



A faster, smaller, better way to qPCR



Ultra-Fast Data Acquisition 35 cycles in 25 minutes



Unrivaled Performance Detect two-fold differences in expression levels reproducibly between samples, runs and instruments



Portable & Compact At 4.5 lbs & speaker-sized, transport without ever calibrating



Scalable & Wireless Wirelessly connect & operate up to 10 instruments from one PC (48 samples/instrument)



Magnetic Induction Technology Temperature accuracy of $\pm 0.25^{\circ}\text{C}$ combined with $\pm 0.05^{\circ}\text{C}$ well-to-well uniformity eliminates variability vs block-based cyclers

Description

Q uses a patented magnetic induction technology to rapidly heat samples coupled with fan forced air for cooling to acquire data in only 25 minutes. The robust optical system acquires all channels simultaneously and allows for running the fastest multiplexed assays.

Q's miniature speaker-size and 4.5 pound weight make it the most portable and versatile qPCR cyclers on the market without ever needing to calibrate. Q also provides scalability as each instrument can process up to 48 samples per run and up to 10 Q's can be connected to a single computer wirelessly via bluetooth enabling up to 480 samples to be processed simultaneously.

A key difference is that Q incorporates a unique spinning aluminum rotor providing superior temperature uniformity of $\pm 0.05^{\circ}\text{C}$ versus traditional block-based real time cyclers which rely on multiple peltier heating blocks that can create edge effects resulting in sample variation. Not only does the data give you superior reproducibility, repeatability but enables detection of 2-fold gene expression level differences as well as identification of difficult class IV SNP's requiring melt temperature resolutions of 0.1°C .

Who wouldn't want to take one for a spin?



Ultra-Fast Data Acquisition

25 mins

Generate high quality data, fast!

Q's speed is the fastest in the industry. Coupling speed with superior temperature uniformity means you don't sacrifice on the performance quality of your qPCR. Completing runs in as little as 25 minutes* is the new standard.

Normalized Fluorescence

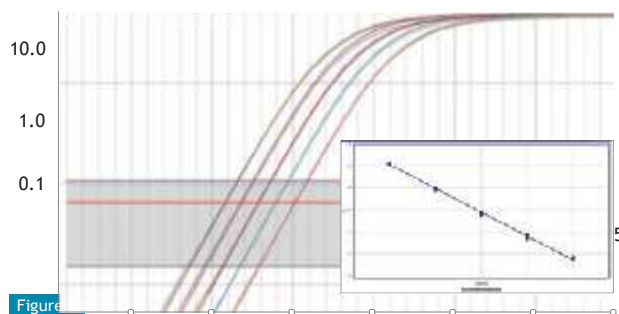
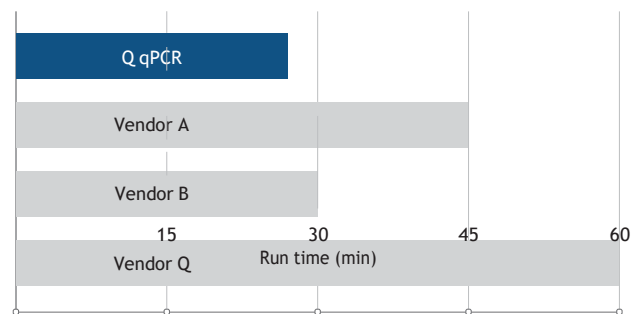


Figure 1
5 point, 2x dilution series of Hepatitis B virus (HBV) cDNA template
Starting amount of $3\text{E}+06$ copies (n = 4 each)
Efficiency = 90% (standard curve method); $R^2 = 0.99$
Time to complete run (including melt) = 26 min



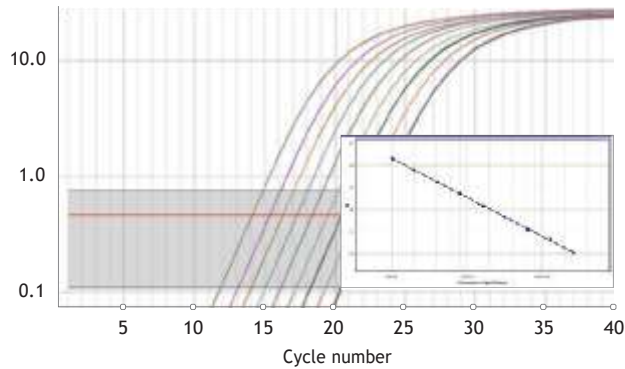
*25 minute cycle times obtained with fast cycling master mixes and short amplicon assay designs targeting cDNA



Unrivaled Performance

Detect 2-fold
Differences

Normalized Fluorescence



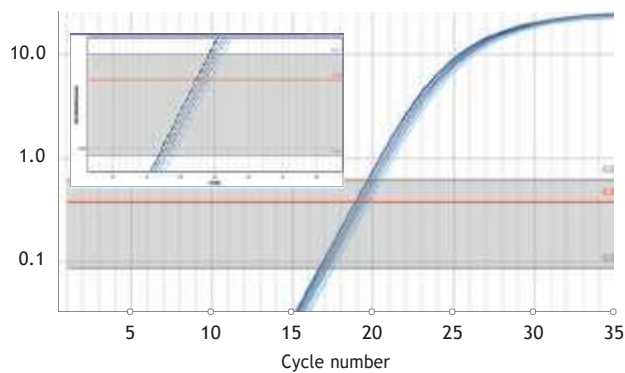
Confidently detect small differences.

Attributed to the high thermal uniformity and reproducibility, Q is able to reliably detect 2-fold differences in gene expression levels whether using standard curves for absolute quantification or relative quantification through REST.

Figure 2

Manganese superoxide dismutase gene (MnSOD)
Eight point, 2x dilution series of human genomic DNA (n = 4 each)
Efficiency = 98% (standard curve method)
 $R^2 = 1.00$

Normalized Fluorescence



Q is also able to detect differences within a single cycle. As an example, the data shown (left) illustrates a 5 pg dilution series differentiated with 0.2 cycles between standards.

Figure 3

Five point dilution series of HBV plasmid cDNA template (n = 4 each)
5 picogram difference between standards
Efficiency = 98% (standard curve method)
 $R^2 = 0.99$

Wide Linear Dynamic Range

Q provides ultra-sensitive detection down to single digit copies of DNA. Whether using absolute quantification for viral load detection or a standard curve to determine PCR efficiency, Q performs reliably across a wide dynamic range.

Normalized Fluorescence

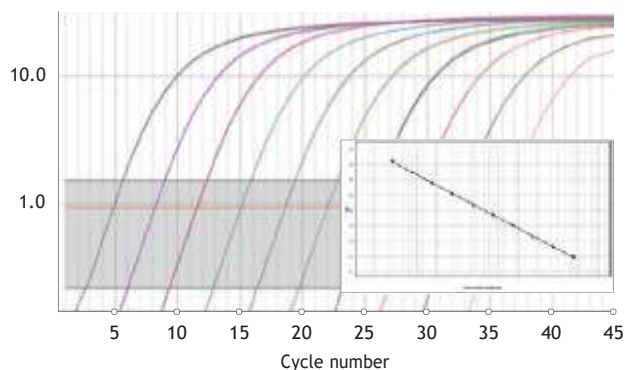


Figure 4

10 point, 10x dilution series of Hepatitis B virus (HBV) cDNA template
Starting amount of $3E+09$ copies (n = 3 each) over 10 logs
Efficiency = 95% (standard curve method)
 $R^2 = 0.99$

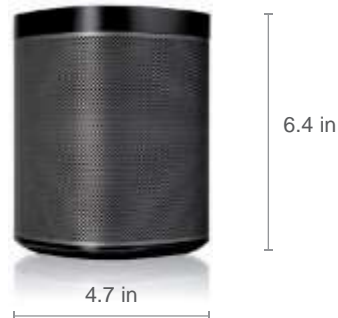
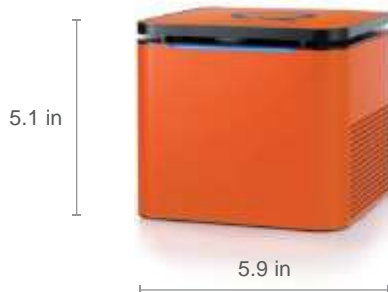


Portable & Compact

4.5 lbs

A qPCR cycler the size of a speaker!

Q is the most portable and compact cyler on the market occupying $\frac{1}{4}$ the size of current qPCR platforms. The small footprint is enabled by the unique rotary and magnetic induction technology.



Don't be fooled by it's small size. Big things are happening inside.

- Fixed optics & no moving parts
- Never needs optical alignment or calibration
- No reference dyes or cross talk compensation required
- Utilizes proprietary 0.1 ml 4-strip tubes & caps supporting volumes of 5 – 30 μ l
- High speed centrifugation ensures sample spin down
- Prevents evaporation & condensation with pre-loaded oil in tubes



up to 10 cyclers

Scalable & Wireless

Flexibility from 48 to 480 samples

Each Q cycler can process up to 48 samples per run and up to 10 cyclers can be connected to a single computer wirelessly to provide the desired scalability.

Q's advanced data analysis software makes combining a single data set from multiple runs from multiple cyclers seamlessly simple.

High reproducibility from thermal and optical performance ensures data from different runs and cyclers look like it was generated on the same instrument and the same run.

Lastly, anyone can setup and run the Q as it is plug-and-play right of the box.

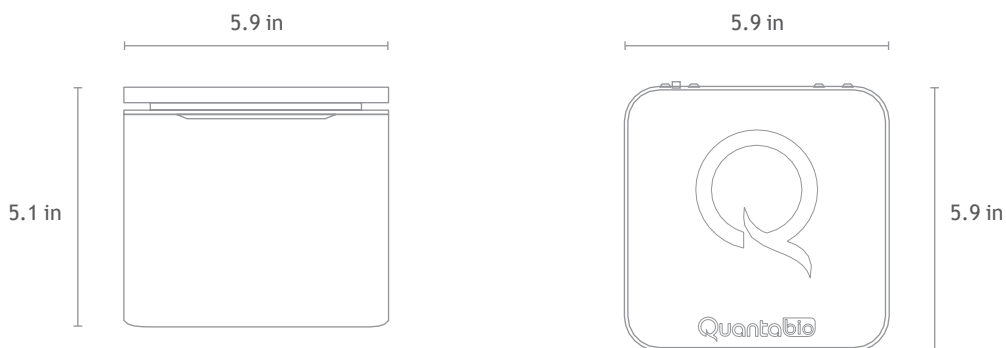


Specifications



Physical

Height	5.1 in
Width	5.9 in
Length	5.9 in
Weight	4.5 lbs



Thermal Performance

Temperature Accuracy	$\pm 0.25^{\circ}\text{C}$
Temperature Uniformity	$\pm 0.05^{\circ}\text{C}$
Ramp Rates	Heating 4°C/s / Cooling 3°C/s
Temperature Input Range	40 – 99°C

Optical

Detectors	Photodiode per channel		
Excitation Sources	High power LED for each channel		
Channels	Green	Ex 465 nm	Em 510 nm
	Yellow	Ex 540 nm	Em 570 nm
	Orange	Ex 585 nm	Em 618 nm
	Red	Ex 635 nm	Em 675 nm
Acquisition Time	1 second		

Reaction Tubes

Samples per Instrument	48
Reaction Volume Range	5 – 30 μl

Operating Environment

Temperature	18 – 35°C
Relative Humidity	20 – 80%

