

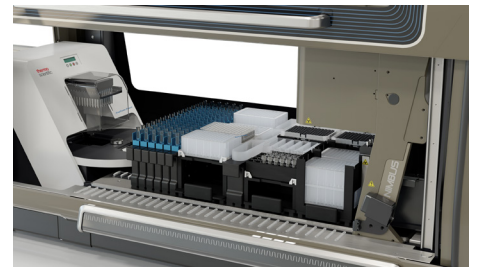


Automated casework workflow

Reclaim your time and keep answers flowing with an automated, set-up-and-go system

The automated Applied Biosystems™ HID NIMBUS® Presto QNA System combines three forensic workflow steps into one compact system. The system can:

- Purify nucleic acids from lysed samples
- Perform quantification plate setup
- Complete normalization
- Perform amplification plate setup



Streamline your casework by integrating purification setup, normalization calculation, dilution, and amplification setup into one user-friendly system

Quality results with high reproducibility

- Minimal variation between users and runs
- Increased process standardization
- Consistent, reliable, and accurate results from a variety of forensic sample types, including bone and touch DNA samples



Less hands-on time

- Simple setup and workflow
- Minimal manual touchpoints to help reduce human error and contamination risk
- Save time, for 96 samples
 - Purification setup in <15 minutes
 - Quantification setup in <15 minutes
 - Amplification setup in <15 minutes
 - Total hands-on time savings: ~5 hours*



* Based on internal testing scenario.

Features	HID NIMBUS Presto System	HID NIMBUS Presto QNA System	HID NIMBUS QNA System
Purification	X	X	
Quantification setup		X	X
Normalization		X	X
Amplification setup		X	X
Easy-to-use software	X	X	X

Figure 1. Available configurations. HID NIMBUS systems are available in three configurations.

Purification

The Applied Biosystems™ HID NIMBUS® Presto System can purify up to 96 lysed samples in less than 90 minutes. With rapid processing and high-quality yields of even the most complex forensic sample types—including bone, tooth, and touch DNA—forensic labs can enjoy faster turnaround times with lasting confidence in results.

The system offers a hands-free and walk-away purification process that combines the Thermo Scientific™ KingFisher™ Presto™ Purification System on an industry-leading, automated liquid handling workstation. The liquid handler simultaneously prepares wash plates while the KingFisher Presto system purifies DNA samples.

The HID NIMBUS Presto System is specifically scripted, optimized, and validated for use with Applied Biosystems™ PrepFiler™ and PrepFiler™ BTA automated forensic DNA extraction kits. PrepFiler extraction kits promote binding of DNA to magnetic particles, removal of cellular debris and inhibitors, and elution of bound DNA through the movement of the magnetic particles across reagent plates.

The easy-to-use software allows users to select their chemistry, labware type, sample volume, and elution volume. It also provides detailed loading instructions, including reagent volumes and the number of required consumables. In addition, it offers a recovery mode so the purification process can be restarted at the interrupted step—saving time and precious samples.

Quantification setup

Cover more steps in your workflow with optimized scripting and a hands-free, automated quantification setup. Available as a stand-alone feature or an add-on to the HID NIMBUS Presto System, the same system can prepare samples for quantification using the Applied Biosystems™ Quantifiler™ Trio Automated DNA Quantification Kit, either on an Applied Biosystems™ QuantStudio™ 5 or 7500 real-time PCR system.

Applied Biosystems™ HID NIMBUS® System Software for quantification allows users to engage a 5-point, 6-point, or virtual standard curve, design their own output plate map, select from a library of provided plate maps, or save their own plate map to the system. The HID NIMBUS Presto QNA System's automated quantification setup feature saves time and resources, allowing analysts more time to work on other tasks, such as analysis or reporting.

Normalization and amplification setup

The HID NIMBUS Presto QNA System consolidates three steps of the forensic workflow onto one instrument. In addition to purification and quantification setup, the HID NIMBUS Presto QNA System can completely remove the manual normalization process by automatically calculating dilution protocols and normalizing DNA samples. Analysts can reduce hands-on time and experience consistent, reliable, and accurate results from a variety of forensically relevant sample types.

The normalization and amplification setup capabilities of the HID NIMBUS systems are validated for use with the following Applied Biosystems™ STR kits: GlobalFiler™, GlobalFiler™ IQC, VeriFiler™ Plus, Yfiler™ Plus, and NGM Detect™ PCR amplification kits. Samples can be prepared and set up for use with Applied Biosystems™ 3500, 3500xL, SeqStudio™, SeqStudio™ 8 Flex, and SeqStudio™ 24 Flex genetic analyzers.

Like the software interface for the other features of HID NIMBUS systems, the normalization and amplification interface provides exact calculations and reagent volumes based on user input. The software includes a robust library of plate maps and the option to save plate maps to a local library.

Validated chemistries

Purification

PrepFiler and PrepFiler BTA automated forensic DNA extraction kits

PrepFiler automated extraction kits use magnetic particles with an optimized multicomponent surface chemistry to facilitate exceptional DNA yield from standard to the most complex forensic sample types—including bone, tooth, and touch DNA.

These kits are designed to improve the overall concentration of DNA recovered from both routine and challenging samples, while enabling the removal of PCR inhibitors—delivering the performance and efficiency needed to help reduce case backlogs.

Quantification

Quantifiler Trio Automated DNA Quantification Kit

Quantifiler Trio kits are specially designed to quantify the total amount of amplifiable human DNA in a sample and include all the necessary reagents for detection, amplification, and quantification of three human-specific DNA targets—including improved male Y target for more sensitive male:female ratio detection and improved results in sexual assault casework.

The Quantifiler Trio kit enables forensic laboratories to simultaneously obtain a quantitative and qualitative assessment of total human DNA in a single, highly sensitive real-time PCR reaction. This guides selection of the optimal short tandem repeat (STR) analysis chemistry (autosomal or mini-STR) and streamlines the workflow while increasing downstream analysis success rates.

STR amplification

GlobalFiler PCR amplification kits

GlobalFiler and GlobalFiler IQC PCR amplification kits combine reduced amplification time with exceptional discrimination power, even with the most challenging sample types. The kits, with 10 mini-STR markers, incorporate the most commonly used loci—all in a single multiplex kit. They contain all markers recommended for inclusion by the CODIS Core Loci Working Group and those markers commonly used in Europe, including SE33. The multiplex selection of markers reduces the risk of adventitious matches while enabling more effective cross-border data sharing. GlobalFiler kits are approved for use by laboratories generating DNA profiles for inclusion in the US National DNA Index System (NDIS) CODIS database.

VeriFiler Plus PCR Amplification Kit

The VeriFiler Plus PCR Amplification Kit offers high-performance genotyping results from single-source and challenging casework samples using a 25-marker STR multiplex assay that includes two gender determination markers, as well as the highly discriminatory Penta D and Penta E markers. VeriFiler Plus kits are approved for use by laboratories generating DNA profiles for inclusion in the US NDIS CODIS database.

With 11 mini-STRs, VeriFiler Plus kits are specifically designed for challenging sample types: touch, inhibited, or degraded samples, with improved sensitivity and robustness to inhibition. In addition, an internal quality control (IQC) system assesses for the presence of inhibitors in the sample to enable distinction between degraded and inhibited samples, which can help forensic analysts make better decisions on how to further process problematic samples. The IQC system also verifies PCR amplification.

Yfiler Plus PCR Amplification Kit

The Yfiler Plus PCR Amplification Kit is designed for forensic laboratories that process highly challenging Y-STR casework and database samples. The Yfiler Plus kit is optimized to help improve resolution of trace evidence and sexual assault mixtures that contain small quantities of male DNA in a large background of female DNA. It offers laboratories both the power of discrimination and the performance to enable accurate results in less time from challenging samples. The kit is a multiplex assay for STRs that allows amplification from multiple male-specific sample types, such as male-male and male-female mixtures, and direct PCR amplification from single-source samples.

NGM Detect PCR Amplification Kit

The NGM Detect PCR Amplification Kit delivers exceptional data quality and robustness along with powerful discrimination to support European cross-border data sharing initiatives. The NGM kits amplify all Applied Biosystems™ SGM Plus™ kit loci together with additional loci in the expanded European Standard Set as recommended by the European Network of Forensic Science Institutes (ENFSI) and European DNA Profiling Group (EDNAP).

The NGM Detect Amplification Kit, with 7 mini-STR markers, offers excellent sensitivity and maximizes information recovery, even from degraded casework samples. It also contains an IQC system that assesses for the presence of inhibitors in the sample to enable distinction between degraded and inhibited samples. This can help forensics analysts make better decisions on how to further process problematic samples.

Software

Easy-to-use visual guides

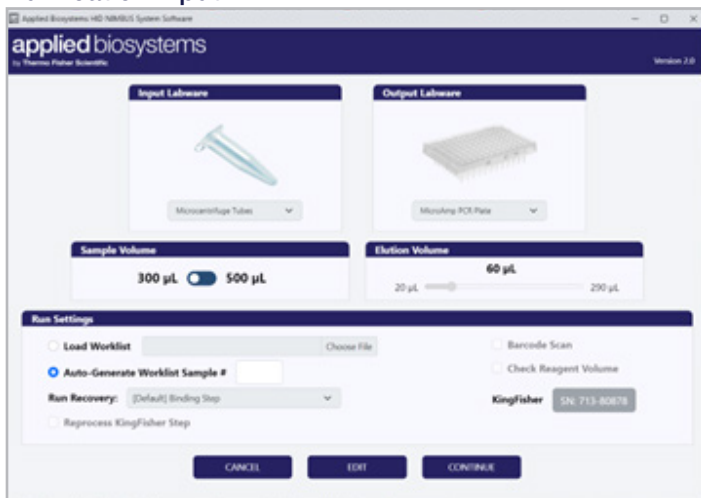
The custom-designed HID NIMBUS System Software includes visualization guides for reagent positioning, guidance mode for step-by-step setup, short tutorial videos, and images of the work deck setup. Users can initiate purification, quantification setup, and amplification setup in just a few minutes. The intuitive software provides an easy-to-navigate interface with intelligent automated calculations for seamless, reliable, and accurate results.

The software, along with the specifically scripted, optimized, and validated instrument, can help optimize the forensic DNA analysis process by reducing hands-on time.

Software features:

- Easily select workflows, kits, and input/output labware
- Select from commonly used plate map templates, or customize your own and add them to your library
- Standard curves: 5 pt, 6 pt, or virtual
- Visual cues and guidance mode to help ensure accurate and easy setup

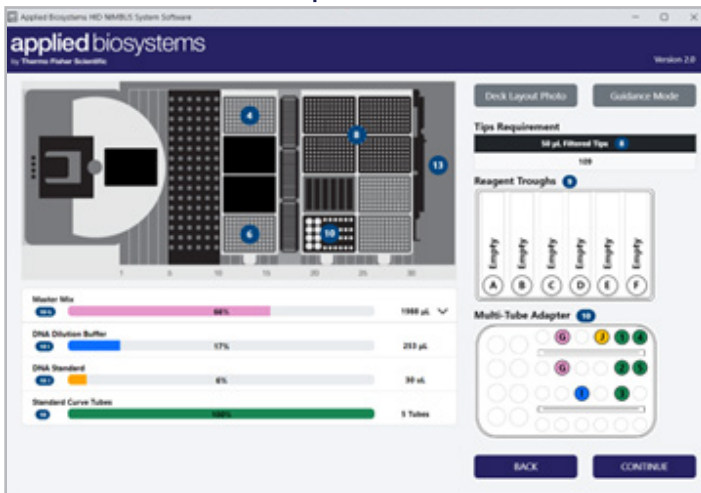
Purification input



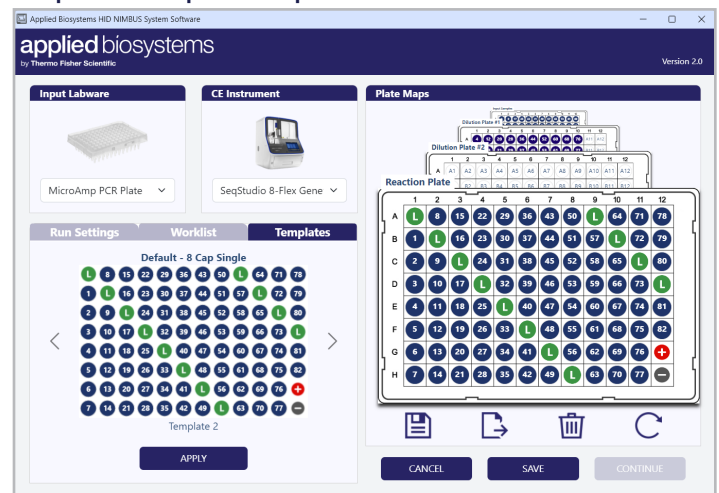
Quantification input



Quantification deck setup



Amplification plate map selection



**Powerful systems combined for reliable liquid handling
Fast, simple, and automated sample preparation**

The HID NIMBUS system includes industry-leading automated liquid handling and superior-quality pipetting in a compact setup. The proven magnetic particle-based technology of the KingFisher Presto Purification System enables high-quality yields of target nucleic acids. These two systems, combined with easy-to-use software, allow consistent results quickly.

**HID Professional Services—get online faster
Integration, validation, and implementation support**

Since 2007, the Human Identification Professional Services (HPS) team at Thermo Fisher Scientific has been partnering with forensic laboratories to provide comprehensive validations and implementation support, both vital for bringing new technologies into operation. With a consultative approach to all services, the HPS team aims to design and implement the right solutions for the required laboratory workflow.

HID NIMBUS systems include:

- Microlab™ NIMBUS® HD Liquid Handler
- Four independent channels
- Barcode scanner
- Laptop
- Easy-to-use software
- Preconfigured deck with accessories
- The KingFisher Presto system for purification*



* Available in the HID NIMBUS Presto and HID NIMBUS Presto QNA systems.

Performance

Across the required operating temperature and humidity, the device is expected to meet or exceed the following pipetting performance requirements:				
	Disposable tip size	Pipetting volume	Accuracy [R] (%)	Precision CV (%)
Pipetting capabilities	10 µL	0.5 µL	10.0	6.0
	10 µL	1 µL	5.0	4.0
	10 µL	5 µL	2.5	1.5
	10 µL	10 µL	1.5	1.0
	50 µL	0.5 µL	10.0	6.0
	50 µL	1 µL	5.0	4.0
	50 µL	5 µL	2.5	1.5
	50 µL	50 µL	2.0	0.75
	300 µL	10 µL	5.0	2.0
	300 µL	50 µL	2.0	0.75
	300 µL	200 µL	1.0	0.75
	1,000 µL	10 µL	7.5	3.5
	1,000 µL	100 µL	2.0	0.75
	1,000 µL	1,000 µL	1.0	0.75
Positional accuracy	Device shall have a positional accuracy of +/- 0.5 mm Positional data as measured from the pipette channel stop disk			

Instrument specifications

Description	
Number of channels	4
Sample input format	1.5 mL microfuge tubes, 96-well plate, 96-deep-well plate, 96-well spin and filter plate
Sample output format	1.5 mL microfuge tubes, 96-well plate, 96-deep-well plate, 96-well reaction plate
Validated sample prep kits for HID	PrepFiler and PrepFiler BTA automated forensic DNA extraction kits
Dimensions (L x W x H)	53.5 x 27.9 x 35.0 in. (135.9 x 70.9 x 88.9 cm) with door closed
	53.5 x 27.9 x 51.2 in. (135.9 x 70.9 x 130.0 cm) with door opened
Weight	300 lb (136 kg)
Warranty	1 year included, extended warranties available
Training	HPS for validation and verification available

Operation

Description	
Power input	100–240 VAC, 50–60 Hz, 5 A
Output power (auxiliary)	42 VDC, ±5%; 600 W maximum
Communication	Ethernet
Operating temperature	15–35°C (59–95°F)
Relative humidity	30–80% noncondensing

Storage

Description	
Storage temperature	–20°C to 50°C

Computer and software*

Description	
Memory	4 GB RAM
Processor	2.33 GHz processor
Hard drive	80 GB hard drive
Operating system	Microsoft™ Windows™ 10 OS
Graphics card	Graphics card with Microsoft™ DirectX™ 10.0 installer support
Miscellaneous	At least 1 (recommended 2) Ethernet ports (RJ45, CAT5E) for connection to the instrument At least 1 serial port for connection to the VFV kit balance Additional USB and/or RS232 ports as necessary for integrated devices (RS232 to USB adaptor may be used) Microsoft™ .NET Framework 3.5
Software	HID NIMBUS System Software

* Minimum specifications.

Ordering information

Description	Includes	Cat. No.
All HID NIMBUS systems*	Instrument: Microlab NIMBUS HD Liquid Handler with 4 channels and laptop Accessories: Plate gripper; barcode reader; 16-position small tube carrier with tube carrier inserts; 4-position carrier with NTR pedestal and PCR adaptors; reagent trough carrier; 4-position carrier with 2 NTR pedestals, reagent trough pedestal, and NTR multitube adapter; 4-position carrier with 2- FTR pedestals and 2 plate stack pedestals Software: HID NIMBUS System Software	
HID NIMBUS Presto System*	Instrument: Includes KingFisher Presto system Methods: Validated with PrepFiler and PrepFiler BTA kits	A55395
HID NIMBUS Presto QNA System*	Instrument: Includes KingFisher Presto system Methods: Validated with PrepFiler, PrepFiler BTA, Quantifiler Trio, GlobalFiler, GlobalFiler IQC, Yfiler Plus, VeriFiler Plus, and NGM Detect kits	A55769
HID NIMBUS QNA System*	Methods: Validated with Quantifiler Trio, GlobalFiler, GlobalFiler IQC, Yfiler Plus, VeriFiler Plus, and NGM Detect kits	A55771
HPS Validation and Performance Check Services		Upon request
HPS Performance Verification		Upon request
Hamilton Tips, non-sterile, 50 µL		A58978
Hamilton Tips, non-sterile, 300 µL		A47618
Hamilton Tips, non-sterile, 1,000 µL		A47619
Hamilton Reagent Reservoir, 60 mL		56694-01
Hamilton Reagent Reservoir, 200 mL		56695-01
KingFisher 96 deep-well plate		95040450
KingFisher 96 tip comb for deep-well magnets		97002534
MicroAmp PCR plate		N8010560
Microcentrifuge tubes		AM12450
Spin and Filter 96-well plate		A36853
Tube Carrier (6 qty)		6604980-01
Carrier inserts		182238
PrepFiler Automated Forensic DNA Extraction Kit*		4463353
PrepFiler BTA Automated Forensic DNA Extraction Kit*		4463354
Quantifiler Trio Automated DNA Quantification Kit*		A58787
GlobalFiler PCR Amplification Kit*		4482815
GlobalFiler IQC PCR Amplification Kit*		A43565
VeriFiler Plus PCR Amplification Kit*		A35495
Yfiler Plus PCR Amplification Kit*		4482730
NGM Detect PCR Amplification Kit*		A31832

* For Research, Forensic, or Paternity Use Only. Not for use in diagnostic procedures.



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