

Droplet Chip Digital PCR Analysis System

DcentriGene 160



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COMPANY PROFILE

Hangzhou Bioer Technology is a leading supplier of life science and medical diagnostic products in China, we specialize in the research and development, manufacture and sales of molecular detection serial products. We are committed to providing comprehensive molecular laboratory solutions for clinical and other customers.

We are one of the leaders in the PCR industry in China and obtained the 1st registration certificate of China quantitative fluorescent PCR detection system. Now we have developed into a comprehensive supplier of molecular detection with multiple technology platforms product lines. Our products include real-time fluorescence quantitative PCR instruments, automatic nucleic acid purification instrument, thermal cycler, nucleic acid purification reagent, all kinds of PCR detection reagents, standard PCR laboratory, mobile PCR laboratory, sample preservative fluid, Molecular detection consumables and PCR raw materials. We create the whole industry PCR chain business model of "Instrument + Reagent + Consumables + Molecular raw materials". In the future, we will continue to focus on the research of molecular detection technology, realize the automation, integration, miniaturization and digitization of PCR instruments, and realize the industrialization of different detection reagents and consumables. On the other hand, we will explore the solution of in vitro diagnostic technology and reagent raw materials through multi-technologies, and further enrich the product lines and application fields.

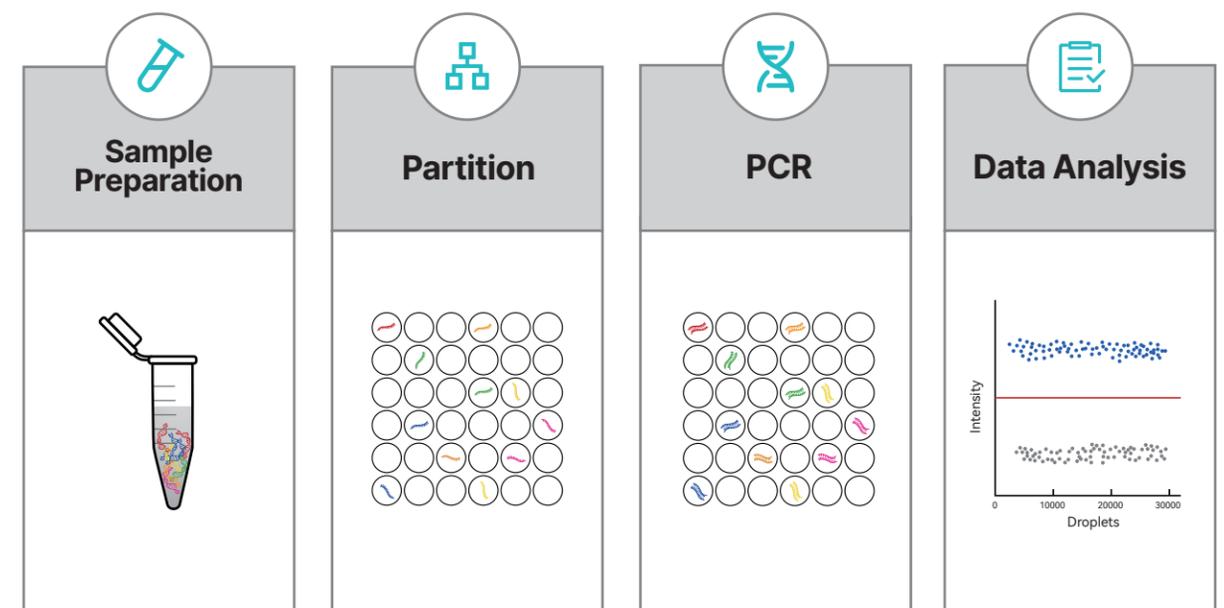
Over the years, Bioer Technology has been dedicated to the innovation of technology and equipment in the field of molecular testing, and always care for life with science and technology for people all over the world. Today, we have developed into an international global enterprise, with multiple subsidiaries and more than 1,000 employees. Our business covers more than 120 countries and regions, including molecular diagnosis, livestock, agriculture, aquatic products, scientific research, food safety, epidemic control and so on, which benefiting hundreds of millions of users.

Today, we use "Diligence, Aspiration, Creativity and Innovation" as our business philosophy. We lead the development with innovation, provide better service for customers and benefit the whole world.

Overview

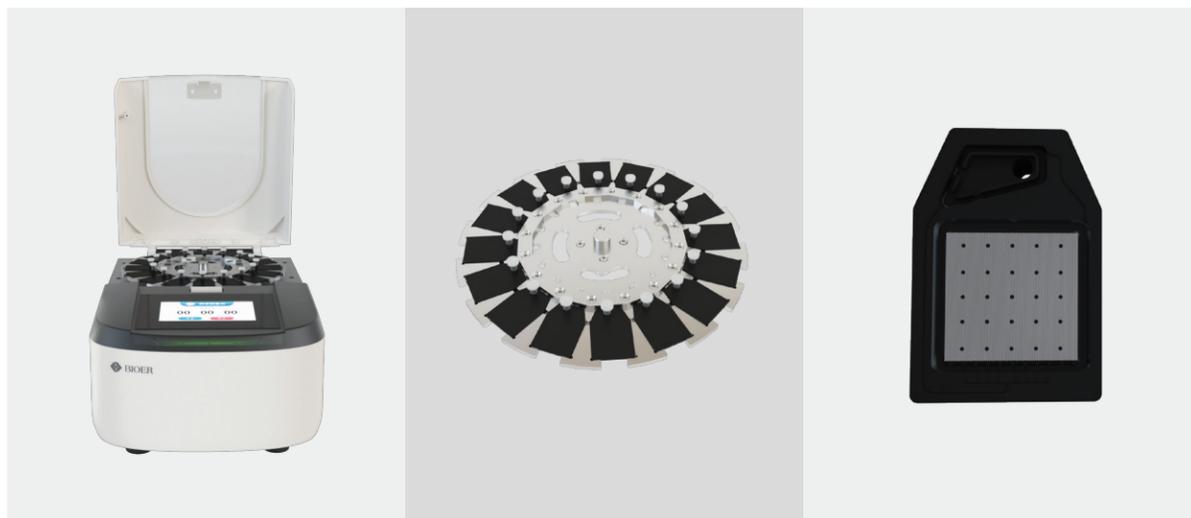
Droplet Chip Digital PCR Analysis System is a six-color digital PCR platform designed for precise and ultrasensitive nucleic acid detection and quantification without the need for a standard curve. The system consists of a MicroDrop Generator, dPCR Thermal Cycler, MicroChip Reader, and dedicated read and analysis software. The MicroDrop Generator utilizes centrifugal force to efficiently partition the sample into 25,000 to 32,000 uniform droplets, eliminating dead volume and maximizing sample utilization. Each droplet encapsulates either one or zero target nucleic acid molecule. The dPCR Thermal Cycler features four independent temperature-controlled zones, each capable of performing PCR reactions for up to four samples simultaneously. The MicroChip Reader records fluorescence signals from individual droplets, distinguishing positive droplets containing amplified target genes from negative droplets without amplification. Dedicated software is designed for raw data acquisition, data analysis and results reporting. During the analysis, the built-in algorithm applies Poisson distribution model for accurate quantification of target nucleic acids.

Workflow





Key Features



MicroDrop Generator - DcentriGene 16m

Patented Droplet Preparation: The patented centrifugal-driven droplet generation method eliminates dead volume and maximizes sample utilization. No additional pressure required.

Minimum PCR Contamination Risk: PCR reaction is fully enclosed in the chip throughout the digital PCR process, which can avoid PCR product contamination.

Fast: Droplet generation can be completed within 3 minutes.

Flexible: Droplet generation throughput can be easily adjusted from 1 to 16 for each run.



dPCR Thermal Cycler - DcentriGene 16c



Chip fully sealed, reducing contamination.

Specially designed anti-evaporation structure, reducing the evaporation during long-duration amplification cycles.

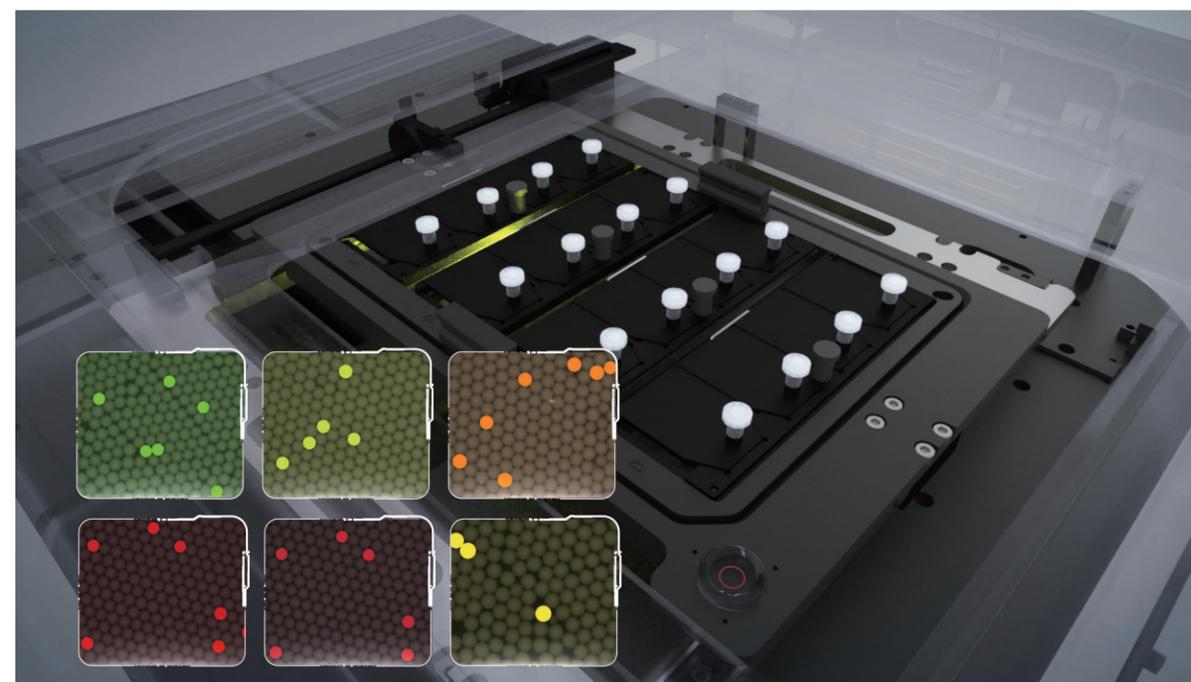
Four independently temperature-controlled PCR zones allow four distinct assays to be conducted simultaneously.

Different PCR conditions in a single run, shortening the process of temperature optimization.



MicroChip Reader - DcentriGene 16r1/16r2/16r3

- ◆ Up to 6-color multiplexing, from 1 to 16 samples/run.
- ◆ Rapid read and analysis, single chip scanning time in 10s.
- ◆ Modular detection system design that can be customized.
- ◆ Supports repeated chip scanning for higher confidence for quantification accuracy.



Software Analysis

- ◆ **01:** Analyze data using 1D, 2D, or 3D dot plots.
- ◆ **02:** Access raw data, as well as copy number variation, rare mutation detection, gene expression, and absolute quantification analysis modules.
- ◆ **03:** Supports image traceability function, allowing for visual analysis of individual droplets.
- ◆ **04:** Features droplet quality control analysis, enabling automatic assessment of droplet quality and evaluation of the number of valid droplets.



Specifications

Product Name	MicroDrop Generator
Model	DcentriGene 16m
Sample Throughput	1-16
Droplet Count	25000-32000
Droplet Diameter	90µm
Loading Volume	15µL
Generation Rate	16 samples within 3 min
Utilization Rate	≥95%
Power supply	100-240VAC, 50/60Hz, 120W
Dimensions	373mm×234mm×166mm (L×W×H)

Product Name	dPCR Thermal Cycler
Model	DcentriGene 16c
Sample Throughput	1-16
Max. Ramp Rate	2.5°C/s
Accuracy	≤0.1°C
Module work temperature range	30~99.9°C (Minimum setting scale: 0.1°C)
Run Time	70 min
Compatible Reagents	Dye-and Probe-based kits
Temperature Zone	4
Power supply	100-240VAC, 50/60Hz, 1200W
Dimensions	558mm×380mm×315mm(L×W×H)

Product Name	MicroChip Reader
Model	DcentriGene 16r1/16r2/16r3
Sample Throughput	1-16
Fluorescence detection channel	F1 F2 F3 F4 F5 (customizable) F6 (customizable)
Applicable dyes	FAM, Eva Green VIC, HEX, JOE ROX Cy5 CY5.5 CY3
Light Source	LED
Detector	CCD
Scan Speed	10s (per chip per channel) 25min(16 chips and 6 channels)
Dynamic Range	1-100000 copies/sample
Sensitivity	1 copy
Input power	100-240VAC, 50/60Hz, 200W
Dimension	542mm×390mm×280mm (L×W×H)



Application Filed





Reagents and Consumables

BioUltraQ Exact dPCR Mix

Introduction:

This product is a 2x PCR premix designed to use with Bioer's Droplet Chip Digital PCR Analysis System (DcentriGene 160), both hardware and software. The key component of this reagent is an ultrapure, thermostable DNA polymerase modified with high-affinity monoclonal antibodies, providing a hot-start mechanism with high tolerance to common PCR inhibitors. All reagents included are specifically developed for digital PCR, ensuring uniform droplet generation, minimizing droplet fusion during amplification, and enabling robust PCR amplification of single-copy templates. Tailored for digital PCR, this product delivers exceptional specificity and efficient amplification of low-concentration templates.

Features:

- ✓ **Easy to Use:** The 2x Exact dPCR Mix is a ready-to-use premix, requiring only optimization of primers and probes.
- ✓ **Broad Compatibility:** Suitable for a wide range of DNA template samples.

Application Results:

Case 1:

Viral DNA from five different concentrations of Hepatitis B Virus (HBV) culture were extracted using the MagaBio Plus Virus DNA/RNA Purification Kit III (Cat. No. BSC86) and quantified via digital PCR using the BioUltraQ Exact dPCR Mix

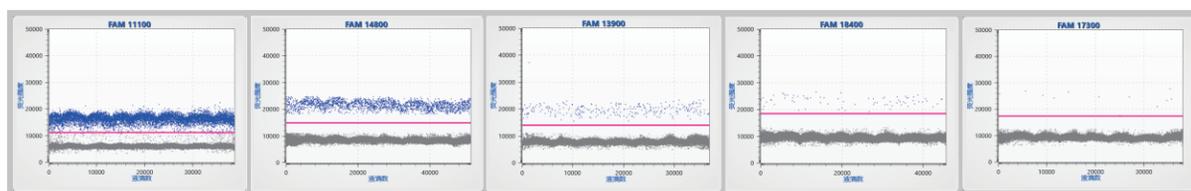


Figure 1: Scatter plot of amplification for five different concentrations of Hepatitis B samples.

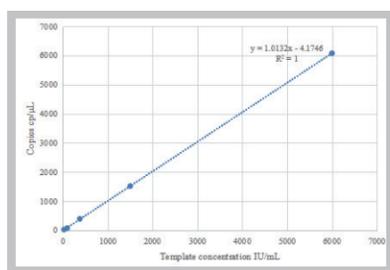


Figure 2: Slope graph of amplification for five different concentrations of Hepatitis B samples.

Result: The results indicate that the BioUltraQ Exact dPCR Mix provides accurate calibration and exhibits good linearity for Hepatitis B samples.

BioUltraQ Exact One-Step RT-dPCR Mix

Introduction:

This product is specifically designed for RNA template amplification and is compatible with Droplet Chip Digital PCR Analysis System (DcentriGene 160), fully compatible with the system's hardware and software. In addition to PCR reagents, the kit includes a high efficient RNA reverse transcriptase for first strand synthesis. Developed specifically for digital PCR, this product offers excellent specificity and high efficiency, even with low-concentration templates.

Features:

- ✓ **Easy to Use:** The 2x BioUltraQ Exact One-Step RT-dPCR Mix is a ready-to-use premix, requiring only optimization of primers and probes.
- ✓ **Broad Compatibility:** Suitable for a wide range of RNA template samples.

Application Cases:

Case 1:

Viral RNA from five different concentrations of Hepatitis C Virus (HCV) culture were extracted using the MagaBio Plus Virus DNA/RNA Purification Kit III (Cat. No. BSC86) and quantified via digital PCR calibration using the 2x BioUltraQ Exact One-Step RT-dPCR Mix.

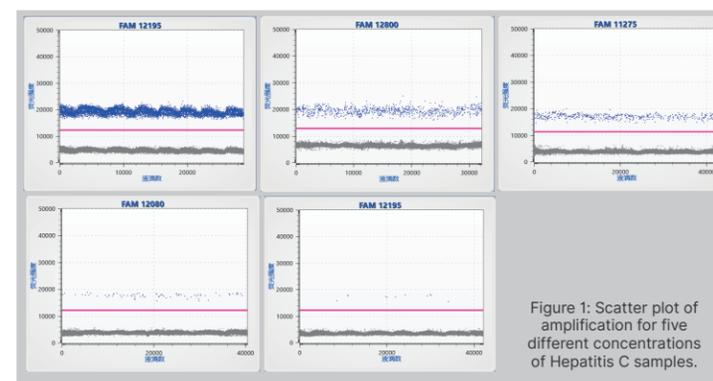


Figure 1: Scatter plot of amplification for five different concentrations of Hepatitis C samples.

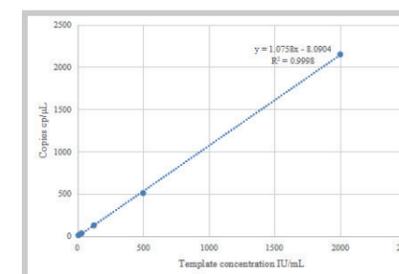


Figure 2: Slope graph of amplification for five different concentrations of Hepatitis C samples.

Microcard Kit

Introduction:

This product includes the Microcard and Microdrop oil, designed to be fully compatible with Droplet Chip Digital PCR Analysis System (DcentriGene 160), both in hardware and software. The Microcard features a sophisticated design, and when used with MicroDrop Generator (DcentriGene 16m), it can generate 25000–32000 droplets within just 3 minutes. The Microdrop oil is hot-resistant, maintaining droplet stability at 95°C without fusion. This product is intended to be used together with BioUltraQ series reagents.

Features:

- ✓ **Easy to Use:** The Microcard is specially designed to generate over 25000-32000 droplets in just three minutes.
- ✓ **Stable Performance:** The Microdrop Oil is hot-resistant and maintains droplet stability at 95°C without fusion.
- ✓ **Contamination Prevention:** The droplet generation and amplification process after adding the reaction liquid does not require opening the lid, effectively preventing contamination.



Ordering Information

Instruments

Cat. No.	Product Name	Model	Description
BYR6B31E	MicroDrop Generator	DcentriGene 16m	Droplet Generation
BYR6B32E	dPCR Thermal Cycler	DcentriGene 16c	PCR
BYR6B33E	MicroChip Reader	DcentriGene 16r1	Six-channel Detection
BYR6B45E		DcentriGene 16r2	Four-channel Detection
BYR6B44E		DcentriGene 16r3	Two-channel Detection

Reagents and Consumables

Cat. No.	Product Name	Package	Storage Condition
BSB106T1	BioUltraQ Exact dPCR Mix	8T	-25°C~-15°C
BSB106S1	BioUltraQ Exact dPCR Mix	64T	-25°C~-15°C
BSB106M1	BioUltraQ Exact dPCR Mix	192T	-25°C~-15°C
BSB107T1	Microcard Kit	8T	2~37°C
BSB107S1	Microcard Kit	64T	2~37°C
BSB107M1	Microcard Kit	192T	2~37°C
BSB111T1	BioUltraQ Exact One-Step RT-dPCR Mix	8T	-25°C~-15°C
BSB111S1	BioUltraQ Exact One-Step RT-dPCR Mix	64T	-25°C~-15°C
BSB111M1	BioUltraQ Exact One-Step RT-dPCR Mix	192T	-25°C~-15°C
BSB125T1	BioUltraQ Exact dPCR Mix for EvaGreen	8T	-25°C~-15°C
BSB125S1	BioUltraQ Exact dPCR Mix for EvaGreen	64T	-25°C~-15°C
BSB125M1	BioUltraQ Exact dPCR Mix for EvaGreen	192T	-25°C~-15°C
BSB126T1	BioUltraQ Exact Multiplex dPCR Mix for Probes	8T	-25°C~-15°C
BSB126S1	BioUltraQ Exact Multiplex dPCR Mix for Probes	64T	-25°C~-15°C
BSB126M1	BioUltraQ Exact Multiplex dPCR Mix for Probes	192T	-25°C~-15°C

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