3730xl DNA Analyzer

Introduction

The Applied Biosystems™ 3730xl DNA Analyzer was developed to meet the growing research needs of institutions ranging from core and research labs in academia, government, and medicine to biotechnology, pharmaceuticals, and genome centers. This high-throughput instrument couples advances in automation and optics with proprietary Applied Biosystems™ reagents and software to support a diverse range of genetic analysis projects. By dramatically improving data quality, significantly reducing total cost per sample, and enabling more runs per day, the 3730xl DNA Analyzer makes it quicker and easier for investigators to get meaningful results in evolving genomic applications. Whether your lab is involved in *de novo* sequencing, resequencing, microsatellite-based fragment analysis, or single-nucleotide polymorphism (SNP) genotyping, the 3730xl DNA Analyzer is the ideal platform for better, faster, and more affordable genetic analysis.

Key features

- Advanced multiplexing capabilities for automated DNA fragment analysis with up to 6 unique dyes
- Uses standard 110 V or 220 V power source to simplify installation and bench placement
- Compatible with 48- and 96-capillary arrays
- Single-line, 505 nm, solid-state, long-life laser that doesn't require heat removal
- Maximum optical sensitivity with in-capillary detection and simultaneous dual-side capillary illumination
- Continuous 48 hr unattended operation*
- Integrated autosampler and sample plate stacker
- Onboard piercing station
- Internal barcode reader
- Automated base calling and quality value (QV) assignment
- Applied Biosystems™ POP-7™ Polymer separation matrix
- Oven with active temperature control (18–70°C)
- AnyDyeSet option

* Only for modules greater than 30 min.

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Key benefits

- Highest-quality DNA sequencing data at the lowest cost
  - POP-7 Polymer increases read length and reduces run time
  - Multiple run modules provide options for targeted length of read (LOR, Table 1)
  - High data pass rate and long reads reduce the number of traces required per project
  - Instrument reliability and easy maintenance reduce overhead and service costs
- Highest-quality fragment analysis
  - Flexible, easy-to-use separation matrix and array can be used for fragment analysis and sequencing
  - Powerful software for automated fragment analysis and allele calling
  - 6-dye chemistry increases throughput
- Maximum optical sensitivity
  - In-capillary detection
  - Simultaneous dual-side capillary illumination provides uniform optical detection
  - High sensitivity supports a wide range of input DNA concentrations

System components

- Capillary electrophoresis instrument
- 48- or 96-capillary array and separation matrix (Table 2)
- DNA sequencing reagents and consumables
- Computer workstation with flat-screen monitor for instrument control and data analysis
- Data collection software and analysis software options

Analysis software options

- Applied Biosystems™ Sequencing Analysis Software for base calling and troubleshooting
- Applied Biosystems™ SeqScape™ Software for reference sequence comparisons, which enable detection of sequence variants including heterozygous insertions and deletions
- Applied Biosystems™ GeneMapper™ Software for microsatellite, SNP, Amplified Fragment Length Polymorphism (AFLP™), terminal restriction fragment length polymorphism (T-RFLP), and loss of heterozygosity (LOH) analyses
- Free Applied Biosystems™ Sequence Scanner Software enables viewing and editing of traces and quality control reporting

Table 1. Run module details.

Run module	Array length (cm)	Run time (min)	KB™ Basecaller QV20 LOR (bases)	Runs/day	Samples/day	KB Basecaller QV20 bases/day
Extra long–read sequencing	50	180	900	8	768	691,200
Long-read sequencing	50	120	850	12	1,152	979,200
Fast sequencing	50	60	700	24	2,304	1,612,800
Standard sequencing	36	60	700	24	2,304	1,612,800
Rapid sequencing	36	35	550	40	3,840	2,112,000
TargetSeq™ resequencing system	36	20	400	72*	6,912	2,880,000
Fragment analysis	Up to 500 bp resolution with 0.15 bp sizing resolution			41	3,936	78,720**

* Number shown is for 400 bp reads (long-read standard: HSP69 template). Module can be customized to run 200–400 bases.
** Genotypes/day; assumes 20 genotypes/sample.

Table 2. Capillary arrays and separation matrix.*

Capillary separation distance (cm)	Capillary dimensions	Polymer consumed/run
36	150 µm OD, 50 µm ID	Approx. 200 µL (96-capillary) and 110 µL (48-capillary)
50	150 µm OD, 50 µm ID	Approx. 250 µL (96-capillary) and 130 µL (48-capillary)

* Internally uncoated capillaries are supplied in preassembled arrays consisting of 48 or 96 capillaries. The arrays offer a 300-run warranty.

Reagents

- Applied Biosystems™ BigDye™ Terminator v1.1 and v3.1 Cycle Sequencing Kits
- Applied Biosystems™ GeneScan™ Size Standards
- Applied Biosystems™ Matrix Standard Kits

Computer specifications

- **Base unit:** minitower, Intel™ Core™ i7-4770S Processor (Quad Core HT, 3.10 GHz Turbo, 8 MB, with HD Graphics 4600)
- **Memory:** 16 GB (2 x 8 GB) 1,600 MHz DDR3 non-ECC
- **Hard drive:** 2 x 500 GB
- **Operating system:** Microsoft™ Windows™ 10 IoT Enterprise LTSB 2016
- **Monitor:** 19 in. flat panel
- **Optical drive:** DVD with or without re-writable discs

Note: The computer configuration may be periodically upgraded. Check with your sales representative on current specifications.

Applied Biosystems™ software compatible with Windows 10 operating system

- 3730xl Data Collection Software 5, with Connect capability
- Sequencing Analysis Software 7
- SeqScape Software 4
- Applied Biosystems™ Variant Reporter™ Software 3
- GeneMapper Software 6
- Applied Biosystems™ Minor Variant Finder Software 1.2
- Applied Biosystems™ MicrobeBridge™ Software 1.1

Integrated plate stacker

- Houses up to 16 sample plates
- Accommodates 96-well and 384-well plates
- Accessible any time except when autosampler is moving

Sample volumes

- For 384-well sample plates: 5–30 µL
- For 96-well sample plates: 10–50 µL

Plate seal

- Septa seal
- Polypropylene heat seal (maximum post-sealing film thickness of ≤1 mm, 1/1,000 in.)

Laser

- Solid-state, 505 nm, long-life, single-line

Operating environment

- **Temperature:** ambient temperature, 15–30°C
- **Humidity:** 20–80% (noncondensing)

Oven temperature

- Active temperature control, 18–70°C

Power requirements

- **Main power:** 100–240 V (±10%), 50–60 Hz (±10%)
- **Current maximum:** 0.6 kVA, 6.7 A
- **Maximum power dissipation:** ~600 VA

Dimensions for CE instrument*

- **Width:** 100 cm
- **Depth:** 65 cm
- **Height:** 93 cm
- **Weight:** ~186 kg

Instrument bench

- We recommend using an appropriate bench to handle instrument weight. Go to **steelsentry.com** for further information on benches.

* Not including computer and monitor.

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Ordering information

Product	Cat. No.
Upgrade	
3730 DNA Analyzer, 96-Capillary Refreshed	A41046
3730xl 36 cm upgrade	A42442
3730xl 50 cm upgrade	A42443
Capillary arrays	
3730 DNA Analyzer 48-Capillary Array, 36 cm	4331247
3730 DNA Analyzer 48-Capillary Array, 50 cm	4331250
3730xl DNA Analyzer 96-Capillary Array, 36 cm	4331244
3730xl DNA Analyzer 96-Capillary Array, 50 cm	4331246
Polymers	
POP-7 Polymer, 1 x 28 mL	4363929
POP-7 Polymer, 10 x 28 mL	4363935
POP-6 Polymer, 1 x 7 mL	4352757
Service	
AB Assurance Service Plan for the 3730xl DNA Analyzer	ZG11SC3730XL
AB Complete Service Plan for the 3730xl DNA Analyzer	ZG21SC3730XL
IQ/OQ/IPV for the 3730xl DNA Analyzer (sequencing)	4344752
IQ/OQ/IPV for the 3730xl DNA Analyzer (fragment analysis)	4344753
OQ/IPV for the 3730xl DNA Analyzer (sequencing)	4375066
OQ/IPV for the 3730xl DNA Analyzer (fragment analysis)	4375065
IQ/OQ/IPV for the 3730xl DNA Analyzer (sequencing and fragment analysis)	A42065

Service and warranty

- New instrument: 1-year limited warranty on parts and labor
- Service installation
- Contact your service or sales representative to discuss upgrade options

Support

Please contact us at
thermofisher.com/support

Find out more at **thermofisher.com/3730xl**

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