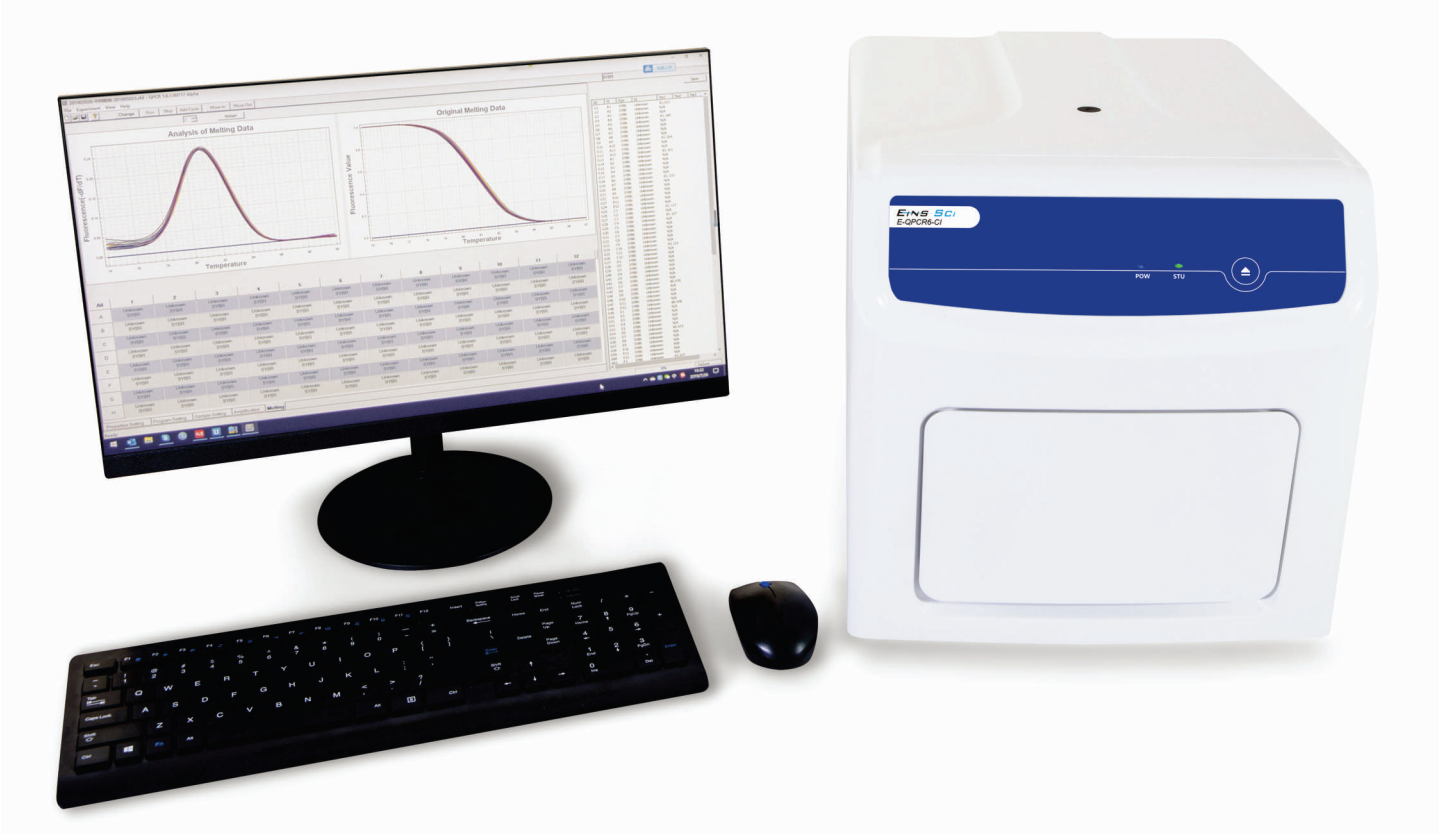
EINS SCI

Quantitative PCR System

E-QPCR4-CI
&
E-QPCR6-CI

As a mandatory choice for quantitative analysis of molecular biology, real-time polymerase chain reaction (PCR) system is widely used in various fields including scientific research, clinical detection / diagnosis, quality / safety testing and forensic applications.



Eins-Sci Quantitative PCR is developed on a global vision of product design and manufacturing processes. It ingeniously incorporates Fresnel lens optical signal acquisition technology, time-resolved signal separation technology and unique temperature control technology. Thus, reaching international advanced level in sensitivity, multi-colour crosstalk, temperature uniformity and accuracy. It supports the application of all common qPCR detection modes.

Real Time PCR can be used for positive and negative testing results for SARS-CoV-2 (COVID-19) in South Africa and internationally.

Features

- Options of 4 or 6 fluorescence detection channels allowing multiplex PCR
- Innovative scanning method and time-resolved signal separation technology
- Effectively reduce multi-colour crosstalk and edge effect, no ROX correction required
- New optical scanning detection system based on Fresnel lens optical signal acquisition technology offers high sensitivity
- High accuracy and uniformity due to unique edge temperature compensation technology
- LED light source is efficient and maintenance free
- High-efficiency PMT detection device
- User-friendly software for sample testing, data calculating and result analysis
- Excludes required computer
- 2 Year Warranty

Applications

Clinical detection and diagnosis
- Genotyping
- Copy number variation
- Rare mutation detection
- Regenerative medicine
- Gene therapy drug
- Molecular diagnosis
- Virus testing [SARS-CoV-2 (COVID-19)]

Forensic Application
- Identification
- Paternity Testing

Quality and safety testing
- Animal health
- Food safety testing
- Public health

Other Applications
- Protein expression
- microRNA
- Melting curve analysis
- Gene expression
- Absolute quantification
- Relative quantification

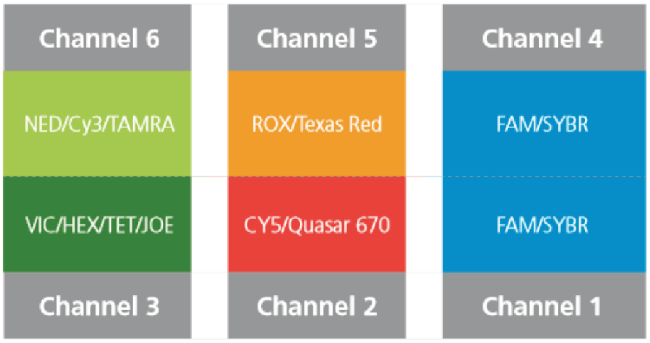
Specifications

Specifications	E-QPCR4 -CI	E-QPCR6 -CI
Integrated Computer	Dedicated Windows 10 PC Required	
USB Computer Interface	Yes	
Dimensions [W x H x D] (mm)	360 x 380 x 500	
Weight [kg]	25	
Housing Material	ABS Plastic	
Permissible Ambient Temp. [°C]	15 - 30	
Recommended Ambient Temp. [°C]	20 ± 5	
Permissible Relative Humidity [%]	20 - 80	
Input Power [W]	600	
Voltage [VAC]	220	
Frequency [Hz]	50/60	

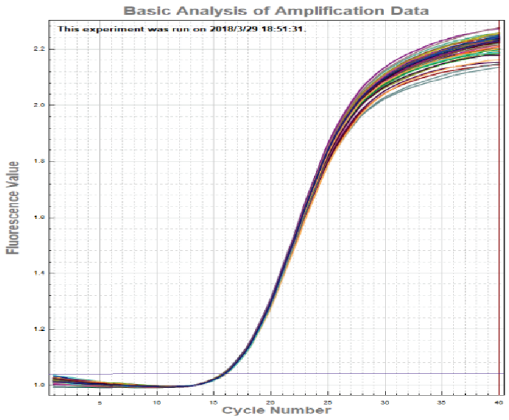
Detection System	E-QPCR4-CI	E-QPCR6-CI
Excitation Light Source	4 Monochrome High Efficiency LED's	6 Monochrome High Efficiency LED's
Detection Device	PMT	
Detection Mode	Time-resolved signal separating technology	
Excitation/Detection Wavelength Range	455-650nm/510-715nm Except Cy3	455-650nm/510-715nm
Fluorescent Channels	4	6
Supported Dye	FAM/SYBR Green, VIC/JOE/HEX/TET, ABY/NED/TAMRA/Cy3, JUN, ROX/Texas Red, Mustang Purple™, Cy®5/ LIZ™	
Sensitivity	Single Copy Gene	
Resolution	1.33 folds copy number difference can be distinguished in single-plex qPCR	
Dynamic Range	10 orders of magnitude copies	

Temperature Control System	E-QPCR4 -CI	E-QPCR6 -CI
Sample Capacity	96 x 0.1ml PCR tubes, 12 x 0.1ml PCR 8 strips or 1 x 96 well plate	
Reaction Volume	10 – 50µl	
Thermal Cycle Technology	Peltier	
Max Heating/Cooling Rate	6.0°C/s	
Average Sample Ramp Rate	2.0°C/s	
Heating Temp. Range	4 - 100°C	
Temp. Accuracy	± 0.2°C	
Temp. Uniformity	±0.2°C @ 60°C / ±0.3°C @ 95°C	
Temp. Gradient Setting Range	30 - 100°C	
Temp. Gradient Diff. Setting Range	1 - 36°C	

Up to 6 fluorescence detection channels allowing multiplex PCR- Simultaneous detection of 5 target genes in 96 samples



FAM, JOE, VIC, HEX, NED, TAMRA and ROX are trademarks of Life Technologies Corporation and its subsidiaries. VIC and Texas Red are registered trademarks of Life Technologies Corporation and its subsidiaries. Cy5 is a registered trademark of GE Healthcare Bio-Sciences Corp. Quasar is a registered trademarks of Biosearch Technologies, Inc.

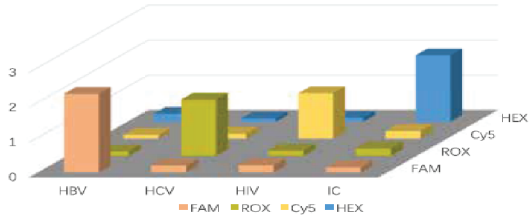


Simultaneous scanning of the six-channel shows that the standard deviation of the Ct value of the FAM channel is <0.07. No fluorescence signal in other channels.

Technical Innovation 1-

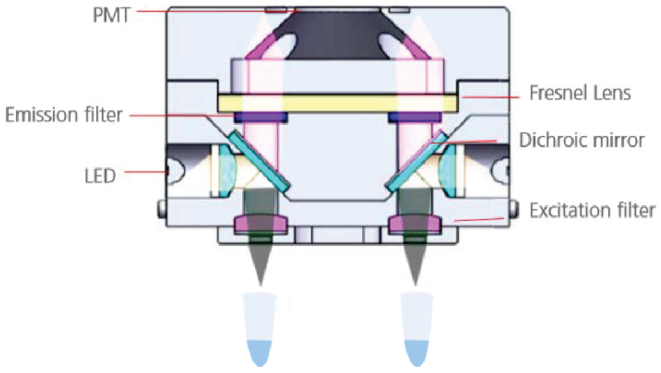
Effectively reduce multi-color crosstalk and edge effect, no ROX correction required

The multi-colour crosstalk caused by the small sample spacing of 96 or 384-well plates has a great influence on the accuracy of the experimental results, especially in multiplex qPCR detection. The new optical signal detection system and unique time-resolved scanning can reduce non-target sample optical signal collection. Thereby high repeatability of single fluorescent channel can be ensured.

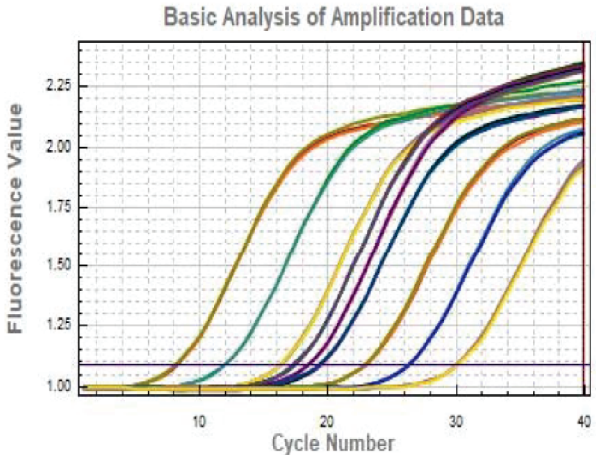


Four different target genes (2 repeats) of FAM/HEX/ROX/Cy5 were simultaneously detected in one reaction tube, and the results showed that there was almost no cross-interference between the different channels.

New optical scanning detection system-High sensitivity /resolution



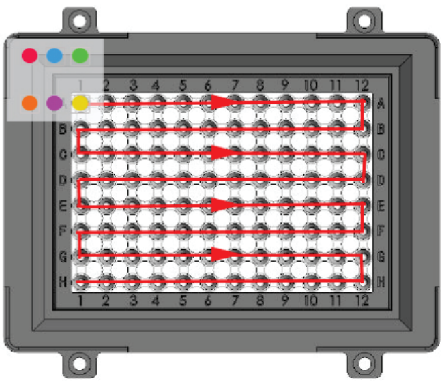
Sectional view of optical detection



The Fresnel Lens greatly reduces the light collection of the non target area. The relative position of the detector to the block hole ensures that one optical detection channel is aligned with one target to be tested at the bottom.
The LED light source is efficient and maintenance -free.

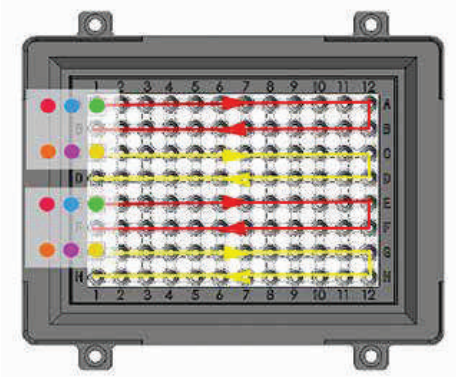
Different concentrations of plasmids were amplified by probe assay (concentration from left to right is 5 μg, 500 ng, 50 ng, 20 ng, 10 ng, 5 ng, 500 pg, 50 pg, 5 pg), three replicates for per concentration. The Ct values difference of the 10-fold dilution is exactly 3.3. The Ct values difference of the 2-fold dilution is exactly 1.

Innovative scanning method and time-resolved signal separation technology-High accuracy



Multi-channel scanning for probe assay

Unique time-resolved scanning method.
The different fluorescence signals of the same sample are collected at different times. The high-speed stepping motor and the highly sensitive detector ensure that all signal acquisition of the entire sample plate is completed in a short time.

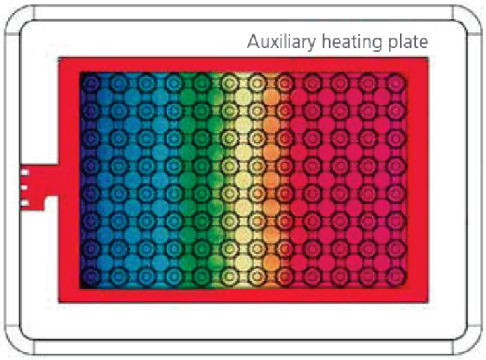


Double FAM scanning for melting curve

Innovative detection channel arrangement Interlaced arrangement of upper and lower channels further reduces inter-hole and multi-color fluorescence crosstalk.

Double FAM scanning for melting curve Scan time is shortened a lot.

Technical Innovation 2-
Unique edge temperature compensation technology



- Both temperature accuracy and uniformity are ±0.2°C
- Module maximum ramp rate is 6°C/ sec
- The average sample ramp rate is 2.2°C / sec
- With a unique outframe protection design, the unit can achieve very even temperature across the whole plate. Effectively reduce the edge temperature variance.

One-Stop Process Solution

Sample preparation and nucleic acid extraction

Prepare PCR mixture

Quantitative PCR detection

Data analysis