

Robotic automation for flow cytometry

Attune NxT Flow Cytometer now available with robotic microplate taxiing.

Whether in academic, commercial, or government laboratories, researchers analyzing very large numbers of samples routinely endure time-intensive assays, a requirement to physically monitor the instruments, and susceptibility to human error. Such workflows may be further complicated by instrument instability or clogging and by software malfunctioning. Invitrogen™ flow cytometry products are engineered to operate together seamlessly for automated high-throughput analysis with extended unmanned run time settings, scalable configuration flexibility, and maximized capacity for processing staggering quantities of data.

Multicomponent automated flow cytometry workcell

The robotic automation instrument suite for flow cytometry comprises five benchtop components: flow cytometer, plate sampler, expanded fluidics, robotic arm, and temperature control (Figure 1). The Invitrogen™ Attune™ NxT Flow Cytometer uses acoustics-assisted hydrodynamic focusing technology and is designed to provide faster run times (up to 10 times faster than traditional flow cytometers) and resistance to clogging, even with difficult samples (see the Behind the Bench blog on page 22). Attune NxT accessories expand the functionality of the flow cytometer for high-throughput applications. The Invitrogen™ Attune™ NxT Autosampler, which mixes samples by aspiration rather than shaking, ensures sample homogeneity and is compatible with many plate formats. The Invitrogen™ Attune™ NxT External Fluid Supply facilitates the use of larger buffer and waste containers and monitors the internal fluid tanks of the Attune NxT cytometer over a 24-hour continuous run time.

The Orbitor RS Microplate Mover

The Thermo Scientific™ Orbitor™ RS Microplate Mover is a high-speed microplate mover that offers reliable performance with flexible plate handling. It can keep pace with the already fast Attune NxT cytometer, delivering a plate from storage to instrument in just 4 seconds.



Figure 2. The Attune NxT Flow Cytometer configured for robotic automation with the Orbitor RS Microplate Mover. The components include the (A) Attune NxT Flow Cytometer, (B) Attune NxT Autosampler, and (C) Orbitor RS Microplate Mover.

Moreover, this robot can run unattended, with a continuous run time of up to 19 hours, and has both active and passive safety features, including self-homing, advanced error handling, and collision detection and recovery. Robotic automation for flow cytometry is facilitated by Thermo Scientific™ Momentum™ Laboratory Automation Workflow Software, which connects the Orbitor RS Microplate Mover to the Attune NxT Flow Cytometer and manages operations between the instruments.

The Orbitor RS Microplate Mover can be programmed for multi-step taxiing workflows, operates complex gripping algorithms, and can unlid and relid plates. It includes an integrated barcode reader for plate sensing in the gripper, enabling sample traceability and plate data storage information. The setup of the robotic workcell has flexible options for instrument arrangement and microplate storage, including random-access microplate hotels and sequential-access storage stacks.

Learn more about automation for flow cytometry

Lab automation allows you to maximize operating capacity, mitigate operator error, and collect accurate and reproducible data. Learn more about the multicomponent automated flow cytometry workcell at thermofisher.com/flowautomationbp77. There, you can also take 3D instrument tours of the Attune NxT Flow Cytometer and the Orbitor RS Microplate Mover, available in 8 different languages. ■

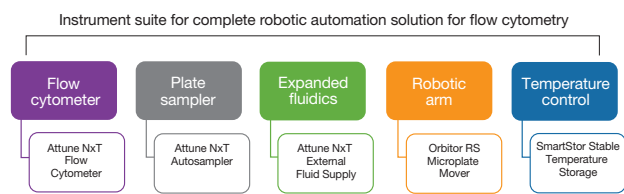


Figure 1. Multicomponent automated flow cytometry workcell.

Product	Quantity	Cat. No.
Attune™ NxT Automation Bundle, stacks	1 bundle	A33007
Attune™ NxT Automation Bundle, hotels	1 bundle	A33008
Attune™ NxT Automation SmartStor Sample Management System	1 system	A35221
Attune™ NxT External Fluid Supply	1 each	A28006