

Microarray

GeneChip Scanner 3000 with AutoLoader

Combining advanced technology with user-friendly features for microarray scanning needs

Introduction

The refreshed Applied Biosystems™ GeneChip™ Scanner 3000 with AutoLoader combines advanced design improvements with high-resolution scanning and automation to dramatically improve efficiency in gene expression and genetic analysis applications. The scanner is part of the refreshed microarray instrument, Applied Biosystems™ GeneChip™ System 3000. Our commitment to the advancement of cytogenetics research continues with updates to the high-performance GeneChip System 3000. These updates include:

- Scanner preassembled with the autoloader for efficient installation
- Easier and safer operation of the scanner lid with new grip and counterbalance
- Updated internal components to maximize longevity
- Modernized look and feel

When used with the Applied Biosystems™ GeneChip™ Fluidics Station 450, the GeneChip Scanner 3000 with AutoLoader provides complete walk-away freedom for scanning arrays. With its refreshed, compact design, the GeneChip Scanner 3000 fits easily in a benchtop environment. Its solid-state laser eliminates the need for an external laser power supply or a special cooling system under the bench.

The outstanding performance and enhanced capabilities of the GeneChip Scanner 3000 offer accurate gridding and consistent scanner-to-scanner performance, helping to improve data integrity and data sharing between researchers.

Highlights

- Compact size for better space utilization
- High-resolution scanning from 0.51 μm to 2.5 μm pixelations, automatically selected by array type
- Optimal image uniformity and collection efficiency across entire scan area with proprietary Flying Objective™ lens technology
- No laser drift and reduced scanner-to-scanner variability
- Automatic adjustment of residual arc correction and x-linearity
- Preassembled with the GeneChip AutoLoader, the scanner enables complete walk-away scanning of up to 48 arrays at a time



Proprietary Flying Objective lens technology means fast, consistent scanning

The unique design of the GeneChip Scanner 3000 enables consistent optical excitation and emission paths for optimal image uniformity across the entire scan area. High collection efficiency allows a single-scan pass and fast scanning times.

GeneChip Scanner 3000 hardware features

Automatic arc correction

- Offers dynamic correction of residual arc correction error and changes in x-linearity on a scan-by-scan basis
- Enables advanced scanner stability and data consistency

Ultralow background noise

- High-speed, analog-to-digital conversion is implemented on printed circuit boards designed to deliver a low-noise performance
- Dynamic range of fluorescence signal is enhanced by a high-speed data acquisition system delivering a full 16 bits of data precision

Auto-zero subsystem

- Helps ensure low electronic background, while providing wide dynamic range for Applied Biosystems™ GeneChip™ array scanning

Auto-set laser power

- Excitation laser power is accurately set for every scan, for long-term stability
- Scanner-to-scanner consistency is improved by reducing gain drift due to aging laser and optics components
- Periodic checks and laser power adjustments are no longer required

Optical and mechanical features

- Multi-axis, closed-loop position control for improved geometric scanning accuracy enables excellent gridding accuracy
- Spot size is optimized for GeneChip™ cartridges
- Resolution has been extended down to a pixelation of 0.51 μm, enabling scanning of next-generation, high-density GeneChip arrays
- Optical design is optimized to scan at multiple wavelengths from a single excitation wavelength
- Photobleaching is enhanced

Solid-state green laser

- Features a highly reliable, solid-state, self-contained, diode-pumped, frequency-doubled YAG laser
- Eliminates the need for separate laser power supply, decreasing clutter and extra wiring
- Eliminates the need for multi-instrument laboratories to install expensive heat-removal ducts

Automation-ready

- Preassembled with the GeneChip AutoLoader, the GeneChip Scanner 3000 provides:
 - Temperature-controlled environment to maintain long-term stability and integrity for up to 16 hours
 - Removable 48-array carousel for unattended loading and unloading of experiments
 - Improved ease of use
 - Integrated experiment and sample tracking

Advanced instrument control software

The GeneChip System 3000 comes with the newly launched Applied Biosystems™ GeneChip™ Data Collection Software and runs on the Microsoft™ Windows™ 64-bit operating system. The following are the enhancements in the latest instrument control software:

- An updated user interface with remote monitoring capability
- Simplified batch registration of arrays
- Easy management of the client operating system, applications, and security for IT departments
- Notifications for network path interruptions
- Support for more than 14 languages

The GeneChip Scanner 3000 offers space savings and improved reliability

Footprint

- Compact benchtop design for optimal space utilization

Reliability

- Includes a sample transport system that can operate in environments running 10,000 scans per year

Key GeneChip Scanner 3000 safety information

Electrical

- Requires no dedicated or special power setup
- Conforms to the following standards for electromagnetic conformity for Class A industrial, scientific, and medical equipment for use in industrial environments: EN 61326-1, CISPR 11, EN 55011, EN 61000-3-2, EN 61000-3-3, FCC Part 15
- Certified by TÜV SÜD America to the following product safety standards for electrical equipment for measurement, control, and laboratory use: IEC/EN 61010-1, CAN/CSA-C22.2 No. 61010-1, UL 61010-1, IEC/EN 61010-2-081, CAN/CSA-C22.2 No. 61010-2-081

Optical

- Complies with 21 CFR 1040.10 and 1040.11 for laser products, except for deviations pursuant to Laser Notice No. 50
- Certified by TÜV SÜD America to the following product safety standards for Class 1 laser products: IEC/EN 60825-1

Specifications

Scan time	5–45 minutes per cartridge, depending on array type
Sensitivity	<0.5 chromophore equivalents/ μm^2 (CPSM) at a signal-to-noise ratio of 2:1 at wavelengths appropriate to R-phycoerythrin
Excitation	532 nm, 10 mW maximum
Emission filters	570 nm, longpass; 565 nm, 605 nm, 655 nm, and 705 nm, longpass; 20 nm wide, bandpass
Detector	Meshless photomultiplier tube, red enhanced
Displayed and saved dynamic range	16-bit (65,535:1)
Software	GeneChip Data Collection Software
Dimensions (W x D x H)	22.5 x 31 x 44.5 in. (57.2 x 78.7 x 113 cm)
Weight	105 lb (47.6 kg)
Power supply	Voltage: 100–240 V, current: 2–4 A, frequency: 50/60 Hz
PC provided with system	Dell™ OptiPlex™ XE4 Mini Tower Processor: Intel™ Core i9-12900 Memory: 32 GB Hard drive: Dual 2 TB Operating system: Microsoft™ Windows™ 10 IoT Enterprise LTSC 2021 DVD: 8X Half Height DVD +/- RW Drive
Warranty	One-year limited coverage

Services and support: installation, training, and support resources overview



With our comprehensive onboarding service and support offerings for the Applied Biosystems™ CytoScan™ Cytogenetics Suite, you will have everything you need to prepare your lab, train your staff, and transition from starting up to ramping up as quickly as possible. The team of experienced professionals at Thermo Fisher Scientific, including technical sales specialists (TSSs), field service engineers (FSEs), and field application scientists (FASs), can provide you with complete support from initial planning to routine implementation. For more information, please access our services and support [brochure](#).

Ordering information

Product	Description	Cat. No.
GeneChip System 3000 with AutoLoader	Includes: <ul style="list-style-type: none"> • GeneChip Scanner 3000 with AutoLoader • GeneChip Fluidics Station 450 • GeneChip Hybridization Oven 645i • Workstation with GeneChip Data Collection Software 	00-0218
GeneChip Fluidics Station 450	Single station available to be purchased separately from the GeneChip System 3000 with AutoLoader	00-0079
GeneChip Hybridization Oven 645i	Single unit available to be purchased separately from the GeneChip System 3000 with AutoLoader	00-0331

Learn more at thermofisher.com/reproductivehealth

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