

# Applied Biosystems 7900HT Fast Real-Time PCR System

- Interchangeable blocks provide improved throughput and flexibility
- The 7900HT Fast Real-Time PCR System delivers 96-well results in about 35 minutes and 384-well results in less than 55 minutes
- Custom Automation Accessory provides 24-hour unattended operation
- Powerful, flexible Standard and Enterprise Edition Software Packages provide tools for highthroughput data analysis
- Enterprise Edition Software assists with 21 CFR Part 11 requirements
- Hand-held and integrated bar code readers simplify sample tracking
- Continuous wavelength detection from 500–660 nm allows the use of multiple fluorophores in a single reaction



Applied Biosystems 7900HT Fast Real-Time PCR System

## Introduction

The Applied Biosystems 7900HT Fast Real-Time PCR System is a high-throughput real-time PCR system that detects and quantitates nucleic acid sequences. This flexible system offers multiple block configurations, software choices, and an optional Automation Accessory, all designed to deliver the throughput and features you need. As your research expands, your system does, too. Key applications include gene expression quantitation and the detection of single nucleotide polymorphisms (SNPs) using the fluorogenic 5' nuclease assay.

## Fluorescence Detection

To induce fluorescence, the 7900HT Fast Real-Time PCR System distributes light from an argon-ion laser excitation source to all sample wells. It then directs the resulting fluorescent emission through a spectrograph to

a charge-coupled device (CCD) camera. Emission wavelengths from 500–660 nm are monitored allowing the simultaneous detection of multiple fluorophores.

## System Components

### 7900HT Fast Real-Time PCR System

- Peltier-based thermal cycling system with interchangeable block capability
- Extended-life 488 nm argon-ion laser excitation source
- Excitation light distributed to all wells via a dual-axis synchronous scanning head
- Robot-compatible plate loading and unloading (Automation Accessory required to load multiple plates without user intervention)

### User-Interchangeable Blocks

The 7900HT Fast Real-Time PCR System offers you a choice of blocks to meet your research needs:

- Industry standard 96-well block
- Industry standard 384-well block
- TaqMan® Array block allows you to run TaqMan Arrays
- Fast 96-well block delivers 96-well results in about 35 minutes
- Fast 384-well block delivers results in less than 55 minutes

#### Automation Accessory

A custom Zymark Twister® Robot with five plate-stacking positions provides automatic plate-loading capability.

Each of the four input stacking positions holds up to twenty-one 384-well plates or nine standard 96-well plates. The fifth position acts as an output stack. Automation Accessory performance plate handling minimizes errors at a frequency of less than 1% of total plates handled.

#### Sequence Detection Software

Both the Standard Edition and Enterprise Edition Sequence Detection System Software run on a Windows® XP® operating system and are used for instrument control, data collection, and analysis.

#### The upgrade to the Enterprise Edition

Software includes access to two new analysis packages designed for high-throughput SNP Genotyping (SNP Manager) and Gene Expression (RQ Manager) as well as secure, robust, and scalable data management in an Oracle® database. This software also includes a full suite of features that comply with 21 CFR Part 11 guidelines including data integrity, security, auditing functions, electronic signatures, and electronic record keeping.

#### Computer

Applied Biosystems supplies a Dell™ computer for use with the 7900HT Fast Real-Time PCR System. For the latest computer specifications, please visit the Applied Biosystems website at: [www.appliedbiosystems.com](http://www.appliedbiosystems.com).

#### Installation Specifications

Using the TaqMan RNase P 384-Well or 96-Well Instrument Verification Plate, the Applied Biosystems 7900HT Fast Real-Time PCR System can distinguish between 5,000 and 10,000 template copies with a 99.7% confidence level.

#### Assay Chemistry

Rapid assay development guidelines are provided to ensure success when using the fluorogenic 5' nuclease assay and SYBR® Green 1 dye double-stranded DNA binding assay. The rapid assay development guidelines are available online at [www.appliedbiosystems.com](http://www.appliedbiosystems.com).

Default primer and probe concentrations are valid for multicolor SNP assays using TaqMan® MGB Probes, and single color quantitation assays using TaqMan probes or the SYBR Green 1 double-standard DNA binding dye assay. Assay optimization is recommended for multiplex quantitation assays to minimize PCR competition.

#### Reagents and Disposables

A complete line of reagents and consumables is available for use with the Applied Biosystems 7900HT Fast Real-Time PCR System.

#### TaqMan® Assays and Arrays

Applied Biosystems provides pre-formulated, ready-to-use, quality-tested, 5' nuclease assays for use with the 7900HT Fast Real-Time PCR System (see table below). The TaqMan Array is also available for use on the 7900HT Fast Real-Time PCR System and is used to analyze tens to hundreds of targets with multiple samples. It contains user-selected, inventoried TaqMan Gene Expression Assays loaded and dried-down into a 384-well micro fluidic card format.

#### Service and Warranty

Purchase of the instrument includes a one-year limited warranty on parts and labor, plus an installation package that includes set-up and calibration of the instrument by our highly trained Service Support team.

### TAQMAN® ASSAYS

Assay Details	Application	
Assay Formats	Gene Expression	SNP Genotyping
TaqMan® Assays (Inventoried)	Yes	Yes
Custom TaqMan® Assays	Yes	Yes
Genome Availability*	Number of Assays	
Human	197,414	>4,500,000
Mouse	175,296	>10,000
Rat	150,078	150,078
Canine	54,541	N/A
Rhesus	14,642	N/A
<i>Arabidopsis</i>	97,232	N/A
<i>C. elegans</i>	92,284	N/A
<i>Drosophila</i>	40,520	N/A
Zebrafish	49,826	N/A
Learn more and order online at:	<a href="http://www.allgenes.com">www.allgenes.com</a>	<a href="http://www.allsnps.com">www.allsnps.com</a>

\* For Inventoried Assays. Custom TaqMan Assays can be ordered for any genome.

\*\* As of June 6, 2008

## FAST VS. STANDARD 384-WELL SYSTEM PERFORMANCE

Specifications	Fast 384-Well System	Standard 384-Well System
Dynamic range	9 logs of linear dynamic range using the human 18S rRNA TaqMan® Gene Expression Assay	9 logs of linear dynamic range using the human 18S rRNA TaqMan® Gene Expression Assay
Sensitivity	Detection of 10 starting copies of the RNase P gene from human genomic DNA in a 20 µL reaction volume	Detection of 10 starting copies of the RNase P gene from human genomic DNA in a 25 µL reaction volume
Time*	52 minutes	110 minutes

\*Required to perform 40 PCR cycles using the TaqMan® RNase P 384-Well Instrument Verification Plate

## 7900HT FAST REAL-TIME PCR SYSTEM THROUGHPUT

System	Real-Time Analysis	End-Point Analysis
7900HT Fast Real-Time PCR System with 384-well block and Automation Accessory using standard thermal cycling protocol	> 5,000 sample wells/day	> 10,000 sample wells/hour

## BLOCK APPLICATIONS

Block Type	Absolute Quantitation	Relative Quantitation	Allelic Discrimination	Plus/Minus
96-well	Yes	Yes	Yes	Yes
Fast 96-well	Yes	Yes	No	No
384-well	Yes	Yes	Yes	Yes
Fast 384-well	Yes	Yes	No	No
TaqMan® Array	Yes	Yes	No	No

## INSTRUMENT DIMENSIONS

Dimension	7900HT Fast Real-Time PCR System with Automation Accessory	7900HT Fast Real-Time PCR System without Automation Accessory
Width	125 cm (49 in)	72 cm (28 in) (with drawer in open position)
Depth	84 cm (33 in)	84 cm (33 in)
Height	64 cm (25 in)	64 cm (25 in)
Weight	114 kg (250 lbs)	82 kg (180 lbs)

## Support

Technical specialists and scientists provide worldwide applications support and service.

## ORDERING INFORMATION

### Instrument Systems

### Part Number

7900HT Fast Real-Time PCR System with 384-Well Block Module and Automation Accessory (200–240V)	4329002
7900HT Fast Real-Time PCR System with 384-Well Block Module (200–240V)	4329001
7900HT Fast Real-Time PCR System with 96-Well Block Module and Automation Accessory (200–240V)	4329004
7900HT Fast Real-Time PCR System with Standard 96-Well Block Module (200–240V)	4329003
7900HT Fast Real-Time PCR System with Fast 96-Well Block Module (200–240V)	4351405

### Accessories

### Part Number

7900HT System Automation Accessory Upgrade (100-240V)	4329007
Enterprise Edition Sequence Detection Software	4350490
TaqMan® Array Upgrade Kit	4329012
7900HT System Fast 96-Well Block Upgrade Kit	4351402
7900HT Fast Real-Time Service Upgrade	4351412
7900HT Fast Real-Time Service Upgrade with Computer	4362078
7900HT System Standard 384-Well Block Upgrade Kit	4331406
7900HT System Standard 96-Well Block Upgrade Kit	4331405

#### For Research Use Only. Not for use in diagnostic procedures.

Certain Applied Biosystems PCR reagents are developed and manufactured by Roche Molecular Systems, Inc. The PCR process and 5' nuclease process are covered by patents owned by Roche Molecular Systems, Inc. and F. Hoffmann-La Roche Ltd. This instrument is an Authorized Thermal Cycler under the PCR process patents. Its purchase includes no rights under the 5' nuclease process patents.

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