

# Applied Biosystems 3130 and 3130x/ DNA Analyzers

## Key Features

- 16 capillaries for the 3130x/ and 4 capillaries for the 3130 system
- 24-hour unattended operation
- Easy instrument setup
- Polymer filling via the Automated Polymer Deliver System
- Detection cell heater for improved thermal control
- Automated sample injection from both 96- and 384-well microtiter plate formats
- 3130 POP-7™, POP-6™, and POP-4™ separation polymers
- Multiple dye detection
- One polymer, one array, multiple applications



## Components

The Applied Biosystems 3130 and 3130x/ Genetic Analyzers consist of the following components:

- Capillary electrophoresis instrument
- Computer workstation for instrument control and data analysis
- Software for instrument control, data collection, and autoanalysis of sample files
- Available analysis software and algorithms:
  - SeqScape® Analysis Software for basecalling
  - GeneMapper®/GeneMapper® ID Software for microsatellite, SNP, AFLP, and LOH analysis
  - SeqScape® Software for comparative sequencing, mutation detection, and detection of heterozygote insertions and deletions

## Capillary Arrays

The internally uncoated capillaries are supplied in preassembled sets of 4 or 16 arrays. Arrays are available in several lengths to provide support for multiple applications and run methodologies. They are specified for 100 runs on the 3130x/ system, and 150 runs on the 3130 system. These arrays are also designed for use with industry-standard 96- and 384-well microtiter plates.

## Separations Matrix

The 3130 POP-7™, POP-6™, and POP-4™ polymers (Performance Optimized Polymers) can be used on the Applied Biosystems 3130 and 3130x/ Genetic Analyzers as the separation matrix. Before each run, the capillaries are automatically replenished with fresh electro-osmotic flow (EOF) suppression polymer.

## Reagents

Applied Biosystems provides the following reagents for use on the 3130 Series Systems:

- Sequencing Analysis Reagents
  - BigDye® Terminator Kits
  - dGTP BigDye® Terminator Kits
  - BigDye® Primer Cycle Sequencing Ready Reaction Kits, M13Rev/-21 M13
  - dRhodamine Dye Terminator Kits
- Fragment Analysis Reagents
  - Linkage Mapping Set Version 2.5
  - GeneScan™ 400 HD Size Standard
  - GeneScan™ 500 Size Standard
  - GeneScan™ 120 Liz® Size Standard
  - GeneScan™ 600 Liz® Size Standard
  - Application-Specific Kits

Contact Applied Biosystems for products in the following categories:

- Agriculture
  - StockMarks® Kits for Canine, Bovine, and Equine Genotyping
- AFLP® Kits for Plants
- Disease Research
- Human Identification
- Microbial Identification
  - MicroSeq® Kits for Microbial Identification
  - AFLP® Kits for Microorganisms
- SNP Analysis
  - ABI PRISM® SNaPshot® Multiplex System
- Methylation

## Software

The Applied Biosystems 3130 and 3130xl Genetic Analyzers include software for data collection and autoanalysis of sample files. Sample-file analysis is performed with Sequencing Analysis

Software v5.2, SeqScape® Software v2.5, and GeneMapper® Software v4.0, running on the Windows XP® platform. The KB™ basecaller algorithm is integrated with Data Collection v3.0 for autoanalysis, Sequencing Analysis v5.2, and SeqScape® v2.5. The algorithm generates pure and mixed basecalls with quality values for sequencing sample files.

## Additional Applied Biosystems Software

- Sequencing Analysis Software v5.2
- SeqScape® Software v2.5
- GeneMapper® Software v4.0
- GeneMapper® *ID* Software v3.2
- MicroSeq® *ID* Software v1.0
- Sequencer Scanner Software v1.0
- Methyl Primer Express® Software v1.0

## Sample Requirement

The 3130 Series Systems can analyze many types of templates prepared by a variety of sample preparation protocols. Samples are automatically injected directly from 96- to 384-well microtiter plates.

## Laser

- Argon-ion multi-line, single mode laser, primary excitation lines: 488 and 514.5 nm.

## Detection Optics

Applied Biosystems 3130 Series Genetic Analyzers use excitation and detection optics for enhanced signal uniformity. These detection optics provide low-noise, full-spectrum data simultaneously from all capillaries. The outer diameter (od), inner diameter (id), and pitch of the capillary have been optimized to minimize loss of signal caused by refraction.

## Electrophoresis Voltage

- Up to 20 kV

## Operating Temperature Range

- 18°C–65°C

## Minimum Computer Requirements

- Hardware: Pentium® IV Processor, 2.00 GHz Processor
- Operating System: Windows XP® Professional Edition
- Installed RAM: 1 GB
- Hard Disk Storage: Dual 36 GB hard drives
- Peripheral: CD/RW

## Operating Environment

- Temperature: 15°C–30°C
- Room temperature should not fluctuate  $\pm 2^\circ$  when the instrument is running.
- Humidity: 20%–80% (non-condensing)

## Main Power Voltage

- 200–220V or 230–240V  $\pm 10\%$
- 50–60 Hz  $\pm 10\%$

## Current

- Maximum: 15 amps

## Maximum Power Dissipation

- 2,000 watts (approximately)

## Dimensions

Electrophoresis Unit:

- Width (closed-door): 74 cm
- Width (open-door): 148.6 cm (left and right door open simultaneously)
- Depth: 54.8 cm
- Height: 81 cm
- Weight: 130 kg (approximately)

## Service and Warranty

- One-year limited warranty on parts and labor
- Service installation
- Application training

## Support

Worldwide applications support and service is offered from expert technical specialists and scientists.

# Performance and Throughput

## SEQUENCING RUN MODULES

Sequencing Run Modules	Array Length, cm	Polymer	Run Time, min	24-hr Throughput*		KB™ Basecaller Q20 LOR**†
				3130 Analyzer	3130x/ Analyzer	
UltraSeq36_POP7	36	POP-7	35	164	656	500
RapidSeq36_POP7	36	POP-7	60	96	384	600
UltraSeq36_POP4	36	POP-4	40	144	576	400
RapidSeq36_POP6	36	POP-6	60	96	384	500
FastSeq50_POP7	50	POP-7	60	96	384	700
StdSeq50_POP7	50	POP-7	120	48	192	850
StdSeq50_POP4	50	POP-4	100	56	224	600
StdSeq50_POP6	50	POP-6	150	36	144	600
LongSeq80_POP7	80	POP-7	170	32	128	950
LongSeq80_POP4	80	POP-4	210	24	96	700

\* Number of samples

\*\* Sequencing Analysis Software v5.2 provides a metric Length Of Read (LOR), defined as the usable range of high-quality or high-accuracy bases determined by Quality Values (QV) generated by KB™ Basecaller Software v1.2. The LOR is determined using a sliding window of 20 bases, which have an average QV greater than 20.

† 98.5% basecalling accuracy, less than 2% N's.

## FRAGMENT ANALYSIS RUN MODULES

Fragment Analysis Run Modules	Array Length, cm	Polymer	Run Time, min	24-hr Throughput*		Resolution, bp	Performance SD**
				3130 Analyzer GT*	3130x/ Analyzer GT*		
Fragment Analysis 22_POP4	22	POP-4	20	5,760	23,040	400	0.50
SNP22_POP4	22	POP-4	15	3,840***	15,360***	120	0.50
Fragment Analysis 36_POP7	36	POP-7	35	3,280	13,120	500	0.15
Fragment Analysis 36_POP4	36	POP-4	45	2,560	10,240	500	0.15
HID Fragment Analysis 36_POP4	36	POP-4	45	2,560	10,240	500	0.15
SNP36_POP4	36	POP-4	30	3,840	15,360	120	0.15
Fragment Analysis 50_POP7	50	POP-7	50	2,240	8,960	500	0.15
Fragment Analysis 50_POP4	50	POP-4	65	1,760	7,040	500	0.15
Fragment Analysis 50_POP6	50	POP-6	90	1,280	5,120	500	0.15

\* 20 genotypes/injection

\*\* Standard deviation: 1 base pair (bp) resolution at 99.99% accuracy

\*\*\* 10 genotypes/injection

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For Research Use Only. Not for use in diagnostic procedures.

NOTICE TO PURCHASER: This instrument is Authorized for use in DNA sequencing and fragment analysis. This authorization is included in the purchase price of this instrument and corresponds to the up-front fee component of a license under process claims of U.S. Patent Nos. 5,821,058 and 5,332,666 and under all process claims for DNA sequence and fragment analysis of U.S. patents now or hereafter owned or licensable by Applied Biosystems for which an Authorization is required, and under corresponding process claims in foreign counterparts of the foregoing for which an Authorization is required. The running royalty component of licenses may be purchased from Applied Biosystems or obtained by using Authorized reagents purchased from Authorized suppliers in accordance with the label rights accompanying such reagents. Purchase of this instrument does not itself convey to the purchaser a complete license or right to perform the above processes. This instrument is also licensed under U.S. Patent No. 5,171,534 and apparatus and system claims in foreign counterparts thereof. No rights are granted expressly, by implication or by estoppel under composition claims or under other process or system claims owned or licensable by Applied Biosystems. For more information regarding licenses, please contact the Director of Licensing at Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.

NOTICE TO PURCHASER: The purchase price of the Applied Biosystems 3130/3130x/ Genetic Analyzer includes a grant of a limited, non-transferable license under U.S. Patent No. 5,567,292 and method claims of its foreign counterparts, and under U.S. Patent No. 6,358,385 and element claims of its foreign counterparts, to use this particular instrument for electrophoresis methods employing fluorescence as a means of detection. No other licenses or rights are hereby conveyed either expressly, by implication, or estoppel including, but not limited to, any claims to a composition. The Applied Biosystems 3130/3130x/ Genetic Analyzer includes patented technology licensed from Hitachi, Ltd. as part of a strategic partnership between Applied Biosystems and Hitachi, Ltd., as well as patented technology of Applied Biosystems.

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