

User Guide

4-Channel RNA (R1) Cartridge Kit (C405110)

A. Specifications

Specification	Description
RNA Sizing Range	20-6,000 nt
L.O.D	5 ng/μL
Sample Number	400 runs*
Shelf Life	4 months

* 100 runs/channel x 4 channels = 400 runs

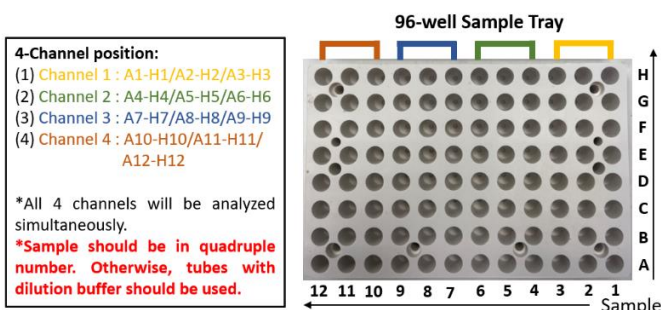
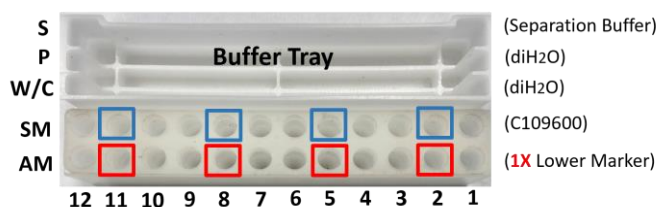
B. Kit Components and Storage Conditions

Item	Storage Condition
4-Channel RNA Cartridge (C405110)	15-30°C (Do Not Freeze)
5X Lower Marker (C109120-500A, 500 µL)	Short-Term (≤ 3 months): 4-30°C Long-Term (> 3 months): -20°C
10X Separation Buffer (C104415-10X, 25 mL)	4-30°C
10X Dilution Buffer (C104416-10X, 15 mL)	4-30°C
Mineral Oil (C104407, 15 mL)	4-30°C

C. Cartridge Unpacking Preparation

The new cartridge must undergo HV check and calibration. Please place 4 tubes of **1X** Lower Marker at positions AM02, AM05, AM08, and AM11, and follow the instructions provided in the unpacking guide to complete the calibration process.

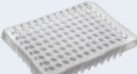
D. Buffer, Marker, and Sample Preparation



The 4-channel system can be interpreted as 4 individual cartridges. Thus, the sample number should be quadruple.

For example, if 4 samples are assigned at A1, A4, A7, and A10, then 6 samples can be assigned at A1, A4, A7, A10, B1, and B4, with dilution buffer at B7 and B10.

1. Compatible Sample Tubes

Name	Cat. No.	Volume	Image
Micro Vial	C104250	≥ 2 μL	
0.1 mL PCR Tube	-	≥ 10 μL	
0.2 mL PCR Tube	-	≥ 20 μL	
Semi/Non-skirted 96-well Plate*	-	10-20 μL	

* Recommended 96-well plates: Labcon (3972-520-000), Axygen (PCR-96-FLT-C)

2. Buffer Preparation

- Separation Buffer (1X): Dilute 10X stock with DEPC-treated water.
- Dilution Buffer (1X): Dilute 10X stock with DEPC-treated water.



Use the droppers to fill the wells. Each well should be 80% full. Overfilling or having droplets left on the dividers will conduct the currents and make it hard to keep track of the changes.

3. Marker Preparation

- Lower Marker (1X): Dilute 5X Lower Marker stock with 1X dilution buffer.
- Size Marker (C109600): RNA 6000 Ladder (Thermo Fisher). Please purchase from your local supplier (Optional).

4. Sample Pre-treatment

Heat-denature RNA samples and RNA 6000 Ladder from Thermo Fisher (diluted 20X with 1X dilution buffer) at 70°C for 2 minutes and put on ice for at least 5 minutes.

5. Recommended Sample Concentration

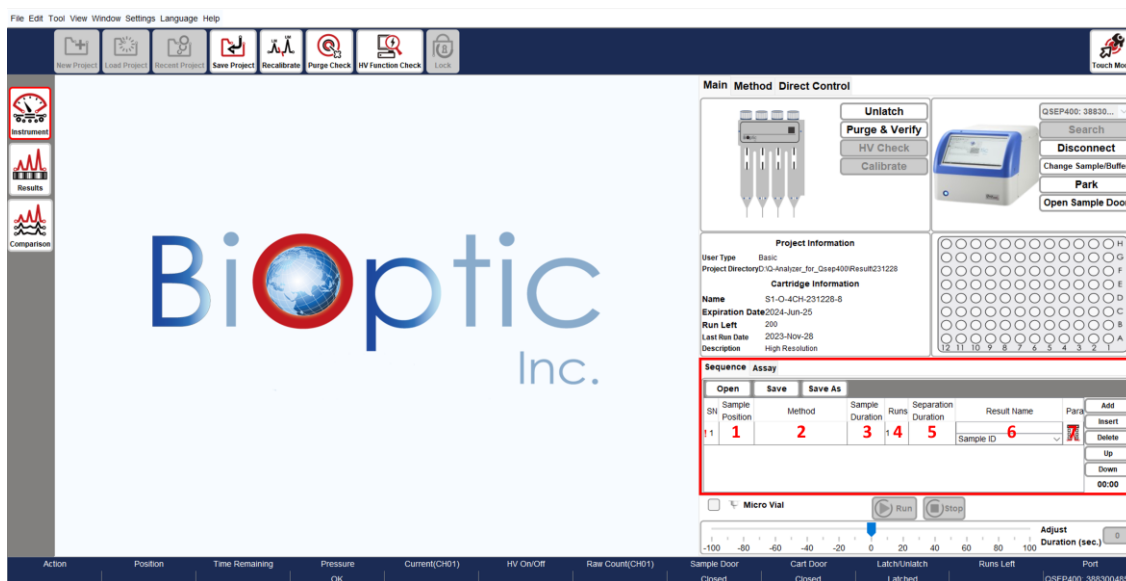
RNA sample: 5-50 ng/ μ L

- If the RNA sample concentration exceeds 50 ng/μL, dilute the sample 10X using 1X dilution buffer.
- If the sample is eluted in RNase-free water, add dilution buffer to achieve a sample concentration of $\geq 0.1X$ dilution buffer condition.

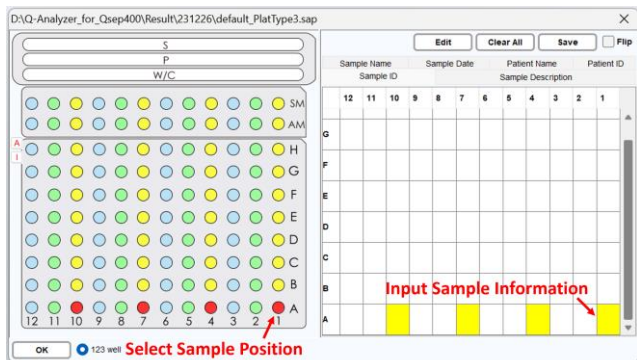
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4-Channel RNA (R1) Cartridge Kit (C405110)

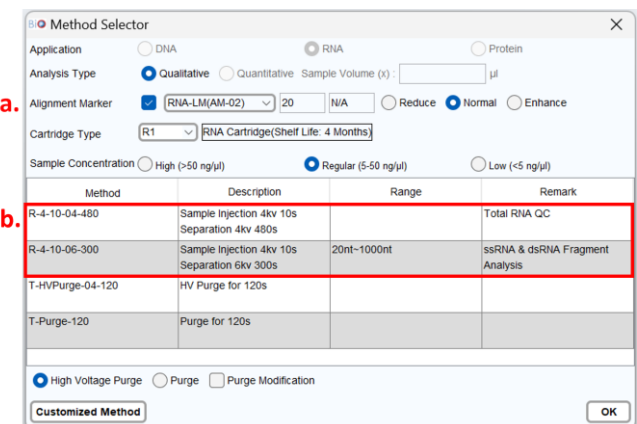
E. Software Operation Guide



1. Sample Position: Place the sample and select the corresponding position. Input sample information if necessary.



2. Method: Select (a) Alignment Marker and (b) Analytic Method in the Method Selector.



- Adjust injection conditions based on sample concentration.

Sample Concentration	High (2kV, 10s)	Regular (4kV, 10s)	Low (8kV, 10s)
RNA	> 50 ng/μL	5-50 ng/μL	2-5 ng/μL

3. Sample Duration: Adjust the sample injection time to increase/decrease injection amount.

- Modify injection conditions based on sample concentration.

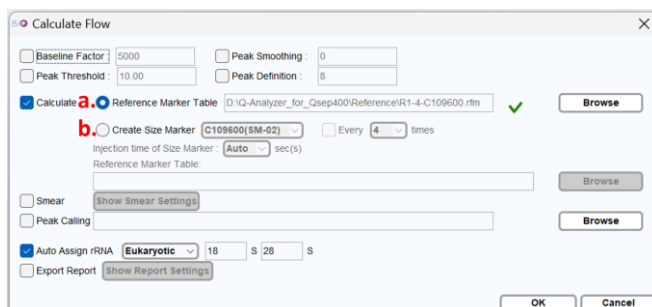
4. Runs: Set the repetition time.

5. Separation Duration: Adjust the duration to extend/reduce the separation time.

(Optional)

6. Result Name: Input the result name for the result file.

7. Para: Choose between (a) Reference Marker Table and (b) Create Size Marker for calculation.



- Size Marker (C109600): RNA 6000 Ladder (Thermo Fisher). Please purchase from your local supplier.
- Dilute the size marker 20X using a 1X dilution buffer before use.

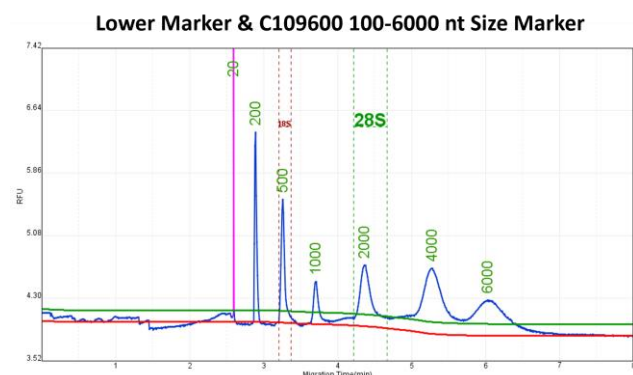
8. Click "Run" to start the sequence analysis.

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4-Channel RNA (R1) Cartridge Kit (C405110)

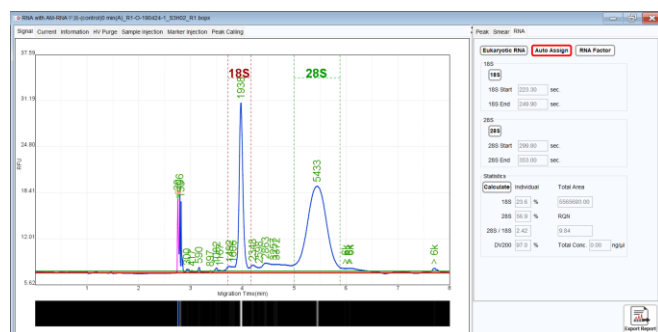
F. Result and Application

• Lower Marker & Size Marker



• RNA Quality Number (RQN)

The software will automatically identify 18S and 28S regions. Subsequently, it will provide the 28S/18S ratio and RQN value, ranging from 1 to 10. If the software fails to assign the 18S and 28S regions, click "Auto Assign".



- The 4-channel system can be interpreted as 4 individual cartridges. Therefore, there should be 30-50% individual differences between each of them.

G. Troubleshooting

Before attempting any troubleshooting, ensure that the system is functioning properly and that all operations are following the instructions.

If encountering unstable current during sample injection or separation steps, which may be caused by unknown substances in reagent buffer or other kit buffers, consider the following solutions:

1. Dilute the sample using dilution buffer.
2. Centrifuge the sample for a period to allow residues to accumulate at the bottom of the tube.

3. Insert a "T-purge-120" method between several sample runs. For example, insert one run of "T-Purge-120" every 5-10 sample runs.

Sequence Assay							
Open		Save		Save As			
SN	Sample Position	Method	Sample Duration	Runs	Separation Duration	Result Name	Para
1	A-01.A...	R-4-10-04-480	10	1	480	Test 1 Sample ID	
2		T-Purge-120	0	1	0	Sample ID	
3	B-01.B...	R-4-10-04-480	10	1	480	Test 2 Sample ID	

Add

Insert

Delete

Up

Down

03:42

H. Cartridge Disposal

Please wear gloves before discarding the cartridge.



1. Bend the cartridge tips.
2. Open the caps on the gel reservoirs and remove the inner caps.
3. Pour the gel into the chemical waste container.
4. Dispose of the cartridge in the trash bin.

Contact Information:

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