

PDx16 Compact Real time PCR System

Product overview

Anitoa PDx16 is a portable, low cost, yet high performance real time quantitative PCR system. PDx16 is equipped with a unique direct imaging optical system, powered by Anitoa's ultra-low-light CMOS bio-imager sensor. This optical subsystem is low power, has no internal moving parts and no extra cooling requirement. PDx16 is optimally suited for applications where portability, minimal space, fast time-to-result is required. Sample applications are: point-of-care molecular diagnostics test (POCT)¹, food safety and environment monitoring, agriculture, or research lab use where bench space is limited.

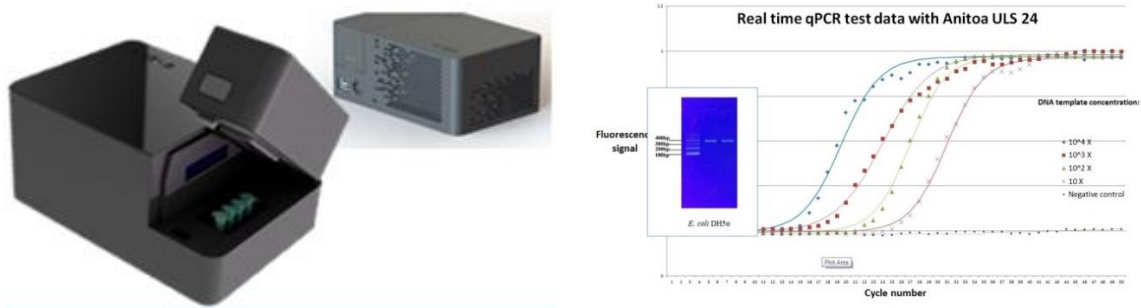


Figure 1. Anitoa PDx16 Compact qPCR

Features

- Compact and rugged. No internal moving parts.
- Equipped with ultra-low-light sensitive CMOS-based fluorescent imager.
- Multi-wavelength channels sensing capability, up to 4 channels, with minimum cross talk.
- USB 2.0 interface to Windows or Bluetooth® interface to Android™ or iOS.
- Low power. External 10V supply. <= 60W active power.
- Battery-backup option for outdoor use and power loss protection
- Fast optical scan in less than 0.1s.
- Powered by three 32-bit ARM Cortex-M3 processor.
- Cloud-enabled software to support multiple use scenarios: research and development use scenario and field test use scenario.
- Low ownership cost. Life time warranty available.

¹ Clinical clearance maybe required

Key parameters

Capacity (# of wells)	4
Channels (# of Fluorophores per well)	4 (e.g. FAM/SYBR, JOE/HEX, ROX, CY5)
Multiplex capability	Up to 4 targets per well or 16 targets total
Minimum detection threshold	4 copies
Dynamic range	>1.0E9
Signal Interface	USB 2.0, Bluetooth® 2.0
Excitation source	High efficiency LED
Detector	Ultra-low-light CMOS Bio-imaging chip
Thermal system	Solid-state, Peltier-based
Tube/plate formats	0.2mL, 4-tube strip
Reaction volume	10uL – 60uL
Filters:	4 sets exchangeable*, **
Excitation Range:	460nm – 670nm
Emission Range	510nm – 720nm
DNA probes supported:	DNA binding dyes (e.g. SybrGreen), hydrolysis probes (e.g. TaqMan probe) and hybridization probes (e.g. FRET probes).
Temperature Uniformity	< +/-0.2°C
Temperature control resolution	+/-0.1 °C
Temperature Ramp Rate	5.5°C/s heating; 4.5°C/s cooling
Size and weight	150mm (L) x 100mm (W) x 80mm (H).
Weight	950g
Power supply	AV, 60W (Adapter provided that accepts 110V/240V AC)

*: Wavelength characteristics can be modified by changing filter modules.

** : We support 1 – 4 channels in different configurations.

Cloud-enabled Software

PDx16 features cloud-enabled software, MVision, that supports multiple use scenarios, include research use, assay development and field deployment. For research use, the user can input detailed reaction parameters such as temperature cycling time and set point levels; and read raw fluorescence data from the imaging module to perform detailed data analysis. In assay development mode, user can associate reaction parameters and data processing algorithm with the assay and store it securely in the cloud. In field deployment mode, the system will directly retrieve information from the cloud to perform reaction and data analysis automatically and how the final test results in a much more intuitive way.

MVision software also monitors the performance of the instrument and predict the need for service or exchange.

Applications

- Point of care molecular diagnostics²
- Food safety test
- Environmental safety monitoring
- Agriculture DNA testing
- Forensic testing
- Research and educational lab use
- Plant molecular biology study
- Drug quality assurance testing

Assay requirement

Below is a description of what we envision as a good assay product for PDx16 instrument.

The assay should be able to detect one type of disease, for example HBV or MRSA that includes one wild type and several drug resistant variants. For example, for HBV, this could be rtM204I, rtL180M, rtA181T/V etc. A complete assay should include:

1. A negative control
2. Positive control
3. Concentration ladder for quantification
4. Primer/probe sets for all the targets (wild type + mutations).

² Clinical clearance required.

One of the potential technical challenge is that when multiple primer/probe sets are included in one reaction they tend to compete for resources in PCR amplification, thus the high concentration targets may mask the lower concentration targets. The assay design should take this into consideration

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