

# 구 매 규 격 서

품 목 번 호		정부물품 목록번호 (16자리)	41111722-23475176	수량/단위	1 대
품 명	한글	EVOS M5000 형광 이미징 시스템			
	영문	EVOS M5000 Imaging System			

**가. 특 징 :**

1. LED 광원을 이용한 도립 형광 현미경
2. 현미경에 컴퓨터 시스템이 내장되어 있어 캡처등의 이미지작업이 직접 가능
3. 형광 이미지에 적합한 고감도,고해상도 sCMOS 카메라 내장
4. 고감도-정밀도 가 뛰어난 광학시스템
5. 2-100X 배율의 Long Working Distance, Cover slip 전용 렌즈 장착 가능
6. LED 형광 광원 사용
7. 현미경과 LED 광원,디지털카메라,컴퓨터,이미지작업 시스템 과 고해상도의 디스플레이가 일체화된 디지털 도립 현미경 시스템
8. Trans RGB 기능을 통해 조직 염색 시료 확인 가능(H&E Staining)
9. 정확한 자동 초점 시스템을 이용한 시료 확인 가능
10. Z-Stacking 기능을 이용한 두꺼운 시료를 정확히 확인 가능
11. 타임랩스(Time lapse) - Onstage Incubator 장착 시 Live cell imaging 가능(Option)

**나. 사 양 :**

**1) 광 학 (Optics)**

- 고감도,고정밀도 의 광학 시스템 (Infinity corrected optical system)
- RMS-threaded objectives with 45 mm parfocal distance
- 손쉽게 조작 가능한 5 개의 렌즈 포지션
- Screen magnifications and fields of view

**2) 광 원(Illumination)**

- 형광용 LED광원 (Fluorescence LED based illumination)
- 교체 가능한 형광 LED cube
- warm - up cool - down 시간 필요 없음
- 반영구적인 수명 (50,000 시간 이상)
- 광량조절이 가능
- 유지보수,교체,얼라이먼트 조정 등이 필요없이 간편하게 사용가능

- U.S. Patent NO. 7,502,164

### 3) Stage

- X-Y 축 사양 : axis fine positioning controls, 69 mm (2.7 inch) per rotation
- 110 mm X 110 mm (4.3 in X 4.3 in) range of motion
- Z-axis focusing controls, 10~370 um/rotation
- 다양한 culture dish 에 적용하기 위한 다양한 vessel holder 제공

### 4) 컴퓨터와 소프트웨어 내장 (On-board computer)

- 광량, 밝기, 명암 등을 소프트웨어 이용하여 간편하게 조작 가능
- 마우스 컨트롤로 가능한 이미지작업용 소프트웨어 내장
- 18.5 인치 HD LCD 디스플레이 일체형 모니터, 1920 X 1080 pixel (adjustable tilt)
- 이미지 캡처와 이미지 저장 가능  
(16 bit monochrome TIFF or PNG (12 bit dynamic range) 24 bit color TIFF or

PNG,JPG,BMP)

- 2.0 USB 포트 4 개, 3.0 USB 포트 1개 제공 USB 통해 저장된 이미지 전송 가능.
- WIFI 이용한 Cloud server 사용 가능
- 1 DVI 포트 제공되어 모니터 등의 다른기기와 호환가능

### 5) Camera

- High-sensitivity 3.2 MP (2048 x 1536) monochrome CMOS sensor
- 2048 × 1536, 3.2 Megapixels
- 3.45 um pixel resolution

### 6) Condenser and filters

- 3 position turret for bright field and phase contrast
- Condenser slides; pinhole, diffuser, green, meniscus filters
- Condenser working distance: 53 mm

### 7) Contrast methods

- 형광과 일반 광학용 관찰 가능  
Fluorescence and transmitted light(brightfield and phase contrast)

### 8) Applications

- Time lapse 기능  
(최소 10 초 단위의 .avi movie files 로 데이터 저장)
- Cell counting  
자동 세포 개수 기능으로 다양한 사이즈의 Cell counting 가능
- Transfection  
(Automatically capture and overlay images for transfection analysis)

### 9) 규 격

- 높이(Operating height): 23 inches

- 폭(Depth) ; 18 inches
- 너비(Width): 18 inches

다. 구 성 :

1. Inverted Fluorescence Microscope (본체)
2. High-sensitivity 3.2 MP (2048 x 1536) monochrome CMOS sensor
3. Objective(대물렌즈) - 4X Acromat PH 0.13NA/10.58
4. Objective(대물렌즈) - 10X Acromat PH 0.25NA/7.45
5. Objective(대물렌즈) - 20X Fluorite PH 0.45NA/6.12
6. Objective(대물렌즈) - 40X Fluorite 0.65NA/1.79
7. Objective(대물렌즈) - 40X Fluorite 0,75NA/0.72
8. 형광라이트큐브(형광필터 시스템)- DAPI
9. 형광라이트큐브(형광필터 시스템)- GFP
10. 형광라이트큐브(형광필터 시스템)- RFP
11. Vessel HOLDER- Dual-slide holder
12. Vessel HOLDER- Universal
13. 데이터 분석과 저장 등을 위한 컴퓨터 시스템 내장

라. 기 타 :

1. 설치와 운영은 구매사용자에게 책임이 있습니다.
2. 1년의 무상유지보수

# EVOS M5000 Imaging System

## Description

The Invitrogen™ EVOS™ M5000 Cell Imaging System is a fully integrated digital inverted microscope for four-color fluorescence, transmitted-light and color applications.

## Manufacturing disclosure

We are the sole manufacturer of the EVOS M5000 Cell Imaging System. The system is sold and serviced only by Thermo Fisher Scientific, Fisher Scientific and authorized distributors.

## Differentiating features of the instrument

- **Camera** - a highly sensitive 3.2 MP monochrome CMOS camera (2048 x 1536) with 3.45  $\mu\text{m}$  pixel resolution. The monochrome camera affords the best sensitivity for detection of faint fluorescence signals and allows quantitative analysis.
- **Optics** - Infinity-corrected optical system; RMS-threaded objectives with 45 mm parfocal distance
- **Objectives** – Wide selection of high-quality, long-working distance (LWD), and coverslip-corrected objectives
- **Color Transmitted Light Imaging** – Patent pending color illumination mode enables rendering of true color in transmitted light, e.g., imaging H&E stained tissue sections.





- **Technical training for new users**—Every EVOS M5000 Imaging System includes access to a self-paced online educational experience designed to help you get up to speed quickly and efficiently anywhere, anytime. The Digital SmartStart™ 3D Experience includes interactive visual demonstrations of how to install, operate, and maintain your instrument.
- **Product warranty and service**—
  - One year of warranty (standard warranty) is included with your instrument purchase. Additional years of coverage (extended warranty) may be purchased and can help you avoid unnecessary downtime and extend the life of your instrument. An instrument warranty package makes it easy to secure multiple years of coverage with Planned Maintenance right at the time of purchase.
  - If your instrument needs repair, our Rapid Exchange (REX) service provides a factory-certified, refurbished, replacement instrument within two business day from the time we determine a replacement is required. Our AB Repair Center (ABRC) Support is ideal for customers in regulated environments that must maintain asset tagging consistency to comply with regulated protocols. With ABRC, we offer a targeted 2-day response to all inquiries related to your instrument and repair turnaround time is typically 3 weeks from receipt of the instrument. Our comprehensive service includes:
    - Unlimited instrument repair (parts, labor, and shipping charges are included)
    - Unlimited technical support (phone, WebEx™ conference)
- **Qualification services**—Installation qualification (IQ) and operational qualification (OQ) services help satisfy regulatory requirements by verifying and documenting that your instrument is installed and operating according to manufacturer's specifications upon installation and after a move.

Find out more at [thermofisher.com/evosm5000](https://thermofisher.com/evosm5000)

**ThermoFisher**  
SCIENTIFIC

- **Fluorescence LED Light Cubes** - We invented the light cube that combines a bright, stable and low energy LED light with hard-coated filters and a dichroic mirror to produce a highly sophisticated light engine that allows placement close to the sample and (minimal light loss), immediate startup (no wait), 50,000h life (low total cost) and digital control (better illumination control) compared to halogen bulbs. Hard-coated filter sets have sharper edges and significantly higher transmission efficiencies that typically result in >25% more light transmission than traditional soft-coated filters. Custom cubes are also available upon request.

- Lightcubes	(EX)	(EM)
- DAPI	357/44	447/60
- TagBFP	390/18	447/60
- CFP	445/45	510/42
- GFP	470/22	510/42
- YFP	500/24	524/27
- RFP	531/40	593/40
- Invitrogen Texas Red	585/29	624/40
- Invitrogen Cy5	628/40	692/40
- Invitrogen Cy5.5	655/46	794/16
- Invitrogen Cy7	710/40	775/46
- CFP-YFP	445/45	542/27
- AO	42/46	488LP
- AOred	442/46	628/32

## Hardware

- **Vessel compatibility** - The EVOS M5000 Imaging system is compatible with microscope and chamber slides; hemocytometers; 6-, 12-, 24-, 48-, 96-, 384 well microplates; 35-, 50-, 60-, 100 mm petri dishes; T-25, T-75, T-175 flasks, Custom configurations are also available upon request.
- **Motorized Z-axis** – on-screen controls give you the ability to autofocus on coarse and fine modes, set z positions, and perform a z-stack.
- **Motorized fluorescence cube change mechanism** – integrated motor is controlled by onscreen software, that changes filter cubes in seconds to allow for fast and smooth multichannel fluorescence image acquisition

- **Incubation Integration** – the EVOS M5000 is compatible with the Invitrogen Onstage Incubator. For live cell imaging over hours or days, the optional EVOS Onstage Incubator functions as an environmental chamber on top of the microscope stage and is operated seamlessly from within the instrument interface. Through control of temperature, humidity and CO<sub>2</sub> as well as oxygen for normoxic and hypoxic conditions, it is possible to study live cell dynamics over extended periods.
- **Networking capability** - Connection through Windows, server message block (SMB), or wifi network via an Ethernet cable connection
- **WiFi enablement** – included wifi dongle allows for software upgrades with the click of a button
- **Cloud connectivity** - Connection to Thermo Fisher cloud for access to images and data anytime and anywhere

## Software

- **Integrated onboard operating software**
  - Autofocus
  - Z-stacking
  - Cell Counting
  - Confluence Measurement
  - Annotations tool
- **Optional Analysis Software** – Celleste Image Analysis software is powerful, easy-to-use software. Easily count, segment, classify and analyze complex images to create reports that include the parameters and data you need. Utilize automation tools to eliminate repetitive steps and minimize chances of errors or inconsistencies.
- **Image saving** - Once you have finished editing and analysis, save the images and data to the embedded hard-drive, an external USB device or a local network.

## Support

- **Technical applications scientists**—Technical applications scientists (TAS) with years of cell biology and microscopy experience support our customers worldwide. This remote staff will work with users on our toll-free technical support phone hotline or by email to support application development, instrument inquiries, and troubleshooting.



# 국 문 규 격 서

## COMMODITY DESCRIPTION

관세분류번호 HSK NO.	품목번호 ITEM NO.	품목 및 규격 DESCRIPTION	수량 Q'TY	단위 UNIT
9027.80.1000		Real Time PCR System	1	set

### A. 특성

1. PCR의 기본분석 방법과 혁신적인 장비와 소프트웨어가 합쳐져 핵산서열의 대용량 시료에 대한 정량을 수행하는 장치이다.
2. Real-time PCR 방법으로 핵산서열을 검출하고 정량을 완벽하게 수행한다.
3. 96well 샘플 블록은 3개의 분리된 펠타이어 블록으로 구성되어 있으며, 10 $\mu$ l 에서 100 $\mu$ l 의 반응액을 사용하도록 디자인되어 있다.
4. 대립유전자 식별(SNP 검출)과 내부에 항상 나타나는 대조군(IPC)을 이용한 양/음성 분석과 같은 비정량 실험 또한 가능하며 제공되는 소프트웨어는 SNP분석에 대해 자동으로 정확한 결과를 제시하여 줌.
5. 평균 5년 이상 수명이 유지되고 오랫동안 지속되는 밝은 White LED 광원을 사용하고 있으며, 광원은 최소 60,000 시간의 수명을 가진다.
6. 컴퓨터의 연결없이 운영이 단독으로 장비의 운영이 가능하다.
7. 본 장비에 사용된 터치스크린의 인터페이스는 컴퓨터없이 장비를 빠르게 운영하기 위한 프로토콜을 저장할 수 있다.
8. 1000개에서 5000개 사이의 표준절대정량 운영파일의 저장이 가능한 10GB의 메모리 수용력을 가지고, 정전 또는 네트워크의 이상 시에 장비를 최대한 보호할 수 있도록 디자인되어 있다.
11. fluorogenic 5' nuclease assay 와 fast chemistries 를 이용하여 실시간유전자증폭반응을 40분 안에 마칠 수 있도록 디자인 되어 있다.
12. 장비는 TaqMan® 프로브 와 SYBR® Green DNA binding dye chemistry, 최소 두 가지 동종의 화학반응을 지원한다.
13. 본 장비는 99.7%신뢰수준으로 5,000 에서 10,000 개 사이의 주형유전자를 구분이 가능한 실시간 정량유전자 분석기의 사양을 가진다.
14. 본 장비는 0.2ml standard 96well, 빠른 0.1ml 96well 모델의 두가지 타입의 블록을 가진 모델 중에 선택이 가능하며, 모든 블록은 30분 이내에 빠른 프로토콜의 운영이 가능하다.

### B. 시스템구성

- |                 |       |
|-----------------|-------|
| 1. 실시간유전자분석 시스템 | 1 set |
| 2. 소프트웨어        | 1 set |
| 3. 기본 악세사리      | 1 set |

### C. 상세규격

## I. 실시간유전자 분석시스템

### 1. 화학물질

#### (1) Fluorogenic 5' Nuclease Assay 방식

PCR 반응용액에 표적 염기서열과 상보성이 있는 형광염료가 붙은 탐침을 첨가하는 방식이며, 탐침은 표식과 흡수염료를 포함하고 있는 20bp 내외의 짧은 뉴클레오티드 집합체로서, PCR 과정에서 시료 DNA의 특정 표적염기서열이 존재할 경우 순방향과 역방향 프라이머 사이에 특이하게 탐침이 결합된다. 이후 합성효소의 핵산분해 활성이 탐침을 잘라내면 그 결과로 탐침에 붙어 있던 표식 염료의 광도가 증가 하게 되며, 이 과정은 매 cycle에서 일어나며 PCR 산물의 축적을 방해하지 않는다.

#### (2) Minor Groove Binder Assay

Minor Groove Binder 는 탐침의 녹는 온도( $T_m$ )를 향상시켜 더 짧은 길이의 탐침으로도 실험할 수 있게 되며, 짧은 probe는 향상된 식별력을 제공한다. 이 탐침은 A/T가 많이 존재하는 염기서열에 대한 개체별 차이도 효과적으로 검증하도록 한다.

#### (3) Double-stranded DNA Binding Dye SYBR Green I

두 가닥의 DNA에 효과적으로 결합하는 SYBR Green I dye는 PCR 산물의 축적을 매우 쉽게 관찰 할 수 있게 하며, PCR 반응 중 DNA의 양이 기하급수적으로 증가함에 따라 염료로부터 방출되는 형광의 양도 비율적으로 증가한다.

### 2. 온도조절파트

- (1) 블록 구성 : 0.2ml 96well
- (2) 반응 용액의 볼륨 : 10-100ul(0.2ml)
- (3) 최대 온도조절 속도 : 초당 6.5도
- (4) 온도의 균등성 : 0.4℃
- (5) 온도의 정확도 : 0.25℃
- (6) VeriFlex 블록 : 3 개의 독립적인 온도구획
- (7) 가열/냉각 방법 : Peltier
- (8) 운영시간 : 40분 이내(Fast reagent 사용 시)

### 3. 형광 감지 시스템

- (1) 발광 광원 : Bright white LED
- (2) 필터/색 : 4 coupled filters
- (3) 발광/검출범위 : 450-600nm/500-640nm
- (4) 검출 기기 : CMOS camera
- (5) 염료 적합성 : FAM/SYBR Green, VIC/JOE/HEX/TET, ABY/NED/TAMRA/CY3, JUN/ROX/Texas Red

### 4. 시스템 수행능력

- (1) 적용가능한 운영방식: Gene expression, SNP genotyping, CNV, Mutation scanning, MicroRNA profiling, HRM, Mutation detection, Protein thermal shift, Methylation analysis.
- (2) 역학 범위: 10 logs
- (3) 민감도 (해상도) : 한 가지 반응의 타겟물질에서 1.5배까지의 차이를 검출



- (4) 민감도 ( DNA 수량) : 1 copy
- (5) 다중분석 : 4 가지의 타겟 물질까지 검출
- (6) 장비 구성 : 시스템, 퍼스널컴퓨터, 클라우드 기반 데이터 저장

## 5. 형광감지시스템의 보정

- (1) 본 장비는 순수하고 보정이 완료된 염료에 최적화된 네 개의 형광 발광 필터휠을 사용하여 같은 Well 에서 다중의 염료를 검출할수 있다.
- (2) 본 장비는 레퍼런스염료를 사용하여 파이펫팅에서 발생하는 작은 편차를 보정할수 있다.
- (3) 본 장비는 정확한 형광감지시스템과 다중구성 알고리즘을 사용하여 정확하고 재현가능한 CT값을 구현해내어, 급격하게 증가되는 구간으로부터 정확하게 모니터링이 가능하고 데이터를 산출해 낸다.

## II. 소프트웨어

- 1. 본 장비에 내장된 소프트웨어는 절대/상대정량, 유/무 분석 그리고 대립형질구분 및 SNP검출 에 대한 형광결과의 수집과 분석을 지원 하도록 설계되어 있다.
- 2. 녹는 곡선 단계에서 PCR 시에 서로 다른 필터 컬러 수집이 가능하도록 설계 되어, 같은 구동으로 TaqMan 과 SYBR Green 화학반응을 지원한다.
- 3. 실험의 문제해결을 위해 처리되지 않은 미 가공 형광 데이터와 다중구성의 데이터를 제공한다.
- 4. 사용자가 동시에 500개의 실험결과의 저장이 가능하도록 지원한다.
- 5. 장비의 소프트웨어는 같은 네트워크 내에 컴퓨터를 사용하여 장비의 조절이 가능하고 장비의 데이터를 분석할 수 있다.
- 6. 온라인상의 소프트웨어는 연결된 장비의 상태와 실시간 운영구성의 상황을 공급한다.
- 7. 온라인 상의 소프트웨어는 연결된 장비로부터 작동완료된 실험결과에 접근이 가능하다.
- 8. 7900HT, ViiA™ 7, and RDML (Real time Data Markup Language, compliant with MIQE Guidelines ) 소프트웨어에서 공유가능한 포맷을 포함하기 때문에 실험데이터를 자동으로 내보낼 수 있는 기능의 설정이 가능하다.
- 9. 선택적으로 프라이머와 프로브 디자인 소프트웨어의 구입이 가능하다.
- 10. 온라인 상의 소프트웨어는 유전자발현실험을 위한 내부조절선택이 가능한 프로그램을 공급한다.
- 11. 온라인 상의 소프트웨어는 같은 타입의 장비의 다른 플레이트의 분석을 위해 하나의 플레이트로부터 표준곡선을 받아들이기 위한 기능구현이 가능하다.
- 12. 장비 소프트웨어는 온도 프로토콜, 타겟과 레이아웃의 변형을 제한하기 위해 패스워드 운영이 가능하다.
- 13. 장비 소프트웨어는 엑셀과 JPG와 같은 모든 그래프로 가공되지 않은 데이터와 분석 데이터를 포함하는 결과로 저장하여 외부로 내보낼 수 있다.
- 14. 장비 소프트웨어는 TaqMan 과 SYBR Green chemistry 방식을 이용하여 Standard Curve, Relative Standard Curve, Relative Quantification Gene Expression, and SNP Genotyping 실험을 빠르게 운영하기 위해 퀵스타트 프로토콜이 저장되어 있다.
- 15. 장비 소프트웨어는 장비런닝 전에 플레이트의 설정 없이 장비운영이 가능하고, 부정

확한 염료 또는 타겟배정을 포함하여 장비런닝 후의 플레이트 설정에 대한 실수를 교정이 가능하다.

### III. 주 장비에 포함된 기본 품목

#### 1. 화학적 설치 키트

(1) TaqMan RNase P Instrument Verification Plate 1 kit

#### 2. 데이터제어 시스템

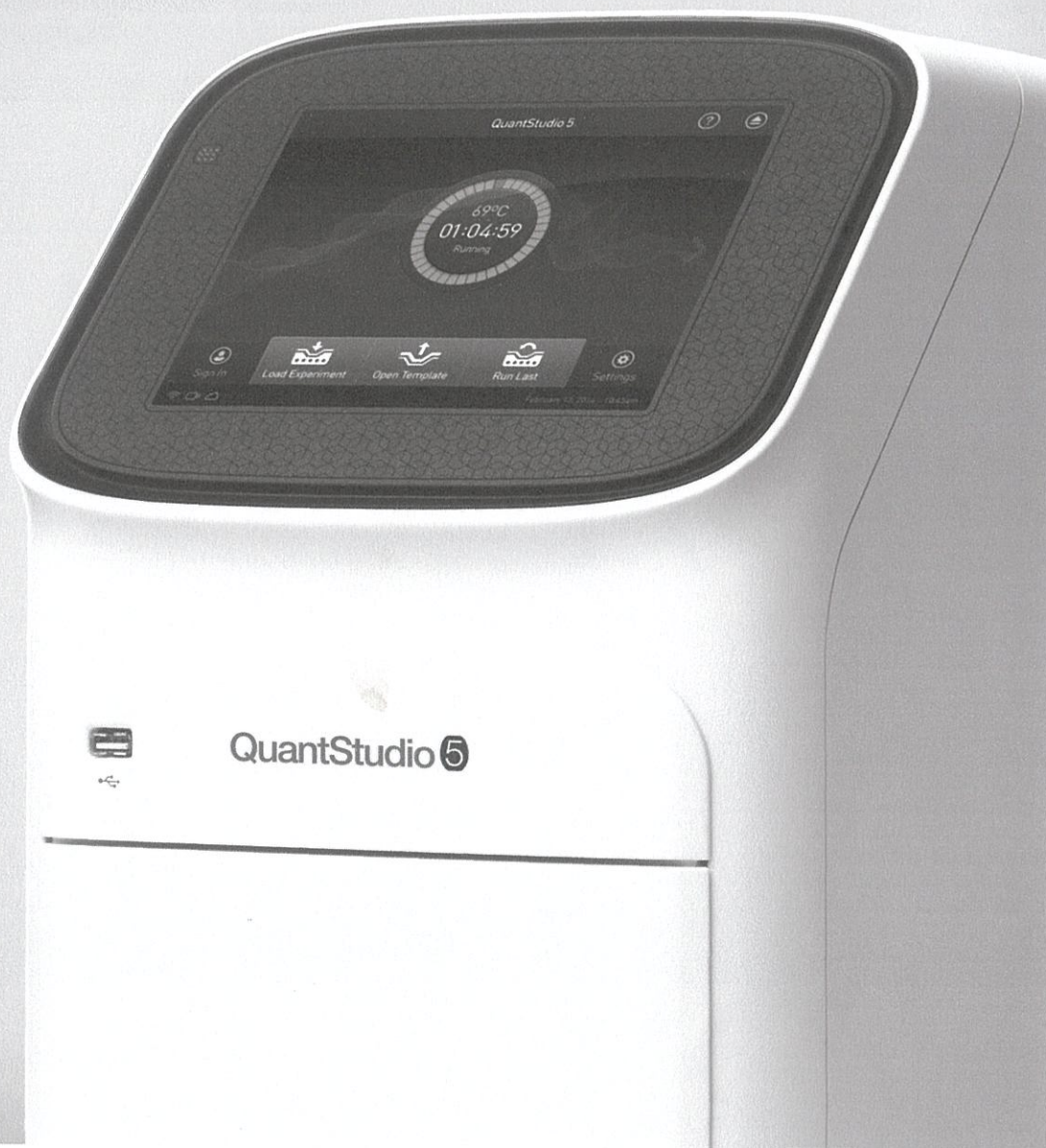
(1) Intel Core i7, 2.80GHz, Window 10 1 set

(2) 17" Monitor 1 set

### D. 비교

1. 장비의 설치 및 초기 작동은 사용자가 원하는 장소에서 공급자에 의해 수행한다.
2. 장비가 정상적으로 설치 및 작동이 됨을 확인 후, 1년간 성능을 보증한다.
3. 공급자 증명원 및 기술지원 약속서를 공급 가능해야 한다.

appliedbiosystems



## QuantStudio 3 and QuantStudio 5 Real-Time PCR Systems

Connect to your data anytime, anywhere

**ThermoFisher**  
SCIENTIFIC



## Connect with your future

The modern laboratory is undergoing a technological revolution. Today's scientific breakthroughs emerge in a context of unparalleled connectivity. Lab instruments not only are more compact, automated, powerful, and accessible, but also can store and can connect to platforms that can share vast amounts of data, facilitating scientific advances through global collaboration.

As your trusted partner at the leading edge of this era of innovation, we've developed the Applied Biosystems<sup>™</sup> QuantStudio<sup>™</sup> 3 and 5 Real-Time PCR Systems. These high-performance benchtop instruments allow you to remotely monitor your runs, as well as easily access and securely share results with colleagues anywhere, anytime when connected to Thermo Fisher Cloud. With your data always within reach and shareable, the answers shaping the future of science are never far away.



## Discover the QuantStudio 3 and 5 Real-Time PCR Systems

The QuantStudio 3 and 5 Real-Time PCR Systems are the latest additions to our family of QuantStudio™ systems. These instruments provide our latest advancements in touch screen usability, allowing you to stay connected to your data easily. They're designed for both new and experienced users who need simple and affordable real-time PCR systems without compromising performance or quality.



**Interactivity**

- Interactive touch screen.
- Run and edit directly from touch screen.
- Easy and intuitive interface.

**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.

†With Web access and Thermo Fisher Cloud.

**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.

**Access, analyze, and share data anytime, anywhere —** Remotely monitor your runs, analyze sophisticated data sets in minutes, store data in a secure space, and share results online with colleagues across institutions and around the world, with Web browser-based software.

**Obtain results you can trust —** Detect differences in target quantity as small as 1.5-fold in singleplex reactions, and obtain 10 logs of linear dynamic range.

**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 experiment data. Real-time data mark-up language (RDML) export is available for compatibility with MIQE guidelines.

**Helps save valuable time —** 3 or 6 independent temperature zones for flexibility to run multiple experiments simultaneously. Fast thermal cycling is also available, enabling results in less than 30 minutes.

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

**Skip the learning curve —** With preoptimized protocol templates, training is minimized for new users, allowing you to focus on your research.

**Maximize benchtop space —** Compact instrument can be configured as stand-alone or with a computer to fit most laboratory needs.

**Get a premium instrument at an affordable price —** Innovation doesn't have to come at a premium price. Get the state-of-the-art Applied Biosystems™ functionality and industrial design that you've come to know, with the QuantStudio family of instruments.

# Interactivity

Simple, intuitive software — at your fingertips

- Interactive touch-screen interface and simplified QuantStudio™ Design and Analysis Software make it easy to get started and stay organized.
- Easily identifiable icons guide you through the workflow to set up runs and analyze experiments.
- Graphical interface allows easy editing of experimental conditions (Figure 1A).
- Interactive touch screen allows you to manipulate view to a particular graph or data point (Figure 1B).
- 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 experiment consistency in tightly controlled environments.

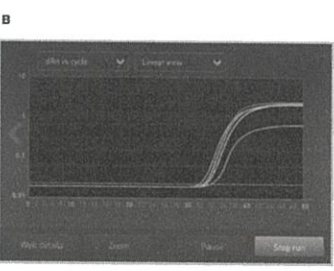


Figure 1. Graphical interface allows (A) easy editing of thermal cycling conditions and viewing of plate layout, as well as (B) viewing of amplification plots and drilling down to a subset of sample wells.

# Accessibility

Access QuantStudio Design and Analysis Software two ways



Access with Web browser-based software

- Web-based or online:**
- Web browser-based system configuration with PC or Mac™ computers.
  - Streamlined software for improved usability and analysis response time.
  - Enables secure access of your data when and where you want it.
  - No software to install, no additional fees, and no versions to update.
  - Monitor and check instrument status.



Co-locate with computer

- Desktop:**
- Traditional co-located computer system configuration.
  - Streamlined software for improved usability and analysis response time.
  - No additional fees.

For more information about the Thermo Fisher Cloud platform and data security, go to [thermofisher.com/thermofishercloud](http://thermofisher.com/thermofishercloud)



## Collaboration

### Fast and powerful secondary analysis software to extract and share results

Applied Biosystems™ Analysis Modules are innovative cloud-based data analysis applications that bring together multiple data sets in one convenient place, and render them in stunning data visualizations for enhanced analysis and insights.



#### Anywhere, anytime access

Access your data with a compatible browser on any device. Each registered user has a PIN-protected account on Thermo Fisher Cloud.

#### Easy to use

One-click quality checks and comparisons between different visualizations, for simple and convenient data analysis.

#### Superior security

Powered by Amazon Web Services™, the Thermo Fisher Cloud platform helps protect your data in a highly secure environment using 256-bit encryption and physical security measures.

#### Fast and powerful analysis

Analysis speeds up to 10 times faster than our desktop software version, to help analyze more data and gain insights more quickly than before using Thermo Fisher Cloud.

#### Integrated analysis solution

Integrate your experiments into a single project — analyze various groups of data, such as time course experiments or cell line comparisons, and pick ideal settings to easily compare data.

#### MIQE guideline support

The instrument software allows users to save predefined analysis settings for auto-exporting run data into their format of choice, including RDML (real-time data mark-up language, compliant with MIQE guidelines) export format.

### The Applied Biosystems Analysis Modules include:

#### Absolute quantification

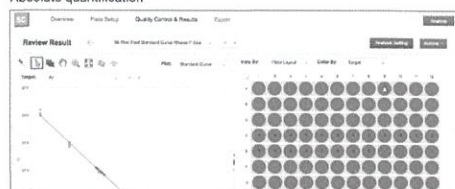


Figure 2. Absolute quantification module for gene expression analysis. The module enables analysis of genes of interest with the use of a standard curve. Additional flexibility is achieved by importing standard curves from other experiments.

#### Relative quantification

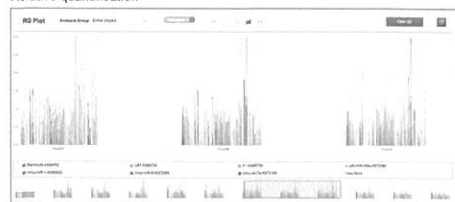


Figure 3. Relative quantification module for gene expression analysis. With this module, you can customize groupings of data within projects for a thorough comparison of data. The module also includes integrated correlation, volcano, and cluster plot analysis, with the ability to drill down to amplification plots.

#### Genotyping

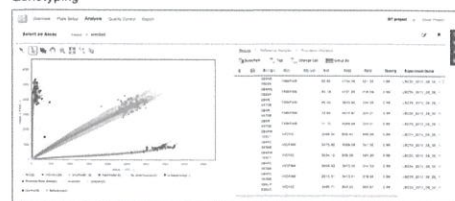


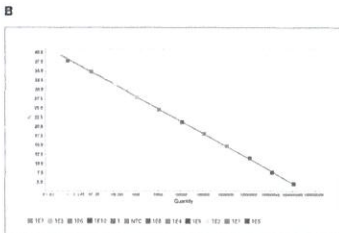
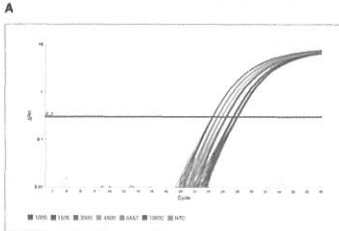
Figure 4. Genotyping analysis module. This module expands on existing TaqMan® Genotype™ software with improved visuals and integrated traces of allelic discrimination plots. The module allows for thorough quality control of SNP assays to accurately reflect true signals vs. background noise.

# Generate high-quality data for a variety of applications

## Performance you can trust

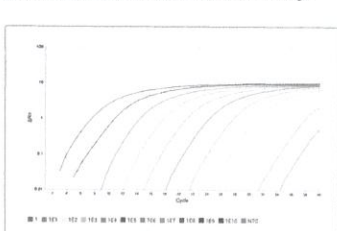
Utilizing proven OptiFlex™ technology and VeriFlex™ Blocks, QuantStudio 3 and 5 systems offer improved data accuracy and sensitivity for a broad range of genomic applications, such as analyses of gene expression, microRNAs and noncoding RNAs, SNP genotyping, copy number variation, mutation detection, drug metabolism enzymes, and protein expression.

### Precise quantification with 1.5-fold discrimination



**Figure 5.** 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 PE2 TaqMan™ Assay under Fast run conditions using the TaqMan™ Fast Advanced Master Mix. Quantities assayed, and C<sub>t</sub> (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, 25.9 (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<sub>t</sub> values.

### Excellent reproducibility and 10-log dynamic range

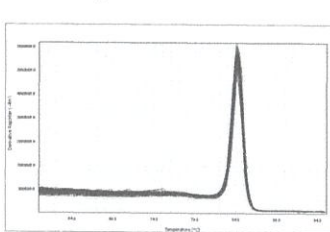


**Figure 6.** Real-time PCR reproducibility. This plot shows results from amplification of KAZ target plasmid DNA in 10-fold dilutions using the 96-well block. The data show highly reproducible results over 10 logs of input template amount, illustrating the broad linear dynamic range of the system.

## Assay flexibility to support your application

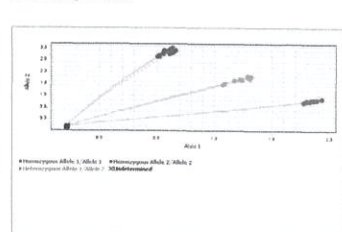
The QuantStudio 3 and 5 systems support probe-based assays as well as intercalating dyes. TaqMan™ probe-based assays, developed with powerful algorithms and optimized master mixes, enable outstanding specificity and sensitivity. SYBR™ Green chemistry is an economical alternative for target identification or initial screening assays. The QuantStudio 3 system has 4 filters calibrated for FAM/SYBR Green, VIC/JOE™, NED/TAMRA™, and ROX™ dyes. The QuantStudio 5 System offers 96-well and 384-well format options, allowing for a broader range of detection chemistries and assay multiplexing. The 96-well format has 6 excitation filters (450–680nm) and 6 emission filters (500–730nm), and the 384-well format has 5 excitation filters (450–650nm) and 5 emission filters (500–700nm).

### Melt curve analysis



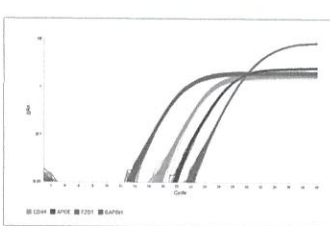
**Figure 7.** Melt curve analysis using the online version of the software. In this experiment, 96 replicates of human genome DNA were amplified using SYBR™ Select Master Mix with primers for RNASE P followed by a dissociation step. The reactions were run under Fast run conditions, showing C<sub>t</sub> uniformity with a mean of 25.7 (SD 0.077), and thermal uniformity as measured by the derivative peak with a melting temperature (T<sub>m</sub>) of 64.17°C (SD 0.07°C).

### Genotyping analysis



**Figure 9.** Allelic discrimination plot with traces using real-time PCR data. Cluster plot of 48 gDNA samples and 4 no-template controls (NTCs) genotyped using TaqMan™ SNP Genotyping Assay C-20081771-20, 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.

### Multiplex gene expression



**Figure 8.** Multiplex reaction with 4 targets plus passive reference. Whole-plate amplification plots of 96 replicates of cDNA made from universal human RNA (hHP) amplified under Fast run conditions using 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.

For more information about TaqMan Assays and formats, go to [thermofisher.com/taqman](http://thermofisher.com/taqman)

# Technical specifications

	QuantStudio 3	QuantStudio 5
<b>Sample capacity (wells)</b>	96	96 or 384
<b>Reaction volume</b>	0.1mL block: 10–30 µL 0.2mL block: 10–100 µL	96-well: 0.1 mL block: 10–30 µL 0.2 mL block: 10–100 µL 384-well: 5–20 µL
<b>Footprint (W x D x H)</b>	27 cm x 50 cm x 40 cm	27 cm x 50 cm x 40 cm
<b>Excitation source</b>	Bright white LED	Bright white LED
<b>Optical detection</b>	4 coupled filters	96 wells: 6 decoupled filters 384 wells: 5 coupled filters
<b>Excitation/detection range</b>	450–600 nm/500–640 nm	96 wells: 450–680 nm/500–730 nm 384 wells: 450–650 nm/500–700 nm
<b>Multiplexing</b>	Up to 4 targets	96-well: up to 6 targets 384-well: up to 5 targets
<b>2D barcode reading</b>	Optional	Optional
<b>Heating/cooling method</b>	Peltier	Peltier
<b>Temperature zone function</b>	3 VeriFlex zones	96 wells: 6 VeriFlex zones 384 wells: NA
<b>Max block ramp rate</b>	6.5°C/sec	6.5°C/sec
<b>Average sample ramp rate</b>	3.66°C/sec	3.66°C/sec
<b>Temperature uniformity</b>	0.4°C	0.4°C
<b>Temperature accuracy</b>	0.25°C	0.25°C
<b>Run time</b>	<30-minute runs	<30-minute runs
<b>Dye compatibility (name)</b>	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/ULZ, Cy5.5
<b>Chemistry capabilities</b>	Fast/standard	Fast/standard
<b>Features to assist with 21 CFR Part 11 compliance</b>	No	Yes, with no additional fees
<b>Number of copies</b>	1 copy	1 copy
<b>Sensitivity</b>	Detect differences as small as 1.5-fold in target quantities in singleplex reaction	Detect differences as small as 1.5-fold in target quantities in singleplex reaction





## Service and support to help meet your changing needs

### SmartStart orientation

Every QuantStudio 3 and QuantStudio 5 system includes a SmartStart orientation to get you up and running quickly in your lab. The orientation includes basic qPCR familiarization and setup with both Thermo Fisher Cloud and online Instrument Management. QuantStudio 5 system owners receive a personalized qPCR application training.

### Online Instrument Management

Sign in to your account to access the award-winning<sup>1</sup> free online Instrument Management<sup>2</sup> tool that enables faster responses to requests for service or service quotes, plus fast connection to key instrument and service information.

### Comprehensive instrument warranty

Our factory-trained and certified field service engineers (FSEs) are focused on delivering the highest-quality workmanship. During the warranty period all qualifying repairs, including engineer time and travel, are covered.

### Flexible service plans

Choose from a variety of service options that balance your budget, productivity, uptime, and regulatory requirements. Plans start with the most basic repair models and scale to premium offerings including advanced support and compliance services. On-site service plans are optimal for labs that have time-sensitive work and need to get their instrument back online quickly. These plans include guaranteed response times in most regions, scheduled planned maintenance, and automatic software updates. The AB Repair Center plan is a cost-effective choice for customers who can allow their instrument to be sent away for repair — this plan provides a loaner instrument so that customers can maintain productivity while their instrument is being repaired.

### Compliance and validation services

Our compliance and validation services are designed to help you balance business and regulatory requirements. From risk assessment and hardware/software qualification to full system validation, we partner with you to help mitigate regulatory risks and get your processes up and running.

### Training courses

Our application and instrument training programs are led by scientists who aim to enhance your workday through experimental design best practices, workflow training, and instrument troubleshooting. Hands-on classes are available at our Thermo Fisher Scientific training centers or in your lab.

### Technical support

If you have questions about product selection or use, assay or experiment design, data analysis, or troubleshooting, contact our team of technical support scientists or access our online product and application support tools.

### Financing options

If you're looking for accelerated return on investment, technology protection, or cash flow management, our innovative financing options can help meet your company's budgetary needs and bottom-line goals. Contact your local sales representative for more details.

## Service plans at a glance

Service plans at a glance	Repair Center service plans		On-site service plans		
	AB Repair Center Support Plus	AB Repair Center Support Plus Care	AB Maintenance Plus	AB Assurance	AB Complete
<b>On-site response time</b>			Target 2 business days <sup>1</sup>	Guaranteed 2 business days <sup>1</sup>	Guaranteed next business day <sup>1</sup>
<b>Scheduled on-site planned maintenance (PM)</b>		✓	✓	✓	✓
<b>Remote diagnostics</b>	✓	✓	✓	✓	✓
<b>Parts, labor, and travel for repair, included</b>	✓	✓	10% discount optional add-on in selected regions	✓	✓
<b>Computer repair and replacement, included</b>	✓	✓		✓	✓
<b>Priority access to Tech Support Mon-Fri, 8 a.m.-5 p.m. local time</b>					✓
<b>Priority access to Remote Service Engineer</b>	✓	✓		✓	✓
<b>Requalification post-PM and critical repairs</b>					✓
<b>Field Application Scientist consultation</b>					✓
<b>Loaner instrument issued during repair (Repair Center plans only)</b>	✓	✓			

For a full schedule of courses, including self-paced online classes, go to [thermofisher.com/training](http://thermofisher.com/training)

<sup>1</sup>2012 Oracle® Fusion Middleware Innovation Award.  
<sup>2</sup>Online Instrument Management tool not available in all regions.

<sup>1</sup>Response times vary by region.

# Ordering information

Product	Cat. No.
<b>QuantStudio 3 system configurations</b>	
QuantStudio 3 Real-Time PCR System (96-well, 0.1 mL block) <sup>†</sup>	A28136
QuantStudio 3 Real-Time PCR System (96-well, 0.2 mL block) <sup>†</sup>	A28137
QuantStudio 3 Real-Time PCR System AB Assurance Service Plan	ZG11SCQS3STD
QuantStudio 3 Real-Time PCR System IQ/OQ/IPV Service	A28480
<b>QuantStudio 5 system configurations</b>	
QuantStudio 5 Real-Time PCR System (96-well, 0.1 mL block) <sup>†</sup>	A28138
QuantStudio 5 Real-Time PCR System (96-well, 0.2 mL block) <sup>†</sup>	A28139
QuantStudio 5 Real-Time PCR System (384-well block) <sup>†</sup>	A28140
QuantStudio 5 Real-Time PCR System AB Assurance Service Plan	ZG11SCQS5STD
QuantStudio 5 Real-Time PCR System IQ/OQ/IPV Service	A28482

<sup>†</sup>Does not include computer. Additional Cat. Nos. are available that include laptop or desktop computer.

## How to reach us

To find your order support or technical support team, go to [thermofisher.com/contactus](http://thermofisher.com/contactus)

For product FAQs, protocols, training courses, and webinars, go to [thermofisher.com/technicalresources](http://thermofisher.com/technicalresources)

Find out more at [thermofisher.com/quantstudio3-5](http://thermofisher.com/quantstudio3-5)

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