Thermo Scientific PikoReal
Real-Time PCR System

- 24-well block format
- 96-well block format

real time, any time

now within your reach

Fisher Scientific

Thermo SCIENTIFIC

Outstanding Performance in a Small Package

The Thermo Scientific PikoReal Real-Time PCR System is designed to fit into your lab, even when bench-top space is limited. Offering an exceptionally small footprint, this qPCR instrument is ideal for personal use and light enough for field applications. The PikoReal® System delivers innovative features and outstanding performance. It is part of the complete Thermo Scientific qPCR workflow that includes sample preparation, nucleic acid purification and analysis as well as qPCR assays and reagents.

- **PERFORMANCE INNOVATIONS**
  Proprietary technologies include an innovative block design that gives high temperature uniformity across all wells, and delivers the reliable performance that you require.
- **A NOVEL FORMAT FOLLOWING INDUSTRY STANDARDS**
  The PikoReal System is offered as a 24-well or 96-well instrument that fits PCR plates one quarter of the size of a standard plate, while maintaining industry standards for well volumes and well spacing.
- **qPCR FOR LESS**
  Less cost, less waste. Reduced plate sizes, in conjunction with proprietary Ultra Thin Wall (UTW®) PCR well technology, offer superior uniformity and significant savings in reagent, plastics and energy consumption.
- **DESIGNED FOR FLEXIBLE USE**
  The distinctive PikoReal design minimizes instrument footprint, yet offers five optical detection channels. The PikoReal instrument offers flexibility in programming and data retrieval from either a computer or USB flash drive. The intuitive software, with the Thermo Scientific Virtual Pipetting Tool, guides you with ease through plate setup.

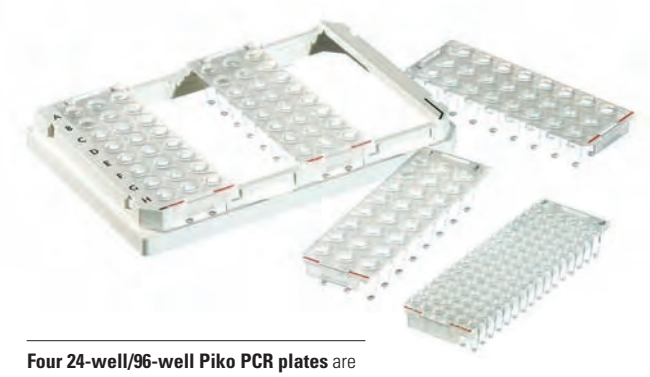
Piko format – full compatibility in one quarter the size of standard plates

The PikoReal Real-time PCR System is available as either a 24-well or 96-well instrument that utilizes proprietary UTW Piko PCR Plates. UTW Piko PCR plate walls are half the thickness (< 0.15 mm) of conventional PCR consumables and, thus, improve the thermal transfer between block and sample. The Piko PCR plates are compatible with standard multi-channel pipettes (both 8- and 16-channel) and liquid handling robots.

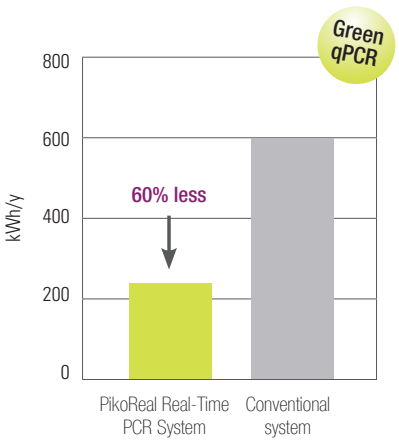
The PikoReal System is available in 24-well and 96-well instrument formats.

Green qPCR – reduced consumption, less cost and lower environmental impact

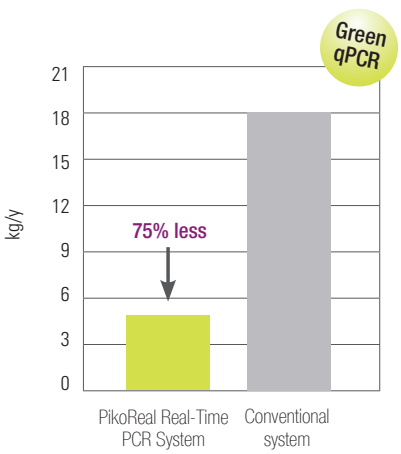
The unique design of the heating block and the small plate format offer significant savings in energy, reagent and plastics consumption. Using plates that are one quarter the size of standard plates produces less plastic waste and reduces the cost of your research. The power usage of the PikoReal System (maximum 200 watts) is only half that of a typical qPCR instrument, which helps to reduce the environmental impact. Low power usage is also a benefit in field applications.



Four 24-well/96-well Piko PCR plates are equivalent to a standard SBS 96-well/384-well plate, respectively. The plates are compatible with standard multi-channel pipettes (16-channel pipette displayed).



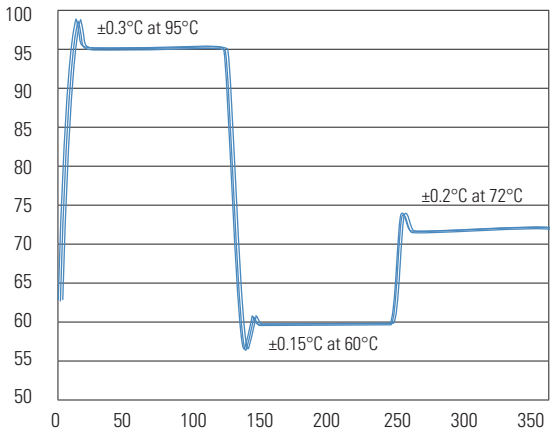
Significant savings in energy consumption. Estimated annual energy consumption (kWh/y), including running power and idle power, of the PikoReal Real-Time PCR System compared to a conventional real-time PCR system. The calculation is based on three qPCR runs per day and 750 qPCR runs per year.



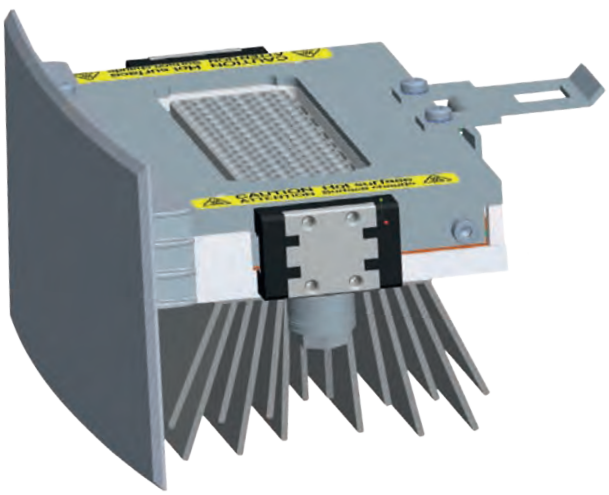
Significant savings in plastics consumption. Estimated annual plastics consumption (kg/y) using 96-well Piko PCR plates compared to conventional 96-well microplates. The calculation is based on three qPCR runs per day and 750 qPCR runs per year.

Fast and uniform heating and heat removal gives superior performance

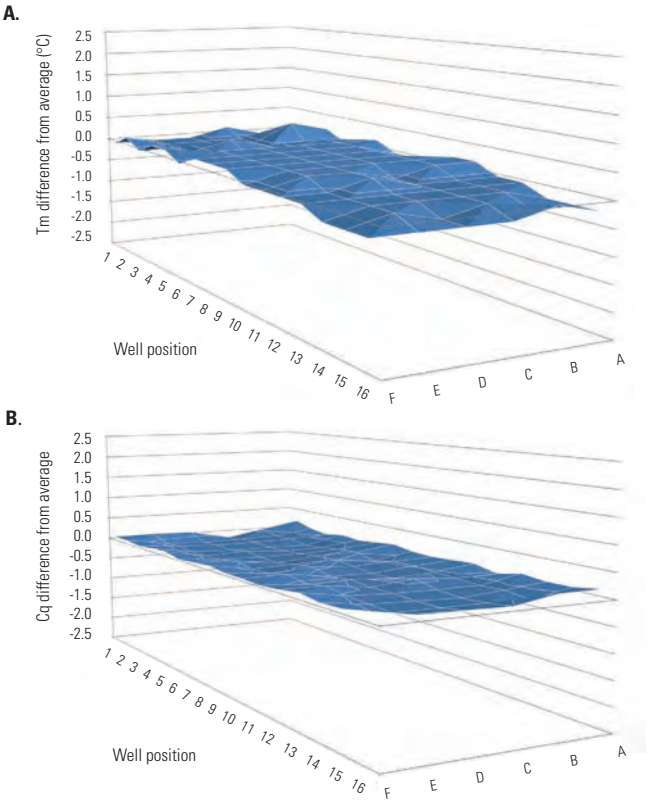
The unique patented block design of the PikoReal instrument ensures quick heating and heat removal over the entire plate area. Temperature homogeneity performance is outstanding at all three stages of thermal cycling- and, with UTW plastics, the target temperatures are achieved rapidly. This combination ensures uniformity of data, independent of application and protocol.



The performance of the block is outstanding at all three stages of amplification (95, 60 and 72°C). The graph shows temperature measurements in 96 wells of the block.



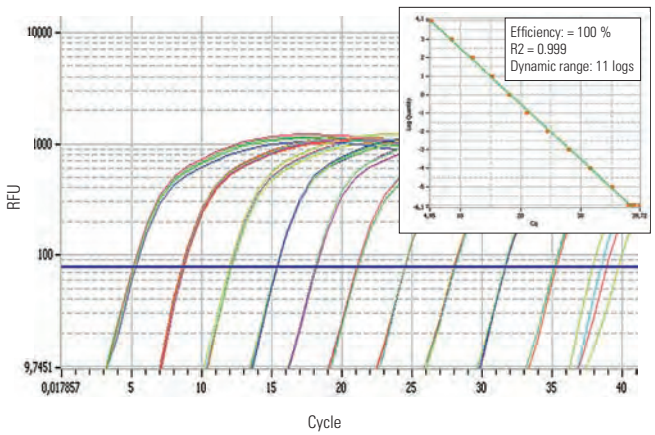
The proprietary inventions in block and heatsink design enable fast and uniform temperature control for the entire plate area.



Tm value uniformity and Cq value uniformity. Ninety six replicate reactions amplifying Lambda DNA (125 pg/5 µL) with Thermo Scientific DyNAmo Color Flash SYBR® Green Master Mix were used to demonstrate the melting temperature (Tm) and cycle of quantification (Cq) uniformity across a heat sealed 96-well plate. Tm values (A) or Cq values (B) were subtracted from the average value of 96 replicates and plotted by well position.

Technological advances enable a dynamic range of 11 logs

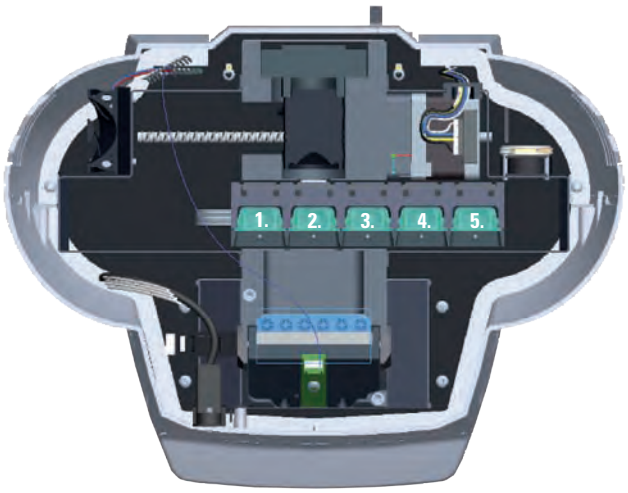
The highly optimized and precise thermal control, combined with a sensitive optical detection system, enables determination of a wide range of target concentrations. This delivers accurate Cq values for both high- and low-copy number targets in the same run.



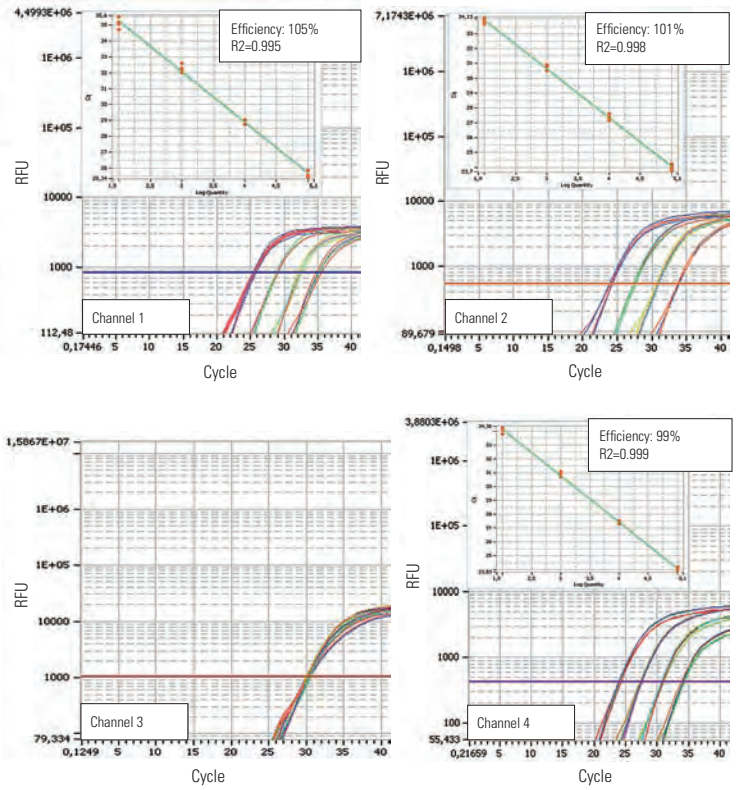
Broad dynamic range. Four technical replicates amplifying FANK1 from plasmid DNA (148 ng– 1.48×10^{-5} pg /10 µL) using Thermo Scientific Solaris qPCR Gene Expression Assay and Master Mix. Amplification and standard curve shown for 11 × 10-fold dilutions of template on PikoReal 96 Real-Time PCR System. The lowest dilution displayed is equivalent to three copies of plasmid DNA in 10 µL reaction.

A five-channel optical system brings multiplexing and flexibility to your experiments

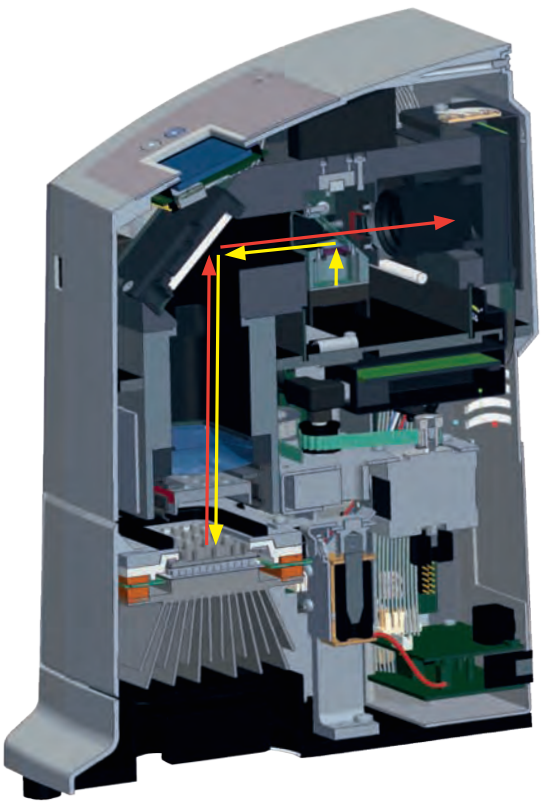
The optical system of the PikoReal instrument contains five channels, precalibrated for many commonly used dyes. New dyes can be calibrated by using the Color Calibration Utility of the software. Multiplexing can be performed with up to four dyes; the fifth channel is dedicated to SYBR Green and HRM experiments. The five LEDs used as the instrument's light source have a long lifetime and emit constant and stable light over a broad spectrum (475–640 nm) and require no user maintenance. Separate light sources for different excitation wavelengths reduce crosstalk and focus high light energy levels. Data is collected from all wells simultaneously with a low noise and high sensitivity CCD camera (520–740 nm). The scanning time for all four channels is less than 10 seconds, supporting the development of fast cycling protocols for multiplexing.



Schematic view of the linear shuttle of the Thermo Scientific PikoReal instrument. The channel selection of the optical system is built on a motorized linear shuttle that moves from left to right. Each of the five channel positions contains separate LED light source, reflector, excitation filter, dichroic mirror and emission filter.



Quadruplicate multiplexed reactions amplifying *Staphylococcus aureus, Enterococcus sp., Corynebacterium bovis* DNA (50,000 to 50 copies/10 µL reaction; channels 1, 2, 4) and internal control (500 copies of Lambda DNA/10 µL reaction; channel 3) using Thermo Scientific PathoProof Mastitis PCR Assay, Complete-12 Kit on PikoReal 96 Real-Time PCR System.



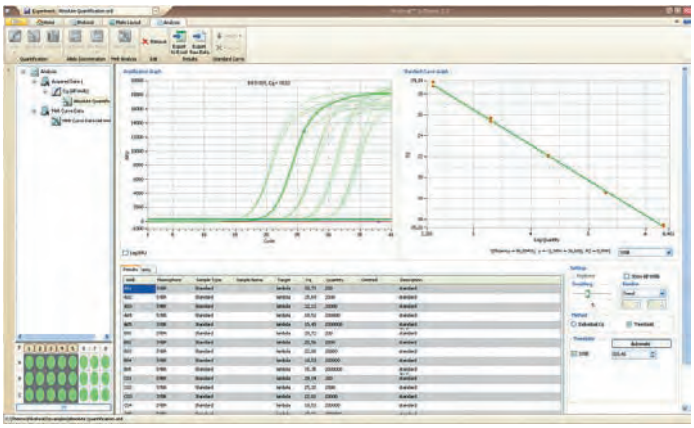
The optical system and light paths of the PikoReal instrument. The light, emitted from LED (yellow arrow), passes through an excitation filter and is reflected by a set of mirrors to the samples. The light signal emitted from the samples (red arrow) travels back passing through a dichroic mirror before being filtered and detected by a CCD camera.

Channel	Fluorescence Dyes
1	FAM™
2	HEX™, Yakima Yellow®
3	Texas Red®, ROX™
4	Cy™5
5	SYBR® Green

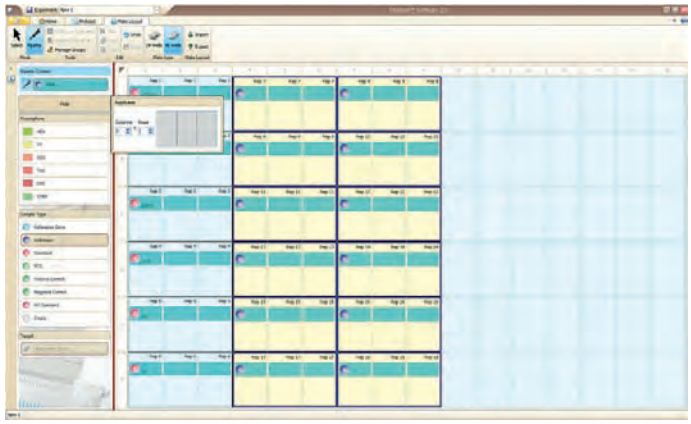
List of precalibrated dyes for the PikoReal instrument. The addition of new dyes is possible using the Color Calibration Utility of the software.

Easy to use

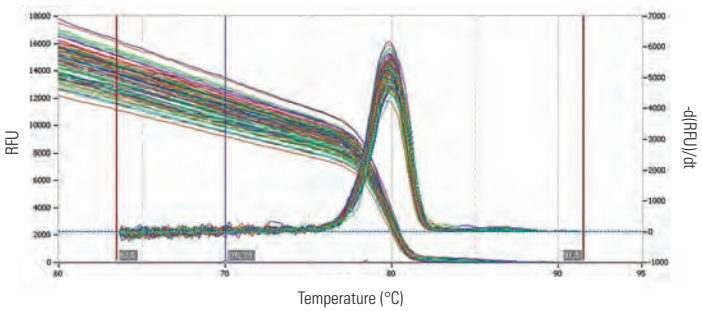
The PikoReal Software offers an intuitive experience, from programming protocols and defining plate layouts to assessing your experimental results. Familiar Windows operating system-based functionality, pre-loaded protocols, visual step list, Virtual Pipetting Tool™ Mode, import and export functions, detachable views, and many other features get the instrument to work for you. The PikoReal Software includes an unlimited licence for multiple users. The available software modules include Absolute quantification, Melt curve analysis, Allelic discrimination and Relative quantification. High Resolution Melting (HRM) will be available as a separate module in 2012.



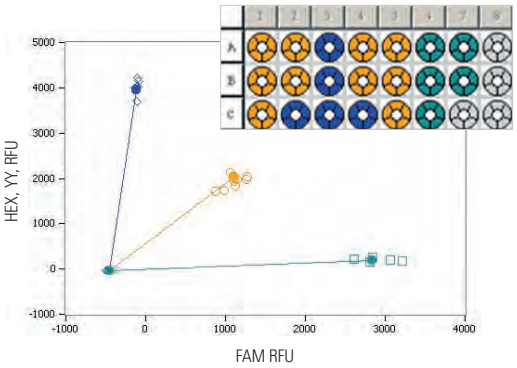
All experiment data and setting options are shown conveniently on a single page. User modifications to analysis parameters can be seen instantly.



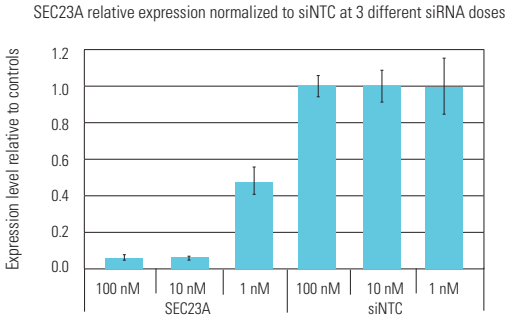
The Virtual Pipetting Tool guides you through setting up plate layouts with ease.



Melt curve analysis. Replicate reactions (24) amplifying Lambda DNA (0.5 ng/20 µL) using Thermo Scientific DyNAmo Color Flash SYBR Green Master Mix on PikoReal 24 Real-Time PCR System. The graph shows the melt curve and its first negative derivate.



Allelic discrimination. Triplicate reactions amplifying human gDNA (1 ng/20 µL reaction) using ABI TaqMan® SNP Genotyping Assay for rs1061666 (Assay ID: C_1420362_10, Gene name: Hypothetical LOC339290) and Thermo Scientific DyNAmo SNP Genotyping Master Mix on PikoReal 24 Real-Time PCR System. The results are shown both on RFU-RFU scatter plot and on plate grid. DyNAmo™ SNP Genotyping Master Mix shows the three distinct genotypes: X, XY and Y.



Relative quantification. siRNA targeting SEC23A and Non-Targeting siRNA control (siNTC) were transfected into HeLa cells at 100, 10 and 1 nM final concentrations. cDNA was synthesized using Thermo Scientific Maxima First Strand cDNA Synthesis Kit and amplified using Solaris qPCR Gene Expression Assays and Master Mix for detection of SEC23A and PPIB on PikoReal 96 Real-Time PCR System. Knockdown was calculated using the ΔΔCq method (normalized to PPIB reference gene and siNTC-treated cells) for biological and technical triplicates (graphed in Excel® Software).

USB flash drive. The PikoReal instrument can also be controlled without a computer, using a USB flash drive for protocol loading and storing run data.

Recommended Thermo Scientific Reagents

qPCR kits for SYBR Green and probe chemistries – fast qPCR

DyNAmo Flash and ColorFlash qPCR Kits deliver extremely short cycling times (combined annealing and extension step of only 15 s) and are the superior choice to achieve fast qPCR. DyNAmo ColorFlash qPCR kits incorporate an innovative multicolor system that ensures correct pipetting.

qPCR kits for SYBR Green and probe chemistries – standard qPCR

Maxima qPCR Master Mixes are ready-to-use solutions optimized for quantitative real-time PCR. The master mixes include Maxima Hot Start *Taq* DNA Polymerase and dNTPs in an optimized PCR buffer.

SNP genotyping

DyNAmo SNP Genotyping Master Mix delivers fast, high-quality SNP genotyping when using endpoint fluorescence detection. The mix utilizes a specially engineered DNA polymerase that provides reliable and reproducible discrimination of SNP alleles.

Reverse transcriptases and RT-qPCR kits

Maxima First Strand cDNA Synthesis Kit is optimized for cDNA synthesis in 2-step RT-qPCR applications. The Maxima Reverse Transcriptase (RT) is derived by *in vitro* evolution of M-MuLV RT. It features high thermostability and robustness. The reaction can be completed in 15 minutes.

Verso 1-step RT-qPCR Kits are optimized for one-step RT-qPCR applications. An optional RT Enhancer eliminates the need for DNaseI treatment by removing DNA contamination during the reverse transcription step when added to the mixture.

Solaris qPCR Gene Expression Assays – pre-designed assays for human and mouse genomes

Solaris qPCR Gene Expression Assays are gene-specifc probe and primer pairs that utilize Minor Groove Binder (MGB) and Superbase technologies to deliver repeatable and sensitive relative quantification of human and mouse gene expression. Each assay is designed to a consensus sequence that includes all known splice variants of the target gene. You only need one optimal assay for each gene target. **Solaris qPCR Gene Expression Master Mixes** are optimized master mixes used with Solaris Assays. **Solaris RNA Spike Control Kit** is designed to verify that reverse transcription and qPCR steps are not inhibited by any components in the RNA sample or purification process. Inhibition can be the cause of unexpected or variable results.

For more information and ordering details, please refer to our catalog for PCR and qPCR products or visit: **www.thermoscientific.com/qpcrsolutions**

Discover our extensive portfolio for the qPCR workflow

We offer a comprehensive portfolio of products for the entire qPCR workflow. These include innovative, high-class instruments, reagents and consumables for sample storage, sample preparation, nucleic acid extraction and qPCR analysis as well as for manual and automated liquid handling. For more information, please visit: **www.thermoscientific.com.**

Sample Storage and Preparation ▶ **DNA/RNA Extraction** ▶ **DNA/RNA Analysis** ▶ **qPCR** | **Liquid Handling**

- Centrifuges
- Freezers
- Refrigerators

- Thermo Scientific KingFisher instruments
- Reagents and consumables for nucleic acid purification

- Thermo Scientific Multiskan GO and NanoDrop spectrophotometers

- PikoReal 24 and 96
- Reagents, assays and consumables for qPCR

- Thermo Scientific Finnpipette pipettes
- Thermo Scientific Matrix pipettes
- Thermo Scientific Versette liquid handler

Thermo Scientific PikoReal Real-Time PCR System

Thermal Block	
Block formats	24-well, 96-well (not interchangeable)
Sample volume	10–50 µL (PikoReal 24), 5–20 µL (PikoReal 96)
Consumables	24-well and 96-well Piko PCR Plates; for 24-well block also low profile strip tubes and PCR tubes
Max heating rate	> 5°C/sec
Max cooling rate	4.5°C/sec
Temperature range	4–99.9°C
Temperature accuracy	±0.2°C
Temperature uniformity	±0.3°C at 95°C, ±0.15°C at 60°C, ±0.2°C at 72°C

Heated lid	
Temperature range	30–110°C
Control	Automatic temperature and pressure setting

Optics			
Excitation	5 LEDs		
Excitation range	475–640 nm		
Detection	CCD		
Detection range	520–740 nm		
Detection channels:			
Channel	**Exitation (nm)**	**Emission (nm)**	**Pre-Calibrated Dyes**
1.	475–500	520–550	FAM
2.	515–535	557–590	HEX, Yakima Yellow
3.	570–590	615–650	ROX, Texas Red
4.	600–640	666–740	Cy 5
5.	475–500	520–590	SYBR Green
Multiplex	Up to 4 targets		
Dynamic range	11 orders of magnitude		
Sensitivity	1 copy		
Scan time for 4 multiplexing channels	< 10 sec		

Software	
Analysis modes	Absolute quantification, Relative quantification, Melt curve analysis, Allelic discrimination; High Resolution Melting will be available as a separately sold module in 2012.

System	
Operating systems	Windows XP, Windows 7
Communication	Ethernet (up to 10 instruments can be operated from a single PC) or USB
Power usage	200 W maximum
Dimensions (W x D x H)	300 x 230 x 310 mm
Weight	10 kg

Ordering Information

Product code	Description
TCR0024	PikoReal 24 Real-Time PCR System
TCR0096	PikoReal 96 Real-Time PCR System

Not available in Canada, Brazil, UK, Germany, Austria, Switzerland, Italy, Spain, France, Belgium, the Netherlands, Liechtenstein, Denmark and Sweden.

BN#

Purchase of this instrument conveys a limited, non-transferable immunity from suit for the purchaser's own internal research and development and applied fields other than human in vitro diagnostics only under Canadian Patent 1,339,653, U.S. Patent 5,475,610 (claims 160-163 only) and non-U.S. counterpart claims as applicable.

Contact Information
www.thermoscientific.com/pikoreal

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To fax an order, use 1-800-926-1166.
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