

AriaMx Real-Time PCR System



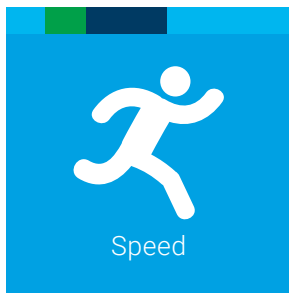
Total Confidence in qPCR

Agilent Technologies provides a comprehensive approach to real-time quantitative PCR (qPCR) – from sample preparation to data analysis. Every Agilent Aria qPCR instrument comes with configurable optical modules, intuitive software, and technical support.

Whether you are new or experienced in qPCR, our full range of products and industry-leading support is sure to keep you up and running with complete confidence and superior results.



- Precision instruments
- Speed and flexibility
- Enzyme engineering expertise



Confidence in Success with Brilliant Ultra-Fast Master Mixes

Our unique Brilliant reagents are equally robust and reproducible across a variety of assays – even on fast cycling platforms. Excellent specificity is delivered utilizing a novel, faster-activating hot start method to minimize the formation of primer-dimers and other off-target reactions.

- Enhanced rapid hot start capability
- Reliable and reproducible data



Confidence in a System that Meets Your Needs—Today and Tomorrow

The agile design of the AriaMx Real-Time PCR system offers the industry's first configurable and customer-changeable optics. Now you can mix-and-match optics to suit your needs today, and easily change them to suit your needs for tomorrow.

- Modular design
- Ready-to-use
- Future-proof



Confidence in Easy-to-Use, Precise Software

The AriaMx software combines robust data analysis algorithms and intuitive organization for precision and ultimate ease-of-use.

- Control experimental bias due to differences in amplification efficiencies through a proprietary algorithm
- Multiple, customizable data analysis algorithms
- Thermocycling control and precision you expect from a more expensive instrument
- Time to identify difficult genotypes cut in half
- Electronic Tracking software upgrade available, with secure application login, database file management, electronic audit trails, and report generation features

AriaMx

Better systems. Brilliant results.



Confidence in a system that meets your needs today and tomorrow

The AriaMx Real-Time PCR system is a fully integrated qPCR amplification, detection, and data analysis platform. The system's modular design combines a state-of-the-art thermal cycler, an advanced optical system with spectra-optimized LED modules, and data analysis software.

The instrument leverages a comprehensive software suite of on-board diagnostics, giving you confidence that fail points are identified prior to running your assay. Experience total confidence with AriaMx's blend of speed, agility, and precision.

Pre-run test: 60+ attributes
in less than one minute

Precise thermal uniformity



Speed

Ready, go!

Factory calibrated

The Agilent AriaMx Real-Time PCR system is ready to go out of the box – no calibration required!

Ultrafast chemistry

The AriaMx is optimized for our Brilliant III reagents and can run all fast chemistries.

Blazing scan times

Scan all channels in less than three seconds – the fastest in the industry.

Agility

Today and tomorrow

Modular design

Optical modules allow in-lab upgrades with the click of a button.

Intuitive interface

The touch screen makes system integration easy for all users..

Broad applications

The AriaMx supports multiple assays, chemistries, and applications, including: gene expression, comparative quantitative PCR, genotyping, allele discrimination, NGS library quantification, and more.

Precision

Superior data

Thermal control

Easily maintain $\pm 0.2^{\circ}\text{C}$ of your target temperature.

Impressive sensitivity

Two-fold discrimination in one cycle with 95% confidence over a wide dynamic range.

Easy reporting

Quickly export raw data in multiple formats and customize data reports.

Brilliant Reagents

Agilent Technologies provides a total solution approach to real-time quantitative PCR.

- Robust validation and tight manufacturing quality controls
- SYBR assay results in 42 minutes using Brilliant III reagents
- Open reagent platform: use your assays and reagents

Ultra-Fast SYBR Master Mixes

A proprietary, quick acting hot start *Taq* mutant enables ultra-fast reactions which maintain amplification efficiency, R2, dynamic range and detection sensitivity.



The AriaMx system makes routine and complicated applications faster and easier without sacrificing data integrity. Applications where AriaMx excels:

- **High-resolution melt (HRM) analysis**
Confidently genotype the toughest alleles in less time with Brilliant HRM kit.
- **Multiplex**
More agility and speed in your assays with reagents optimized for your reactions with Brilliant Multiplex kit.
- **qPCR NGS library quantification kit**
Optimal cluster density improving efficiency and data quality.

- **miRNA quantification**
qPCR master mixes and synthesis kits which enable your assays to discriminate miRNA differences – even by one SNP.
- **Open platform**
Instrumentation validated for all major manufacturer kits as well as Agilent Brilliant reagents.

Figure 1. Six color standard curve data by Fluor.

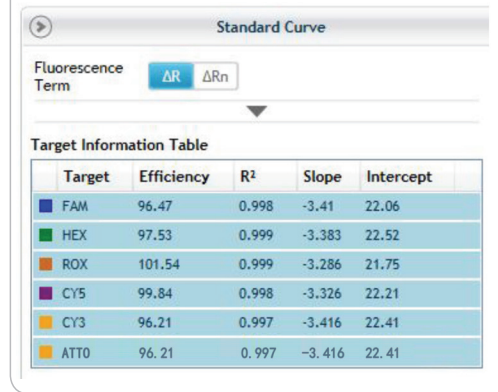
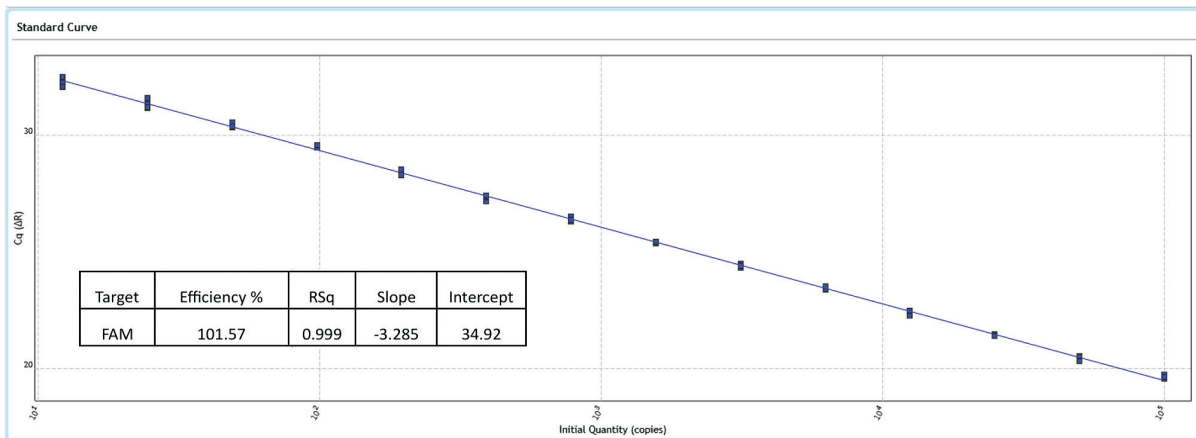
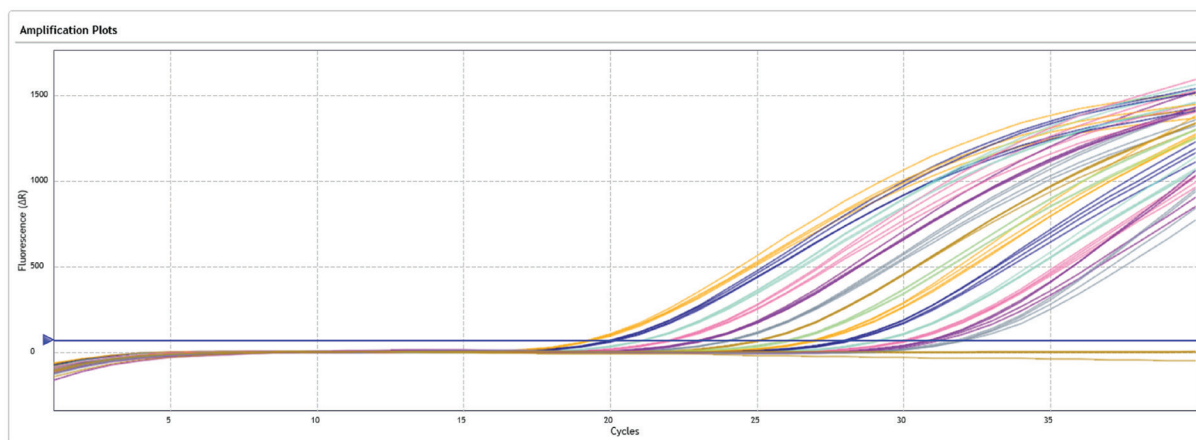


Figure 2. SYBR Green Assay – amplification and standard curve plots showing sensitivity measuring a two-fold change.



The standard curve consisted of nine, ten-fold dilutions starting with 1×10^9 copies and ending at two copies. Amplification plots are below.



Brilliant HRM Ultra-Fast Loci Master Mix

Fast chemistry to confidently identify hard-to-detect genotypes.

High Resolution Melt Application

High resolution melt analysis (HRM) is a quick method to monitor and record the melt profile of amplicons in a sample, post-PCR. HRM's high sensitivity can detect even the smallest of melting temperature changes, nucleotide repeats and small deletions in DNA.

Some of the more common applications of HRM include genotype confirmation, mutation identification and screening, and clone confirmation and methylation analysis.

HRM is often used at hypervariable loci to find hard-to-detect base changes. In contrast to *TaqMan* assays, which can easily miss new or unknown mutation, HRM can detect any mutation between two primers in the assay. HRM also cost-effectively resolves small changes while maintaining melting temperature control.

Brilliant HRM Ultra-Fast Loci Master Mix Advantages

- **Mix and go**
MgCl₂ and dNTPs are included.
- **Better stability**
Stable after multiple freeze thaws, reducing wastage and increasing batch-to-batch reliability.
- **Fast-start *Taq***
Three-minute activation time for the proprietary mutant Fast-Start *Taq* polymerase.
- **EvaGreen release-on-demand based dye**
Non-toxic and can be added at saturating concentrations—ensuring minimal inhibition while preserving high sensitivity.
- **Platform independent**
Use with any HRM-capable thermocycler.

High-Performance Agilent HRM Options:



Brilliant HRM Ultra-Fast Loci Master Mix
Faster HRM on any platform with total confidence



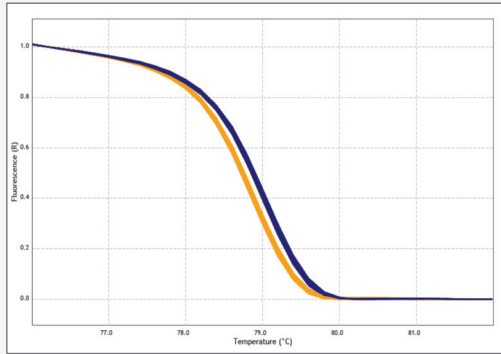
Complete AriaMx HRM solution
The fastest way to confidently identify hard-to-detect genotypes

Agilent HRM Ultra-Fast Loci Master Mix

For the scientist looking to quickly "mix-and-go" with confidence, we now offer the Brilliant Ultra-Fast Loci Master Mix as a stand-alone reagent – validated to work on your existing instrumentation. Although optimized for the Agilent AriaMx, the master mix also works on most major manufacturers' instrumentation.

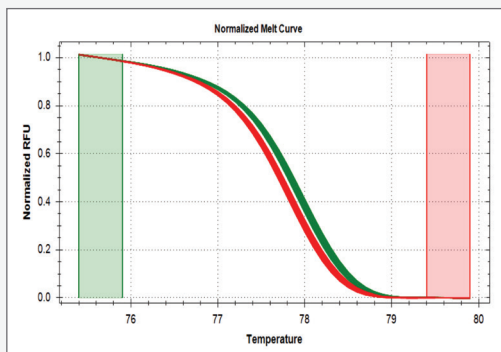
The Agilent HRM Ultra-Fast Loci Master Mix combines a fast-start mutant *Taq* polymerase, MgCl₂ buffer optimized for most HRM reactions, dNTPs and an EvaGreen low toxicity dye, considered the most reliable for HRM.

Figure 3. HRM of SNP Rs9939609 (FTO) using Brilliant HRM Master Mix on three different instruments.



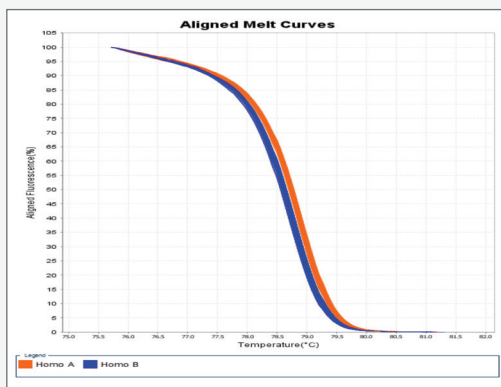
Panel A (Agilent AriaMx qPCR system)

SNP identified using Brilliant HRM Master Mix on the Agilent AriaMx qPCR system.



Panel B (Competitor B)

The same SNP identified using Brilliant HRM Master Mix on Competitor B qPCR system.



Panel AB (Competitor AB)

The same SNP identified using Brilliant HRM Master Mix on the Competitor AB qPCR system.

Brilliant HRM Ultra-Fast Loci Master Mix

Complete HRM solution for total confidence in your data.

Intuitive HRM Software

Agilent's HRM workflow includes software for HRM analysis which contains several benefits over other software packages with respect to plate set up, analysis and reporting (Table 1).

The Agilent platform's speed advantage over the competition is due to fast scan times and an algorithm used to interpolate the maximum T_m peak value. Other platforms report the highest melt peak value observed during the run, requiring additional scans to obtain an equivalent answer.

Table 1. Comparison of instrument software for HRM analysis.

Feature	Instrument		
	A (AriaMx)	B	AB
Set up replicates quickly using "smart-rules-based" software	●	●	●
Use files from a previously-run experiment as a template	●	●	●
Use a highlighting feature to link plots to the results table for easier analysis	●	●	●
Hover over each plot to reveal key data (e.g. X, Y coordinates, replicate number, dye channel)	●	●	●

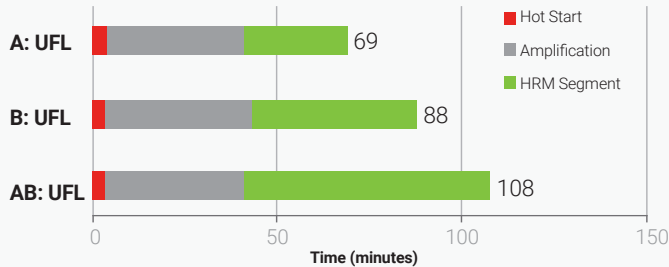
● Yes ● No ● Partial

Part Number	Description
5190-7827	Brilliant III HRM Ultra-Fast Loci Master Mix
5190-7702	AriaMx HRM Calibration kit

Agilent Complete HRM Solution

For researchers ready for a change in genotyping speed and confidence, Agilent offers a complete solution: **HRM Master Mix**, an **qPCR instrument** and **HRM analysis software**.

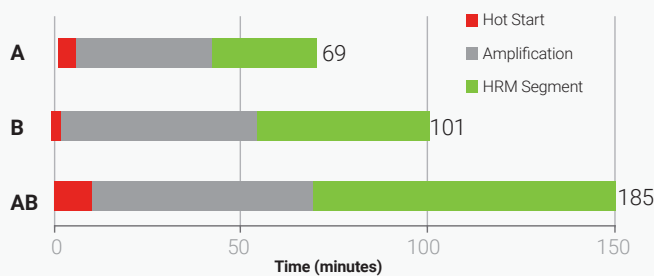
Figure 4. The Agilent AriaMx qPCR system is > 20% faster than competitor systems.



This graph shows the time required to identify the Class IV SNP Rs9939609 FTO with the Brilliant HRM Ultra-Fast Loci Master Mix (UFL) on three different qPCR instruments. The assay consisted of a hot start, 40 cycles of qPCR amplification and a high resolution melt segment. The time differences observed are due to 1) differences in instrument scanning speeds, 2) the number of measurements over the temperature profile, and 3) Taq polymerase's activation time.

- A:** The AriaMx system with Brilliant HRM Master Mix
- B:** Competitor B qPCR system with Brilliant HRM Master Mix
- AB:** Competitor AB qPCR system with Brilliant HRM Master Mix

Figure 5. The Agilent complete HRM solution is > 30% faster than competing HRM solutions.



This graph shows the time to identify the Class IV SNP Rs9939609 FTO on three competing qPCR instruments with manufacturer's respective HRM chemistries. Manufacturer's recommended HRM protocols were used.

- A:** Agilent AriaMx qPCR system with Agilent Brilliant HRM Ultra-Fast Loci Master Mix
- B:** Competitor B qPCR system and competitor B's HRM Master Mix
- AB:** Competitor AB qPCR system with competitor AB's HRM Master Mix

Using our complete HRM solution, **the time to correctly identify the most difficult-to-detect genotypes can be cut in half** (Figure 5). The longest run time (185 minutes) was on the AB system with the AB reagents. In contrast, on the Agilent AriaMx system with the Brilliant HRM Ultra-Fast Loci Master Mix, the same result was obtained in only 69 minutes. Now researchers can identify difficult-to-detect genotypes much faster than any other 96-well plate based solution – with ease and confidence.

Optical Modules

The first real-time-PCR system with optics contained in optical modules, the AriaMx allows for less cross talk between channels – resulting in improved data resolution.



Ready, Go!

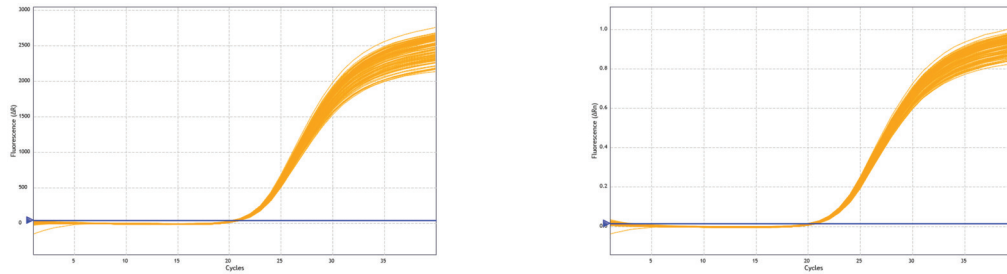
The AriaMx system comes calibrated straight from the factory. Calibration is only required if new optical modules are added.

Key features

- Expandable and upgradable in the lab
- No reference channel needed
- “Set it and forget it” calibration
- Future-proof
- Accommodate as many or as few optical channels as you require

With optical modules that have no need for a reference channel, the tight calibration of the modules and steady emission wavelengths from the instrumentation provide consistent data with every run.

Figure 6. Validation run with no ROX reference (left) and with ROX reference (right).*



When detecting biologically relevant changes, which occur at low thresholds, instrument sensitivity is critical. The SYBR uniformity curves at left were generated as part of the AriaMx validation on the same day. Both begin at cycle seven and end at cycle 17.

*Sigma multiplier was set to 19 for both runs. Adaptive smoothing was also on for the baseline graph. $dR, SD = 0.13$ Cq for both runs.

Better Multiplexing: Don't Sacrifice Time, Samples or Reagents

We know you're always looking to maximize information obtained from rare samples. Multiplexing is one solution to getting answers in the least amount of time. However, multiplexing often requires extensive optimization of reagents, which can be expensive in both time and reagent costs and is quickly becoming an impractical method. Agilent Brilliant Master Mixes allow you to normalize your results with internal controls, providing the most accurate quantification possible.

Agilent Brilliant Multiplex qPCR Master Mixes

Providing sensitive, real-time amplification, Agilent Brilliant Multiplex qPCR Master Mix allows the use of internal controls to provide normalization within each reaction while reducing time and reagent costs. The Brilliant Multiplex qPCR Master Mix provides amplification of up to four targets per reaction, and each requires far less template than if performed in four separate reactions. Moreover, the sensitivity remains equivalent to that seen in single-plex.

Agilent complete multiplex solution

The AriaMx system delivers answers from multiplexing experiments faster than most thermocycler-based platforms. Get ready for an improvement in time-to-results and accuracy.

Part Number	Description
600880	Brilliant III Ultra-Fast QPCR Master Mix for Multiplex Reactions
600884	Brilliant III Ultra-Fast QPCR Master Mix for Multiplex Reactions

Advanced, easy-to-use software with proprietary algorithms accompany AriaMx's precision chemistry and thermocycling capability.



Easy Touchscreen Set-Up

Simple-to-use, feature-rich touchscreen allows you to set up runs with the touch of a finger.

Secure data management and audit trailing is available by licensing Electronic Tracking software upgrade.

Figure 7. Easy-to-access plate and well maps.

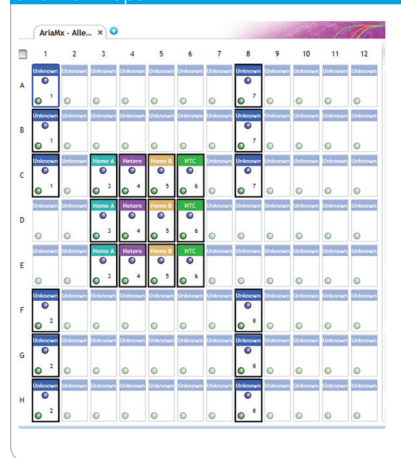


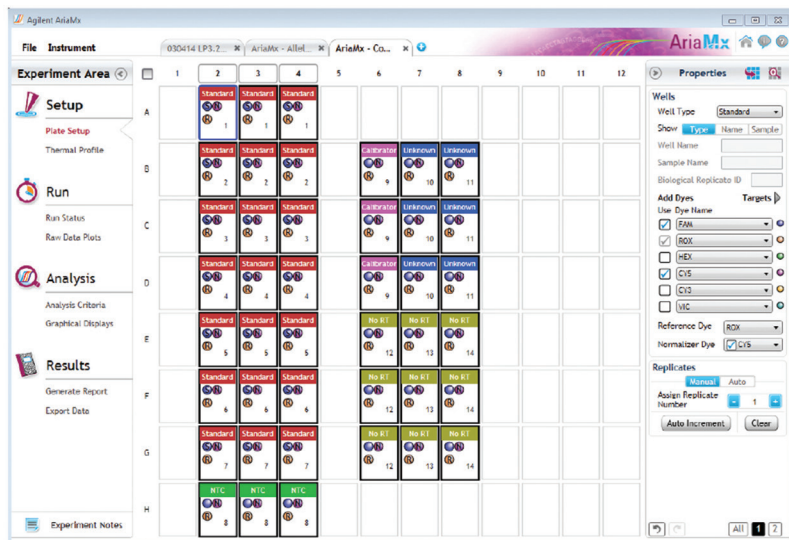
Plate Maps at Your Fingertips

Program at the plate and well level. Simply hover over a well, and its details will open in a new window.

Software features:

- Touchscreen set-up
- Onboard diagnostics
- Remote monitoring
- Base software included with instrument purchase

Figure 8. Set-up screen for comparative quantitation.



The AriaMx software helps you control experimental bias due to differences in amplification efficiencies through a proprietary algorithm – resulting in higher accuracy.

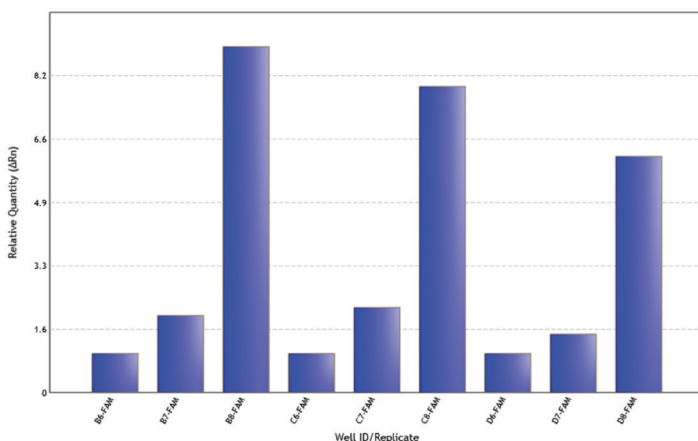
Pre-programmed Assays

Pre-programmed assays allow for easy selection of calibrators, normalizers and sample associations.

- Quantitative PCR
- Allele discrimination
- Comparative quantitation
- High-resolution melt

In high-throughput gene expression studies, standard curves are not used. Relative quantity calculation is automated using the Comparative Quantitation module in the AriaMx software. See Figure 8 for details.

Figure 9. Relative gene expression.



Easy Reporting

Easily export raw data in multiple formats with the touch of a finger. Select only those datasets you want displayed using custom data reports:

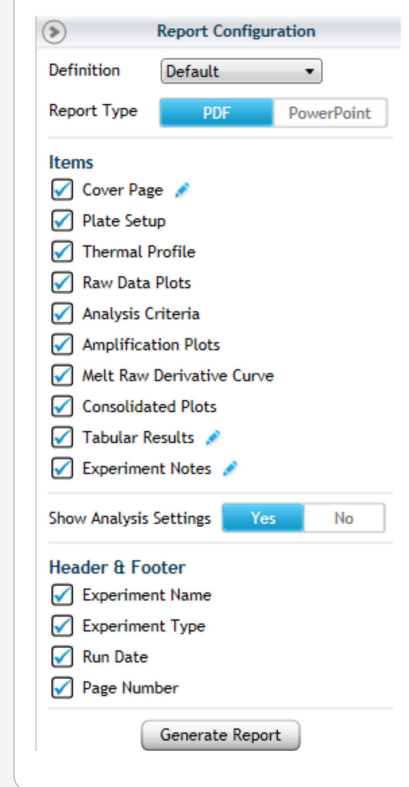
- Plate set-up
- Experimental thermal profile
- Raw data plots
- Analysis criteria
- Amplification plots
- Allele determination
- Graphical displays
- Tabular results
- Experimental notes

Multiple, Customizable Data Analysis Algorithms

Identify NGS bias and fragment drop

Accurate NGS library quantification is crucial for determining sequencing efficiency and data quality.

Figure 10. Report configuration.



Give your research the attention it deserves. Regain time lost on peripheral tasks and focus on the critical processes that keep your lab competitive and successful.

Maximize Uptime, and Get More Reliable Results

Agilent CrossLab service plans, preventive maintenance, and compliance services are available to you at the system level, assuring all modules of your system are covered.

- 96%+ of parts immediately available when needed.
- Speedy delivery for critical parts.
- Dedicated instrument support for fast issue resolution.

Confidence, Not Compromise

The Agilent stands behind every instrument, giving you confidence in equipment functionality and data. Agilent has one global focal point: providing our customers with the best service available worldwide. Up to 90% of Agilent-certified service professionals hold advanced degrees and our service professionals average over 7.5 years of instrument repair experience. Equipped with calibrated and traceable tools, our service technicians verify your equipment is running at maximum performance. Agilent hardware and software qualification protocols guarantee rapid issue resolution.

The Agilent Service Guarantee if we cannot fix an instrument covered by an Agilent CrossLab service plan, regardless of manufacturer, our escalation process will resolve the issue up to and including replacing your instrument free.*

Breadth of Services

Agilent-certified service professionals have been called upon to support customers with customized training, systems and enterprise integration, workflow design, special engineering projects, protocol development, and project management. We have conducted over 100,000 successful system qualifications worldwide, and our genomics professionals operate in 65 countries.

Immediate Assistance

Whatever the challenge, our broad resources address your needs. Expect reduced repair time with:

- **Virtual technical support:** Rapid assistance with instrumentation, reagents, applications, and protocols requires a vast knowledge of a variety of chemistries. That's why our advanced Application Scientists are typically PhD scientists with genomics experience – just like you. If you still need a service visit, your Agilent-certified service professional will have a previewed diagnosis and will arrive quickly with the required parts and supplies.
- **Detailed asset information:** Our tracking system provides critical information on instrument usage, resulting in quicker solutions.

*Conditions apply.

Warranty and Multi-Year Upfront Coverage

Each AriaMx has a global warranty, including the standard warranty for the country of purchase. If moved to another country, the destination country's standard warranty will apply to the instrument.¹

Agilent CrossLab Service plans available for purchase with AriaMx include:

- **Enhanced Extended Warranty:** lengthens your instrument's standard warranty coverage, including any warranty-level repairs using genuine Agilent parts, and is using enhanced by including preventive maintenance services after year 1.²
- **Return to Agilent (RTA):** This may be accompanied with a loaner instrument, exchanging out your instrument, or direct return of your instrument to Agilent.
- **Installation and Introduction (I&I):** An Agilent-certified service professional will install and introduce you to the AriaMx system.
- **Standard Preventive Maintenance (PM):** Agilent is available to run routine maintenance check-ups on your instrument annually to ensure peak performance for the upcoming year.³
- **CrossLab Silver:** A bundled service plan including annual standard preventive maintenance service and the return to Agilent RTA program, if necessary.
- **Multiyear service plans:** Protect against price increases and lock-in your price for the plan's duration. Cut down on administrative tasks, save time, and focus on strategic initiatives knowing that you have continued service coverage.



¹ Except for on-site warranty where Agilent does not have an applicable product-specific support presence or authorized representative in that country.

² Only available for new instrument purchases.

³ Unless a service plan is in place, parts replaced outside the scope of preventive maintenance will be charged as a repair event (this includes the engineer's time and materials).

Specifications

Feature	Description
Excitation Source	8 dye specific LEDs per optical module
Detection Sources	8 photodiodes
Optical Modules	SYBR/FAM HEX ROX CY3 CY5 ATTO425 6 slots, swappable optical modules
Dye Selection	Excitation and Emission
Reaction Volume	10 µL to 30 µL
Chemistries Supported	SYBR, HRM
Thermal System	Six Peltiers made from two ceramic plates with semi-conductor elements, 96-well
Thermal System Temperature Range	25.0 – 99.9°C Heating: 6.0°C/sec Cooling: 3.0°C/sec (Median), 2.5°C/sec (Average) Accuracy: ± 0.2°C or better at typical annealing, amplification, and denaturation temperatures
Dynamic Range	9
Experiment Types	Quantitative PCR with dye, Quantitative PCR with probe, Allele Discrimination with HRM, Allele Discrimination with probe, Comparative Quantitation, User Defined
Uniformity	± 0.4°C
Data Acquisition Time	<3 seconds for all
Electrical Power (input)	100 – 240VAC, 50/60Hz, 1100VA
Operating Environment	20 – 30°C, 20 – 80% non-condensing humidity, 7500 feet, max altitude
Weight	50 lbs. (23 kg)
Dimensions	19.7" W x 18.1" D x 16.5" H (50cm x 46cm x 42cm)

Feature	Description
Sample Containers	96-well plates, strip tubes; 0.2 mL tubes
Warranty	<ul style="list-style-type: none"> • 1-year warranty is standard with the instrument • 5-year warranty and service packages available
Onboard Analytics	<ul style="list-style-type: none"> • Thermal, physical, interactive (sensors) tests • Extended: 125 performance points tested in 30 minutes • Start-up: 59 performance points tested in ~1 minute • Optional bypass of both features
Services (upon request)	<ul style="list-style-type: none"> • Installation and introduction • Standard preventive maintenance • Extended warranty and service contracts available • Onsite repair where available
Operating System	<ul style="list-style-type: none"> • Windows 10 Pro (64-bit) - with preferred language set to English (United States)
MS Office Compatibility	<ul style="list-style-type: none"> • Microsoft 2010 and 2013 compatible
Run Modes	<ul style="list-style-type: none"> • Stand alone • PC connected • LAN connected to PC (more than 20 instruments can be connected and monitored remotely) • USB connected, external devices
Software	<ul style="list-style-type: none"> • Free software including LIMS connectivity • Electronic Tracking software upgrade • HRM Analysis software upgrade
Optical Module Calibration and Cleaning	<ul style="list-style-type: none"> • All channels can be tested and calibrated • All attributes of optical channels are calibrated at the factory – LED light output, light path, mirror, and photodiode • Optical modules can be cleaned in the lab without requiring help from an Agilent technician or a factory return.
Selected Applications	<ul style="list-style-type: none"> • Quantitative and qualitative gene expression analysis • miRNA analysis • Genetic mapping • Genetic fingerprinting • NGS library quantification • 2-6 channel multiplex ability • HRM analysis (including genotyping, mutational analysis, and class IV SNP detection) • Pathogen quantification

Quick Reference

Useful tools

qPCR decision tree: Determine which qPCR reagents or enzymes best serve your needs.

AriaMx software updates: Ensure your software is the most current version.

Agilent Genomics Biocalculators for PCR and qPCR: Useful for both new and expert users.

Ordering Information

Category	Part Number	Description	Quantity	
Base Instrumentation	G8830A	AriaMx Real-Time PCR system (base instrument)	1	
Optical Modules (Select 1-6 filters to add to base instrument. Additional filters can be added to base instrument at any time.)	Option 101	SYBR/FAM Optical module	1/pack	
	Option 102	ROX Optical module	1/pack	
	Option 103	HEX Optical module	1/pack	
	Option 104	CY3 Optical module	1/pack	
	Option 105	CY5 Optical module	1/pack	
	Option 106	ATTO425 Optical module	1/pack	
	Option 300	Electronic Tracking software upgrade	1 authorization code (good for one license)	
	Option 400	HRM analysis software upgrade	1 authorization code (good for ten licenses)	
AriaMx Software Upgrades (post instrument purchase)	G5380AA	Electronic Tracking software upgrade	1 authorization code (good for one license)	
	G5381AA	HRM analysis software upgrade	1 authorization code (good for ten licenses)	
Optical Modules (sold without instrument)	G8830-67001	SYBR/FAM Optical module	1/pack	
	G8830-67002	ROX Optical module	1/pack	
	G8830-67003	HEX Optical module	1/pack	
	G8830-67004	CY3 Optical module	1/pack	
	G8830-67005	CY5 Optical module	1/pack	
	G8830-67006	ATTO425 Optical module	1/pack	
Plastics	401490	AriaMx 96-well plates, skirted and low profile	1 x 25/pack	
	401491	AriaMx 96-well plates, skirted and rigid	1 x 25/pack	
	401494	AriaMx 96-well plates, non skirted low profile	1 x 25/pack	
	401492	AriaMx adhesive plate seals	1 x 50/pack	
	401493	AriaMx low profile strip tubes for PCR and qPCR applications, without caps	8/strip x 120/box	
	401425	AriaMx Strip caps for PCR and qPCR applications	8/strip x 120/box	
	Reagents	PROBE SYBR	600880	Brilliant III Ultra-Fast qPCR Master Mix
600882			Brilliant III SYBR Ultra-Fast qPCR Master Mix	10 pack (400 rxns)
5190-7708			AriaMx SYBR Qualification Plate	1 plate/pack
MULTIPLEX HRM		600553	Brilliant Multiplex qPCR Master Mix	200 rxns
		5190-7827	Brilliant HRM Ultra-Fast Loci Master Mix	200 rxns
		5190-7702	AriaMx HRM Calibration kit	1 x 96-well plates

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