

The Thermo Scientific Cellomics® ArrayScan® VTI HCS Reader is a modular High Content Screening instrument designed for high-capacity automated fluorescence imaging and quantitative analysis of fixed and live cells. The instrument features optics by Carl Zeiss®, broad white-light source, scientific grade digital camera and integrated acquisition and analysis software.

Thermo Scientific Cellomics ArrayScan VTI HCS Reader



General

- Arrayscan VTI HCS Reader, modular, multi-mode High Content Screening instrument
- Bench-top footprint, 36"W x 24"D x 20"H
- CE, CSA certified
- Microscope optics by Carl Zeiss
- Fully automated and software controlled
- Compatible with samples in SBS-compliant microwell plates and microscope slides
- Optional Modules include: Optical Sectioning, Brightfield, Live Cell, liquid handling and automated plate handling

Optics

- Automated objective changer giving increased resolution and sensitivity
- Field of view 1.3mm x 1.3mm (with 5x objective)

Objective lenses

Mag (NA)	Class
* 2.5x (0.075)	Plan-Neofluar
5x (0.25)	Fluar
10x (0.3)	Plan-Neofluar
10x (0.45)	Plan-Apochromat
20x (0.4)	LD Plan-Neofluar
* 20x (0.8)	Plan-Apochromat
* 40x (0.5)	LD A-Plan
* 40x (0.75)	Plan-Neofluar

* Optional Objectives

Resolution Capabilities

- Hamamatsu ORCA®-ER cooled 12 bit grayscale digital CCD Camera offering high-resolution, 1344 x 1024 pixel array with 6.45µm x 6.45µm pixel size
- Multiple software-specified digital image resolutions
- Available sampling density¹ of 325nm/pixel in 165mm² field and 5µm/pixel in 2.6mm² field

Light Source

- User changeable 120W, 1500 hour, metal halide light source
- Prevents re-strikes until safely cooled
- Broad (350nm-700nm) excitation wavelength
- Shutter eliminates photo-bleaching of samples

Fluorescence Capabilities

- 10-position wheel for excitation filters²
- 5-position turret for dichroic/emission cubes
- Dye combinations in standard configurations
 - Broad blues [365(50)/535(45)] Hoechst, DAPI, coumarins
 - Greens [475(40)/535(45)] FITC, GFP, fluorescein, Alexa Fluor® 488
 - Orange reds [535(35)/590(35)] TRITC, rhodamine, Cy3™, Alexa Fluor® 546
 - Deep reds [575(25)/640(30)] Texas Red, Alexa Fluor® 594
 - Long reds [630(50)/695(55)] Cy5, DRAQ5, Alexa Fluor® 647
- Additional emission filter wheel hardware and filters available

Integrated Software Features

- Thermo Scientific Cellomics iQ - High Content intelligent acQuisition™
 - Integrated real time image acquisition and data analysis software
 - Collect just the images required for statistically relevant results
 - Reduce data storage needs
 - Simple configuration
- Rapid Assay Development - an interactive graphical user interface provides immediate feedback on the effects of changing acquisition or analysis settings
- All settings software-controlled, selected by user-friendly menus
- Thermo Scientific Cellomics AccuFocus™
 - Adaptively optimized focus in each field resulting in progressively faster plate scan time
 - Avoids fluorescent debris, contaminants and is tolerant to plate abnormalities
- Fully automated, wizard-guided multiprotocol capability
 - Complex, programmed automation batches can be triggered by both user-constructed lists and plate bar codes

- Automated changing of objectives, dichroic cube and emission filter
- Broadest portfolio of validated image analysis algorithms (18 BioApplications)
 - Monitor and analyze multiple individual cells in parallel, and within a cell population so one can observe correlations between cellular events
 - Easy for new users to get started with HCS right away, but gives experienced users flexibility to customize analysis

Available High-Content informatics (HCl™)

- Data are automatically stored and organized in an enterprise class database
- Offers readily accessible off-line visualization and analysis
- Images and data are accessible throughout an organization to anyone with a PC and network connection
- Thermo Scientific Cellomics OpenImage™
 - images from third party sources can be imported into database for analysis and storage
- Easy IT administration

Modular Functionality

The ArrayScan VTI HCS Reader provides unrivaled flexibility via optional modules that may be added to the instrument at any time. Each module was designed and tested to be fully integrated with both the hardware and software of the existing instrument.

ApoTome™ Optical Sectioning Module

- Grating Imager
- Reduces background fluorescence and allows a wider variety of cell types to be imaged
- Easy configuration for any assay and any channel

Live Cell Module

- Offers full control of temperature (Ambient to 45°C), CO₂ (0-10%) and added humidity (>90% RH) to maintain cell health
- Proprietary cell tracking algorithm allows for both motility and kinetic measurements at the cell and well level
- Cell movement can be monitored over seconds, minutes, hours or days

Automated Plate Handling

- Fully integrated with the Thermo Scientific CataLyst Express
- Robotics-ready and compatible with all major commercial laboratory robotic systems

Liquid Handling Module

- Fully functional fluid transfer from plates, troughs and live cell chamber
- Complete integration into scanning software for ease of use
- Disposable tips and/or tip washing, one to two-hundred µl volumes

Brightfield Module

- Label-free detection
- Capture, analyze, and visualize transmitted light images interleaved with fluorescence images
- Autofocus in transmitted light mode

¹ Dependent on objective, coupler and binning.

² Exciter wheel & cube turret configurations are customizable; examples are for standard configuration, included in base price.