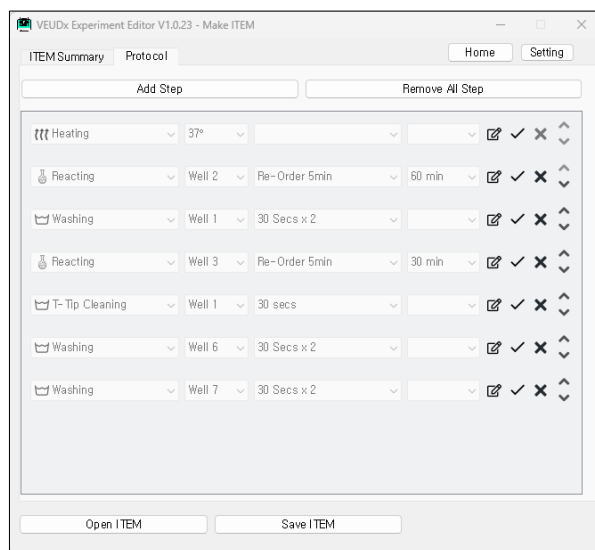
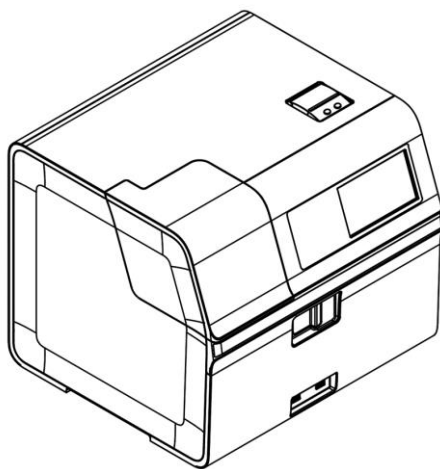


# Operation Manual

## VEUDx Experiment Editor



UM-VEUDx-1.0

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# 1. Installation

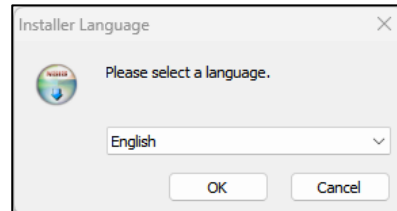
## 1.1 Installation

### 1.1.1 Execution

Execute VEUDx Experiment Editor Setup V1.x.x.exe on PC.

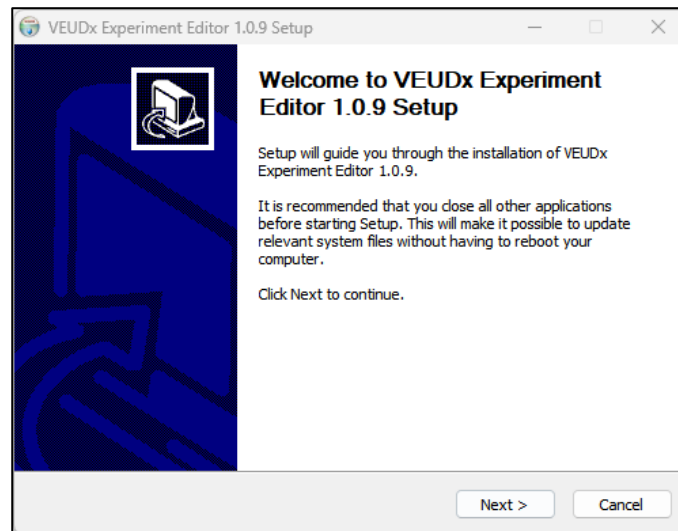
### 1.1.2 Language selection

Choose the language you want to use



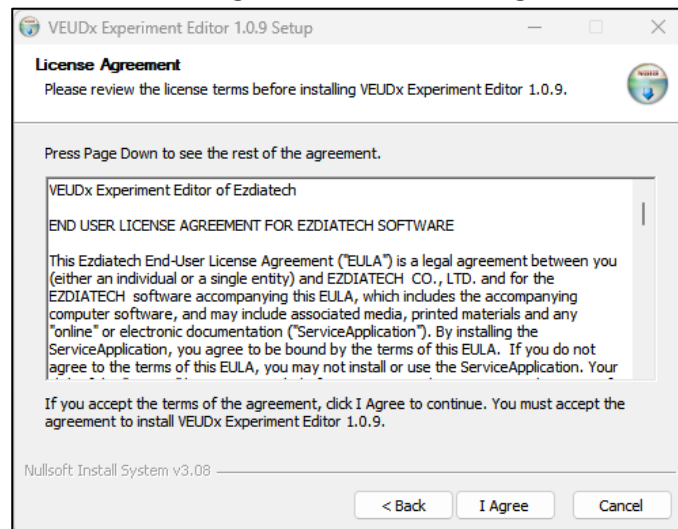
### 1.1.3 Start installation

Check the contents and click 'Next'.



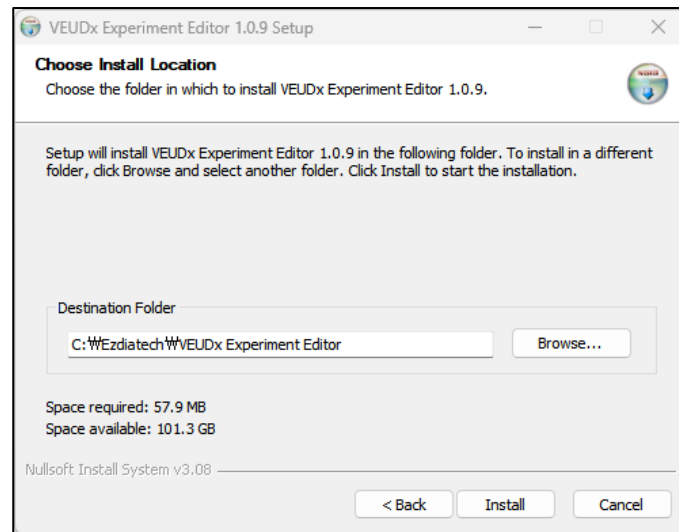
### 1.1.4 Check License

Read the license agreement and click 'I Agree'.



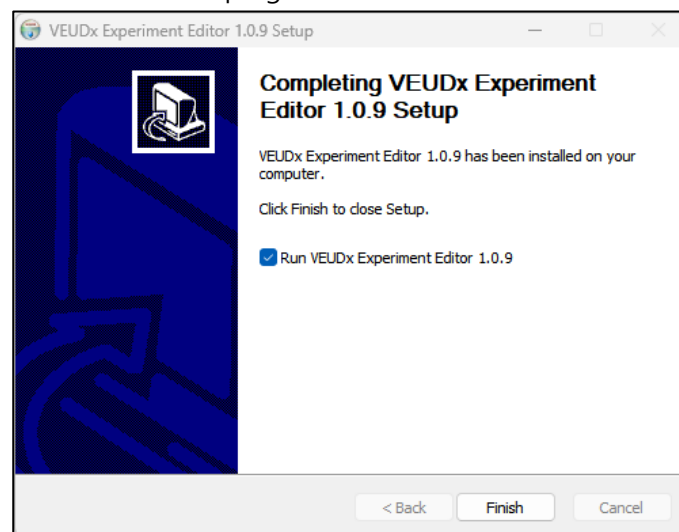
### 1.1.5 Installation location

Check the installation path and click 'Install'.



### 1.1.6 Installation completion

Check to run the program and click 'Finish'.



## 2. Term definition

### 2.1 ITEM

---

<b>2.1.1 ITEM</b>	ITEM consists of ITEM name( ex) TBI, Neurology ), Marker name, Pixel Cut, Experiment Protocol, etc.
<b>2.1.2 Protocol</b>	Protocol is a collection of experimental procedures (Steps).
<b>2.1.3 Step</b>	This is the procedure for each well. (ex) Well 6 Washing 1 min )
<b>2.1.3 ITEM file</b>	ITEM File is created as VEUDxITEM_ITEM_name.zip file. (ex, VEUDxITEM_TBI.zip )

### 2.2 LOT

---

<b>2.1.1 LOT</b>	Depending on the produced LOT, it consists of Made Date, Serial, Expire Date, etc. An ITEM file is required to create a LOT.
<b>2.1.2 LOT file</b>	A LOT XML file that stores LOT information and a Barcode PDF file are created. Ex) VEUDxLOT_TBI_EZTB22111601.xml VEUDxLOT_TBI_EZTB22111601_BarCode.pdf

### 2.3 QC Material LOT

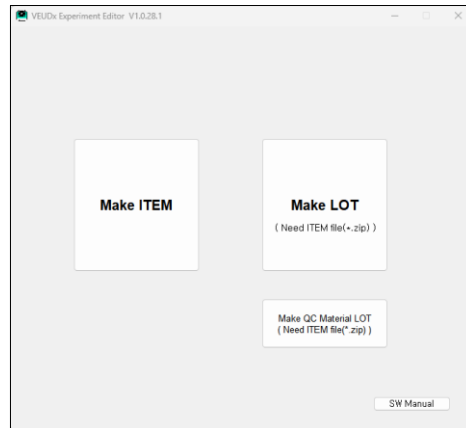
---

<b>2.3.1 QC Material LOT</b>	Depending on the produced QC Material LOT, it consists of Made Date, Serial, Expire Date, etc. An ITEM file is required to create a QC Material LOT.
<b>2.3.2 QC Material LOT file</b>	QC Material LOT XML file that stores LOT information and a Barcode PDF file are created. Ex) VEUDx_QC_LOT_TBI-assay_230921001.xml VEUDx_QC_LOT_TBI_230921001_BarCode.pdf

## 3. Start

### 3.1 Start screen

**3.1.1 Start screen** On the start screen, you can select 'Make ITEM', 'Make LOT', 'Make QC Material LOT' or 'SW Manual'.



## 4. Make ITEM

### 4.1 ITEM creation start screen

**4.1.1 Start screen**

ITEM Open, save and edit are possible.

- In the ITEM Summary tab, you can edit the item name, maker name by RSMP length, unit, CutOff, QC High/Low Range, QC Replication, pixel cut, experiment time, Dilution Factor, Fluorescence Exposure Time, Optical photography only, etc.
- You can edit steps in the Protocol tab

Length	Marker	Unit	CutOff	QC High		QC Low	
				Lower	Upper	Lower	Upper
200		pg/ml					
250		pg/ml					
300		pg/ml					
350		pg/ml					
400		pg/ml					
450		pg/ml					
500		pg/ml					

Total Estimated Time (Min.)  \* RT 6 samples assumptions

QC Replication  Not Specified

Fluorescence Exposure Time(ms)  500

Pixel Cut (%) Bottom  25 Top  5

Dilution Factor  4

☐ Make RSMP QC Data  
☐ Optical photography only  
☐ Optical + Demagnetization only



- You must input information about the name, unit, and RSMP Length of the markers to be used for the item.
- Based on the input information, the fluorescence image is detected by RSMP Length and the result is calculated.

VEUDx Experiment Editor V1.0.28.1 - Make ITEM

ITEM Summary Protocol Home Setting

ITEM Name TBI-assay Initialize

Length	Marker	Unit	CutOff	QC High		QC Low	
				Lower	Upper	Lower	Upper
200	UCH-L1	pg/ml	138	340	460	170	230
250		pg/ml					
300	GFAP	pg/ml	24	255	345	80	100
350		pg/ml					
400		pg/ml					
450		pg/ml					
500		pg/ml					

Total Estimated Time (Min.) 58

\* RT 6 samples assumptions

QC Replication Not Specified

Fluorescence Exposure Time(ms) 500

Pixel Cut (%) Bottom 25 Top 5

Dilution Factor 4

☐ Make RSMP QC Data  
☐ Optical photography only  
☐ Optical + Demagnetization only

Open ITEM Save ITEM

VEUDx Admin 2023-08-28 15:12:54

Result Display the Results

TBI-assay Slot1 Slot2 Slot3 Slot4 Slot5 Slot6

Sample ID : sample1

UCH-L1 : 792.476(pg/ml) Cutoff : 138  
 GFAP : 744.264(pg/ml) Cutoff : 24

Result : Positive

Copy Home Back Print

### <VEUDx Analysis Result Screen>

VEUDx Admin 2023-08-28 16:50:47

Result Display the Results

TBI-assay Slot1 Slot2 Slot3 Slot4 Slot5 Slot6

QC Result : Pass

High-QC (Mean)  
 UCH-L1 : 429.024(pg/ml) Pass [340 ~ 460]  
 GFAP : 321.724(pg/ml) Pass [255 ~ 345]

Low-QC (Mean)  
 UCH-L1 : 209.704(pg/ml) Pass [170 ~ 230]  
 GFAP : 93.2667(pg/ml) Pass [80 ~ 100]

Copy Home Back Print

### <VEUDx QC Result Screen>

## 4.2 Edit ITEM Summary

### 4.2.1 Open ITEM

Press the "Open ITEM" button to select the previously created ITEM file.  
ITEM files are in \*.zip. (ex, VEUDxITEM\_TBI.zip )

### 4.2.2 Edit ITEM Summary

Editable below items

- Item name
- Marker name used by RSMP length
- Unit used by RSMP length
- CutOff for Result(Positive/Negative)
- QC High/Low Range
- QC Replication ( 1x, 2x, 3x , Not Specified )



If you want to use a different concentration unit, you can add a concentration unit in 'Setting'

- Pixel Cut Bottom, Top (%)  
Remove noise caused by saturation when obtaining MFI.  
Defaults to Bottom 25% Top 5%.

- Dilution Factor

The calculated concentration value and the 'Dilution Factor' value are multiplied and displayed separately in a VEUDx Result(.csv) File.



UserID : Admin									
AnalysisDate : 2023-09-19 09:33:29									
RunningTime : 00:00:41									
ITEM : TBI-assay									
LOT ID : EZTB23072601									
	Result	Conc.(DF)		Conc.		MFI		Well Bg BiWell Bg CV(%)	
#.Sample		UCH-L1	GFAP	UCH-L1	GFAP	UCH-L1	GFAP		
1	Positive	792.476	744.264	198.119	186.066	21638.7	37300.6	3677.79	36.8548
2	Positive	429.024	321.724	107.256	80.431	12333.3	16572.3	3455.58	24.2337
3	Positive	96.304	80.84	24.076	20.21	4928.82	5770.24	3418.24	15.6008
4	Positive	7.8	28.432	1.95	7.108	3137.73	3673.79	3417.86	19.3441
5	Negative	4.36	2.012	1.09	0.503	1755.09	1652.69	2766.09	25.1271
6	Negative	6.824	2.636	1.706	0.659	2745.77	2165.72	2807.88	25.3188
		pg/ml	pg/ml	pg/ml	pg/ml				
ITEM(LOT Marker		Cal_a	Cal_b	Cal_c	Cal_d	Cutoff			
TBI-assay( UCH-L1		3329.702	1.156779	344418.6	1.03E+08	101(pg/ml)			
GFAP		2685.655	1.089364	209949.7	73234192	17(pg/ml)			
Dilution Factor(DF) : 4									
Pixel Top cut : 5									
Pixel Bottom cut : 25									
FL_LED : 361									
FL Exposure : 500									

**<VEUDx Result(.csv) file>****- Fluorescence Exposure Time**

The default value of Fluorescence Exposure is 500ms.(1~1000)

If the MFI value of the item you are using is high or low, adjust the 'Fluorescence Exposure' value.

(High MFI values can affect fluorescence saturation)

**- Optical photography only**

Check if you only want to image capture and Detecting

(RSMP is demagnetized)

**- Optical + Demagnetization only**

Check if you only want to image capture and Detecting

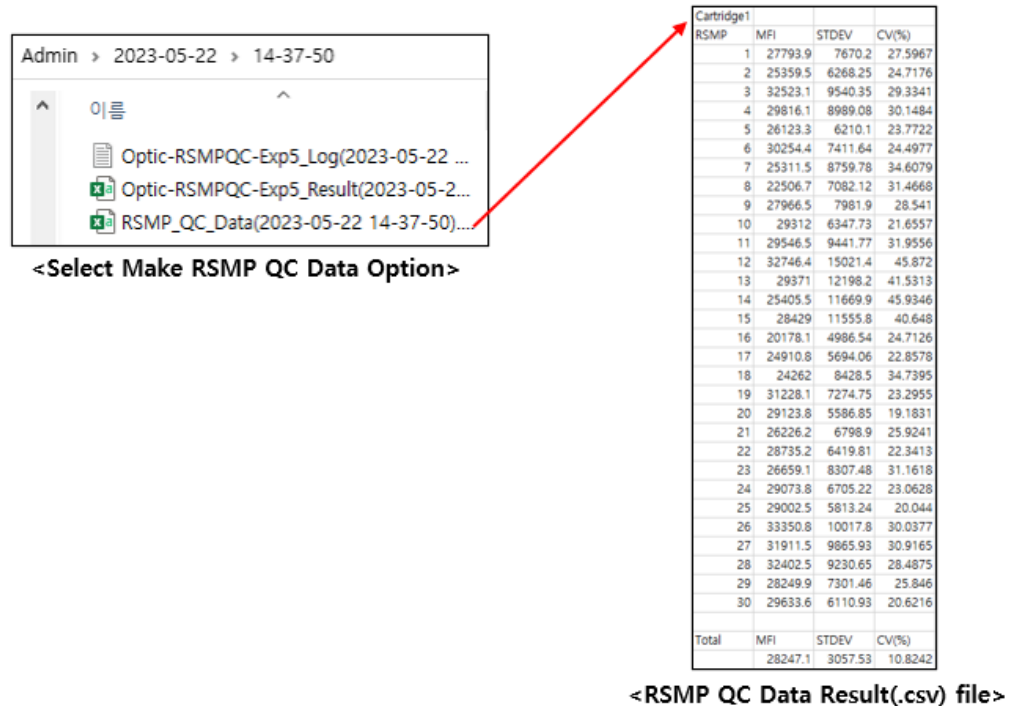
(RSMP is not demagnetized)

(RSMP should be in imaging well 8)

**- Make RSMP QC Data**

If you select the 'Make RSMP QC Data' Option, you can acquire MFI, CV(%) values for each RSMP and for the entire RSMP.

(Used to check RSMP Ab coupling QC status)



Admin > 2023-05-22 > 14-37-50

이름

- Optic-RSMPQC-Exp5\_Log(2023-05-22 ...)
- Optic-RSMPQC-Exp5\_Result(2023-05-2...
- RSMP\_QC\_Data(2023-05-22 14-37-50)....

<Select Make RSMP QC Data Option>

Cartridge1	RSMP	MFI	STDEV	CV(%)
1	27793.9	7670.2	27.5967	
2	25359.5	6268.25	24.7176	
3	32523.1	9540.35	29.3341	
4	29816.1	8989.08	30.1484	
5	26123.3	6210.1	23.7722	
6	30254.4	7411.64	24.4977	
7	25311.5	8759.78	34.6079	
8	22506.7	7082.12	31.4668	
9	27966.5	7981.9	28.541	
10	29312	6347.73	21.6557	
11	29546.5	9441.77	31.9556	
12	32746.4	15021.4	45.872	
13	29371	12198.2	41.5313	
14	25405.5	11669.9	45.9346	
15	28429	11555.8	40.648	
16	20178.1	4986.54	24.7126	
17	24910.8	5694.06	22.8578	
18	24262	8426.5	34.7395	
19	31228.1	7274.75	23.2955	
20	29123.8	5586.85	19.1831	
21	26226.2	6798.9	25.9241	
22	28735.2	6419.81	22.3413	
23	26659.1	8307.48	31.1618	
24	29073.8	6705.22	23.0628	
25	29002.5	5813.24	20.044	
26	33350.8	10017.8	30.0377	
27	31911.5	9865.93	30.9165	
28	32402.5	9230.65	28.4875	
29	28249.9	7301.46	25.846	
30	29633.6	6110.93	20.6216	
Total		MFI	STDEV	CV(%)
	28247.1	3057.53	10.8242	

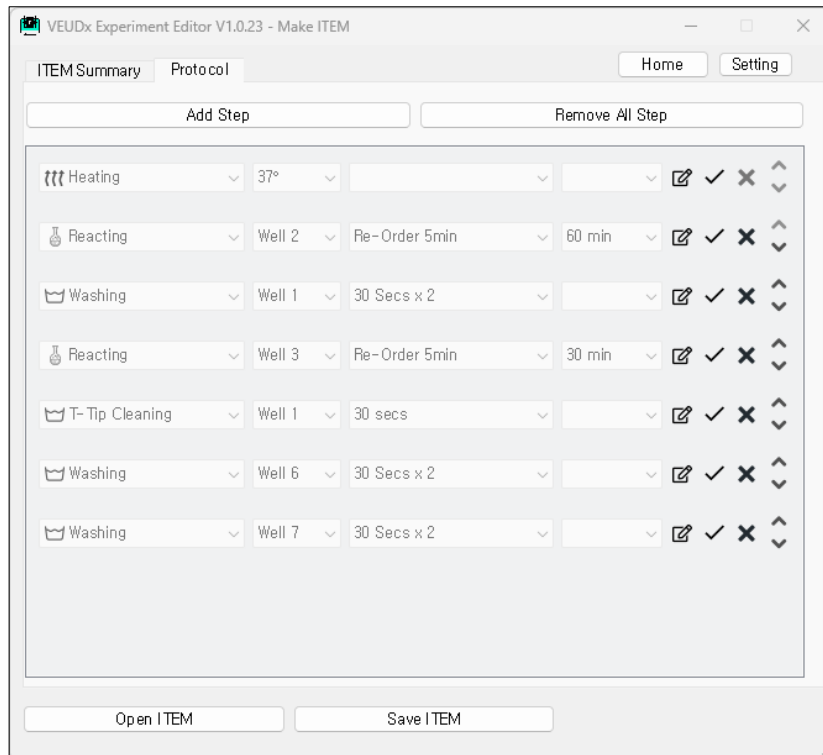
<RSMP QC Data Result(.csv) file>

### 4.3 Edit Protocol

#### 4.3.1

If you select the Protocol tab, you can edit the Step.

#### Protocol tab



VEUDx Experiment Editor V1.0.23 - Make ITEM

ITEM Summary Protocol Home Setting

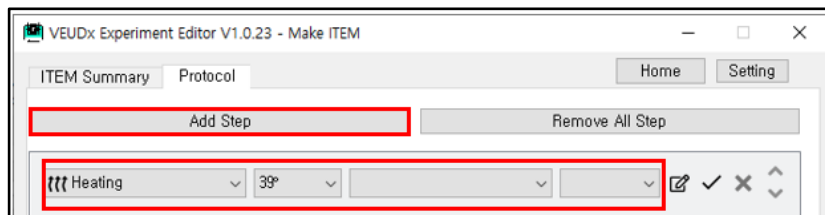
Add Step Remove All Step

Step	Well	Duration	Time	Icon	Check	Close	Up	Down
Heating	37°				✓	✗	↑	↓
Reacting	Well 2	Re-Order 5min	60 min		✓	✗	↑	↓
Washing	Well 1	30 Secs x 2			✓	✗	↑	↓
Reacting	Well 3	Re-Order 5min	30 min		✓	✗	↑	↓
T-Tip Cleaning	Well 1	30 secs			✓	✗	↑	↓
Washing	Well 6	30 Secs x 2			✓	✗	↑	↓
Washing	Well 7	30 Secs x 2			✓	✗	↑	↓

Open ITEM Save ITEM

### 4.3.2 Add Step

Click the "Add Step" box at the top and add an item.



#### - Selection by Category

.Heating : 30° / 35° / 37° / 38° / 39° / X / RT selectable

.Reacting : Reaction Well (Well 2~5) selectable

- Re-Order 2min (Change the location of RSMP every 2 minutes.)

-> 1~30 min selectable

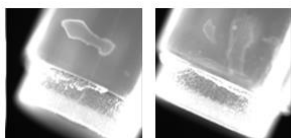
- Re-Order 5min (Change the location of RSMP every 5 minutes.)

-> 1~480 min selectable

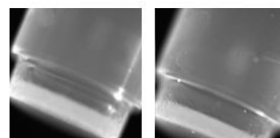
.Washing: Well1~7 and time (30 secs, 20 secsX2, 30 secsX2) selectable

.T-Tip Cleaning: Well1~7 and time (30 secs) selectable

'T-tip Cleaning' use after Staining Reaction to prevent PE buffer from remaining on the T-Tip into the Imaging Well.



T-Tip image after Staining  
Reacting (SA-PE)




T-Tip Image after using 'T-  
Tip Cleaning' action.




Heating can be selected only once and must be located only in the first step.


### 4.3.3 Edit Step



-  : Change edit Step mode

-  : Save Step

-  : Delete Step

-  : Change Step Order

## 4.4 Save ITEM and Installation

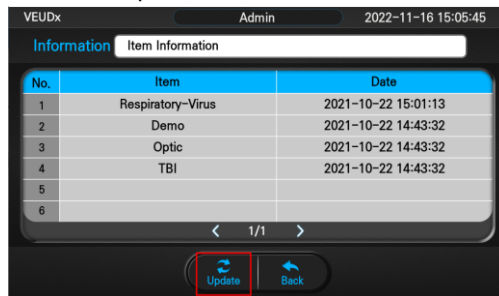
### 4.4.1 Save ITEM to PC

Click the "Save ITEM" button to create an ITEM zip file.

\*For how to save only protocol (script) for development reference, refer to the setting section.

### 4.4.2 ITEM installation on VEUDx equipment

1. Copy the ITEM file created above to an external USB memory
2. Run VEUDx equipment
3. Admin Login (Initial Admin Password: 0000)
4. Click Settings
5. Click Information
6. Click Item
7. Mounting on an external USB memory device
8. Select Update



When you press "Update" button, you can check the updateable ITEM list.

(Update file must be placed in the USB Root folder)



9. Select ITEM to update
10. ITEM update complete
11. Restart after shutting down the equipment



When you press each item, you can check detailed information such as each marker name and unit.

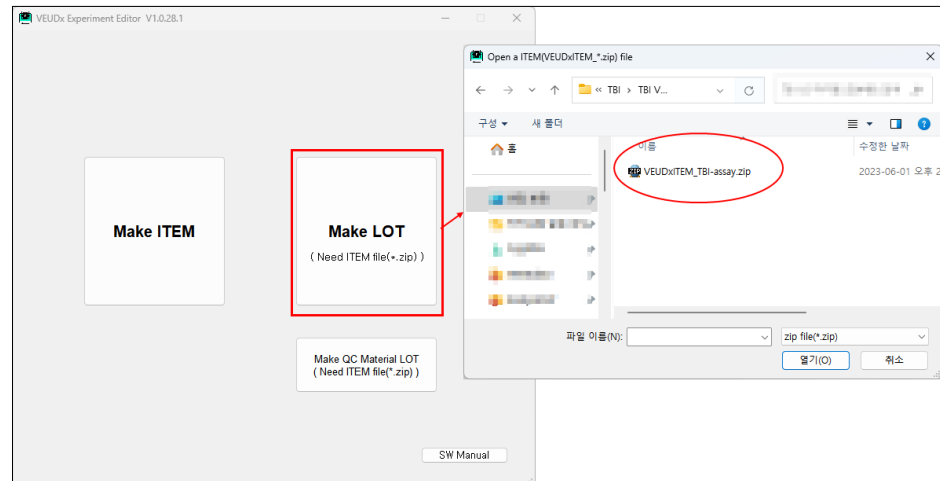


## 5. Make LOT

### 5.1 Select ITEM file

#### 5.1.1 Select ITEM file

Select ITEM file to make LOT.



### 5.2 Make LOT

#### 5.2.1 Start

Length	Marker	a	b	c	d	Make	Max	Min
200	UCH-L1					Make	65535	0
250						Make	65535	0
300	GFAP					Make	65535	0
350						Make	65535	0
400						Make	65535	0
450						Make	65535	0
500						Make	65535	0

The ITEM name and Marker name read from the ITEM file are displayed.

#### 5.2.2 Enter LOT information

- 4PL Parameters (a, b, c, d)
- LOT creation date
- LOT Serial

- LOT Expire Date can be entered.

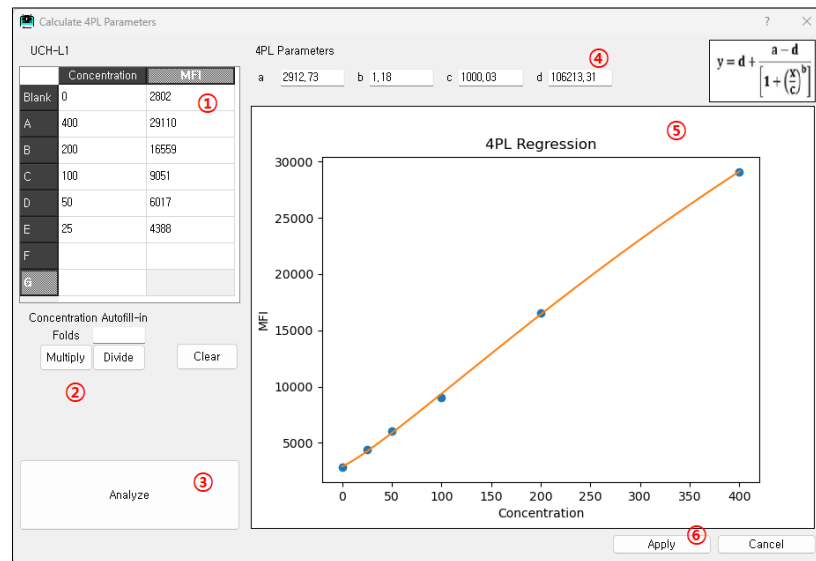
\*Barcode Name, Note can be used as a reference.

### 5.2.3 Calculate 4PL Parameters

- Select "Make" button for each Maker.

Length	Marker	a	b	c	d	
200	200um					Make

- 4PL calculation screen



- ① Concentration, MFI input  
(Copy/Paste available in Excel/Notepad)
- ② Automatically multiply and divide as much as Folds(multiples) based on A concentration
- ③ Calculate 4PL parameters and graphs according to the input concentration and MFI values
- ④ Calculated graph
- ⑤ Apply to the LOT edit screen by selecting "Apply" button

### 5.2.4 Copy Barcode string to Clipboard

When you press the "Copy LOT Barcode string to Clipboard" Button, the LOT Barcode string below will be copied to the clipboard.

Ex)"VEUDx-L/V3/230927001/TBI-

V2/240325/1\_a2\_b3\_c4\_d5\_x65535\_n0/3\_a6\_b7\_c8\_d9\_x65535\_n0"

When you press the "Copy Cartridge Barcode string to Clipboard" Button, the Cartridge Barcode string below is copied to the clipboard.

ex)"VEUDx-C/V3/230927001"

### 5.2.3 Save LOT

Click the "Save LOT(+PDF)" button

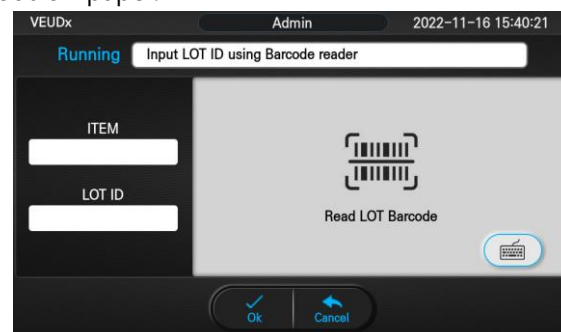
Two LOT XML files and Barcode PDF files are created.

- LOT XML file (ex, VEUDxLOT\_TBI\_EZTB22111601.xml) Used to save work

When using VEUDx equipment, it can be used when there is no Barcode Reader equipment.

- Barcode PDF file (ex, VEUDxLOT\_TBI\_EZTB22111601\_BarCode.pdf)

It is used for reading VEUDx equipment LOT/Script Barcode by printing it out on paper.



< VEUDx equipment LOT reading screen >



< PDF file for LOT Barcode output >

**5.2.4 Open LOT** Editing is possible by selecting the saved LOT XML by pressing the "Open LOT" button.

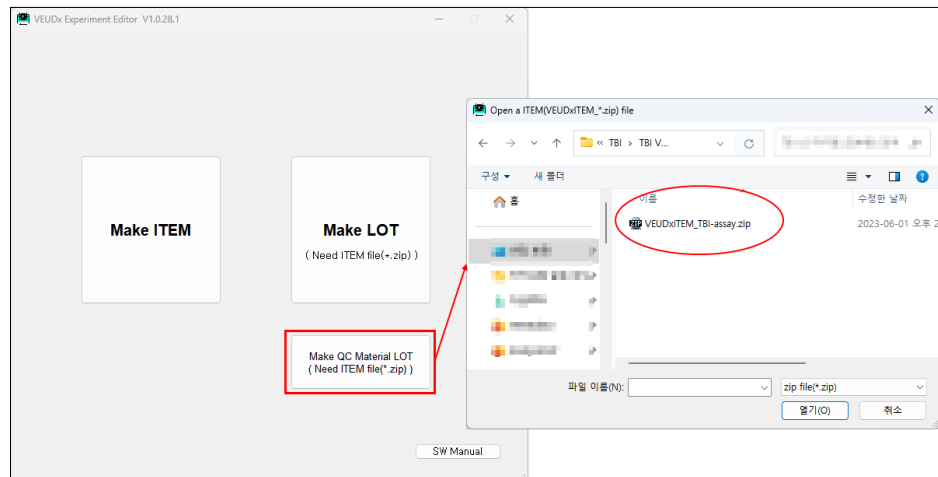


## 6. Make QC Material LOT

### 6.1 Select ITEM file

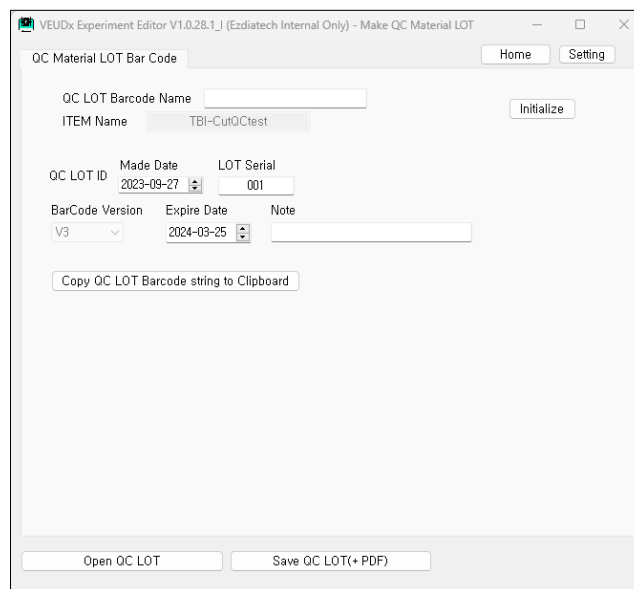
#### 6.1.1 Select ITEM file

Select ITEM file to make QC Material LOT.



### 6.2 Make QC Material LOT

#### 6.2.1 Start



The ITEM name read from the ITEM file are displayed.

#### 6.2.2 Enter QC Material LOT information

- QC Material LOT creation date
  - QC Material LOT Serial
  - QC Material LOT Expire Date can be entered.
- \*Barcode Name, Note can be used as a reference.

### 6.2.3 Copy Barcode string to Clipboard

When you press the "Copy QC LOT Barcode string to Clipboard" Button, the QC LOT Barcode string below will be copied to the clipboard.  
Ex)" VEUDx-Q/V3/230927001/TBI-CutQCtest/240325"

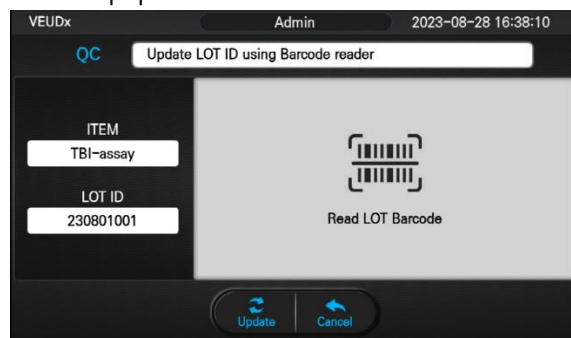
### 6.2.4 Save QC Material LOT

Click the "Save QC LOT(+PDF)" button  
Two QC LOT XML files and Barcode PDF files are created.

- QC Material LOT XML file (ex, VEUDx\_QC\_LOT\_TBI-assay\_230922001.xml)  
used to save work

- QC Material Barcode PDF file  
(ex, VEUDx\_QC\_LOT\_TBI-assay\_230922001\_BarCode.pdf)

It is used for reading VEUDx equipment QC Material Barcode by printing it out on paper.



< VEUDx equipment QC Material LOT reading screen >



< PDF file for QC Material LOT Barcode output >

### 6.2.5 Open QC Material LOT

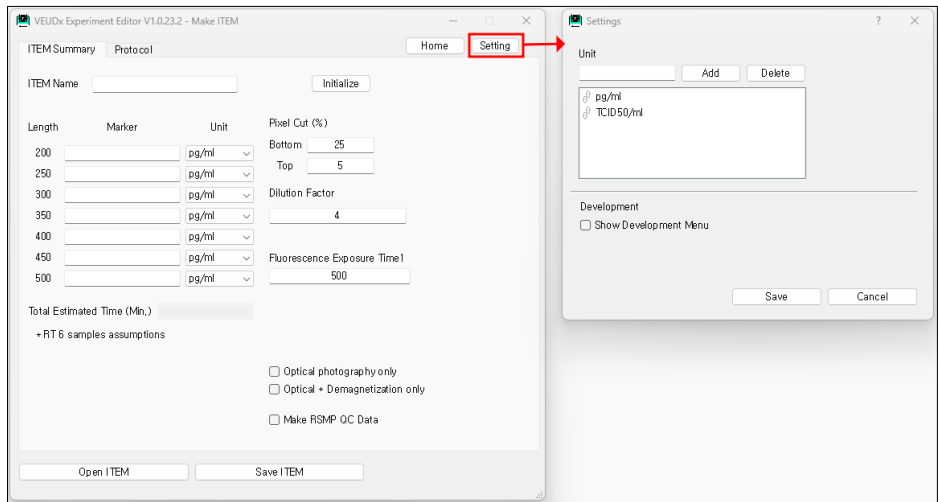
Editing is possible by selecting the saved LOT XML by pressing the "Open QC LOT" button.

## 6. Settings

### 6.1 Open Settings

#### 6.1.1 Open Settings

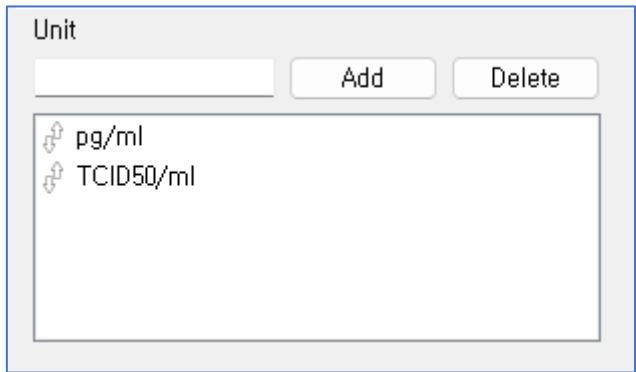
'Press the 'Settings' button.



### 6.2 Unit

#### 6.2.1 Unit

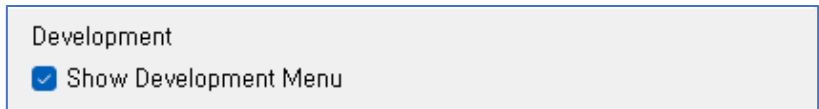
Units to be displayed in the Unit Combo List of the ITEM Summary tab can be edited.



### 6.3 Development menu

#### 6.3.1 Development menu

If you select the development menu, you can open/save only the protocol and display comments for analysis.



#### 6.4.2 Save protocol file

If you press the 'Save Protocol' button, only the Protocol (Script) file can be saved separately.

This is a development file and **cannot** be installed on a machine.

When "Add Comment", comments are displayed on the Protocol (Script).

< Protocol display according to annotation options >