



CFX96 Touch™ Real-Time PCR Detection System

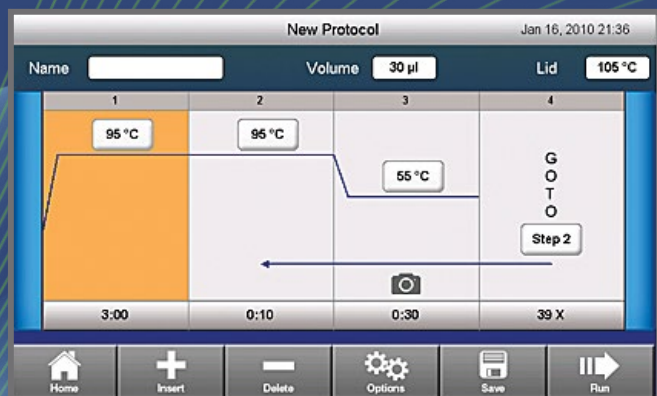


ADVANCING qPCR TOGETHER

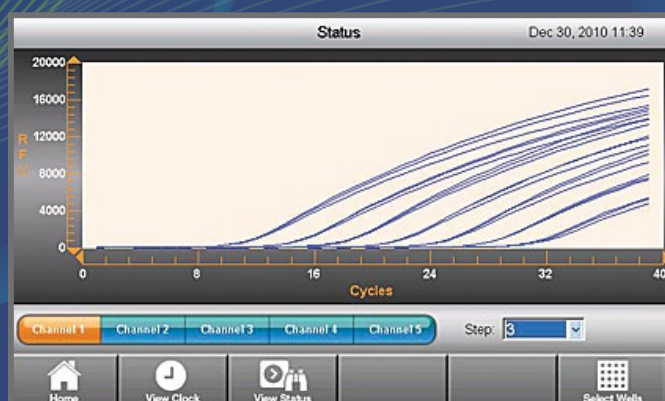


Easily start runs using the intuitive touch screen.

The CFX96 Touch Real-Time PCR Detection System builds on the power and flexibility of the C1000 Touch™ Thermal Cycler to create an exceptional real-time PCR system. Its unsurpassed thermal cycler performance plus innovative optical design produce accurate, reliable data. The powerful, yet intuitive software accelerates every step of your real-time PCR research, shortening the time between getting started and obtaining great results.



Quickly customize run parameters.



Monitor run progress in real time by viewing the amplification traces on the LCD display.



qPCR That Stands Alone

Real-time PCR runs can be performed in stand-alone mode without the CFX96 Touch System being attached to a computer. Easily set up runs using the intuitive touch screen. The amplification data traces can be viewed on the touch screen while a run is in progress so you can quickly decide your next experimental step even before your run has finished. When a run is complete, export the data using a USB flash drive, or directly email the data from the C1000 Touch Chassis. The CFX96 Touch System truly stands alone.

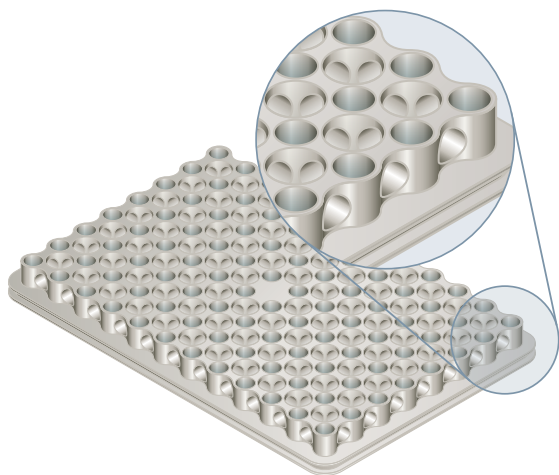
With the CFX96 Touch System you can:

- **Get great results right away** — quick installation and factory-calibrated optics let you set up the system in seconds
- **Fit experiments into your schedule** — fast thermal cycling produces results in <30 min
- **Save research time** — thermal gradient feature lets you optimize reactions in a single experiment
- **Minimize sample and reagent usage** — perform up to 5-target multiplexing and use low sample volumes
- **Rely on performance** — innovative technology with long-lasting LEDs and solid-state components provides maximum reliability and optimal quantitative results
- **Analyze results when and where you want** — receive email notification with an attached data file when a run is finished
- **Configure the system to fit your laboratory needs** — run without a computer, run up to 4 instruments from 1 computer, or integrate with the CFX Automation System II for higher throughput

FAST THERMAL CYCLING

Superior Uniformity

Precision of the temperature steps is critical for the rate and efficiency of PCR. To obtain reliable, consistent results, all sample wells must maintain proper temperature throughout each incubation step. The CFX96 Touch System uses six independently controlled thermal electric modules, the heating and cooling elements of the thermal cycler, to maintain tight temperature uniformity at all points during a run — even while ramping.

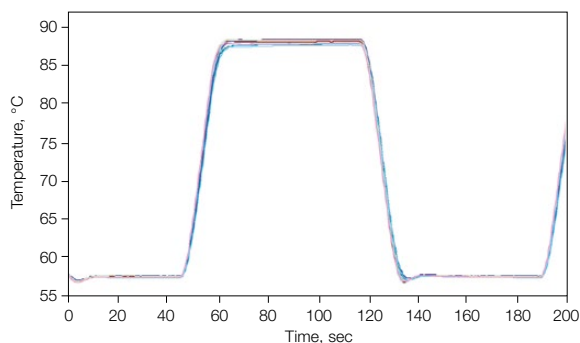


The patented* reduced-mass sample block heats and cools more quickly than standard blocks, so average ramp rates are increased and overall run times are reduced.

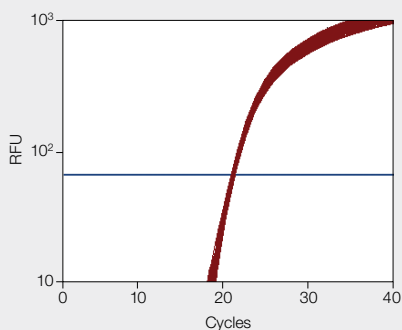
* U.S. patent 7,632,464.

Rapid Arrival at Target Temperature

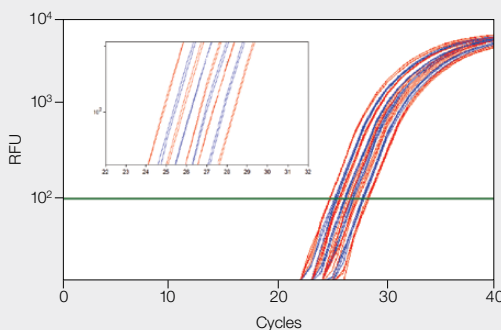
A key component of overall protocol run time is the time required to reach target temperature, which is determined by the average ramp rate and the time needed for the sample block to reach thermal uniformity. Maximum ramp rate is less important because it can fluctuate significantly during the ramp. The CFX96 Touch System produces high average ramp rates and tight uniformity during ramping to yield fast time to target temperature and faster protocol run times. Run times can be dramatically shortened — to less than 30 min — while still producing accurate quantitative results. Now you can tailor your runs around your schedule instead of tailoring your schedule around your runs.



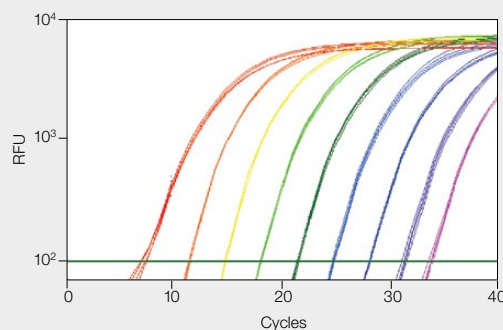
Superior uniformity with rapid arrival at target temperature. 1000-series thermal cyclers exhibit high average ramp rates, rapid settling time, and tight thermal uniformity throughout the ramp. This graph shows the temperature measured by probes in 15 wells across a sample block. The traces are nearly indistinguishable due to the tight uniformity. Note the consistent high average ramp rate throughout heating and cooling.



Excellent uniformity. *IL-1 β* plasmid template diluted to 10^5 copies/reaction amplified in the presence of a FAM-labeled detection probe with iQ™ Supermix. Graph shows 96 replicates of 10 μ l reactions. Average quantification cycle (Cq) = 19.81 ± 0.10 . RFU, relative fluorescence units.



Exceptional reproducibility can be achieved with SsoFast™ EvaGreen Supermix. Efficient discrimination and reliable quantification can be obtained from 1.33-fold serial dilutions of input template. The *CBP* gene was amplified from varying amounts of human genomic DNA (5 ng–511 pg). From left to right: (■) 5 ng, 2.83 ng, 1.60 ng, 903 pg, and 511 pg; (■) 3.76 ng, 2.13 ng, 1.20 ng, and 679 pg. *CBP* efficiency = 96.5%, $r = 0.996$. Inset is a magnified view showing robust discrimination and reproducible amplification. RFU, relative fluorescence units.



The unique fusion polymerase in SsoFast EvaGreen supermix delivers extreme speed and generates exceptional quantitative PCR (qPCR) results in less than 30 min. Tenfold serial dilutions of 10 ng–100 ag cDNA from human spleen were used in each 20 μ l reaction to detect 18S rRNA. 18S rRNA efficiency = 101.8%, $r = 0.997$. Total qPCR run time = 29 min. RFU, relative fluorescence units.

INNOVATIVE OPTICAL DESIGN

CFX96 Touch
REAL-TIME PCR
DETECTION SYSTEM

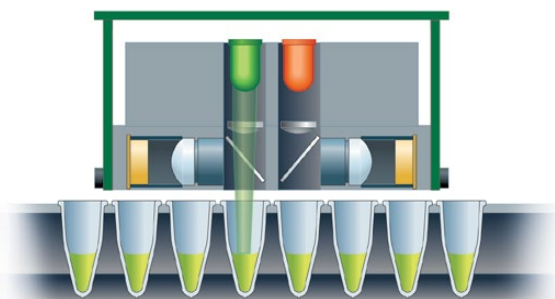
The solid-state optical technology of the CFX96 Touch System provides sensitive detection for precise quantification and target discrimination. Scanning just above the sample plate, the optics shuttle individually illuminates and detects fluorescence from each well with high sensitivity and no cross talk. The optical system automatically collects data from all wells during data acquisition, so you can enter or edit well information on your own schedule.

Five-Target Multiplexing

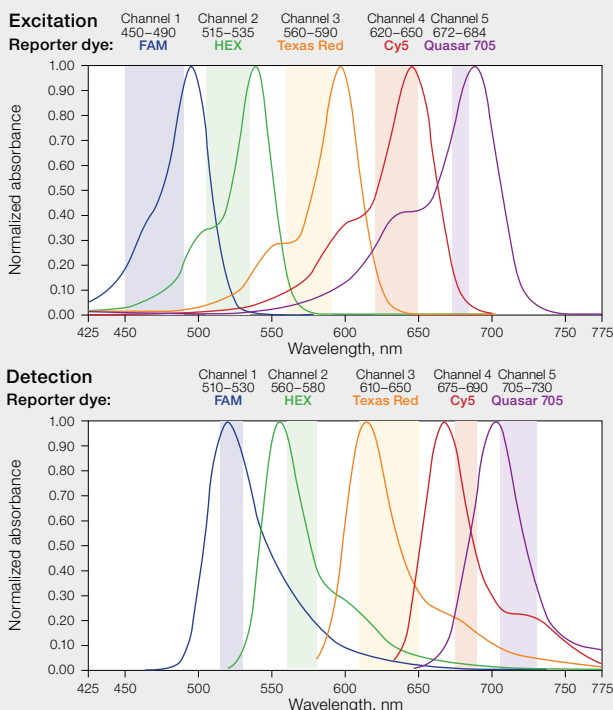
The CFX96 Touch System can discriminate up to five targets in a single reaction well. The optical filter sets are designed to maximize fluorescence detection for specific dyes in specific channels. At every position and with every scan, the optics shuttle is reproducibly centered above each well, so the light path is always fixed and optimal, and there is no need to sacrifice data collection in one of the channels to normalize to a passive reference.

Multiple Data Acquisition Modes

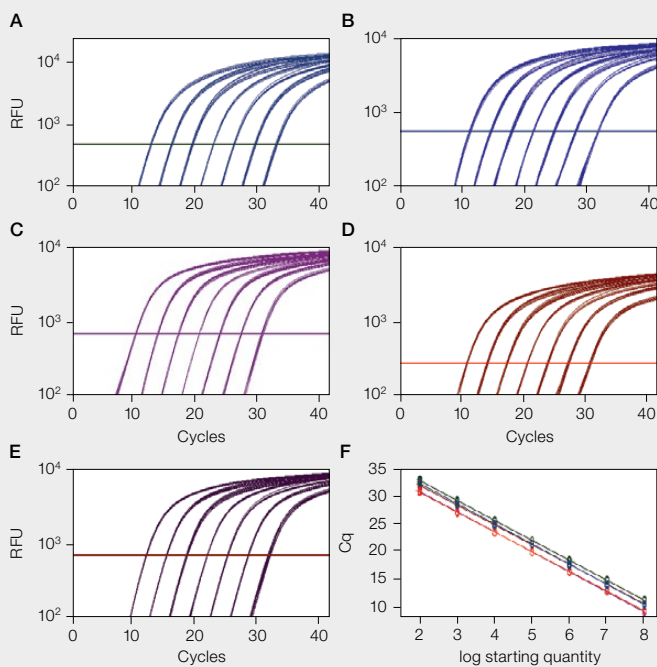
The CFX96 Touch System can acquire data using several modes. Choose to acquire data for SYBR® Green I, EvaGreen, and single-color FAM protocols using the fast scan mode, or choose to acquire data from all channels when performing multiplex protocols. The CFX96 Touch System includes one channel with an LED-filter photodiode combination designated for single-color fluorescence resonance energy transfer (FRET) experiments, further expanding your experimental options.



As the optics shuttle of the CFX96 Touch System travels across the plate, light is focused directly into the center of each sample well. Side view of the optics shuttle shows the green LED firing over a well.



Discrete excitation and detection wavelengths for the CFX96 Touch System enable through data discrimination.



Confidently analyze data from a broad range of sample concentrations even when multiplexing five targets. A–E, fluorescence data from a series of tenfold dilutions of plasmid DNA (10^8 – 10^2 copies) amplified using reporter dyes to monitor five targets: ■, FAM/actin; ■, HEX/GAPDH; ■, Texas Red/cyclophilin; ■, Cy5/tubulin; ■, Quasar 705//IL-1 β ; F, standard curves generated from data in A–E, reaction efficiencies range from 97 to 103%. Cq, quantification cycle; RFU, relative fluorescence units.

POWERFUL SOFTWARE

CFX Manager™ Software

CFX Manager Software accommodates individual user needs and different types of experiments with intuitive navigation and customizable settings.

With CFX Manager Software you can:

- **Get started quickly** — use intuitive navigation, a new Startup Wizard, and a streamlined interface
- **Stay organized** — reserve multiple instruments using the Scheduler and rapidly set up reactions with the Master Mix Calculator
- **Analyze results when and where you want** — receive email notification with an attached data file when a run is finished
- **Make decisions about your data faster** — visualize all of your run's data easily with Custom Data View
- **Extract more meaningful information from your run** — analyze data using bar chart, clustergram, scatter plot, volcano plot, or heat map analysis employing multiple reference genes and individual reaction efficiencies
- **Export only the data you want** — specify what to export and the preferred format with Custom Data Export

Precision Melt Analysis™ Software

Precision Melt Analysis Software imports and analyzes data files generated by the CFX96 Touch, CFX96 Touch Deep Well, CFX Connect™, or CFX384 Touch™ Real-Time PCR Detection System to genotype samples based on their DNA thermal denaturation properties. The software can be used for a variety of applications, including scanning for new gene variants, screening DNA samples for single nucleotide polymorphisms (SNPs), identifying insertions/deletions or other unknown mutations, and determining the percentage of methylated DNA in unknown samples.

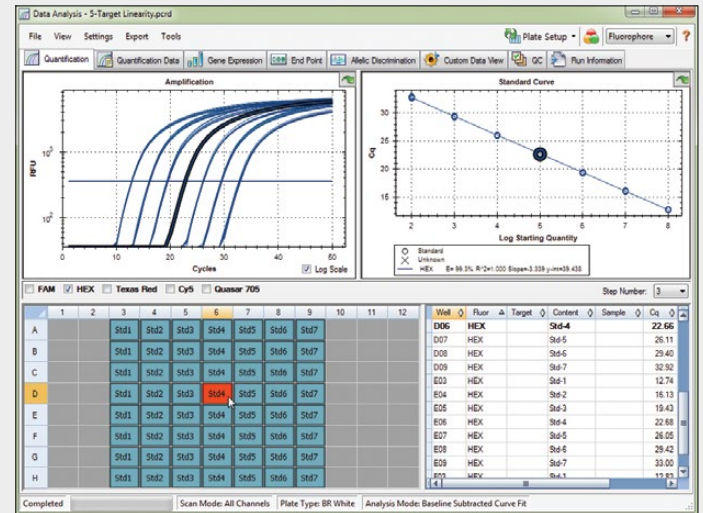
qbase+ Software

qbase+ Software is a powerful tool that imports and analyzes data generated by the CFX96 Touch, CFX96 Touch Deep Well, CFX Connect, or CFX384 Touch System. This platform-independent software package is available for major computer operating systems such as Microsoft Windows, Macintosh, and Linux.

Key features of qbase+ Software:

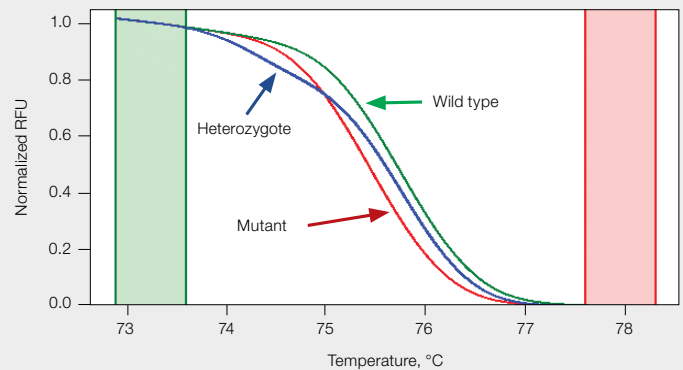
- **Reliable validation** — based on proven solutions for quality control, normalization, and inter-run calibration
- **Efficient data analysis** — import and consolidate information from multiple runs and multiple instruments to quickly analyze your complete data set, and use a guided statistical wizard to determine significance

CFX Manager Software



Easily identify specific samples using the multipane data highlighting feature.

Precision Melt Analysis Software



Quickly and accurately genotype samples using Precision Melt Analysis Software. Discrimination of human factor V coagulation SNP genotypes (C to T substitution) using SsoFast EvaGreen Supermix. Data from homozygous wild type (■), mutant (■), and heterozygote (■) samples are shown on a normalized melt curve plot. RFU, relative fluorescence units.

- **Streamlined publication submission** — export an RDML file containing annotations, such as sample and assay information, to conform to the minimum information for publication of quantitative real-time PCR experiments (MIQE) guidelines

EFFICIENT OPTIMIZATION

CFX96 Touch
REAL-TIME PCR
DETECTION SYSTEM

Thermal Gradient

Determining the optimal temperature for primer annealing is crucial for efficient and specific amplification of product. With the thermal gradient feature of the CFX96 Touch System, you can determine the optimal temperature for primer annealing in a single experiment, minimizing the use of precious samples and reagents, and saving valuable research time. At any step in a protocol, you can program a temperature gradient of up to 24°C across the reaction block. The thermal cycler provides exceptional temperature uniformity and reproducibility within each gradient zone, and the temperatures can easily be programmed and viewed onscreen in the software, so you can quickly identify the optimal incubation temperature.



CFX Automation System II

Expanding Your Throughput

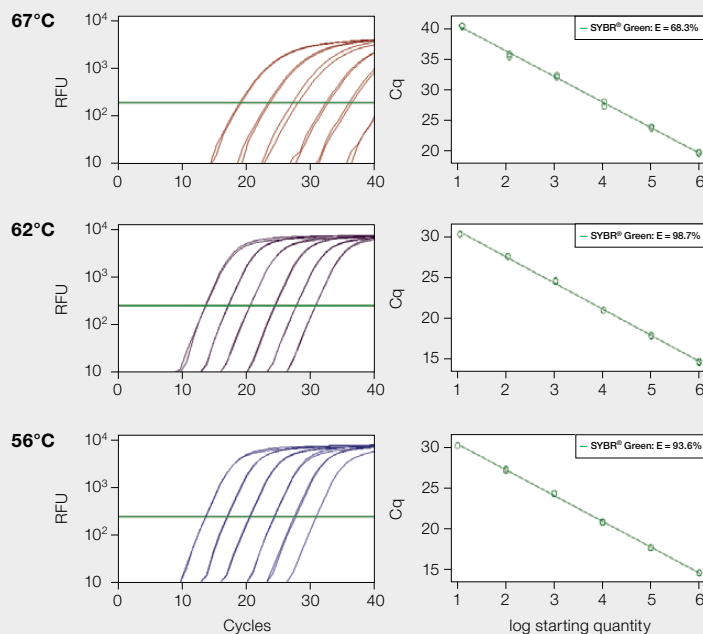
The flexibility of the 1000-series thermal cycling platform allows you to adjust your setup as your needs change. CFX Manager Software can independently run up to four instruments. You can easily maximize your work efficiency by integrating one or two CFX Systems with the CFX Automation System II. This automated plate handler comes with an easy-to-use software package that makes running and analyzing large-volume experiments simple.

Consumables That Provide Optimal Performance

Optimal real-time PCR results rely on the synergy of all the products, so Bio-Rad created optimized components for each step of your experiment. The advanced formulation of Bio-Rad's reverse transcription kits ensures ultrasensitive and highly unbiased cDNA synthesis. Our patented* Sso7d fusion DNA polymerase provides superior performance with complex samples and difficult-to-amplify targets. PrimePCR™ Assays are expertly designed and wet-lab validated for proven performance. Each assay for the human, mouse, and rat genomes was experimentally tested for optimal efficiency, specificity, sensitivity, and linear dynamic range. Plastics are manufactured for optimal fit and cycling performance and warp-free Hard-Shell® Plates are ideal for automation.

Together, these products provide unmatched real-time PCR results. What will you discover when you can see details you could not before?

* U.S. patents 6,627,424; 7,541,170; and 7,560,260.



Thermal gradient experiment for optimizing annealing temperature. A tenfold dilution series (10⁹ to 10 copies) of plasmid containing *GAPDH* template was amplified in the presence of SYBR® Green using a protocol with an annealing thermal gradient ranging from 55 to 68°C. Results are presented for three temperatures, showing 62°C as the optimal in this case, with early Cq values and the highest standard curve efficiency. Cq, quantification cycle; RFU, relative fluorescence units.



Specifications

Thermal Cycler

Chassis	C1000 Touch
Maximum ramp rate	5°C/sec
Average ramp rate	3.3°C/sec
Heating and cooling method	Peltier
Lid	Heats up to 105°C
Temperature	
Range	0–100°C
Accuracy	±0.2°C of programmed target at 90°C
Uniformity	±0.4°C well-to-well within 10 sec of arrival at 90°C
Gradient	
Operational range	30–100°C
Programmable span	1–24°C

Optical Detection

Excitation	6 filtered LEDs
Detection	6 filtered photodiodes
Range of excitation/emission wavelengths	450–730 nm
Sensitivity	Detects 1 copy of target sequence in human genomic DNA
Dynamic range	10 orders of magnitude
Scan time	
All channels	12 sec
Single channel fast scan	3 sec

CFX Manager Software

Operating systems	Windows 7, Windows 8
Memory	Minimum 1 GB
Multiplex analysis	Up to 5 targets per well
Data analysis modes	PCR quantification with standard curve Melt curve analysis Gene expression analysis by relative quantity (ΔCq) or normalized expression ($\Delta\Delta\text{Cq}$) with multiple reference genes and individual reaction efficiencies Data analysis options include bar chart, clustergram, scatter plot, volcano plot, and heat map Multiple file gene expression analysis for comparison of an unlimited number of Cq values Allelic discrimination End-point analysis
Data export	Save, copy, and print all graphs and spreadsheets from right-click menu Export specified data in multiple formats Copy and paste into Microsoft Excel, Word, or PowerPoint file Customizable reports containing run settings, data graphs, and spreadsheets can be directly printed or saved as PDFs

System

Licensed for real-time PCR	Yes
Sample capacity	96 wells
Sample size	1–50 μl (10–25 μl recommended)
Communications	USB 2.0
Electrical approvals	IEC, CE
Dimensions (W x D x H)	33 x 46 x 36 cm (13 x 18 x 14 in.)
Weight	21 kg (47 lb)

Ordering Information

Catalog #	Description
184-1100	C1000 Touch Thermal Cycler Chassis , includes USB flash drive, power cord; does not include reaction module
184-5097	CFX96™ Optical Reaction Module , for use with C1000 Touch Thermal Cycler Chassis, includes CFX Manager Software, license for qbase+ Software, communication cable
185-5196	CFX96 Touch Real-Time PCR Detection System , includes C1000 Touch Thermal Cycler Chassis, CFX96 Optical Reaction Module, CFX Manager Software, license for qbase+ Software, communication cable, reagents, consumables
185-5195	CFX96 Touch Real-Time PCR Detection System , includes C1000 Touch Thermal Cycler Chassis, CFX96 Optical Reaction Module, CFX Manager Software, license for qbase+ Software, communication cable
184-5001	CFX Manager Software, Security Edition , includes 1 user license, installation CD, HASP HL key
184-5025	Precision Melt Analysis Software , includes 2 user licenses, installation CD, 2 HASP HL keys, melt calibration kit
184-5075	CFX Automation System II , includes plate handler and barcode scanner, mounting plate, automation software
181-4000	PX1™ PCR Plate Sealer , includes heat sealing instrument
181-4030	Optically Clear Heat Seal , for use with PX1 PCR Plate Sealer, 100
MSB-1001	Microseal® 'B' Adhesive Seals , optically clear, 100
HSP-9655	Hard-Shell Low-Profile 96-Well Skirted PCR Plates , white well, white shell, 50
HSP-9955	Hard-Shell Low-Profile 96-Well Skirted PCR Plates , white well, white shell, barcoded, 50
170-8840	iScript™ Reverse Transcription Supermix for RT-qPCR , 25 x 20 μl reactions, includes 100 μl 5x iScript RT Supermix, iScript RT Supermix No-RT Control
172-5037	iScript Advanced cDNA Synthesis Kit for RT-qPCR , 25 x 20 μl reactions, includes 100 μl 5x iScript Advanced Reaction Mix, 25 μl iScript Advanced Reverse Transcriptase
172-5270	SsoAdvanced™ Universal SYBR® Green Supermix , 2 ml (2 x 1 ml vials), 200 x 20 μl reactions, 2x qPCR mix, contains Sso7d fusion polymerase, ROX Normalization Dyes
172-5280	SsoAdvanced Universal Probes Supermix , 2 ml (2 x 1 ml vials), 200 x 20 μl reactions, 2x qPCR mix, contains Sso7d fusion polymerase, ROX Normalization Dyes
172-5160	SsoAdvanced PreAmp Supermix , 1.25 ml (1 x 1.25 ml vial), 50 x 50 μl reactions, 2x PreAmp Mix, contains dNTPs, Sso7d fusion polymerase, salts, enhancers, stabilizers, other proprietary components
172-5095	SingleShot™ SYBR® Green One-Step Kit , 100 x 50 μl reactions

Visit bio-rad.com/web/CFX96TouchMore for more information.

Cy is a trademark of GE Healthcare group companies. EvaGreen is a trademark of Biotium, Inc. Bio-Rad Laboratories, Inc. is licensed by Biotium, Inc. to sell reagents containing EvaGreen Dye for use in real-time PCR, for research purposes only. Excel, Microsoft, PowerPoint, and Windows are trademarks of Microsoft Corporation. FAM and ROX are trademarks of Applied Biosystems. HASP is a trademark of Aladdin Knowledge Systems, Ltd. Linux is a trademark of Linus Torvalds. Macintosh is a trademark of Apple Inc. Quasar is a trademark of Biosearch Technologies, Inc. SYBR and Texas Red are trademarks of Life Technologies Corporation. Bio-Rad Laboratories, Inc. is licensed by Life Technologies Corporation to sell reagents containing SYBR Green I for use in real-time PCR, for research purposes only.

Bio-Rad's real-time thermal cyclers are covered by one or more of the following U.S. patents or their foreign counterparts owned by Eppendorf AG: U.S. Patent Numbers 6,767,512 and 7,074,367.

The use of iQ, SsoAdvanced, and SsoFast Supermixes is covered by one or more of the following U.S. patents and corresponding patent claims outside the U.S.: 5,804,375; 5,538,848; 5,723,591; 5,876,930; 5,994,056; 6,030,787; 6,171,785; and 6,258,569. The purchase of these products includes a limited, non-transferable immunity from suit under the foregoing patent claims for using only this amount of product for the purchaser's own internal research. No right under any other patent claim and no right to perform commercial services of any kind, including without limitation reporting the results of purchaser's activities for a fee or other commercial consideration, are conveyed expressly, by implication, or by estoppel. These products are for research use only. Diagnostic uses under Roche patents require a separate license from Roche. Further information on purchasing licenses may be obtained from the Director of Licensing, Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.

Hard-Shell Plates are covered by one or more of the following U.S. patents or their foreign counterparts owned by Eppendorf AG: U.S. Patent Numbers 7,347,977; 6,340,589; and 6,528,302.



**Bio-Rad
Laboratories, Inc.**

Life Science
Group

Web site www.bio-rad.com **USA** 800 424 6723 **Australia** 61 2 9914 2800 **Austria** 01 877 89 01 **Belgium** 09 385 55 11 **Brazil** 55 11 3065 7550
Canada 905 364 3435 **China** 86 21 6169 8500 **Czech Republic** 420 241 430 532 **Denmark** 44 52 10 00 **Finland** 09 804 22 00
France 01 47 95 69 65 **Germany** 089 31 884 0 **Greece** 30 210 9532 220 **Hong Kong** 852 2789 3300 **Hungary** 36 1 459 6100 **India** 91 124 4029300
Israel 03 963 6050 **Italy** 39 02 216091 **Japan** 81 3 6361 7000 **Korea** 82 2 3473 4460 **Mexico** 52 555 488 7670 **The Netherlands** 0318 540666
New Zealand 64 9 415 2280 **Norway** 23 38 41 30 **Poland** 48 22 331 99 99 **Portugal** 351 21 472 7700 **Russia** 7 495 721 14 04
Singapore 65 6415 3188 **South Africa** 27 861 246 723 **Spain** 34 91 590 5200 **Sweden** 08 555 12700 **Switzerland** 026 674 55 05
Taiwan 886 2 2578 7189 **Thailand** 1800 88 22 88 **United Kingdom** 020 8328 2000