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Bioneer
Healthier Future for Humanity with Genomic Technology

Exicycler™ 96

Real-Time Quantitative PCR System

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BIONEER
Innovation • Value • Discovery

Bioneer's Newest Real-Time Quantitative PCR System

Exicycler™ 96 is a superior 96-well qPCR system designed for real-time qPCR applications demanding the highest performance. In addition, *in vitro* diagnostic software packages have also been developed (MFDS, CE-IVD certified versions), which allows the instrument to be used for molecular diagnostic purposes.

- **Superior Sensitive Optics by Light Polarization**
- **Improved Thermal Block Ramp Rate**
- **Minimization of Ct variation**
- **Wide Linear Dynamic Range**
- **Real 5-color Multiplexing**
- **Excellent Accuracy and Uniformity**
- **Intuitive & Convenient Software**

Applications

Quantification of Gene Expression
- MicroRNA expression analysis
- Gene detection
- Virus load analysis

Pathogen Detection

Genotype Analysis
- SNP (Single nucleotide polymorphism) detection
- Drug resistance analysis

Genetic Disease Detection

Oncology

DNA Methylation Study

Superior Sensitive Optics by Light Polarization

Bioneer's imaging technique based on polarization of light provides sensitive detection for robust and reliable results.

Patented polarizing optical apparatus mitigates the common problem of a reflection light*, allowing precise quantification and target discrimination.

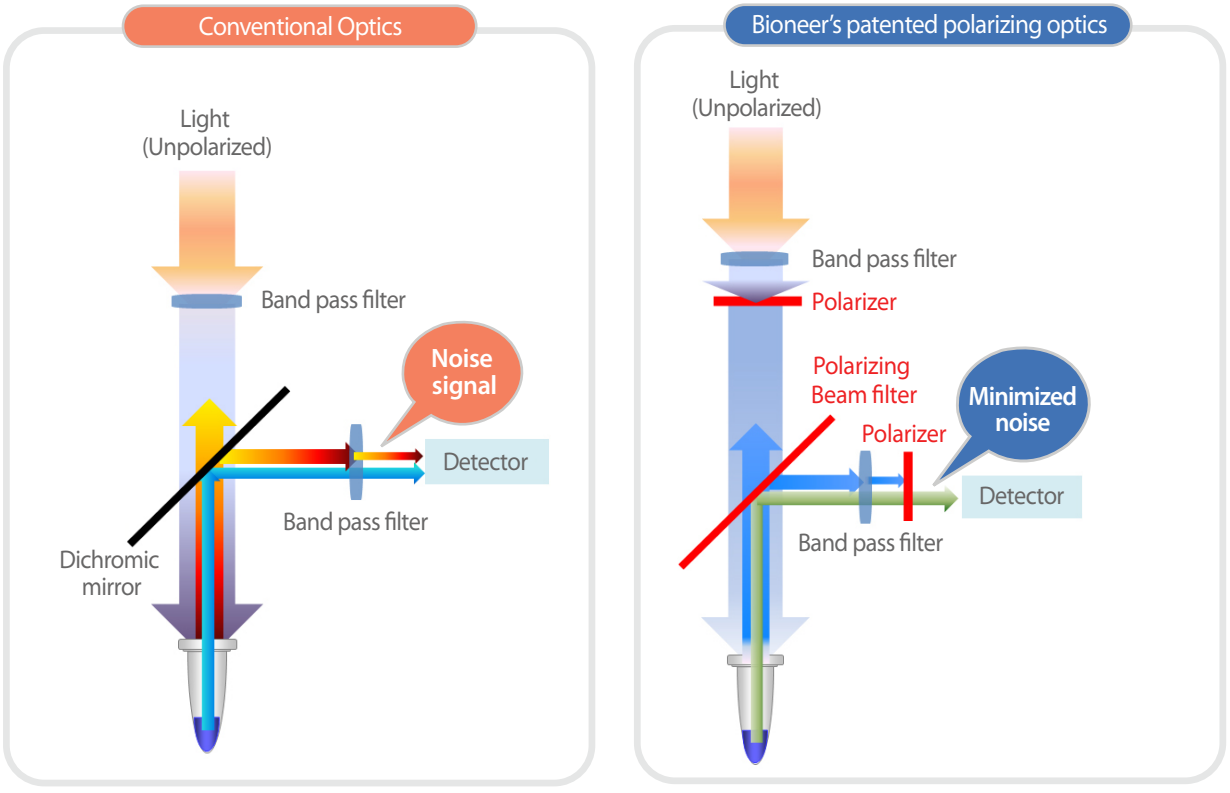


Figure 1. Separation of a reflection light from fluorescence.

A reflection light (Unpolarized)

A reflection light (Polarlized)

* Problem of a reflection light: In the conventional technology, excitation light is generally brighter than fluorescence generated from the sample. Therefore, light reflected from an optical component interferes with the fluorescence generated from the sample. Furthermore, it is hard to completely distinguish one from the other. This can cause imprecise and unreliable results.

Real 5-color Multiplexing

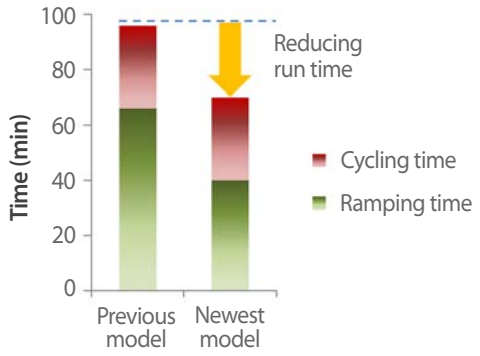
***Exicycler*™ 96 is a flexible, 5-color system with advanced optical features (light tunnel technology), which eliminates use of a reference dye.**

No need to reserve one channel for a reference dye, 5-color multiplexing is available.

Filter	Excitation	Emission	Fluorescence dye
1	475 nm	529 nm	FAM, SYBR Green I
2	517 nm	560 nm	JOE, TET
3	549 nm	586 nm	TAMRA, Cy3
4	572 nm	632 nm	Texas Red, ROX
5	628 nm	692 nm	Cy5

Improved Thermal Block Ramp Rate

Exicycler™ 96 reduces experimental time due to improved ramp rate compared to previous model.

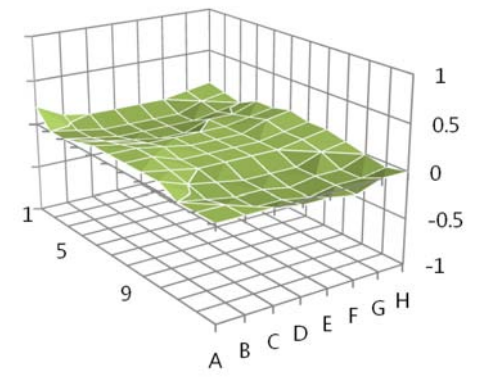


We improved temperature ramp rate for *Exicycler*™ 96. Hence it reduced run time by ~25% (for 2-step, 40-cycle protocol), even less for fast type.

Figure 2. Comparison of operating time and ramping time between the previous model and the newest model of *Exicycler*™ 96.

Excellent Accuracy and Uniformity

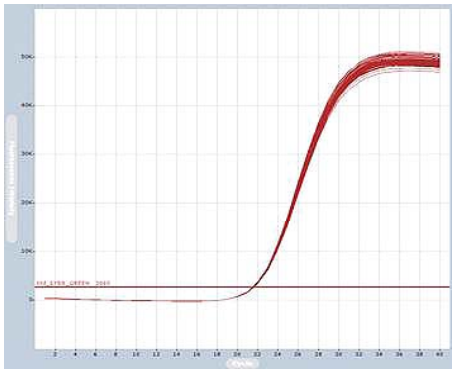
Precise temperature control system with cutting-edged algorithm enables researchers to obtain reproducible results.



Precise temperature control system improves temperature accuracy and uniformity for the entire well of thermal block. The temperature differences between center and border wells are reduced remarkably. As a result, these cyclers are thermally reliable. Thus, users can achieve reproducible results.

Figure 3. *Exicycler*™ 96 has superior well-to-well uniformity.

Excellent homogeneity of amplification.



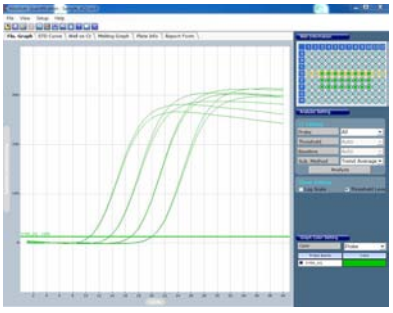
By implementing in-house designed LT technology in the optics module, well-to-well signal variation has been dramatically minimized and well-to-well optical homogeneity has been improved. No matter which well the reaction is executed, the Ct variation will be within 0.3.

Figure 4. qPCR result using $1x10^6$ copy of IRF3 gene in each of 96 well positions

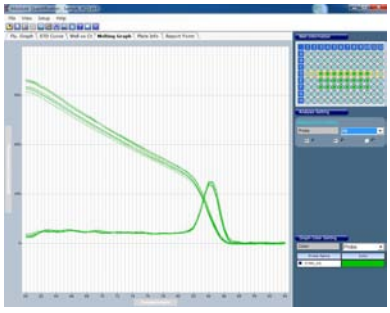
Intuitive & Convenient Software

A user-friendly interface provides convenience for every steps of qPCR process including protocol setup, data analysis and result storage.

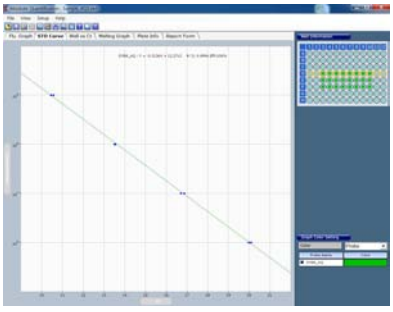
Analysis software that comes with *Exicycler*™ 96 has 4 different tools. Data analysis modules include Absolute Quantification, Relative Quantification, Existence/Nonexistence, SNP Genotyping and melting curve analysis. Simply choose an appropriate tool for the experimental purpose. Users can learn to use the software in no time.



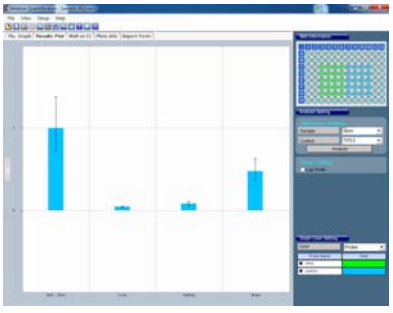
Fluorescence graph



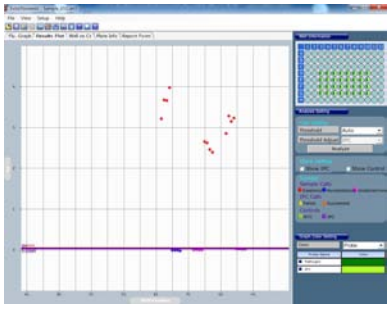
Melting curve analysis



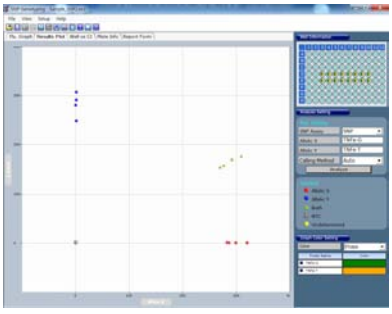
Standard curve analysis



Relative Quantification



Existence/non-existence assay



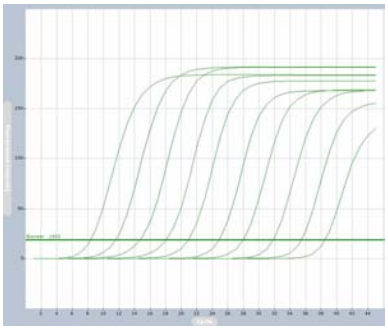
SNP Genotyping

Figure 5. *Exicycler*™ 96 Analysis Software

Wide Linear Dynamic Range

The dynamic range of detection is wide at over 10^9.

The benefit of having a wide linear dynamic range is especially important for the quantification of low concentration target. It simplifies experiments by avoiding repeating assays. *Exicycler*™ 96 has nine orders of magnitude wide dynamic range especially for the quantitative experiment.



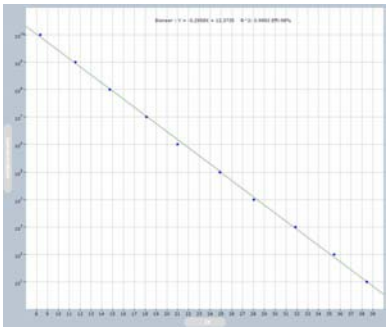


Figure 6. Ct values of 10-fold diluted samples show a wide dynamic range of quantification and high PCR efficiency.

Specifications

Physical specifications		
Dimension (mm)	355(W) X 540(D) X 470(H)	
Weight (Kg)	39 Kg	
Sample capacity size	Fast block	Opaque White 96-well Low Profile PCR Plate/ 0.2 ml Opaque White 8-strip Low Profile PCR Tube
	Normal block	Opaque White 96-well PCR Plate/0.2 ml Opaque White 8-strip PCR Tube
Sample volume	Fast block	10 - 50 µl (20 µl recommended)
	Normal block	20 - 100 µl (50 µl recommended)
Input voltage	100 - 240 VAC	
Frequency	50 / 60 Hz	
Power	800 VA (Fuse : 250 V, F10AL, 2 ea)	
Optical parts		
Light source	Short arc lamp	
Wattage	120 W	
Sensor	2D CCD	
Excitation Filter / Emission Filter	5 Set	

Operating specifications	
Method Heating/Cooling	Peltier
Temperature range	4.0 °C - 99.9 °C (39.2 °F - 211.82 °F)
Temperature accuracy	± 0.3 °C (± 0.54 °F)
Temperature uniformity	± 0.3 °C (± 0.54 °F)
Ramping rate	Max 4.5 °C (8.1°F)/sec (normal block)
	Max 5.0 °C (9.0 °F)/sec (Fast block)
Lid temperature	90°C - 120 °C (194 °F - 248 °F)
Gradient range*	20°C - 95°C (36 °F - 203 °F)
Temperature increment range	0. 1°C - 2.0 °C (0.18 °F - 3.6 °F)
Time increment range	1sec - 60 sec
Ramp rate control	0. 1°C/sec - 2.5 °C/sec (0.18 °F/sec - 4.5 °F/sec)
Operating temperature	15 °C - 30 °C (59° F - 86 °F)
Operating humidity	20 % - 80 %, no condensation
Communication	USB 2.0 high speed
Operating system	Window 7 (32 bit OS only) for English or Korean version

* Gradient function is not available in the U.S., Japan, German, France and Italy

Ordering Information

Cat no.	Product Description
A-2060-1	*Exicycler*™ 96 Real-Time Quantitative PCR System
A-2060-2	*Exicycler*™ 96 Fast Real-Time Quantitative PCR System

Related Products

Cat no.	Accessories
A-2060-A1	*AccuPower*® Fluorescence Test kit for *Exicycler*™ 96
A-2060-A2	*AccuPower*® Fluorescence Test kit for *Exicycler*™ 96 Fast
Cat no.	**Plastic consumables**
3111-4110	Adhesive Optical Sealing Film, 100 sheets
3111-50	0.2 ml Opaque White 8-strip PCR Tube, 250 Strips
3111-51	0.2 ml Opaque White 8-strip, Low Profile PCR Tube, 250 Strips
3111-52	Opaque White 96-well Semi-skirted PCR Plate, 25 Plates
3111-53	Opaque White 96-well Skirted, Low Profile PCR Plate, 25 Plates (Full-skirted)
Cat no.	**Premix & Reagent**
K-6100	*AccuPower*® *DualStar*™ qPCR PreMix, Exicycler 8-well strip, 20 µl, 12 strips, optical film included
K-6110	*AccuPower*® *DualStar*™ qPCR PreMix, Exicycler 8-well strip, 50 µl, 12 strips, optical film included
K-6200	*AccuPower*® *Greenstar*™ qPCR PreMix, Exicycler 8-well strip, 50 µl, 12 strips, optical film included
K-6210	*AccuPower*®*Greenstar*™ qPCR PreMix, Exicycler 8-well strip, 20 µl, 12 strips, optical film included
K-6251	*AccuPower*® 2X *Greenstar*™ qPCR Master Mix with 50X ROX Dye / 100 Rxn, 50 µl reaction

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