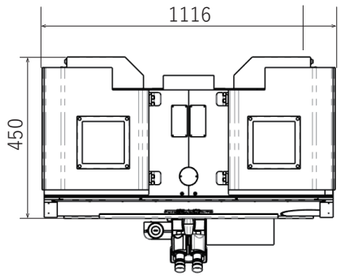
＜Front＞



＜Side＞



＜Top＞



Glass/Metal Heater for microscope

ThermoPlate®

Persues high-end “User-Friendliness”

TPi SERIES

10 year free-repair service for glass breakage

Applied strengthen glass or hard glass for the glass heater and with 10 year free-repair service for glass breakage.
No more glass breakage and no more stopping your experiment.
* Depending on the model

10year warranty
Stress-Free from glass breakage

Compact Controller

Miniaturizes the controller to be as small as a smart-phone
It is very useful for space saving in the clean bench.

Controller Dimensions：W85×D135×H30 (mm)
Size：232 (cm^3)　Weight：170 (g)

Plate LED Indicator

Plate LED Indicator visualizes the plate condition without looking at the controller.
Green LED lights up when the glass heater is ready.

Statement of LED	Condition of the plate
Lights up	The plate surface temp. is stable at the setting temp..
Blinks slowly (1.0 sec. period)	Running Calibration.
Blinks fast (0.2 sec. period)	An error occurred.

＊Plate LED is attached to some major models.

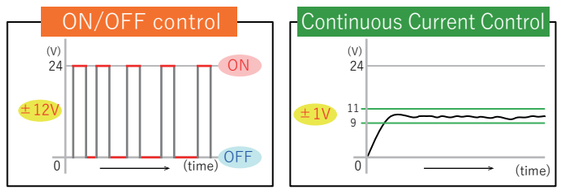
One-touch calibration

Easy calibration to set the suitable PID value on your usage environment is available with just one-touch.

＊Before shipping, TokaiHit’s ThermoPlate controller and plate is calibrated together to make the center of the plate temperature at 37°C under room temperature 25°C.

Continuous Current Control

In addition to PID control, Continuous Current Control minimizes the focus drift generated by thermal expansion and it also prevents light intensity change compared to the conventional ON/OFF control.



Glass Heater Line-up

Tokai Hit’s Glass Heaters

Temp. setting range：Ambient - 60°C (* Depenging on the model)

Original clear glass heater maintains stable temperature. Supports the needs in different various fields such as Time-Lapse in low magnification and/or IVF field.

Inverted
Microscope：**DMi8**
Applicable stage：XY manual/motorized stage (160×110 mm opening)

Model **TPi-SQFTLX** 10 LED
Glass thickness：0.5 (mm)
Plate size：W160×D110 (mm)
Heating area：W135×D95 (mm)

Inverted
Microscope：**DMI6000B/4000B/3000B**
Applicable stage：XY manual/motorized stage (160×110 mm opening)

Model **TPi-SQX** 10 LED
Glass thickness：0.5 (mm)
Plate size：W160×D110 (mm)
Heating area：W128×D84 (mm)

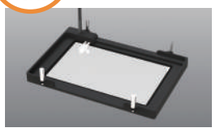
Inverted
Microscope：**DMi8, DMI6000B/4000B/3000B**
Applicable stage：Slim stage with 88 mm round opening

Model **TPi-RSRX** 10
Glass thickness：0.5 (mm)
Plate size：ϕ88 (mm)
Heating area：W60×D54 (mm)

Inverted
Microscope：**DMi8, DMI6000B/4000B/3000B**
Applicable stage：Mechanical stage

Model **TPi-SQMX** 10
Glass thickness：0.5 (mm)
Plate size：W165×D105 (mm)
Heating area：W129×D86 (mm)

Inverted
Microscope：**Leica SP8/SP5**
Applicable stage：Super Z Galvo stage



Model **TPi-GSIGX** 10
Glass thickness：0.5 (mm)
Plate size：W129×D87 (mm)
Heating area：W111×D62 (mm)

Inverted
Microscope：**DMIRB**
Applicable stage：XY手動ステージ 開口部：150×150 (mm)

Model **TPi-RSLTX** 10
Glass thickness：0.5 (mm)
Plate size：W150×D150 (mm)
Heating area：W130×D130 (mm)

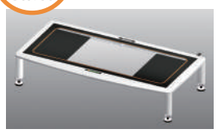
Upright
Microscope：**For upright microscopes**
Applicable stage：XY mechanical stage

Model **TPi-SX** 10 LED
Glass thickness：0.5 (mm)
Plate size：W142×D115 (mm)
Heating area：W128×D95 (mm)

Stereo
Microscope：**For stereo microscopes**
Applicable illumination base：Transmitted Light Base TL RCI/RC etc.

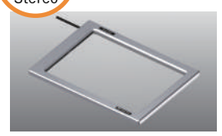
Model **TPi-TLBaseX** 10
Glass thickness：1.0 (mm)
Plate size：W219.5×D169.5 (mm)
Heating area：W190×D134 (mm)

Stereo
UNIVERSAL
For various types of illumination bases



Model **TPi-UNIX** 10 LED
Glass thickness：1.5 (mm)　Plate size：W435×D220 (mm)
Heating area：W400×D175 (mm)
Leg adjustment：75 - 100 (mm)
＊Temp. setting：Ambient - 50°C

Stereo
Large Glass Type
For various types of illumination bases

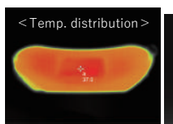


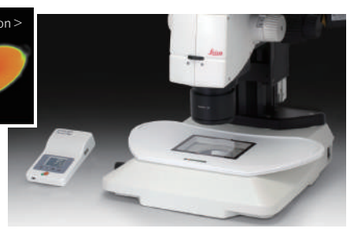
Model **TPi-W**
Glass thickness：1.5 (mm)
Plate size：W230×D180 (mm)
Heating area：180×D140 (mm)

Model **TPi-WL**
Glass thickness：1.5 (mm)
Plate size：W310×D220 (mm)
Heating area：W250×D170 (mm)

Stereo
Entire Surface Heating Plate
Applicable illumination base：Transmitted Light Base TL RCI/RC etc.

Model **TPiD-TLDX** 10 LED
Glass thickness：0.5 (mm)
Plate size：W380×D206 (mm)
Heating area：＜Glass part＞ W128×D95 (mm)
＊Temp. setting：Ambient - 50°C





Since the entire surface of the plate is heated, it can manag the temp. of the sample under observation as well as the sample before/after observation.

10 With 10 year free-repair service for glass breakage.
LED With Plate LED Indicator.

ThermoPlate®

Metal Heater Line-up

For oil/water immersion objective and high-magnification objective imaging

Temp. setting range：Ambient - 60°C

Focus drift is caused by thermal expansion from the ordinary ON/OFF regulation.
Tokai Hit is applying Continuous Current Control regulation as standard to minimize focus drift.

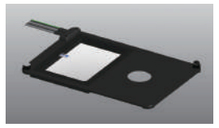
Inverted

Microscope：**DMi8**

Applicable stage：XY manual/motorized stage (160×110 mm opening)

Model **TPi-SQH26FT**

Plate size：W160×D110 (mm)
With a hole (ϕ26 mm)
※Surface flat type



Model **TPiD-I2X** (10)

Plate size：W160×D110 (mm)
※2 in 1 type
Glass：W68×D95 (mm)
Metal：With a hole (ϕ26 mm)

Inverted

Microscope：**DMI6000B/4000B/3000B**

Applicable stage：XY manual/motorized stage (160×110 mm opening)

Model **TPi-SQH26**

Plate size：W160×D110 (mm)
With a hole (ϕ26 mm)

Inverted

Microscope：**Leica SP8/SP5**

Applicable stage：Super Z Galvo stage

Model **TPi-GSIH26**

Plate size：W129×D87 (mm)
With a hole (ϕ26 mm)

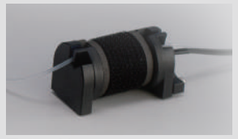
Options

Lens Heater

Model **TPiE-LH**

Temp. setting range：Ambient - 45°C

Prevents heat loss from the sample especially when using oil/water immersion objective and high-magnification objective.



Tube Heater

Model **TPiE-TH**

Temp. setting range：Ambient - 50°C

A compact barrel-type heater. Simply wrap the media tubing for heating the media before inserting it to Chamber Unit.

Hot Plate

Model **TPiE-SP/SPE**

Temp. setting range：Ambient - 45°C

Light-weight and thin aluminum thermal plate.
TPiE-SP ：W482×D282 (mm)
TPiE-SPE：W282×D232 (mm)

KW series

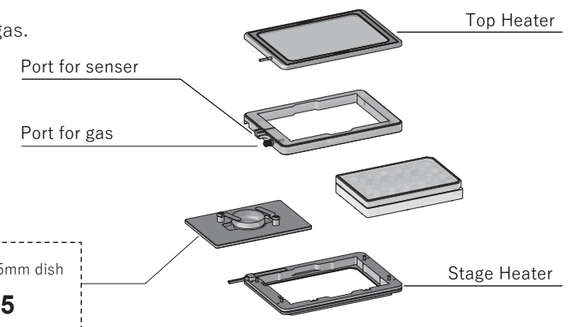
TPiD SERIES

BOX-type ThermoPlate with a gas port.

Model **TPiD-KW**

A box type thermo plate with a gas port that can hold CO_2 gas.

- For inverted microscope
- Setting temp.：Ambient～50°C (Plate temp.)
- Top Glass Heater prevents the condensation of the dish.
- Double Heater system (Top Heater/Stage Heater) keeps the suitable sample temp.
- Multi-well plate can be installed



■ Option
Dish Attachement for 35mm dish
UNIV2-D35

* The Dish attachment for 35mm dish ×2 - ×6 is also available.

2-channel controller (Option)

TPiD SERIES

2 plates can be controlled by TPiD controller. Every combination is possible.

Model **TPiD-○○○○-△△△△**
ThermoPlate 1　ThermoPlate 2

Ex 1：Glass (for inverted)＋Glass (for stereo)

SQFTLX　TLBaseX

Model **TPiD-SQFTLX-TLBaseX**

Ex 2：Glass (for stereo)＋Glass (for stereo)

UNIX　UNIX

Model **TPiD-UNIX-UNIX**

TPiD

Ex1：Metal (for inverted)＋Lens Heater

SQH26FT　LH

Model **TPiD-SQH26FT-LH**

Ex 4：Glass (for inverted)＋Hot Plate

SQFTLX　SP

Model **TPiD-SQFTLX-SP**

Cooling/Heating Plate

* Cooling/Heating Plate is not complied with CE

TP SERIES

Best for observing yeast, plants, marine samples, cultured cell, C. elegans and/or Planarian, etc.

Temp. setting range (Plate surface)：4 - 60°C

With electronic cooling element (Peltier module) and original control system, it allows responsive cooling and heating regulation.

* The plate may build the condensation at the bottom when the setting value (SV) of the controller set below 15.0°C (depending on the lab temperature).
The system may not be suitable for
- Long-term imaging
- Rooms with high humidity

37°C	Cultured Cell
28°C	Zebrafish
25°C	Drosophila
20°C	C. elegans

Usually, it is difficult to control the temperature around room temperature because of the small temperature difference between the room temperature and the sample temperature. However, Tokai Hit Cooling/Heating Plate has both cooling and heating functions and can control the temperature around the room temperature accurately without any change-over switch.

It also can be used for controlling activation of the common samples which normally cultured at 37.0 degree C by lowering the temperature or observe expressions of samples at each temperature.

Inverted

Microscope：**DMi8, DMI6000B/4000B/3000B**

Applicable stage：XY manual/motorized stage (160×110 mm opening)

Model **TP-CHSQ-C**

Plate size：W160×D110 (mm)
With a hole (ϕ20mm)

Inverted

Microscope：**DMi8, DMI6000B/4000B/3000B**

Applicable stage：XY manual/motorized stage (160×110 mm opening)

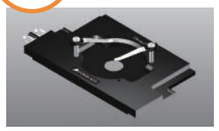
Model **TP-CHSL-C**

Plate size：ϕ88 (mm)
With a hole (ϕ20mm)

Inverted

Microscope：**DMi8, DMI6000B/4000B/3000B**

Applicable stage：Mechanical stage



Model **TP-CHSQM-C**

Plate size：W165×D105 (mm)
With a hole (ϕ20mm)

Upright

Microscope：**For upright / stereo microscopes**

Applicable stage：XY mechanical stage

Model **TP-CHS-C**

Plate size：W110×D110 (mm)
With a hole (ϕ20mm)

Built-in dedicated chiller unit

Cool the circulating water with sealed water.
It can also be used for long-term observation.

Regenerative medicine solution

— Bioreactor —

We design Bioreactor to support cell to organoid, tissue and organ.

— Perfusion pump —

Possible to install a perfusion system including a pump in a conventional CO_2 incubator.

Pressure Stimulation Unit

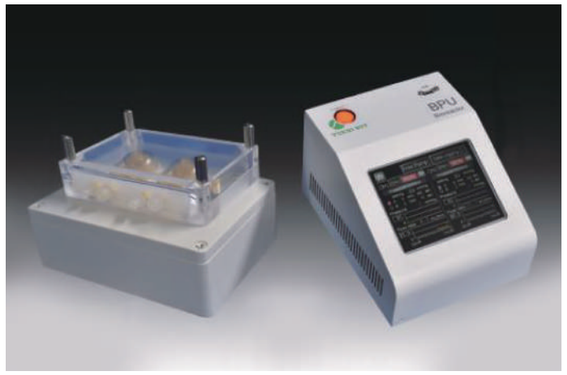
Main Unit

Enable to adjust the pressure in the culturing vessel inside the conventinal CO_2 incubator.

Model **PSU**

【Components】Pump Unit, Sealing lid for 35mm dish
Dish Attachment

【Application】
Tissure-engineering, Vascularization, Perfusion culture, 3D culture, Organoid
Biomimesus, Decellularization, Organ culture, Organ preservation, Mechanobiology



【Features】

① Time, positive and/or negative pressure in the vessel can be programmed.

Support Intermittent and steady pressure modes.
The date logging function is integrated.

② The system for gas exchange.

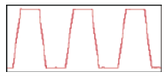
Method to incorporate CO_2 from the conventional CO_2 incubator (inside) through sterilizing filter.
Possible to use together with Tokai Hit add-on Digital Gas mixer.

③ Possible to be placed inside the conventional CO_2 incubator

Moisture-proof design and shield technology.
Make it possible to place the system inside the conventional CO_2 incubator.

The sealed vessels can be custom-made upon request.
The system supports cells, tissue and organ study/reseaches.
Auto-clave is possible.

【Basic Specification】

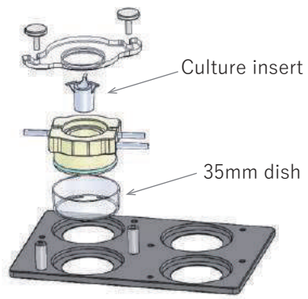
Intermittent pressure mode	Intermittent pressure range：-100 - 300 mmHg Time setting：Every second	
Steady pressure mode	Pressure setting range：-100 - 300 mmHg Time setting：1 mmHg	

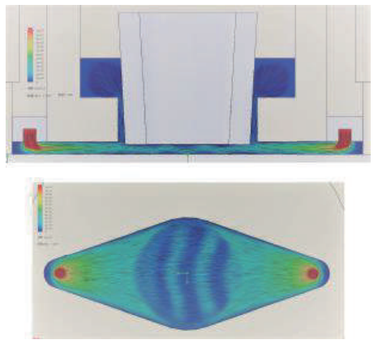
Capable of use with a culture insert

Develop a perfusion system for 35mm to be used with commercially available culture insert.
By using both sealed culture vessel and PSU, it can stimulate cells and/or organoid physically and perfusion culturing together

Model **ORC-D35-C01**

35mm dish and lid set for culture insert.





The simulation analysis of flow velocity

Constant pressure perfusion & Pulsating constant pressure pump unit

Non-contact pressure measurement allows to measure the flow path pressure during perfusion under aseptic condition and by feedback to the pump, the constant pressure supply is possible.

Model **BPU**

【System】
The controller on the right hand side will regulate the system outside of conventional CO_2 incubator

【Basic Specification】

Pulsating constant pressure mode	Pulsating pressure range：0～200 mmHg Time STEP：from 1 sec * Suitable for vascular experiment
Constant pressure mode	Pressure setting range：0～200 mmHg Setting STEP：1 mmHg
Constant flow mode	Flow rate setting range：0.3～42.0 mL/min or 0.04～6.00 mL/min Setting STEP：0.1 mL/min or 0.01 mL/min

【Application】
Constant Pressure perfusion Tissue-engineering Vascularization
3D culturing Blood-pressure measurement Biomimesis
Pressure Transducer Organoid

【Features】

① Possible to run perfusion inside the conventional CO_2 incubator.

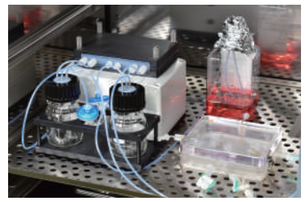
With the moisture-proof designed system,possible to install a perfusion system including 1 pump in a conventional CO2 incubator.

② Ideal pulsating constant pressure perfusion for vascular experiments and organ related experiments.

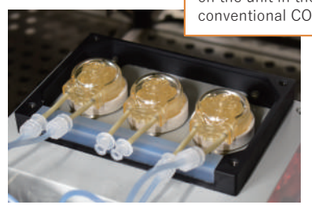
Change the perfusion mode between,Constant pressure, Pulsating Constant Pressure and Constant Flow + data logging function are integerated.

③ Non-contact pressure measurement allows to measure the flow path pressure during perfusion under asptically condition

Non-contact pressure measurement allows to monitor the flow path pressure during perfusion under aseptic condition and possible to regualte flow rate and pressure.



Three pumps are mounted on the unit in the conventional CO_2 incubator

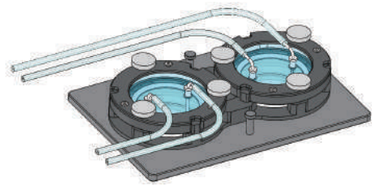


Sealed lid for 35mm dish & Dish Attachment

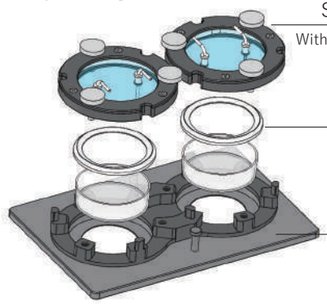
Model：**ORC-D35-2**

Sealed lid with perfusion & drug delivery pipes
Dish Attachment for 35mm dish ×2 pcs.

Applicable brand：Corning / MatTek / Eppendorf / IWAKI / Nunc / Greiner



【System image】



Sealed lid for 35mm dish
With perfusion & drug delivery pipes

Packing
For sealing vessel

Dish Attachment
For 35mm dish ×2 pcs