

Agilent BioTek Cytation 5 Cell Imaging Multimode Reader

Powerful imaging and microscopy, and advanced multimode detection



Agilent BioTek Cytation 5

Cell Imaging Multimode Reader

Technical details

General	
Detection Modes	UV-Vis absorbance Fluorescence intensity Luminescence Fluorescence polarization Time-resolved fluorescence Alpha
Read Methods	End point, kinetic, spectral scanning, well-area scanning
Microplate Types	Monochromator: 6- to 384-well plates Filters: 6- to 1536-well plates Imaging: 6- to 1536-well plates
Other Labware Supported	Microscope slides, Petri and cell culture dishes, cell culture flasks (T25), counting chambers (hemocytometer) Agilent BioTek Take 3 microvolume plates
Temperature Control	4-Zone Incubation to 65 °C with Condensation Control; ± 0.2 °C at 37 °C
Cooling	Optional Peltier cooling module maintains internal temperature with < 1 °C rise over ambient. Provides internal cooling after incubated processes.
Shaking	Linear, orbital, double orbital
Software	Agilent BioTek Gen5 microplate reader and imager software included
Optional Software	- Gen5 Image+: Image analysis - Gen5 Image Prime: Advanced image analysis - Gen5 Secure, Gen5 Secure Image+, Gen5 Secure Image Prime: Enable 21 CFR Part 11 compliance Optional software modules and apps: Neurite outgrowth , autoROI, spot counting, object tracking, Scratch Assay app
Automation	Agilent BioTek BioStack and third-party automation compatible Agilent BioTek BioSpa 8 automated incubator compatible Agilent BenchCel microplate handler compatible
CO ₂ and O ₂ Control (Option)	Range: 0–20% (CO ₂), 1–19% (O ₂), with optional gas controller Models for both CO ₂ and O ₂ , or CO ₂ only, are available.
Imaging–Widefield Microscope	
Imaging Mode	Fluorescence, phase contrast, brightfield, high-contrast brightfield, and color brightfield
Imaging Method	Single color, multi-color, montage, time lapse, z-stacking
Image Processing	Z-projection, digital phase contrast, stitching
Camera	Sony CMOS, 16-bit grayscale, standard or WFOV
Objective Capacity	Six-position automated turret for user-replaceable objectives
Objectives Available	1.25x, 2.5x (2.25x eff), 2.5x (2.75x eff), 4x, 10x, 20x, 40x, 60x
Phase Objectives Available	4x, 10x, 20x, 40x

No CO₂ or O₂ Controller in PBCF

Objectives available in PBCF
1.25x, 4x, 10x, 20x, and 40x

Imaging Filter Cube Capacity	4 user-replaceable fluorescence cubes plus brightfield channel
Imaging Filter Cubes Available	DAPI, CFP, GFP, YFP, RFP, Texas Red, CY5, CY7, acridine orange (ACR OR), CFP-YFP FRET, propidium iodide, chlorophyll, phycoerythrin, CY5.5, TagBFP, Alexa 568, Ex377/Em647
Imaging LED Cubes Available	365, 390, 465, 505, 523, 590, 623, 655, and 740 nm
Automated Functions	Autofocus, autoLED intensity, auto-exposure
Autofocus Method	Image-based autofocus User-trained autofocus Laser autofocus (option)
Positional Controls	Software control Joystick control (option)
Image Collection Rate	Image-based autofocus: 96 wells, 1 color (DAPI), 4x, 6 min 96 wells, 3 colors, 4x, 12 min Laser autofocus: 96 wells, 1 color (DAPI), 4x, < 3 min 96 wells, 3 colors, 4x, < 7 min 30 s Burst mode: 10 fps, single well, single color at ≤ 50 ms integration time
Fluorescence Intensity	
Light Source	Xenon flash
Detector	PMT for monochromator system PMT for filter system
Wavelength Selection	Quad monochromators (top/bottom) Filters (top)
Wavelength Range	Monochromators: 250–700 nm (900 nm option) Filters: 200–700 nm (850 nm option)
Monochromator Bandwidth	Variable, from 9 nm to 50 nm, in 1 nm increments
Dynamic Range	7 decades
Sensitivity	Filters: Fluorescein 0.25 pM (0.025 fmol/well, 384-well plate) Quad monochromator: Fluorescein 2.5 pM (0.25 fmol/well, 384-well plate)–top Fluorescein 4 pM (0.4 fmol/well, 384-well plate)–bottom
Reading Speed (Kinetic)	96 wells: 11 s 384 wells: 22 s
Luminescence	
Wavelength Range	300–700 nm
Dynamic Range	> 6 decades
Sensitivity	Monochromators: 20 amol ATP (flash) Filters: 10 amol ATP (flash), 100 amol (glow)
Fluorescence Polarization	
Light Source	Xenon flash
Detector	PMT
Wavelength Selection	Filters
Wavelength Range	280–700 nm (850 nm option)
Sensitivity	1.2 mP standard deviation at 1 nM fluorescein
Time-Resolved Fluorescence	
Light Source	Xenon flash
Detector	PMT
Wavelength Selection	Quad monochromators (secondary mode) Filters (top)
Wavelength Range	Filters: 200–700 nm (850 nm option)
Sensitivity	Filters: europium 40 fM (4 amol/well, 384-well plate) Monochromators: Europium 1200 fM (120 amol/well, 384-well plate)

Absorbance	
Light Source	Xenon flash
Detector	Photodiode
Wavelength Selection	Monochromator
Wavelength Range	230–999 nm, in 1 nm increments
Monochromator Bandwidth	4 nm (230–285 nm), 8 nm (> 285 nm)
Dynamic Range	0–4.0 OD
Resolution	0.0001 OD
Pathlength Correction	Yes
Monochromator Wavelength Accuracy	± 2 nm
Monochromator Wavelength Repeatability	± 0.2 nm
OD Accuracy	< 1% at 2.0 OD < 3% at 3.0 OD
OD Linearity	< 1% from 0 to 3.0 OD
OD Repeatability	< 0.5% at 2.0 OD
Stray Light	0.03% at 230 nm
Reading Speed (Kinetic)	96 wells: 11 s 384 wells: 22 s
Alpha Detection	
Light Source	100 mW 680 nm laser
Detector	PMT
Wavelength Selection	Filters (top)
Sensitivity	100 amol LCK peptide (384-well low-volume plate)
Reagent Injectors (Option)	
Supported Detection Modes	All modes
Number	2 syringe pumps
Supported Labware	6- to 384-well plates, Petri and cell culture dishes
Dead Volume	1.1 mL with backflush
Dispense Volume	5–1,000 µL in 1 µL increments
Plate Geometry	6- to 384-well microplates
Dispense Accuracy	± 1 µL or 2%
Dispense Precision	≤ 2% at 50–200 µL
Physical Characteristics	
Power	250 watts maximum consumption
Dimensions	16.4" W x 17.5" H x 20.2" D (41.6 x 44.5 x 51.4 cm)
Weight	80 lb (36.3 kg)

Imaging plus multimode configurations

Model installed in PBCF

Part Number	CYT5FV	CYT5FW	CYT5FAV	CYTFAW	CYT5MV	CYT5MW	CYT5MPV	CYT5MPW	CYT5MFV	CYT5MFW	CYT5MFAV	CYT5MFAW
Fluorescence Imaging	•	•	•	•	•	•	•	•	•	•	•	•
Brightfield Imaging	•	•	•	•	•	•	•	•	•	•	•	•
Color Brightfield Imaging	•	•	•	•	•	•	•	•	•	•	•	•
Phase Contrast Imaging							•	•				
Wide Field of View (FOV) Camera		•		•		•		•		•		•
Filter-Based Fluorescence Intensity	•	•	•	•					•	•	•	•
Filter-Based Fluorescence Polarization	•	•	•	•					•	•	•	•
Filter-Based Time-Resolved Fluorescence	•	•	•	•					•	•	•	•
Filter-Based Luminescence	•	•	•	•					•	•	•	•
Filter-Based Alpha Detection			•	•							•	•
Monochromator-Based UV-Vis Absorbance					•	•	•	•	•	•	•	•
Monochromator-Based Fluorescence Intensity					•	•	•	•	•	•	•	•
Monochromator-Based Time-Resolved Fluorescence (Secondary)					•	•	•	•	•	•	•	•
Monochromator-Based Luminescence					•	•	•	•	•	•	•	•
Take3 Microvolume Plate Compatible					•	•	•	•	•	•	•	•

Imaging-only and multimode-only configurations

Part Number	CYT5V	CYT5W	CYT5PV	CYT5PW	CYT5MF	CYT5MFA	CYT5F	CYT5FA	CYT5M
Fluorescence Imaging	•	•	•	•					
Brightfield Imaging	•	•	•	•					
Color Brightfield Imaging	•	•	•	•					
Phase Contrast Imaging			•	•					
Wide FOV Camera		•		•					
Filter-Based Fluorescence Intensity					•	•	•	•	
Filter-Based Fluorescence Polarization					•	•	•	•	
Filter-Based Time-Resolved Fluorescence					•	•	•	•	
Filter-Based Luminescence					•	•	•	•	
Filter-Based Alpha Detection						•		•	
Monochromator-Based UV-Vis Absorbance					•	•			•
Monochromator-Based Fluorescence Intensity					•	•			•
Monochromator-Based Time-Resolved Fluorescence (Secondary)					•	•			•
Monochromator-Based Luminescence					•	•			•
Take3 Microvolume Plate Compatible					•	•			•

All configurations include incubation to 65 °C and shaking, and are compatible with the Agilent BioTek dual-reagent injection module, CO₂/O₂ gas controller, BioStack microplate stacker, and BioSpa automated incubator.

www.agilent.com/lifesciences/biotek

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This information is subject to change without notice.

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