User Guide
High Sensitivity RNA (NR1) Cartridge Kit (C105111/C105211)

A. Specifications

Specification	Description
RNA Sizing Range	20-6,000 nt
L.O.D	1 ng/µL
Sample Number	100 runs
Shelf Life	4 months

B. Kit Components and Storage Conditions

Item	Storage Condition
High Sensitivity RNA Cartridge (C105111/C105211)	2-8°C (Do Not Freeze)
5X Lower Marker (C109120-100A, 100 µL)	Short-Term (≤ 3 months): 4-30°C Long-Term (> 3 months): -20°C
10X Separation Buffer (C104409-10X, 15 mL)	4-30°C
10X Dilution Buffer (C104408-10X, 8 mL)	4-30°C
Mineral Oil (C104404, 8 mL)	4-30°C

⚠ **Warm to room temperature for 30 mins before cartridge use.**

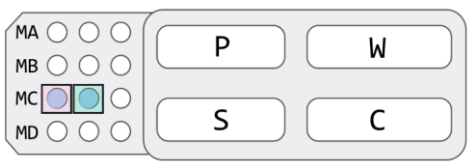
⚠ **Please always store cartridges in a light-proof bag, and then store in the cartridge box after analysis.**

C. Cartridge Unpacking Preparation

The new cartridge must undergo HV check and calibration. Please follow the instructions provided in the unpacking guide and calibrate using **1X** Lower Marker.

⚠ **CAUTION: To prevent cartridge lockout after 10 failed calibration attempts, please contact your local distributor or BiOptic if the issue persists after following the troubleshooting steps in the cartridge unpacking guide.**

D. Buffer, Marker, and Sample Preparation

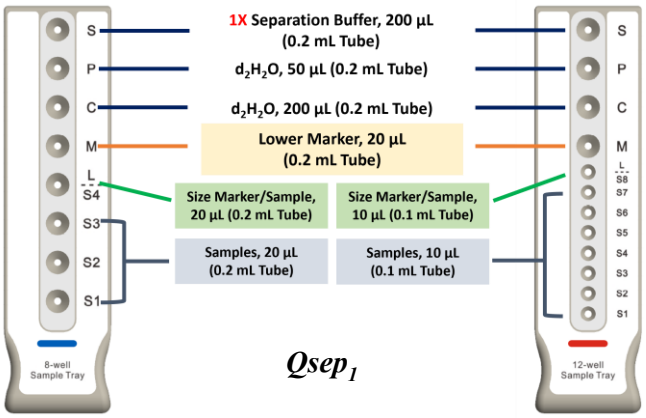


Qsep$_{100}$

Buffer:
S: 1X Separation Buffer
P/W/C: d_2H_2O
***Add to the groove**

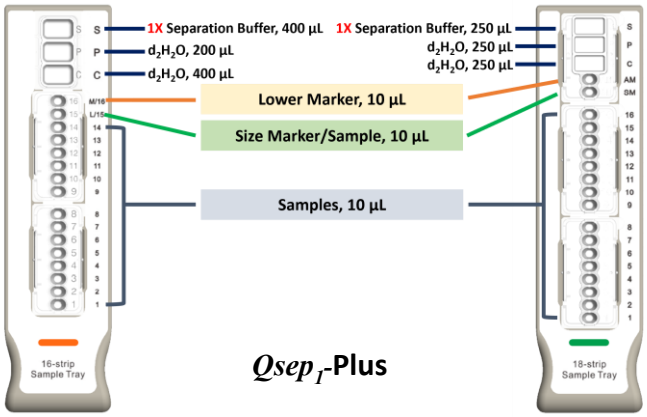
MC-1: RNA-LM & MC-2: C109600/RNA 6000 ladder (Optional)

⚠ **Hold the holder steady and press the alignment marker tube firmly into the well with your thumb.**



Qsep$_1$

⚠ **Ensure the buffer tray is pushed to the end until the color bar aligns with the edge of the holder.**



Qsep$_1$**-Plus**

1. Compatible Sample Tubes

	Name	Cat. No.	Volume	Image
Qsep$_{100}$ / 8-well Sample Tray	Micro Vial	C104250	≥ 2 µL	
	0.1 mL PCR Tube	-	≥ 10 µL	
	0.2 mL PCR Tube	-	≥ 20 µL	
**Qsep*$_{100\ 2.0}$	0.2 mL PCR Tube	-	≥ 10 µL 10 µL Mode Only	
12-well Sample Tray	0.1 mL Strip Tube	C104252	≥ 10 µL	
16-strip Sample Tray	16-strip Sample Tube	C104254	≥ 10 µL	
18-strip Sample Tray	18-strip Sample Tube	C104257	≥ 10 µL	

2. Buffer and Marker Preparation

- Separation Buffer (1X): Dilute 10X stock with DEPC-treated water.
- Dilution Buffer (1X): Dilute 10X stock with DEPC-treated water.
- Lower Marker (1X): Dilute 5X Lower Marker stock with 1X dilution buffer.

3. 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.

ℹ Running the RNA ladder is optional. Using a ladder generated under the same running conditions can improve sizing accuracy.

4. Recommended Sample Concentration

RNA sample: 1-10 ng/µL

ℹ If the RNA sample concentration exceeds 10 ng/µL, dilute the sample 10X using 0.1X dilution buffer.

ℹ If the sample is eluted in RNase-free water, add dilution buffer to achieve a sample concentration of ≥ 0.1X dilution buffer condition.

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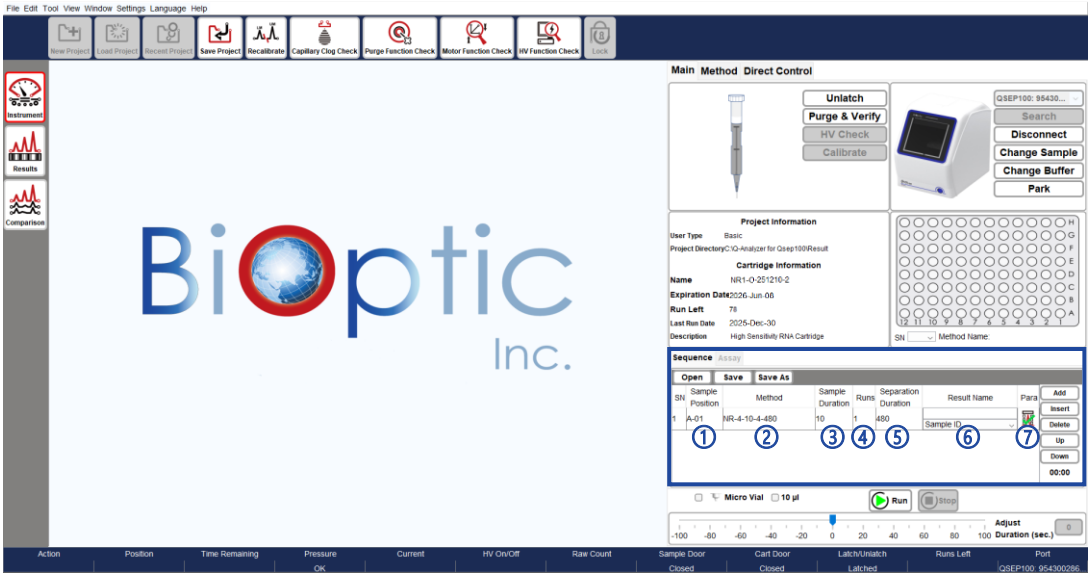
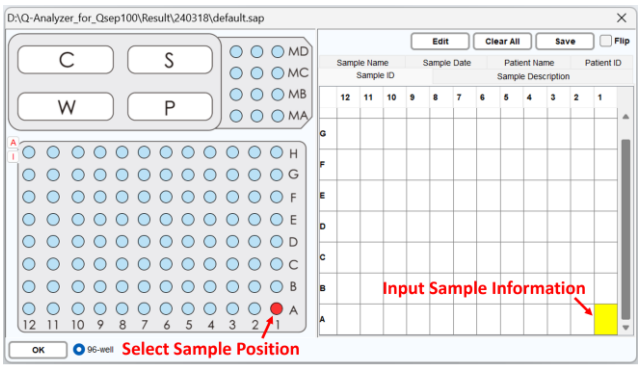
I. Software Operation Guide

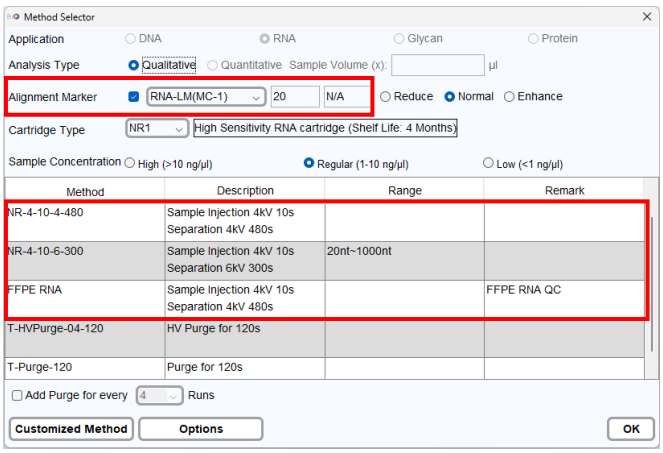
Qsep100



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



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



a.
b.

- **Adjust injection conditions based on sample concentration.**

Sample Concentration	High (2kV, 10s)	Regular (4kV, 10s)	Low (8kV, 10s)
RNA	> 10 ng/μL	1-10 ng/μL	0.5-1 ng/μL

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

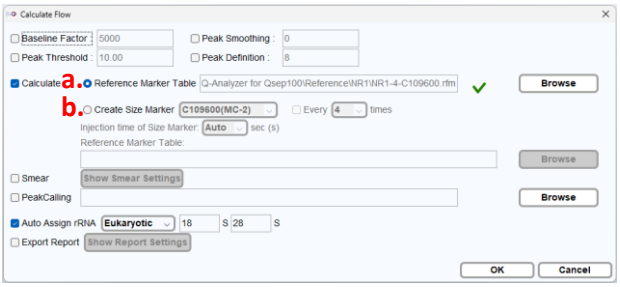
- **Modify injection conditions based on sample concentration.**

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.



a.
b.

- **Size Marker (C109600) is the RNA 6000 Ladder from Thermo Fisher. Please purchase it 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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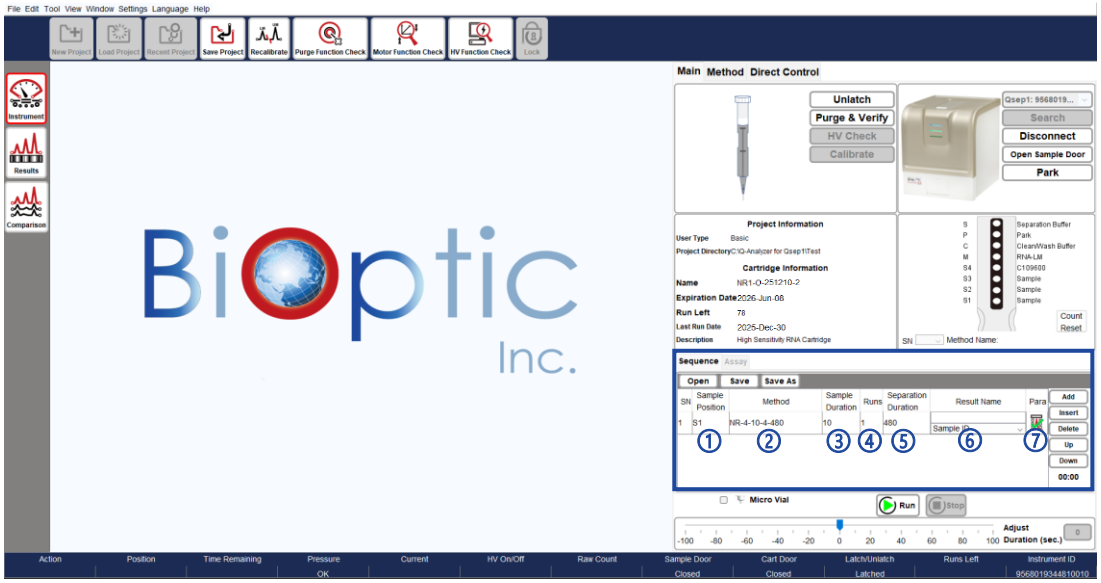
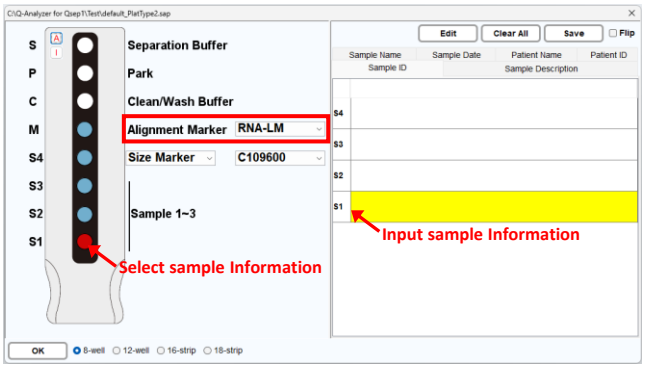
Qsep1



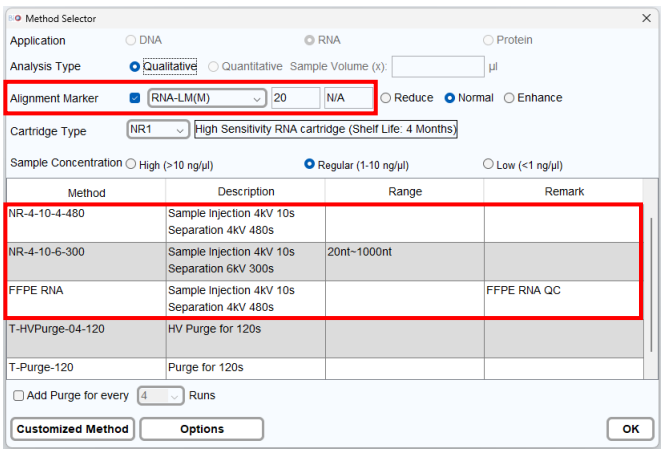
- Click "Open Sample Door" and insert the desired sample tray
- Click "Park" to move the sample tray into position.

Qsep1	*Qsep1*-Plus
• 8-well Sample Tray • 12-well Sample Tray	• 8-well Sample Tray • 12-well Sample Tray • 18-strip Sample Tray

① Sample Position:
- Choose Alignment Marker type.
- Position the Alignment Marker at M, place the paired Size Marker at S4 if required, and input the sample information if necessary.



② Method:
(a) Check Alignment Marker is ticked.
(b) Select 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	> 10 ng/μL	1-10 ng/μL	0.5-1 ng/μL

③ Sample Duration: Adjust the sample injection time to increase/decrease injection amount.
- **Modify injection conditions based on sample concentration.**

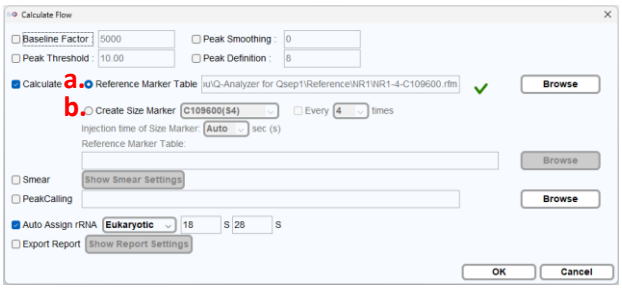
④ Runs: Set the repetition time.

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) is the RNA 6000 Ladder from Thermo Fisher. Please purchase it 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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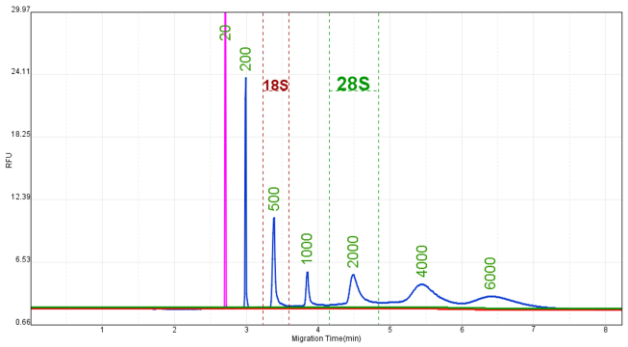
F. Result and Application

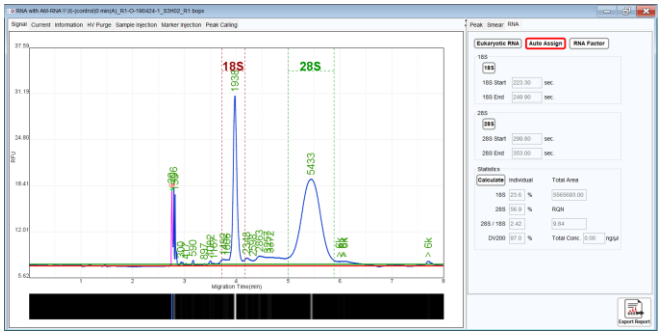
- **Lower Marker & Size Marker**

Lower Marker & C109600 100-6000 nt 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”.

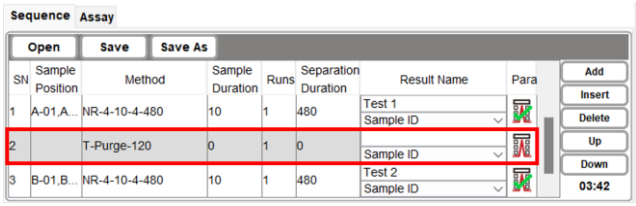


G. Troubleshooting

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 PCR 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.



H. Cartridge Disposal

Please wear gloves before discarding the cartridge.

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

Contact Information:
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