

Applied Biosystems 7300 Real-Time PCR System

A *Real* Affordable Approach to Real-Time PCR

- **Four-color detection provides the flexibility to perform a variety of applications, including gene expression analysis, pathogen quantitation, SNP genotyping, and plus/minus assays that utilize internal positive controls**
- **Powerful, versatile software includes plate set-up wizards that guide you through experimental set-up; advanced data-viewing capabilities and automated analysis tools make data processing simple and straightforward**
- **Precision optics and a charge-coupled device (CCD) camera, combined with a sophisticated multicomponenting algorithm, provide highly accurate, reproducible, and reliable results**
- **Latest generation, Peltier-based, thermal cycling system accommodates both standard 96-well plates and 0.2 mL tubes**
- **Small instrument footprint permits easy placement in any laboratory, even those with limited space**



Introduction

The Applied Biosystems 7300 Real-Time PCR System is an integrated platform for the detection and quantification of nucleic acid sequences. Real-time PCR combines thermal cycling, fluorescence detection, and application-specific software to measure the cycle-by-cycle accumulation of PCR products in a single-tube, homogeneous reaction.

Quantitative results are available immediately upon completion of PCR, with no need to run gels, purify PCR products, or perform any post-PCR manipulations. Real-time PCR runs are completed in under two hours, using 96-well plates and tubes (individual or 8-strip), with a supported volume range of 25 – 100 μ L. Compared with manual PCR quantitation techniques such as Northern blotting or RNase protection assays, real-time PCR offers enormous time-savings, greater sensitivity, superior precision, and a larger dynamic

range. This high-quality platform from the leader in real-time PCR systems provides data you can trust at a price you can afford.

Real-Time PCR Applications

The 7300 system supports many real-time quantitative PCR applications including gene expression analysis using relative quantitation (RQ) assays, and pathogen quantitation using standard curves. In addition, the system allows for qualitative, post-PCR detection of nucleic acids for allelic discrimination (SNP genotyping) assays and plus/minus assays that use internal positive controls.

Fluorescence Detection

All sample wells in the 7300 system are illuminated with a tungsten-halogen lamp. Fluorescence emission is detected through four filters on to a CCD camera. The emission filters are optimized for use with FAM™/SYBR® Green I, VIC®/JOE™, TAMRA™, and ROX™ fluorescent dyes.

Sequence Detection Software

Instrument software for the Applied Biosystems 7300 Real-Time PCR System runs on the Windows XP® operating system and provides instrument control, data collection, and data analysis. Powerful and user-friendly, sequence detection software includes the following features:

- Plate set-up wizards for easy experimental design, even with complex multicolor assays
- Real-time monitoring of amplification growth curves enables you to view run progress
- Auto-baseline and auto-threshold for simplified data analysis
- Absolute quantitation of nucleic acid targets with the ability to simultaneously analyze multiple standard curves on a single plate

- Optional relative quantitation (RQ) study software with powerful data-viewing capabilities allowing the simultaneous analysis of up to ten 96-well plates containing gene expression data
- Automated SNP genotype calling capability with intuitive graphical output and quality-value assignment
- Simple dissociation curve data collection and viewing
- Tool tips for easy identification of sample wells when viewing amplification curves or SNP genotyping plots
- Lamp-life monitoring and instrument diagnostics provide confidence in your instrument's performance

Computer Specifications

Applied Biosystems supplies a Dell™ Business Line computer (notebook or tower) for use with the 7300 system. For the latest computer specifications, please visit the Applied Biosystems Web site at www.appliedbiosystems.com

Installation Specifications

Using the TaqMan® RNase P Instrument Verification Plate, the 7300 system can distinguish between samples containing 5,000 and 10,000 template copies with a confidence level of 99.7%.

Instrument Specifications

| Instrument | 7300 System |
|---------------------------------|---|
| Thermal cycling system | Peltier-based, 96-well block |
| Sample Ramp Rate | +/-1.1°C/sec |
| Peak Block Ramp Rate | 1.6°C/sec |
| Temperature Range | 4°C – 100°C |
| Temperature Accuracy | ±0.25°C of setpoint/display temperature, measured at 3 minutes after clock start. |
| Temperature Uniformity | ±0.50°C, 30 seconds after clock start |
| Optical system | Single excitation, four emission filters, and CCD camera |
| Calibrated Dyes at Installation | SYBR® Green I, FAM™, VIC™, JOE™, NED™, TAMRA™, ROX™ |
| Passive Reference Dyes | ROX™ or any calibrated dye. Selection of no passive reference is optional |
| Data Collection | Data collected in all 4 filters for all wells regardless of plate setup. Plate setup may be altered after run completes. |
| Quantitative PCR run time | < 1 hour 50 minutes |
| Supported Volumes | 20 – 100 µL |
| Supported Consumables | <ul style="list-style-type: none">• Standard Optical 96-well plates• 8-strip 0.2mL tubes• 0.2mL tubes• Optical Adhesive Covers• Optical Flat Caps |

Demonstrated Performance

The 7300 system has been demonstrated to achieve the following performance targets:

- 9 logs of linear dynamic range
- Detection of 10 starting copies of a DNA template in a 50 µL reaction for a single reporter TaqMan® assay with a confidence level of 99.7%

Reagents and Disposables

A complete line of reagents including TaqMan® Universal PCR Master Mixes and SYBR® Green I Master Mixes, and disposables including tubes and 96-well plates, are available for use with the 7300 system.

TaqMan® Genomic Assay Products

Applied Biosystems provides preformulated, ready-to-use, quality-tested, 5' nuclease TaqMan® assays for use with the 7500 and 7500 Fast systems.

| Assay Details | Application | |
|---|--|--|
| | Gene Expression | SNP Genotyping |
| TaqMan® Genomic Assays | Yes | Yes |
| Custom TaqMan® Genomic Assays | Yes | Yes |
| Genome Availability | Number of Assays | |
| Human | > 204,000 | > 1,990,000 |
| Mouse | > 179,000 | N/A |
| Rat | > 128,000 | N/A |
| D. Melanogaster (Drosophila) | > 38,000 | N/A |
| A. Thaliana (Arabidopsis) | > 95,000 | N/A |
| URL (assays can be ordered online only) | www.allgenes.com | www.allsnps.com |

Instrument and Computer Dimensions

| Dimension | 7300 System | Notebook | Tower |
|-----------|-------------------|-----------------------|------------------|
| Width | 34 cm (13.39 in.) | 32 cm (12.4 in.) | 18 cm (7.1 in.) |
| Depth | 45 cm (17.72 in.) | 26 cm (10.1 in.) | 45 cm (17.6 in.) |
| Height | 49 cm (19.29 in.) | 3 cm (1.2 in. closed) | 42 cm (16.7 in.) |
| Weight | 29 kg (64 lb) | 2.1 kg (4.7 lb) | 32 kg (70 lb) |

Ordering Information

| Description | P/N |
|--|---------|
| 7300 Real-Time PCR System with Notebook Computer | 4351101 |
| 7300 Real-Time PCR System with Tower Computer | 4351103 |
| RQ Study Software Upgrade | 4350814 |

TaqMan® Genomic Assays

Applied Biosystems provides preformulated, ready-to-use, quality-tested, 5' nuclease TaqMan® probe-based assays for use with the 7300 system (see table below).

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 from our highly trained Service Support team.

Support

Applied Biosystems technical specialists and scientists provide worldwide applications support and service.

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

Authorized Thermal Cycle. This instrument is an Authorized Thermal Cycler. Its purchase price includes the up-front fee component of a license under United States Patent Nos. 4,683,195, 4,683,202 and 4,965,188, owned by Roche Molecular Systems, Inc., and under corresponding claims in patents outside the United States, owned by F. Hoffmann-La Roche Ltd, covering the Polymerase Chain Reaction ("PCR") process to practice the PCR process for internal research and development using this instrument. The running royalty component of that license may be purchased from Applied Biosystems or obtained by purchasing Authorized Reagents. This instrument is also an Authorized Thermal Cycler for use with applications licenses available from Applied Biosystems. Its use with Authorized Reagents also provides a limited PCR license in accordance with the label rights accompanying such reagents. Purchase of this product does not itself convey to the purchaser a complete license or right to perform the PCR process. Further information on purchasing licenses to practice the PCR process may be obtained by contacting the Director of Licensing at Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.

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