

BIO-RAD
CFX Opus



Specialist : 蔡鼎諾 (Tim)



Genmall

qPCR Operation Training





2022 

— Operation —



System Overview - Front View

BIO-RAD

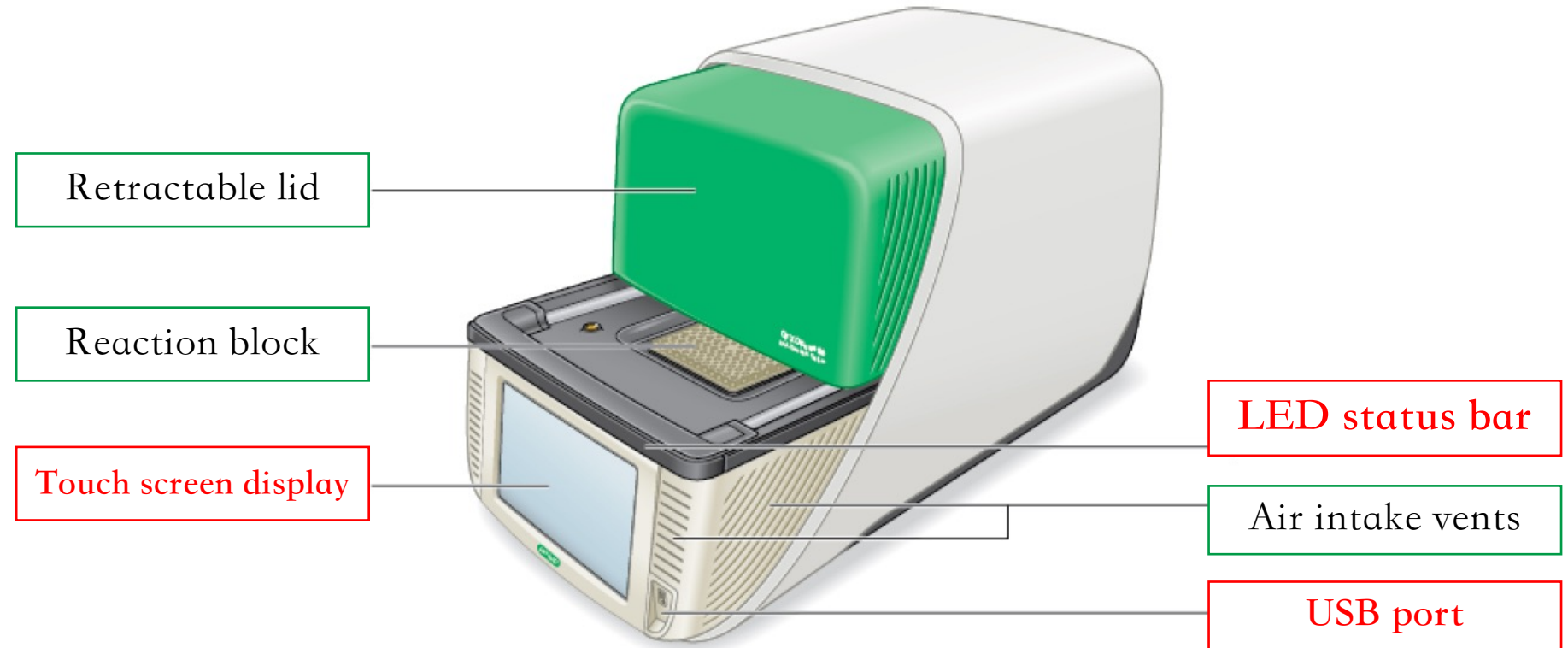
Appearance

Device Boot

Consumables

Software

Optics



System Overview - Back View

BIO-RAD

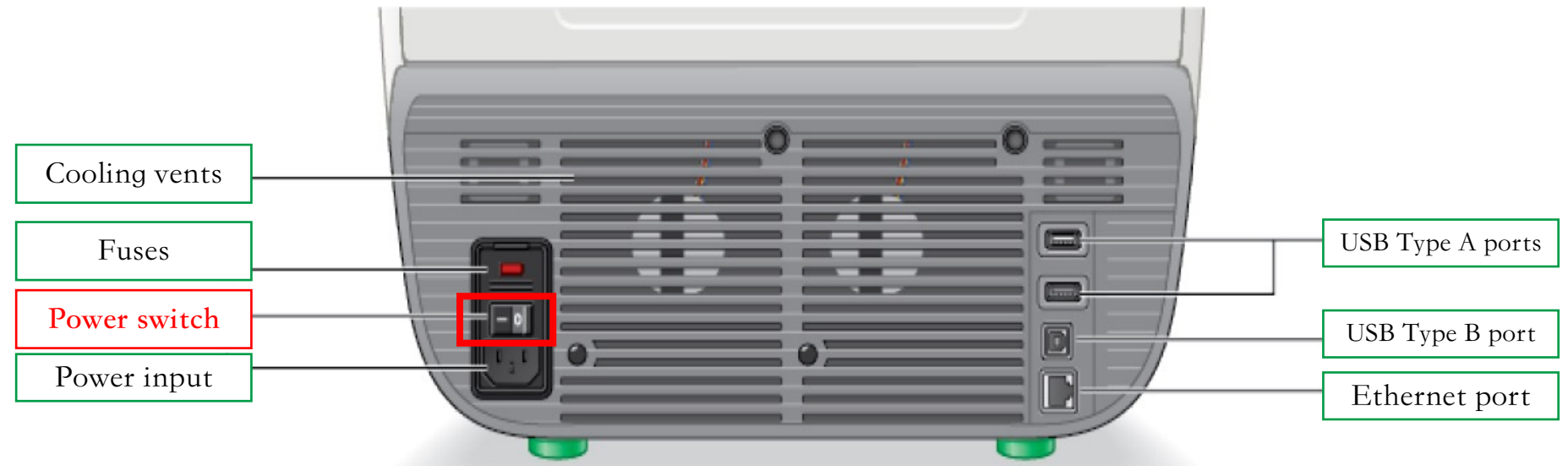
Appearance

Device Boot

Consumables

Software

Optics



Touch Screen Overview - Open lid

BIO-RAD

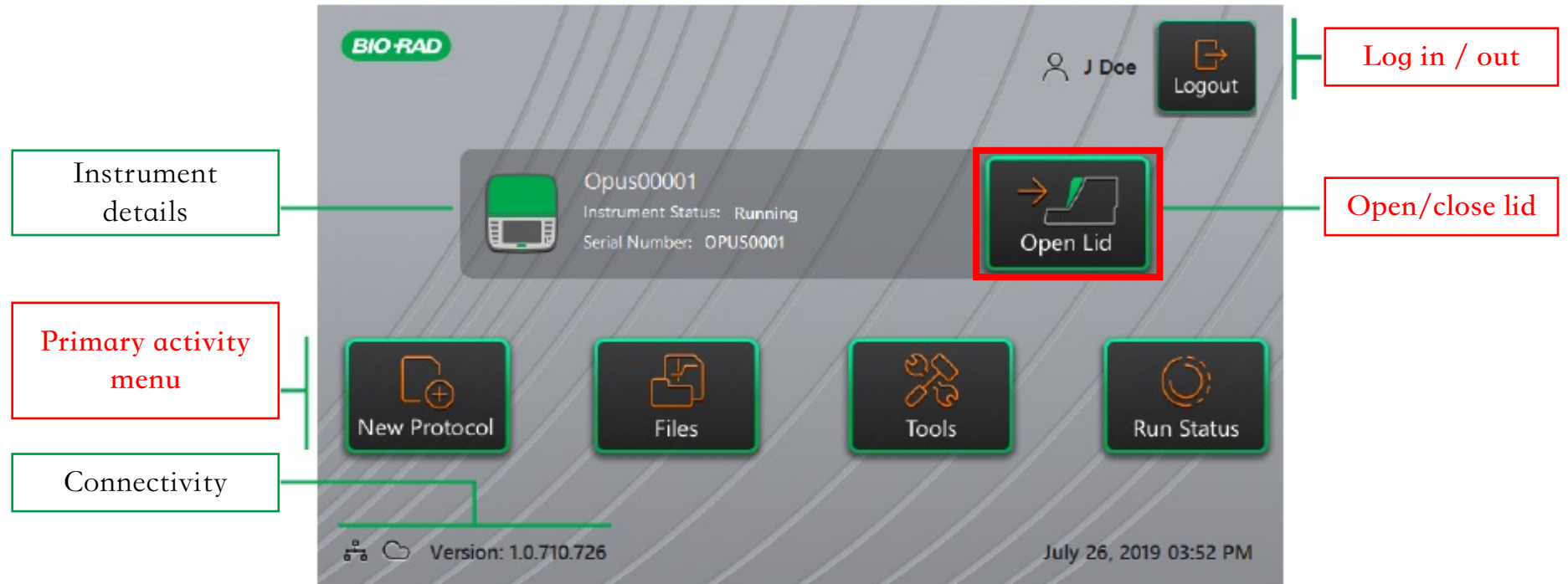
Appearance

Device Boot

Consumables

Software

Optics



Creating a Protocol

BIO-RAD

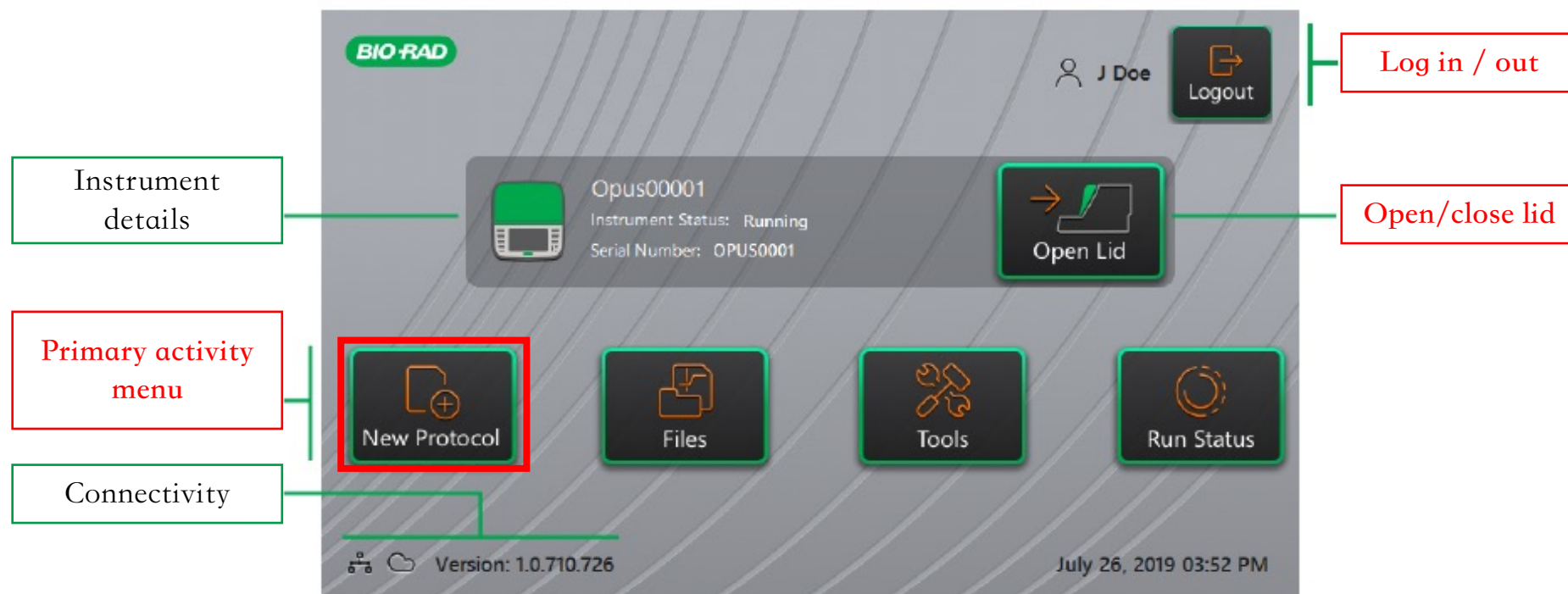
Appearance

Device Boot

Consumables

Software

Optics



Modifying the Settings in a Protocol Step

BIO-RAD

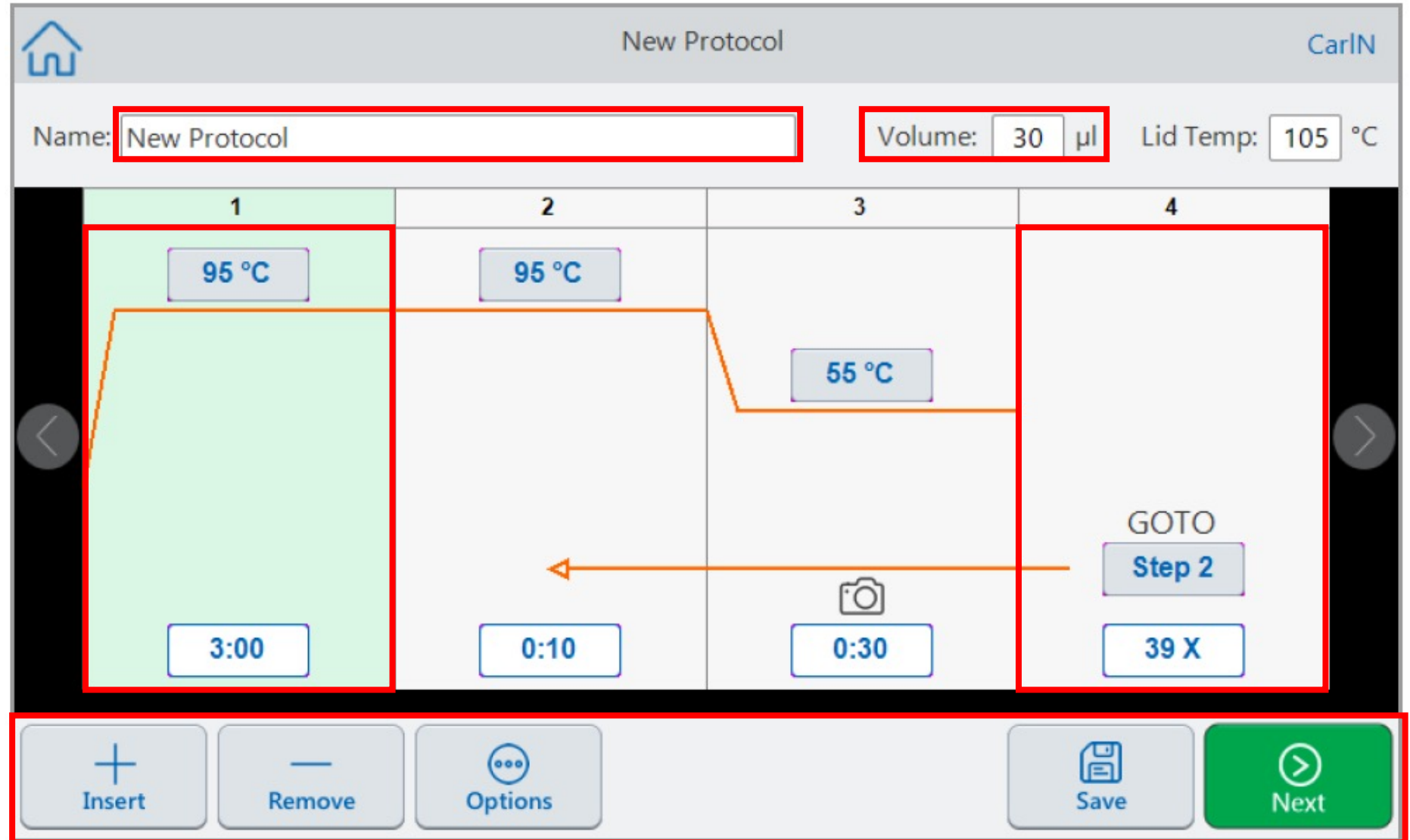
Appearance

Device Boot

Consumables

Software

Optics



Modifying the Settings in a Protocol Step

BIO-RAD

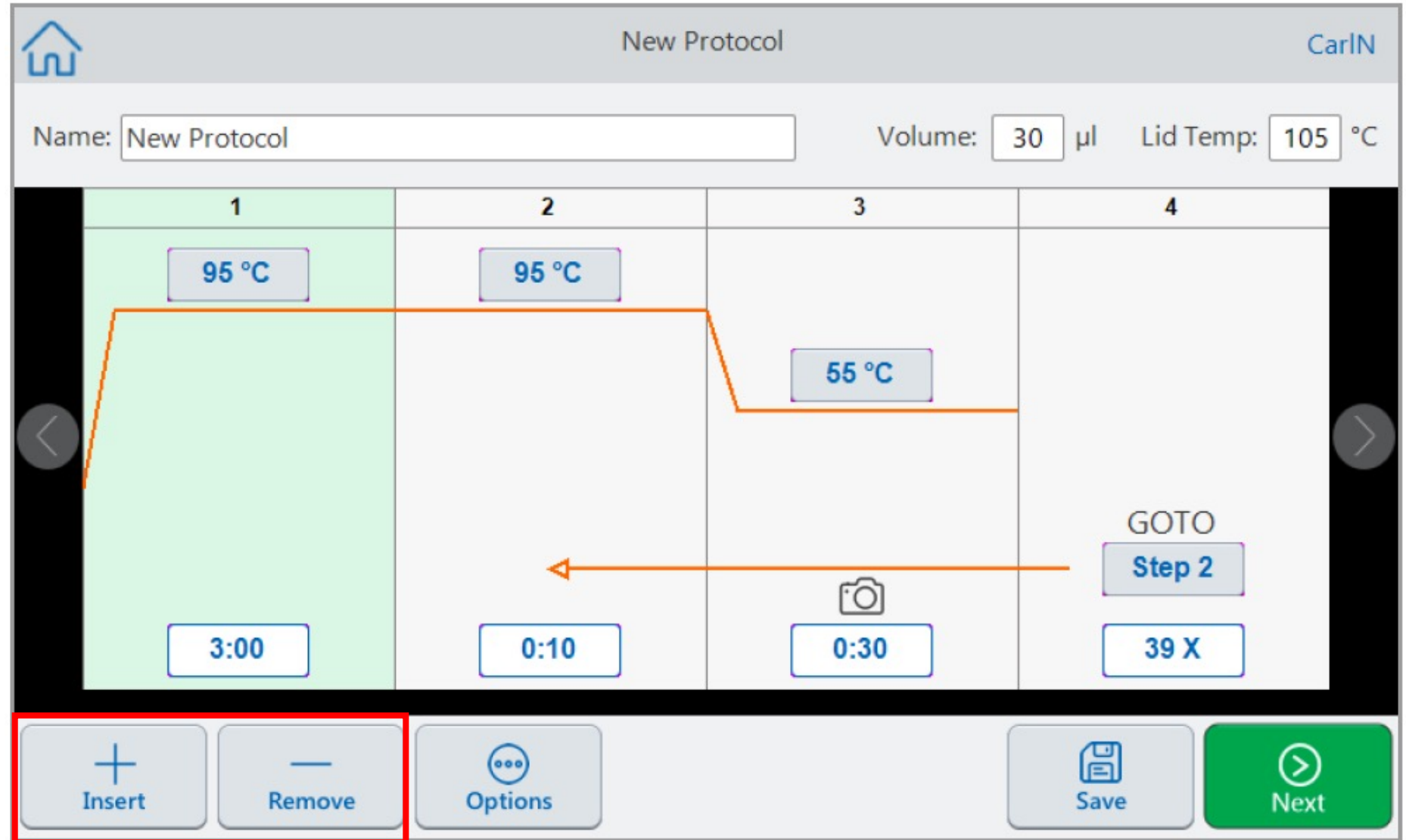
Appearance

Device Boot

Consumables

Software

Optics



Modifying the Settings in a Protocol Step

BIO-RAD

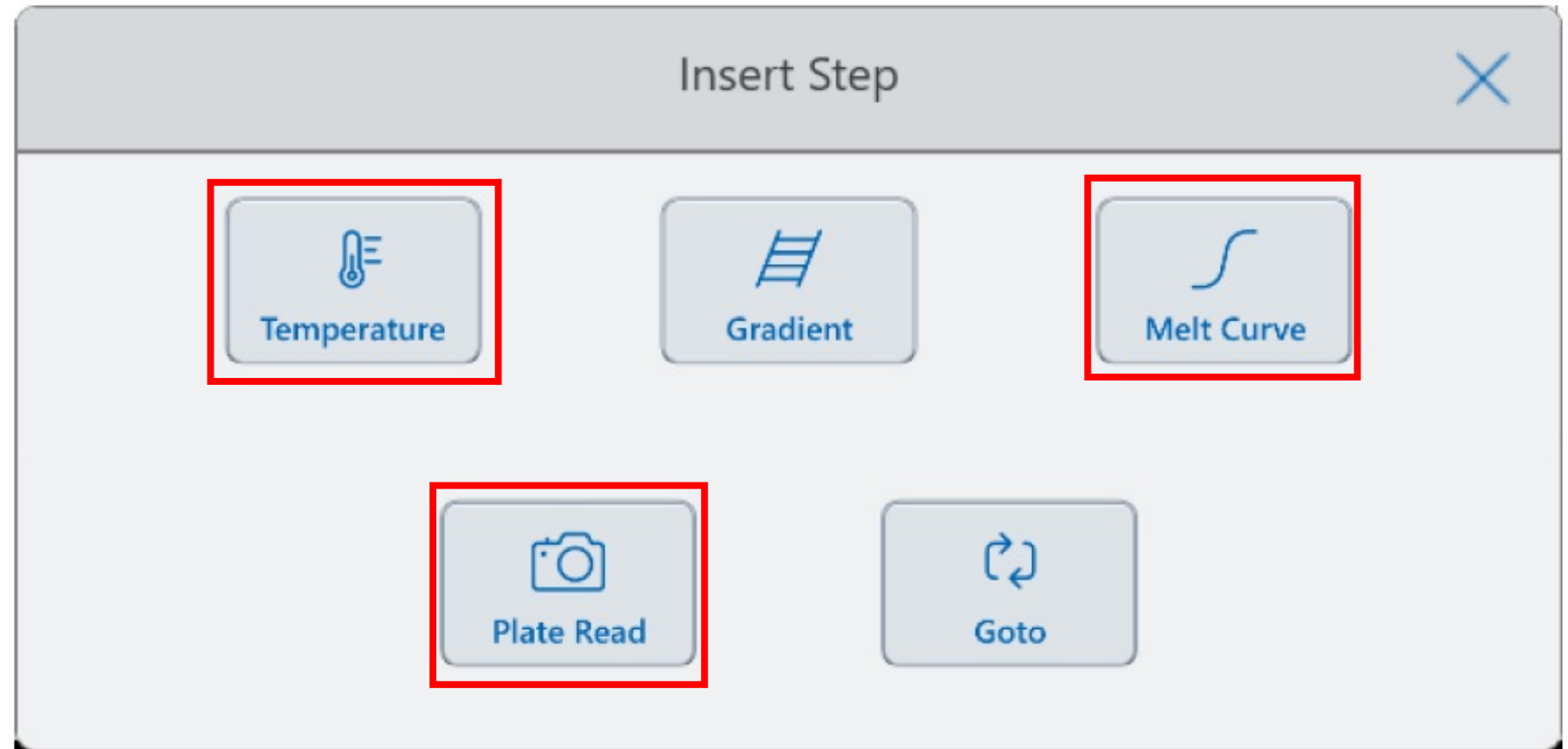
Appearance

Device Boot

Consumables

Software

Optics



Changing Target Gradient and Ramp Rate

BIO-RAD

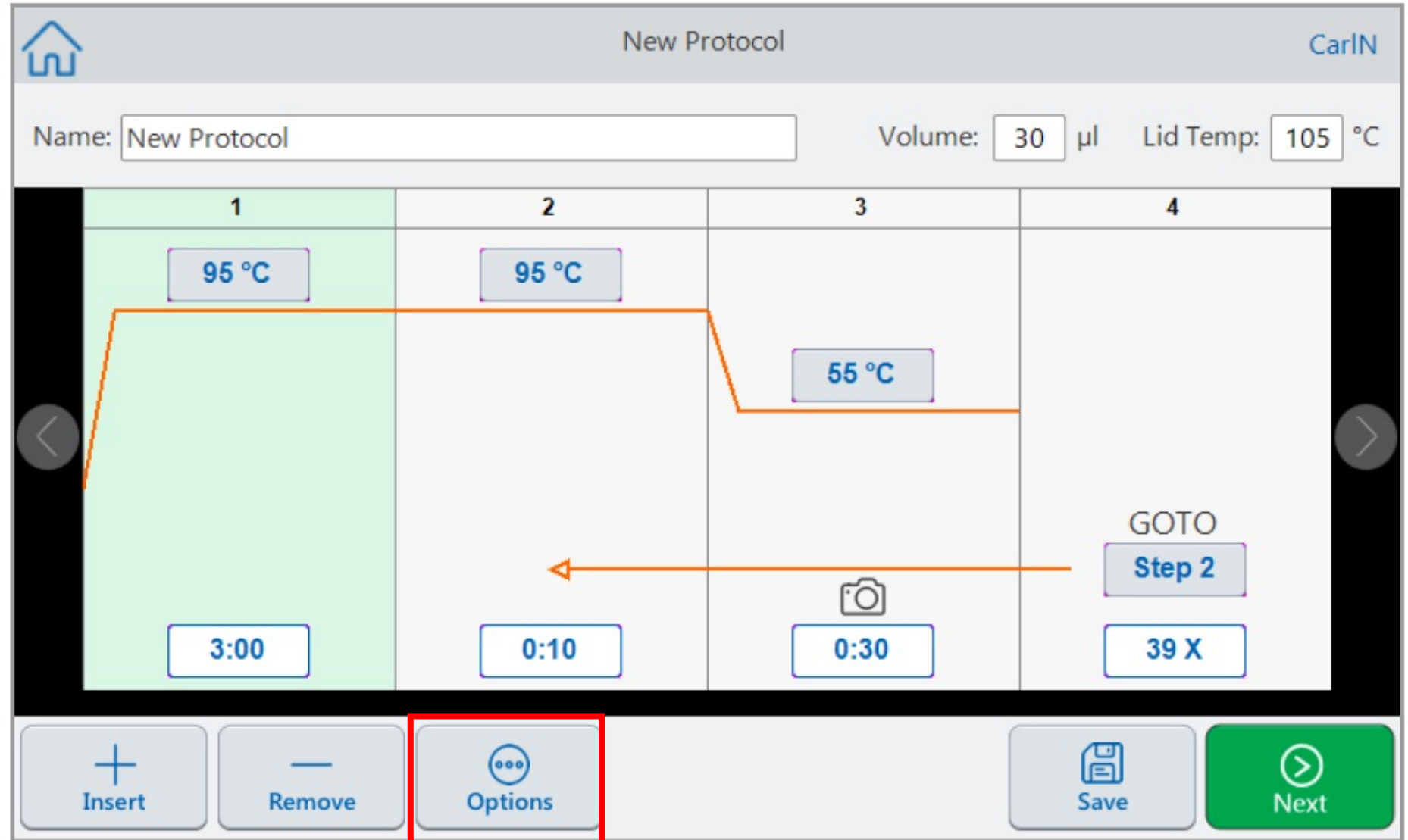
Appearance

Device Boot

Consumables

Software

Optics



Changing Target Gradient and Ramp Rate

BIO-RAD

Appearance

Device Boot

Consumables

Software

Optics

Step Options

Temperature: °C

Time: HH:MM:SS

Ramp Rate: °C/s

Increment: °C/cycle

Extend: s/cycle

Beep: ☐

Plate Read: ☐

OK

Adding or Removing a Temperature Gradient

BIO-RAD

Appearance

Device Boot

Consumables

Software


Optics


Step Options


Temperature:

Gradient (°C): ☒

Time: HH:MM:SS

Ramp Rate: °C/s 

Increment: °C/cycle 

Extend: s/cycle 



Beep: ☐ 

Plate Read: ☐ 

OK

A	100
B	99.8
C	99.2
D	98.2
E	97.1
F	96.2
G	95.5
H	95

Saving a Protocol

BIO-RAD

Appearance

Device Boot

Consumables

Software

Optics

New Protocol

CarlN

Name: Volume: μl Lid Temp: $^{\circ}\text{C}$

1	2	3	4
95 $^{\circ}\text{C}$	95 $^{\circ}\text{C}$	55 $^{\circ}\text{C}$	
3:00	0:10	0:30	GOTO Step 2 39 X

Save Next

Saving a Protocol

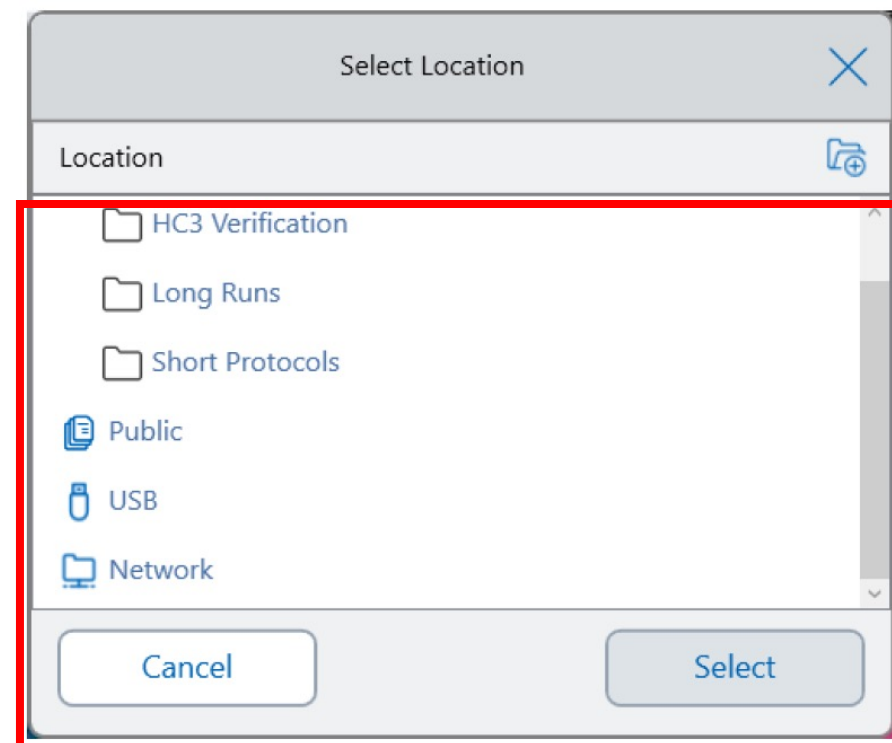
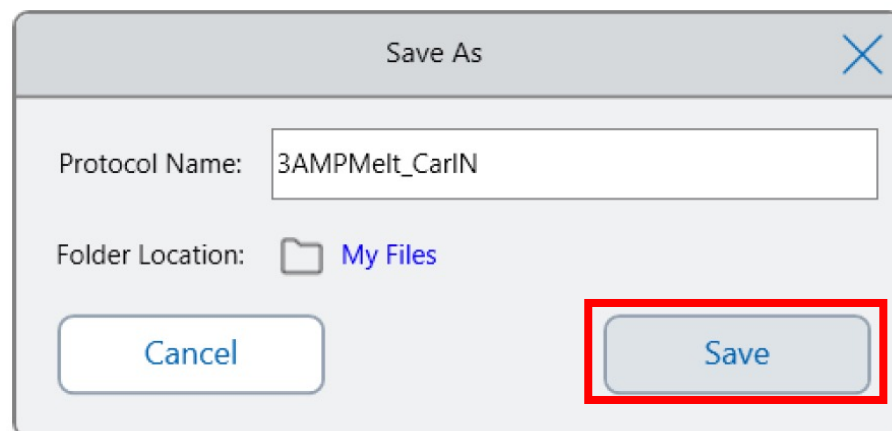
Appearance

Device Boot

Consumables

Software

Optics



Run Setup

BIO-RAD

Appearance

Device Boot

Consumables

Software

Optics

New Protocol

CarlN

Name: New Protocol Volume: 30 μ l Lid Temp: 105 $^{\circ}$ C

1	2	3	4
95 $^{\circ}$ C	95 $^{\circ}$ C	55 $^{\circ}$ C	
3:00	0:10	0:30	GOTO Step 2 39 X

Insert Remove Options Save Next

Appearance

Device Boot

Consumables

Software

Optics

Run Setup - Start Run

BIO-RAD

Run Setup


Back CARLN



Name: 3AMPMelt_CarLN Volume: 30 μ l Lid Temp: 105 $^{\circ}$ C

Scan Mode: ☒ SYBR/FAM ☐ All Channels ☐ FRET

Plate ID:

Run File Name: 3AMPMelt_CarLN_20191117_131432_OPUS0001_CARLN

Save Location:  CARLN\...\CarLN

Notification: ☒  ☒  cnavar@celltech.com

Open Lid Run

Touch Screen Overview - Proceeding

BIO-RAD

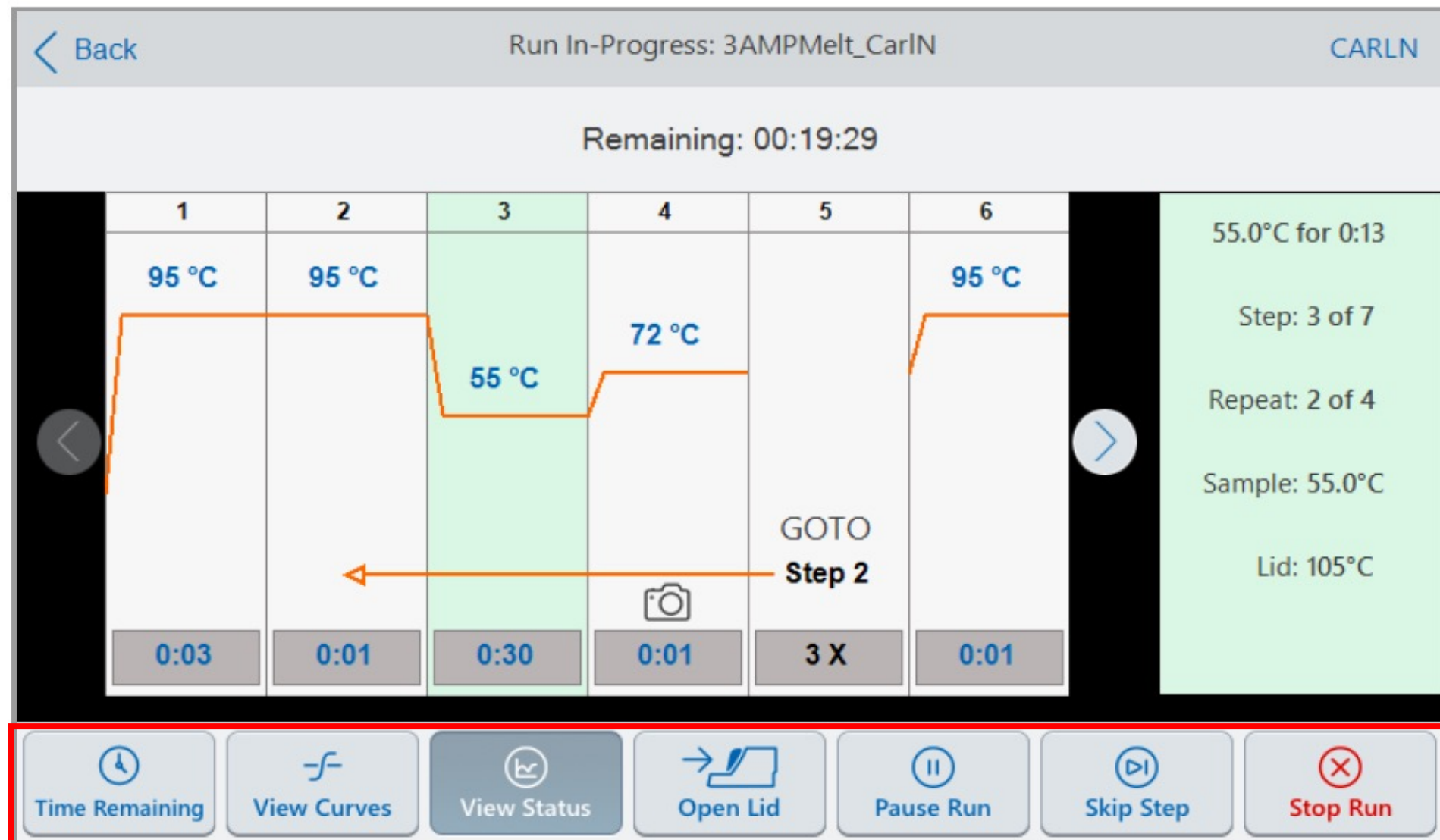
Appearance

Device Boot

Consumables

Software

Optics



Touch Screen Overview - File

BIO-RAD

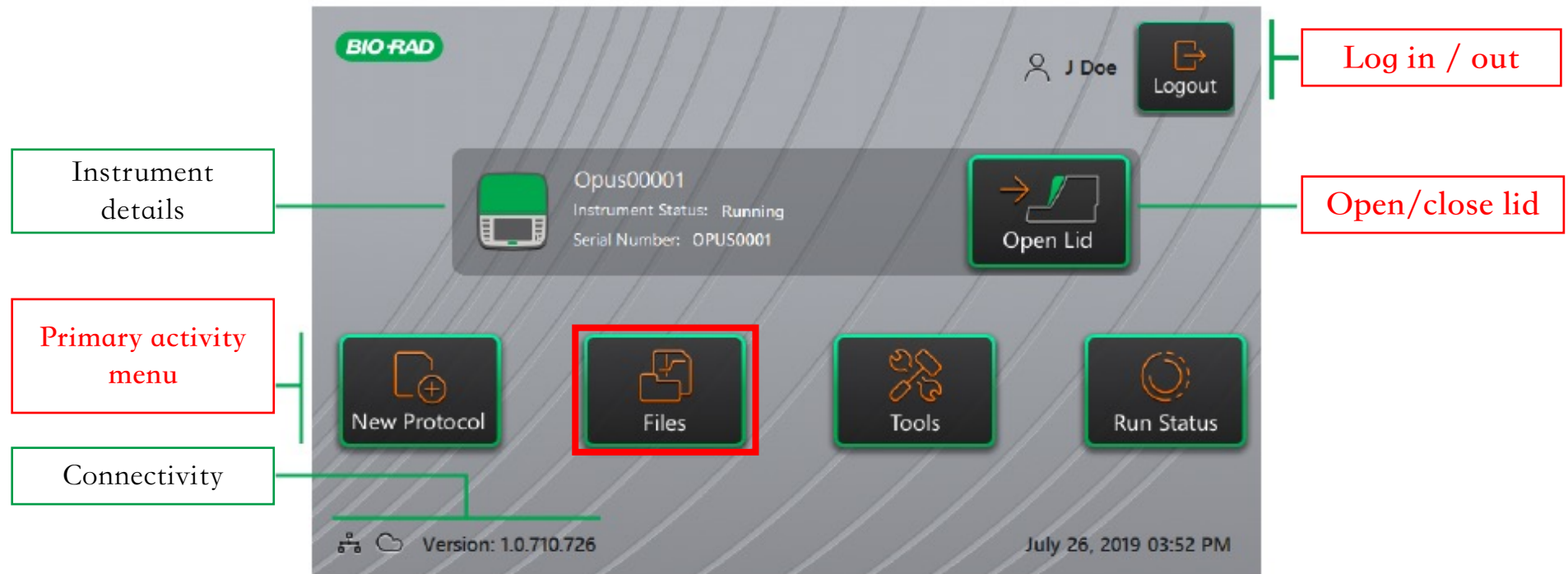
Appearance

Device Boot

Consumables

Software

Optics



The File Browser Screen

BIO-RAD

Appearance

Device Boot

Consumables

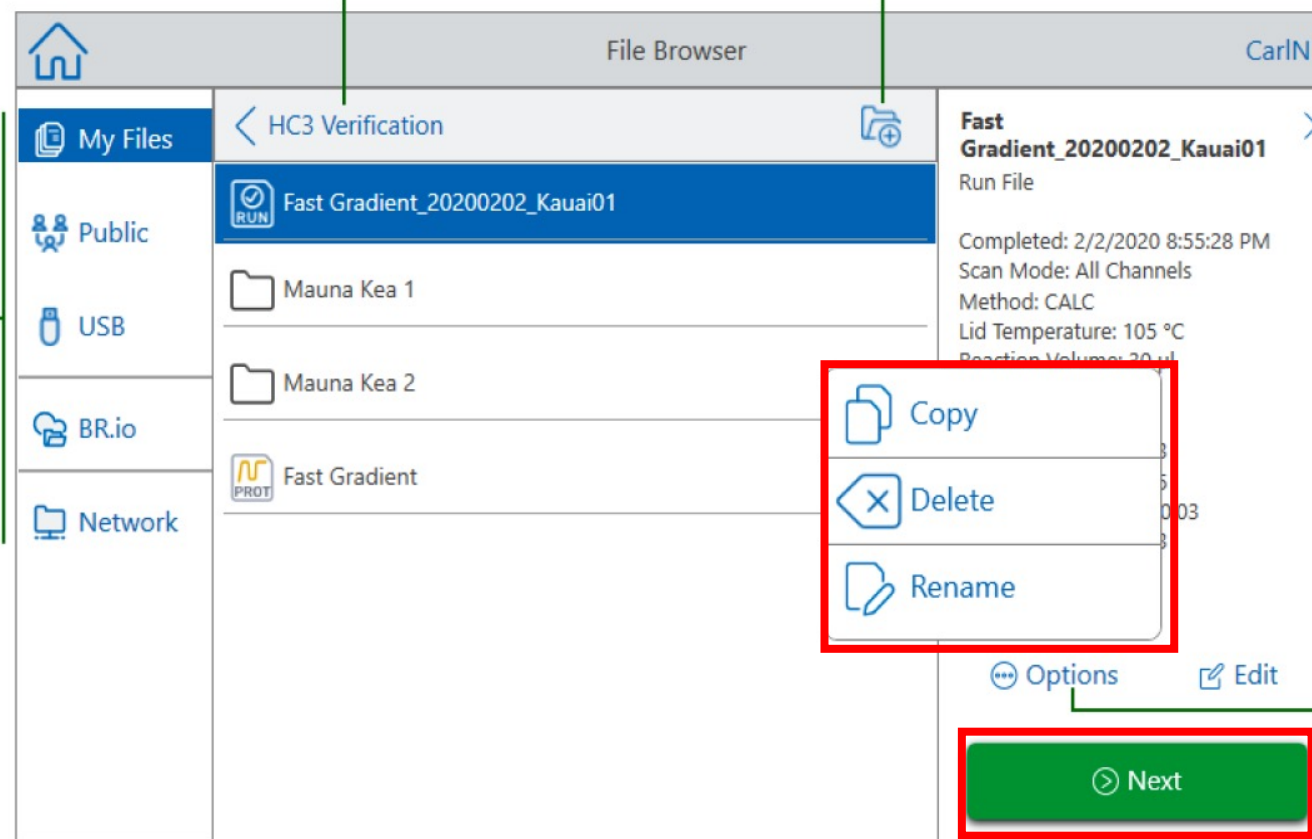
Software

Optics

Sub-directory location

Create Folder

Directories



File options

Extracting and Editing a Protocol from a Run

BIO-RAD

Appearance

Device Boot

Consumables

Software

Optics

Run Setup

Name: 3AMPMelt_CarlN Volume: 30 μ l Lid Temp: 105 $^{\circ}$ C

Scan Mode: ☒ SYBR/FAM ☐ All Channels ☐ FRET

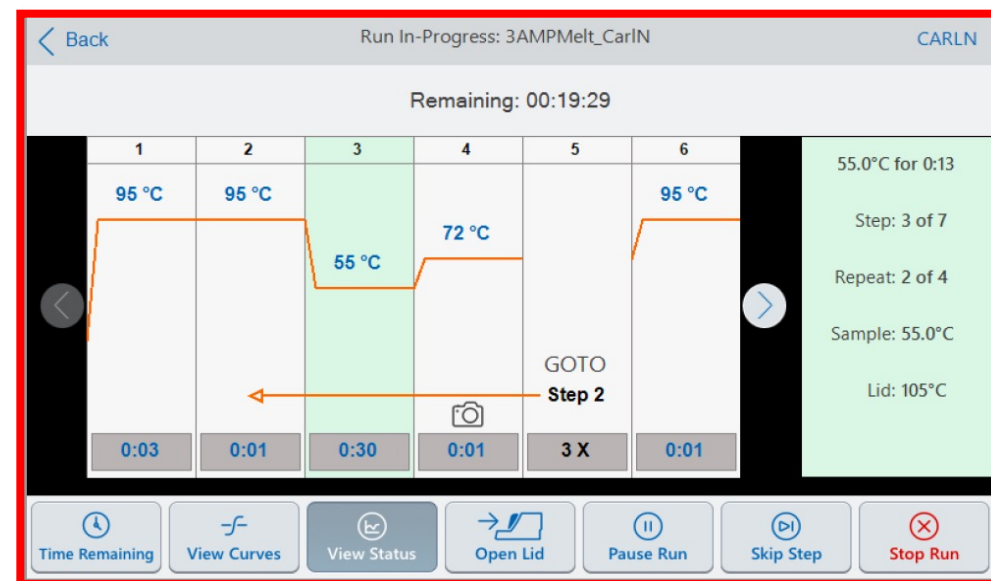
Plate ID:

Run File Name: 3AMPMelt_CarlN_20191117_131432_OPUS0001_CARLN

Save Location: CARLN\...\CarlN

Notification: ☒ ☒ cnavar@celltech.com

Open Lid Run



Consumables - Specification

BIO-RAD

Appearance

Device Boot

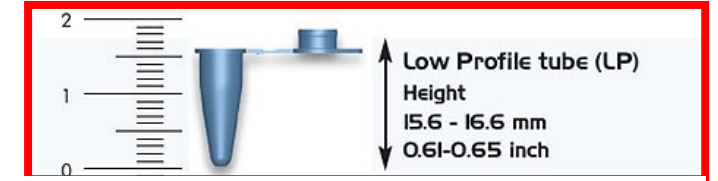
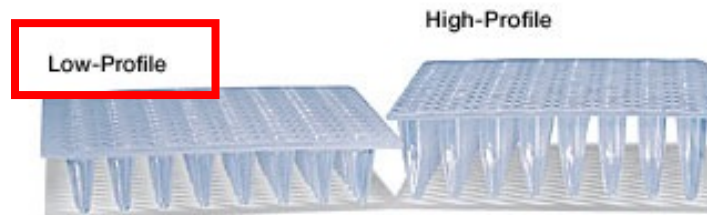
Consumables

Software

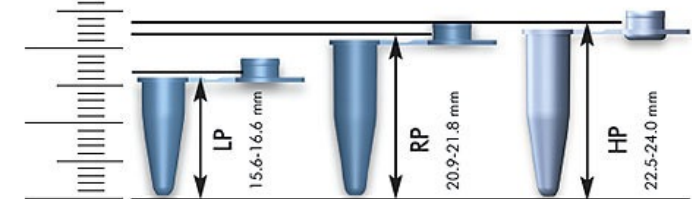
Optics



Low – Profile Only !!



Well Color Effect on Signal Strength



Notice for usage

BIO-RAD

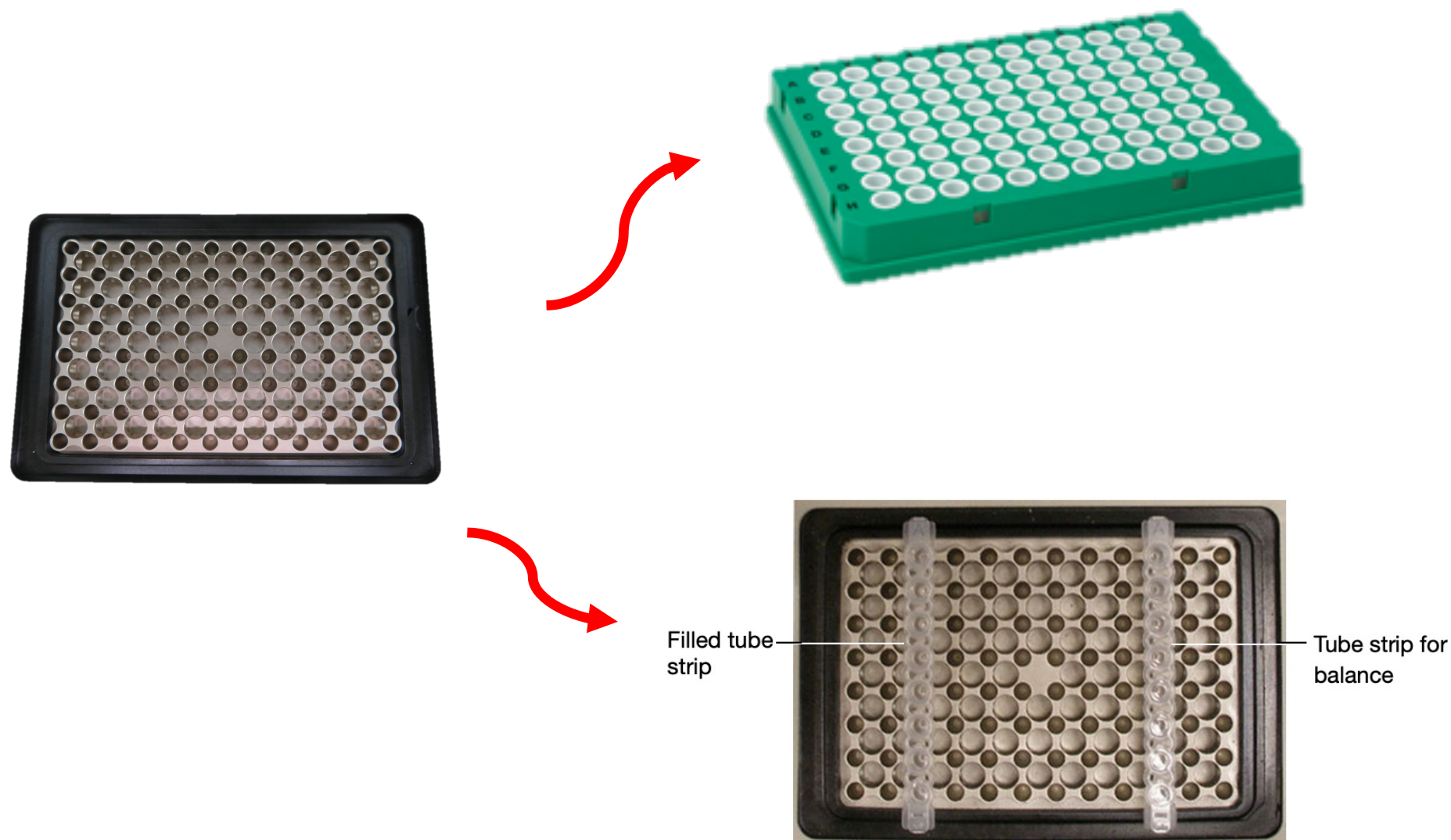
Appearance

Device Boot

Consumables

Software

Optics



Connection with Opus 96 - Overview

BIO-RAD

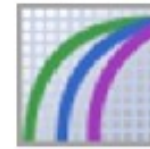
Appearance

Device Boot

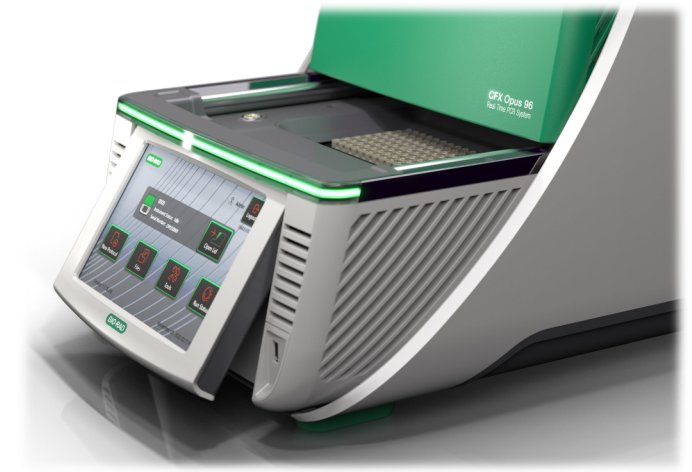
Consumables

Software

Optics



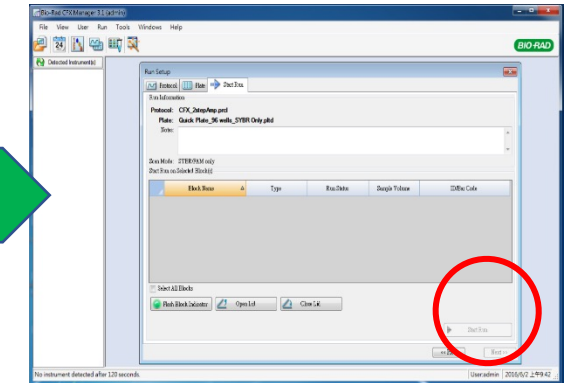
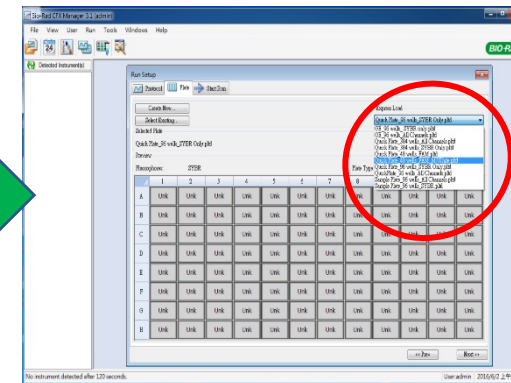
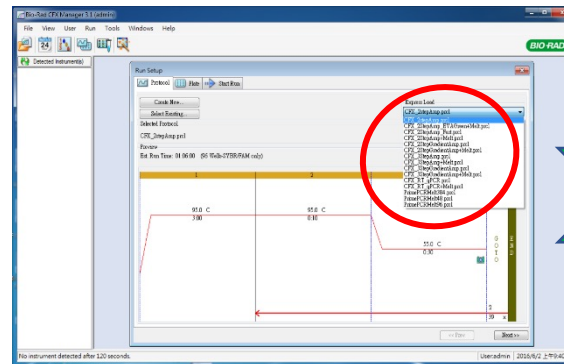
BIO RAD CFX Maestro



Protocol

Plate

Start Run



Start Run !

Operation setting - Overview

BIO-RAD

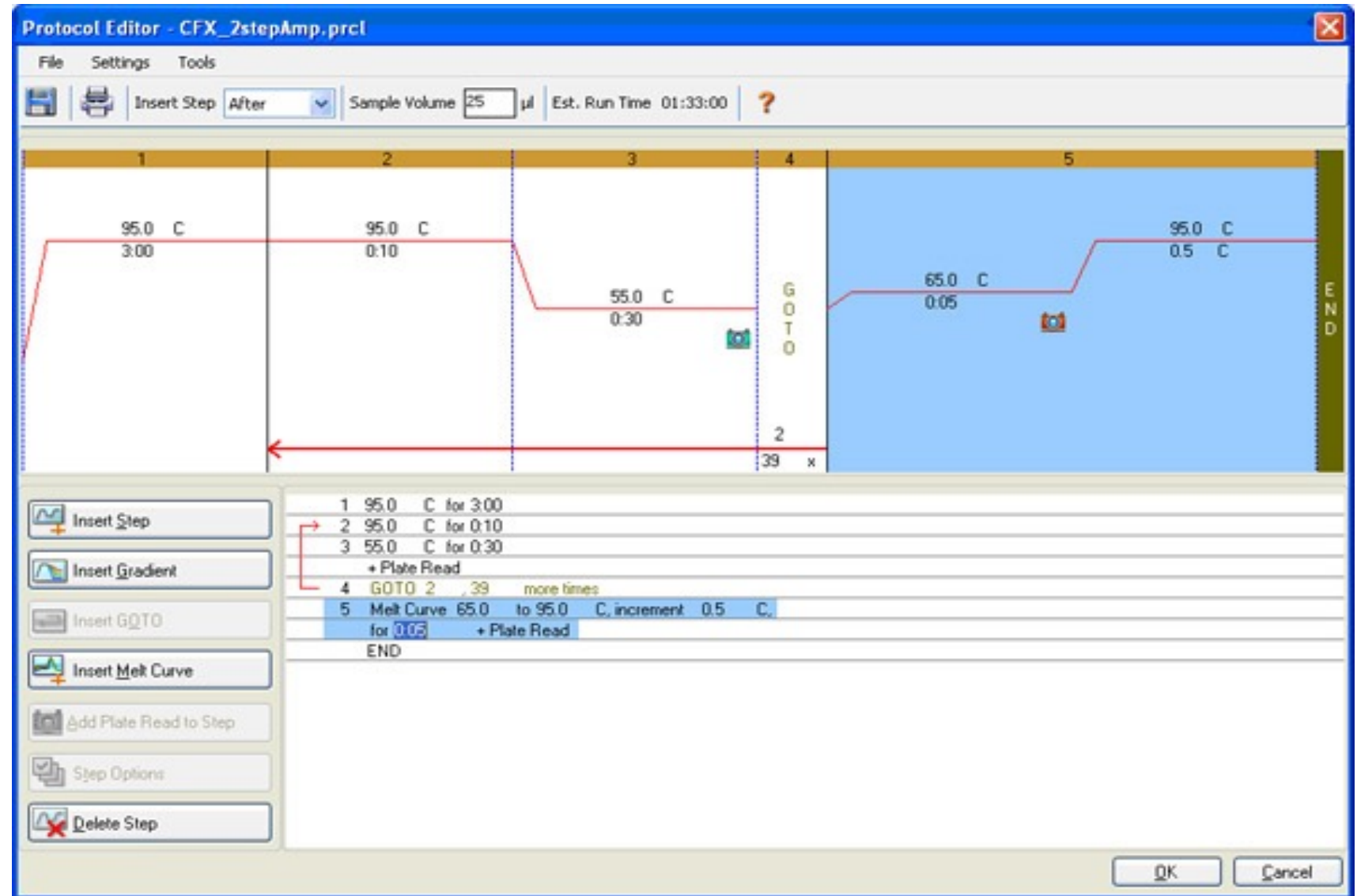
Appearance

Device Boot

Consumables

Software

Optics



Optical design for detection

BIO-RAD

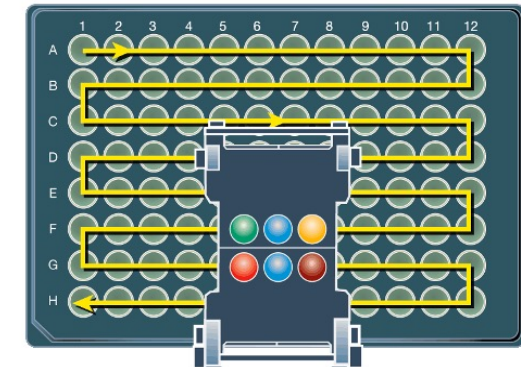
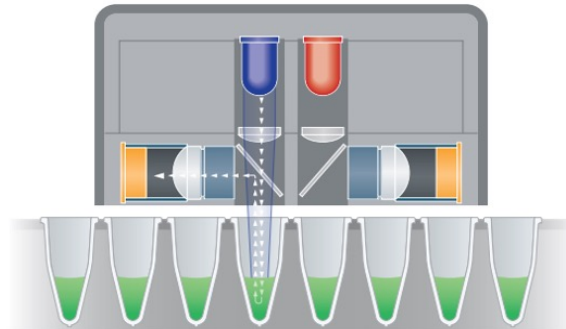
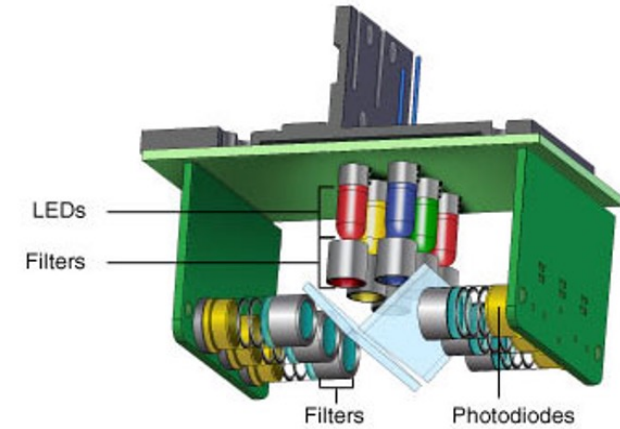
Appearance

Device Boot

Consumables

Software

Optics



Optical design for detection

BIO-RAD

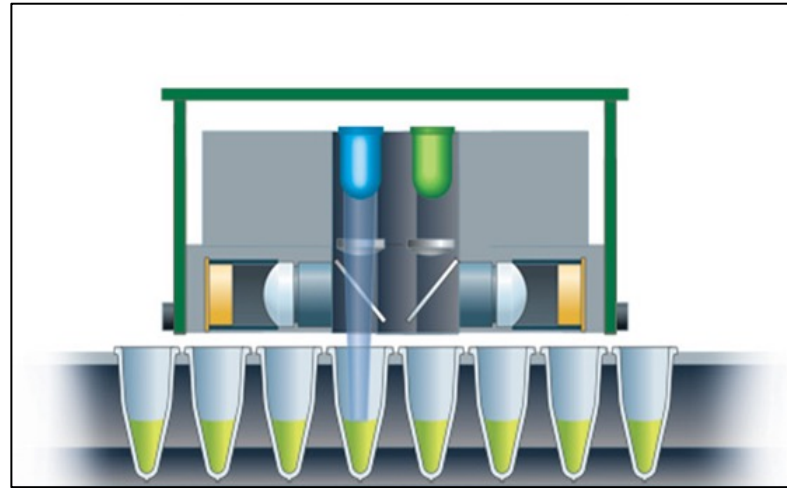
Appearance

Device Boot

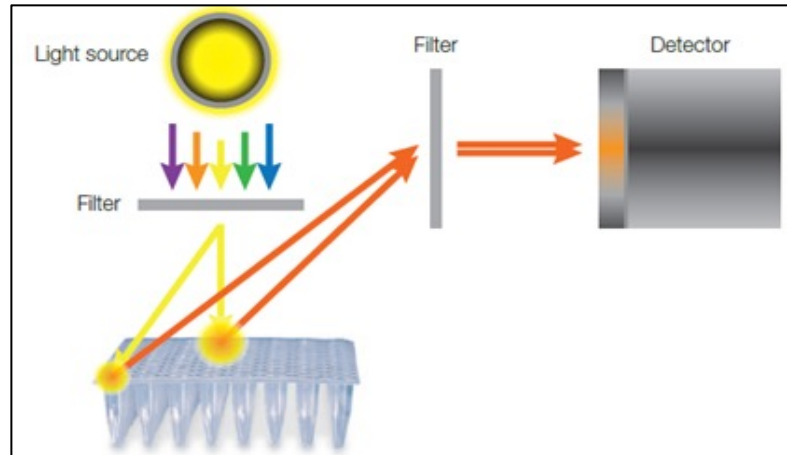
Consumables

Software

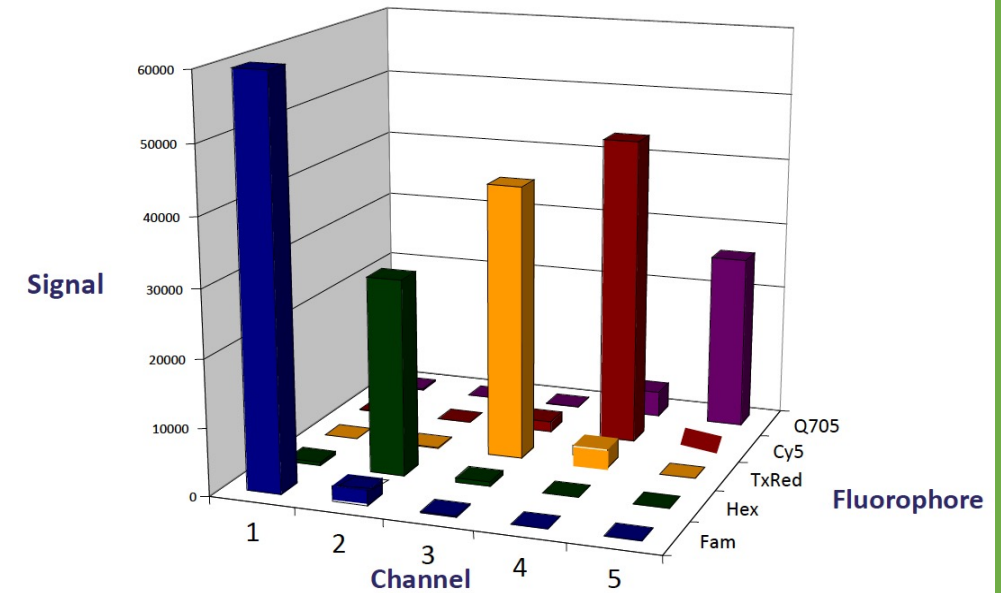
Optics



BIO-RAD



Competitor



Vertical light path : 「Rox dye」 calibration is unnecessary

Fluorescence : 「high strength / specificity」

Light source : **LEDs** with long lifespan, allowing you to use them right away

Optical application - Dye / Wave band

BIO-RAD

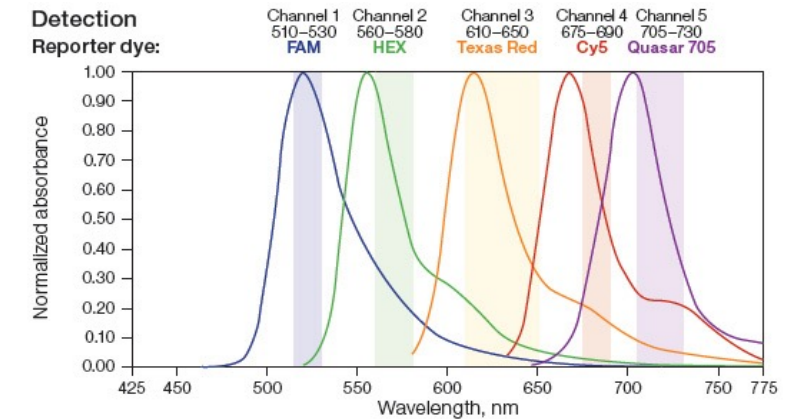
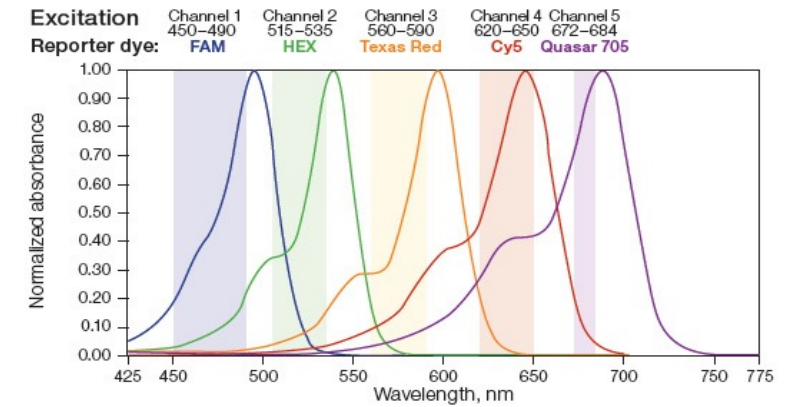
Appearance

Device Boot

Consumables

Software

Optics



Channel	Excitation (nm)	Detection (nm)	Calibrated Fluorophores
1	450-490	515-530	FAM™, SYBR Green I™, EvaGreen™
2	515-535	560-580	VIC®, HEX™, TET™, Cal Gold 540™
3	560-590	610-650	ROX™, Texas Red®, Cal Red 610™
4	620-650	675-690	Cy5, Quasar 670™
5	672-684	705-730	Quasar 705™
6	450-490	560-580	Accommodates FRET Chemistry



2022 

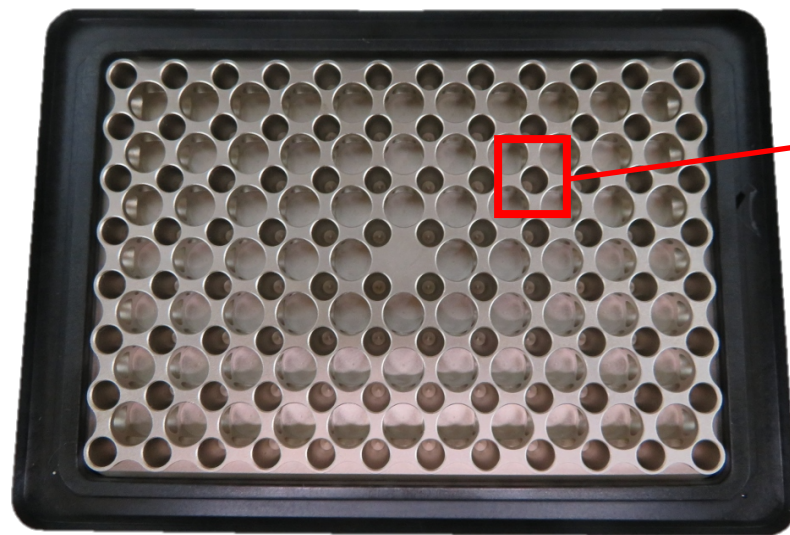
— Supplement —



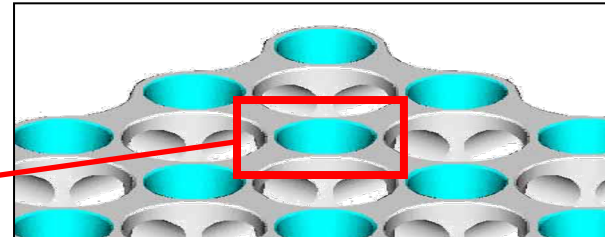
Blocks

Gradient

Application



Mass-reduced sample block



Uniform / Rapid heating

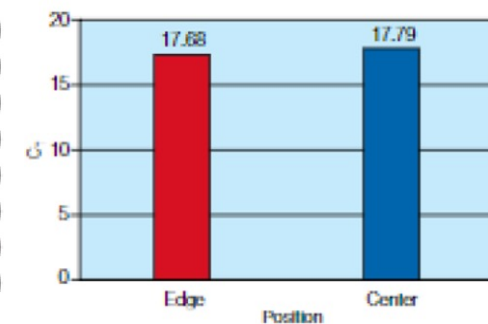
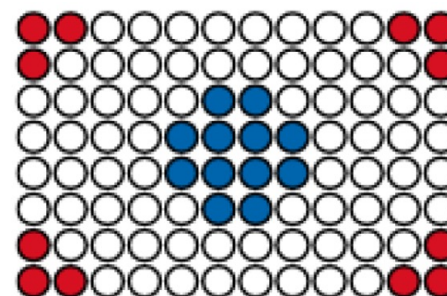
Max ramp rate	5°C / sec
Temp Accuracy	$\pm 0.2^{\circ}\text{C}$
Temp Uniformity	$\pm 0.3^{\circ}\text{C}$

Accurate temperature control

BIO-RAD



Uniformity ↑

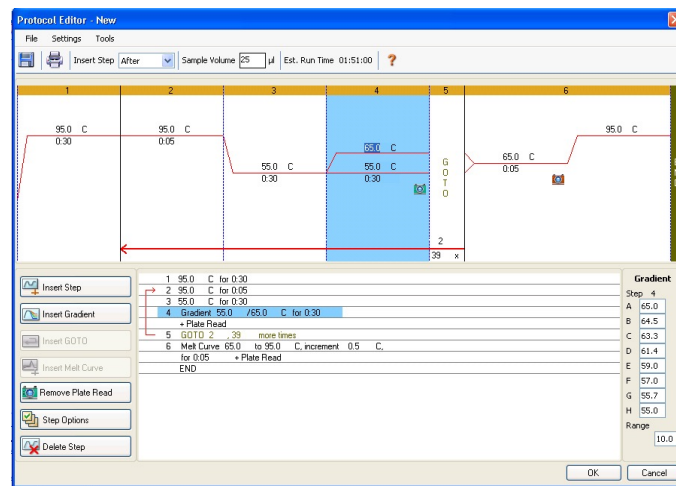


Supreme 「 uniformity 」 in any position

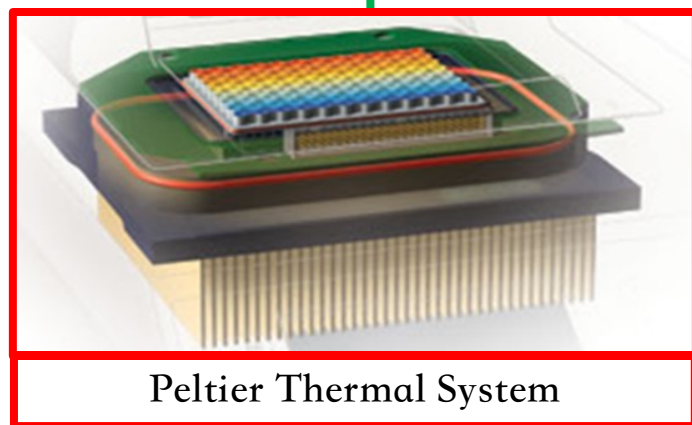
Blocks

Gradient

Application



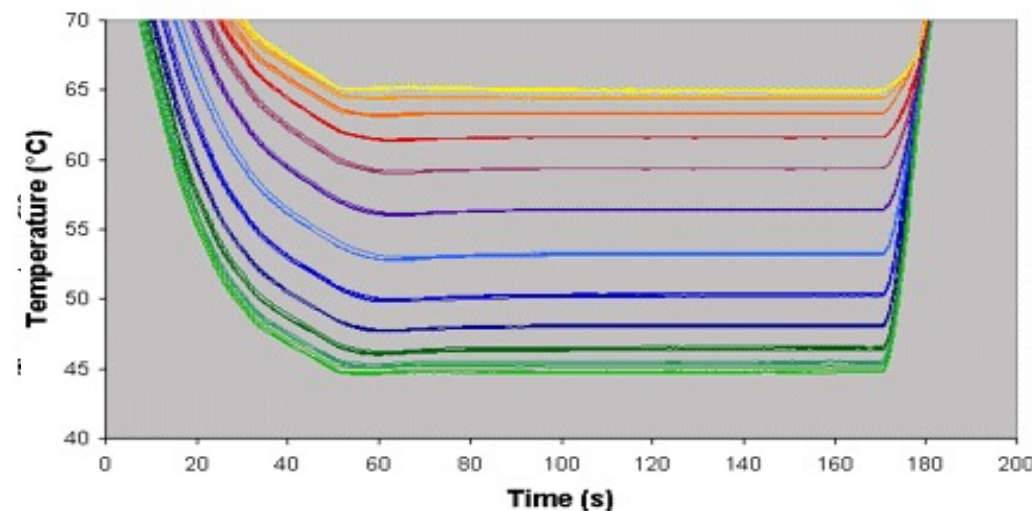
Graphical interface : friendly operation and setting



Peltier Thermal System

		1	2	3	4	5	6	7	8	9	10	11	12
A	70.0	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk
B	69.5	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk
C	68.4	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk
D	66.4	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk
E	64.0	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk
F	62.0	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk
G	60.7	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk
H	60.0	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk	Unk

Gradient temperature setting : 「1 - 24°C」



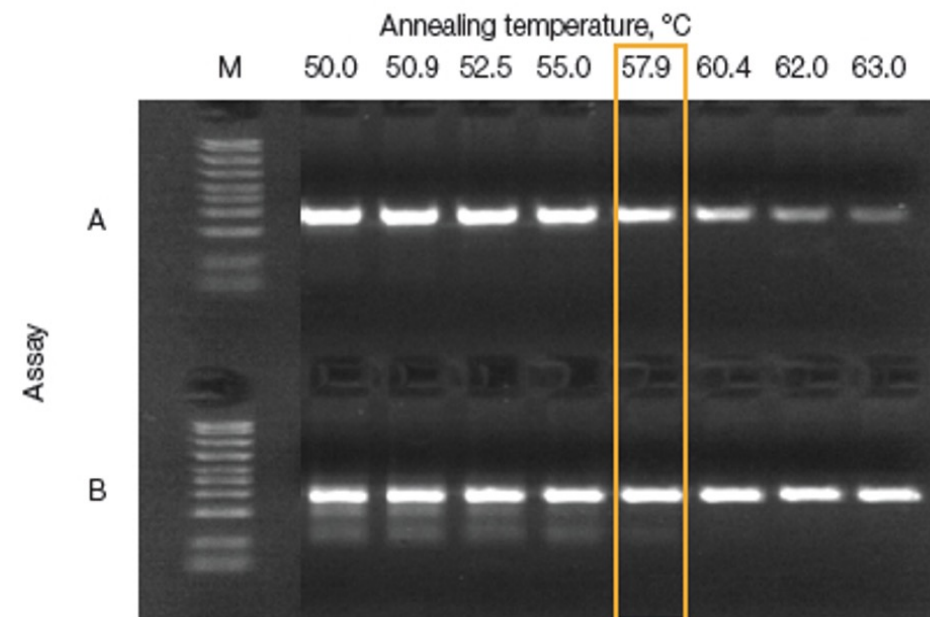
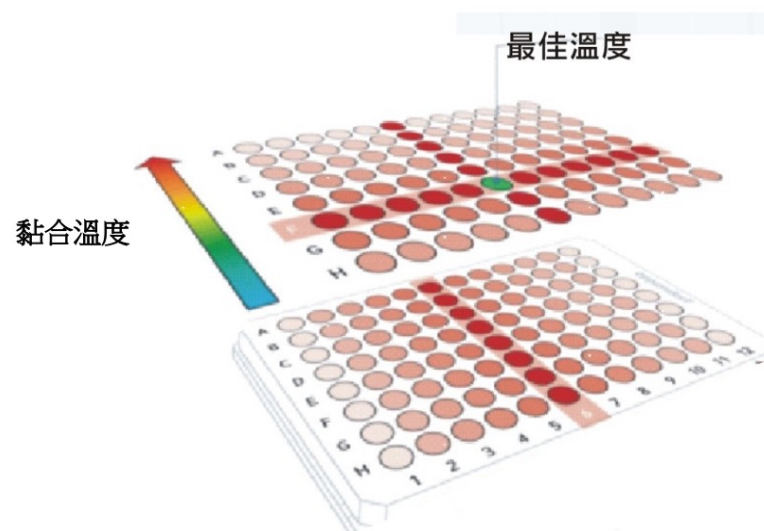
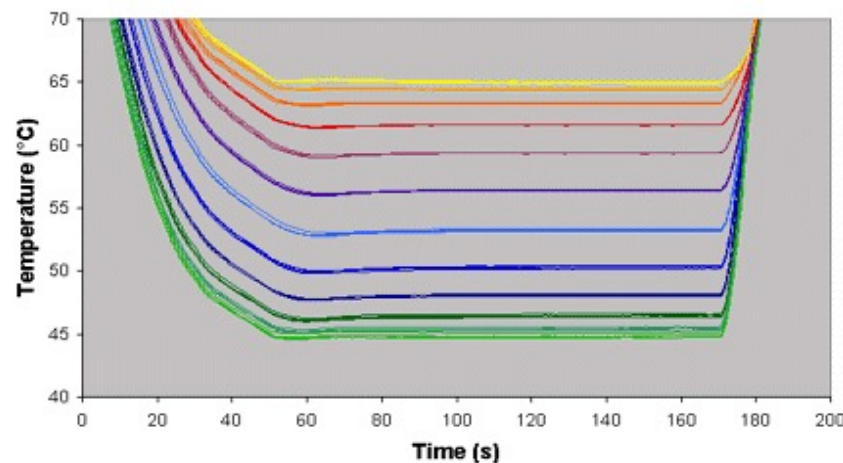
Same starting point / Reaction is accurate

30s

Blocks

Gradient

Application



Optimization of an assay results in better yields and specificity. Results show that assays A and B can be run at an **annealing temperature** of **57.9°C** on the same plate. Higher temperatures result in a reduced yield in assay A while lower temperatures result in nonspecific products in assay B. M, markers.



正茂生物科技股份有限公司
Genmall Biotechnology Co., Ltd.

BIO-RAD

Thank You!

