



QuantStudio 3 and QuantStudio 5 Real-Time PCR Systems

Just the right everything

Data within your reach

Applied Biosystems™ QuantStudio™ 3 and 5 Real-Time PCR Systems allow you to remotely monitor your runs, as well as easily access and securely share results with colleagues anywhere, anytime with Connect, our cloud-based platform. When your data are always within reach, the answers shaping the future of science are never far away.



Interactivity

- Run and edit directly from touchscreen



Accessibility*

- Access experiment runs from any location, anytime, with remote monitoring
- Wi-Fi-enabled connectivity
- Utilize portable devices to quickly analyze data when you need to



Connectivity*

- Telemetry data monitoring to proactively anticipate maintenance needs
- Calendars to schedule time on shared instruments for the best utilization and return on investment
- Integration with scientific analysis apps and peer collaboration tools
- Remote support from our services team
- World-class data security on an Amazon Web Services™ platform



Collaboration*

- Quickly share data sets and protocols online
- Send large files securely around campus or around the world
- Integrate and analyze multiple data sets and data types into one project

* Internet access and Connect cloud-based account required.

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 (Figure 1).



Helps save valuable time—

Applied Biosystems™ VeriFlex™ Blocks with 3 or 6 independent temperature zones provide flexibility to run multiple experiments simultaneously. Fast thermal cycling is also available, enabling results in less than 30 minutes.

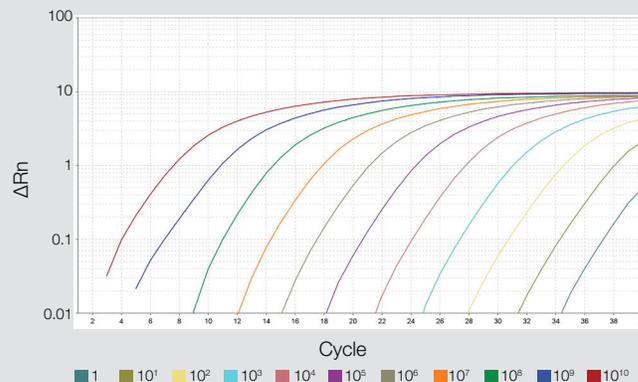


Figure 1. Real-time PCR reproducibility. This plot shows results from amplification of KAZ plasmid DNA in 10-fold dilutions using the 96-well block. The data show highly reproducible results over 10 logarithmic units of input template amount, illustrating the broad linear dynamic range of the system.

Simple, intuitive interface—at your fingertips

The interactive touchscreen interface and simplified Applied Biosystems™ QuantStudio™ Design and Analysis Software make it easy to get started and stay organized.

- Software can be accessed either via desktop or online
- Easily identifiable icons guide you through the workflow to set up runs and analyze experiments
- Graphical interface allows easy editing of experimental conditions and viewing of plate layout (Figure 2A)

- Manipulate view to a particular graph or data point (Figure 2B)
- Option to pause a real-time PCR run on demand
- Preoptimized protocol templates allow quick selection of default protocols for standard applications
- Locked workflow feature allows for experimental consistency in tightly controlled environments

Service and support plans designed for you

Our extended warranty plans are designed to maximize instrument performance and help ensure availability of critical systems with preventive maintenance, proactive instrument monitoring, remote diagnostic capabilities, and—should one of your instruments require repair—fast response. Benefits include:

- Guaranteed 2 business day response time*
- Scheduled on-site planned maintenance (PM)
- Parts, labor, and travel for repair
- Remote instrument diagnostics
- Priority access to remote service engineer

To learn more about our services and support solutions, go to thermofisher.com/instrumentservices



Figure 2. Graphical interface. Software allows (A) easy editing of thermal cycling conditions and viewing of plate layout, and (B) viewing of amplification plots and drilling down to a subset of sample wells.

* Guaranteed response times vary by region.

Get started quickly—Instrument is factory-calibrated for optical and thermal accuracy, quick installation, and immediate use.

Skip the learning curve—Sign into EducationConnect with your Connect account for an online course on installing, operating, and maintaining your instrument. To begin the course, go to thermofisher.com/quantstudio3-5training.

Maximize benchtop space—Compact instrument can be configured as a stand-alone unit or with a computer to fit most laboratory needs (instrument dimensions: 27 x 50 x 40 cm).



Establish standard operating procedures and compliance with ease—Locked protocol templates, in-run quality control (QC) feedback, and QC traceability of consumables

offer greater control of experimental data. Real-time data markup language (RDML) export is available for compatibility with MIQE guidelines.

Technical specifications



	QuantStudio 3 Real-Time PCR System	QuantStudio 5 Real-Time PCR System
Sample capacity (wells)	96	96 or 384
Reaction volume	0.1 mL block: 10–30 μ L 0.2 mL block: 10–100 μ L	96-well 0.1 mL block: 10–30 μ L 96-well 0.2 mL block: 10–100 μ L 384-well block: 5–20 μ L
Excitation source	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
Maximum block ramp rate	0.1 mL block: 9.0°C/sec 0.2 mL block: 6.5°C/sec	96-well 0.1 mL block: 9.0°C/sec 96-well 0.2 mL block: 6.5°C/sec 384-well block: 6.0°C/sec
Average sample ramp rate	3.66°C/sec	
Temperature uniformity	0.4°C	
Temperature accuracy	0.25°C	
Compatible dyes	FAM™/SYBR™ Green, VIC™/JOE™/HEX™/TET™, ABY™/NED™/TAMRA™/Cy®3, JUN™, ROX™/Texas Red™	FAM/SYBR Green, VIC/JOE/HEX/TET, ABY/NED/TAMRA/Cy3, JUN, ROX/Texas Red, Mustang Purple™, Cy®5/LIZ™, Cy®5.5
Security, auditing, and e-signature (SAE) features	No	Yes, with no additional fees

High-quality data for a variety of applications

Utilizing proven Applied Biosystems™ OptiFlex™ technology and VeriFlex™ Blocks, QuantStudio 3 and 5 systems offer optimal data accuracy and sensitivity (Figure 6). Applications include analysis of gene expression, microRNAs and noncoding RNAs, SNPs, copy number variation, somatic mutations, drug metabolism enzymes, and protein expression.

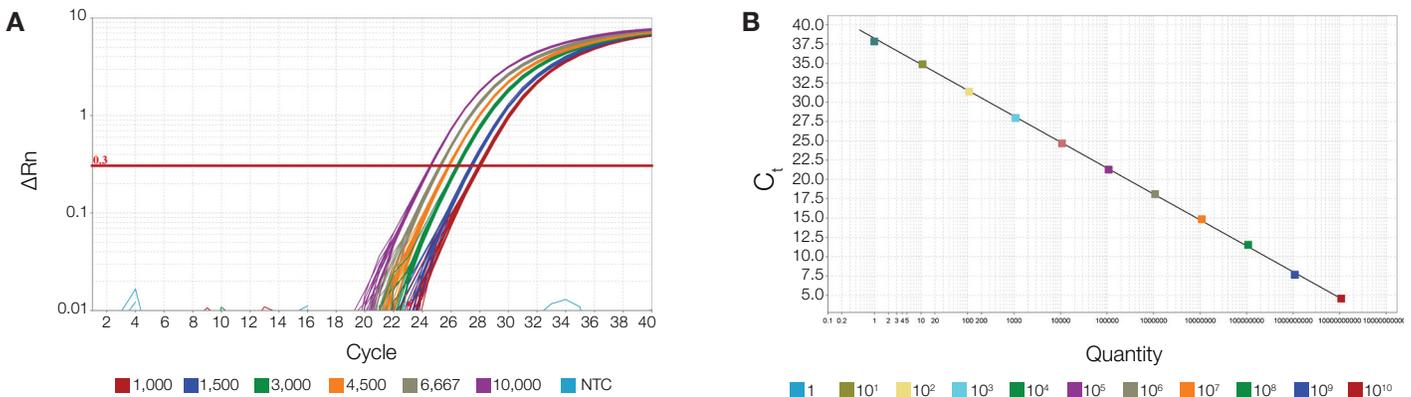


Figure 6. The QuantStudio 3 and 5 systems provide sensitive detection and high-confidence target discrimination down to 1.5-fold differences. (A) Amplification plots for 1.5-fold dilutions of a KAZ plasmid amplified with the Applied Biosystems™ PE2 TaqMan® Assay under fast run conditions using Applied Biosystems™ TaqMan® Fast Advanced Master Mix. Quantities assayed, and C_t (SD): 1,000 copies, 27.9 (0.063); 1,500 copies, 27.4 (0.059); 3,000 copies, 26.4 (0.060); 4,500 copies, 25.8 (0.047); 6,667 copies, 25.2 (0.049); 10,000 copies, 24.5 (0.041). NTC = no-template control. (B) Standard curve generated from the C_t values.

Assay flexibility to support your application

The QuantStudio 3 and 5 systems support probe-based assays as well as intercalating dyes (Figures 7–9). TaqMan probe-based assays, developed with powerful algorithms and optimized master mixes, enable outstanding specificity and sensitivity. Applied Biosystems™ SYBR™ Green chemistry is an economical alternative for target identification or initial qualification of assays.

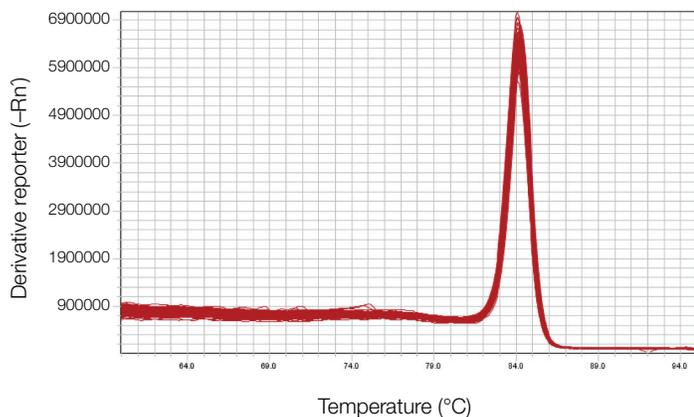


Figure 7. Melt curve analysis using the online version of the software. In this experiment, 96 replicates of human genomic DNA were amplified using Applied Biosystems™ SYBR™ Select Master Mix with primers for the *RNase P* gene, followed by a dissociation step. The reactions were performed under fast run conditions, showing C_i uniformity with a mean of 25.7 (SD 0.077), and thermal uniformity as measured by the derivative peak with a melting temperature (T_m) of 84.17°C (SD 0.07°C).

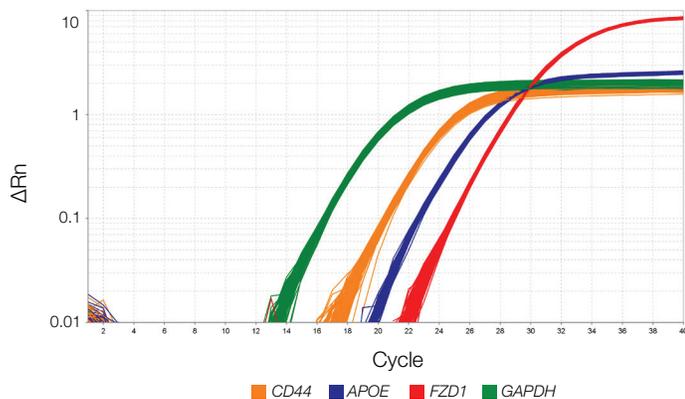


Figure 8. Multiplex gene expression analysis of 4 targets. Whole-plate amplification plots are shown of 96 replicates of cDNA made from universal human RNA (UHR) amplified under fast run conditions using Applied Biosystems™ TaqMan® Multiplex Master Mix with Mustang Purple passive reference dye. Targets and labels: *FZD1* labeled with FAM dye, *APOE* labeled with VIC dye, *CD44* labeled with ABY dye, *GAPDH* labeled with JUN dye.

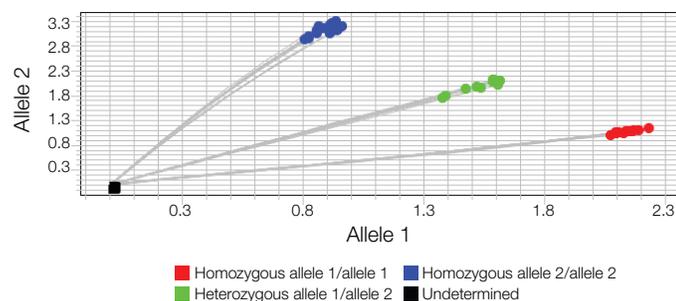


Figure 9. Genotyping analysis that includes cluster plots with data traces. An allelic discrimination plot is shown of 44 gDNA samples and 4 no-template controls (NTCs) genotyped using Applied Biosystems™ TaqMan® SNP Genotyping Assay C_29086771_20, with both PCR and allelic discrimination performed on the QuantStudio 5 Real-Time PCR System. The novel use of real-time PCR data to plot SNP cluster progress aids in calling ambiguous samples and reduces run times by displaying the optimal number of cycles necessary for maximum cluster separation.

For more information about TaqMan Assays and formats, go to thermofisher.com/taqman

Ordering information

Instruments	Cat. No.	Instrument with service—Cat. No.*
QuantStudio 3 system configurations		
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 system configurations		
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

* Extended warranty packages for the QuantStudio 3 and 5 Real-Time PCR Systems include the instrument, SmartStart™ Orientation, and a 1-year AB Assurance service plan with 1 planned maintenance (PM) visit. Packages are not available in all countries. Contact your local sales representative for availability information.

** Does not include a computer. Additional Cat. No. are available that include a laptop or desktop computer.

Reagents	Quantity	Cat. No.
TaqMan Fast Advanced Master Mix	5 mL	4444557
TaqMan Fast Advanced Master Mix	50 mL	4444558
PowerUp SYBR Green Master Mix	5 mL	A25742
PowerUp SYBR Green Master Mix	50 mL	A25743
SuperScript IV VILO Master Mix	500 reactions	11756500
High-Capacity RNA-to-cDNA Kit	50 reactions	4387406

qPCR plastics	Quantity	Cat. No.
MicroAmp Optical 96-Well Reaction Plate	10 plates	N8010560
MicroAmp EnduraPlate Optical 96-Well Clear Reaction Plates with Barcode	20 plates	4483354
MicroAmp Fast Optical 96-Well Reaction Plate, 0.1 mL	10 plates	4346907
MicroAmp EnduraPlate Optical 96-Well Fast Clear Reaction Plates with Barcode	20 plates	4483485
MicroAmp Optical 384-Well Reaction Plate with Barcode	50 plates	4309849
MicroAmp EnduraPlate Optical 384-Well Clear Reaction Plates with Barcode	20 plates	4483285
MicroAmp Optical Adhesive Film	100 covers	4311971

Instrument qualification (IQ), operational qualification (OQ), and instrument performance verification (IPV) services†	Quantity	Cat. No.
IQ/OQ/IPV Service for QuantStudio 3 Real-Time PCR Systems, 96-well, 0.1 mL block	1 service	A28481
IQ/OQ/IPV Service for QuantStudio 3 Real-Time PCR Systems, 96-well, 0.2 mL block	1 service	A28480
IQ/OQ/IPV Service for QuantStudio 5 Real-Time PCR Systems, 96-well, 0.1 mL block	1 service	A28483
IQ/OQ/IPV Service for QuantStudio 5 Real-Time PCR Systems, 96-well, 0.2 mL block	1 service	A28482
IQ/OQ/IPV Service for QuantStudio 5 Real-Time PCR Systems, 384-well block	1 service	A28484

† OQ/IPV service is not available in all countries. Contact your local sales representative for availability information.

Find out more at thermofisher.com/quantstudio3-5

ThermoFisher
SCIENTIFIC

QuantStudio 5 Real-Time PCR System

Take charge of how you create and manage your real-time PCR data with the Applied Biosystems™ QuantStudio™ 5 Real-Time PCR System. Available with either a 96- or 384-well thermal block, this high-performance instrument offers more control to customize your reactions and still maximize bench space with a small footprint. Additional filter channels and six temperature block zones* allow ultimate control over cycling conditions. Desktop software with security, auditing, and e-signature features assists with 21 CFR Part 11 compliance and increased security, helping to ensure your run and your data are protected. With Web browser-based and desktop analysis options, the QuantStudio 5 Real-Time PCR System offers superior performance and quality. Plus, you can leverage the power of Thermo Fisher Connect to stay connected to your data anywhere, anytime when you are online.



QuantStudio 5 Real-Time PCR System performance specifications			
Dye compatibility	FAM™, SYBR™ Green, VIC™, JOE™, HEX™, TET™, ABY™, NED™, TAMRA™, Cy®3, JUN™, ROX™, Texas Red™, Mustang Purple™, Cy®5, LIZ™, and Cy®5.5 dyes		
Multiplexing	96-well: up to 6 targets with 21 filter combinations; 384-well: up to 5 targets		
Dynamic range	10 logarithmic units		
Sensitivity (resolution)	Detect changes as little as 1.5-fold in target quantities in a singleplex reaction		
Sensitivity (No. of copies)	1 copy		
Research areas	Infectious diseases Pathogen detection Translocation analysis Viral load analysis	Drug metabolism Plant sciences Agricultural biotechnology Oncology	Inherited diseases Epigenetics Synthetic biology Stem cells
Key applications	Gene expression Copy number variation High resolution melt (HRM) analysis	Single-nucleotide polymorphism (SNP) genotyping Mutation scanning	Mutation detection Protein thermal shift MicroRNA profiling Methylation analysis

QuantStudio 5 Real-Time PCR System specifications	
Dimensions and weight	27 x 50 x 40 cm (W x D x H), <26 kg
Sample capacity (wells)	96 (0.1 mL and 0.2 mL blocks available), 384
Reaction volume	96-well 0.1 mL block: 10–30 µL; 96-well 0.2 mL block: 10–100 µL; 384-well block: 5–20 µL
Maximum ramp rate	96-well 0.1 mL block: 9.0°C/sec; 96-well 0.2 mL block: 6.5°C/sec; 384-well block: 6.0°C/sec
Average sample ramp rate	3.66°C/sec
Temperature uniformity	0.4°C
VeriFlex™ Blocks	6 independent temperature zones (96-well blocks only)

* Available on 96-well format only.

QuantStudio 5 Real-Time PCR System specifications (continued)

Temperature range	4–99.9°C
Heating/cooling method	Peltier system
Run time	96-well: <30 min; 384-well: <35 min
Calibration	Factory calibrated
Onboard memory	10 GB, which translates to approximately 2,000–5,000 run files
Electrical approvals	IEC, CE
Excitation (light source)	Bright white LED
Filters/colors	96-well: 6 decoupled filters, up to 21 combinations; 384-well: 5 coupled filters
Excitation/emission detection range	96-well: 450–680/500–730 nm; 384-well: 450–650/500–700 nm
Data acquisition	Whole-plate imaging
Touch screen	Interactive touch screen with real-time application viewing
Online ecosystem	Thermo Fisher Connect
Communication interface	Thermo Fisher Connect, USB, or Wi-Fi
External devices	2D barcode reader via USB connection
System configuration	Stand-alone, PC connected, or direct connection to Thermo Fisher Connect via LAN or Wi-Fi
International standards	ISO 13485
Run monitoring	Real-time run monitoring app on Apple™ or Android™ mobile devices*

QuantStudio 5 Real-Time PCR Software specifications

Design and analysis software	<ul style="list-style-type: none"> • Desktop option using Microsoft™ Windows™ 7 operating system • Web browser-based software option; run on PC or Mac™ computer
Run programming options	<ul style="list-style-type: none"> • Preoptimized protocol templates or ability to customize • Programmable and manual pause • Locked workflows • Run recovery feature for power interruptions
Chinese language software	Available
MIQE compliance	Real-time PCR data markup language (RDML) export format
Features to assist with 21 CFR Part 11 compliance	Security, auditing, and e-signature; no additional fees or licenses required
Single-plate analysis	Absolute and relative gene expression, SNP genotyping, presence and/or absence, HRM, protein thermal shift
Multiplate analysis	Absolute and relative gene expression studies, SNP genotyping studies

MIQE = Minimum information for publication of quantitative real-time PCR experiments

Ordering information

Product	Cat. No.
QuantStudio 5 Real-Time PCR System,** 96-well, 0.1 mL block	A28138
QuantStudio 5 Real-Time PCR System,** 96-well, 0.2 mL block	A28139
QuantStudio 5 Real-Time PCR System,** 384-well	A28140

Stay connected at thermofisher.com/quantstudio5

ThermoFisher
SCIENTIFIC

* With Internet connection and Thermo Fisher Connect account.

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