

# Agilent BioTek Lionheart FX (LFXW) Automated Microscope

## Technical details

General	
Microplate Types	6- to 1536-well plates
Other Labware Supported	Microscope slides, Petri and cell culture dishes, cell culture flasks (T25, T75), counting chambers (hemocytometers), chamber slides Support for labware up to 1.5" tall
Temperature Control	To 40 °C; uniformity $\pm 0.5$ °C at 37 °C
Software	Agilent BioTek Gen5 microplate reader and imager software (included) Optional software: Agilent BioTek Gen5 Image+ software: image analysis Agilent BioTek Gen5 Image Prime software: advanced image analysis Agilent BioTek Gen5 Secure, Gen5 Secure Image+, and Gen5 Secure Image Prime software: enables 21 CFR Part 11 compliance Auto ROI module Spot count module
CO <sub>2</sub> and O <sub>2</sub> Control (Option)	Range: 0–20% (CO <sub>2</sub> ); 1–19% (O <sub>2</sub> ) Control resolution: $\pm 0.1\%$ (CO <sub>2</sub> and O <sub>2</sub> ) Stability: $\pm 0.2\%$ at 5% (CO <sub>2</sub> ); $\pm 0.2\%$ at 1% (O <sub>2</sub> ) Models for both CO <sub>2</sub> /O <sub>2</sub> , or CO <sub>2</sub> only, are available
Environmental Control Cover	Top cover for light tight imaging and incubation control (option)
X/Y Stage Resolution	Lead screw driven stage with 0.1 $\mu\text{m}$ resolution
Humidity Control	Humidity chamber with rapid gas recharge (optional)
Imaging–Field of View (WFOV) Mode	3.42 x 3.42 mm at 4x magnification
Imaging–Widefield Microscope	
Imaging Modes	Fluorescence, brightfield, high-contrast brightfield, color brightfield, and phase contrast
Imaging Methods	Single color, multicolor, montage, time lapse, z-stacking, z-stack montage
Light Source	User-replaceable LEDs (available wavelengths: 365, 390, 405, 465, 505, 523, 590, 623, 655, and 740 nm)
Image Processing	Z-projection, digital phase contrast, stitching
Camera	Sony CMOS 16-bit grayscale camera
Camera Binning	Optional 2 x 2 binning for focus and/or image capture
Camera Exposure Range	5 milliseconds to 4 seconds
Image Outputs Available	Raw images: 16-bit TIFF Saved images: TIF, JPG, BMP, PNG, EMF, GIF Movies: MP4, WMV
Objective Capacity	Six-position automated turret for user-replaceable objectives
Objectives Available	Air: 1.25x, 2.5x (2.75x eff), 4x, 10x, 20x, 40x, 60x Oil: 60x, 100x
Phase Objectives Available	4x, 10x, 20x, 40x

Imaging Filter Cube Capacity	4 user-replaceable fluorescence cubes
Imaging Filter Cubes Available	DAPI, CFP, GFP, YFP, RFP, Texas Red, CY5, CY7, acridine orange, CFP-FRET, CFP-YFP FRET, chlorophyll, phycoerythrin (PE), propidium iodide, CY5.5, TagBFP, Tag BFP-FRET, GFP (Ex)-CY5 (Em), RFP (Ex)-CY5 (Em), Alexa 568, Ex 377/Em 647, oxidized roGFP2, TRITC
Image Collection Rate	Single well fastest frame rate capture: *Full resolution: up to 10 frames per second for single color images *2 x 2 binning: up to 20 frames per second for single color images
Microscope Stage Control	Gen5 software control Optional joystick controller
Image Flatness WFOV Mode	< 20% CV for blank, uncorrected brightfield images < 5% CV for corrected brightfield images, when using $\geq 4\times$ magnification
Image Capture Rate	Laser autofocus, 20x, 100 ms exposure, 96 wells: 4 min 4 s Software autofocus, 20x, 100 ms exposure, 96 wells: 7 min 3 s
Reagent Injectors (Option)	
Number	2 syringe pumps
Supported Labware	6- to 384-well microplates, Petri and cell culture dishes, chamber slides
Dead Volume	< 1.65 mL, with backflush
Dispense Tip Options	Aligned tip: aligned with optical path for dispensing for fast kinetic assays Offset tip: dispensing is offset from the optical path
Dispense Volume	5–1,000 $\mu\text{L}$ in 1 $\mu\text{L}$ increments
Dispense Accuracy	$\pm 1 \mu\text{L}$ or 2%
Dispense Precision	$\leq 2\%$ at 50–200 $\mu\text{L}$
Physical Characteristics	
Power	External 250 W (minimum), 24 VDC power supply, compatible with 100–240 VAC at 50–60 Hz.
Dimensions	With cover closed or without cover: 18.3" D x 17.9" W x 14.1" H (46.5 x 45.5 x 35.8 cm) With cover fully open: 18.3" D x 17.9" W x 27.5" H (46.5 x 45.5 x 69.8 cm)
Weight	With top cover: 58 lb (26.3 kg) Without top cover: 51 lb (23.1 kg)

## Configurations

The Lionheart FX automated microscope base configuration includes: fluorescence, brightfield, phase contrast, high-contrast brightfield, and color brightfield imaging. Includes standard Gen5 software and two-position slide holder. The imaging controller, objectives, filter/LED cubes, gas controller, and environmental control cover are sold separately.

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This information is subject to change without notice.

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