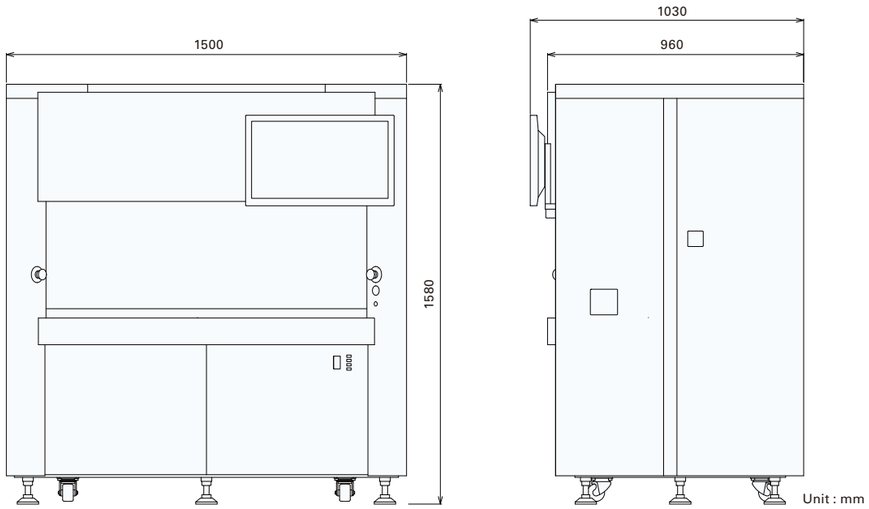
Specifications

Power supply		Single-phase AC 100 – 230 V (- 10 ～ + 8%), 50 / 60 Hz Average wattage : ≈ 690 W / Max wattage : ≈ 990 W Equipment power capacity : 1.2 kVA
Display		23 in wide LCD display
Memory storage capacity		Hard disk drive 500 GB (30 GB for initial shipment models)
External input/output		USB 3.0 x 2-port
Operation interface		Optical mouse with scroll wheel, Mini keyboard
Imaging unit	Camera	CMOS 2048 x 1544 pixels
	Optical lens	Bright-field 4x
	Light source	White LED
Recommended use environment	Ambient temp.	Accuracy assured at 23°C±2°C Function assured at 10 - 35°C (Average temp. should be below 30°C for operations lasting over 24hours)
	Relative humidity	45 - 60%RH (no condensation)
	Installation	Ensure there is no dirt, dust or corrosive gas. Avoid placing under strong lighting or direct sunlight. Install on horizontal solid floors.
Sterilizing lamp		UV 15 W, Qty : 2
Air purifier		HEPA filter Qty : 2

Optional accessories

Microscope	Optical lens	Bright-field 10x
	Fluorescence imaging	Fluorescence filter 3 blocks (exchangeable) Light source : UV Xenon lamp Lens : 4x, 10x
Glass heater		Between room temp. and 50°C
Touch panel display		23 in wide LCD monitor

Dimension



Unit : mm

Weight : approximately 600 kg

Yamaha Motor Co., Ltd.

https://global.yamaha-motor.com/business/hc/ ych@yamaha-motor.co.jp

*For research use only. Not for use in diagnostic or therapeutic procedures.
*The specifications are subject to change without notice.

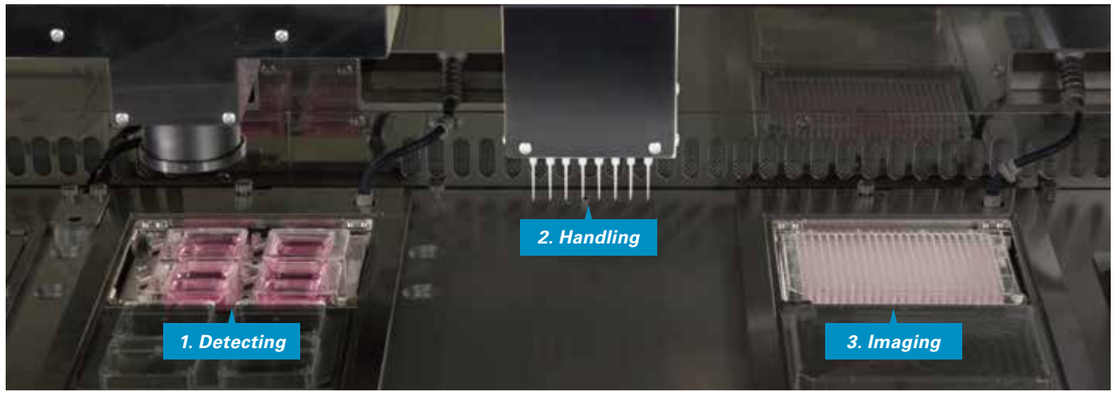
YAMAHA Revs Your Heart

Cell picking & imaging system

CELL HANDLER™

Concept

Cell picking & imaging system



For Cell Selection
For Drug screening

CELL HANDLER™ offers new and revolutionary solutions for applications in the biomedical field by utilizing our state of the art ultra high speed pick and place robotic technology.

This technology enables the selection and transfer of a targeted cell to a microplate well, a process that is difficult using conventional manual methods. In addition, the system performs high throughput image analysis.

* The cell mentioned in this brochure is a single cell and/or aggregated cells including spheroids and organoids.

1. Detecting

Detection

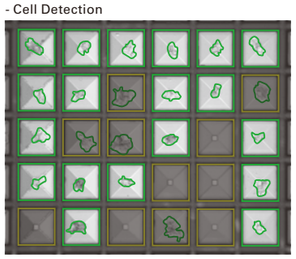
Selection

CELL HANDLER™ can report multiple features of an individual cell.
These features are summarized statistically and can be used for cell selection.

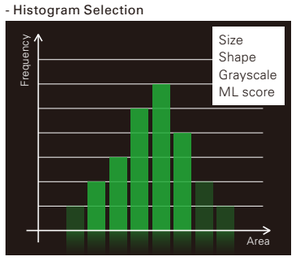
1) Automated Selection (Histogram)

All features of the cells are visualized in histograms. The cut-off threshold or selection range of a feature can be determined using the histogram. By combining selection criteria of multiple features (maximum of 6 parameters), the desired group of cells can be selected. Threshold values are saved and retrieved for reiterative experiments.

- Cell Detection



- Histogram Selection

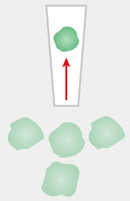


2) Manual Selection (Machine learning)

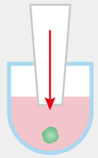
Cells can be selected manually by checking them one by one and selecting the desired cells. Through this action, the cell preference can be instructed to the CELL HANDLER™ using the machine learning (ML) function. This function calculates the matching level score of each cell. The score is provided as one of the histogram thresholds for the selection of cells.

2. Handling

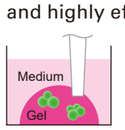
Picking



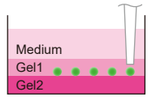
Dispensing



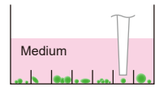
Cells are transferred one by one from a source well to a new well in the destination plate. This process is executed for 8 wells at the same time using 8 individual tips, and therefore is gentle and highly efficient.



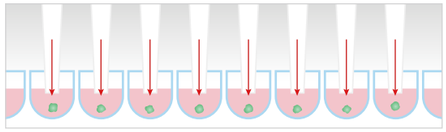
Dome Type



Two-layer Type

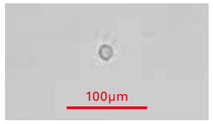


Nanoliter wells

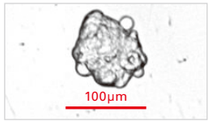


1) Types of Biological Material

- Single cell
- Spheroid / Organoid
- Tissue fragment



Single cell

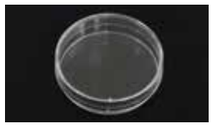


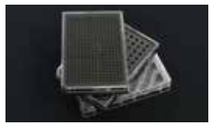
3D culture cell

2) Source and destination plates

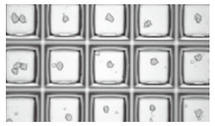
-Picking from various plates


Precision Chamber™

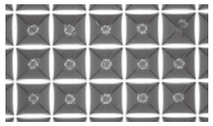

Culture Dish


Microplate（SBS standard）

3D culture plate


Elplasia®*1


Cell-able®*2


AggreWell™*3

-Dispensing to microplate

*1 “Elplasia” is a registered trademark of Corning Inc..
*2 “Cell-able” is a registered trademark of TOYO GOSEI CO., LTD..
*3 “AggreWell” is a trademark of STEMCELL Technologies Inc..

3. Imaging

Imaging

Analysis

High resolution cell Images are captured at high speed.

1) Imaging

CELL HANDLER™ can capture not only bright field but also fluorescent images.
A whole well can be observed as stitched image.

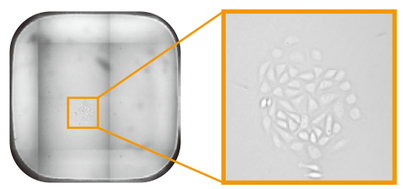


Image in 384-well microplate

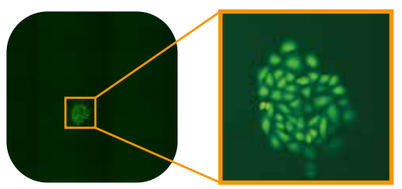
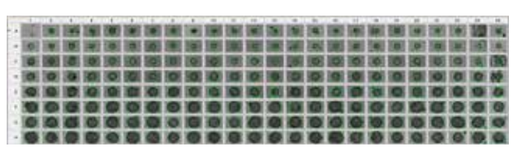
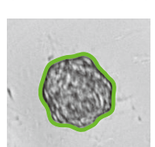


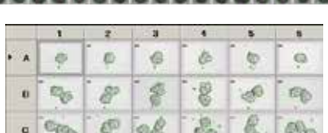
Image in 384-well microplate

2) Image analysis

Cells are identified using object recognition software and features are reported and saved for analysis.




A spheroid in microplate



A variety of conditions can be created in one plate.