QX100™ Droplet Reader and QuantaSoft™ Software

Instruction Manual

Catalog #186-3001, 186-3003

BIO-RAD

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Safety and Regulatory Compliance

This instrument has been tested and found to be in compliance with all applicable requirements of the following safety and electromagnetic standards:

- IEC 61010-1:2001 (2nd ed.), EN61010-1:2001 (2nd ed). Electrical Equipment for Measurement, Control, and Laboratory Use — Part 1: General requirements
- EN 61326-1:2006 (Class A). Electrical equipment for measurement, control, and laboratory use. EMC requirements, Part 1: General requirements

This equipment generates, uses, and can radiate radiofrequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

The CE mark indicates that the manufacturer ensures the product conforms with the essential requirements of the applicable EC directives.

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This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

The Waste Electrical and Electronic Equipment Directive symbol indicates that when the end-user wishes to discard this product, it must be sent to separate collection facilities for recovery and recycling.

Instrument Safety Warnings

Alteration of this instrument voids the warranty and safety certification and creates a potential safety hazard. This instrument is intended for laboratory use only. Bio-Rad Laboratories is not responsible for any injury or damage caused by use of this instrument for purposes other than those for which it is intended, or by modifications of the instrument not performed by Bio-Rad Laboratories or an authorized agent. Follow the safety specifications listed here and throughout this manual. Use only the power cord supplied with the instrument, using only the plug adaptor that corresponds to the electrical outlets in your region. Use of unapproved supermixes may harm the instrument and voids the warranty.

PPE (Personal Protective Equipment) Training

Proper use of gloves is recommended with use of oils and sample plates. OSHA requirements for PPE are set forth in the Code of Federal Regulations (CFR) at 29 CFR 1910.132 (General requirements); 29 CFR 1910.138 (Hand protection); 29 CFR 1926.95 (Criteria for standard personal protective equipment). Any gloves with impaired protective ability should be discarded and replaced. Consider the toxicity of the chemicals and factors such as duration of exposure, storage, and temperature when deciding to reuse chemically exposed gloves. Features to aid glove selection for handling of machines, assays, oils, and cleaning solvents:

- Butyl gloves are made of a synthetic rubber and protect against peroxide, hydrofluoric acid, strong bases, alcohols, aldehydes, and ketones
- Natural (latex) rubber gloves are comfortable to wear and feature outstanding tensile strength, elasticity, and temperature resistance
- Neoprene gloves are made of synthetic rubber and offer good pliability, finger dexterity, high density, and tear resistance; they protect against alcohols, organic acids, and alkalis
- Nitrile gloves are made of copolymer and provide protection from chlorinated solvents such as trichloroethylene and tetrachloroethene; they offer protection when working with oils, greases, acids, and caustic substances

1 QX100™ Droplet Digital™ PCR System

1.1 Introduction

The QX100 Droplet Digital PCR (ddPCR™) system performs digital PCR with unrivaled accuracy and precision. The system consists of two instruments, the QX100 droplet generator and the QX100 droplet reader, and their associated consumables (see Section 1.2). The QX100 droplet generator partitions samples into 20,000 nanoliter-sized droplets, and after PCR on a thermal cycler, droplets from each sample are analyzed individually on the QX100 droplet reader. PCR-positive and PCR-negative droplets are counted to provide absolute quantification of target DNA in digital form.

The ddPCR system lets you:

- Detect rare DNA target copies with unmatched sensitivity
- Determine copy number variation with unrivaled accuracy
- Measure gene expression levels with precision

Applications and uses include:

- Copy number variation
- Rare sequence detection
- Mutation detection
- Gene expression analysis
- miRNA analysis
- Next-generation sequencing sample quantification

This manual describes use of the QX100 droplet reader and QuantaSoft™ software. For instructions on use of the QX100 droplet generator, please refer to the QX100 Droplet Generator Instruction Manual (bulletin 10026322).

1.2 System Components

The system consists of two instruments and associated software, consumables, and reagents (Table 1.1):

- **QX100 droplet generator** — utilizes proprietary reagents and microfluidics to partition samples into 20,000 nanoliter-sized droplets
- **QX100 droplet reader** — following PCR amplification of the nucleic acid target in the droplets, this instrument analyzes each droplet individually using a two-color detection system (set to detect FAM and either VIC or HEX); PCR-positive and PCR-negative droplets are counted to provide absolute quantification of target DNA in digital form using QuantaSoft software

Additional materials required for performing ddPCR are listed in Table 1.2.

QX100 Droplet Digital PCR system. Left, QX100 droplet reader. Right, QX100 droplet generator.

1.3 Droplet Digital PCR Workflow

Droplet Digital PCR involves the following steps (4.5–5.5 hours for the complete workflow):

- **Prepare PCR-ready samples** — combine nucleic acid sample (DNA or RNA), primers, and probes (FAM, VIC, or HEX) with Bio-Rad ddPCR supermix (see Table 1.2)
- **Make droplets** — load 20 µl of the ddPCR reaction into the DG8™ droplet generator cartridge, then load the cartridge into the QX100 droplet generator to partition the sample into droplets. The QX100 droplet generator uses microfluidics to combine oil and aqueous sample to generate the nanoliter-sized droplets required for ddPCR analysis. It processes up to 8 samples at a time in under 2 minutes
- **Perform PCR** — pipet droplets from the cartridge to a 96-well PCR plate and seal the plate with foil. Perform PCR to end point (~40 cycles) using a thermal cycler
- **Read droplets** — load the plate into the QX100 droplet reader and start your run. The droplet reader sips each sample, singulates the droplets, and streams them in single file past a two-color detector. The detector reads the droplets to determine which contain a target (+) and which do not (–)
- **Analyze results** — the droplet reader connects to a laptop computer running QuantaSoft software. The software provides a complete set of tools for setting up and naming samples, running and controlling the instrument, and analyzing results. It also reads the positive and negative droplets in each sample and plots the fluorescence droplet by droplet. The fraction of positive droplets in a sample determines the concentration of target in copies/µl

Table 1.1. QX100 Droplet Digital system components. Items shipped with the QX100 ddPCR system (catalog #186-3001). Catalog # refers to replacement items (quantities may be different).

Component	Description	Catalog #
QX100 droplet generator		
QX100 droplet generator	Instrument used for droplet generation	186-3002
DG8 droplet generator cartridges and gaskets (24)	Microfluidic cartridge used to mix sample and oil to generate droplets; gaskets seal the cartridge to prevent evaporation and apply pressure required for droplet formation	186-3008
Droplet generator cartridge holders (2)	Position and hold the droplet generator cartridge in the instrument for droplet generation	186-3051
Power cord	Connects QX100 droplet generator to power source	Call technical support
QX100 droplet reader		
QX100 droplet reader	Instrument used for droplet reading, data collection	186-3003
Laptop PC and QuantaSoft software	Connects to QX100 droplet reader for data collection and analysis	186-3007
Droplet reader plate holders (2)	Position 96-well PCR plate in the droplet reader	510-10608
USB 2.0 cable	Connects QX100 droplet reader to PC	Call technical support
Power cord	Connects QX100 droplet reader to power source	Call technical support

Table 1.2. Additional materials required.

Component	Recommended	Catalog # and Supplier
QX100 droplet generator		
PCR supermix (required)	ddPCR supermix for probes	186-3010, 186-3026, 186-3027, 186-3028
	One-Step RT-ddPCR kit for probes	186-3021, 186-3022
Control	Buffer control kit	186-3052
Droplet generator oil	Droplet generator oil (10 x 7 ml)	186-3005
Pipets	20 µl pipet for sample loading 50 µl pipet for droplet transfer 8-channel, 200 µl pipet for oil	Rainin L-20 Rainin L-50, L8-50 Rainin L8-200
Pipet tips	Filtered	Rainin GP-L10F, GP-L200F
96-well PCR plates	twin.tec semi-skirted 96-well plate	Eppendorf 951020362
Reagent trough	For droplet generator oil	Thermo 95128095
Foil plate seals	Easy Pierce foil plate seals	Thermo AB-0757
Plate sealer		Eppendorf 951023078
QX100 droplet reader		
Droplet reader oil	Droplet reader oil (2 x 1 L)	186-3004
Droplet reader waste bottle	Empty waste bottle	N/A

The QX100 ddPCR system is compatible with hydrolysis probe (TaqMan) chemistry and can detect up to two probes at a time (FAM and VIC, or FAM and HEX), using a dye deconvolution matrix in the software to ensure target specificity. The system is not compatible with SYBR® Green or EvaGreen® chemistry; using these chemistries or other unapproved Bio-Rad supermixes may harm the instrument and voids the warranty.

1.4 System Setup and General Operation Instructions

- Connect the QX100 droplet generator and QX100 droplet reader to a power source using the power cords provided. Leave 10" (5 cm) space clear behind and 5" (2.5 cm) clear to the right and left of each instrument for proper ventilation
- Connect the QX100 droplet reader to the laptop PC using the USB 2.0 cord provided. QuantaSoft software is preinstalled on the laptop
- Power on the QX100 droplet reader using the switch at the back. The status indicator turns solid green to indicate power is on. The QX100 droplet generator is powered on by plugging it into a power source
- Open and close the instruments by pressing the button on top of the green lid
- The droplet reader requires droplet reader oil (catalog #186-3004). Please refer to Section 4.2.2 for instructions on replacing droplet reader oil

2 Using the QX100™ Droplet Reader

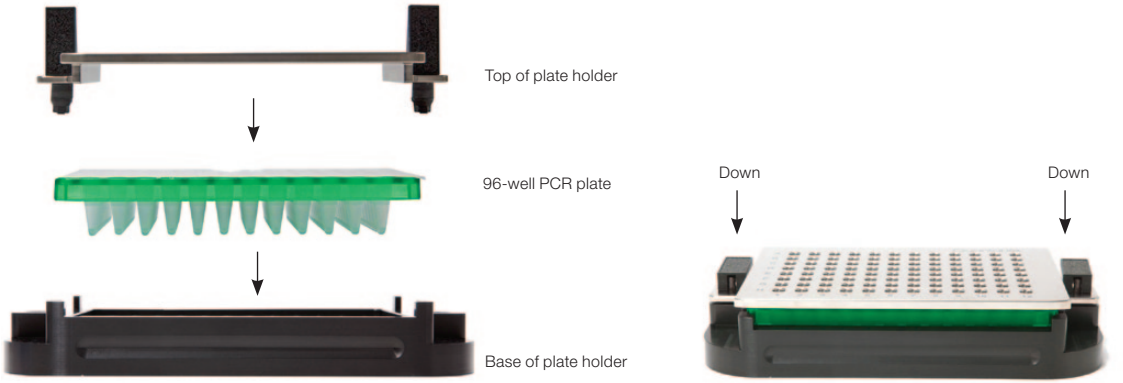
1. Power on the QX100 droplet reader using the switch at the back. Allow it to warm up for 30 min, then switch on the PC and launch QuantaSoft™ software.
2. Check the indicator lights on the front of the droplet reader (Table 2.1). The first two lights at left should be solid green, indicating power is on, there is sufficient oil in the designated oil reservoir, and there is <700 ml in the waste bottle. If the lights are flashing amber, the run cannot be started; clean out the waste bottle or replace the oil (see Section 4.2.2).

Table 2.1. Status indicator lights on the QX100 droplet reader.

				
Solid green	Power on	Bottle levels OK*	Plate in place	Run complete
Flashing green	---	Oil <30% or waste >70%**	---	Run in progress
Flashing amber	---	Oil <10% or waste >90%***	---	Error during run
Off	Power off	---	No plate	Idle

* There is sufficient oil and room in the waste bottle to run 96 wells.
** The run can be started if <96 wells are run (for example, only 19% oil is required for 24 wells); if there is not enough oil for the run, the software will not allow you to start the run.
***The software will not allow you to start the run.

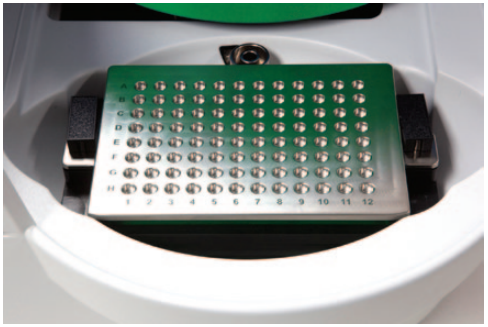
3. Place the 96-well PCR plate into the plate holder:
   a. Place the 96-well PCR plate containing the amplified droplets into the base of the plate holder. Well A1 of the PCR plate must be in the top left position.
   b. Move the release tabs of the top of the plate holder into the “up” position and place the top on the PCR plate. Firmly press both release tabs down to secure the PCR plate in the holder.



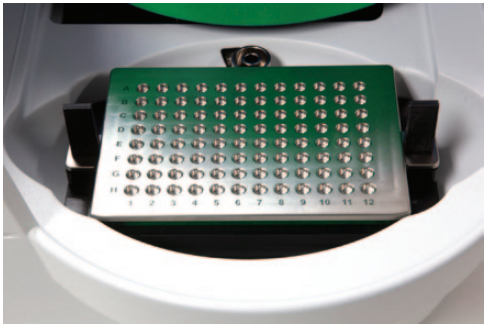
Placing the 96-well plate into the plate holder.

4. Press the button on the green lid to open the droplet reader. Load the plate holder into the droplet reader, and press the button on the lid again to close the cover. Confirm the first three indicator lights are green (Table 2.1).

Placing the plate holder into the droplet reader.



Correct



Incorrect

Correct and incorrect placement of the plate holder. Note the release tabs are in the “up” position in the incorrect placement at right.

5. In QuantaSoft software, click **Setup** in the left navigation bar to define your experiment (see Chapter 3), then click **Run**. The run indicator light (far right) flashes green to indicate droplet reading is in progress.
6. When droplet reading is complete, all four indicator lights are solid green. Open the door and remove the plate holder from the unit. Remove the 96-well PCR plate from the holder and discard it.

3 Using QuantaSoft™ Software

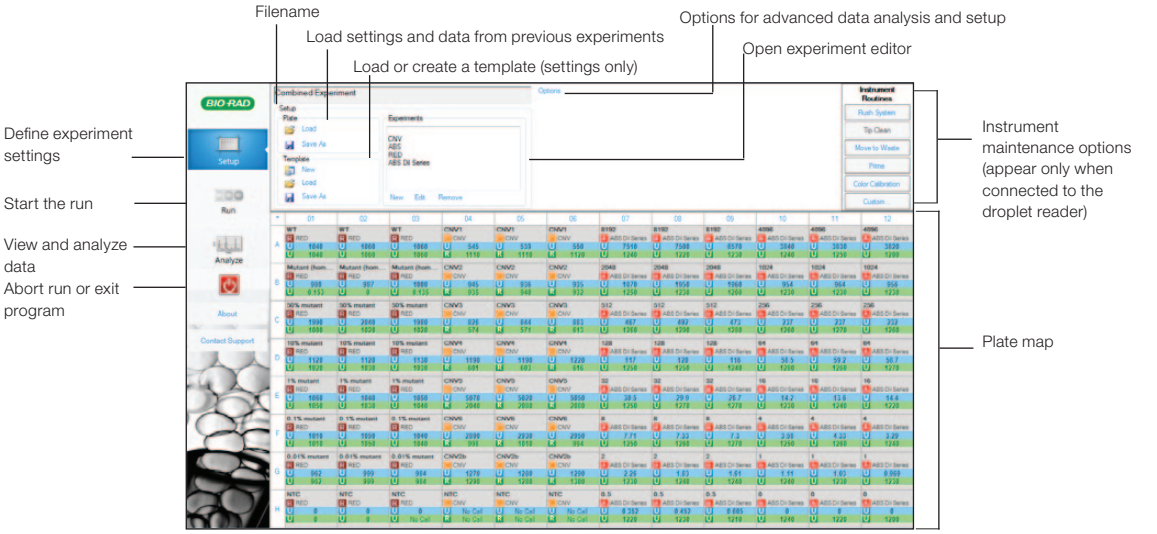
QuantaSoft software organizes and provides one-click access to the three main steps of droplet analysis in the left navigation bar, moving you through the entire workflow:

- **Setup** — enter information about the samples, assays, and experiments (see Section 3.1)
- **Run** — start the run and control the instrument, if needed (see Section 3.2)
- **Analyze** — compute nucleic acid concentration (see Section 3.3)

QuantaSoft software uses the following file types:

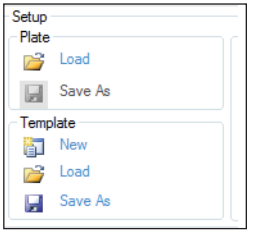
- Template (*.qlt) — user-defined plate layout settings (no data) for reading a ddPCR plate
- Raw data (*.qlb) — unprocessed data from each well in a ddPCR plate
- Results (*.qlp) — user-defined plate layout settings and processed data for a ddPCR plate
- Comma-separated values (*.csv) — analyzed data in a format that can be assessed using other programs, such as Microsoft Excel

3.1 Setup

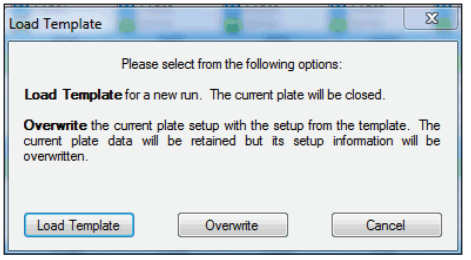


QuantaSoft software Setup interface. The plate map is a diagram of the wells in the 96-well plate and contains information about the type of analysis, sample, and assay represented by that well. After a run, it also contains concentration data.

1. Click **Setup** to enter information about the samples, assays, and experiments.
   - To open saved details (settings and data) from another experiment, click **Plate > Load** and select the file
   - To open a saved template for a plate map (settings only, no data), click **Template > Load** and select the file
   - To create a new template, click **Template > New**



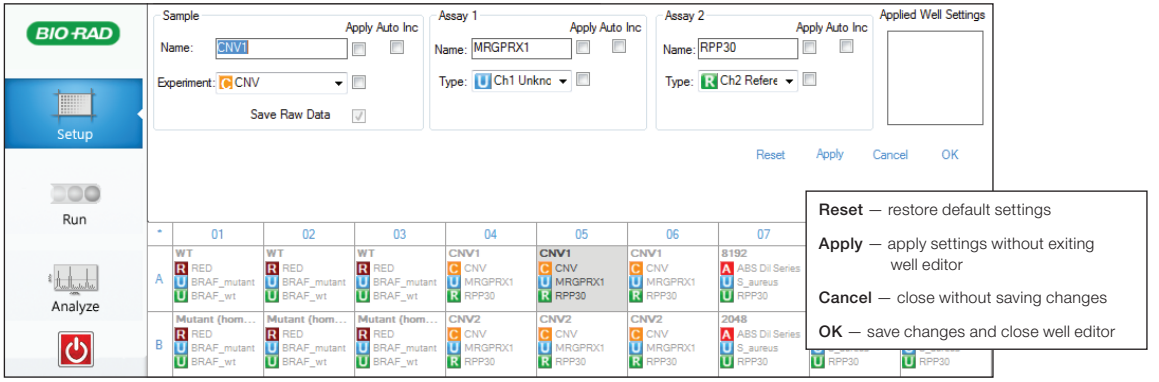
To overwrite the setup information for a plate that is open (experiment type and name, sample name, etc.), click **Template > Load**. In the Load template window, click **Overwrite**.



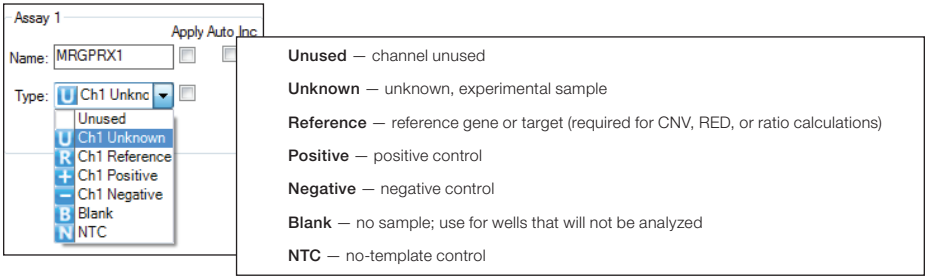
2. Enter the filename, then use the well editor (see Section 3.1.1) and experiment editor (see Section 3.1.2) to adjust the settings for your experiment. Click **Options** to access advanced options data analysis and setup (see Section 3.1.3).

3.1.1 Using the Well Editor

Use the well editor to define the settings (samples, experiment type, and detection type) for the plate. Sample and experiment types are color-coded and can be customized for easy reference in the plate map.



Well editor. Settings for absolute quantification of two unknowns in a single sample are shown.



Assay type options.

1. To open the well editor, double-click on the well(s) you wish to edit.
   - To select multiple wells, hold **Ctrl** and select the wells
   - To select wells in a continuous series (horizontal or vertical), hold **Shift** and select the first and last wells
   - To select all wells in the plate, double-click in the top left corner of the plate
   - To select a row or column, double-click the letter or number for that row or column

Selected wells are highlighted in gray, and the well editor appears across the top of the interface.

2. In the Sample panel, enter the sample **Name** and select the **Experiment** from the drop-down menu. All saved experiments appear in the drop-down menu, along with the option to **add experiment...** To create or edit an experiment, use the experiment editor (see Section 3.1.2).
3. Define Assay 1 (channel 1, the FAM channel) and Assay 2 (channel 2, the VIC or HEX channel). Assign each assay a **Name** and sample **Type**.

Settings appear in the Applied Well Settings box as you enter them. When you are done, click **Apply** or **OK** to save the information. The settings appear in the well in the plate map.

Tips:
You can change the selected well using the plate map without exiting the well editor.

To append sample or assay names with numbers incrementally through selected wells, select the **Auto Inc** check box next to **Name**.

Use standard Windows keyboard shortcuts for copying, pasting, and deleting selections (for example, use **Ctrl+c** to copy a selection, **Ctrl+z** to undo an operation, etc.).

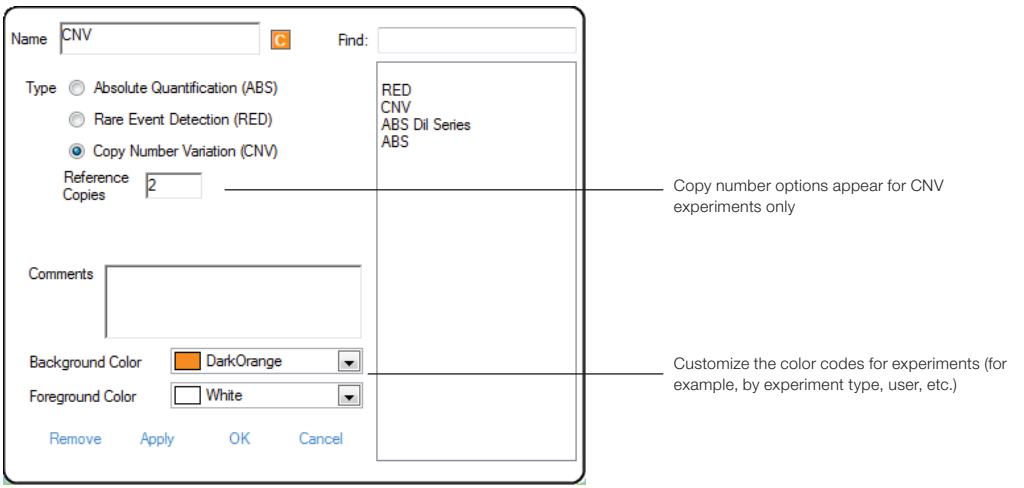
3.1.2 Using the Experiment Editor

Use the experiment editor to define the experiment type. To open the experiment editor, select **Experiment > add experiment...** in the well editor or select **New** or **Edit** (double-click on an experiment name) in the Experiments window under Setup. Three types of experiments are possible: Absolute Quantification (ABS), Rare Event Detection (RED), and Copy Number Variation (CNV). A default list of experiments is supplied at installation, but you can create and save custom experiments; upgrade installations will preserve current experiment lists.

Settings are summarized in the Applied Well Settings box as you enter them. When you are done, click **Apply** or **OK** to save the experiment information. The settings appear in the well in the plate map.

If the Sample Name, Experiment, Assay Name, and Assay Type all match across mutliple wells, the software can identify these as “merged” and provides an option to view merged data during analysis (see Section 3.3).

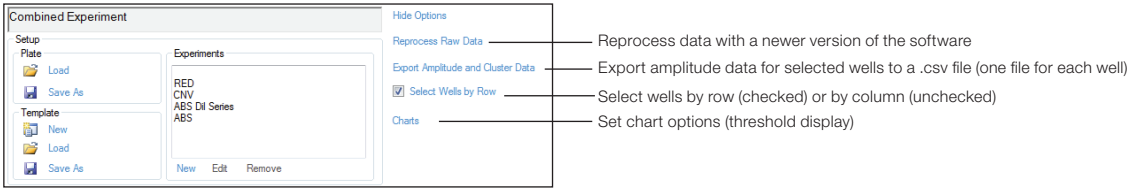
Click **Apply** or **OK** to save the information. The settings appear in the well in the plate map.



Experiment editor. Options for a CNV experiment are shown.

3.1.3 Using the Advanced Options

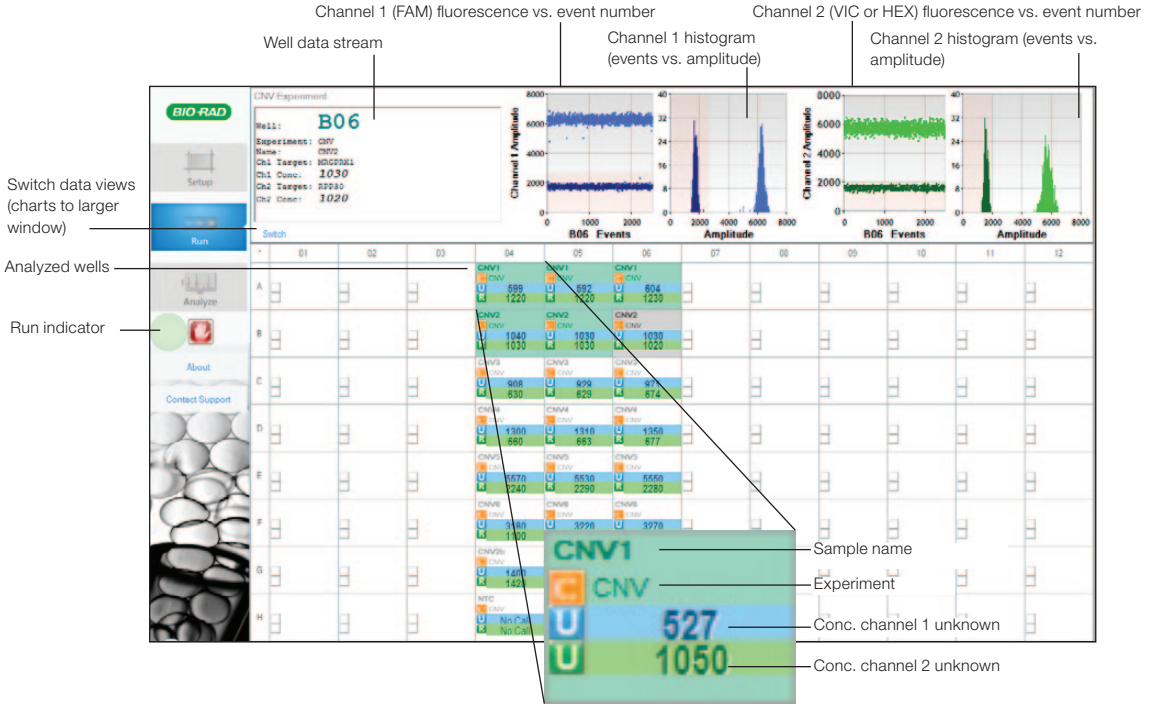
Click **Options** in the Setup window to see all advanced options for data collection and analysis.



Advanced options.

3.2 Run

1. Click **Run** in the left navigation bar to start the run. After a few moments (up to 1 min), a green circle appears next to the abort button and flashes periodically to indicate the run is in progress. Active and analyzed wells are also highlighted in green in the plate map.
2. As each well is analyzed, the data appear across the top navigation area. Once the run is complete, all data are reanalyzed for the final data file.

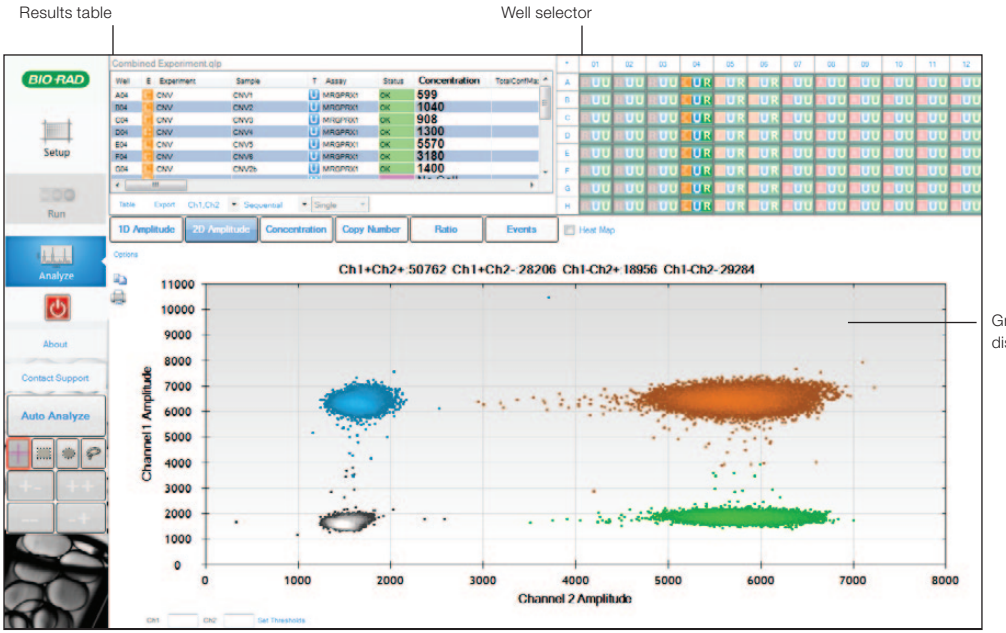


Interface during an active run. Data from all active detector channels are shown.

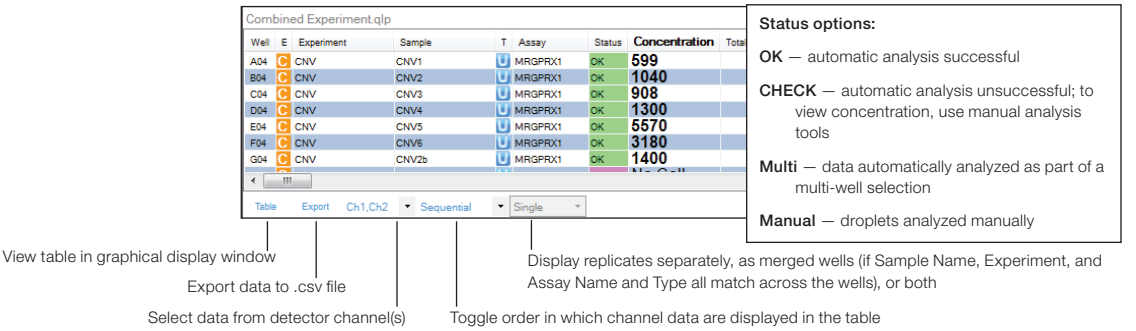
3.3 Analyze

In the **Setup** window, load a plate (*filename*.qlp), then click **Analyze** to open and analyze the data. The data analysis interface is separated into three windows:

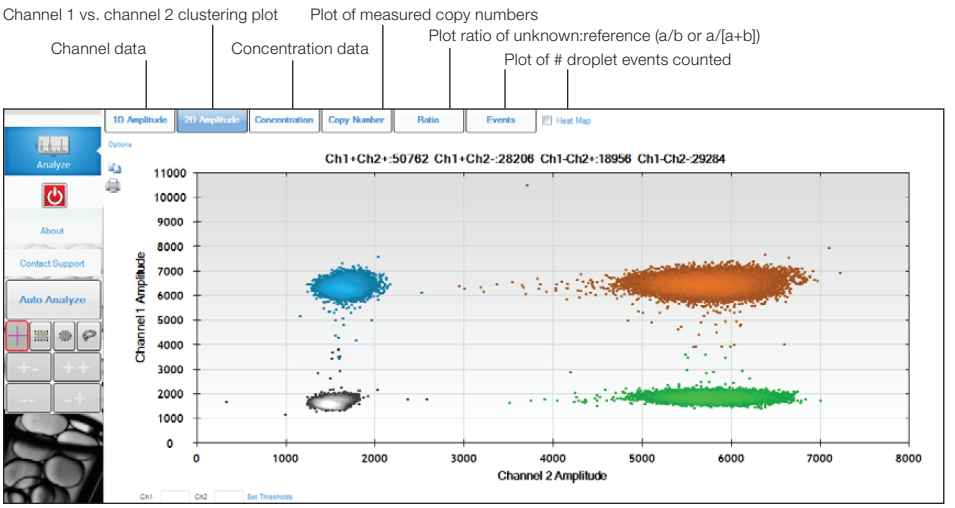
- Results table — summarizes results for wells selected in the well selector
- Well selector — enables selection of wells for targeted analysis
- Processed data/graphical display — allows visualization of graphical data from selected wells



Data analysis interface. Data from a CNV analysis are shown.



Results table options. Data from a CNV analysis are shown.



Graphical data display options. A clustering plot from a CNV analysis is shown, with display options across the top.

3.3.1 Viewing Channel Data (1D Amplitude)

Click **1D Amplitude** to visualize the data collected from each channel of selected wells. Use the radio buttons to select the channels to be displayed. This tab also provides options for adjusting the thresholds used in assigning positives and negatives for each channel.

When viewing a single well, change the threshold using one of the following options:

- Use the single-well threshold tool . The assigned threshold appears as a horizontal pink line

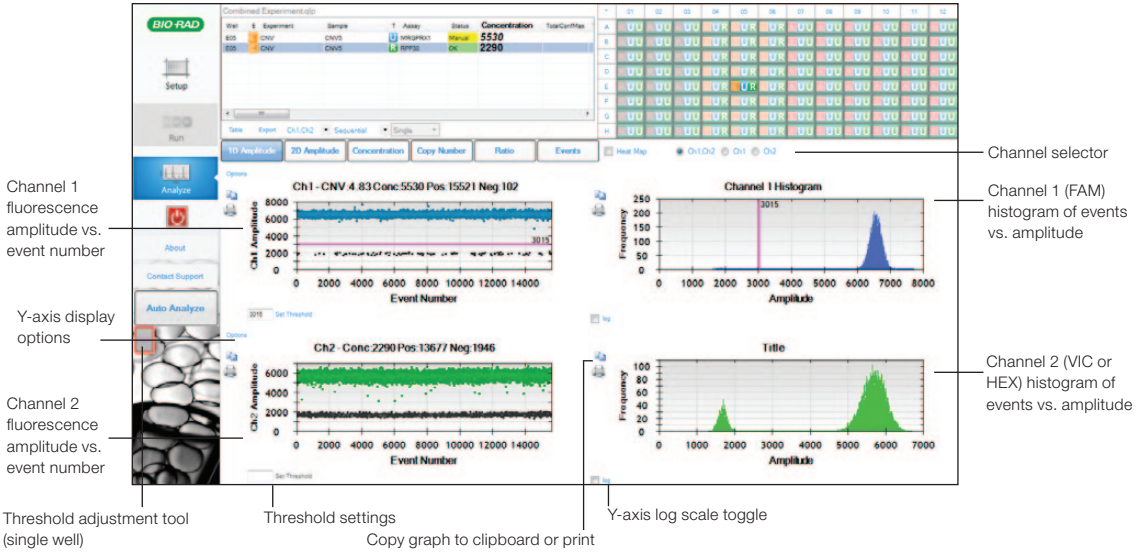
-Or-

- Enter threshold values in the **Set Threshold** field

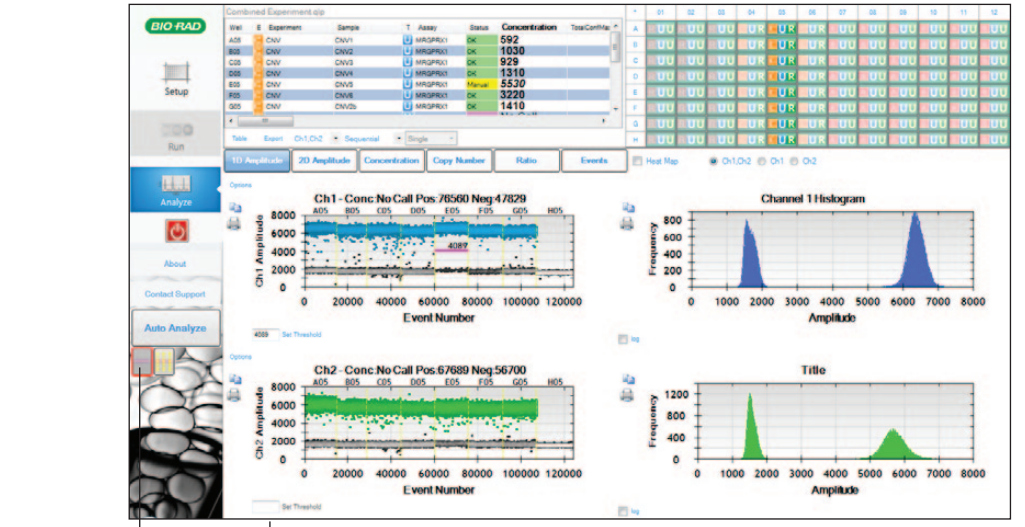
When viewing multiple wells, change the thresholds as follows:

- Use the single-well threshold tool to change the threshold in a single well. Vertical yellow lines in the processed data plots show where droplet data from each well start and end, and the assigned threshold appears as a horizontal pink line
- Use the multi-well threshold tool to change the threshold in all the wells (appears as a pink line in the plots), or enter threshold values in the **Set Threshold** field

Click **Auto Analyze** to revert to automatic threshold settings and calculations. Threshold adjustments can also be made in the 2D Amplitude clustering plots (see Section 3.3.2).



Viewing channel data for a single well. Processed data from both channels of a single well are shown. In channel 1, the single-well threshold tool is enabled (the threshold is shown by the pink line and the value in the **Set Threshold** field).



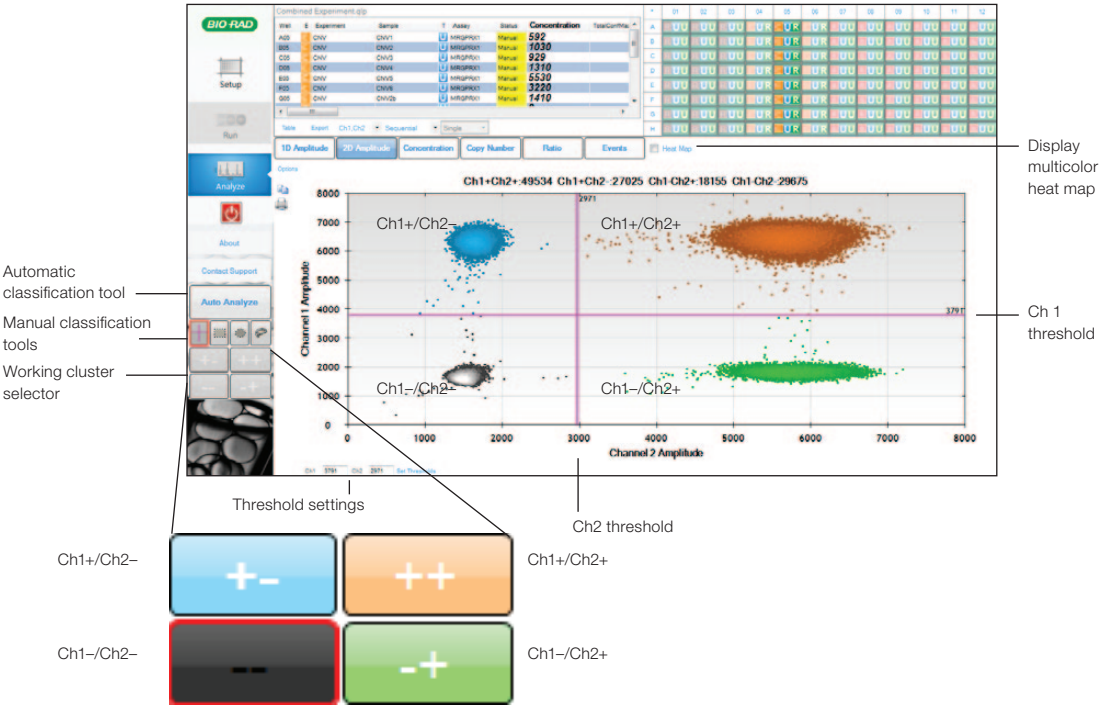
Viewing channel data for multiple wells. Processed data from both channels of multiple wells are shown. In channel 1, the single-well threshold tool is enabled (the threshold is indicated by the pink line and the value in the **Set Threshold** field; the status of that well in the results also shows Manual).

3.3.2 Viewing Clustering Plots (2D Amplitude)

Click **2D Amplitude** to view the channel 1 vs. channel 2 clustering plot and enable options for manually or automatically adjusting the thresholds used in assigning positives and negatives for each detection channel. Patterns observed in these plots can also indicate interactions between PCR products in the reactions.

- To automatically assign thresholds for positives and negatives, click **Auto Analyze**
- To manually assign thresholds:
  - Use the thresholding crosshair to assign classification regions for the whole plot
  - Use the ellipse, rectangle, or lasso classification tool to classify a region of the plot. Click the tool, then click the region type in the working cluster selector. Use the classification tool to select the region within the plot

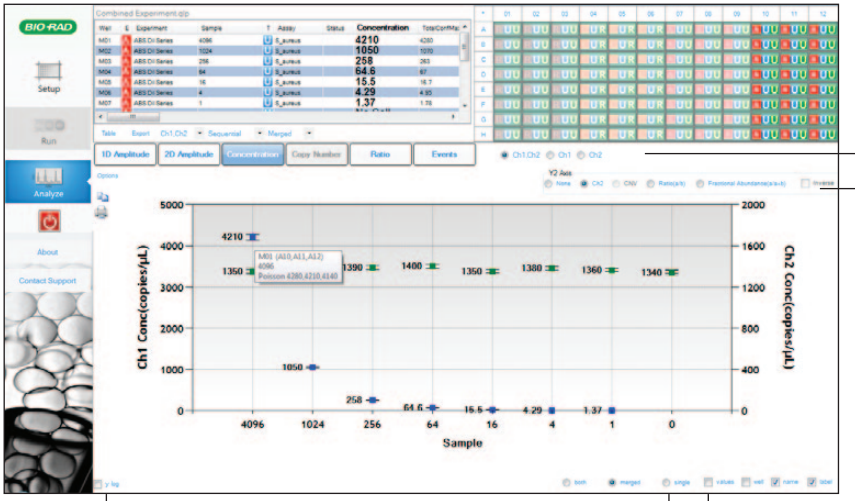
> **Tip:**
> Mouse over any well in the well selector to transiently superimpose data from that well in the clustering plot.



Viewing clustering plots. Threshold adjustment options available in the clustering plot are shown. Threshold values are indicated by the pink lines in the plot.

3.3.3 Viewing Concentration Data (Concentration)

Concentration data for each target appear in the wells in the plate map and are tabulated in the results table. Click **Concentration** to visualize data in concentration plots. Use the radio buttons to select the channels displayed. Error bars reflect total error or Poisson 95% confidence limits. These data can be exported for analysis in other spreadsheet applications (for example, Microsoft Excel).



Viewing concentration data. Data from absolute quantification are shown. Hover over data points to reveal well identity, concentration, and Poisson confidence limits. Solid data points (shown) indicate merged data; open data points (not shown) indicate data from single wells.

3.3.4 Viewing Copy Number Data (Copy Number)

Click **Copy Number** to view copy number for selected wells/samples.

Viewing copy number data. Hover over data points to reveal well identity, concentration, and Poisson confidence limits. Solid data points (not shown) indicate merged data; open data points (shown) indicate data from single wells.

3.3.5 Viewing Ratio Data (Ratio)

Click **Ratio** to view ratio data for selected wells/samples. Use the radio buttons to select a plot of the **Ratio** (unkown:reference) or **Fractional Abundance** (% of sample), and select **Inverse** to apply the inverse of either.

Viewing ratio data. Data from absolute quantification are shown. Hover over data points to reveal well identity, concentration, and Poisson confidence limits. Select **y log** to convert the y-axis to logarithmic scale (shown). Solid data points (not shown) indicate merged data; open data points (shown) indicate data from single wells.

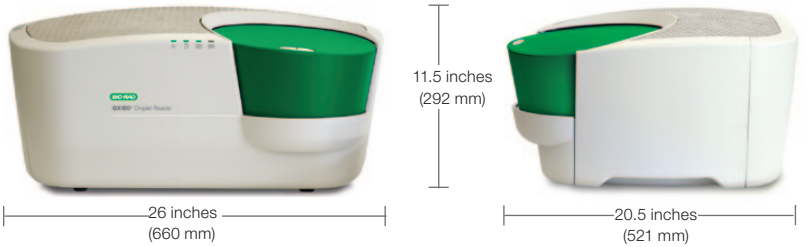
3.3.6 Viewing Events

Click **Events** to view the number of droplet events counted for selected wells/samples. Use the radio buttons to select the channels displayed. View positive, negative, or total droplet counts, or any combination of these.

Viewing event data. Data from absolute quantification are shown.

4 Specifications and Maintenance

4.1 Specifications



Weight	56.6 lbs. (26 kg)
Size (W x D x H)	660 x 521 x 292 cm (26 x 20.5 x 11.5")
Electrical requirements	100–240 V, 50/60 Hz, 1 A; voltage fluctuations not to exceed +10% of ratings
Temperature	15–30ºC
Altitude	0–6,560 ft (0–2,000 m)
Humidity	85% max (noncondensing)
Pollution degree	2 (indoor use)
Installation category	II (external power supply plugs into standard AC receptacle)
Ventilation requirement	5" (12 cm) left and right of machine and 10" (25 cm) behind should be unobstructed for proper ventilation

4.2 Maintenance

4.2.1 General Maintenance Procedures

Surfaces of the instrument may require general cleaning. Use deionized/distilled water for general wipe down with a slightly dampened cloth. For decontamination, 10% bleach followed by 70% ethanol and/or deionized/distilled water may be used. Do not use acetone or tap water.

Inspect equipment regularly for damaged external components or wiring. Do not use if damaged.

Apply standard MSDS (Material Safety Data Sheet) and OSHA practices when handling and disposing of generated waste.

Bio-Rad droplet generation and reader fluids are based on fluorinated hydrocarbon chemistry and should be disposed of in accordance with institutional, state, and local regulations. These nonflammable fluids are inert and have low environmental impact and low toxicity. Collect waste in a polyethylene container and dispose within one month.

Droplets made with Bio-Rad master mix have antimicrobial properties, but microbial growth is possible. The waste profile should contain the following: fluorinated hydrocarbons, water, fluorescent dye (from probes), protein, and nucleic acids. The droplet generator is not intended to be used with biohazardous material.

4.2.2 Replacing Droplet Reader Oil and Removing Waste

Replace the droplet reader oil and empty the waste receptacle as needed. Use the handle built into the side compartment to slide the carriage out:

- Use empty oil supply bottles as new waste bottles. Add 50 ml 10% bleach to the waste bottle to prevent microbial growth, and place a label on the waste bottle at this time
- Place the new bottle of oil in the oil position and screw the cap into place. In QuantaSoft™ software, click **Prime** to fill the lines with oil before the system is run

Replacing droplet reader oil and removing waste. Slide out the carriage containing the droplet reader oil and waste receptacle to remove and replace the bottles (left). After replacing oil, click **Prime** (right) to fill the lines; other instrument maintenance routines are for use by field specialists only.

Appendix A
Ordering Information

QX100™ ddPCR™ System

Catalog #	Description
186-3001	**QX100™ Droplet Digital™ PCR System**, includes droplet generator, droplet reader, laptop computer, software, associated component consumables
186-3002	**QX100 Droplet Generator**, includes droplet generator, 1 box of 24 cartridges, 1 pkg of 24 gaskets, 2 cartridge holders, 1 power cord
186-3003	**QX100 Droplet Reader**, includes droplet reader, ddPCR manual, 2 plate holders, USB cable, power cord
186-3005	**Droplet Generator Oil**, 10 x 7 ml bottles
186-3004	**Droplet Reader Oil**, 2 x 1 L bottles
186-3006	**Droplet Generator Cartridges and Gaskets**, includes 5 pkg of 24 DG8™ cartridges, 5 pkg of 24 DG8 gaskets
186-3008	**DG8 Cartridges for QX100 Droplet Generator**, 1 pkg of 24 cartridges
186-3009	**DG8 Gaskets for QX100 Droplet Generator**, 1 pkg of 24 gaskets
510-10608	**Droplet Reader Plate Holder**

ddPCR Reagents

186-3010	**ddPCR Supermix for Probes**, 5 x 1 ml tubes 2x supermix, for use in sample preparation for droplet generator in the QX100 Droplet Digital PCR system
186-3026	**ddPCR Supermix for Probes**, 2 x 1 ml tubes
186-3027	**ddPCR Supermix for Probes**, 5 x 5 ml tubes
186-3028	**ddPCR Supermix for Probes**, 10 x 5 ml tubes
186-3021	**One-Step RT-ddPCR Kit for Probes**, 2 x 1 ml, 200 x 20 µl reactions, 2x RT-ddPCR mix, for use with QX100 Droplet Digital PCR system; contains manganese acetate
186-3022	**One-Step RT-ddPCR Kit for Probes**, 5 x 1 ml, 500 x 20 µl reactions, 2x RT-ddPCR mix, for use with QX100 Droplet Digital PCR system; contains manganese acetate
186-3052	**Buffer Control Kit**, 2 x 4.5 ml bottles 2x buffer, for use with QX100 Droplet Digital PCR system

Thermal Cyclers

185-1196 **C1000 Touch™ Thermal Cycler with 96-Well Fast Reaction Module**, includes C1000 Touch thermal cycler chassis, 96-well fast reaction module, USB flash drive

186-1096 **T100™ Thermal Cycler**, includes 96-well thermal cycler, power cord, tube support ring

Bio-Rad
Laboratories, Inc.

Life Science Group

Web site *www.bio-rad.com* ***USA*** *800 424 6723* ***Australia*** *61 2 9914 2800* ***Austria*** *01 877 89 01* ***Belgium*** *09 385 55 11* ***Brazil*** *55 11 5044 5699*
Canada *905 364 3435* ***China*** *86 21 6169 8500* ***Czech Republic*** *420 241 430 532* ***Denmark*** *44 52 10 00* ***Finland*** *09 804 22 00*
France *01 47 95 69 65* ***Germany*** *089 31 884 0* ***Greece*** *30 210 9532 220* ***Hong Kong*** *852 2789 3300* ***Hungary*** *36 1 459 6100* ***India*** *91 124 4029300*
Israel *03 963 6050* ***Italy*** *39 02 216091* ***Japan*** *03 6361 7000* ***Korea*** *82 2 3473 4460* ***Mexico*** *52 555 488 7670* ***The Netherlands*** *0318 540666*
New Zealand *64 9 415 2280* ***Norway*** *23 38 41 30* ***Poland*** *48 22 331 99 99* ***Portugal*** *351 21 472 7700* ***Russia*** *7 495 721 14 04*
Singapore *65 6415 3188* ***South Africa*** *27 861 246 723* ***Spain*** *34 91 590 5200* ***Sweden*** *08 555 12700* ***Switzerland*** *061 717 95 55*
Taiwan *886 2 2578 7189* ***Thailand*** *800 88 22 88* ***United Kingdom*** *020 8328 2000*

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