Attune NxT Flow Cytrometer

Band: Invitrogen by Thermo Fisher Scientific

Model: Attune NxT Acoustic Focusing Cytrometer

Custodian: Sirapope Wongniam

Location: K635 Room, 6th Floor, Chaloemprakiet Building, Phyathai Campus

Description and Specifications:

Optics

☐ **Laser power** (as shown in table below)

Laser	Wavelength (nm)	Beam-shaping optics (BSO)* (mW)	Diode power** (mW)
Violet	405	50	100
Blue	488	50	100

* Amount of measured usable laser power after light has gone through the beam optics and shaping filters.

** Vendor-specified theoretical maximum.

☐ **Laser excitation:** Optimized excitation for minimized stray laser-line noise and losses to reflection

	☐ **Laser profile:** 10 µm x 50 µm flat-top laser providing robust alignment ☐ **Emission filters:** 8 color channels with wavelength-tuned photomultiplier tubes (PMTs); user-changeable, keyed filters ☐ **Laser separation:** 150 µm ☐ **Optical alignment:** Fixed alignment with prealigned welded fiber; no user maintenance require ☐ **Onboard thermal-electric cooler:** No warm-up delay; fiber isn't affected by on/off ☐ **Simmer mode:** Instant on/off reduces usage and/or aging by 10x; only keep it "on" when acquiring samples; reports hours of usage ☐ **Flat top specified at the flow cell:** CV <3% over width of flat top ☐ **Upgradable:** Convenient field changes
Fluidics	☐ **Flow cell:** Quartz cuvette gel coupled to 1.2 numerical aperture (NA) collection lens, 200 x 200 µm ☐ **Sample analysis volume:** 20 µL to 4 mL ☐ **Custom sample flow rates:** 12.5–1,000 µL/min ☐ **Sample delivery:** Positive-displacement syringe pump for volumetric analysis ☐ **Sample tubes:** Accommodates tubes from 17 x 100 mm to 8.5 x 45 mm ☐ **Fluid-level sensing:** Active ☐ **Standard fluid reservoirs:** 1.8 L focusing fluid tank, 1.8 L waste tank, 175 mL shutdown solution tank, and 175 mL wash solution tank ☐ **Fluid storage:** All fluids stored within instrument ☐ **Extended fluidics option:** Configuration for 10 L fluid ☐ **Nominal fluid consumption:** 1.8 L/day ☐ **Automated maintenance cycles:** ☐15 min startup and shutdown—deep clean, sanitize, and debubble modes
Performance	☐ **Fluorescence sensitivity:** ☐80 MESF for FITC, ☐30 MESF for PE, ☐70 MESF for APC ☐ **Fluorescence resolution:** CV <3% for the singlet peak of propidium iodide–stained chicken erythrocyte nuclei (CEN) ☐ **Data acquisition rate:** Up to 35,000 events/sec, based on a 10% coincidence rate per Poisson statistics ☐ **Maximum electronic speed:** 65,000 events/sec with all parameters ☐ **Carryover:** Single-tube format: <1%

	☐ **Forward and side scatter sensitivity:** Able to discriminate platelets from noise ☐ **Forward and side scatter resolution:** Optimized to resolve lymphocytes, monocytes, and granulocytes in lysed whole blood ☐ **Forward scatter:** Photodiode detector with 488/10 nm bandpass filter ☐ **Side scatter:** PMT with default 488/10 nm bandpass filter; optional 405/10 nm bandpass filter ☐ **Fluorescent detectors:** 10 individual detectors ☐ **Electronic pulse:** Measured area, height and width pulse for all detectors ☐ **Violet side scatter resolution:** Can be configured for violet side scatter to better resolve particles from noise ☐ **Minimum particle size:** 0.2 μm on side scatter using Bangs Laboratories, Inc.™ Submicron Bead Calibration Kit (Cat. No. 832) o 0.1 μm on side scatter under following conditions: Using an Attune NxT Flow Cytometer standard 0.5 mm blocking configuration, an Attune NxT 488/10 Filter (Cat. No. 100083194) and using Attune Focusing Fluid (Cat. No. 4488621, 4449791, or A24904) that has been 0.025 filtered.
Software	☐ **Compensation:** Full matrix—automated and manual modes, on-plot compensation tools for fine adjustment; use of tubes and wells ☐ **Flow rate:** Precise flow rate control via software; no hardware adjustments ☐ **Live streaming:** Live update of statistics during acquisition of events up to 35,000 events/sec ☐ **Overlays:** Comparative analysis between samples; 3D view ☐ **Sample recovery:** System able to return unused samples ☐ **Concentration:** Direct concentration measurement without use of counting beads ☐ **Software layout:** Fully customizable for each user account ☐ **Bubble detection technology:** Stops automated run to preserve sample integrity ☐ **Maximum single-event file:** 20 million with option to append ☐ **Heat map:** Set up for definition of plate layout; screening view for analysis for tubes and plates ☐ **Threshold:** Up to 4 individual thresholds with user option to apply Boolean logic ☐ **Gating:** Hierarchal gating with the ability to derive gates ☐ **Smartgate labeling:** Option to annotate quad gate names based on fluorophore and target names ☐ **Voltage:** User adjustable ☐ **Window extensions:** User adjustable

	☐ **Area scaling factor (ASF):** User adjustable ☐ **Acquisition settings:** Documented in FCS files and maintained upon import ☐ **Templates:** Create from existing experiments—instrument settings, workspaces, run protocols, heat map settings, and compensation settings optimized and defined previously ☐ **Tube-to-plate conversion:** One-click transition from tubes to plates and vice versa; no disassembly, no additional QC, no reboot required for conversion between plates and tubes ☐ **Graphics resolution:** Publication-quality images; support for TIF, PNG, BMP, JPG, GIF, and EMF; quickly copy and paste plots to any external application (e.g., Microsoft™ PowerPoint™ software) ☐ **User account administration:** Administrative creation of individual user accounts with designated roles, advanced setting permissions, management of individual accounts, user time tracking, and sample count

Configuration options:

Laser	Filter	Common fluorochromes	Total detection channels
Violet Laser	440/50	Super Bright 436, Alexa Fluor 405, eFluor 450, Pacific Blue	4
	512/25	eFluor 506, Pacific Green	
	603/48	Super Bight 600, Pacific Orange, Qdot 605	
	710/50	Super Bright 702, Qdot 705	
Blue Laser	530/30	Alexa Fluor 488, FITC	4
	574/26	PE, PI, PE-Alexa Fluor 610, Alexa Fluor 546	
	695/40	PE-Alexa Fluor 700, PE-Cy5.5, PerCP, PerCP-Cy5.5, Qdot 705, TRI-COLOR	
	780/60	PE-Cy7, Super Bright 780	