

3730xl DNA Analyzer for Human Identification



Introduction

The Applied Biosystems™ 3730xl DNA Analyzer was developed to meet the growing needs of institutions ranging from core and research labs in forensics, government, academia, and medicine to biotechnology, pharmaceutical, 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 human identification (HID) and other genetic analysis projects. By significantly reducing total cost per sample and enabling more runs per day, the 3730xl DNA Analyzer makes it quicker and easier for scientists to get meaningful results in a variety of genomic applications. Whether your lab is involved in microsatellite-based fragment analysis, *de novo* sequencing, resequencing, or single-nucleotide polymorphism (SNP) genotyping, the 3730xl DNA Analyzer is the ideal platform for faster and more affordable genetic analysis.

The 3730xl DNA Analyzer with the 36 cm 48-capillary array has been validated for use with Applied Biosystems™ GlobalFiler™ Express and VeriFiler™ Express PCR Amplification Kits for efficient processing from single-source samples used in HID applications (Figure 1).

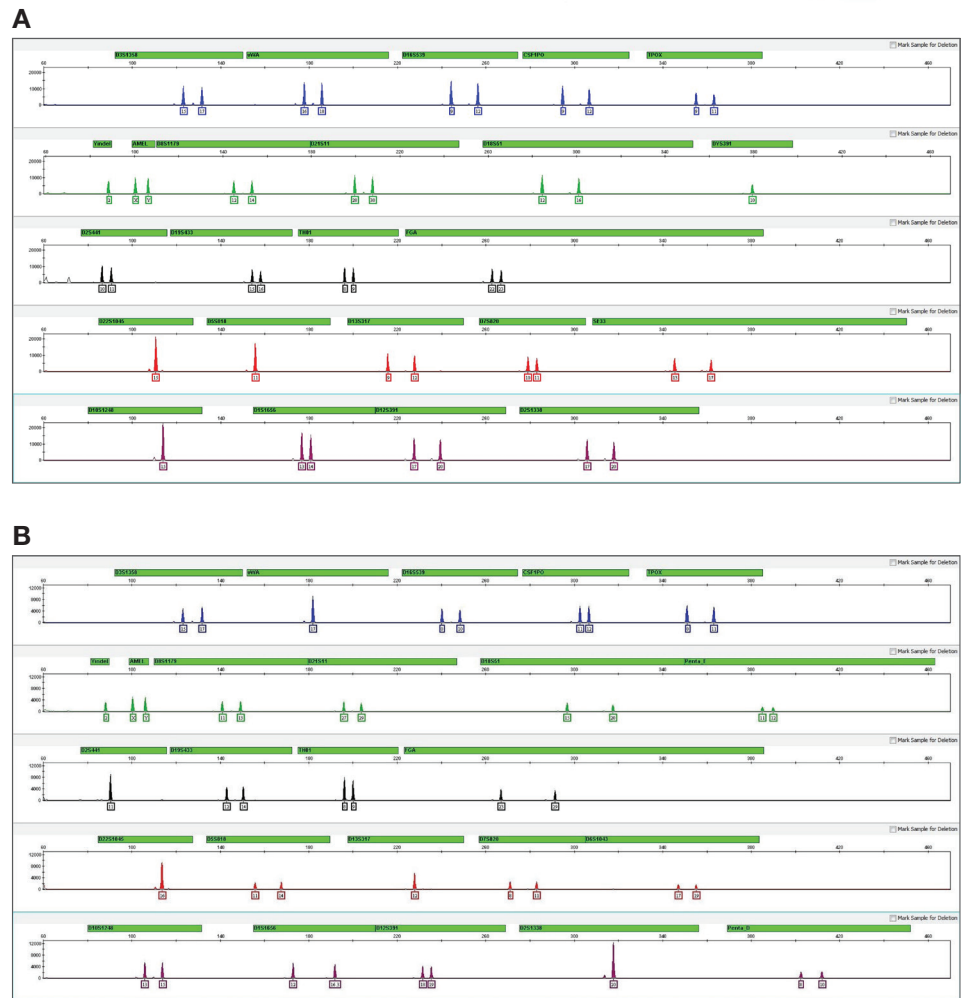


Figure 1. Short tandem repeat (STR) fragment analysis on the 3730xl DNA Analyzer. (A) Direct amplification using the GlobalFiler Express PCR Amplification Kit on a 1.2 mm punch of blood on FTA™ paper. A 15 µL reaction was amplified using 26 cycles and analyzed on a 48-capillary 3730xl DNA Analyzer. **(B)** Direct amplification using the VeriFiler Express PCR Amplification Kit on a 1.2 mm punch of blood on FTA paper. A 10 µL reaction was amplified using 25 cycles and analyzed on a 48-capillary 3730xl DNA Analyzer.

Key features

- Microsoft™ Windows™ 10 operating system included
- Advanced multiplexing capabilities for automated DNA fragment analysis with up to 6 unique dyes
- AnyDyeSet option
- Oven with active temperature control (18–70°C)
- 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 does not require heat removal
- Continuous 48 hr unattended operation
- Sample plate stacker, internal barcode reader, integrated autosampler, and onboard piercing station
- Applied Biosystems™ POP-7™ Polymer separation matrix
- No 6-dye or data collection license renewal required with the latest 3730xl Data Collection Software 5

Key benefits

- Highest-quality fragment analysis at the lowest cost per sample
 - Flexible, easy-to-use separation matrix and array can be used for fragment analysis and sequencing with multiple options for run modules (Table 1)

- POP-7 Polymer increases read length and reduces run time
- Instrument reliability and easy maintenance reduce overhead and service costs
- 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 with computer workstation and flat-screen monitor for instrument control and data analysis
- 48- or 96-capillary array and separation matrix (Table 2)
- Data collection software and analysis software options

Analysis software options

- Applied Biosystems™ GeneMapper™ *ID-X* Software v1.6 offers an integrated solution designed to significantly enhance productivity and confidence in your human identification laboratory
- Applied Biosystems™ Sequencing Analysis Software for base calling and troubleshooting

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
HID STR analysis and 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™ STR kits for Human Identification
- Applied Biosystems™ BigDye™ Terminator v1.1 and v3.1 Cycle Sequencing Kits
- Applied Biosystems™ GeneScan™ Size Standards
- Applied Biosystems™ Matrix Standard Kits

Applied Biosystems™ software compatible with Windows 10 operating system

- 3730xl Data Collection Software 5
- GeneMapper *ID-X* Software v1.6
- Sequencing Analysis Software 7
- Additional software packages are available; please contact your local representative for more information

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

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

* Not including computer and monitor.

Ordering information

Product	Cat. No.
Upgrade*	
3730xl DNA Analyzer	A41046
3730 48-Capillary Upgrade	A42442
3730xl 96-Capillary 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
STR kits	
GlobalFiler Express PCR Amplification Kit, 1,000 reactions	4474665
GlobalFiler Express PCR Amplification Kit, 10,000 reactions	A26912
GlobalFiler Express PCR Amplification Kit and Prep-n-Go Buffer, 1,000 reactions	4479648
VeriFiler Express PCR Amplification Kit, 200 reactions	A32014
VeriFiler Express PCR Amplification Kit with Prep-n-Go Buffer, 200 reactions	A33032
Service	
AB Assurance Service Plan for the 3730xl DNA Analyzer	ZG11SC3730XL
AB Complete Service Plan for the 3730xl DNA Analyzer	ZG21SC3730XL
IQ/OQ for the 3730xl DNA Analyzer (fragment analysis)	4344753
OQ/IPV for the 3730xl DNA Analyzer (fragment analysis)	4375065
IQ/OQ/IPV for the 3730xl DNA Analyzer (sequencing and fragment analysis)	A42065

* Trade-in opportunities, refurbished instruments, and field upgrade options are also available. See below or contact your sales representative for more information.

Service and warranty

- New instrument: 1-year limited warranty on parts and labor
- Service installation

Support

Please contact us at
thermofisher.com/support

Find out more at thermofisher.com/3730xl

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 S C I E N T I F I C