applied biosystems

Real-time and digital PCR solutions

More efficiency to take your research further

ThermoFisher SCIENTIFIC

Discover more efficient real-time PCR (qPCR)

The family of most-cited Applied Biosystems™ qPCR solutions delivers the caliber of results you need, faster and easier than you could have imagined. Free yourself from extra steps, preventable rework, and other inefficiencies so you can focus on making meaningful discoveries.

Experience the difference the efficient workflow of Applied Biosystems qPCR solutions can make to your research success:

- Connected instruments incorporate smart technologies to enable hands-free operation and remote support, while a suite of cloud-based analysis software provides greater flexibility.
- Predesigned Applied Biosystems™ TaqMan™ Assays provide everything you need, including TaqMan™ probe and PCR primer sets, formulated to work right out of the box. No additional design, optimization, or post-run analysis steps required.
- Complement your assay with an Applied Biosystems™ TaqMan™ master mix and experience the gold standard in qPCR performance. We also offer Applied Biosystems™ SYBR™ dye chemistry with advanced features like dye tracking that help prevent pipetting errors.

More choices. More flexibility. More efficiency.

Experience more from your qPCR.

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Which qPCR instrument fits your needs?

QuantStudio real-time PCR systems

For when you need:	Ultimate simplicity	Total control
	QuantStudio 3 system	QuantStudio 5 system
Colors	4 colors	5 or 6 colors (21 filter combinations)
Available formats*	96-well (0.1 mL block) 96-well (0.2 mL block)	96-well (0.1 mL block) 96-well (0.2 mL block) 384-well
Dimensions (H x W x D)	40 x 27 x 50 cm	40 x 27 x 50 cm
Block change	Fixed	Fixed
VeriFlex temperature control	Yes, 3 zones	Yes, 6 zones (96-well blocks only)
Throughput	Medium	Medium
21 CFR Part 11–enabled	Security	Security, auditing, e-signature package
Touchscreen	Yes, interactive	Yes, interactive
Cloud-enabled	Yes	Yes
Automation compatible	NA	NA
Key applications	• Gene expression • miRNA profiling • SNP genotyping • Copy number variation • Protein thermal shift • High resolution melt • Pathogen detection	• Gene expression • miRNA profiling • SNP genotyping • Copy number variation • Protein thermal shift • High resolution melt • Pathogen detection

* Some blocks may not be available.
Some instruments are also available in a diagnostic format. Learn more at thermofisher.com/qsdx

For information on other Applied Biosystems™ PCR instruments, please visit **thermofisher.com/qpcrinstruments**

Smart and connected	Smarter productivity	Maximum productivity
QuantStudio 6 Pro system*	QuantStudio 7 Pro system*	QuantStudio 12K Flex system
5 colors	6 colors (21 filter combinations)	6 colors (21 filter combinations)
96-well (0.1 mL block) 96-well (0.2 mL block) 384-well	96-well (0.1 mL block) 96-well (0.2 mL block) 384-well TaqMan Array Card (384-well microfluidic card)	96-well (0.1 mL block) 96-well (0.2 mL block) 384-well TaqMan Array Card (384-well microfluidic card) OpenArray plates (3,072 through-holes)
54.7 x 33.8 x 52.5 cm	54.7 x 33.8 x 52.5 cm	73.8 x 50.1 x 66.1 cm
Interchangeable; no tools required	Interchangeable; no tools required	Interchangeable; no tools required
Yes, 3 zones (96-well blocks only)	Yes, 6 zones (96-well blocks only)	NA
High	High	Very high
Upgradeable	Security, auditing, e-signature package	Optional security, auditing, e-signature package
Yes, interactive	Yes, interactive	Yes
Yes	Yes	No
Upgradeable	Yes	Yes
• Gene expression • miRNA profiling • SNP genotyping • Copy number variation • Protein thermal shift • High resolution melt • Pathogen detection • Pharmacogenomics	• Gene expression • miRNA profiling • SNP genotyping • Copy number variation • Protein thermal shift • High resolution melt • Pathogen detection • Pharmacogenomics	• Gene expression • miRNA profiling • SNP genotyping • Copy number variation • Protein thermal shift • High resolution melt • Pathogen detection • Pharmacogenomics • Growing menu of qualified solutions

= cloud-enabled instrument

Real-time PCR applications

Real-time PCR is used for sensitive, specific detection and quantification of nucleic acid targets. We have developed powerful assay design algorithms, optimized master mixes, intuitive data analysis software, and flexible instrumentation to help harness the power of qPCR across a rich and diverse set of applications. Explore our robust solutions for your qPCR-based research.

Infectious disease research

See our growing catalog of sensitive, specific real-time PCR probe and primer sets to study microbe biology and pathogenicity, host response, and disease pathology.

Food pathogen detection

Detect multiple bacteria in the same run, including *Salmonella, Campylobacter, E. coli* O157:H7, *Listeria monocytogenes*.

Waterborne pathogen detection

Designed to detect and monitor waterborne pathogens in recreational and drinking water supplies.

Pharmaceutical analytics

Designed to detect mycoplasmas, viruses, and residual host cell contamination for pharmaceutical, cosmetics, and personal care product manufacturing.

Qualified solutions

A growing menu of new and valuable content for you to use on your high-throughput real-time PCR systems, including pharmacogenomics, vaginal microbiota, and *CFTR* mutation analysis.

Stem cell research

Solutions for analyzing stem cells, determining stemness, and studying gene regulation and translation in stem cells.

Pharmacogenomics research

Predesigned Applied Biosystems™ TaqMan™ Assays for more than 175 ADME and CYP targets, including >95% of ADME core markers and a warfarin metabolism panel.

Oncology and genetic disease research

Enabling robust, reliable detection and quantitation of markers for cancer and genetic diseases.

Plant sciences and agricultural biotechnology

Instruments, reagents, and kits designed for plant researchers that enable remarkable agricultural discoveries—from improved crops that feed more people to sustainable biofuels.

Other key applications include gene expression, genotyping, and sequencing.

Real-time PCR software

A suite of analysis modules for the QuantStudio instrument family is available on the Thermo Fisher™ Connect Platform, enabling users to access and analyze their data anytime and anywhere. Just create and sign in to your account to use the Connect Platform for secure, cloud-based data storage, scientific analysis apps, and peer collaboration tools. Use the asset management apps and web tools to schedule time on your lab's instruments via your mobile device.

thermofisher.com/connect

Applied Biosystems qPCR analysis modules are a set of modules that provide an online toolkit for the analysis of qPCR data. The software takes advantage of the Connect Platform to provide highly versatile analysis tools that are flexible, fast, and easy to use and facilitate functional understanding of qPCR and related data. These modules allow users to combine over 100 genotyping, expression, or qPCR experiments into a project and analyze the data within minutes. Featured modules include:

- Design and Analysis
- High Resolution Melt (HRM) Analysis
- Presence/Absence Analysis
- Standard Curve
- Genotyping
- hPSC Scorecard Analysis
- Relative Quantification

Design and Analysis

The Design and Analysis app offers the ability to create, edit, and analyze qPCR instrument files.

High Resolution Melt (HRM) Analysis

This High Resolution Melt Analysis (HRM) app is designed for post-PCR analysis to identify variation in nucleic acid sequences. The method is based on detecting small differences in PCR melting (dissociation) curves. It is enabled by high-brightness, dsDNA-binding dyes used in conjunction with real-time PCR instrumentation that has precise temperature ramp control, advanced data capture capabilities, and access to software designed specifically for HRM analysis.

Presence/Absence Analysis

The Presence/Absence Analysis app analyzes and interprets real-time PCR data or post-read data to determine if a specific target sequence is present in a sample or not. It provides an easy-to-view presence/absence result in a plate grid view.

Standard Curve

The Standard Curve app offers reliable quantification of unknown quantities of genes and enables importing of standard curves from other experiments, providing analysis flexibility.

Genotyping

The Genotyping app includes improved visuals and integrated traces of allelic discrimination plots to allow thorough QC of SNP assays to accurately reflect the true signals versus background noise.

hPSC Scorecard Analysis

The hPSC Scorecard Analysis app scores gene expression profiles generated using the TaqMan hPSC Scorecard Panel compared to a reference set of well-characterized pluripotent stem cell lines. It provides raw data as well as box plots, heat maps, and correlation plots for export.

Relative Quantification

The Relative Quantification app allows fast and powerful gene expression analysis with enhanced visual capabilities for relative quantification, including integrated correlation and volcano and cluster analysis with the ability to drill down to amplification plots.

Learn more at **thermofisher.com/qpcranalysisapps**

Intuitive and easy to use for all levels of experience

QuantStudio 3 and 5 Real-Time PCR Systems

The Applied Biosystems™ QuantStudio™ 3 and QuantStudio™ 5 Real-Time PCR Systems provide intuitive touchscreen usability, allowing you to stay connected to your data easily. They're designed for both new and experienced users who need simple and affordable instruments without compromising performance or quality.

Get a premium instrument at an affordable price

Access, analyze, and share data anytime, anywhere with the Connect Platform—cloud-enabled services that support remote monitoring of your runs in real time, analyze sophisticated datasets in minutes, securely store data, and share results online with colleagues across institutions and around the world

Obtain results you can trust—detect differences in target quantity as small as 1.5-fold in singleplex reactions, and obtain 10 logarithmic units of linear dynamic range

Multiplex with ease—up to six excitation and six emission filters offer 21 different color combinations, allowing a broad range of detection chemistries and maximum multiplexing

Helps save valuable time—QuantStudio 3 and 5 systems offer 3 or 6 independent temperature zones for flexibility to run multiple experiments simultaneously; fast thermal cycling enables results in less than 30 minutes

Get up and running quickly—instruments are factory-calibrated for accuracy, quick installation, and immediate use; preoptimized protocol templates help minimize training for new users, and the included SmartStart Orientation provides basic qPCR training and setup for both the Connect Platform and the Instrument Management tool

Maximize benchtop space—compact instrument can be configured as a stand-alone or with a computer

= cloud-enabled instrument

Find out more at **thermofisher.com/quantstudio3-5**

Specifications

	QuantStudio 3 system	QuantStudio 5 system
Sample capacity (wells)	96	96 or 384
Reaction volume	0.1 mL block: 10–30 µL 0.2 mL block: 10–100 µL	96-well, 0.1 mL block: 10–30 µL 96-well, 0.2 mL block: 10–100 µL 384-well: 5–20 µL
Footprint (H x W x D)	40 x 27 x 50 cm	40 x 27 x 50 cm
Excitation source	Bright white LED	Bright white LED
Optical detection	4 coupled filters	96-well: 6 decoupled filters 384-well: 5 coupled filters
Excitation/detection range	450–600 nm/500–640 nm	96-well: 450–680 nm/500–730 nm 384-well: 450–650 nm/500–700 nm
Multiplexing	Up to 4 targets	96-well: up to 6 targets 384-well: up to 5 targets
2D barcode reading	Optional	Optional
Heating/cooling method	Peltier	Peltier
Temperature zone function	3 VeriFlex zones	96-well: 6 VeriFlex zones 384-well: NA
Max. block ramp rate	0.2 mL block: 6.5°C/sec 0.1 mL block: 9.0°C/sec	0.2 mL block: 6.5°C/sec 0.1 mL block: 9.0°C/sec 384-well block: 6.0°C/sec
Average sample ramp rate	3.66°C/sec	3.66°C/sec
Temperature uniformity	0.4°C	0.4°C
Temperature accuracy	0.25°C	0.25°C
Run time	<30 min runs	96-well block: <30 min runs 384-well block: <35 min runs
Dye compatibility (name)	FAM/SYBR Green, VIC/JOE/HEX/TET, ABY/NED/TAMRA/Cy3, JUN, ROX/Texas Red	FAM/SYBR Green, VIC/JOE/HEX/TET, ABY/NED/TAMRA/Cy3, JUN, ROX/Texas Red, Mustang Purple, Cy5/LIZ, Cy5.5
Chemistry capabilities	Fast/standard	Fast/standard
Features to assist with 21 CFR Part 11 compliance	No	Yes, with no additional fees
Detection sensitivity	1 copy	1 copy
Sensitivity	Detect differences as small as 1.5-fold in target quantities in singleplex reactions	Detect differences as small as 1.5-fold in target quantities in singleplex reactions

Ordering information

Product	Cat. No.	Instrument + 1-year extended warranty with AB Assurance Cat. No.*
QuantStudio 3 Real-Time PCR System (96-well, 0.1 mL block)**	A28136	A33777
QuantStudio 3 Real-Time PCR System (96-well, 0.2 mL block)**	A28137	A33779
QuantStudio 5 Real-Time PCR System (96-well, 0.1 mL block)**	A28138	A33619
QuantStudio 5 Real-Time PCR System (96-well, 0.2 mL block)**	A28139	A33624
QuantStudio 5 Real-Time PCR System (384-well block)**	A28140	A33628

* Includes SmartStart Orientation.

** Does not include computer. Additional Cat. Nos. are available that include laptop or desktop computer.

Recommended plastics

96-well block	Cat. No.	96-well block Fast	Cat. No.	384-well block	Cat. No.
MicroAmp EnduraPlate Optical 96-Well Clear Reaction Plate with Barcode	4483354	MicroAmp EnduraPlate Optical 96-Well Fast Clear Reaction Plate with Barcode	4483485	MicroAmp EnduraPlate Optical 384-Well Clear Reaction Plate with Barcode	4483285
MicroAmp Optical 96-Well Reaction Plate with Barcode	4306737	MicroAmp Fast Optical 96-Well Reaction Plate with Barcode, 0.1 mL	4346906	MicroAmp Optical 384-Well Reaction Plate with Barcode	4309849
MicroAmp Optical 8-Tube Strip with Attached Optical Caps, 0.2 mL	A30588	MicroAmp Fast 8-Tube Strip	4358293	MicroAmp Optical 384-Well Reaction Plate	4343370
MicroAmp Optical Adhesive Film	4360954	MicroAmp Optical 8-Cap Strip	4323032	MicroAmp Optical Adhesive Film	4360954
		MicroAmp Optical Adhesive Film	4360954		

Smarter productivity and improved workflow

QuantStudio 6 Pro and 7 Pro Real-Time PCR Systems

The Applied Biosystems™ QuantStudio™ 6 Pro and 7 Pro Real-Time PCR Systems are designed to save space on the lab bench, increase format flexibility, and support quick and simple block changes. These systems also deliver a smart workflow experience with advanced features that are designed for efficiency and productivity.

* Automation is available for the QuantStudio 7 Pro system and is available for the QuantStudio 6 Pro system after upgrade.

Personalized

- Automatically load your settings and plate setup
- Simply log in with facial authentication, no passwords required
- SmartStart Orientation, which includes one day of on-site training that covers basic instrument operation and maintenance, and a choice of hands-on application training (including reagents) on either absolute quantification, gene expression, or genotyping

Efficient

- Minimize hands-on time with voice commands facilitating hands-free operations
- Eliminate manual steps to obtain plate layout, protocol, and assay information on the instrument when using Applied Biosystems™ TaqMan™ Array Plates with RFID (see page 14 for more information)
- Maximize uptime with the push-button Smart Help feature to access technical support scientists for faster, more efficient troubleshooting and resolution
- Reduce downtime using the Smart Remote Support collaboration tool with real-time video/audio and desktop support to guide you through repairs remotely

Simple

- Streamlined workflow directly from touchscreen
- Simple, tool-free block changes

Productive

- Access data anytime and anywhere with cloud-enabled services from the Connect Platform
- Built-in help videos for commonly used activities
- Increased ergonomics due to larger touchscreen, improved screen angle, and optional Bluetooth™ keyboard

The QuantStudio 7 Pro system also features automation compatibility and a security, auditing, and e-signature (SAE) package.

Find out more at **thermofisher.com/quantstudiopro**

Specifications

	QuantStudio 6 Pro system	QuantStudio 7 Pro system
Sample capacity (wells)	96, 384	96, 384, TaqMan Array Card
Reaction volume	0.1 mL block: 10–30 µL 0.2 mL block: 10–100 µL 384-well: 5–20 µL	0.1 mL block: 10–30 µL 0.2 mL block: 10–100 µL 384-well: 5–20 µL TaqMan Array Card: ~1 µL
Footprint (H x W x D)	54.7 x 33.8 x 52.5 cm	
Excitation source	Bright white LED	
Filter or color combinations	5	21
Multiplexing	5 targets	6 targets
Excitation/emission range	450–680 nm/500–730 nm	
2D barcode reading	Via USB connection	
Heating/cooling method	Peltier	
Temperature zone function	3 independent temperature zones	6 independent temperature zones
Maximum ramp rate	6.5°C/sec	
Average sample ramp rate	3.66°C/sec	
Temperature uniformity	0.4°C	
Temperature range	4–99.9°C	
Temperature accuracy	0.25°C	
Run time	Less than 30 min	Less than 30 min
Dye compatibility (name)	FAM, SYBR Green, VIC, JOE, HEX, TET, ABY, NED, TAMRA, Cy3, JUN, ROX, Texas Red, Mustang Purple, Cy5, LIZ, Cy5.5	
Features to assist with 21 CFR Part 11 compliance	Upgradeable	Yes
Detection sensitivity	1 copy	1 copy
Sensitivity	Detect differences as small as 1.5-fold in target quantities in singleplex reactions	

Ordering information

Product	Cat. No.	Instrument + service Cat. No.*
QuantStudio 6 Pro Real-Time PCR System, 96-well, 0.1 mL block	A43160	A47200
QuantStudio 6 Pro Real-Time PCR System, 96-well, 0.1 mL block, laptop	A43167	A47202
QuantStudio 6 Pro Real-Time PCR System, 96-well, 0.1 mL block, desktop	A43181	A47204
QuantStudio 6 Pro Real-Time PCR System, 96-well, 0.2 mL block	A43159	A44288
QuantStudio 6 Pro Real-Time PCR System, 96-well, 0.2 mL block, laptop	A43166	A44290
QuantStudio 6 Pro Real-Time PCR System, 96-well, 0.2 mL block, desktop	A43180	A44292
QuantStudio 6 Pro Real-Time PCR System, 384-well	A43161	A45582
QuantStudio 6 Pro Real-Time PCR System, 384-well, laptop	A43168	A45584
QuantStudio 6 Pro Real-Time PCR System, 384-well, desktop	A43182	A45586
QuantStudio 7 Pro Real-Time PCR System, 96-well, 0.1 mL block	A43163	A47201
QuantStudio 7 Pro Real-Time PCR System, 96-well, 0.1 mL block, laptop	A43170	A47203
QuantStudio 7 Pro Real-Time PCR System, 96-well, 0.1 mL block, desktop	A43184	A47205
QuantStudio 7 Pro Real-Time PCR System, 96-well, 0.2 mL block	A43162	A44289
QuantStudio 7 Pro Real-Time PCR System, 96-well, 0.2 mL block, laptop	A43169	A44291
QuantStudio 7 Pro Real-Time PCR System, 96-well, 0.2 mL block, desktop	A43183	A44293
QuantStudio 7 Pro Real-Time PCR System, 384-well	A43164	A45583
QuantStudio 7 Pro Real-Time PCR System, 384-well, laptop	A43171	A45585
QuantStudio 7 Pro Real-Time PCR System, 384-well, desktop	A43185	A45587
QuantStudio 7 Pro Real-Time PCR System, TaqMan Array Card block	A43165	A47651
QuantStudio 7 Pro Real-Time PCR System, TaqMan Array Card block, laptop	A43172	A47653
QuantStudio 7 Pro Real-Time PCR System, TaqMan Array Card block, desktop	A43186	A47655

* Extended warranty packages include the instrument, SmartStart Orientation, and a 1-year AB Assurance Plan with 1 planned maintenance (PM) visit. Packages are not available in all countries. Contact your local sales representative for more information.

Recommended consumables can be found on page 14 (RFID-tagged plates), page 16 (plastics), page 21 (assays), page 23 (master mixes), and page 25 (reverse transcriptases).

Maximum productivity with minimum effort

QuantStudio 12K Flex Real-Time PCR System

This one instrument enables multiple users to conduct a wide range of experiments, from low- to high-throughput sample processing and virtually any PCR application, such as:

- Drug discovery
- Pharmacogenomics research
- MicroRNA profiling
- Agriculture molecular testing
- *CFTR* mutation analysis
- Vaginal microbiota research

Miniaturization at a lower cost

Applied Biosystems™ OpenArray™ technology is a broadly applicable nanoliter fluidics platform for low-volume solution-phase reactions, and enables lower reagent and assay costs, and rapid parallel processing.

Superior throughput

The Applied Biosystems™ QuantStudio™ 12K Flex Real-Time PCR System can simultaneously run up to four 3,072-reaction Applied Biosystems™ OpenArray™ plates in about 4 hours. You can produce up to 110,000 data points in an 8-hour day with the addition of a single Applied Biosystems™ ProFlex™ PCR System.

Outstanding flexibility

Easily switch between five available thermal cycling blocks: OpenArray plate, TaqMan Array Card, 384-well, and standard or Fast 96-well blocks. Load the thermal cycling block in less than 1 minute—no tools required.

Increased data integrity and quality control—with results you can trust

The integrated sample tracking and security, auditing, and electronic signature (SAE) module assist you in supporting 21 CFR Part 11 compliance.

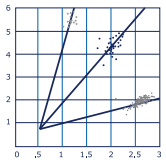
Application spotlight

Pharmacogenomics research

Pharmacogenomics is the study of drug efficacy based on a subject's unique genomic composition. The QuantStudio 12K Flex system and OpenArray technology provide a simple, cost-effective, and fast workflow for the analysis of mutations and copy number variants associated with drug metabolism enzyme (DME) genes.

= automation-ready instrument

OpenArray workflow

1. Load samples onto OpenArray plate.	2. Cycle and image OpenArray plates.	3. Analyze results.
Minimal hands-on time	**Up to 1,100 samples per 8 hr day**	**Applied Biosystems™ AlleleTyper™ Software for star allele reports** 

Find out more at **thermofisher.com/quantstudio12k**

Specifications

	QuantStudio 12K Flex system	
Block change design	• 96-well (10–100 µL reactions) • Fast 96-well (15–30 µL reactions) • 384-well (5–20 µL reactions) • TaqMan Array Card (~1 µL reactions) • OpenArray plate (33 nL reactions)	
Block change design	Block change from front in less than 1 min; no tools or service call required	
Excitation source	Enhanced OptiFlex system, white LED	
Instrument control	Instrument touchscreen, networked computer, or attached computer	
Detection channels	• Decoupled: 6 emission, 6 excitation (96-well/Fast, 384-well, TaqMan blocks) • Coupled: 4 emission, 4 excitation (OpenArray blocks)	
21 CFR Part 11 enablement	Optional software module	
Dimensions (H x W x D)	73.8 x 50.1 x 66.1 cm	
Weight	70 kg	
Remote monitoring	Available to monitor up to 15 networked instruments simultaneously	
	96-well, 96-well Fast, 384-well, TaqMan Array Card blocks	**OpenArray block**
Detection channels	Decoupled: 6 emission, 6 excitation	Coupled: 4 emission, 4 excitation
Well-to-well variability	±0.25°C	±0.75°C
Max. block ramp rate	3.0°C/sec (384-well)	3.0°C/sec
Run time	• 30 min expected (Fast 96-well block) • 35 min (384-well block, using Fast master mix)	• 2 hr (gene expression) • 4 hr (genotyping)
Demonstrated sensitivity	To 1 copy	To 1 copy
Dynamic range	To 9 logarithmic units	To 7 logarithmic units
Resolution	As low as 1.5-fold change for singleplex reaction	As low as 2-fold change for singleplex reaction

Ordering information

Product	Cat. No.	Instrument + 1-year extended warranty with AB Complete Cat. No.*
QuantStudio 12K Flex Real-Time PCR System, OpenArray block with AccuFill System, desktop configuration	4471090	4480621
QuantStudio 12K Flex Real-Time PCR System with OpenArray Block without AccuFill system, desktop configuration	4472380	NA
QuantStudio 12K Flex Real-Time PCR System with TaqMan Array Card instrument, desktop configuration	4471089	4480622
QuantStudio 12K Flex Real-Time PCR System 384-well instrument, desktop configuration	4471134	4480623
QuantStudio 12K Flex Real-Time PCR System 96-well Fast, desktop configuration	4471088	4480625
QuantStudio 12K Flex Real-Time PCR System 96-Well, desktop configuration	4471087	4480631
96-Well Block Upgrade Kit	4453543	NA
96-Well Fast Block Upgrade Kit	4453544	NA
384-Well Block Upgrade Kit	4453545	NA
TaqMan Array Card Block Upgrade Kit	4453546	NA
OpenArray Block with AccuFill System	4471067	NA
QuantStudio 12K Flex AccuFill Upgrade Kit (For existing AccuFill system users)	4471022	NA

* Includes SmartStart Orientation.

Recommended plastics

96-well block	Cat. No.	96-well block Fast	Cat. No.	384-well block	Cat. No.
MicroAmp EnduraPlate Optical 96-Well Clear Reaction Plate with Barcode	4483354	MicroAmp EnduraPlate Optical 96-Well Fast Clear Reaction Plate with Barcode	4483485	MicroAmp EnduraPlate Optical 384-Well Clear Reaction Plate with Barcode	4483285
MicroAmp Optical 96-Well Reaction Plate with Barcode	4306737	MicroAmp Fast Optical 96-Well Reaction Plate with Barcode, 0.1 mL	4346906	MicroAmp Optical 384-Well Reaction Plate with Barcode	4309849
MicroAmp Optical 8-Tube Strip with Attached Optical Caps, 0.2 mL	A30588	MicroAmp Fast 8-Tube Strip	4358293	MicroAmp Optical 384-Well Reaction Plate	4343370
MicroAmp Optical Adhesive Film	4360954	MicroAmp Optical 8-Cap Strip	4323032	MicroAmp Optical Adhesive Film	4360954
		MicroAmp Optical Adhesive Film	4360954		

Multiple colors are available for most Cat. Nos.

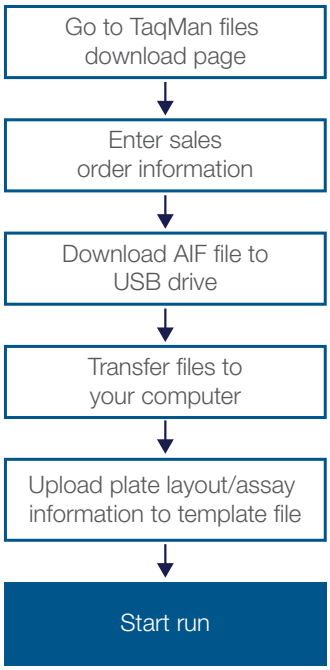
One simple step gets you to your data faster

TaqMan Array Plates with RFID

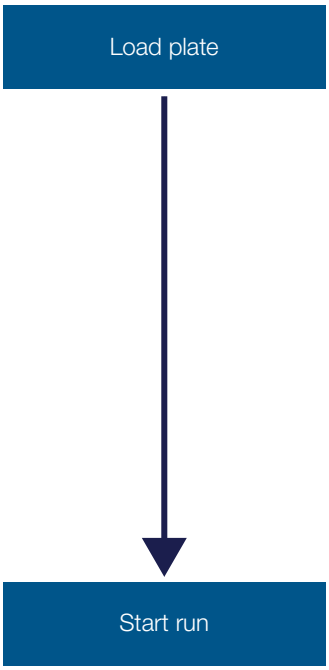
TaqMan Array Plates with RFID and QuantStudio 6 and 7 Pro systems create an improved user experience with smart features that eliminate the manual steps currently necessary to set up the plate file for your real-time PCR instrument run. Just insert the RFID plate, and the QuantStudio Pro system captures the plate setup information, including:

- Plate layout—assay IDs in each well
- Plate type
- Expiration date
- Cat. No.
- Lot. No.
- Reaction volume per well
- Passive reference dye
- Thermal protocol

Conventional workflow



Smart qPCR workflow



Description	No. of assays	No. of samples	Cat. No. (96-well 0.1 mL)	Cat. No. (96-well 0.2 mL)
TaqMan Array Plates with RFID	NA	NA	A43823	
TaqMan Array, Standard, 96-well plate; Format 8	8	12	4413263	4413266
TaqMan Array, Standard, 96-well plate; Format 16/16 Plus	16	6	4413261/4413262	4413264/4413265
TaqMan Array, Standard, 96-well plate; Format 32/32 Plus	32	3	4413259/4413260	4391528/4391529
TaqMan Array, Standard, 96-well plate; Format 48/48 Plus	48	2	4413257/4413258	4391526/4391527
TaqMan Array, Standard, 96-well plate; Format 96/96 Plus	96	1	4413255/4413256	4391524/4391525

Find out more at **thermofisher.com/taqman-rfid**

The perfect solution to automate a variety of workflows

Orbitor RS2 Microplate Mover

The easy-to-use, flexible, and reliable Thermo Scientific™ Orbitor™ RS2 Microplate Mover is a collaborative benchtop mover that provides superior reliability and improved process efficiency. Its innovative bidirectional telescoping arm, coupled with its expansive 360° workspace, provides exceptional reach and precision, making the Orbitor RS2 Microplate Mover your trusted laboratory productivity partner.

Designed with you in mind

- Integrated barcode reader enables sample tracking, barcode transmission, and inventory management
- Plate detection in the gripper helps to eliminate labware handling errors and reduces the risk of lost samples
- Variable force settings make it compatible with many plate types for a variety of applications

Specifications

General specifications		Axis/joint specifications			
Power requirements	110–230 V, automatic switching	**Axis**	**Range**	**Velocity**	**Acceleration**
Operating environment	4–40°C, noncondensing	Z (height)	575 mm	750 mm/sec	2,250 mm/sec^2
Safety compliances	CE, CSA	Radius (reach)	±406 mm	200 mm/sec	3,600 mm/sec^2
Weight	25 kg	Theta (rotation)	Infinite	225 deg/sec	675 deg/sec^2
Motion control	Closed-loop servo, brushless AC motor	Gripper stroke	51 mm		
Control	Directly from PC, requires Windows 7 or 10 operating system				
Storage options					
Random access hotel	8 plates per hotel, maximum capacity of 24 plates, best for 384-well				
Sequential access stack	40 plates per stack, maximum capacity of 80 plates, best for 384-well and 96-well (0.2 mL and 0.1 mL) plates				

Ordering information

Product	Cat. No.
Orbitor RS2 Microplate Mover Bundle	A43780
Orbitor RS2 Microplate Storage, Sequential Access Stacks (3-pack)	A43781
Orbitor RS2 Microplate Storage, Random Access Hotels (3-pack)	A43782
Dual QuantStudio–Orbitor RS2 Integration Kit	A43779

Find out more at **thermofisher.com/orbitorrs2**

High-performance real-time PCR plastics for optimal qPCR results

Engineer Approved MicroAmp qPCR plastics

Applied Biosystems™ PCR plastics have been designed and validated to work with our thermal cyclers for more than 25 years. That's why they are Engineer Approved to enable optimal PCR performance.

Applied Biosystems™ MicroAmp™ qPCR plastics are:

- Validated on Applied Biosystems thermal cyclers for optimal fit and performance
- Designed to perform on all Applied Biosystems qPCR instruments
- Designed for optimal heat transfer with thin-walled polypropylene wells
- Designed to reduce cross-contamination with raised well rims for effective sealing

Unique, high-performance features of Applied Biosystems™ MicroAmp™ EnduraPlate™ plastic consumables

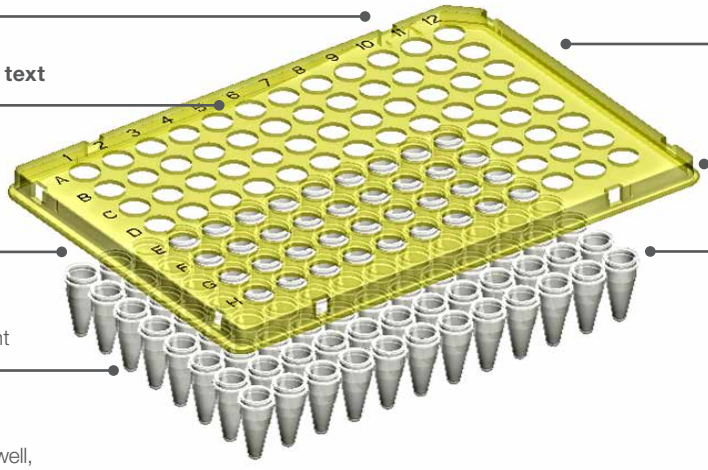
Easy visual organization
5 color choices

Easy-to-read well identification text
Black text for excellent contrast

Non warping, even after thermal cycling
Polycarbonate (hard shell) for mechanical stability and flatness

Snug fit to thermal blocks
Thin-wall polypropylene for excellent mechanical fit and heat transfer

Available in common formats
96-well standard, 96-well Fast, 384-well, 5-piece sample packs, 20 & 500 packs



Constructed to ANSI/SBS standard
Well suited for SBS standard robotic handling

Certified DNA-, RNase-, and PCR inhibitor–free

Compatible with and optimized for performance on Applied Biosystems instruments

Options for every format and throughput need

Choose from tubes, tube strips, plates, adhesive film, and accessories for any throughput need. MicroAmp EnduraPlate plastics offer a solution for experiments that require special handling, such as automated or high-throughput workflows, and an even greater degree of durability for use with multi-instrument experiments.

The Applied Biosystems™ MicroAmp™ 8-Tube Strip with attached optical caps* is optimally designed for precise real-time PCR with lid and tube labeling, dual end tabs, and 20 µL graduation marks on each tube to prevent pipetting errors. The 8-tube strips fit in all 0.2 mL Applied Biosystems real-time PCR instruments.

* MicroAmp 8-Tube Strip with attached domed caps is also available for PCR.

Find out more at **thermofisher.com/findplastics**

Did you know?

Proper plate sealing helps reduce evaporation and well-to-well contamination.

1. Remove the backing of the Applied Biosystems adhesive film.

2. Align the adhesive film so as to cover all wells while placing on the plate.

3. Rub the flat edge of the applicator along the long edge (length) of the plate, then along the short edge (width). Finally, rub the applicator between all the wells and around the outside edges of the plate using small back-and-forth motions to form a complete seal.

Which qPCR plastic fits your needs?

Find the plastic format with the throughput and features for your application

Use for:	Small-scale experiments with a few samples	Routine experiments	Automation	Laboratory use
	Single tubes, strips, caps, adhesive film & accessories	**MicroAmp optical microplates**	**MicroAmp EnduraPlate optical microplates**	**MicroAmp EnduraPlate optical microplates GPLE***
Formats	• Single tubes • Single tubes with caps • 8-strip tubes with caps	• 48-well Fast • 96-well • 96-well Fast • 384-well	• 96-well • 96-well Fast • 384-well	• 96-well • 96-well Fast • 384-well
DNA-, RNase-, and PCR inhibitor–free	Yes	Yes	Yes	Yes
ANSI/SBS standard dimension color	Clear	Clear	Single-color packs (red, blue, green, yellow, or clear) and 5-plate sampler (1 of each color)	Clear
Instrument compatibility	Use our plastics selection tool	Use our plastics selection tool	Use our plastics selection tool	Use our plastics selection tool
Barcode available	No	Yes (1 or 2 sides)	Yes (3 sides)	Yes (3 sides)
Multiple application	No	No	Yes	Yes
Optical compatibility	Yes (applicable for optical version)	Yes	Yes	Yes
Use	Research use only	Research use only	Research use only	For laboratory use**

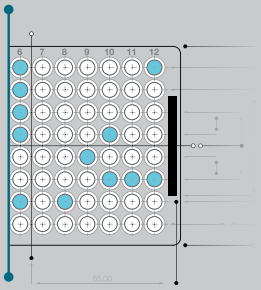
* For laboratory use.

** Lot-based contamination test with Certificate of Analysis.

Did you know?

Need high-quality PCR plastics for non–Applied Biosystems instruments, or need a white plate for your qPCR application? Visit **thermofisher.com/findplastics** for a wide range of Thermo Scientific™ PCR plastics.

Custom and OEM plastics for PCR and qPCR are also available. Learn more at **thermofisher.com/oemplastics**



Quickly find the plastics and accessories you need for your instrument

Product	Cat. No.	48-well	96-well 0.2 mL			96-well 0.1 mL			384-well
		StepOne	7000	7300, 7500	QuantStudio 3, 5, 6 Flex, 7 Flex, 12K Flex, 6 Pro, 7 Pro; ViiA 7; 7900HT	StepOnePlus	7500	QuantStudio 3, 5, 6 Flex, 7 Flex, 12K Flex, 6 Pro, 7 Pro; ViiA 7; 7900HT	QuantStudio 5, 6 Flex, 7 Flex, 12K Flex, 6 Pro, 7 Pro; ViiA 7; 7900HT
96-well, 0.2 mL reaction plates									
Optical 96-Well Plate	N8010560, 4316813		•	•	•				
Optical 96-Well Plate with Barcode	4306737, 4326659		•	•	•				
Optical 96-Well Plate with Barcode & Optical Caps	403012		•	•	•				
Optical 96-Well Plate with Barcode & Optical Adhesive Films	4314320		•	•	•				
EnduraPlate Optical 96-Well Clear Reaction Plate	A36924			•**	•				
EnduraPlate Optical 96-Well Clear Reaction Plate with Barcode*	4483354, 4483352			•**	•				
96-well, 0.1 mL reaction plates									
Fast Optical 96-Well Plate, 0.1 mL	4346907					•	•	•	
Fast Optical 96-Well Plate with Barcode, 0.1 mL	4346906, 4366932					•	•	•	
EnduraPlate Optical 96-Well Fast Clear Reaction Plate	A36930					•	•	•	
EnduraPlate Optical 96-Well Fast Clear Reaction Plate with Barcode*	4483485, 4483494					•	•	•	
384-well reaction plates									
Optical 384-Well Plate	4343370								•
Optical 384-Well Plate with Barcode	4309849, 4326270, 4343814								•
EnduraPlate Optical 384-Well Clear Reaction Plate	A36931								•
EnduraPlate Optical 384-Well Clear Reaction Plate with Barcode*	4483285, 4483273								•
48-well reaction plates									
Fast Optical 48-Well Plate	4375816	•							
Strip tubes and caps									
Fast 8-Tube Strip, 0.1 mL	4358293	•				•	•	•	
Optical 8-Tube Strip with Attached Optical Caps, 0.2 mL	A30588		•	•	•				
Optical 8-Tube Strip, 0.2 mL	4316567		•	•	•				
Optical 8-Cap Strip	4323032	•	•	•	•	•	•	•	
Single tubes and caps									
Fast Reaction Tube with Cap, 0.1 mL	4358297	•				•		•	
Optical Tube without Cap, 0.2 mL	N8010933		•	•					
Seals and covers									
Optical Adhesive Film	4360954, 4311971		•	•	•	•	•	•	•
48-Well Optical Adhesive Film	4375323	•							
Reaction trays									
96-Well Tray/Retainer Set	403081		•						
Fast 48-Well Tray	4375282	•							
96-Well Tray for VeriFlex Block	4379983					•			
Accessories									
Splash-Free 96-Well Base	4312063		•	•	•	•	•	•	
96-Well Support Base	4379590		•	•	•	•	•	•	

* Multiple colors are available.

** Requires use of proper adapter, Cat. No. A24820.

Note: Experiments using one or two 8-tube strips with attached caps require blank tube strips to balance lid pressure on the block or the use of the Applied Biosystems™ MicroAmp™ 96-Well Tray/Retainer Set (Cat. No. 4381850)—bottom part of tray *only*. For use with 96-well block of Applied Biosystems™ 7000, 7300, 7500, and ViiA 7 systems, and QuantStudio 3/5/6/7/12K instruments.

Visit our online plastics selection guide at **thermofisher.com/findplastics**

TaqMan and SYBR Green chemistries for real-time PCR

We offer two types of chemistries to detect PCR products using real-time PCR instruments:

- Applied Biosystems™ TaqMan™ chemistry (also known as fluorogenic 5′ nuclease chemistry)
- Applied Biosystems™ SYBR™ Green I dye chemistry

With more than 21 million predesigned assays, including 2.8 million gene expression assays for more than 32 species, 5 assay formats, and >200,000 publications, Applied Biosystems™ TaqMan™ Assays represent the most trusted and comprehensive collection of qPCR assays available.

Find master mixes, reagents, and kits to power your applications.

	TaqMan chemistry—based detection	SYBR Green dye—based detection
Chemistry overview	Uses a fluorogenic probe to enable detection of a specific PCR product as it accumulates during PCR cycles	Uses SYBR Green I, or similar dye that binds to double-stranded DNA to detect PCR product as it accumulates during PCR

	TaqMan Assays and reagents	SYBR Green reagents
Specificity	High	Low
Sensitivity—low copy number	High	Variable*
Reproducibility	High	Variable*
Multiplexing	Yes	No
Predesigned assays	Yes	No
Custom assays	Yes	No
User design and optimization	No	Yes
Cost	High	Low*
Gene expression quantitation	High	Low
DNA quantitation	Yes	Yes (pathogen detection)
ChIP	Yes	Yes
SNP genotyping	Yes	No
MicroRNA	Yes	No
Copy number	Yes	No
Somatic mutation detection	Yes	No
Pathway analysis	Yes	No

* Depends on template quality, and primer design and optimization.

Chemistry	Application	Starting material	Recommended master mix
5′ nuclease (TaqMan Assays)	Gene expression, DNA quantification	cDNA, gDNA	TaqMan Fast Advanced Master Mix
	Gene expression, RNA virus quantification	RNA	TaqMan Fast Virus 1-Step Master Mix
	Genotyping	gDNA	TaqPath ProAmp Master Mix
SYBR Green dye	Gene expression	cDNA	PowerTrack SYBR Green Master Mix

Find your assay at **thermofisher.com/taqman** or your master mix at **thermofisher.com/qpcrmastermixes**

TaqMan Assays to accelerate your research

Comprehensive, high-quality solutions for genetic analysis

TaqMan Assays are the industry-leading choice for 5′ nuclease real-time PCR (qPCR) assays. They are cited in more publications than any other qPCR assay product and are considered the gold standard for quantitative genomic analysis. Backed by a performance guarantee,* TaqMan Assays are consistently chosen as a proven solution to reliably provide fast and accurate results.

- **Specificity**—advanced primer/probe sequence selection criteria plus minor groove binder (MGB) probe enhancement deliver the specificity and reproducibility you need for confidence that your results are generated from amplification of the intended target and not from nonspecific dye binding or amplification of closely related genes or pseudogenes
- **Sensitivity**—the nonfluorescent quencher (NFQ) on Applied Biosystems™ TaqMan™ probes minimizes background, and intelligent PCR primer and probe design maximizes amplification efficiency; get better sensitivity and accuracy to reliably detect targets present at 10 or fewer copies
- **Reproducibility**—accurately reproduce results from well to well, day to day, and lab to lab, even across manufacturing lots
- **Proven technology**—referenced by more than 200,000 publications to date

Guaranteed to perform for all your research needs*

TaqMan Assays cover a broad range of research for a wide variety of applications:

Expression	Genetic variation
• Gene expression • MicroRNA (miRNA) expression • Long noncoding RNA (lncRNA) expression • Fusion transcript detection • Protein expression	• Single-nucleotide polymorphism (SNP) genotyping • Drug metabolism enzyme genotyping • Copy number variation (CNV) • Rare somatic mutation detection

* Terms and conditions apply. See full details of the guarantee at **thermofisher.com/taqmanguarantee**.

Applied Biosystems™ TaqMan™ Gene Expression Assays

- Designed to detect virtually any gene product, with more than 2.8 million predesigned assays
- Best-coverage assays available to detect the highest number of transcript variants possible
- Available for 32 species and some microbial pathogens
- Multiple format options—single tubes, 96-well and 384-well plates, TaqMan Array Cards, and OpenArray plates
- Can't find a predesigned assay to meet your needs? Use our Custom Assay Design Tool to design an assay based on your specific target sequence

Applied Biosystems™ TaqMan™ Advanced miRNA Assays

- Detect targets with as few as 60 copies of input microRNA (miRNA) in the cDNA synthesis reaction
- One universal reverse transcription (RT) step for all miRNA assays
- cDNA can be archived for future miRNA studies
- Identify only mature miRNA and distinguish related highly homologous miRNAs with gold-standard TaqMan probe specificity
- Detect and quantify mature miRNA from as little as 1 pg of total RNA or 2 µL of purified plasma or serum

Applied Biosystems™ TaqMan™ Noncoding RNA Assays

- For reliable detection and quantitation of noncoding transcripts longer than 200 nucleotides
- Designed to detect only noncoding transcript targets

Applied Biosystems™ TaqMan™ Fusion Assays

- Quantify expression level of gene fusions using qPCR
- Orthogonal validation method for confirming next-generation sequencing (NGS) results

Applied Biosystems™ TaqMan™ SNP Genotyping Assays

- Comprise the world's largest predesigned collection, with over 17 million assays
- Rigorous design pipeline with >90 parameters for optimal primer–probe combinations
- Functional quality testing on at least 20 gDNA samples for each assay
- Flexible formats to accommodate any number of targets and samples

Applied Biosystems™ TaqMan™ Drug Metabolism Genotyping Assays

- Detect polymorphisms in high-value drug metabolism enzyme (DME) pharmacogenetics markers
- Cover specific SNP alleles, multi-nucleotide polymorphisms (MNPs), and insertions and deletions (indels)
- Targets derived from public databases, consortia, and published articles

Applied Biosystems™ TaqMan™ Copy Number Assays

- Evaluate copy number of genomic DNA targets
- Easy to interpret—Applied Biosystems™ CopyCaller™ Software provides the calculated copy number and predicted copy number, along with confidence value and z-score quality metrics
- Fast and simple—setup to primary analysis in 3–4 hours

Applied Biosystems™ TaqMan™ Mutation Detection Assays

- Powered by competitive allele-specific Applied Biosystems™ TaqMan™ PCR (castPCR™) technology
- Detect and measure somatic mutations in genes associated with cancer research
- Detect rare amounts of mutated DNA in a sample that contains large amounts of normal, wild-type DNA
- Compatible with different sample types, such as cell lines; formalin-fixed, paraffin-embedded (FFPE) tissue; and fresh-frozen tissue samples

Custom TaqMan Probes

Design your own TaqMan primers and probes by choosing from dual-labeled Applied Biosystems™ TaqMan™ MGB, QSY™, or TAMRA™ custom probes. TaqMan MGB probes include an MGB moiety at the 3´ end that increases the melting temperature (T_m) of the probe and stabilizes probe–target hybrids. TaqMan MGB probes can be significantly shorter than traditional probes, providing better sequence discrimination and flexibility to accommodate more targets. TaqMan QSY probes are available for multiplexing three or more targets and are a seamless replacement for BHQ™ probes.

Flexible formats

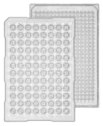
A variety of formats to meet your system and throughput needs

TaqMan Assay formats

Configurations to fit your research goals

Are you analyzing hundreds (or thousands) of samples, and expression from a handful of genes? Or does your research involve a few samples that need to be analyzed for a long list of mRNA targets? No matter what experiment you're performing, there's a TaqMan Assay format* perfect for your research needs.

Single tubes
- Low entry price
- Flexible for small projects
- Run on any real-time PCR instrument



96- or 384-well plates
- Optimal for medium to large projects
- Balance flexibility with streamlined reaction setup
- Run on 96- or 384-well real-time PCR instrument

384-well TaqMan Array Cards
- Low cost per reaction
- Optimal for medium to large projects
- Run on QuantStudio 7 Pro, 7 Flex, and 12K Flex systems**

* Also available on OpenArray plates for QuantStudio 12K Flex System.
** Also available on Applied Biosystems™ ViiA™ 7 and 7900HT systems.

TaqMan and SYBR Green master mixes

Applied Biosystems TaqMan and SYBR Green master mixes have been designed to give you the reliable results you need in run times as short as 40 minutes. Master mixes are optimized for specific applications and contain everything needed for reliable qPCR—buffer, dNTPs, passive reference dye, thermostable hot-start DNA polymerase, and other components. Simply add your sample and assay and start your reaction.

Applied Biosystems™ TaqMan™ Fast Advanced Master Mix

Accurate, dependable gene expression quantification in less time

- Wide linear dynamic range even on fast cycling instruments (<40 min run time)
- 72-hour pre-PCR benchtop stability enables flexibility in automated workflows
- Compatible with single and multiplex assays

Applied Biosystems™ TaqMan™ Fast Virus 1-Step Master Mix

Sensitive 1-step quantification of RNA viruses and transcripts, even with challenging samples

- Designed for reliable, high-sensitivity 1-step RT-qPCR to enhance virus and transcript quantification
- Formulated to handle common RT-PCR inhibitors found in blood, stool, and other difficult samples
- Single-tube 4X master mix format enables use of more sample for enhanced sensitivity
- Works in singleplex and multiplex, and with exogenous or endogenous internal controls

Applied Biosystems™ TaqPath™ ProAmp™ and ProAmp™ Multiplex master mixes*

Accurate SNP and CNV genotyping calls in both purified and crude samples

- Reproducible genotyping results even in the presence of inhibitors
- Two formulations that enable single- to four-target detection per reaction
- Compatible with buccal swab and blood crude lysates prepared with the Applied Biosystems™ DNA Extract All Reagents Kit
- 72-hour pre-PCR benchtop stability enables flexibility in automated workflows

Applied Biosystems™ TaqPath™ BactoPure™ Microbial Detection Master Mix*

Less background DNA for lower-level microbial detection

- Low-level detection of bacterial, fungal, mammalian, and viral DNA, as well as antibiotic resistance markers
- Tolerance of PCR inhibitors typically found in both purified samples and crude lysates in biopharmaceutical, molecular diagnostic, and research applications
- Wide dynamic range** (up to 8 orders of magnitude) enabling accurate detection from both low- and high-concentration samples

Explore Applied Biosystems™ QualTrak™ qPCR solutions for biopharma discovery at thermofisher.com/qpcr/biopharma

* TaqPath ProAmp and TaqPath BactoPure master mixes are General Purpose Reagents for Laboratory Use.

** Dynamic range is a property of both the assay and template concentration in the sample, as well as the formulation of the master mix; thus, individual results may vary.

Learn more about master mixes and how to use our selection tool at **thermofisher.com/qpcrmastermixes**

Applied Biosystems™ PowerTrack™ SYBR™ Green Master Mix

SYBR Green dye–based gene expression quantification with unrivaled specificity

- Helps reduce pipetting errors with a two-color tracking dye system
- Formulated for superior specificity and tight reproducibility of C_t values over a broad dynamic range
- Broad primer T_m and primer concentration compatibility allows flexibility in qPCR reaction setup with minimal optimization
- Compatible with SuperScript IV VILO Master Mix for fast, reproducible reverse transcription results

Applied Biosystems™ PowerUp™ SYBR™ Green Master Mix

Exceptional performance for even the most challenging qPCR applications

- High specificity with proprietary *Taq* DNA polymerase with dual-lock, hot-start mechanism
- Room-temperature stability of preassembled qPCR reactions for up to 72 hours
- Compatibility with standard or fast cycling for results in less than 50 minutes

Ordering information (more sizes available)

Product	Quantity	Cat. No.
TaqMan Fast Advanced Master Mix	1 x 1 mL	4444556
	1 x 5 mL	4444557
	1 x 50 mL	4444558
	1 x 1 mL (no UNG)	A44359
	1 x 5 mL (no UNG)	A44360
TaqMan Fast Virus 1-Step Master Mix	1 x 1 mL	444432
	1 x 10 mL	444434
	1 x 50 mL	444436
TaqPath ProAmp Master Mix	1 x 1 mL	A30865
	1 x 10 mL	A30866
	1 x 50 mL	A30867
TaqPath ProAmp Multiplex Master Mix	1 x 1 mL	A30868
	1 x 10 mL	A30869
	1 x 50 mL	A30870
TaqPath BactoPure Microbial Detection Master Mix	1 x 1 mL	A52699
	1 x 5 mL	A52700
	1 x 50 m	A52702
PowerTrack SYBR Green Master Mix	1 mL	A46012
	5 mL	A46109
	50 mL	A46113
PowerUp SYBR Green Master Mix	1 mL	A25741
	5 mL	A25742
	50 mL	A25743

Superior cDNA synthesis performance in RT-qPCR applications

SuperScript IV VILO Master Mix

Invitrogen™ SuperScript™ IV VILO™ Master Mix is a first-strand cDNA synthesis reaction mix for two-step RT-qPCR. The master mix format elevates the trusted VILO technology (Variable Input, Linear Output) to the next level by combining further optimized buffer conditions with the highly processive and thermostable Invitrogen™ SuperScript™ IV Reverse Transcriptase. The master mix offers exceptional performance features while maintaining superior linearity across the broadest range of input RNA.

- **Super-efficient**—C_t values earlier by an average of 2 cycles compared to other reverse transcription reagents, in a 10 min reaction
- **Super-strong**—reliable results even with degraded or inhibitor-containing RNA samples
- **Super-reliable**—improved RT-qPCR data reproducibility due to single-tube master mix format
- **Super-safe**—integrated, easy, and RNA-friendly genomic DNA removal

Doing other cDNA synthesis applications?
The SuperScript IV Reverse Transcriptase portfolio of products is engineered to offer superior cDNA synthesis performance with even the most challenging RNA samples. The portfolio includes a stand-alone enzyme, first-strand cDNA synthesis kit, and one-step RT-PCR kit.

thermofisher.com/ssiv

Find out more at **thermofisher.com/4vilo**

Ordering information

Product	Quantity	Cat. No.
SuperScript IV VILO Master Mix	50 reactions	11756050
	500 reactions	11756500
SuperScript IV VILO Master Mix with ezDNase Enzyme	50 reactions	11766050
	500 reactions	11766500

Did you know?

SuperScript IV VILO Master Mix is available in a format with the novel dsDNA-specific Invitrogen™ ezDNase™ Enzyme, which offers convenient and fast genomic DNA removal from RNA samples to help ensure high confidence in RT-qPCR results.

Why isolate RNA when you don't have to?

SuperScript IV CellsDirect cDNA Synthesis Kit

The Invitrogen™ SuperScript™ IV CellsDirect™ cDNA Synthesis Kit is designed to synthesize first-strand cDNA directly from mammalian cell lysates without first isolating the RNA. With lysis and reverse transcription (RT) performed in the same tube, the resulting first-strand cDNA is ready to use in many downstream applications such as PCR and qPCR.

Key benefits of this easy-to-use format

- **Time-saving**—save up to 2 hours in overall workflow time
- **Superior sensitivity**—easy detection of low-abundance targets
- **Direct convenience**—no need to isolate RNA
- **qPCR compatibility**—superior performance with PowerTrack SYBR Green Master Mix

Ordering information

Product	Cat. No.
SuperScript IV CellsDirect cDNA Synthesis Kit	
50 reactions	11750150
500 reactions	11750350
SuperScript IV CellsDirect Lysis Reagents	
500 reactions	11750550

Find out more at **thermofisher.com/cellsdirect**

Connect with your instrument and achieve lab/life balance

Instrument Connect app

Thermo Fisher Scientific has pioneered a way to connect you to your instruments, giving you real-time updates on your run and access to data as they come up. We connect you to your cloud-enabled instruments and benchtop devices anytime, anywhere using the Instrument Connect mobile app.

The Instrument Connect remote monitoring app allows you to stay connected to any of our cloud-enabled instruments, including the QuantStudio 3, 5, 6 Pro, and 7 Pro real-time PCR instruments, as well as endpoint PCR devices including Applied Biosystems™ ProFlex™, SimpliAmp™, and MiniAmp™ thermal cyclers.

With the Instrument Connect app, you can:

- Check the availability of your cloud- and network-connected device
- Monitor run progress
- View amplification plots in real time (available for QuantStudio 3, 5, 6 Pro, and 7 Pro real-time PCR instruments)
- View plots and filter by sample or target in real time
- Schedule an instrument

It's easy to get started. Just download the Instrument Connect app from the Apple™ App Store or Google Play™ Store and log in to your account on the Connect Platform. You can view your connected instruments, monitor remaining time in your run, and view your amplification plots in real time.

Learn more about the Instrument Connect app at **thermofisher.com/connect**

qPCR educational resources

Do you want to learn more about qPCR? Find answers to common questions and learn the basics in our online education hub. Get more from your qPCR by improving your knowledge at your own pace. You can learn about:

- The difference between absolute and relative quantification
- Benefits of fast real-time PCR
- Multiplexing
- And so much more

qPCR	Key online resources
Real-time PCR Learning Center, which includes articles, videos, and webinars	thermofisher.com/qpcreducation
qPCR promotions	thermofisher.com/qpcrpromotions
Webinars	thermofisher.com/gawebinars
Taq Talk video series	thermofisher.com/taqtalk
qPCR handbook	thermofisher.com/qpcrhandbook
Behind the Bench blog	thermofisher.com/blog/behindthebench
Assay search	thermofisher.com/taqman
Master mix sample request	thermofisher.com/mmsample
General qPCR support	thermofisher.com/qpcrsupport
Training offered	thermofisher.com/events
Instrument Management tool	thermofisher.com/easiertomanage
Real-time PCR data analysis	thermofisher.com/qpcrdata
qPCR troubleshooting tool	thermofisher.com/qpcrtroubleshooting
Real-time PCR Support Center	thermofisher.com/qpcrsupport

Discover powerfully simple digital PCR

Digital PCR (dPCR) is quickly becoming a reliable, complementary technology to qPCR for precise nucleic acid quantification because it can deliver a high level of precision, sensitivity, and robust performance.

dPCR overcomes common limitations of qPCR, such as the need for routine standard curves, low precision when measuring rare targets, and lack of sensitivity in high-background conditions.

Experience the difference that the efficient workflow of Applied Biosystems dPCR solutions can make to your research success:

- **Single instrument, single plate, simple workflow**—eliminate cumbersome reaction preparation steps from your dPCR workflow. The Applied Biosystems™ QuantStudio™ Absolute Q™ Digital PCR System requires only one hands-on step that takes under five minutes to complete with minimal technical skill.
- **Fast time to answer**—avoid wasting precious time generating microchambers, moving plates, and reading samples. In as little as 90 minutes, reagent digitization, thermal cycling, and data collection are integrated into a single system with no manual transfer steps required.
- **Industry-leading choice**—the Applied Biosystems brand is relied on for genetic analysis, offering robust assays powered by our unique design algorithms and years of experience. Our easy-to-use predesigned assay technology makes dPCR simple with Applied Biosystems™ Absolute Q™ digital PCR assays.

dPCR that works how you need it, when you need it

QuantStudio Absolute Q Digital PCR System

The QuantStudio Absolute Q Digital PCR System is a plate-based dPCR platform powered by proprietary microfluidic array plate (MAP) technology that enables all the necessary steps for dPCR—compartmentalizing, thermal cycling, and data acquisition—to be conducted on a single instrument. The dPCR workflow is identical to the qPCR workflow you are familiar with, improving ease of use, minimizing hands-on steps, and maximizing consistency.

The higher precision, sensitivity, and absolute nature of dPCR is ideal for research in:

- Rare-target detection, such as somatic mutation detection in oncology research
- Precise quantification of viral targets
- Pathogen detection and load determination
- Generation of references and standards
- Copy number variation

Simple workflow

The simplified dPCR workflow requires one instrument, one consumable, and one hands-on step that takes under 5 minutes to complete with minimal technical skill.

Fast turnaround time

In as little as 90 minutes, you can generate highly precise dPCR data in a fraction of the time required for typical dPCR workflows.

Industry-leading consistency

MAP technology enables exceptional consistency in total microchambers analyzed per reaction.

Maximum reagent efficiency

More than 95% of the input sample is analyzed per reaction compared to the 25–60% of other dPCR platforms.

Plate flexibility

Each 16-sample dPCR plate may be run one column at a time to preserve unused wells for future runs, minimizing waste.

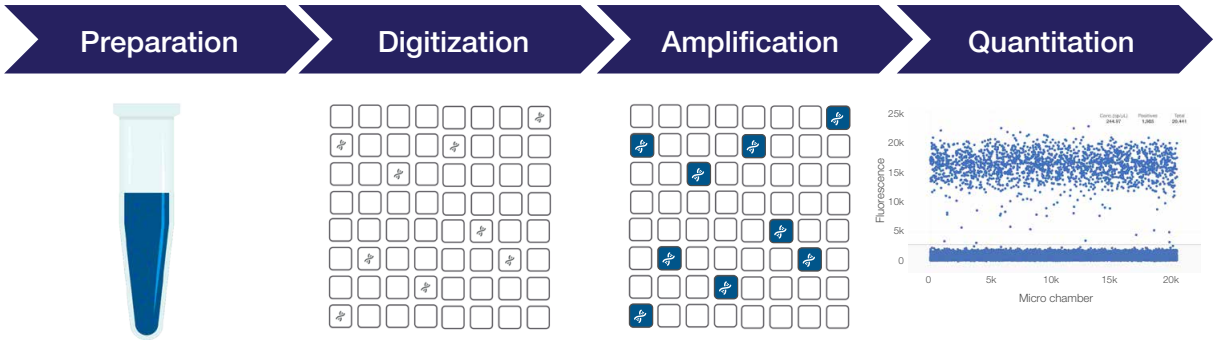
Absolute quantification

The >20,000 microchambers per sample generate data expressed as copies/µL, enabling high precision and sensitivity without the need for a standard curve.

Application spotlight

Rare cancer mutation quantification in liquid biopsy

Liquid biopsies use cell-free DNA (cfDNA) that is derived from both normal and cancerous cells that have undergone apoptosis or necrosis and have released their DNA contents into their environment. The small fraction of cfDNA molecules originating from the tumor are called circulating tumor DNA (ctDNA), and these show cancer mutations unique to the tumor. dPCR is an established method for the fast, reliable, and accurate quantification of these cancer mutations that occur in low abundance. dPCR offers outstanding specificity and precision, making it a cost-effective and rapid method for routine monitoring of ctDNA from liquid biopsy samples.



Find out more at **thermofisher.com/absoluteq**

Specifications

QuantStudio Absolute Q Digital PCR System	
Time to results	<2 hr
Colors	4 (endpoint detection)
Illumination	Rax, blue, phosphor green high-power LED
Detection channels	FAM, VIC, and HEX
Reader size (H x W x D)	540 x 600 x 620 mm
Weight	60 kg
QuantStudio Absolute Q Digital PCR MAP	
Samples per plate	16
Targets per plate	4
Microchambers per sample	20,480
Loading volume	9 µL
Sample waste/dead volume	<5%
Performance	
Dynamic range	5 logarithmic units
Precision at 95% confidence interval	±10%
Compatible chemistries	Absolute Q Digital PCR Assays and TaqMan Assays

Ordering information

Product	Cat. No.
QuantStudio Absolute Q Digital PCR System, desktop, extended warranty, SmartStart Orientation	A53267
QuantStudio Absolute Q Digital PCR System, desktop	A52864
QuantStudio Absolute Q MAP16 Plate Kit and Master Mix	A53301
QuantStudio Absolute Q MAP16 Plate Kit	A52865
Absolute Q DNA Digital PCR Master Mix (5X)	A52490
QuantStudio Absolute Q Isolation Buffer	A52730

dPCR educational resources

dPCR	Key online resources
dPCR literature, including technical and application notes	**thermofisher.com/quantstudio-absoluteq-technotes**
QuantStudio Absolute Q Digital PCR System	**thermofisher.com/absoluteq**
Absolute Q digital PCR assays	**thermofisher.com/absoluteqassays**
dPCR for cell and gene therapy research	**thermofisher.com/dpcr-viraltiter**
dPCR for liquid biopsy	**thermofisher.com/dpcr-liquidbiopsy**
Behind the Bench blog	**thermofisher.com/blog/behindthebench**
Absolute Q assay guarantee	**thermofisher.com/absoluteqassayguarantee**

Keep working wonders. We've got your back.

Count on superior services and support to keep your real-time and digital PCR instruments up and running

Service plans help protect your investment

All new instruments are protected by a standard factory warranty. This warranty covers all costs for travel, labor, and parts for repairs. Extended coverage service plans are also available at the time of instrument purchase. Services at additional charge include:

- Service plans with guaranteed response times*
- Priority technical support—priority phone access to our trained and certified technical and instrument support specialists
- 24-hour response time—expedited access to remote service engineers within 24 hours

Check your instrument's coverage status at **thermofisher.com/manage**

Digital service innovations

Our instrument service plans include digital innovations that help keep your instruments and your lab running smoothly. With pioneering on-demand tools and capabilities such as remote support using mobile augmented-reality (AR) technology, instrument-driven support, and on-demand instrument training, we're constantly looking ahead so your lab doesn't fall behind.

Explore our digital service innovations at **thermofisher.com/innovations**

Instrument hardware qualification (IQ/OQ/PQ)

Our manufacturer-trained and certified field service engineers will conduct and document comprehensive tests, including software and hardware compatibility matrixing, component verification, and site requirements, to verify performance and provide reliable, audit-style documentation to meet your regulatory requirements. Installation qualification (IQ), operational qualification (OQ), and performance qualification (PQ) or instrument performance verification (IPV) services are recommended at installation, after moving the instrument, after software or hardware upgrades, and after planned maintenance or critical repairs.

Contact an instrument qualifications specialist at **thermofisher.com/iqoqpq**

Analytical validation consulting services

Why handle your analytical validation (AV) in-house, when using our AV consulting services can speed up the launch process by up to 75% and cut costs by up to half? We'll consult with you to develop and optimize your validation workflow, while providing data analysis support and template documentation to fully maximize your instrument and reagent investment.

Get a complete list of assays and panels we support, or contact an AV consulting services specialist at **thermofisher.com/av**

* Guaranteed response times are dependent on type of service plan and geographic region.

Service plans at a glance

	On-site service plans			Repair Center service plan*
	AB Platinum	AB Assurance**	AB Maintenance Plus	AB Repair Center Support Plus
Response time	Next business day†	2 business days†	3 business days‡	
Planned maintenance	•	•	•	
Access to technical support (Mon–Fri, standard business hours)	24/7/365	•	•	•
Parts, labor, and travel	•	•	10% discount	•
Digital remote support	•	•	•	•
Qualification service	•	Available as add-on	Available as add-on	
Field application scientist (FAS) consultation	•	Available as add-on	Available as add-on	
Loaner instrument issued during repair (Repair Center plan only)				Available as add-on

* Repair Center service plan available for QuantStudio 3 and 5 real-time PCR systems only.

** AB Assurance plan offered for QuantStudio Absolute Q Digital PCR System.

† Availability limited in some geographic areas.

‡ After receipt of purchase order.

Education services

It can be difficult to prepare yourself for what's next while you're focused on the work you have now. Our professional, interactive training courses make it easier.

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How to reach us

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Notes

Notes

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biosystems

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