Multi LABELIST V5
Training Manual
- Function Descriptions -

Version 11

SATO CORPORATION

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1: Using the Tax Calculator Function

Let's try to calculate consumption tax, using the tax calculator function.

1. What Is the Tax Calculator Function?

The tax calculator function calculates the tax for the amount entered, and outputs "Including tax", "Net of tax", "Tax excluded", or "Tax included".

"Tax included" and "Tax excluded" indicates whether the price includes tax or not.
For example, for something priced at ¥100 which includes tax, tax is ¥7 (tax included) and the actual product price is ¥93. For something priced at ¥100 that doesn't include tax (tax excluded), it will be sold at ¥108, the product price of ¥100 and the tax of ¥8.

*This example is based on an 8% tax rate, rounding down figures less than ¥1.

2. Processing Different Types of Taxes and Tax Calculations

■ Types of Tax setting
Including tax: add tax excluded for the specified tax rate to the input price.
Net of tax: subtract tax included for the specified tax rate from the input price.
Tax excluded: the tax excluded for the specified tax rate.
Tax included: the tax included for the specified tax rate.

■ Tax Processing
• Unit
0.1s place: processes the value in the 0.1s place.
1s place: processes the value in the 1s place.
10s place: processes the value in the 10s place.
100s place: processes the value in the 100s place.
1,000s place: processes the value in the 1,000s place.

• Fraction calculation
Round down: rounds down the number in the processing place.
Round up: rounds up the number in the processing place.
Round off (1): rounds off the number in the processing place.
Round off (2): rounds up for 6 or more in the processing place or rounds down for 5 or less.

*It is a fractional treatment of the tax amount, not a fractional treatment of the results required by the tax edit.

■ Specification method of tax rate
User's tax rate: Uses the tax rate set in MLMaintenance.
Fixed value: Uses the value directly entered on the Edit variable screen as the tax rate.
Variable value: Uses the specified value for the input variable as the tax rate.

■ **Examples of consumption tax setting**

Settings for Tax Editing	Input	Tax	Value after editing Tax	Final Output
Type : Outside Fraction : 0.1s place, round down Tax rate : 8%	19899	1591.92	1591	1591
Type : Included Fraction : The second decimal place, round up Tax rate : 8%	19899	1591.92	1591.92	21490.92
Type : Inside Fraction : 0.1s place, round off Tax rate : 10%	2955	268.63…	269	269
Type : Excluded Fraction : 10s place, rounds up for 6 or more or rounds down for 5 or less Tax rate : 10%	2955	268.63…	270	2655

3. Tax Rate Setting Method

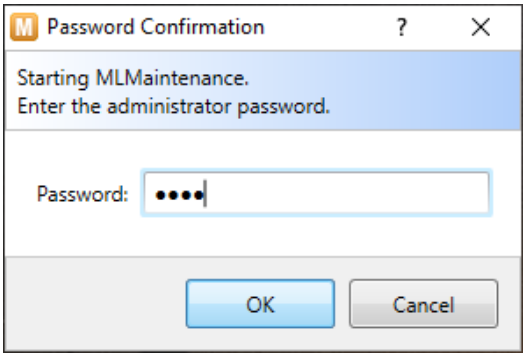
First make settings for the user's tax rate.

Select Windows Start Menu > Multi LABELIST V5

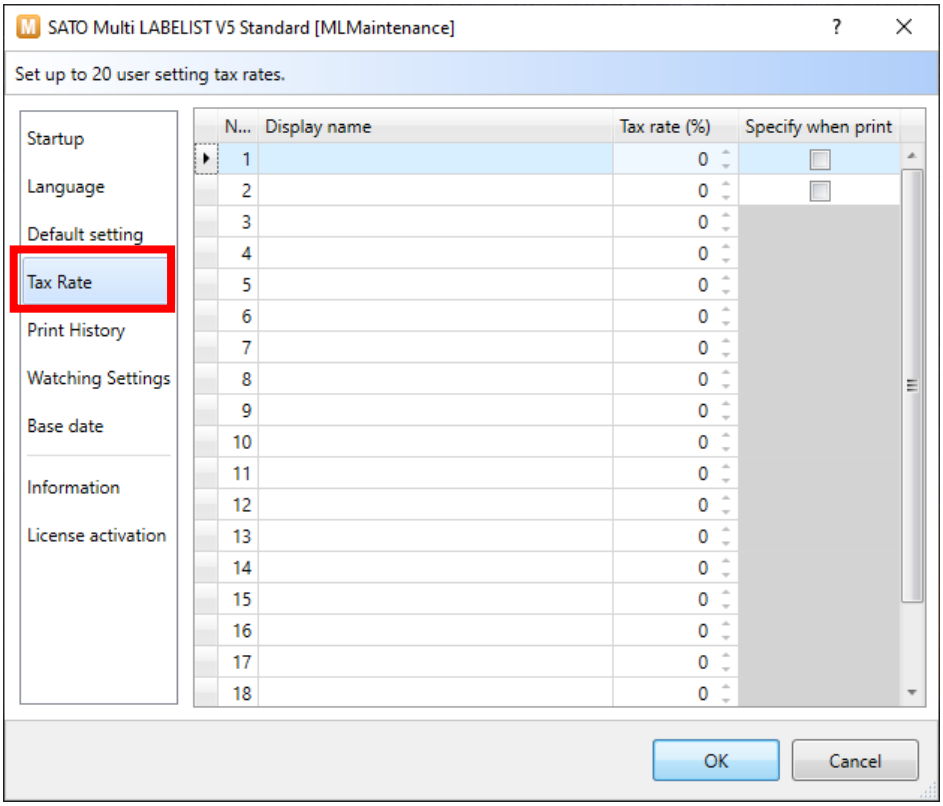
.

The displayed location of "Multi LABELIST V5" may differ depending on your OS.

Enter "user" as the password.
This is displayed as black circles (●) on the screen.
Select "OK". The MLMaintenance screen will be displayed.

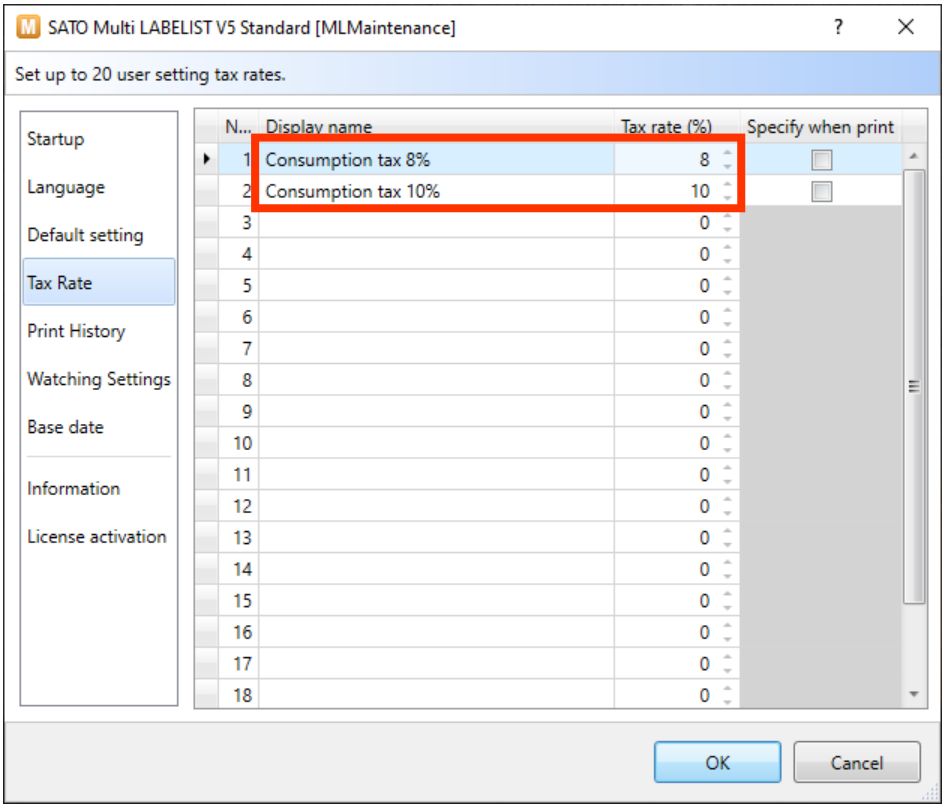


Click “Tax Rate” to display the consumption tax setting screen.



Up to 20 patterns of tax rate can be registered.

Enter the Display name and Tax rate (%) and click “OK”.

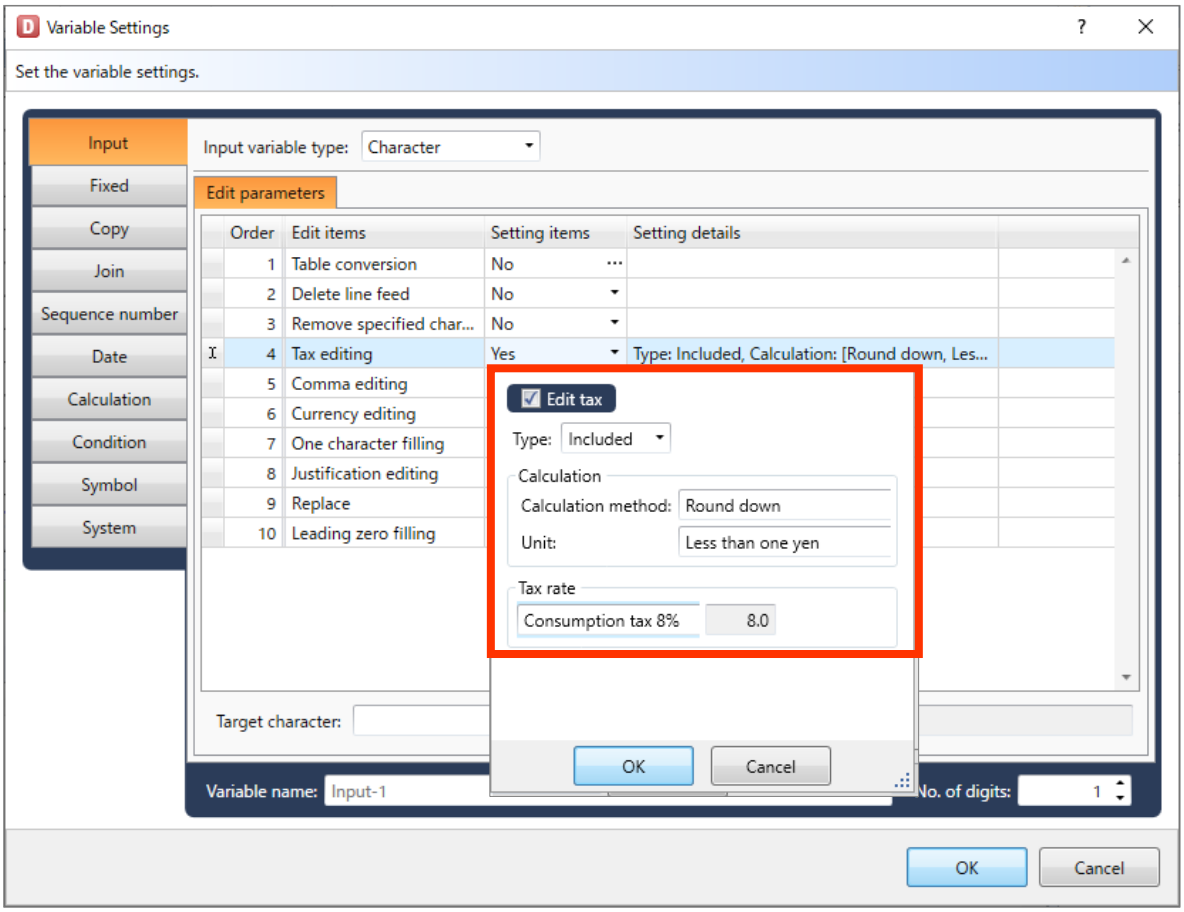


This completes the tax rate setting.

4. Settings for Tax Editing

Create a new layout in MLDesign and add a local variable.
Display the local variable screen.

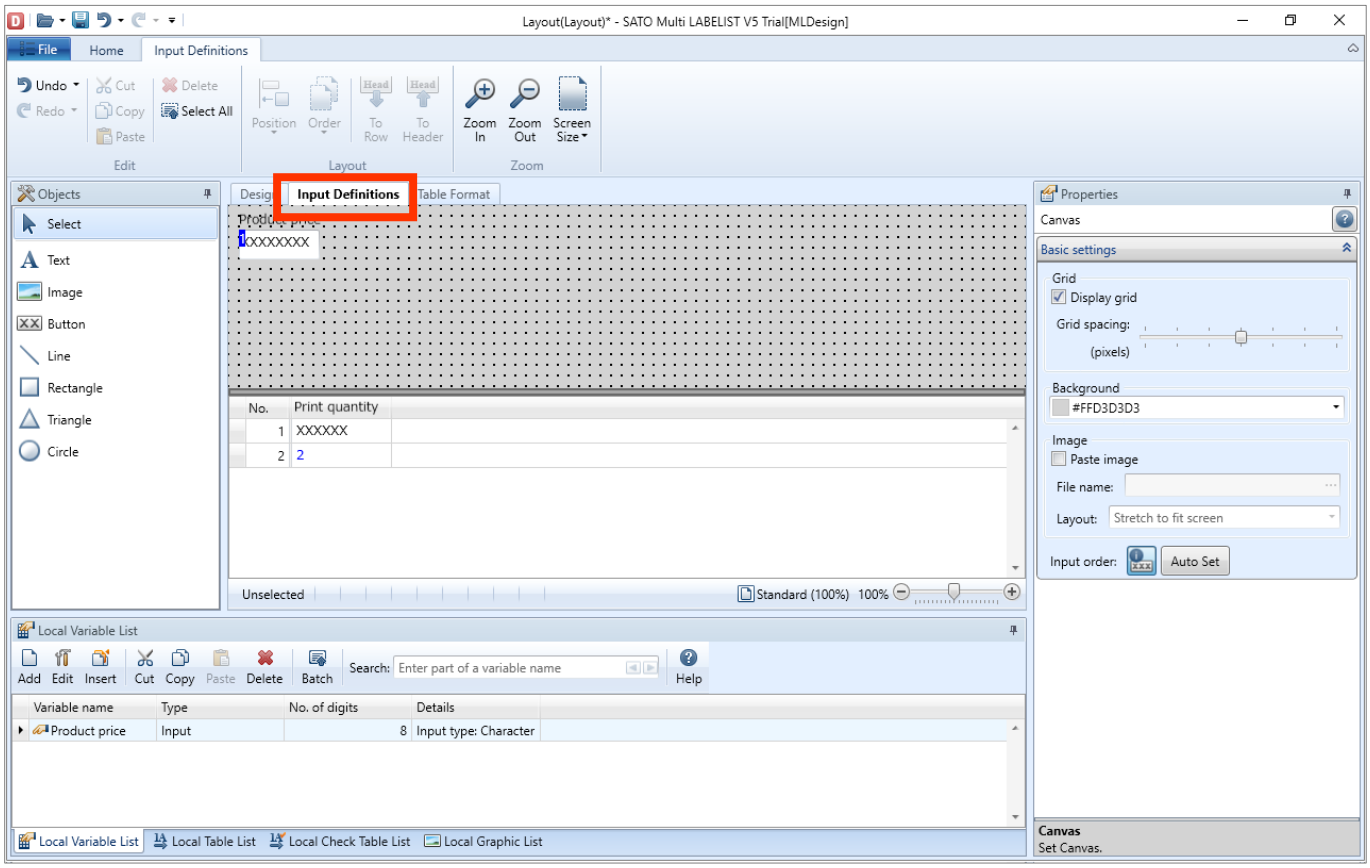
Select “Input” on the Variable Settings screen and set the Tax editing items on the “Edit parameter” tab as shown below.



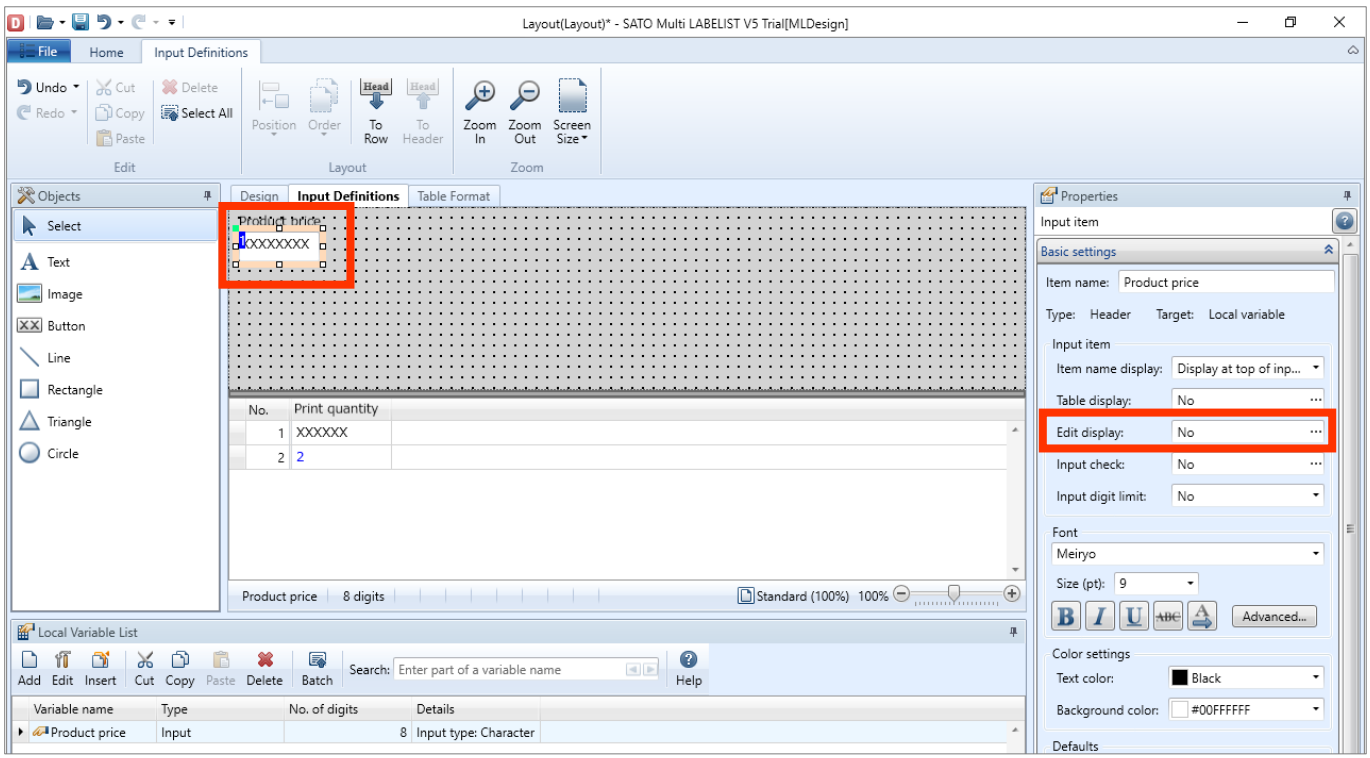
Enter the Variable name and No. of digits and register the variable. Then place it on the layout screen.
The Tax editing set in variable will be reflected in print result.

5. Edit/Display Function

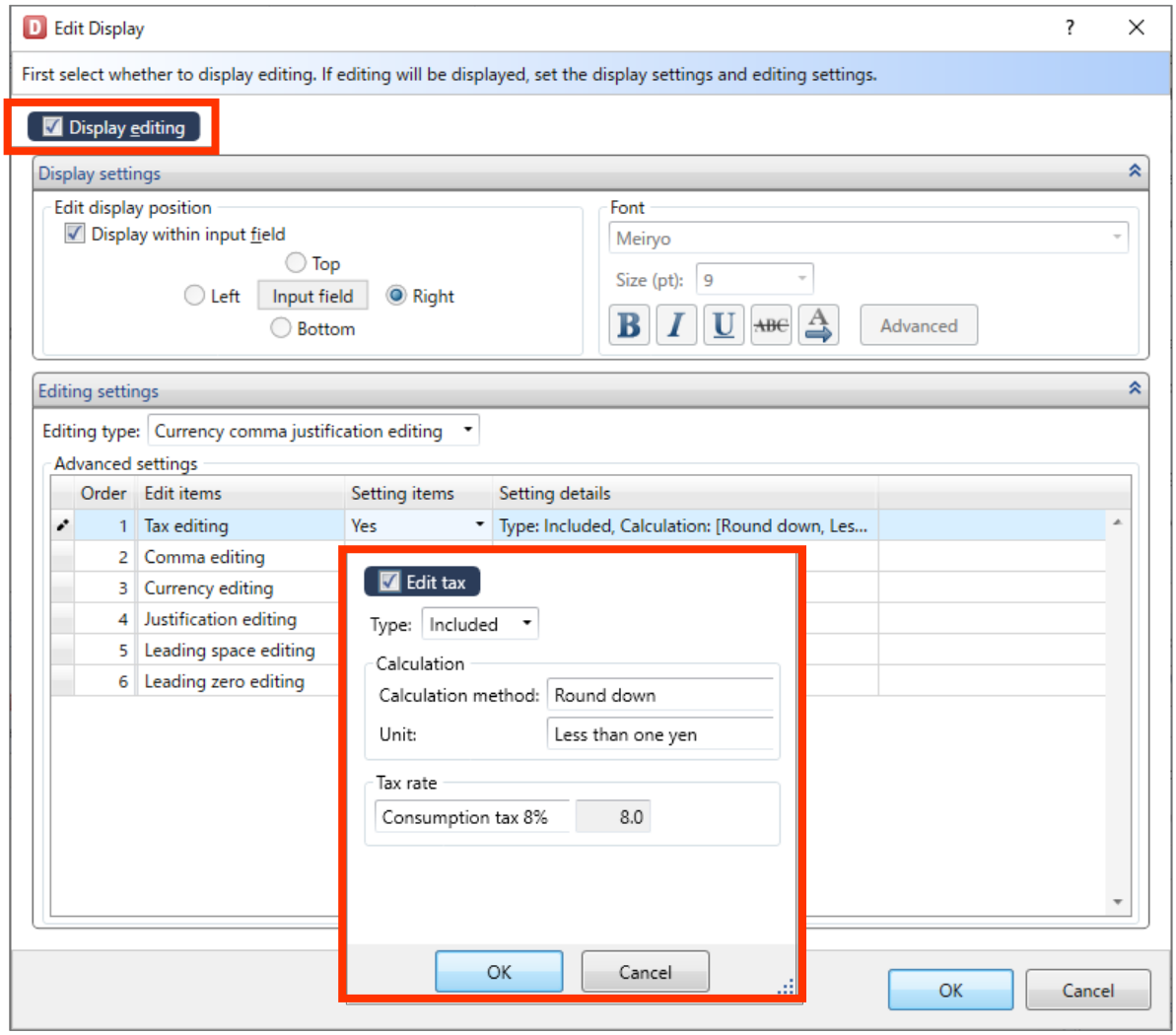
In this section, it is described how to make settings for the display on the print screen.
The screen is switched on the “Input Definitions” tab.

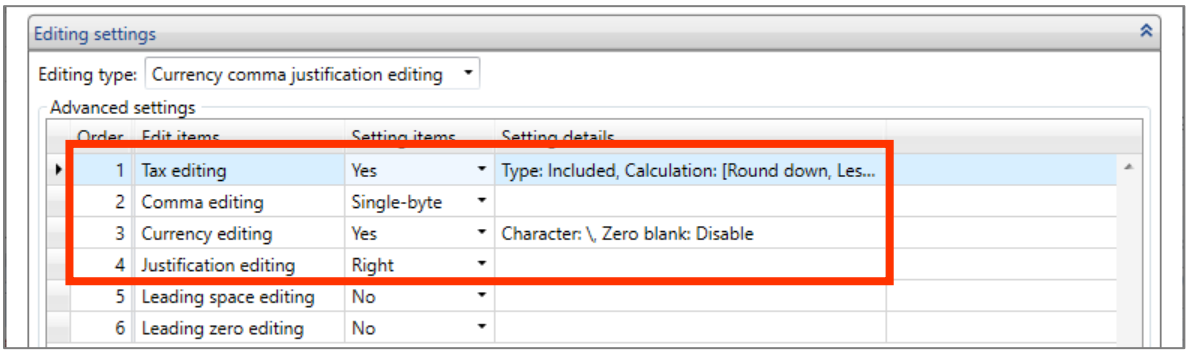


Click “Product price” item to make the settings for “Edit display” on the “Basic settings” pane on the right.



The “Edit Display” screen opens. Enable “Display editing”.
Make settings for “Tax editing”, “Comma editing”, “Currency editing”, and “Justification editing” on the “Editing settings” block.





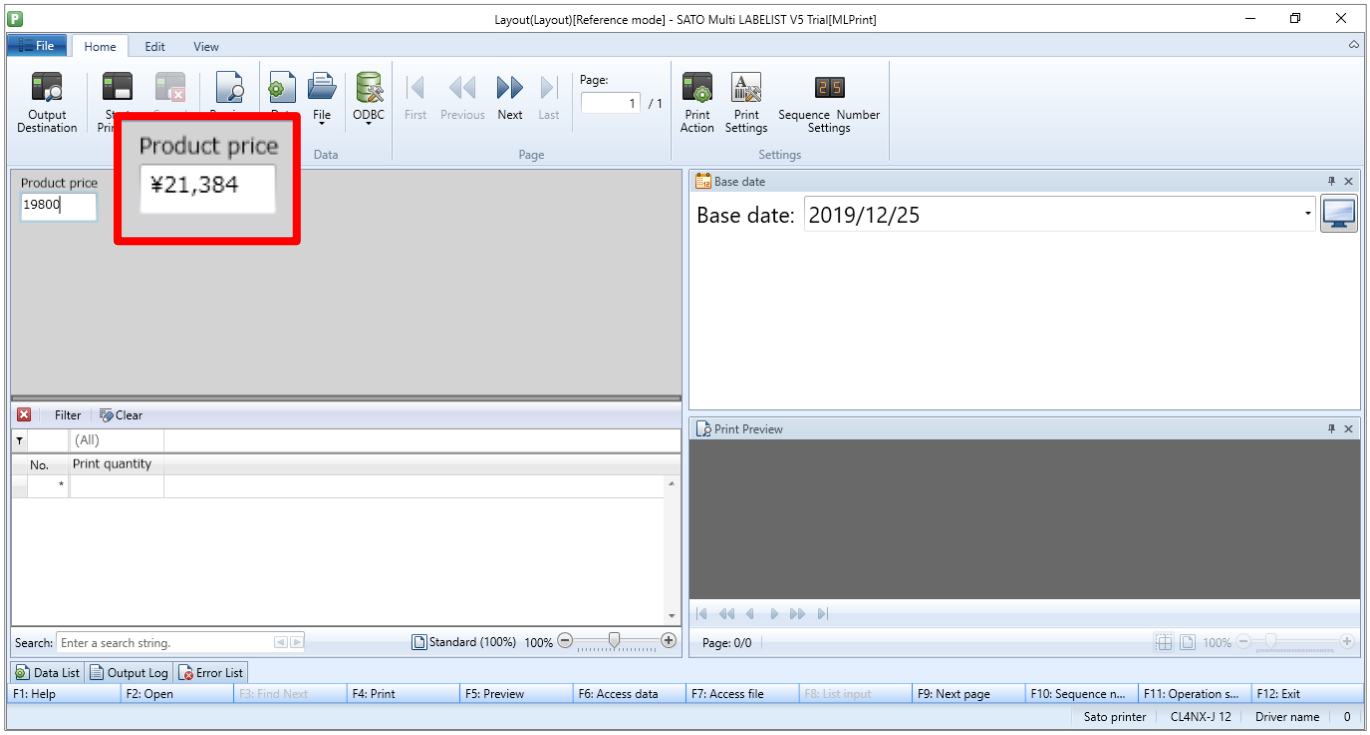
When settings are complete, save the layout and exit MLDesign.

Open the layout created before in MLPrint and enter data in “Product price”.
Then the display shows the value after Editing settings.

■ Number of digits for the input variable

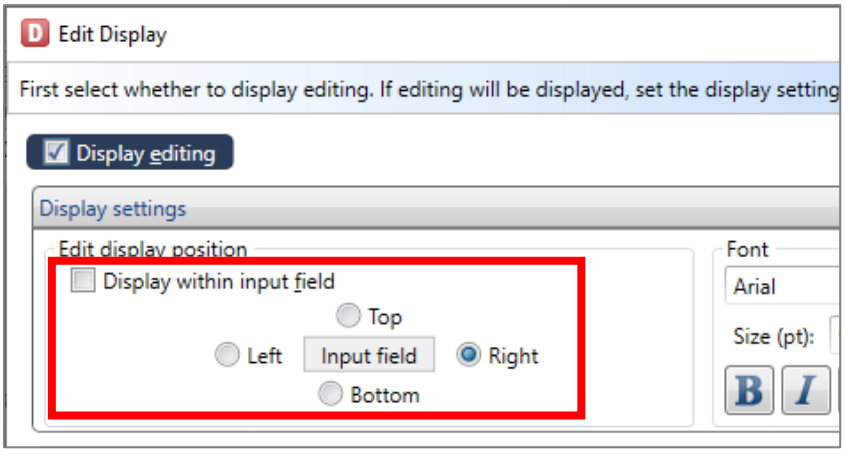
When Edit Display is used, a money symbol “¥” or comma “,” is treated as one character so that you have to create an input item considering the number of digits after editing.

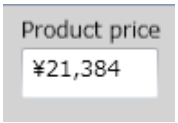
For example, to display the price with tax included “¥21,384” by entering the product price “19800”, set the number of digits for the variable to 7 digits or more.



■ Display position of editing results

To display the editing results not in the input field but as separate items, open the Edit Display screen on the “Input Definitions” tab in MLDesign and disable “Display within input field” in “Edit display position”.





This completes “1: Using the Tax Calculator Function“.

2: Creating GS1-128 Barcode

1. What Is the GS1-128 Create Function?

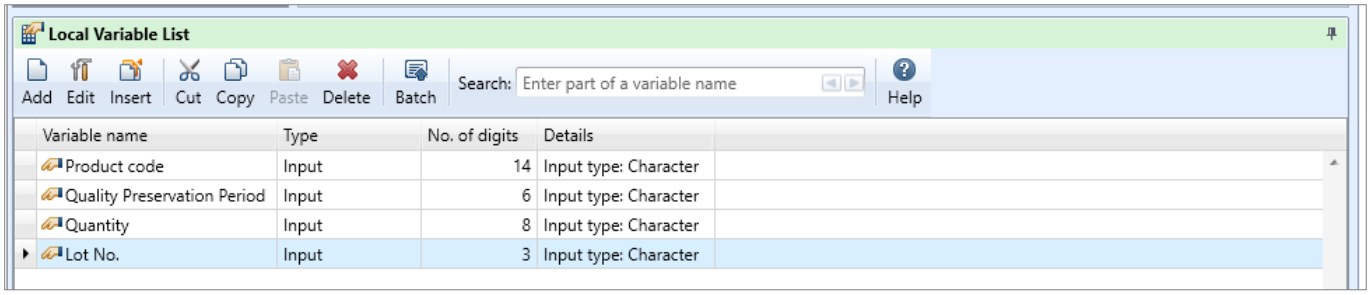
“GS1-128” is a CODE128 barcode comprising various management data with Application Identifiers (AI) added in a business transaction system (product, distribution, and business management, etc.).

The “GS1-128 Create Function” enables you to create GS1-128 easily by selecting Application Identifiers (AI) on the list and connecting them to variables to be printed. This function has many useful features such as “automatically writing parenthesis to Application Identifiers (AI) of description”, “automatic switching to the shortest type of barcode”, and “function to check the number of digits and values of input”.

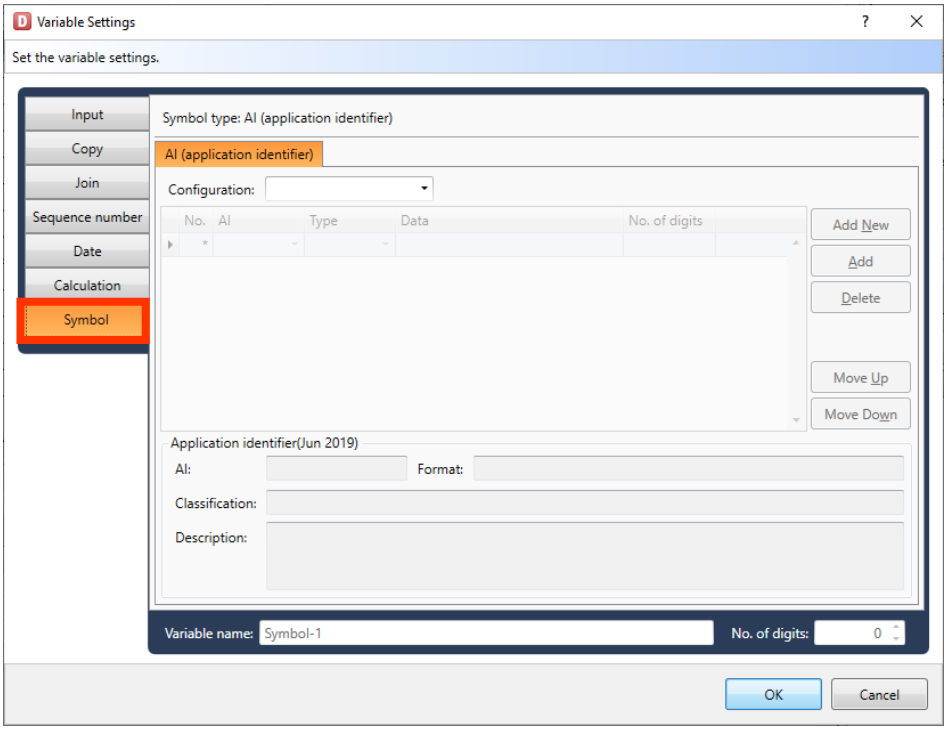
2. Creating Variables

First let’s create data to be incorporated into barcode.
In this section, we will explain how to create GS1-128 barcode that includes “Product code”, “Quality Preservation Period”, “Quantity”, and “Lot No.”, as an example.

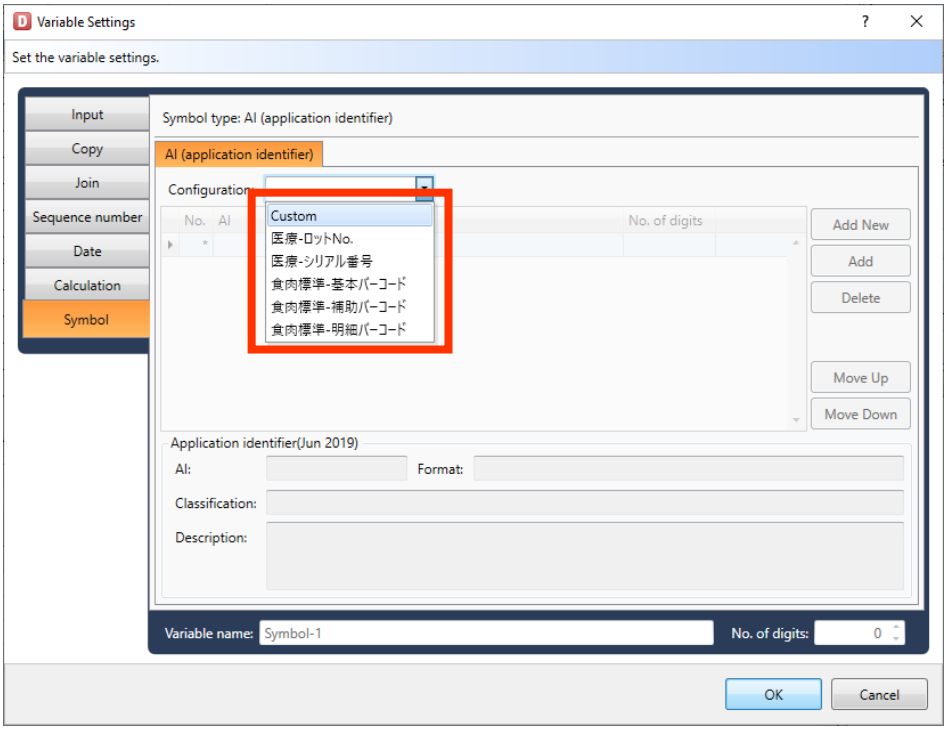
First create variables to be incorporated into GS1-128 in MLDesign.



Then create GS1-128 variables incorporating the variables.
Select “Symbol” on the Variable Settings screen.



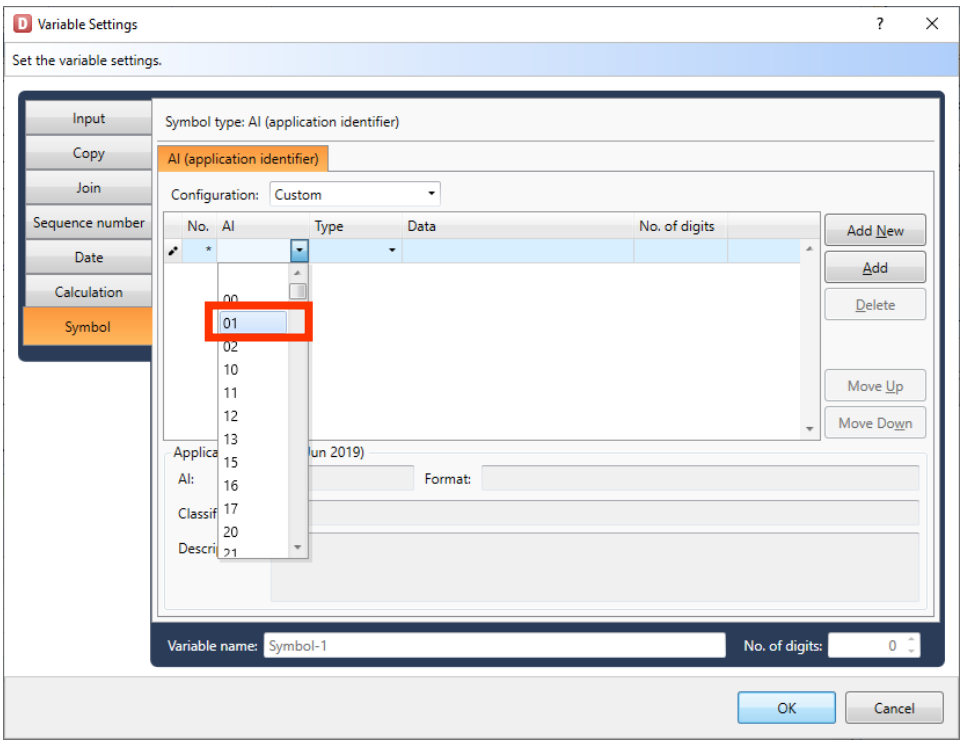
Select the “Configuration” for GS1-128.
The “Configuration” has several types such as “Custom”, which enables editing the configuration freely, and standard configurations that are used in the medical and food fields.
When you select “Custom”, go to “Custom configuration” on the next page. When you select the other configuration, go to “Standardized configuration”.



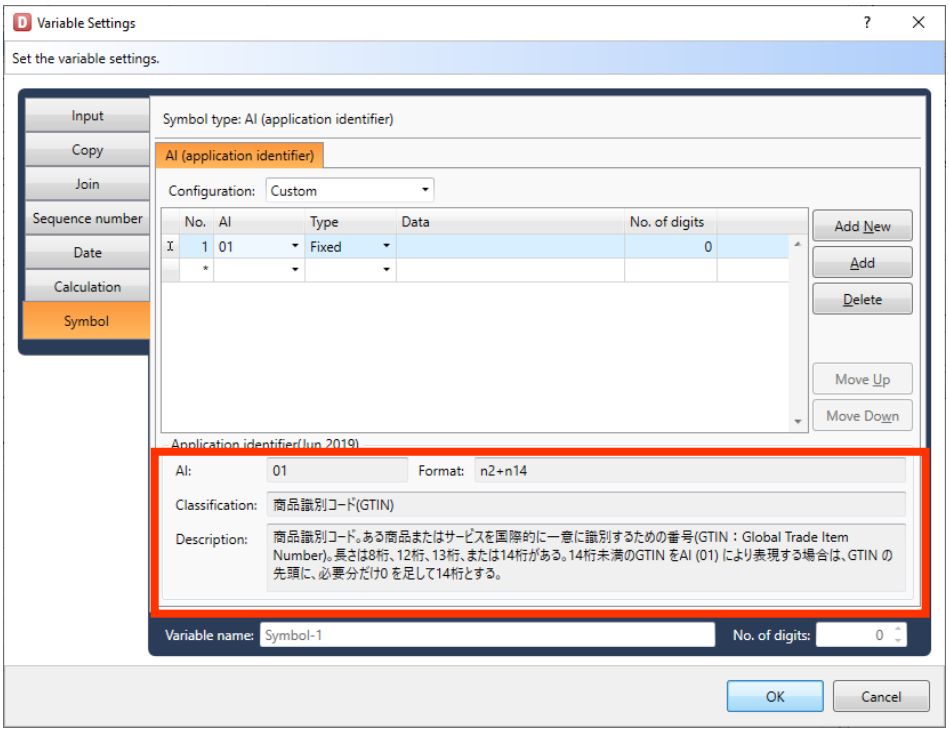
■Custom configuration

First incorporate the AI of the product code.

Click an item “AI” and the AI list will be displayed.



The Format, Classification, and Description of the selected AI will be displayed.

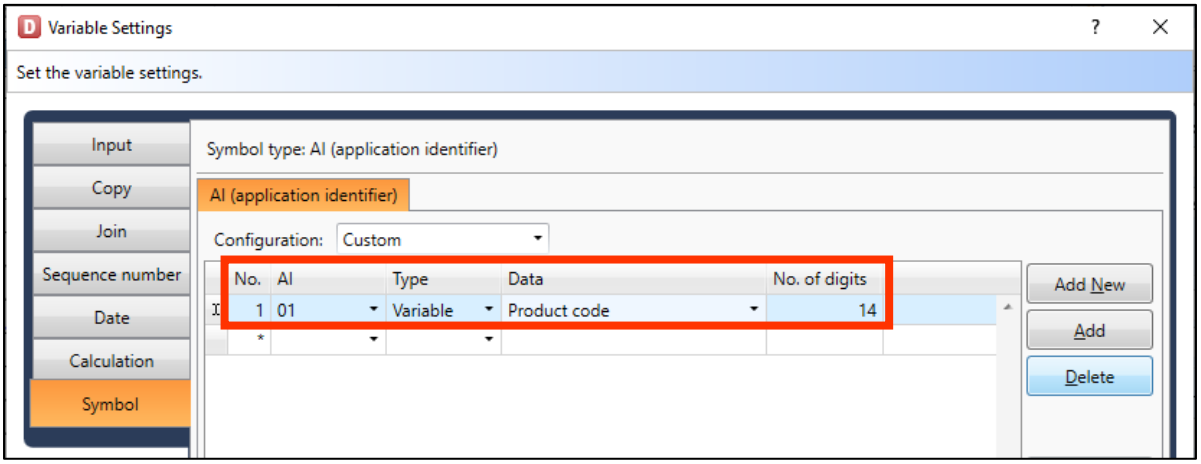


The following rules apply to the AI format.

Format: n3+an...30

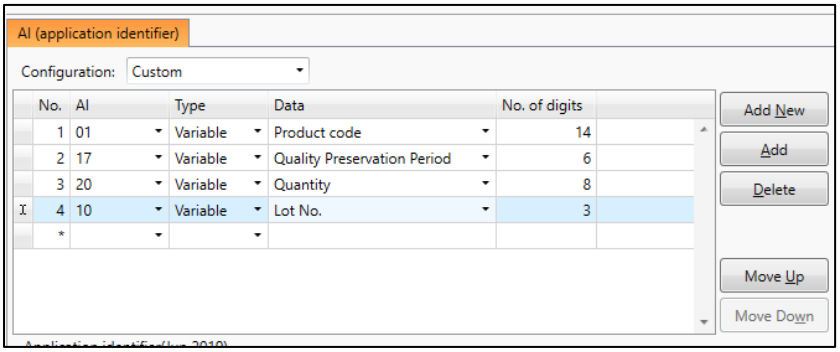
The “n” of the input character indicates numeric, “a” for alphabet, and “an” for alphanumeric.
A numeric value after the symbol indicates the number of digits that can be entered and “...”indicates that the number of digits is variable.

After selecting AI, select “Variable” for “Type” and “Product code” for “Data”.



Make settings for all AI and data required in the same manner.
When you finish settings, set “GS1-128” in Variable name and click “OK” to register the variable.
The combination of each variable and AI is as shown below.

AI	Variable
17	Quality Preservation Period
20	Quantity
10	Lot No.

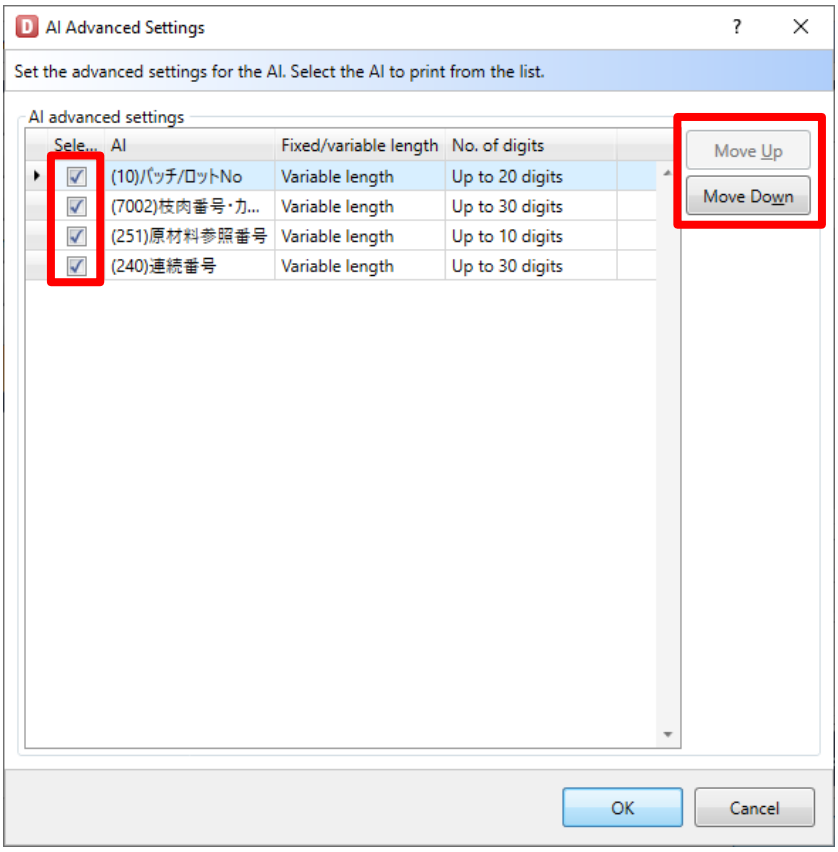


This completes “Custom Configuration:“.

■Standardized configuration

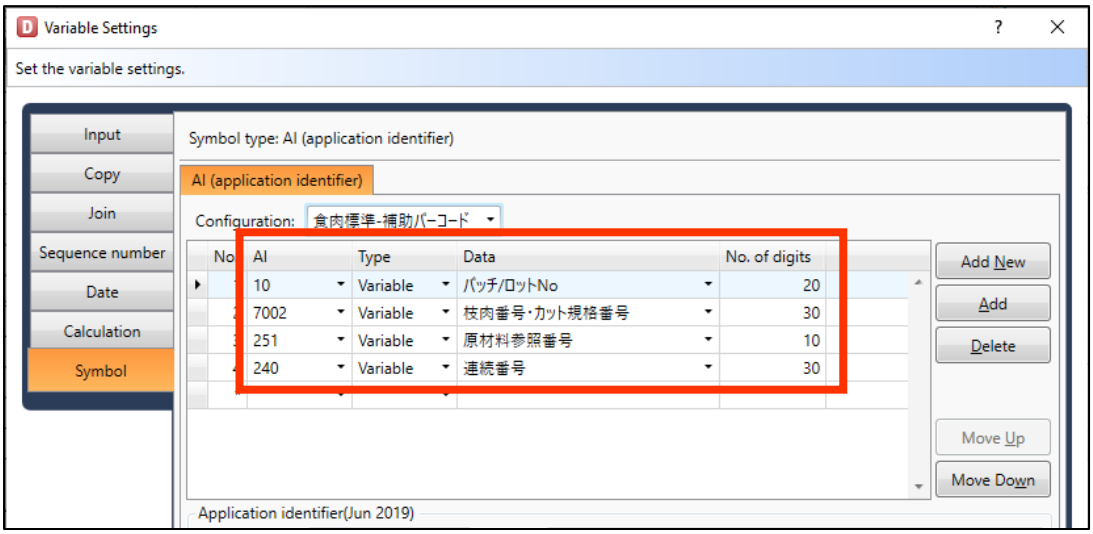
If you select “Meat Standard – Assistant” in Configuration, the screen shown below will appear.

Add check marks to the items that you wish to print. The order can be changed.



This mode automatically generates the required AI and variables for the selected standardized configuration.

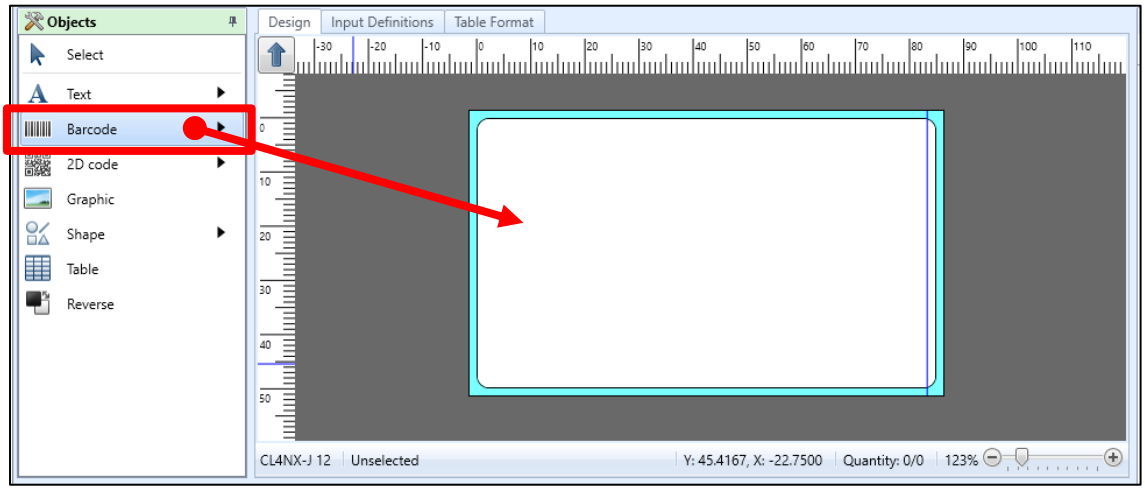
Variables created automatically can be changed to the existing variables.



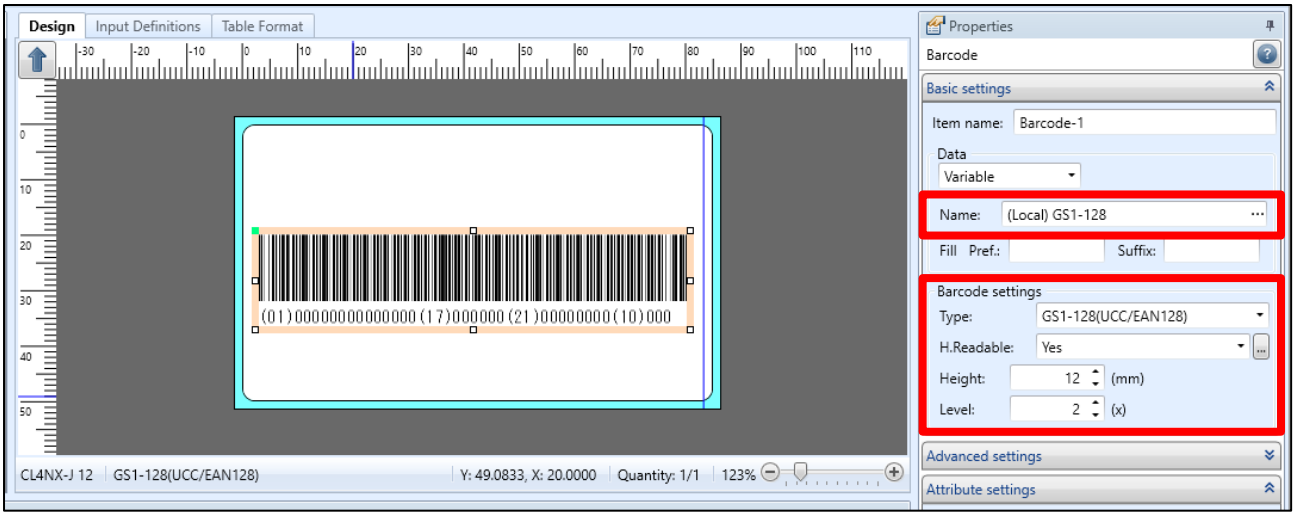
This completes “Standardized configuration“ .

3. Creating a GS1-128 Layout

Let's create a barcode on the layout for the registered GS1-128 data.
Click "Barcode" and place the barcode on the Design screen.



Set "Data" in "Basic settings" on the Properties pane to "Variable" and click "Name" to select the variable for GS1-128 created before. Set "Type" to "GS1-128(UCC/EAN128)", "H.Readable" to "Yes", and "Level" to "2" or higher.



Now the GS1-128 can be created on the layout.
Make sure that the printed barcode can be read by a scanner.
*If the barcode cannot be read, the issue may be resolved by enlarging the barcode.

This completes "2: Creating GS1-128 Barcode".

3: History Files

1. What Are History Files?

History files store accumulated history data of the layout print history, sort print history, and count history of the counter item values. The accumulated data are in text format, so they can be exported to Excel and other programs for editing.

2. Specifying the Destination to Save History Files

First specify the destination to save print history.

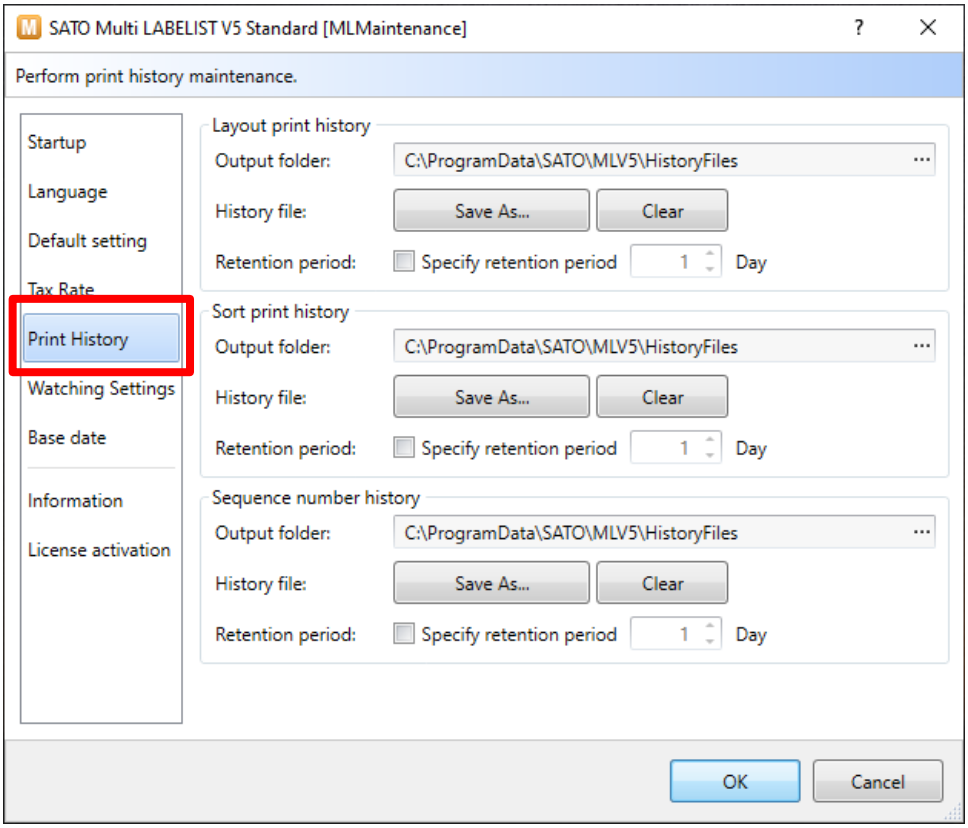
Select Windows Start Menu > Multi LABELIST V5

.

The displayed location of “Multi LABELIST V5” may differ depending on your OS.

Enter “user” as the password. This is displayed as black circles (●) on the screen. Select “OK”. The MLMaintenance screen will be displayed.

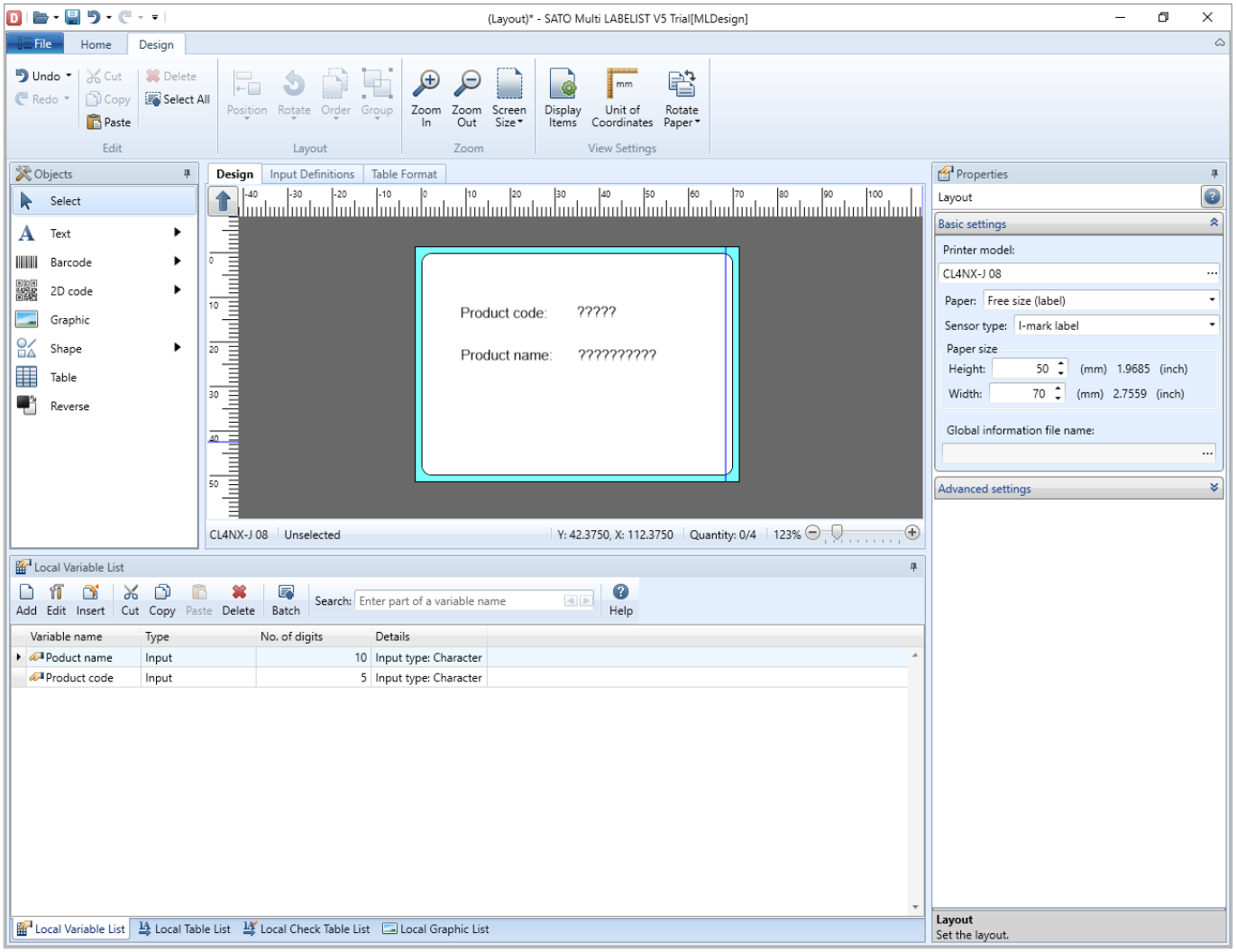
Select Print History and change the output folder for each print history as required.
Existing history files can be saved using the “Save As ...” button.
The “Clear” button clears the saved print history.



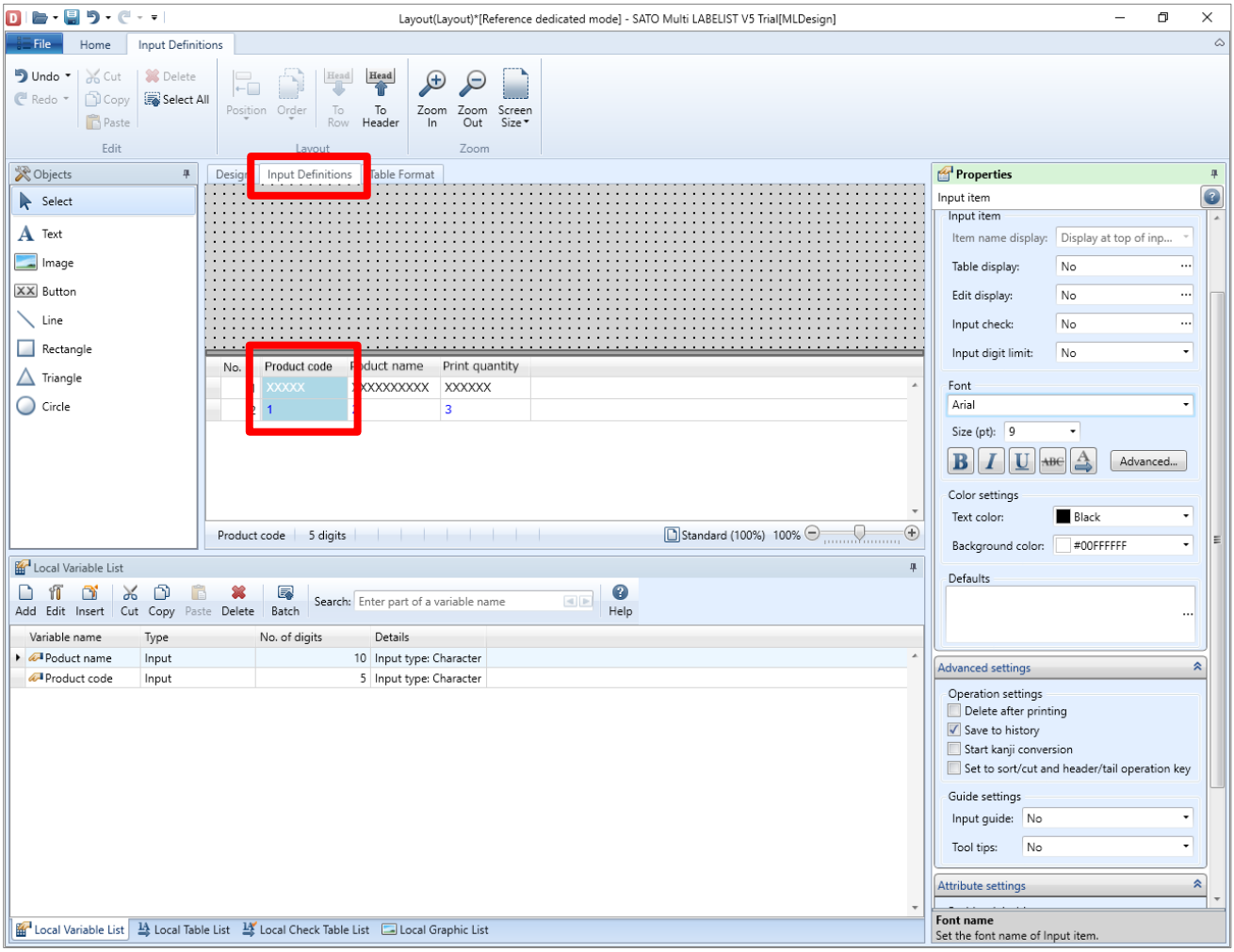
3. Creating a History File

Using the layout shown below, create a history file for storing the product code by print layout

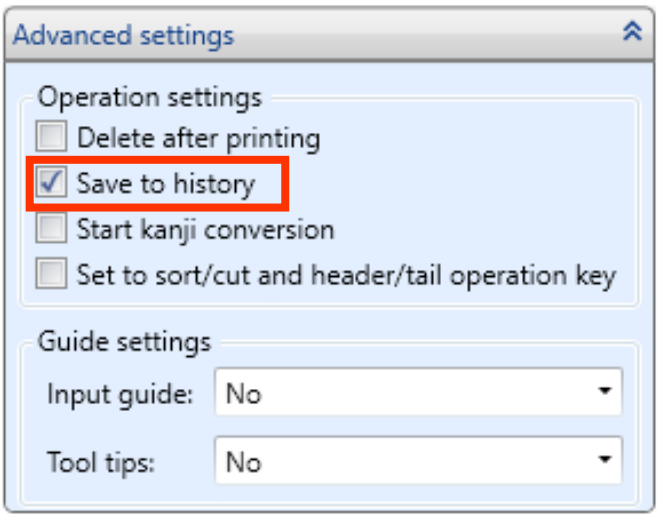
Open the layout you wish to get history with “MLDesign”.
(This layout uses the product code and product name as input items.)



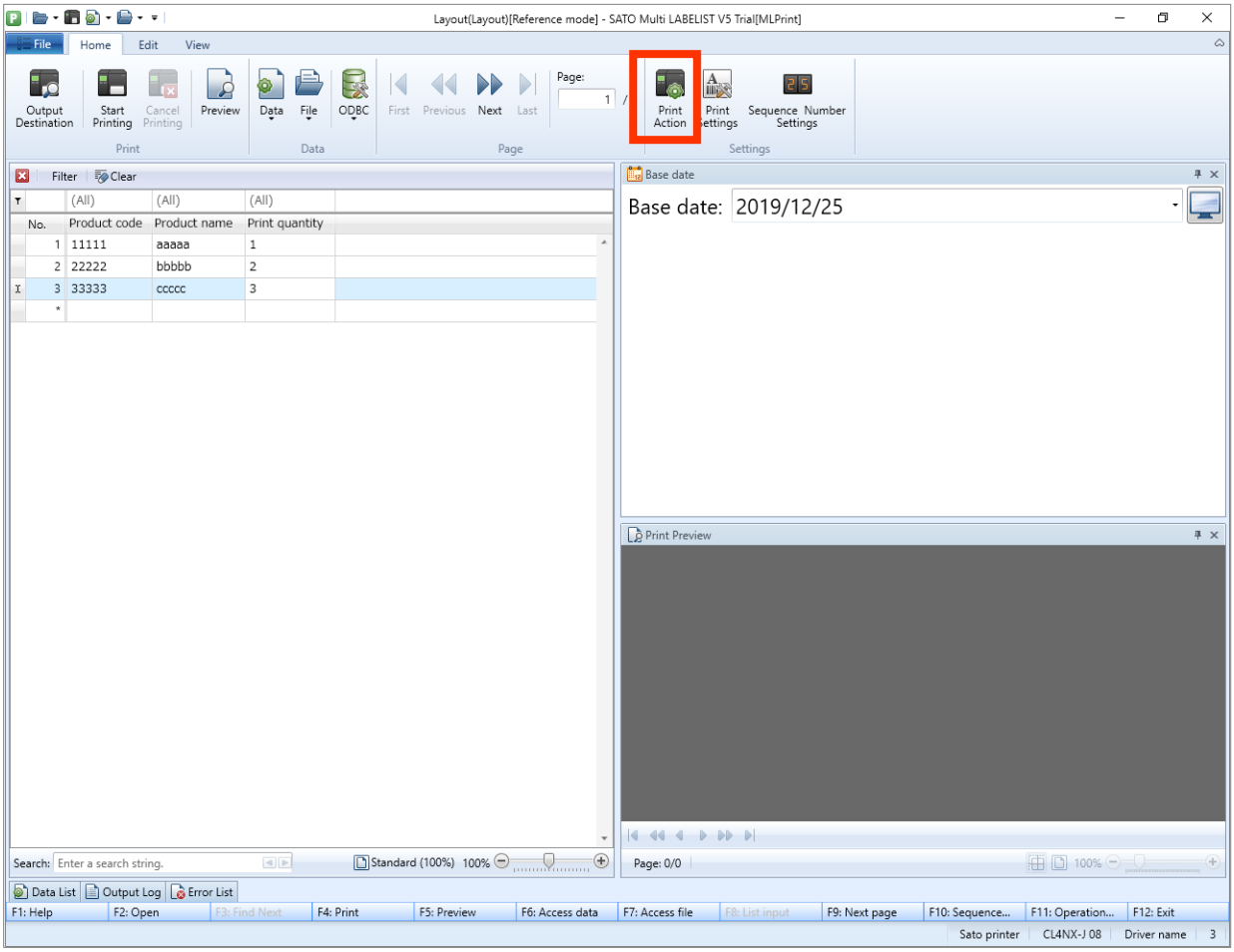
Then display the Input Definitions screen and click the input item to display the Properties pane.



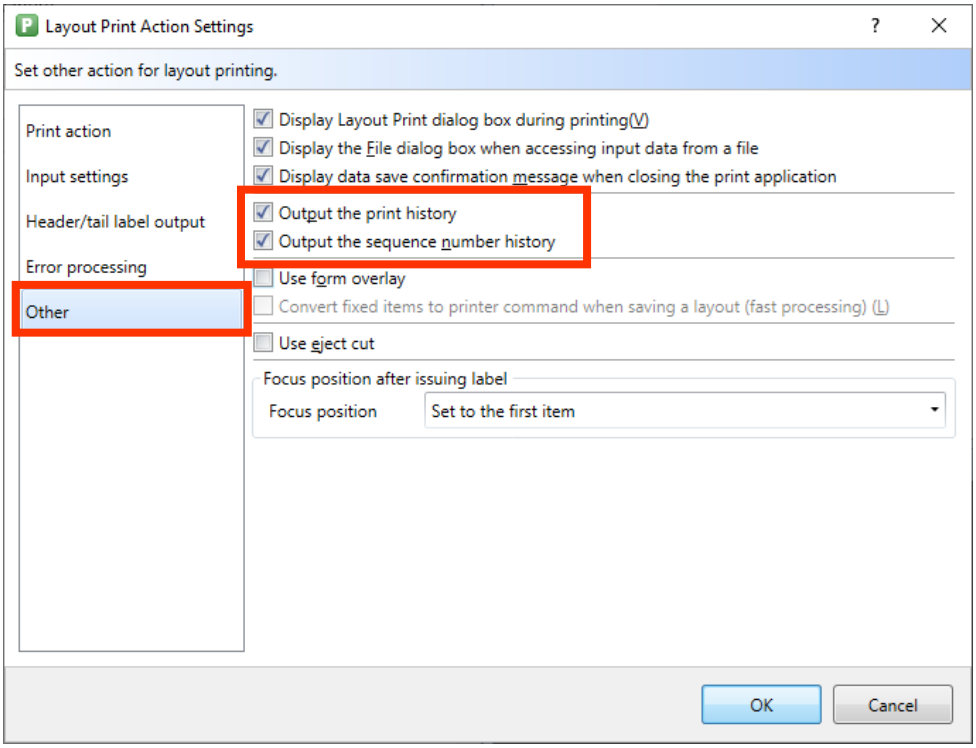
Check “Save to history” in “Advanced settings” to save the layout.
(The item is checked as default.)
Whether or not to save data as history must be set for each input item.



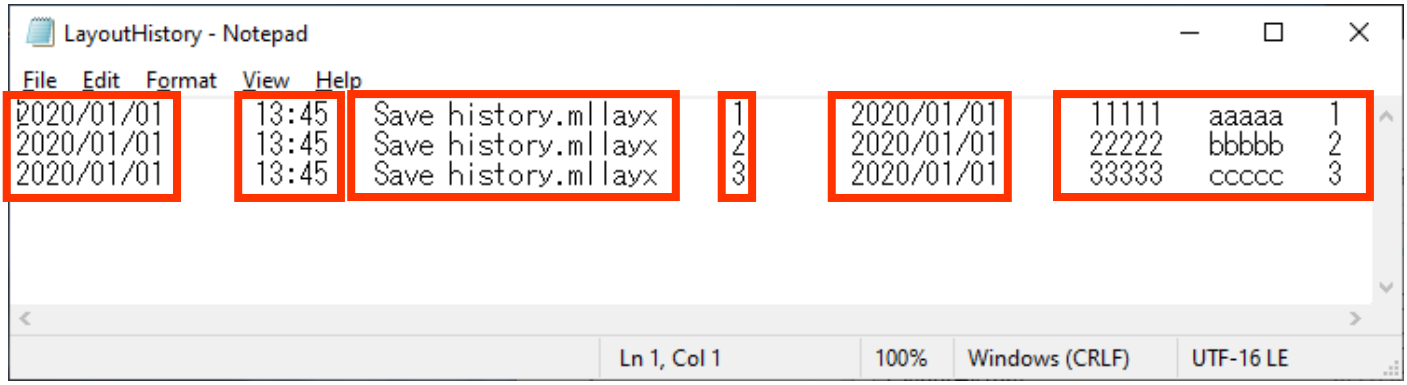
Next, open the layout saved in the previous step with “MLPrint” and click “Print Action”.



Select “Other” on the Layout Print Action Settings screen.
Check “Output the print history” or “Output the sequence number history” and click “OK”. (The item is checked as default.)



Then let's print the layout.
After printing, check that the history file is created on the pass specified by MLMaintenance.



“Print date”, “Time”, “Layout (Sort) name”, “Print quantity”, “Base date”, and the values for the items specified to be stored in a history on the Input Definitions screen are written.

Sequence number history is configured with data of 2 rows, header section and data section for one print.

Type	Content (Tab-separated)				
Header	Header type (H)	Date	Layout name	Variable type Local/Global	Counter variable name
Data	Data type (D)	Counter value 1/Counter value 2/.../Counter value n			

This completes “3: History Files”.

4: MLConvert

1. What is MLConvert?

MLConvert is to convert the layout and sort information used with Multi LABELIST V4 so that it can be used with Multi LABELIST V5. If an option is enabled, the internal data connected to the layout can be converted.

2. Specifying the Layout

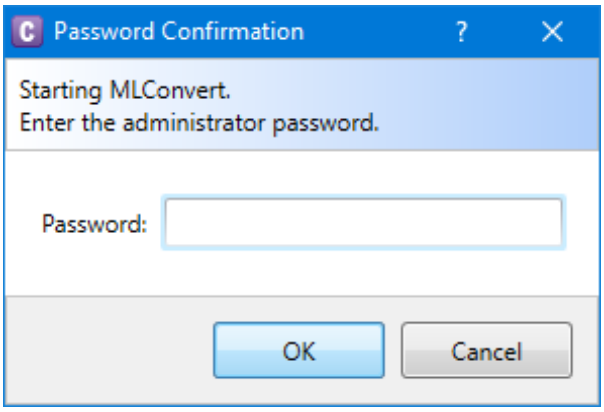
How to convert the data is described here.

Select Windows Start Menu > Multi LABELIST V5

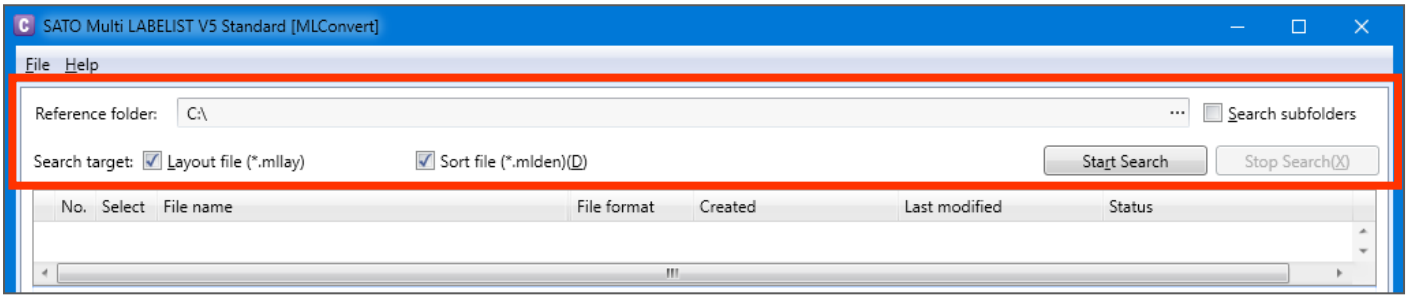
.

The displayed location of “Multi LABELIST V5” may differ depending on your OS.

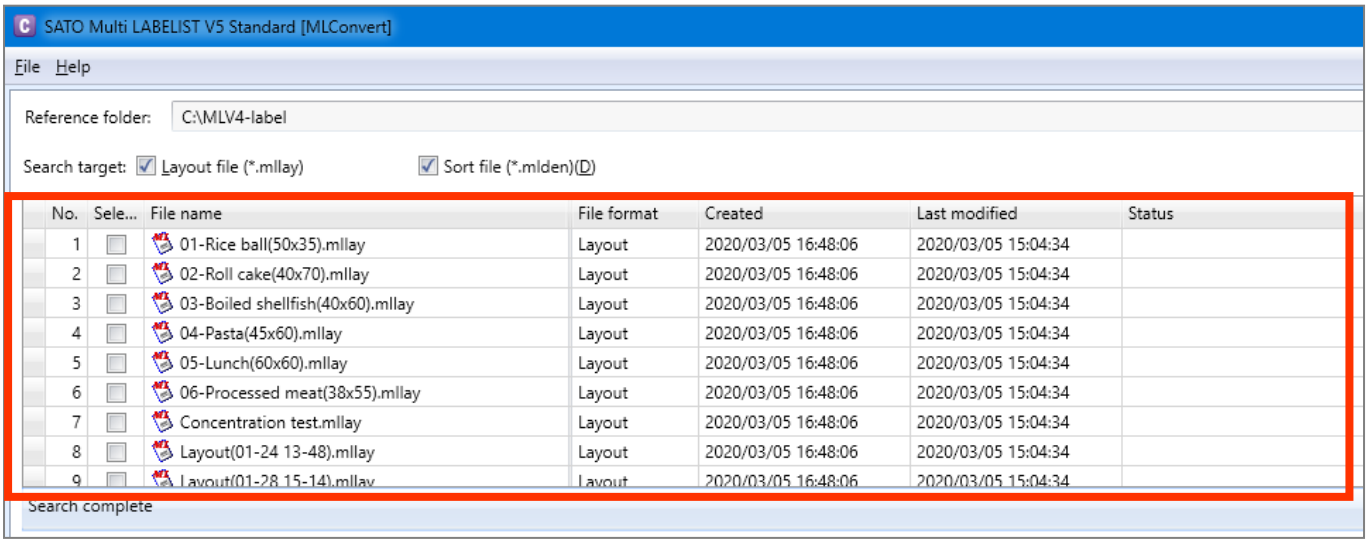
Enter “user” as the password. This is displayed as black circles (●) on the screen. Click “OK” to display the MLConvert screen.



First search for the layout file and sort file of Multi LABELIST V4.
Specify the type of the folder and file to be searched for and click the [Start Search] button.



Data that matches the search conditions will be displayed.

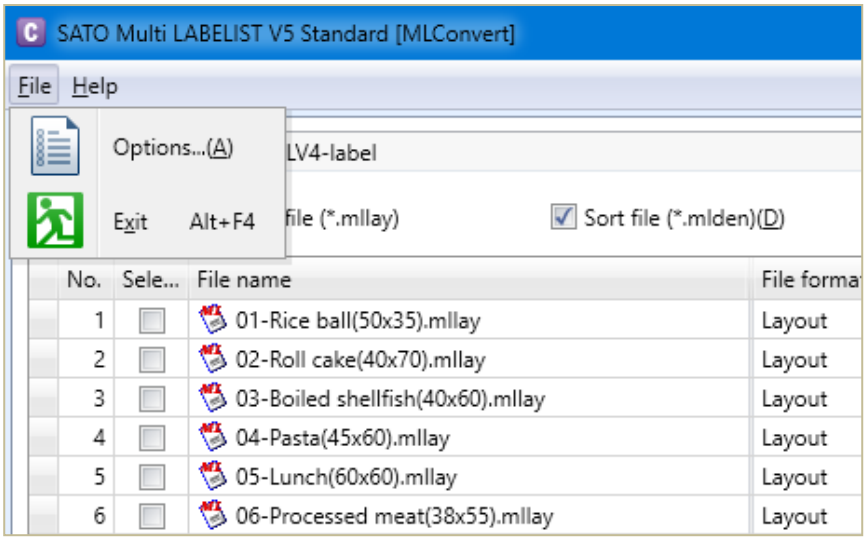


3. Option Settings

Option settings enable you to assign the layout set on an old printer model to the successive model and to change the method for changing the shape object and Windows fonts.

- Display method

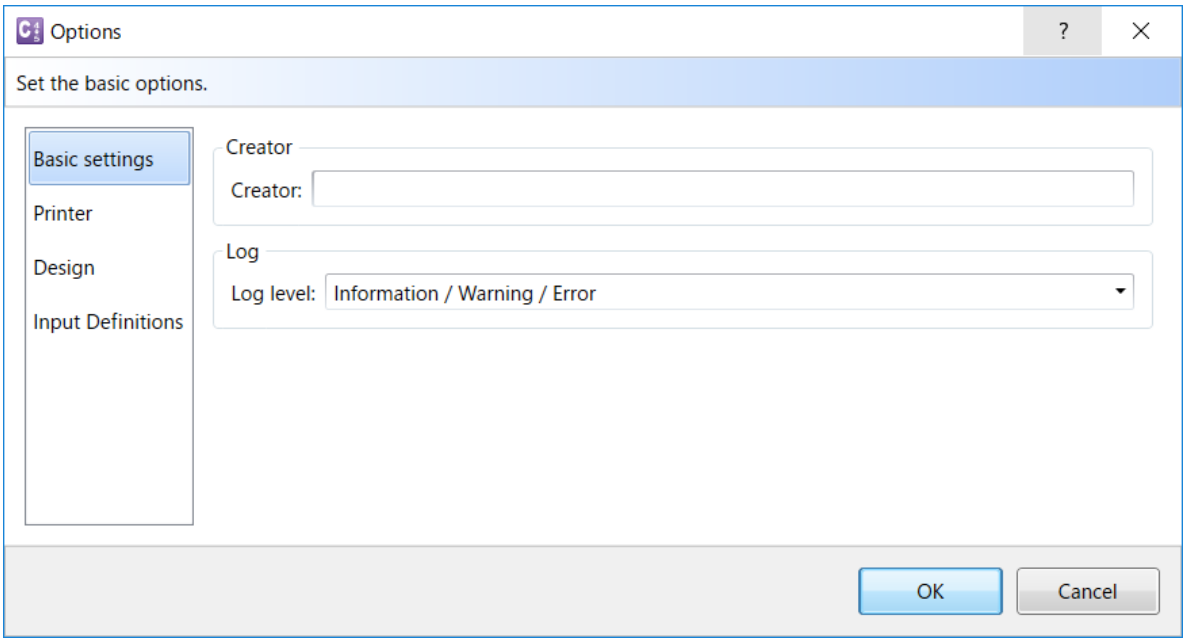
  Select “Option” from the “File” menu.



■ Basic settings

The creator is recorded in the file's revision history. It is used to identify the author who performed the conversion.

The log changes what is displayed in the log output window at the log level. You can set this to "Warning/Error" to focus on only the information that needs to be checked in the layout.

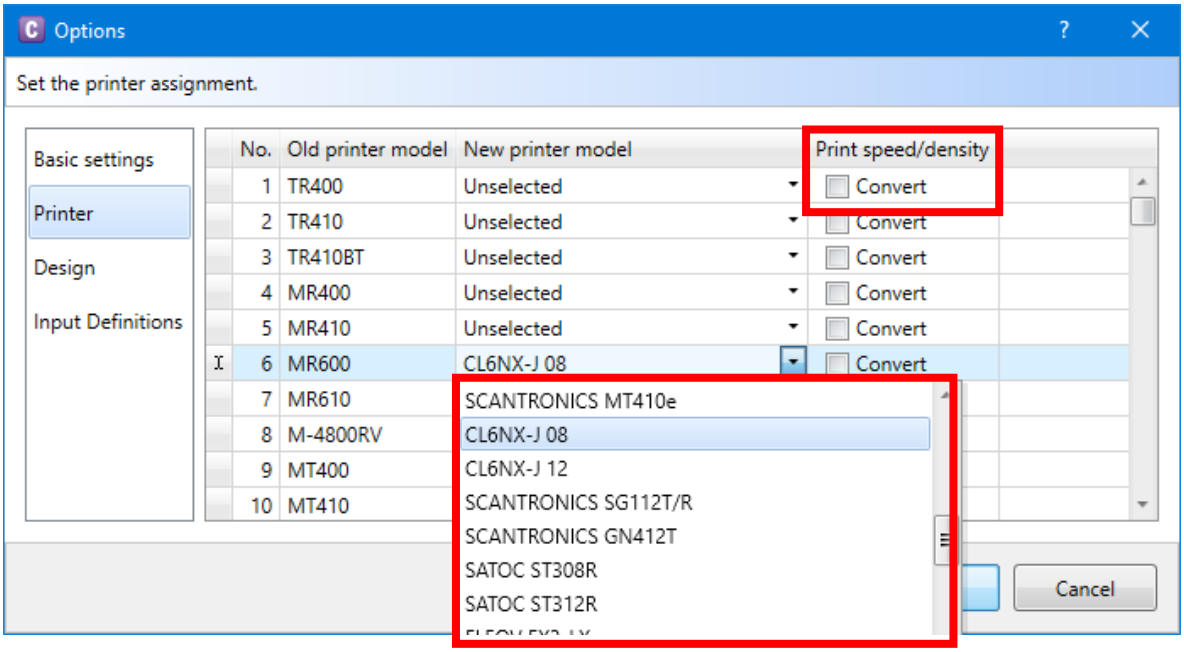


■ Printer

Select a printer to which the layout is to be assigned on the New printer model list.

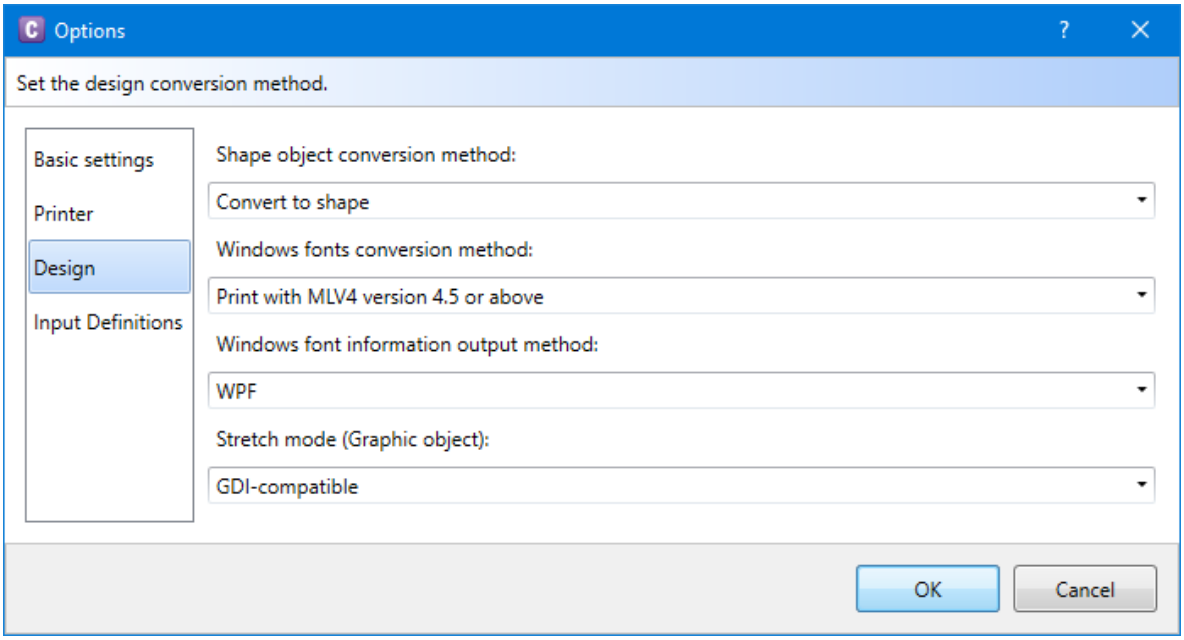
To convert the print speed/density, check the check box.

When printer assignment is complete, click “OK” to exit the option screen.



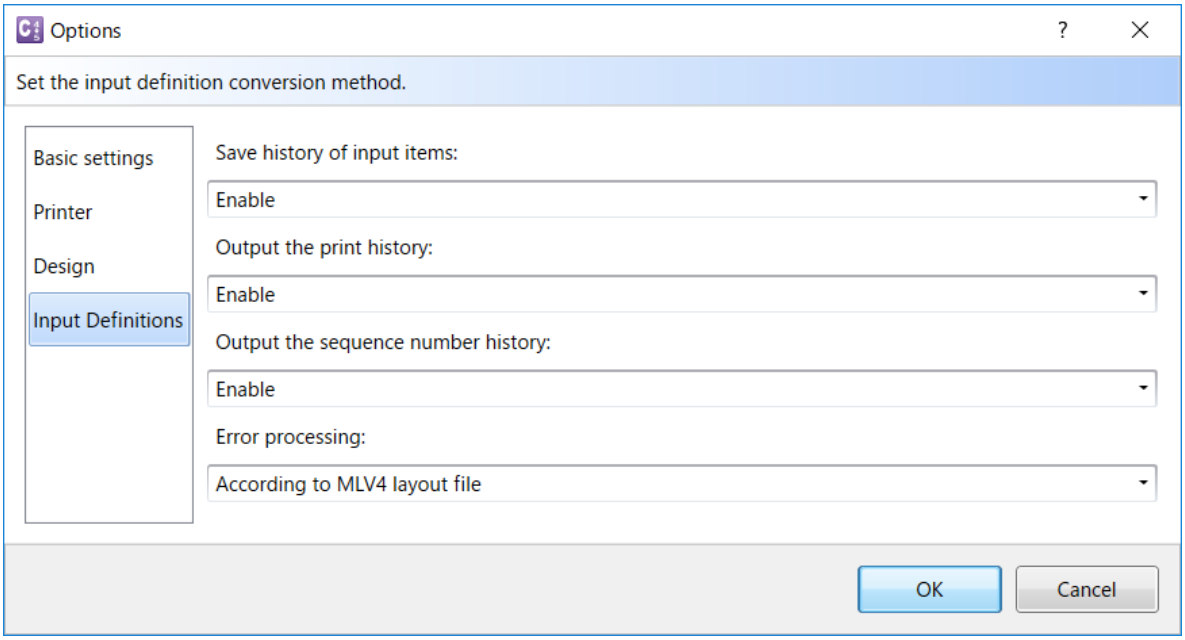
■ Design settings

Shape object conversion method enables a shape object to convert to graphic.
Windows font conversion method adjusts the font size depending on the version of MLV4 you are using, version 4.4 or lower or version 4.5 or higher.



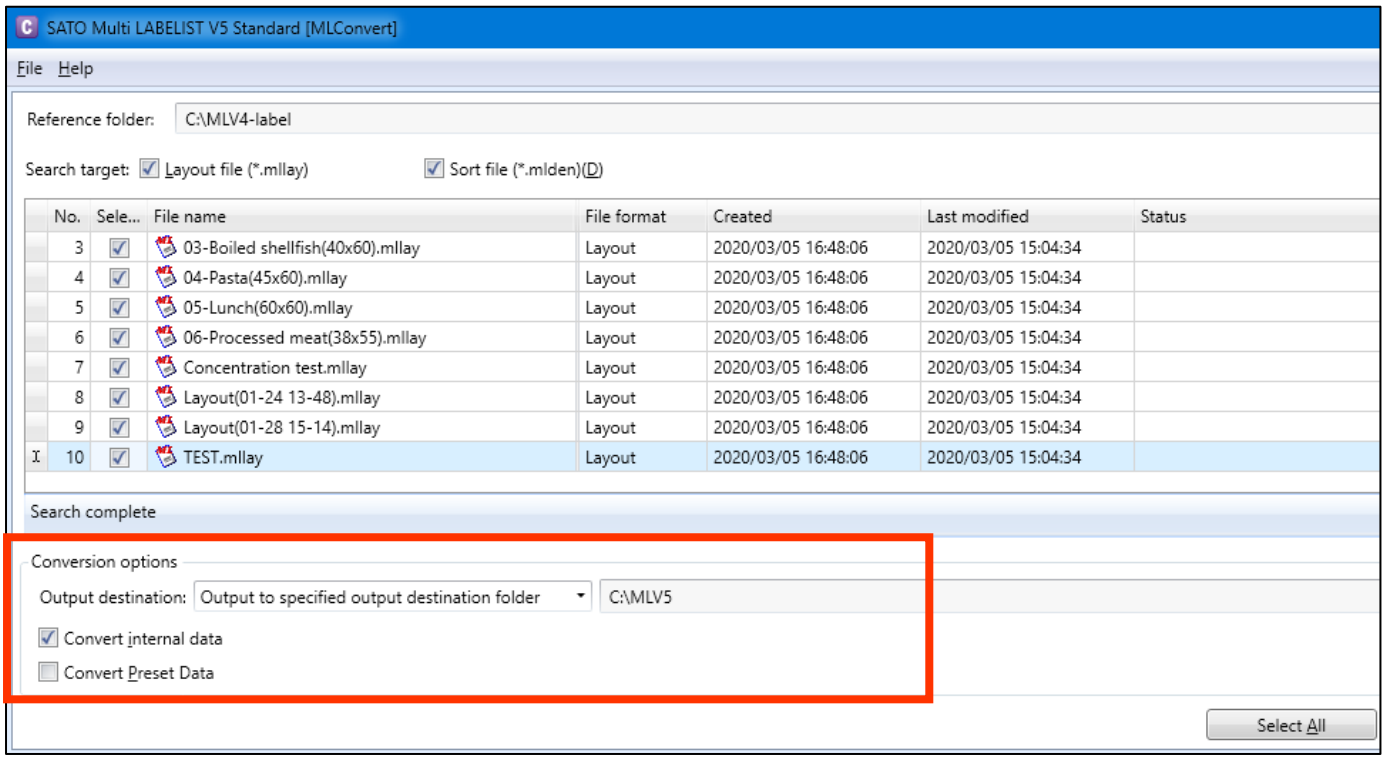
■ Input Definitions

Save history of input items enables the setting to output the data entered in the input items to the print history.
The output of print history and sequential number history can be changed to output history or not.
In Error processing, you can adjust the behavior of displaying the message as an error when printing.



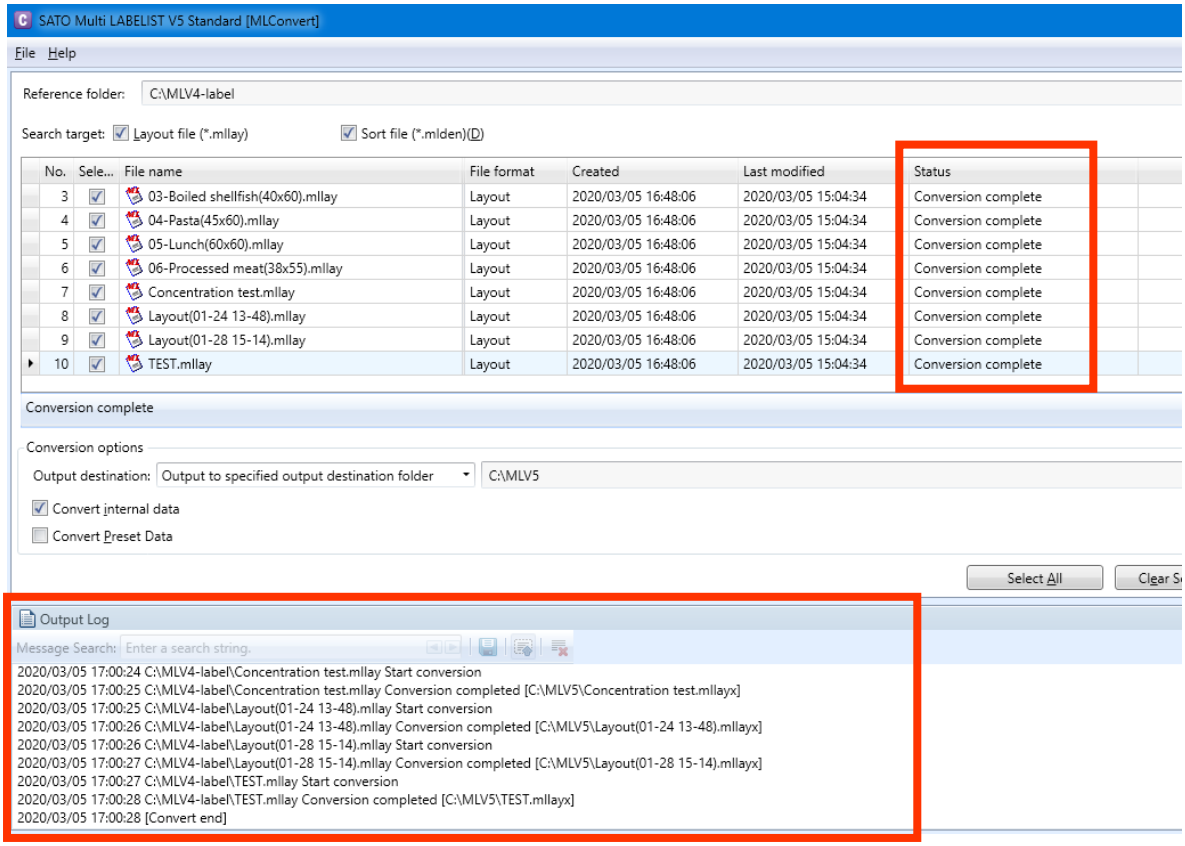
4. Converting

Once settings for the tax rate and printer assignment are complete, set the conversion options. Specify whether to convert the output destination and internal data, select the target data from the search file, then perform the conversion.

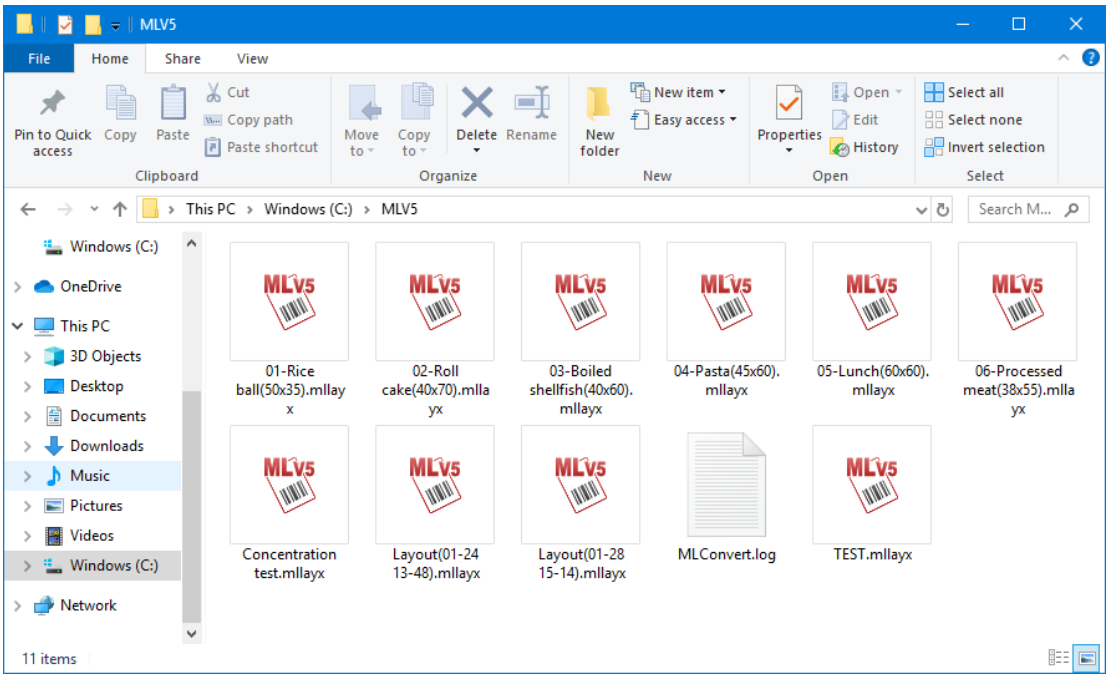


The conversion results are shown in Status.

If “Warning” is displayed, check the details on the output log.



When conversion is complete, a new folder is created at the location designated as the output destination.
The folder configuration is the same as with the original Multi LABELIST V4 files, and the layout converted for V5 is created.
The folder whose layout name includes “.data” stores the internal data.

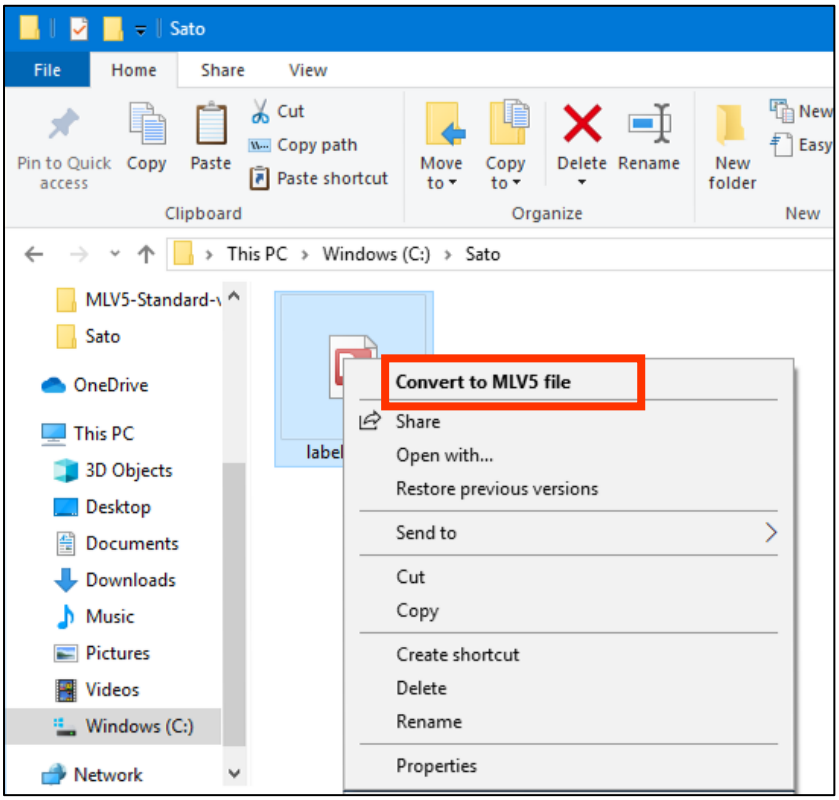


Check the print.

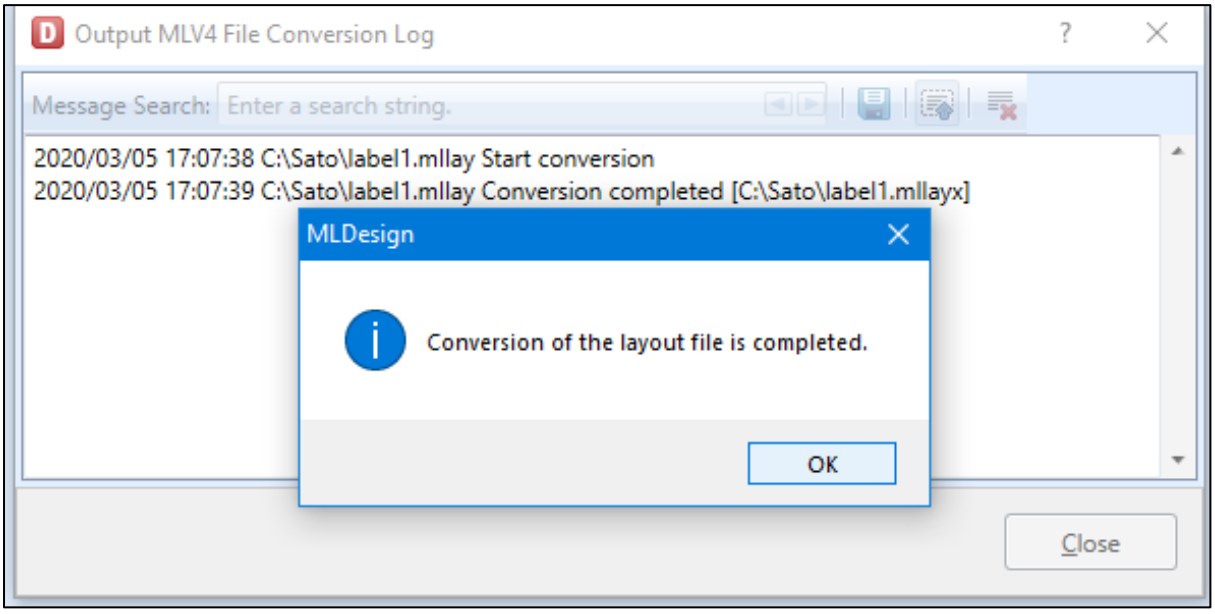
5. Converting (Context Menu)

Once the tax rate and printer assignment are complete, conversion can easily be done using the context menu (right-click menu) of the layout file or sort file of Multi LABELIST V4. (Designation of file output destination or internal data conversion is not available.)

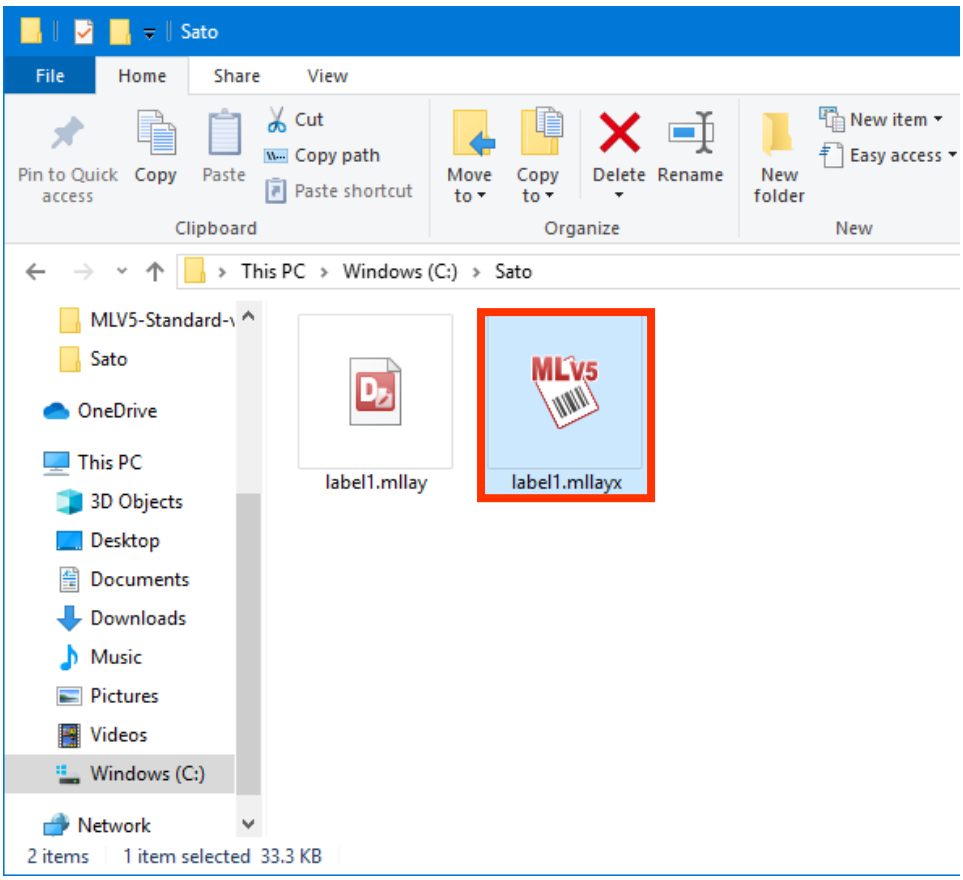
Click [Convert to MLV5 file] on the context menu of the file.



The ML Design starts and the conversion is done.



The file after conversion is stored with the same name in the same folder as the original file.



This completes “4: MLConvert”.

5: Saving the Sequence Number Every Time Judgment Value

1. What is Saving the Sequence Number Every Time Judgment Value?

This function saves the sequence number value judged by the value of the input data (variable item). For example, sequence number values can be saved for each store name.

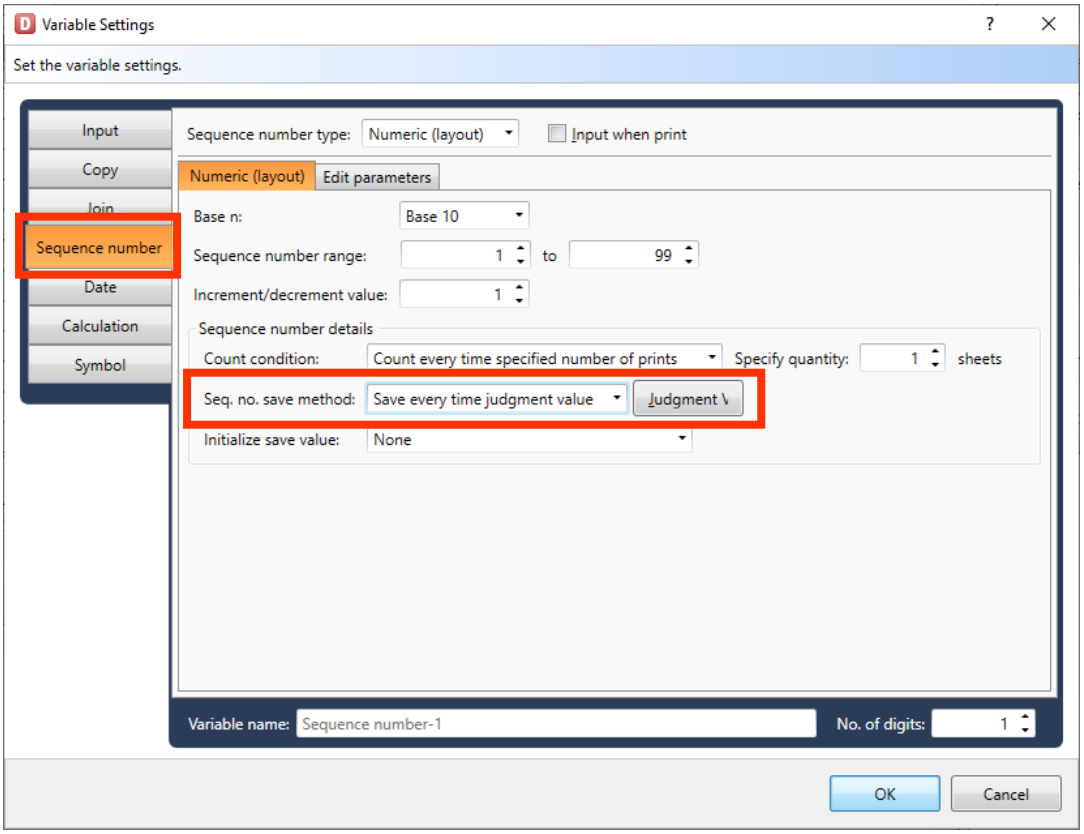
Up to three judgment items can be registered. When multiple items are registered, judgment is done based on AND conditions. If the value cannot be judged because it does not match the key, the sequential number values are saved in the common part as outside settings.
The saved sequence number values can be edited on the MLPrint screen.

2. Setting the Sequential Number Variables

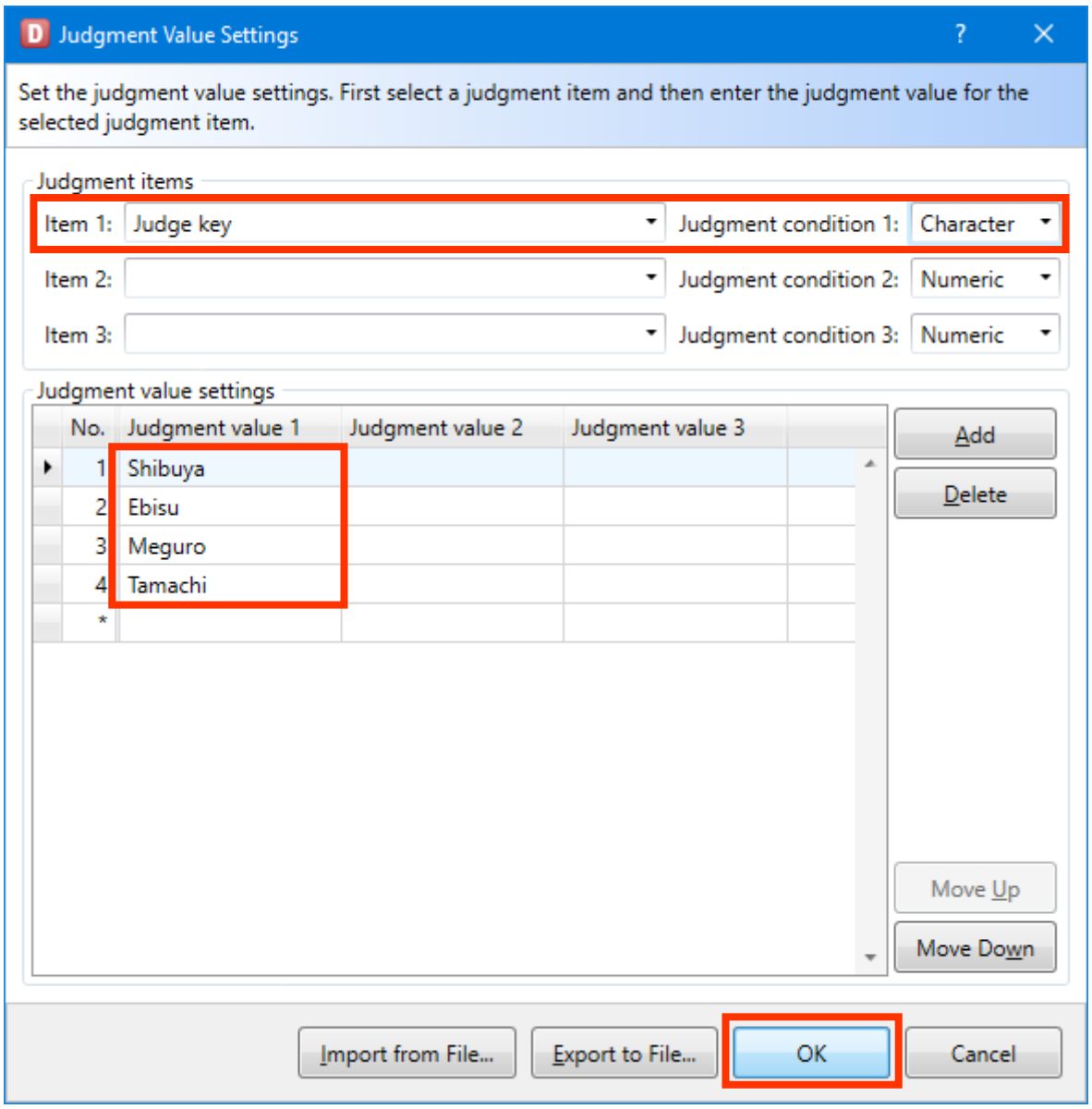
Create the input variable used as the judge key.

Variable name: Judge key
Number of digits: 10

Then select “Sequence number” with Add of Local Variable, input the conditions, specify “Save every time judgment value” in “Seq. no. save method”, and click the “Judgment” button.

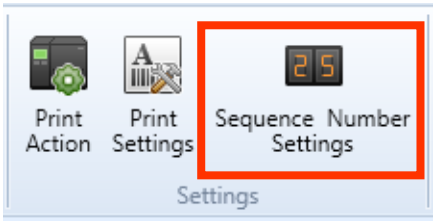


In Item 1, specify “Judge key” created in the previous step, and select “Character” as the value type.
When you complete entering the judgment value, click “OK”.
The file data can be used as the judgment value with the “Import from File” button.

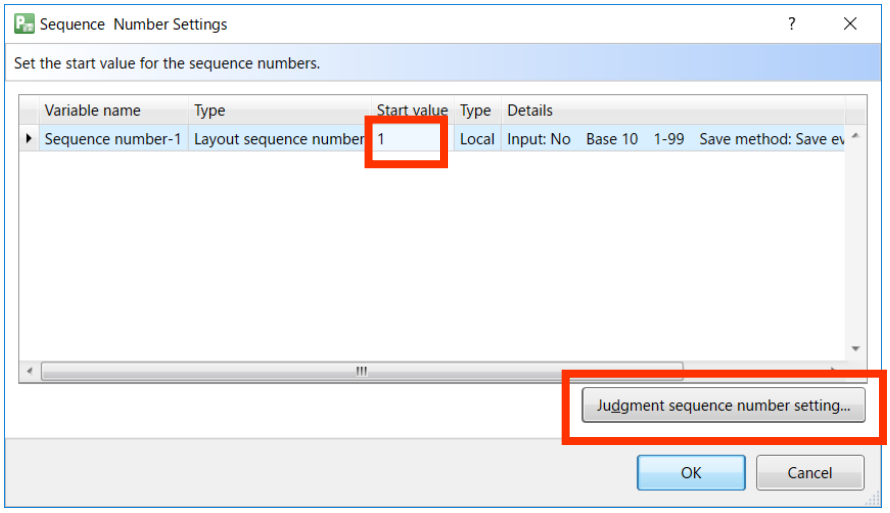


3. Modifying Method of Saved Sequence Number

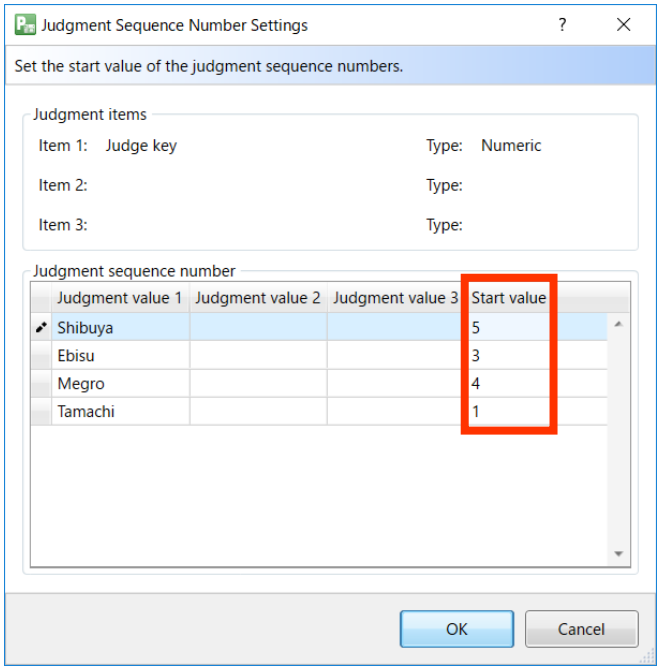
Click “Sequence Number Settings” on the MLPrint screen.



Sequence number save value that do not match the Judge key will be displayed.
To modify the sequence number save value for each Judge key, click “Judgment sequence number setting”.



The value for the set Judge key is displayed and the start value of the sequence number can be modified.

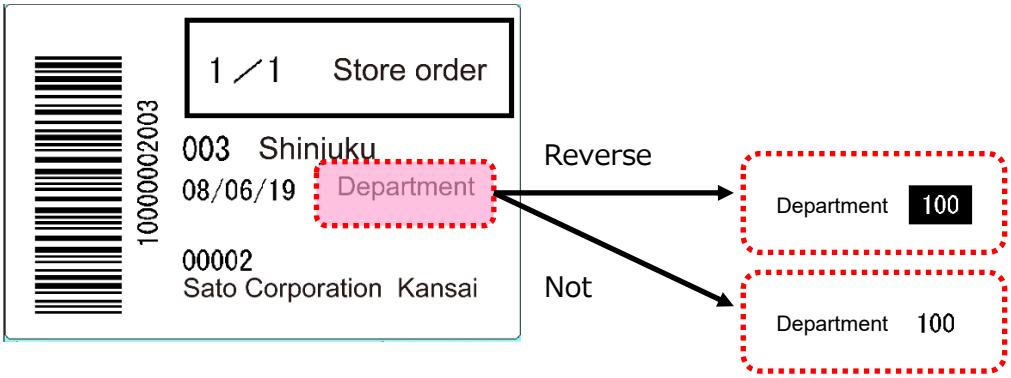


This completes “5: Saving the Sequence Number Every Time Judgment Value”.

6: Print Condition Settings for Objects

1. What are Print Condition Settings for Objects?

This function is to control printing objects configuring the label design such as reverse, line, etc. For example, if a part of the label is to be reversed or not reversed depending on the value of the input item, it can be switched between reversed and not reversed by setting conditions.



Here we will explain how to reverse the department code (variable character) when the conditions below are met, using the existing layout file.

Condition: Department code (1) is from 1 to 99 (2). → Reversed (3) (not reversed in other cases).

(1) Register as “Variable”.
(2) Set the conditions for printing in the “Input Check Table”.
(3) Set the conditions for printing or not printing on reverse objects ((1), (2)).

2. Advanced Settings Required for Print Condition Settings of Objects

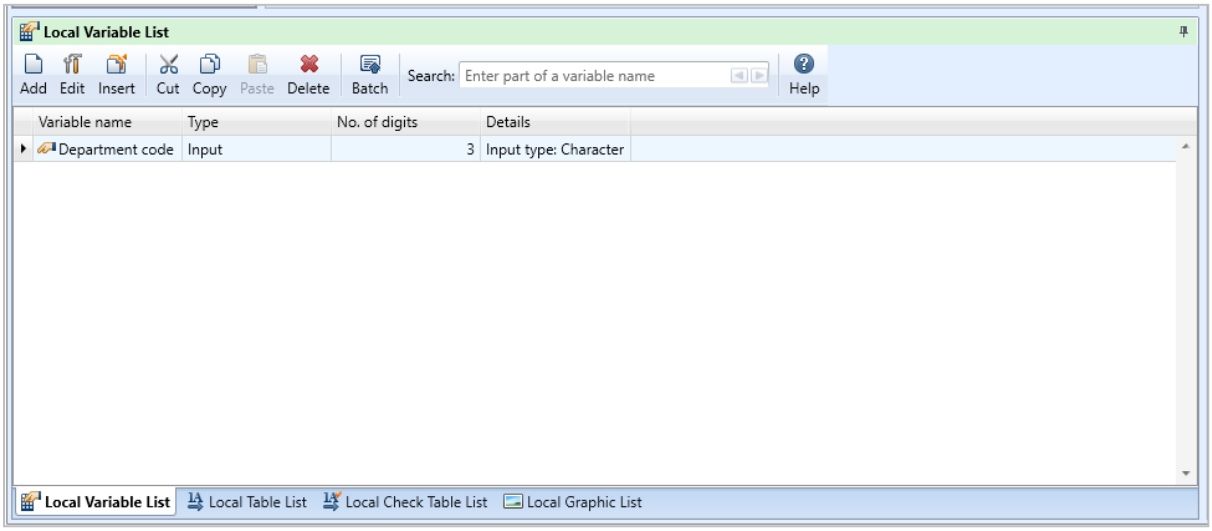
To set switching between printing and not printing, conditions, “Variable” and “Check table”, should be created on the MLDesign screen.
In this manual, “Variable” and “Check table” are used as conditions.

Select Windows Start Menu > Multi LABELIST V5

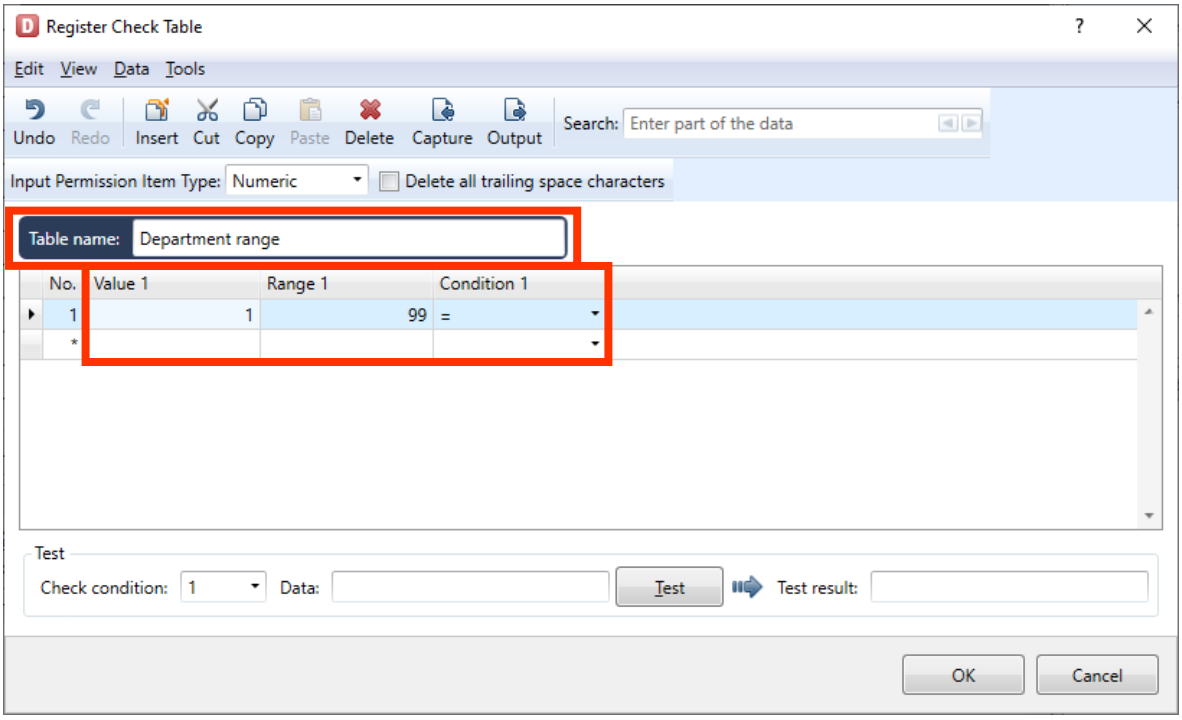
.

The displayed location of “Multi LABELIST V5” may differ depending on your OS.

Set the variables used for conditions as shown below.

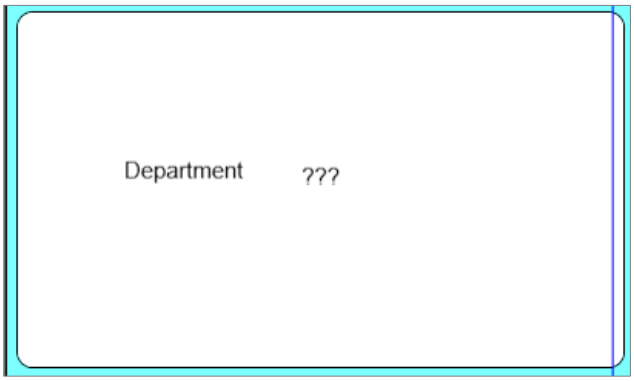


Set the check table used for conditions as shown below.

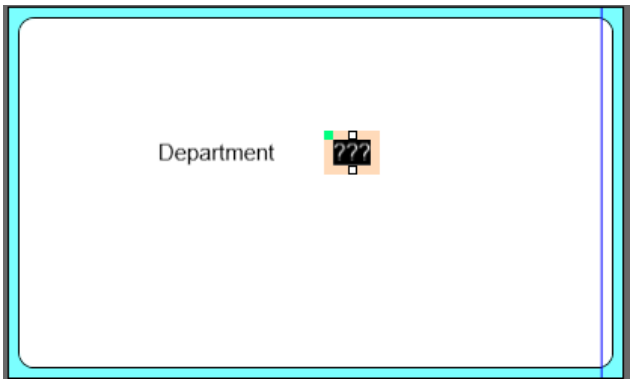


3. Condition Settings for Printing or Not Printing Objects

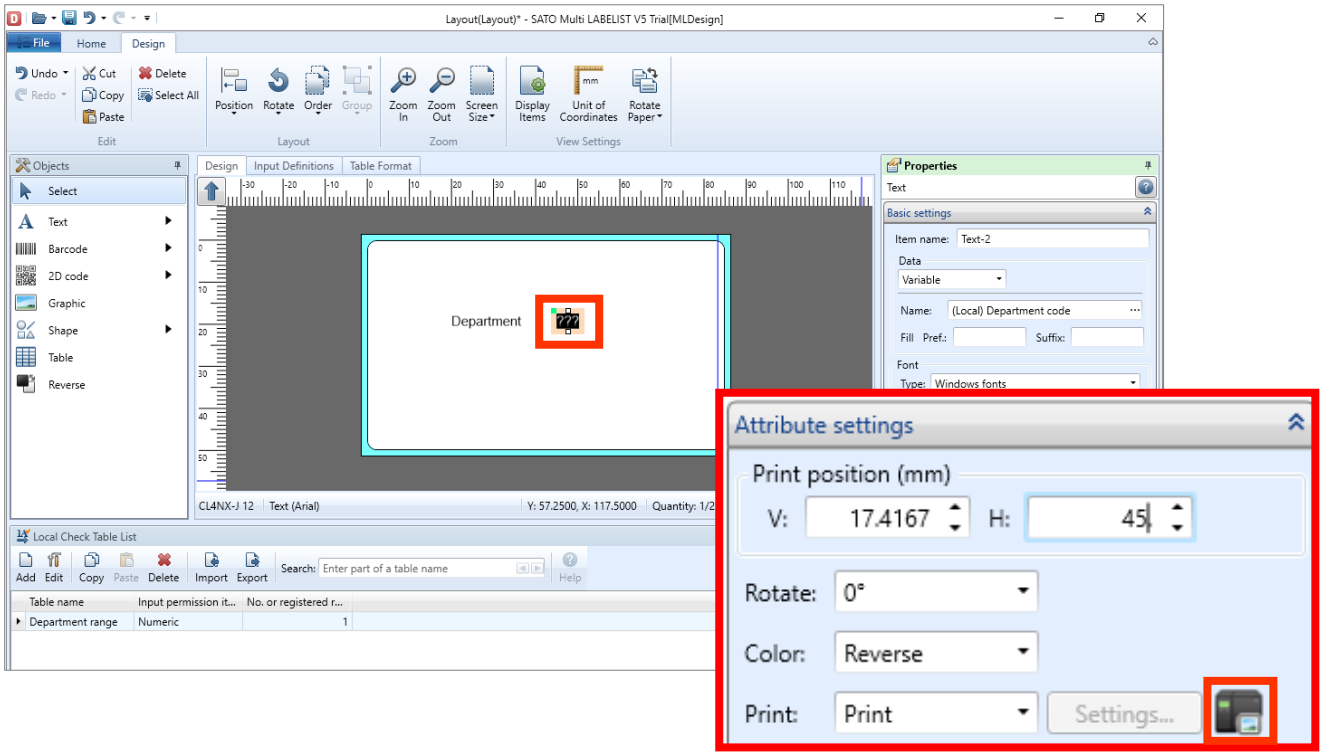
On the “MLDesign screen”, place the variable of department code and fixed characters created in Section “2” on the layout as shown below.



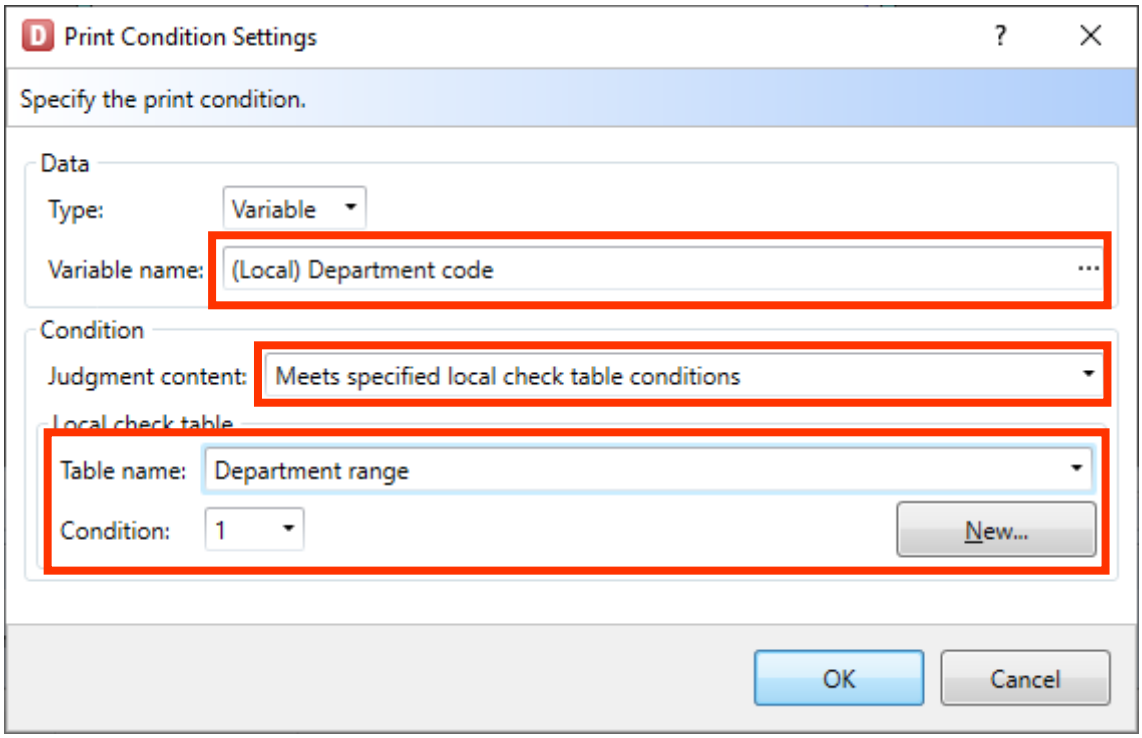
Place the object that sets the conditions for printing or not printing on the layout.
(In this manual, place “Reverse Object” on the Department code.)



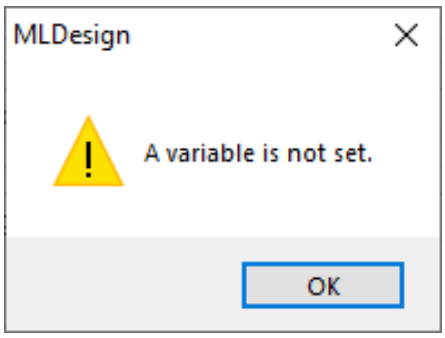
Click the reverse object in section “2” and click the “Print” icon in “Attribute settings” on the Properties pane.

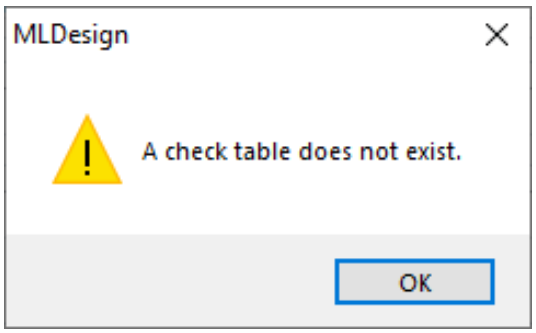


On the Print Condition Settings screen, specify “Department code” in “Variable name” and select “Meets specified local check table conditions” in Judgment content.
On the specified screen of the local check table, select “Department range” created in advance, and select the Check table Conditions to be used (No. 1 to 5)
Last click “OK” and the settings are registered.



If you click “OK” before setting “Variable” or “Condition”, error messages shown below will be displayed.
Make settings and click “OK” again.



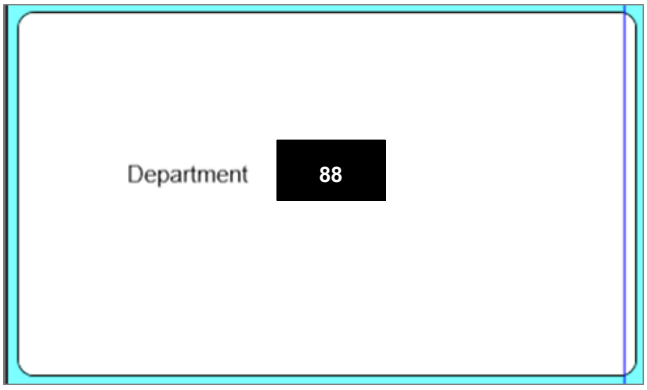


This is the end of settings. Save the layout with a name, and check it using the print or preview screen.

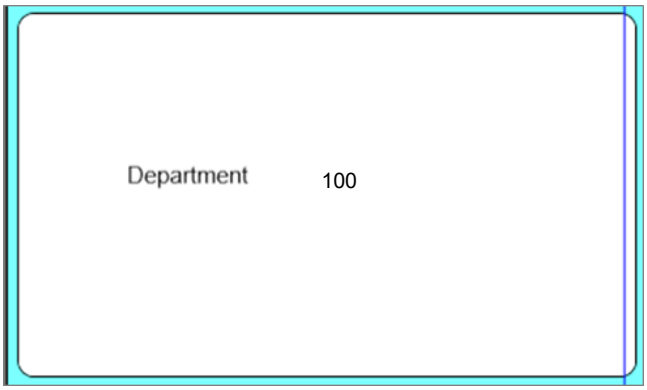
4. Checking the Print Results

Start a layout file created in the previous step in MLPrint.
Print the layout and check whether it is printed according to the set conditions.

In this example, as the condition is the check table of “1 to 99”, the print result will be reversed if “88” is entered in Department code,



If “100” is entered in Department code, the print result will not be reversed.



Judgment of printing is made based on the value after editing variables.
So it is recommended to use input variables that do not use edit parameters as reference variables for condition settings.

For example, if table conversion editing is enabled for the reference variable in condition settings, the values after conversion are compared with those in the check table.

Input value	Value after table conversion
001	Meguro
002	Shinagawa
003	Shinjuku

Used as the judgment values for conditions

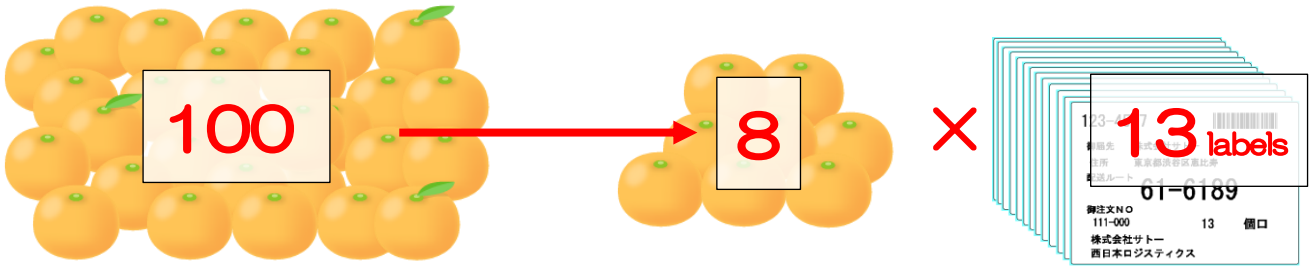
This completes “6. Print Condition Settings for Objects”.

7: Print Quantity Calculation Function

1. What Is the Print Quantity Calculation Function?

This function can set any calculation expression using variable values and fixed values as calculation items and calculate the print quantity.
For example, the number of labels attached to the box that are required for packing 100 products in a fixed number can be calculated.

To pack 100 products in boxes of 8 each and to print the label required for the boxes,
the labels for 13 boxes are required as a result of calculation, 100/8=12 remainder 4.
When the Print Quantity Calculation Function is used, the number of labels required can be obtained automatically.



2. Creating a Variable

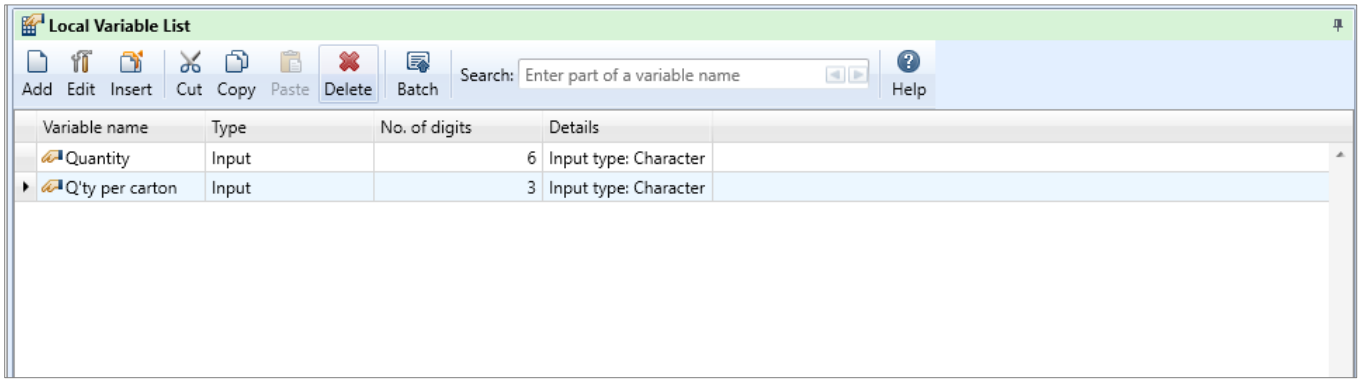
To use “Input value” for the Calculation Target items of Print Quantity Calculation, it is necessary to create “Variable” on the “MLDesign” screen and to place it on the layout as “Variable Character”.
In this manual, “Variables” shown below are used for conditions of Print Quantity Calculation.

Select Windows Start Menu > Multi LABELIST V5

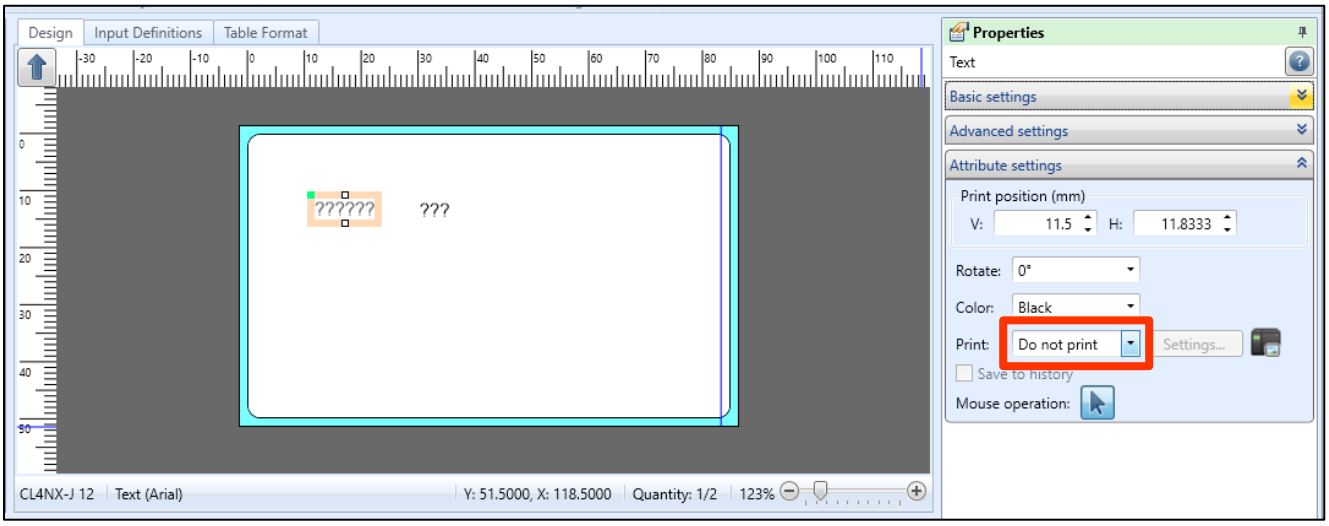
.

The displayed location of “Multi LABELIST V5” may differ depending on your OS.

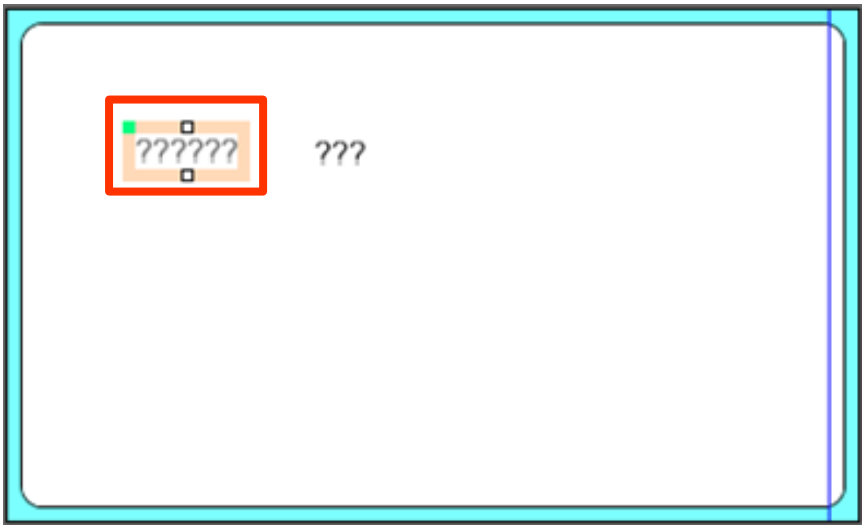
Set the variables used for conditions as shown below.



The variables used for print quantity calculation must be placed on the layout as “Variable Character” even if the value will not be printed on labels or tags because the value is input and calculated on printing.
If printing is not necessary, place the variable and specify “Do not print” on the character setting screen.

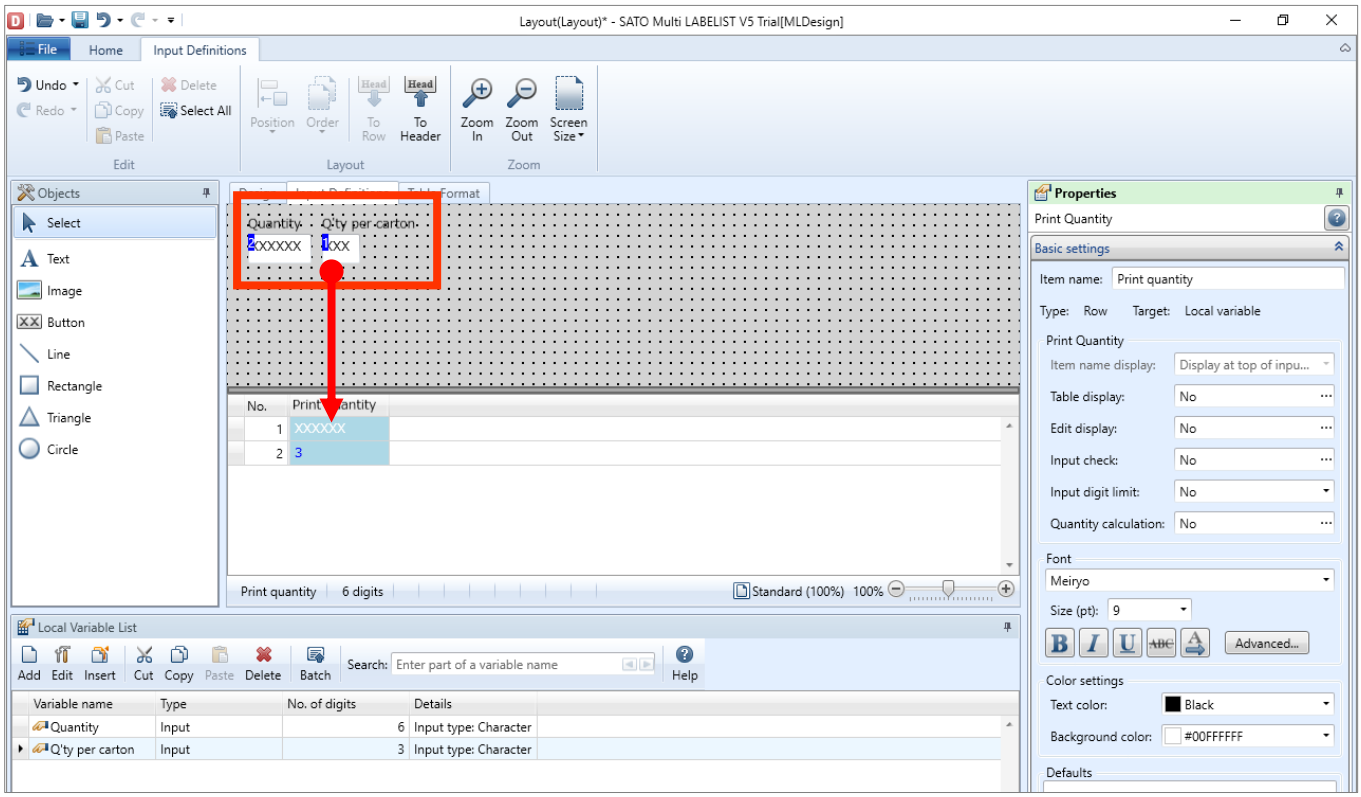


For the layout of this manual, only the “Q’ty per carton” variable is printed. As “Quantity” is not printed on labels or tags, it will be set to “Do not print”.
When “Do not print” is set, the characters are displayed in gray.

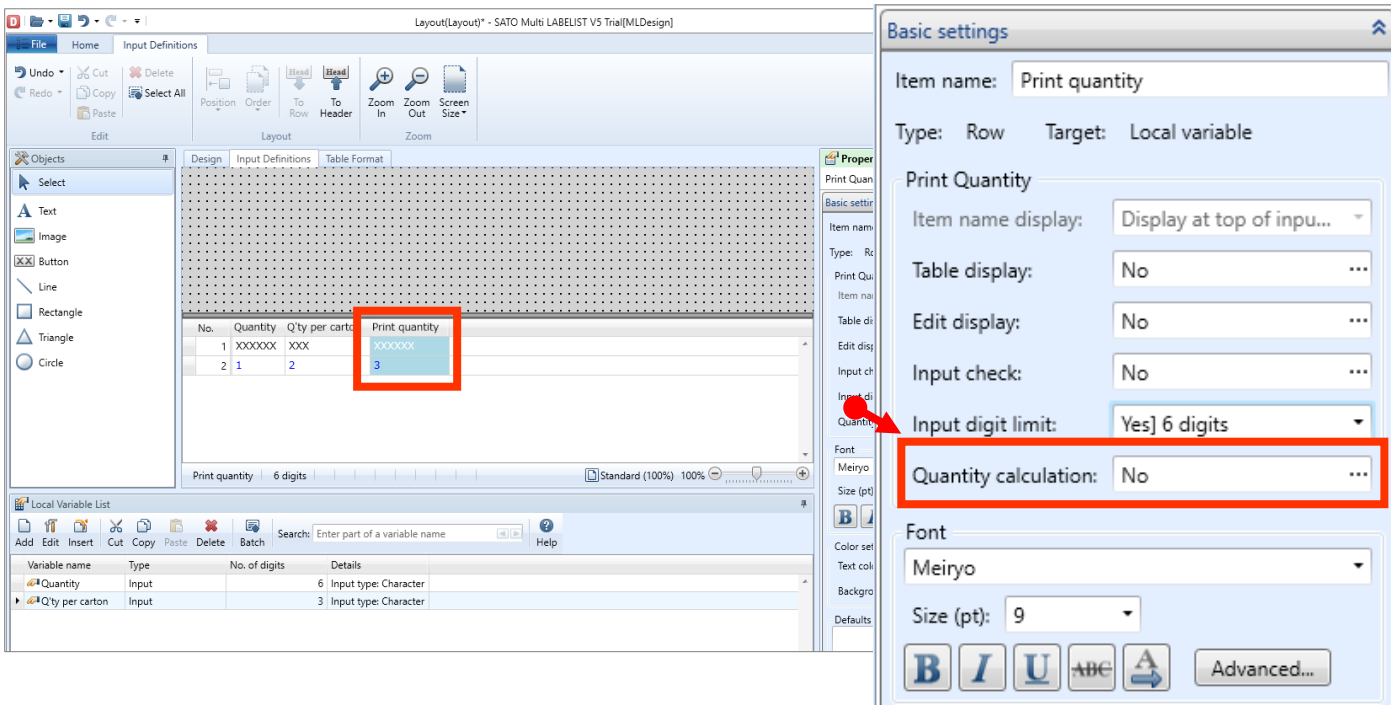


3. Setting Condition for Print Quantity Calculation

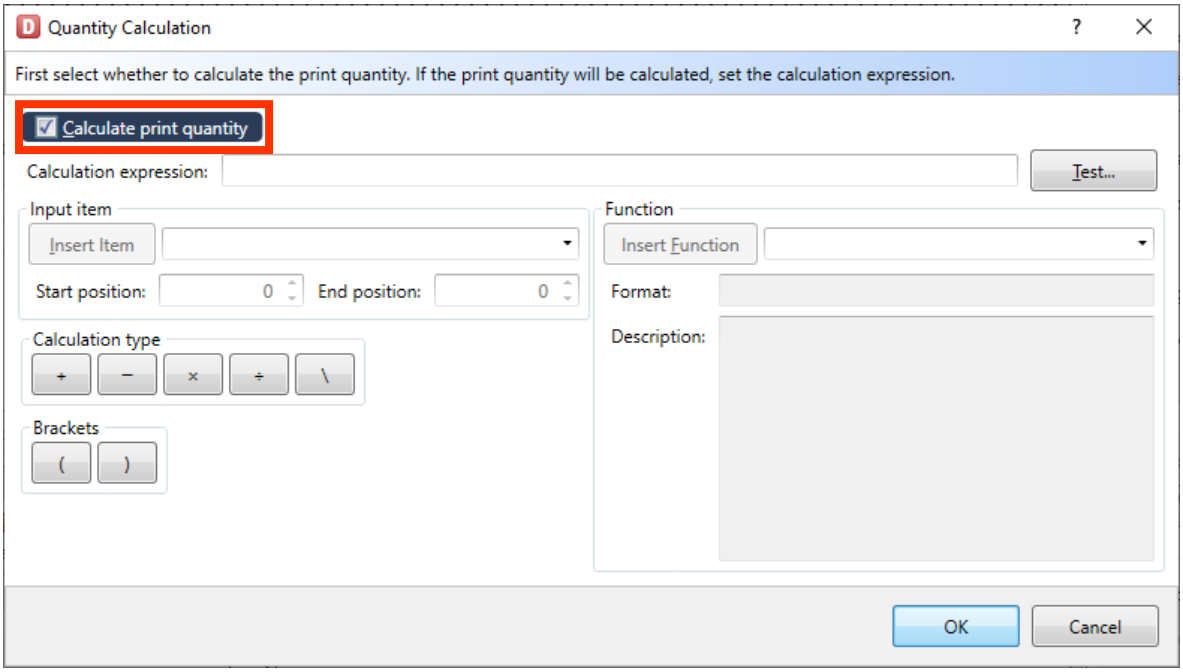
Display the “Input Definition” screen of the layout created in section “2”.
Move “Quantity” and “Q’ty per carton” on the header section to the row section and change the order of the items.



Click “Print quantity” item then “Quantity calculation” in “Basic settings” on the Properties pane.



The “Quantity Calculation” screen opens. Check the check box of “Calculate print quantity” and enable input to the items below.

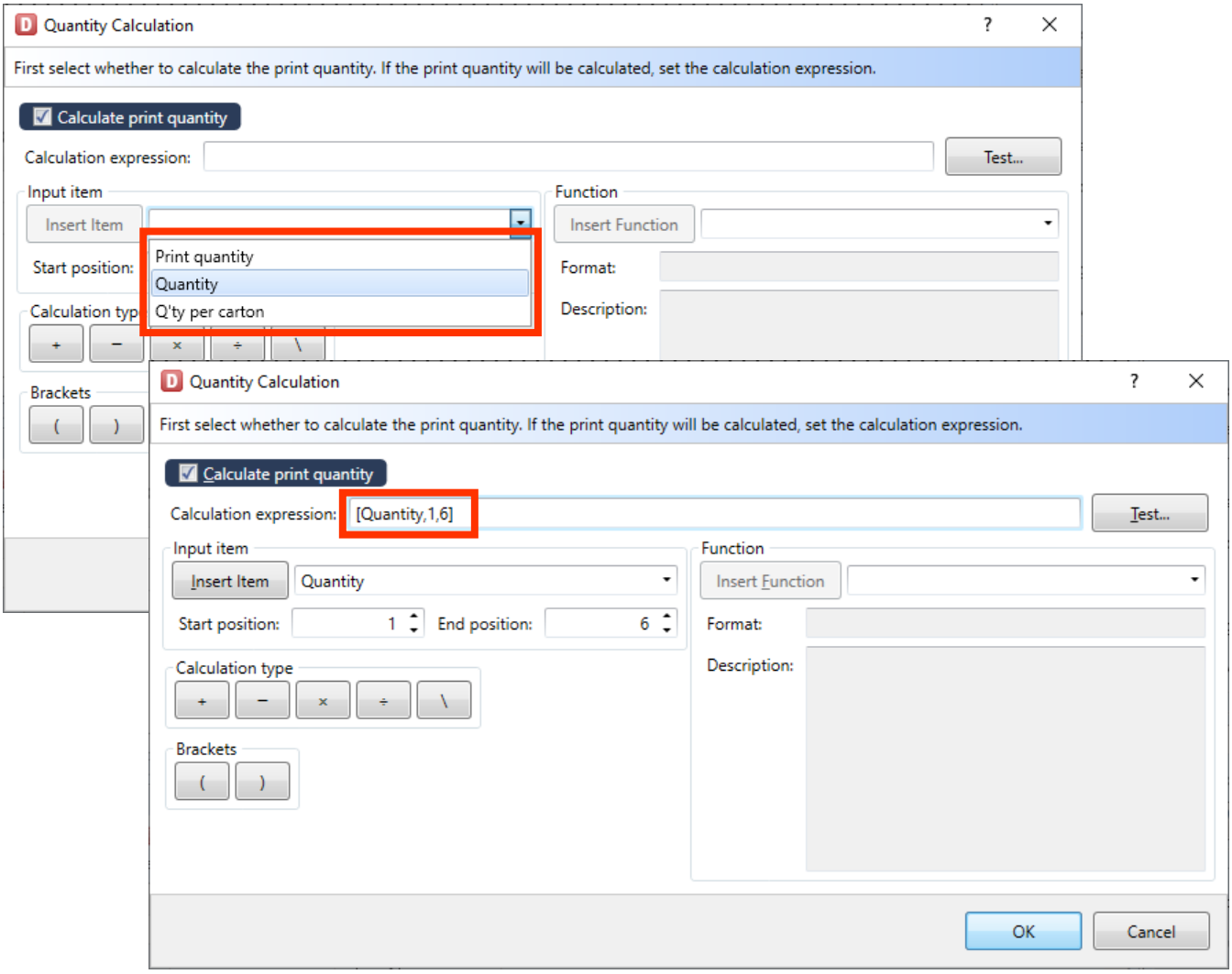


Set the expression in “Calculation expression” item. Calculation expression can be created from Input item on the screen. In this manual, as the value obtained by rounding up the result of “Quantity” ÷ “Q’ty per carton” is required, calculation expression is written using the “ROUNDUP function”.

For “ROUNDUP function”, specify the value to be rounded up as an “Parameter”.
In this example, as the result of the calculation “Quantity” ÷ “Q’ty per carton” is to be rounded up, set this calculation expression “Quantity” ÷ “Q’ty per carton”, as “Parameter”.

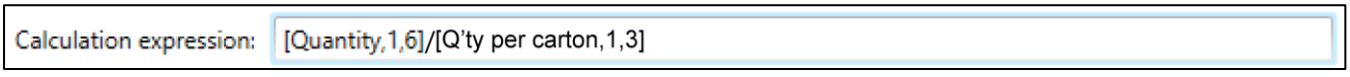
If calculation expression is manually set as “Parameter”, mistakes may occur in description. To reduce such mistakes, select a variable in “Input item” of the “Calculation expression” item, set the calculation expression “Quantity” ÷ “Q’ty per carton”, and copy the calculation expression.

First select a variable “Quantity” in Input item and set the value in calculation expression in “Insert Item”

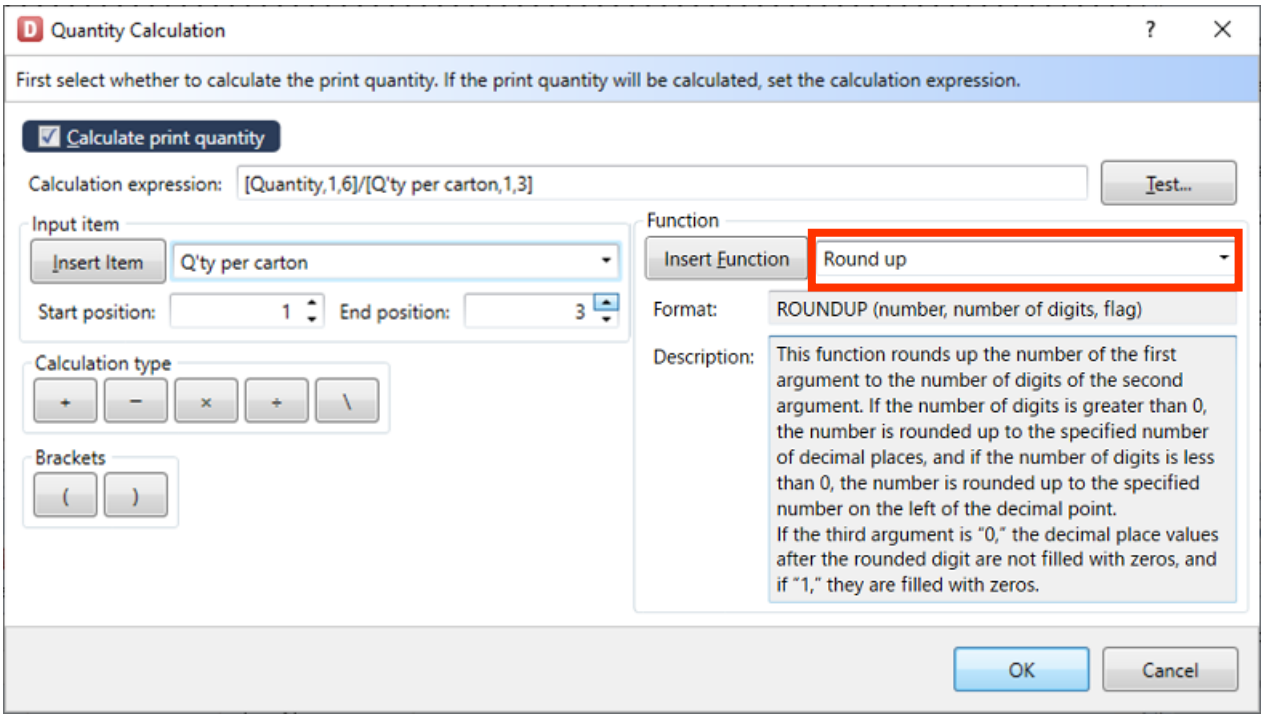


Then Click “÷” in “Calculation type”.

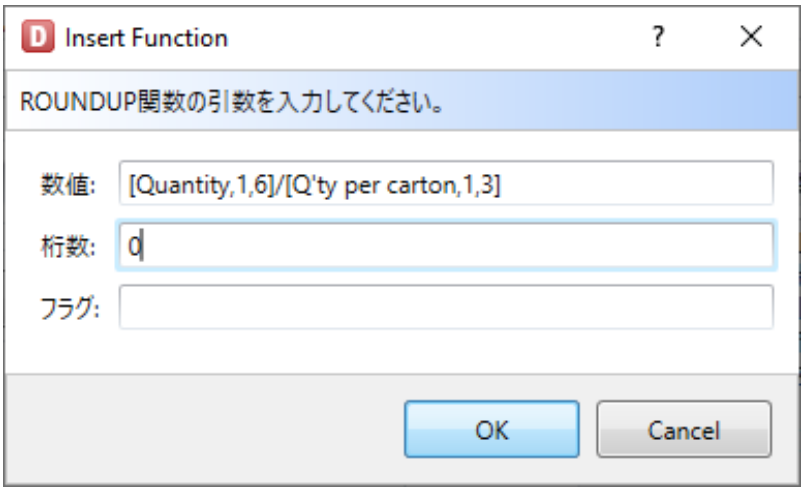
Then select a variable “Q’ty per carton” to make the calculation expression shown below.



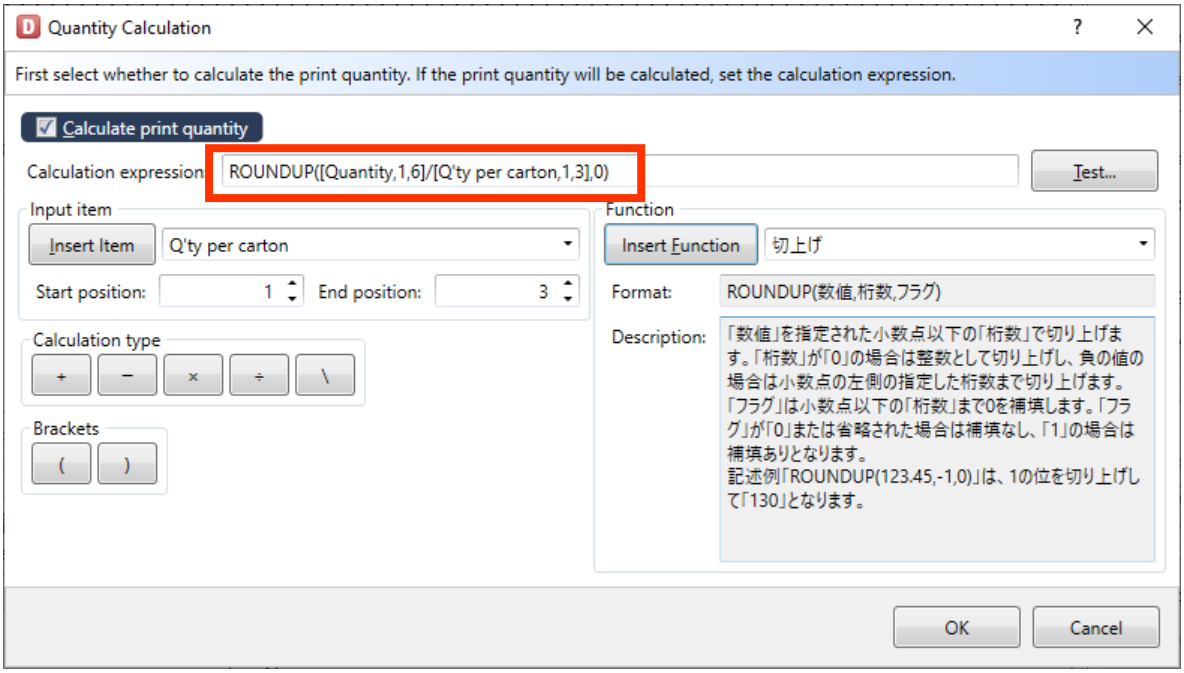
The calculation expression for entering the value in parameter of “ROUNDUP function” is made.
Cut this calculation expression, select “Roundup” from the “Function” list, and click “Insert Function”.



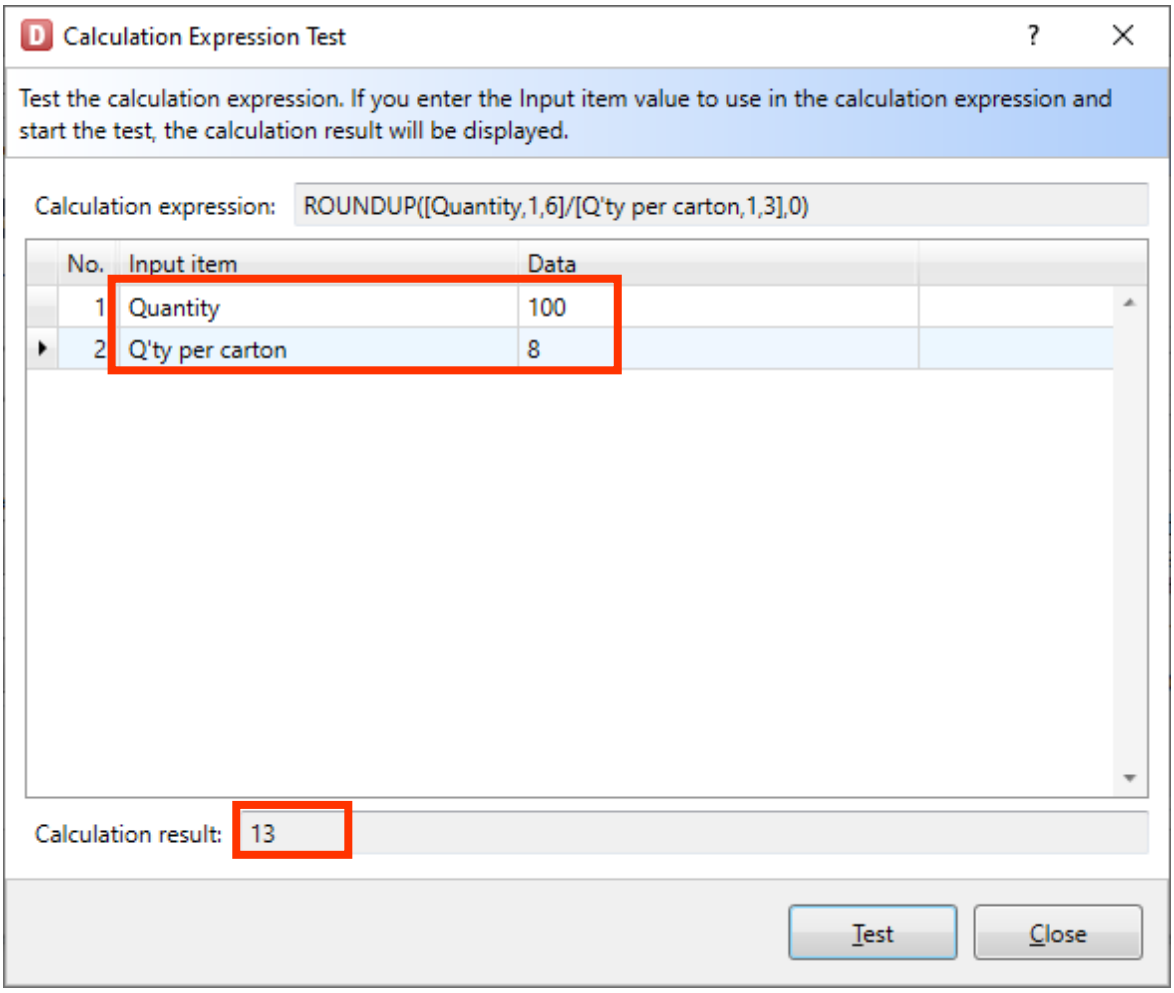
The “Insert Function” screen is displayed. Set the calculation expression cut in the previous step in “Numeric”.
Set “0” in “No. of digits” and click “OK”.



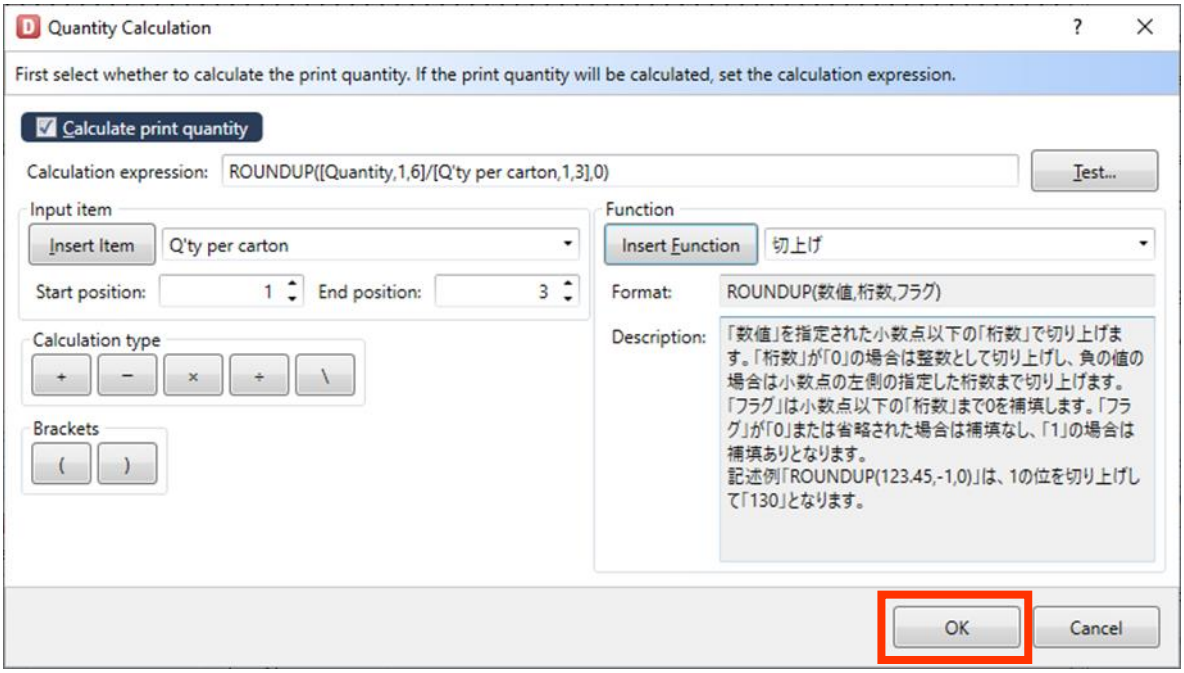
Is the Calculation expression shown below set in “Calculation expression”?
Click “Test” to check the calculation result.



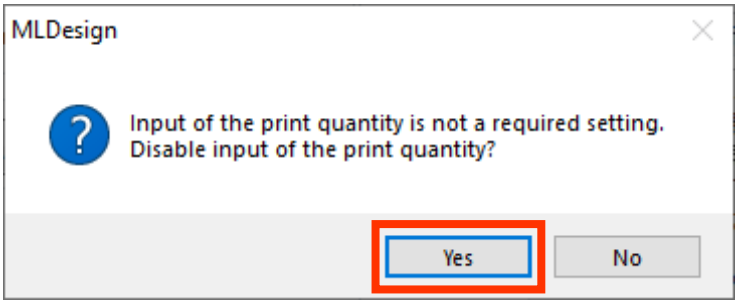
Enter “100” in “Quantity” and “8” in “Parameter:” then click “Test”.
Is “13” displayed in “Calculation result”? When the result is checked, click “Close”.



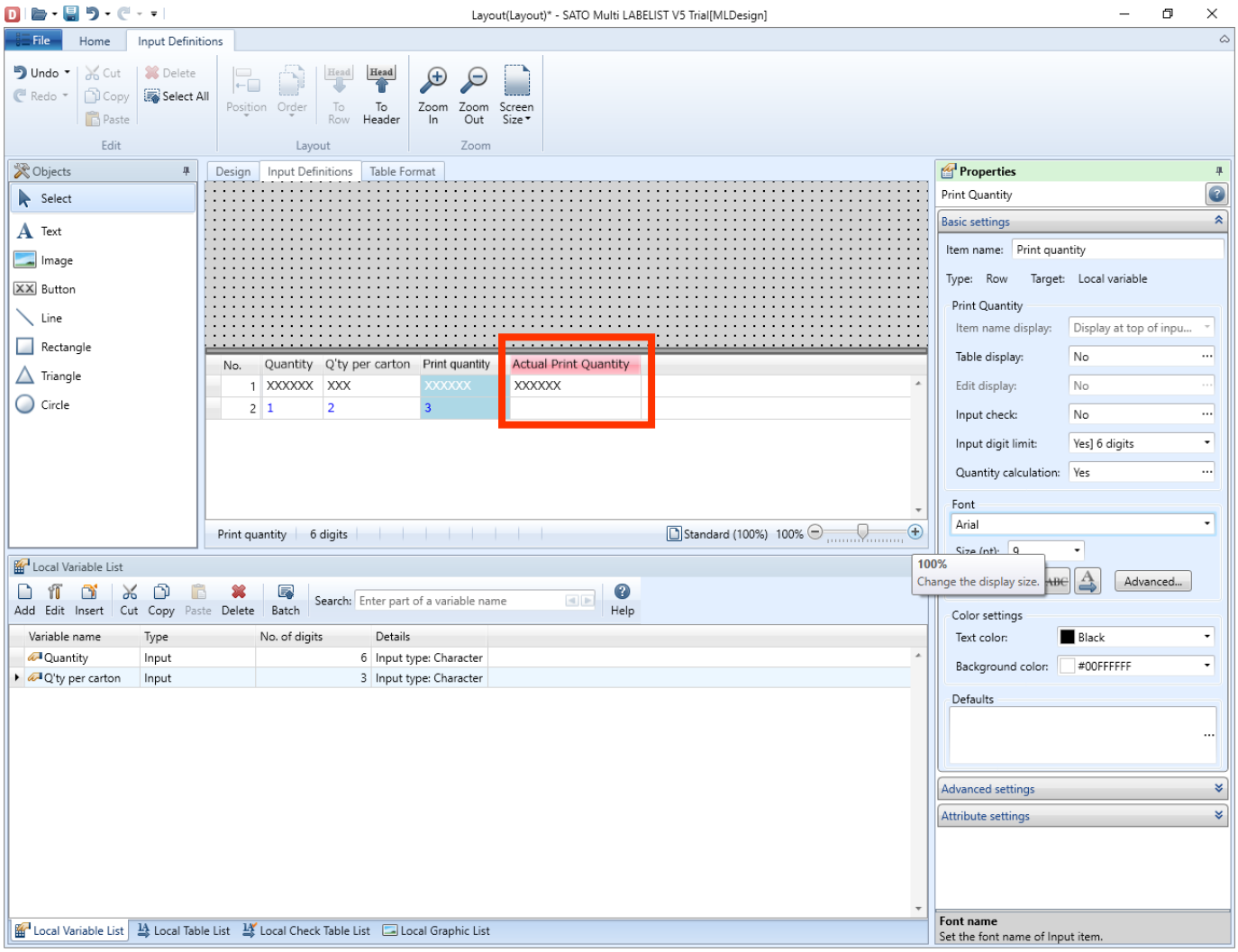
When the Quantity Calculation screen is returned, click “OK” to finish the registration.



If “Print Quantity” item is not used in calculation,
the message shown below is displayed. Select “Yes”.



When settings are complete, “Actual Print Quantity” item is displayed on the right of “Print quantity” of the input item.



This is the end of settings.

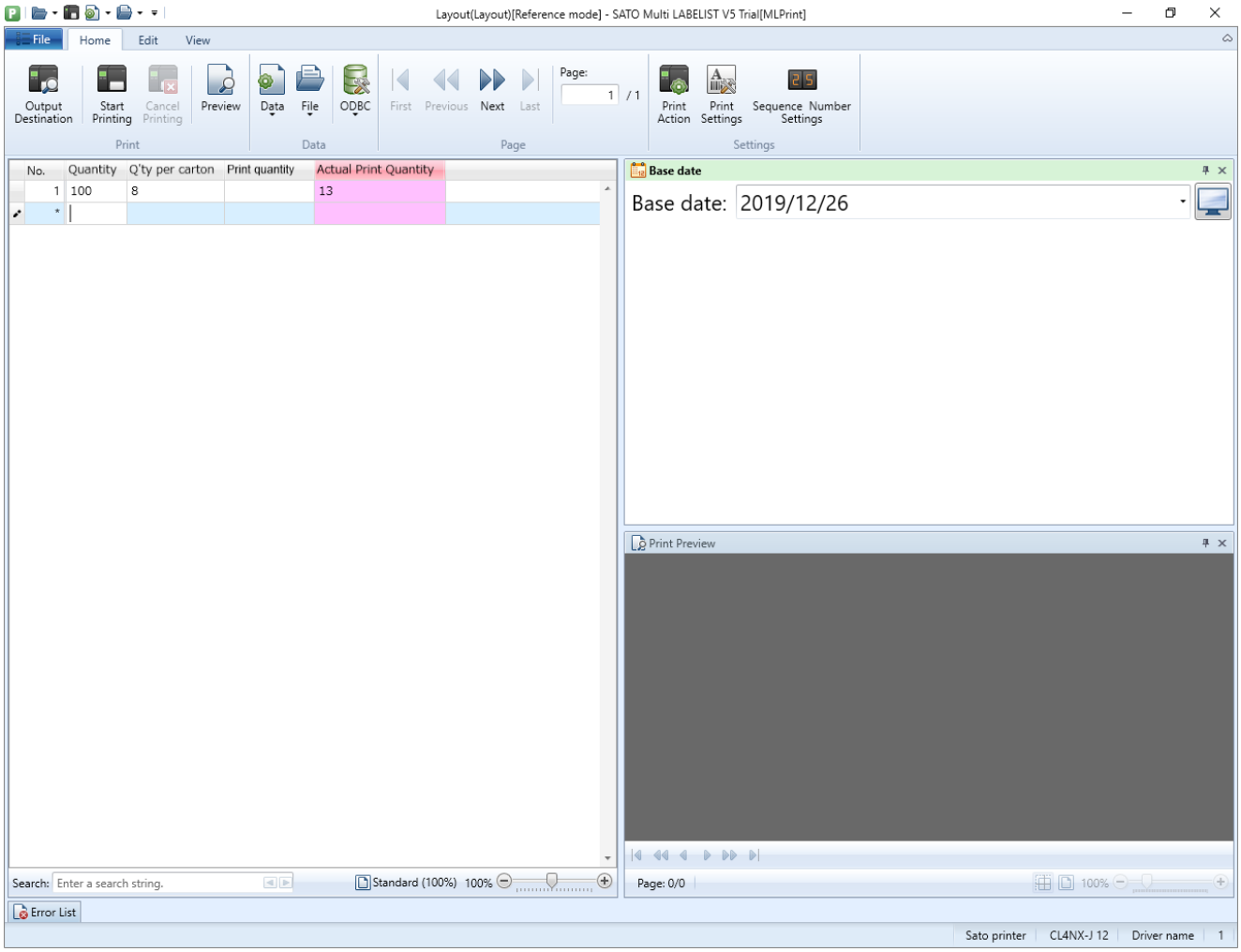
In the next item, enter the value on the Print screen and check the actual print quantity (calculation result).

4. Checking the Calculation Result of Print Quantity

Enter the value in Input item on the Print Layout screen and check that the correct calculation result is set in “Actual Print Quantity” item.

In this manual, the calculation is done under the conditions below so that the calculation result will be 13.

<Condition>
To pack 100 products in boxes of 8 each and to print the label required for the boxes



This completes “7: Print Quantity Calculation Function”.

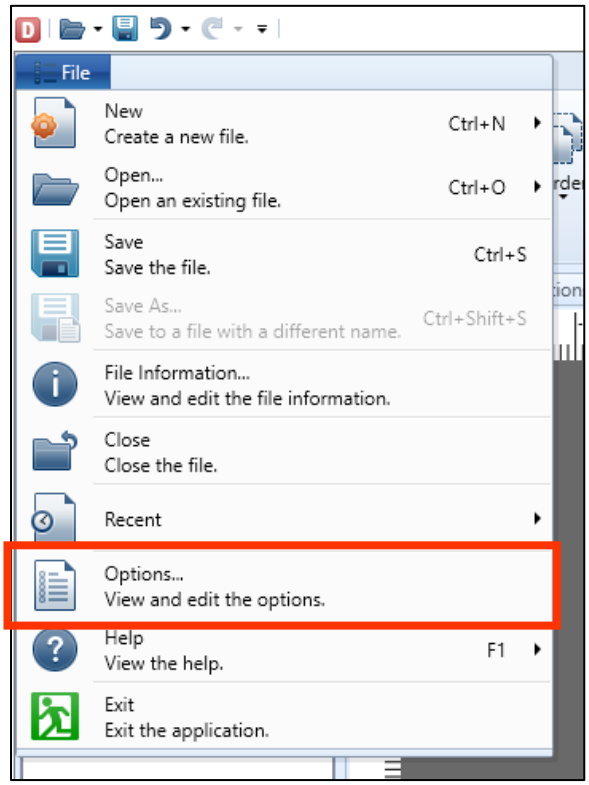
8: Operating in Advanced Mode

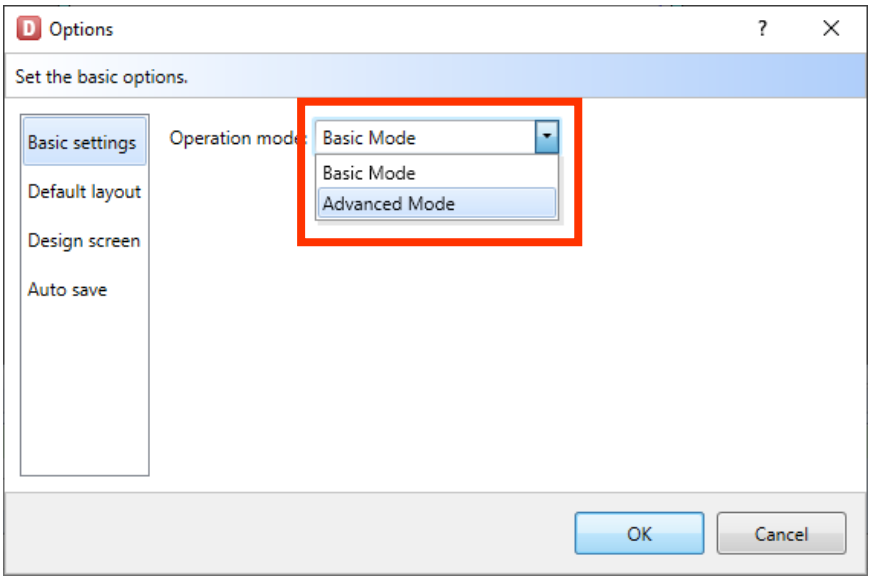
1. What is the Advanced Mode?

The Advanced Mode is an operation mode that enables you to use the advanced functions such as reverse, composite symbol, etc.

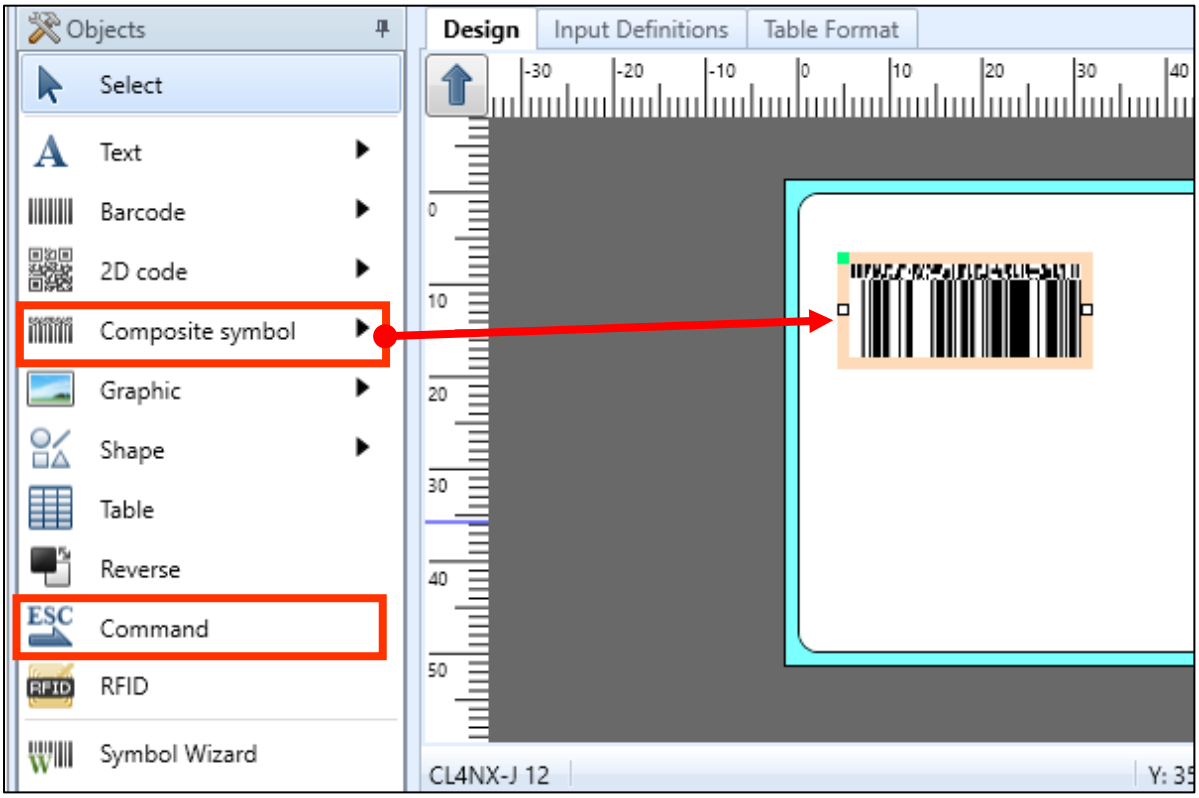
2. Setting Method of the Advanced Mode

Select “Options” from the File menu in MLDesign and select “Advanced Mode” in Operation mode.





You can use the Composite symbol or Command function.



3. Function of the Advanced Mode

Basic Mode and Advanced Mode differ in the available design objects and variables.

■ **Design object**

Design object		SATO printer		Color printer	
		Basic	Advanced	Basic	Advanced
Select		Yes	Yes	Yes	Yes
Character	(1) Paste	Yes	Yes	Yes	Yes
	(2) Input	Yes	Yes	Yes	Yes
	(3) Sequential number	Yes	Yes	Yes	Yes
	(4) Date	Yes	Yes	Yes	Yes
Barcode	(1) Paste	Yes	Yes	Yes	Yes
	(2) Input	Yes	Yes	Yes	Yes
	(3) GS1 Databar	No	Yes	No	Yes
	(4) GS1-128	No	Yes	No	Yes
	(5) CODE128	No	Yes	No	Yes
2D Code	(1) Paste	Yes	Yes	Yes	Yes
	(2) Input	Yes	Yes	Yes	Yes
Composite Symbol	(1) Paste	No	Yes	No	Yes
	(2) Input	No	Yes	No	Yes
Graphics	(1) Paste	Yes	Yes	Yes	Yes
	(2) Call	No	Yes	No	Yes
	(3) Input	No	Yes	No	Yes
Shape	(1) Line	Yes	Yes	Yes	Yes
	(2) Rectangle	Yes	Yes	Yes	Yes
	(3) Triangle	Yes	Yes	Yes	Yes
	(4) Circle	Yes	Yes	Yes	Yes
Table		Yes	Yes	Yes	Yes
Reverse		Yes	Yes	No	No
Red area		No	Yes	No	No
Command		No	Yes	No	No
RFID		No	Yes	No	No
Symbol Wizard		No	Yes	No	Yes

■ **Variable**

Variable	Setting Item	Items available in Advanced Mode
Input	Calculation variable type	[Hexadecimal code], [Graphic]
	Edit parameters	Refer to the table below.
Fixed	All	(Not displayed in Basic Mode)
Copy	Edit parameters	Refer to the table below.
Join	Edit	Cross check
Sequential number	Sequential number type	[Numeric (printer)], [Characters]
	Numeric (layout)	[Inherit increment/decrement value when loop]
	Numeric (layout) -Count condition	[Count every time specified number of prints], [Count every time design object], [Count every time another variable value loops]
	Edit parameters	Refer to the table below.
Date	Date type	[System date]
	Character type	[Double-byte]
	Edit parameters	Refer to the table below.
Calculation	Calculation variable type	[Price C/D], [Price rounding]
	Edit parameters	Refer to the table below.
Condition	All	(Not displayed in Basic Mode)
Symbol	All	(Not displayed in Basic Mode)
System	All	(Not displayed in Basic Mode)

• Edit parameters

In Advanced Mode, every function is available.

Edit parameters	Limit in Basic Mode				
	Input	Copy (before editing)	Sequential number	Date	Calculation
Table conversion	Yes	Yes	No	Yes	Yes
Delete line feed	No	No	No	No	No
Remove specified character	No	No	No	No	No
Tax editing	Yes	Yes	No	No	Yes
Comma editing	Yes	Yes	Yes	No	Yes
Currency editing	Yes	Yes	No	No	Yes
One character filling	No	No	No	No	No
Justification editing	Yes	Yes	Yes	Yes	Yes
Replace	No	No	No	No	No
Leading zero filling	Yes	Yes	Yes	No	Yes

This completes "8: Operating in Advanced Mode".

9: Print Function of GS1 DataBar and GS1 Composite Symbol

1. What is the Print Function of GS1 DataBar and GS1 Composite Symbol?

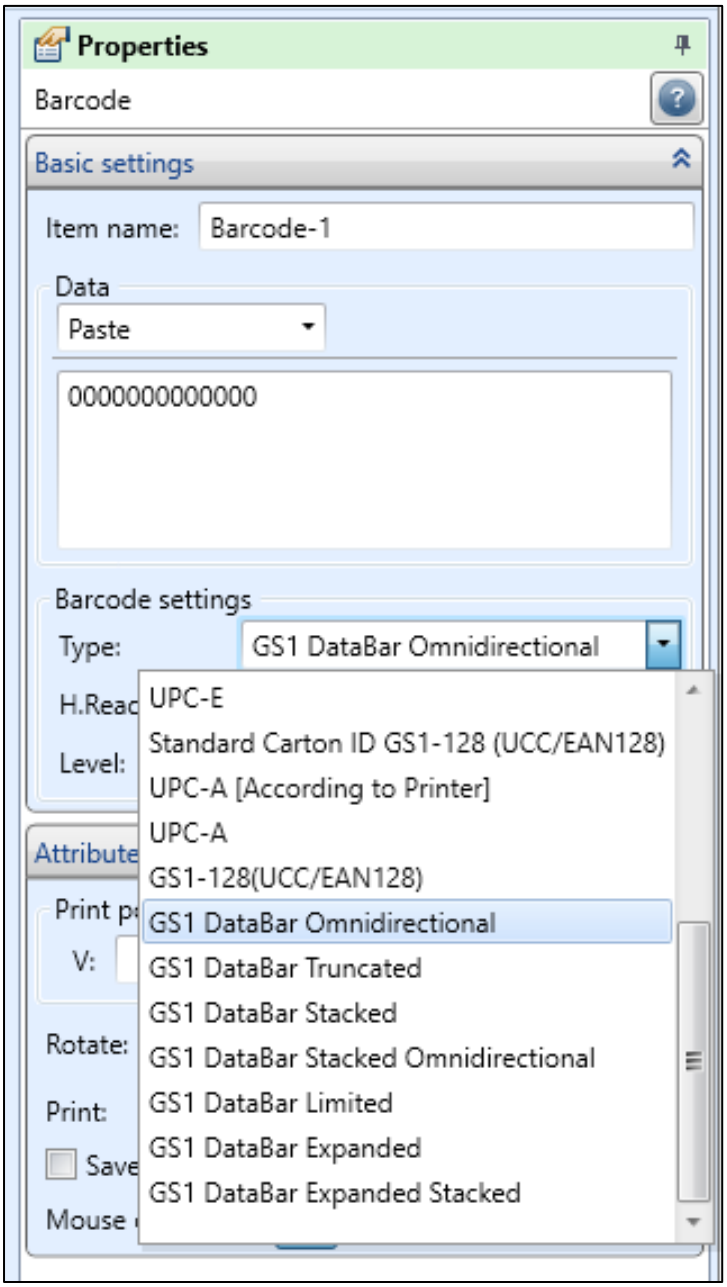
This is the function to print GS1 DataBar and GS1 composite symbol.

To use the GS1 DataBar and GS1 composite symbol, change the operation mode to Advanced Mode.

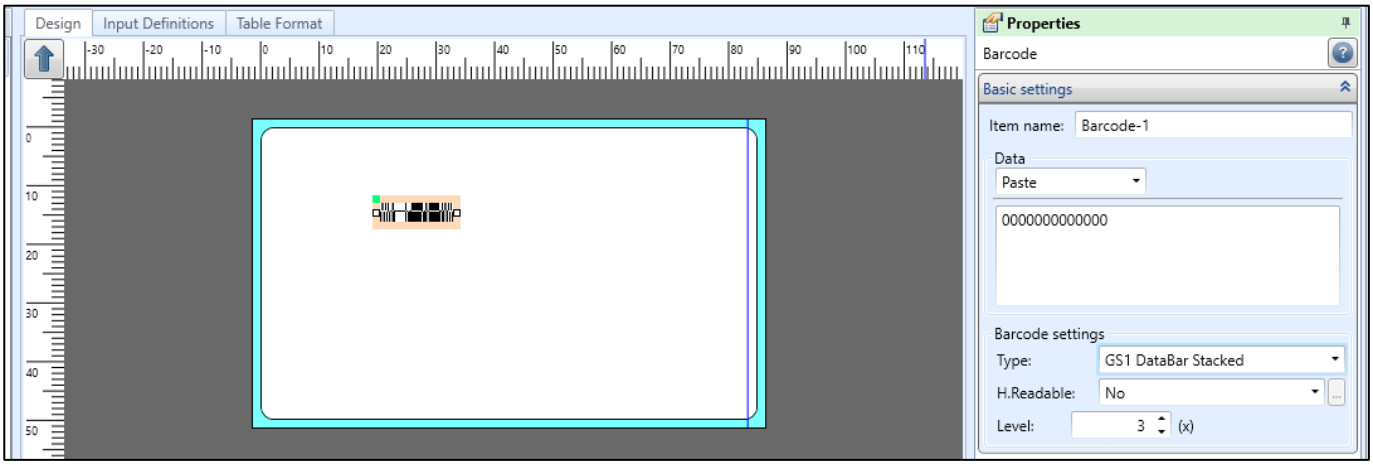
2. How to Set Up the Layout

■ Specifying the GS1 DataBar

1. In MLDesign, barcode type that can be created as GS1 DataBar is listed on the Properties pane of the Barcode Object with the name “GS1 DataBar ...”.

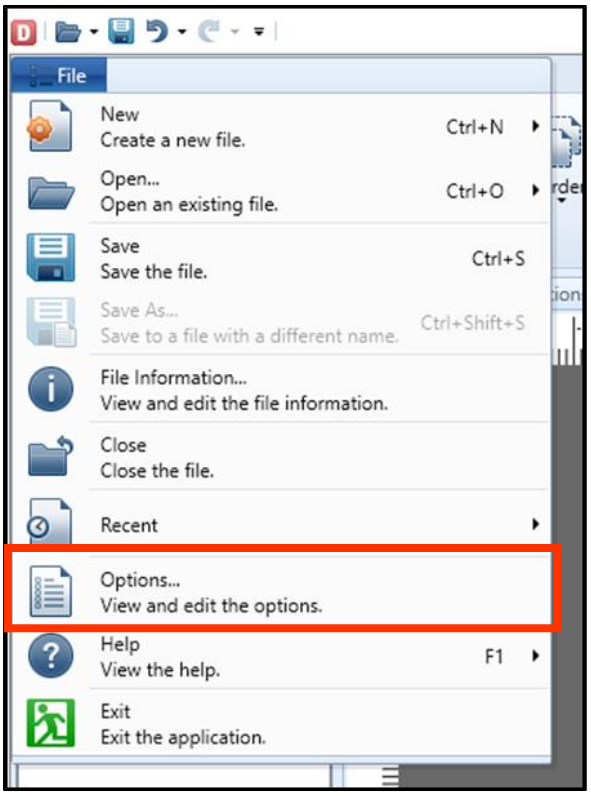


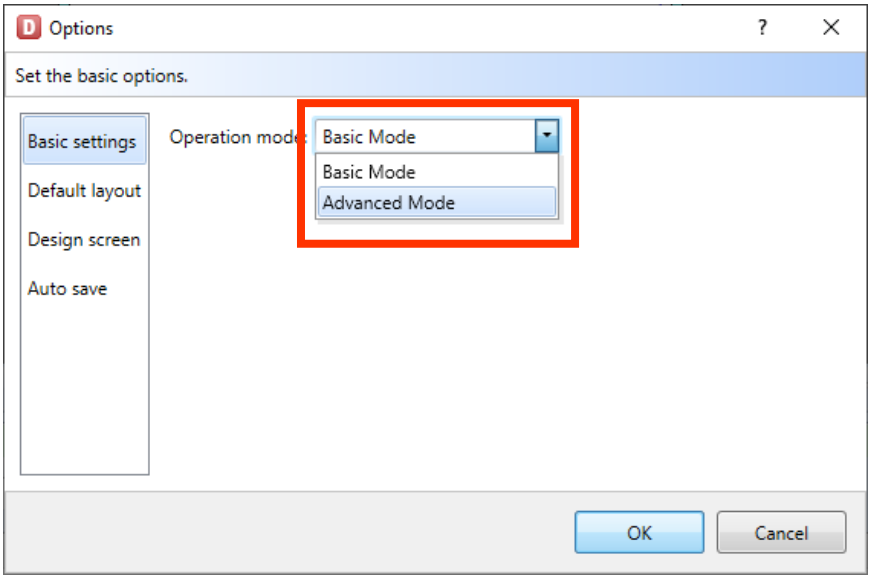
2. Select a barcode type to be printed and specify the character code and number of digits according to the specifications of 1D barcode. Then GS1 DataBar will be displayed.



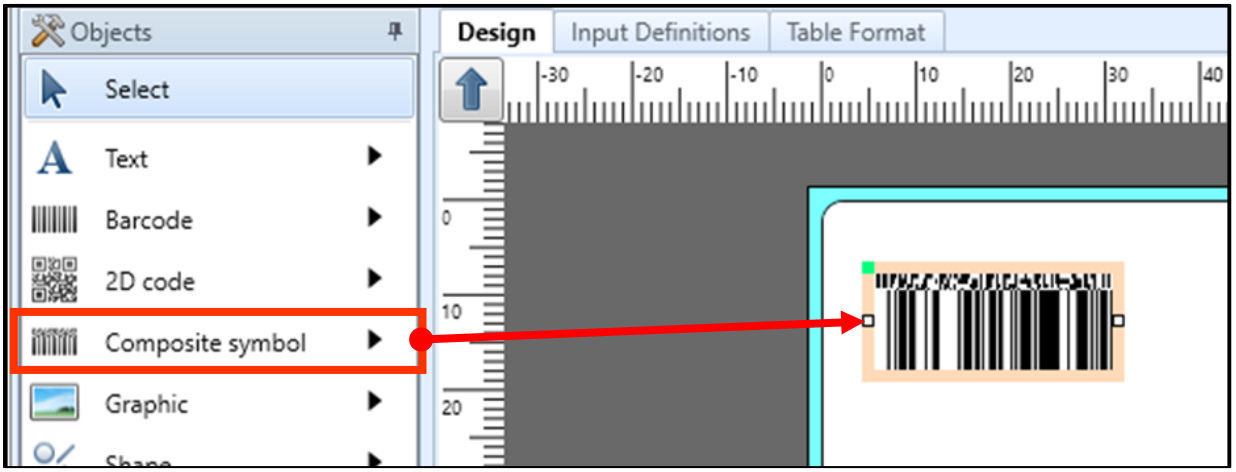
■ **Specifying GS1 composite symbol**

1. Select “Options” from the File menu in MLDesign and select “Advanced Mode” in Operation mode.

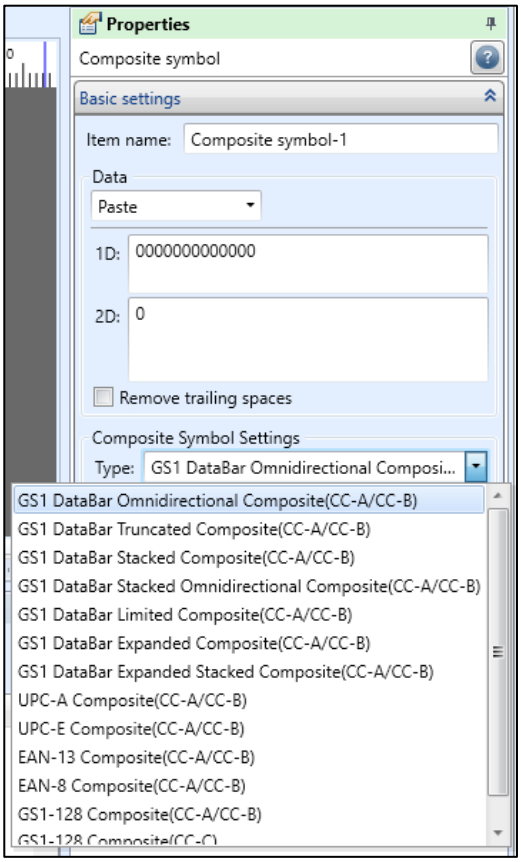




2. Place a composite symbol object on the Design screen.

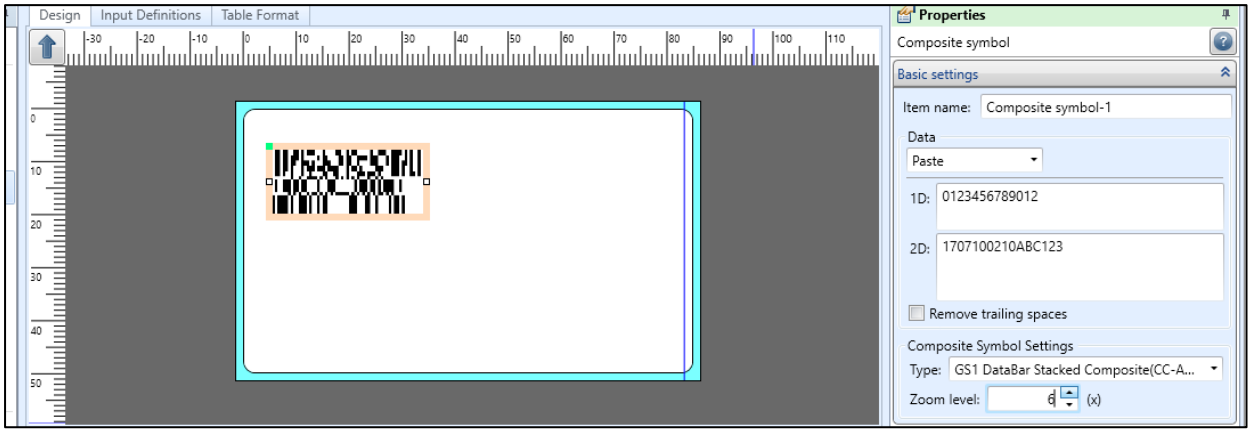


3. Select a composite symbol object and select a barcode type from the pulldown menu on the properties pane.



4. To print the GS1 composite symbol, specify the data for 1D barcode section and for 2D code section respectively.

Example) 1D barcode: 0123456789012, 2D code: 1707100210ABC123



3. Description

■ Specifying FNC1 for the GS1 composite symbol

- To specify FNC1 (GS) as data, specify '#' (23h).

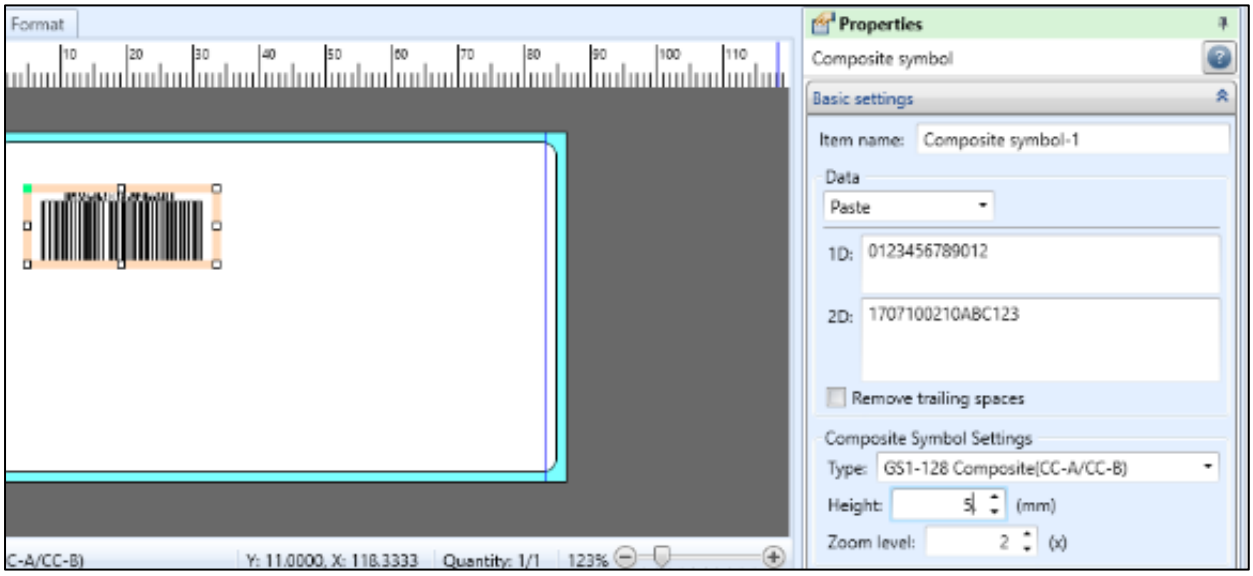
■ Specifying the bar height of GS1-128 Composite (CC-A/CC-B) and (CC-C)

- The bar height of 1D barcode section only for GS1-128 Composite (CC-A/CC-B) and (CC-C) can be specified. The barcode height is that when Zoom level is set to "1".

  The maximum value that can be set depends on the head density.

Head density	Height	Printer model
8 lines/mm	62.5 mm	CL4NX-J 08, T/R408v-ex, etc.
12 lines/mm	41.7 mm	CL4NX-J 12, T/R412v-ex, etc.
24 lines/mm	20.85mm	CL4NX-J 24, HA224R, etc.

- Select a composite symbol object and specify it in Basic settings on the Properties pane.
  Example) When the height is set to "5" and zoom level to "2", the height of the 1D barcode section will be "10 mm".



■ About the use of variables

- Symbol variables are only available in the 1D data section of GS1-128/GS1 DataBar/GS1 DataBar Conposite. Other GS1 composite symbols must be used with a concatenated variable.
- The symbol variable automatically adds FNC1 to the beginning and the end of the variable data, and switches to the optimum code set according to the AI to generate the data.

■ Limitation for data

- Data type that can be specified depends on the barcode type.

Characters that can be specified
1D barcode section
Barcode type: GS1 DataBar Expanded, GS1-128 Composite
Alphanumeric, single-byte space, symbol 29 characters* * "!" """ "$" "%" "&" "'" "(" ")" "*" "+" "," "-" "." "/" ":" ";" "<" "=" ">" "?" "@" "[" "¥" "]" "_" "`" "{" "}" "~"
Barcode type: GS1 DataBar and GS1 composite symbol other than above
Numeric only
2D code section (all common)
Alphanumeric, single-byte space, symbol 21 characters* * "!" """ "%" "&" "'" "(" ")" "*" "+" "," "-" "." "/" ":" ";" "<" "=" ">" "?" "_" "#" (# is FNC1.)

- For GS1-128 Composite (CC-A/CC-B), it is automatically judged that 2D Code section of 56 digits or less is CC-A and that of 57 to 338 is CC-B.

- AI (application identifier) required at the top of 1D barcode section of GS1 DataBar "01" is added and output by the scanner. However, for GS1 DataBar Expanded, it should be specified as data.

- Check digit for 1D barcode section of GS1 DataBar is automatically filled. However, for GS1 DataBar Expanded only, check digit should be specified as data.

■ Request for reading confirmation

- As there are many types of GS1 composite symbols and data configuration is complicated, be sure to check the data using the scanner.

This completes "9: Print Function of GS1 DataBar and GS1 Composite Symbol".

10: Binary Information Setup Function (2D Code)

1. What Is the Binary Information Setup Function?

The binary information indicates characters that cannot be expressed in alphabetic. 2D code enables these characters to be expressed and used. The binary information setup function enables various symbols with the binary information attached to be printed.

To use the binary information setup, change the operation mode to Advanced Mode.

For example, a raw-material manufacturer adds binary information to a QR code which results in construction of the traceability system. An example of QR code is shown below. The following pages cover the specific setup method based on the QR code specifications below.

Displayed symbol: QR code
Stored data:
[)>【RS】05【GS】01【GTIN】【GS】17【Guarantee date】【GS】11【Production date】【GS】10 【Lot No.】【GS】412【GLN】【RS】【EOT】

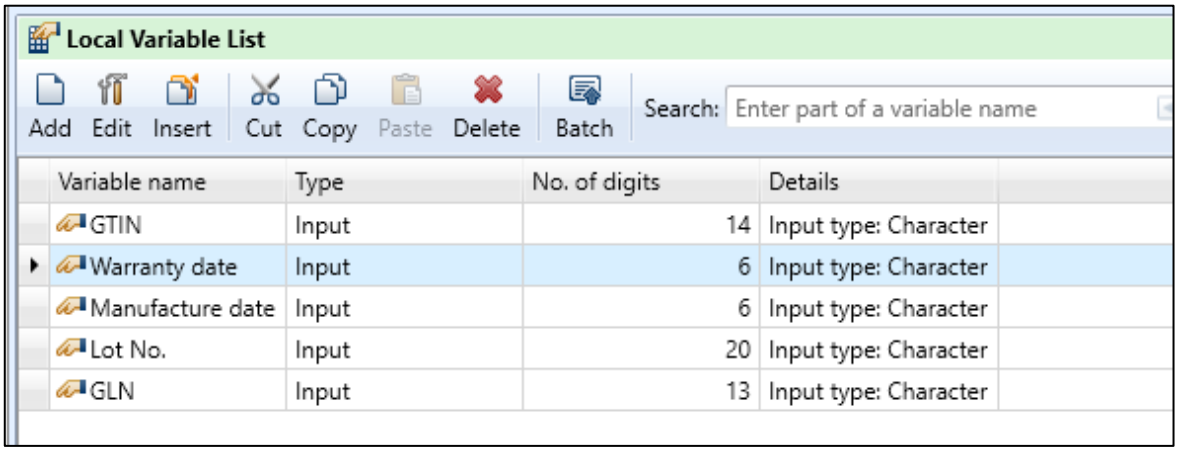
* The followings are binary information.

【RS】	Record separator （”1E”h）
【GS】	Group separator （”1D”h）
【EOT】	Message trailer （”04”h）

2. How to Set Up the Layout

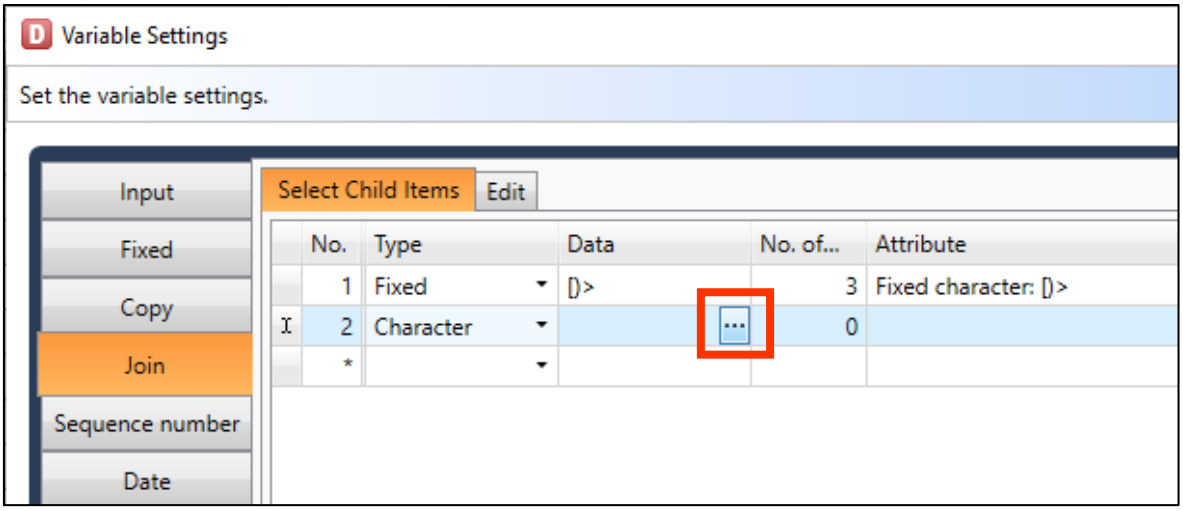
■ Creating using the Join variable

1. Create a variable to input the data.
   Using the settings shown below, create input variables.

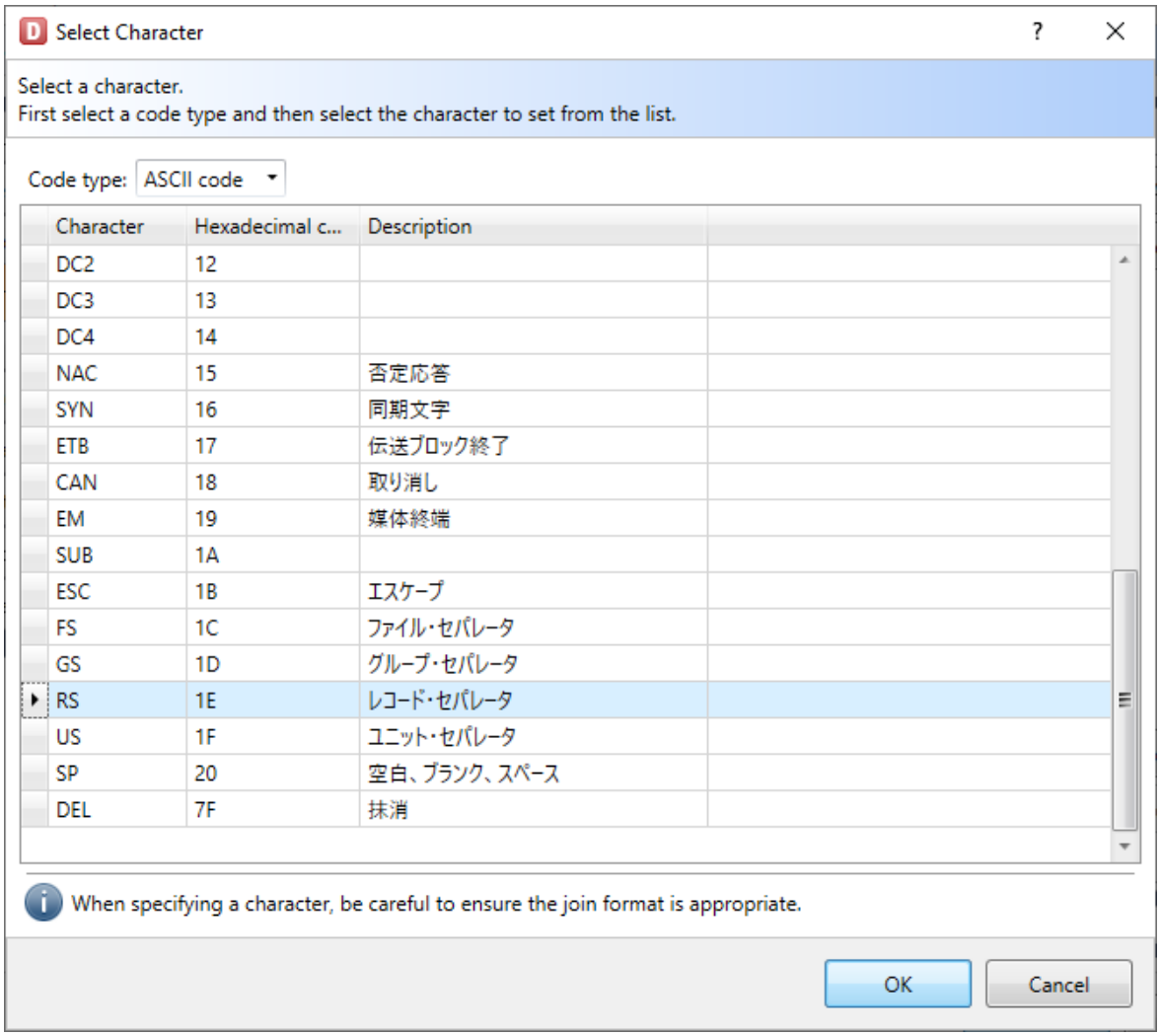


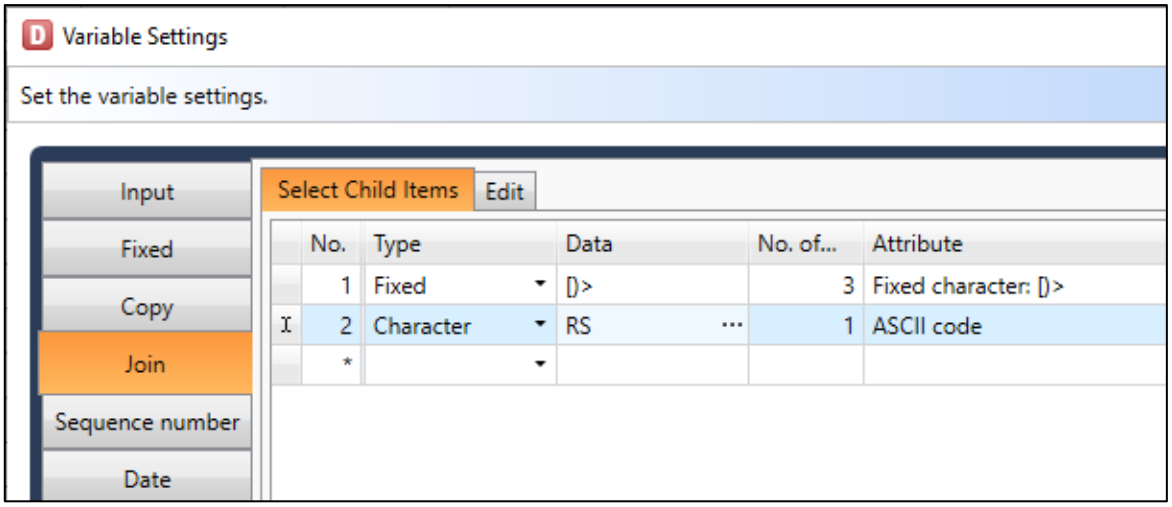
Variable name	Type	No. of digits	Details
GTIN	Input	14	Input type: Character
Warranty date	Input	6	Input type: Character
Manufacture date	Input	6	Input type: Character
Lot No.	Input	20	Input type: Character
GLN	Input	13	Input type: Character

2. To use with QR code, put the items together with the Join variable.
   To input binary information, select “Character” in Type and click “. . .” in Data.

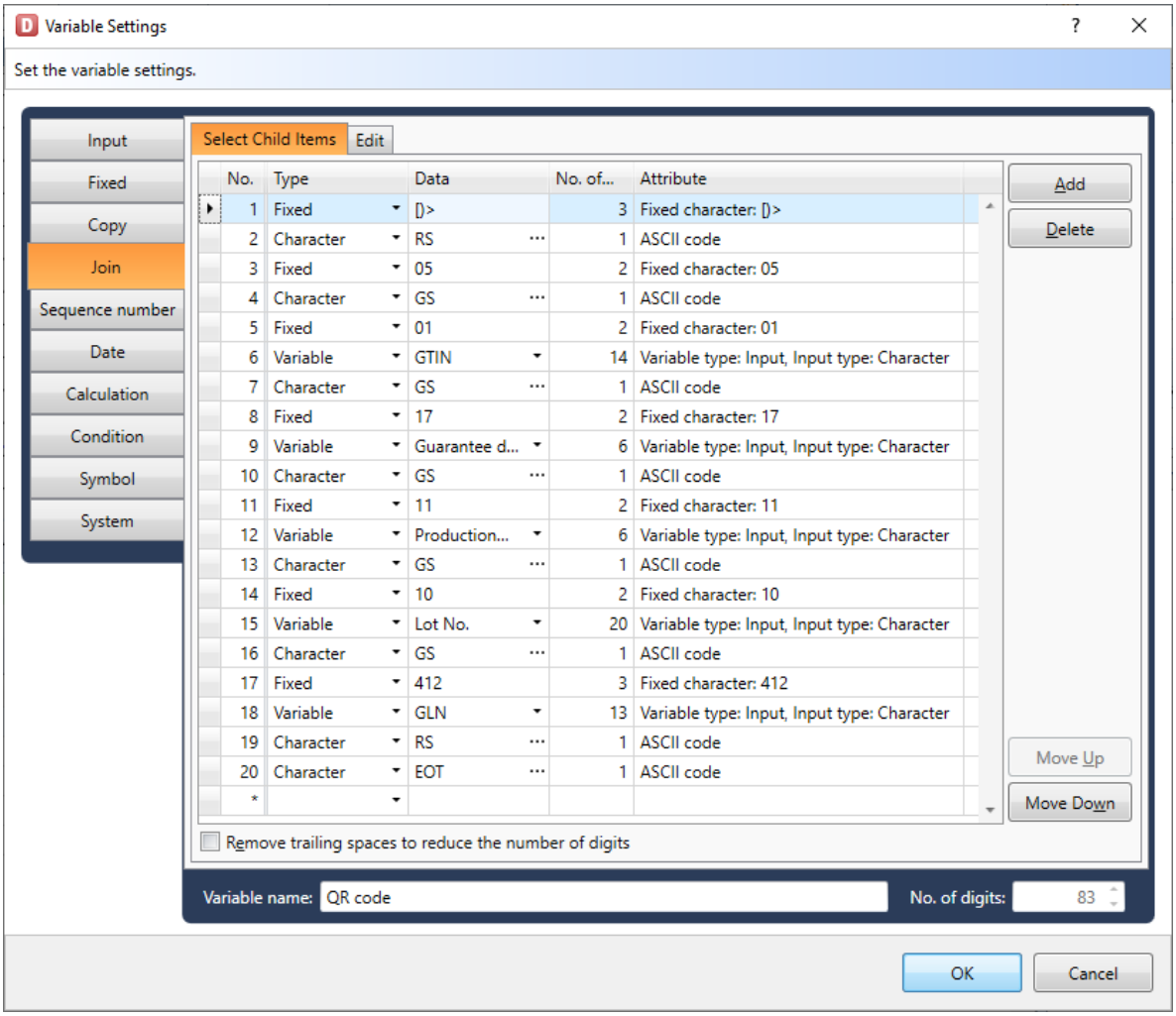


3. Select the character of a Binary Information and click “OK”.

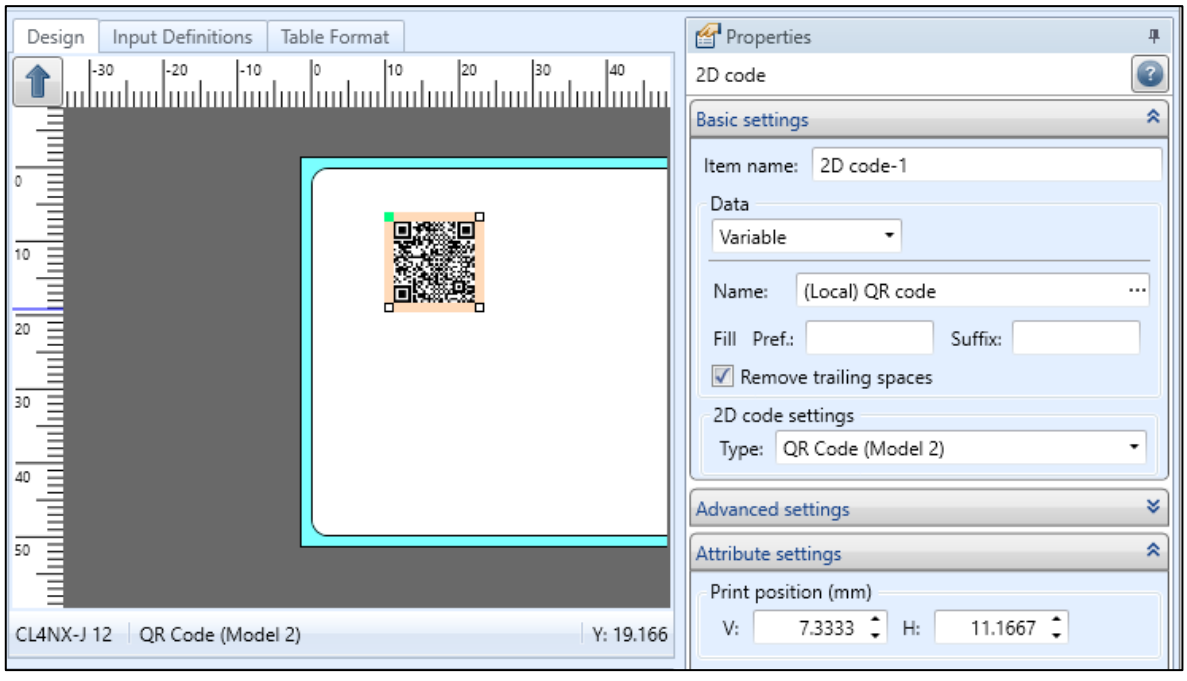




4. In the same way, combine the binary information and input item to create data.

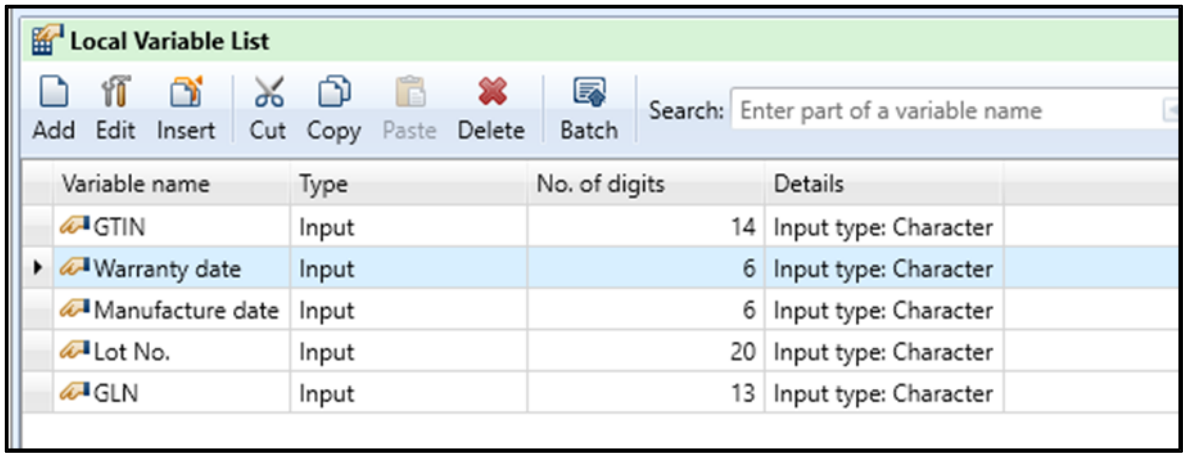


5. Set the Join variable created in QR code on the Design screen. This is the end of settings.

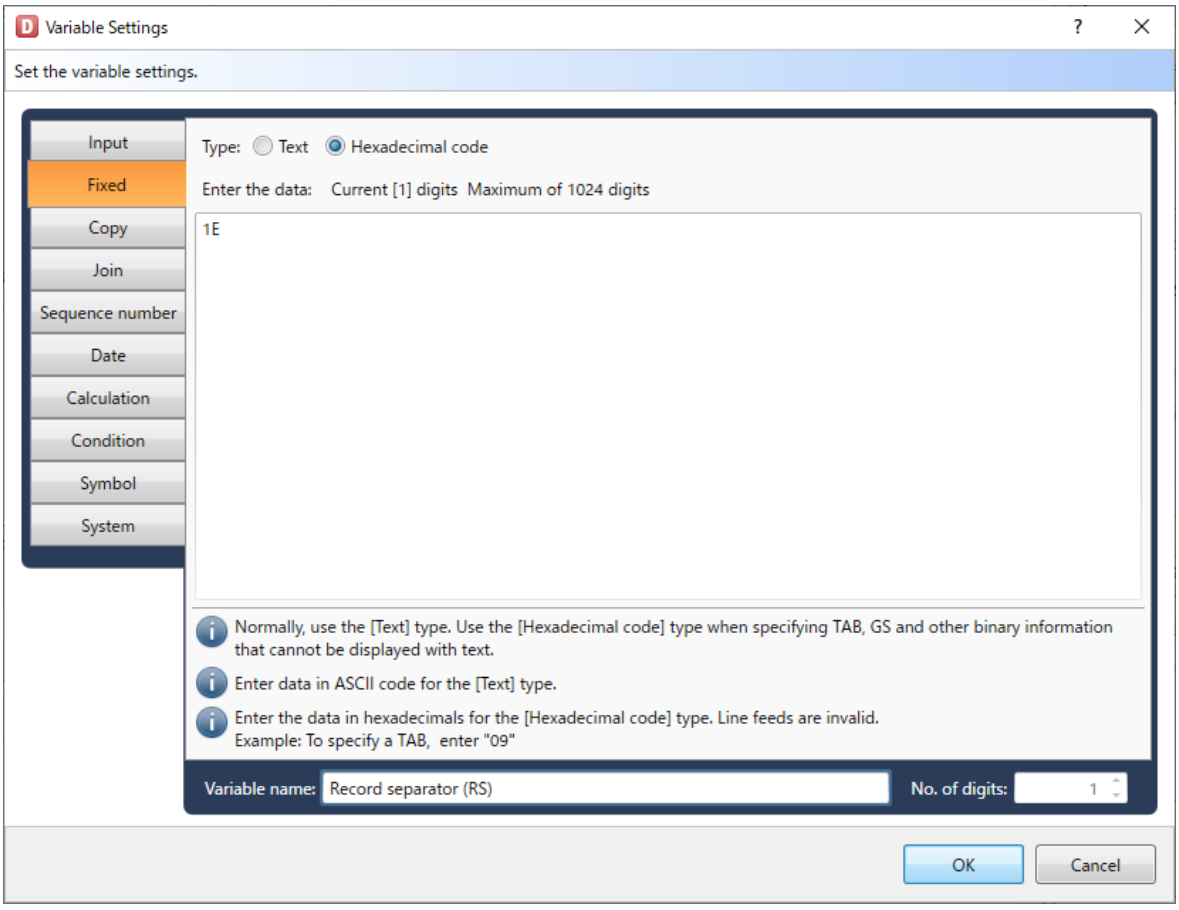


■ Creating using the fixed variable

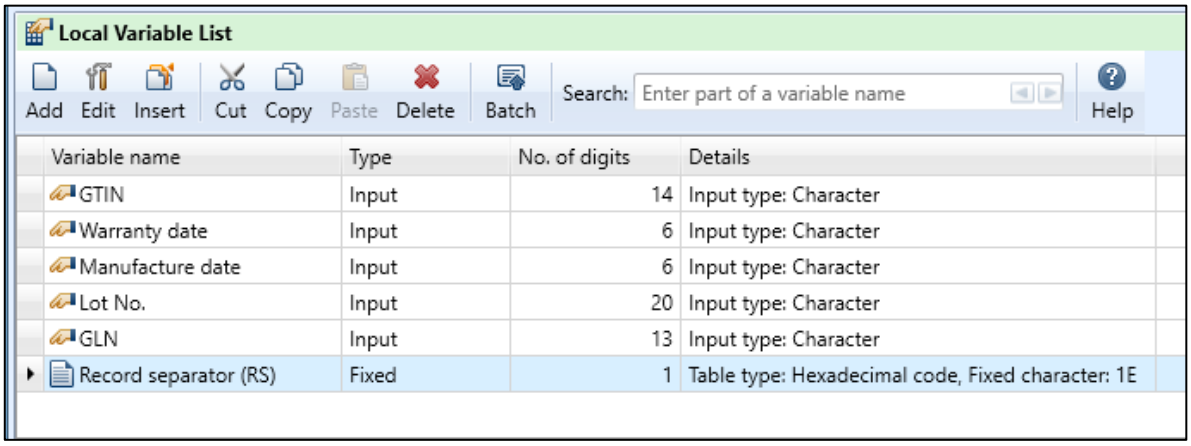
1. Create a variable to input the data.
   Using the settings shown below, create input variables.



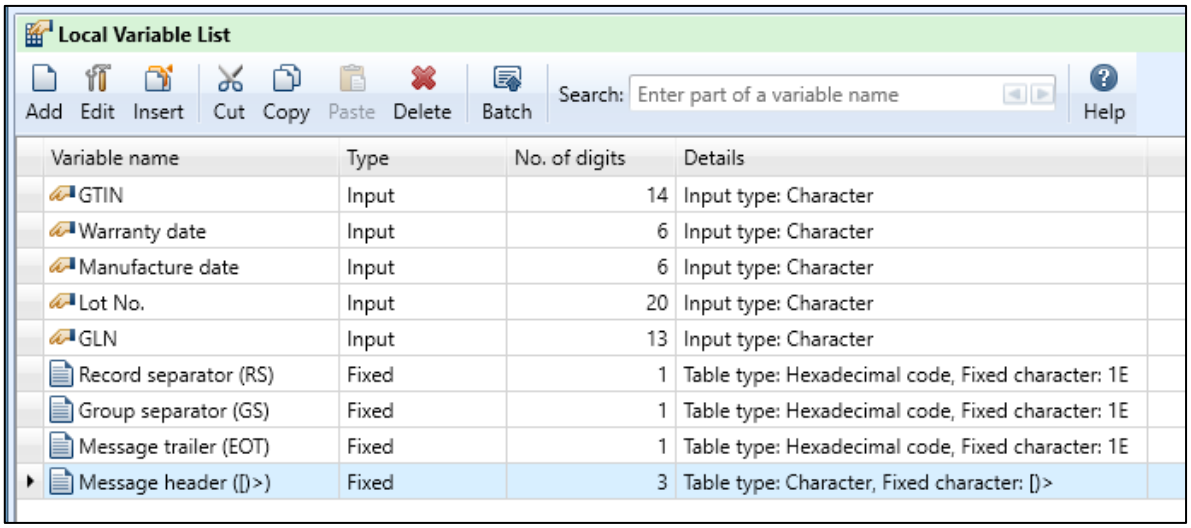
2. Create binary information using the fixed variable.
   Select “Hexadecimal code” in Type and enter hexadecimal character string in data.
   Enter “1E” for Record separator.



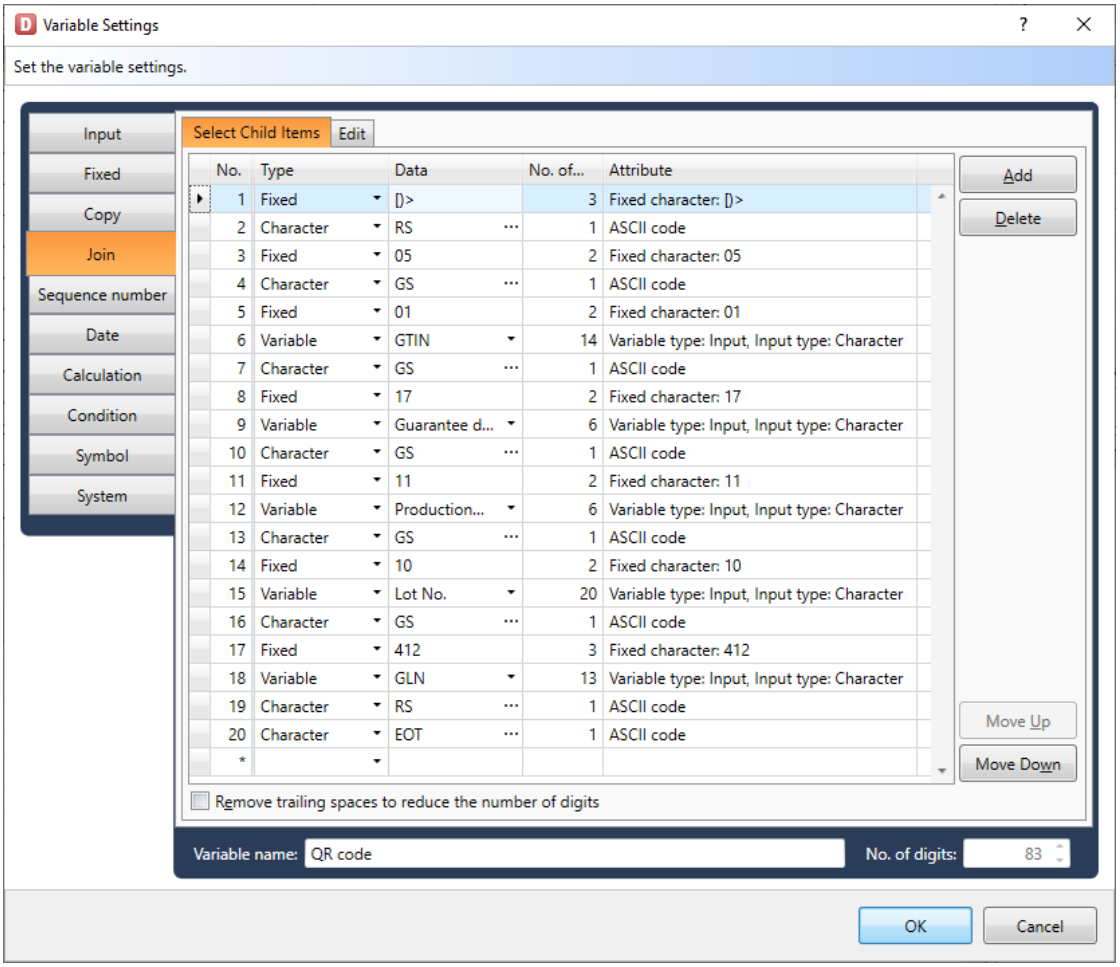
3. When variable creation is completed, it is displayed in a Local variable list.



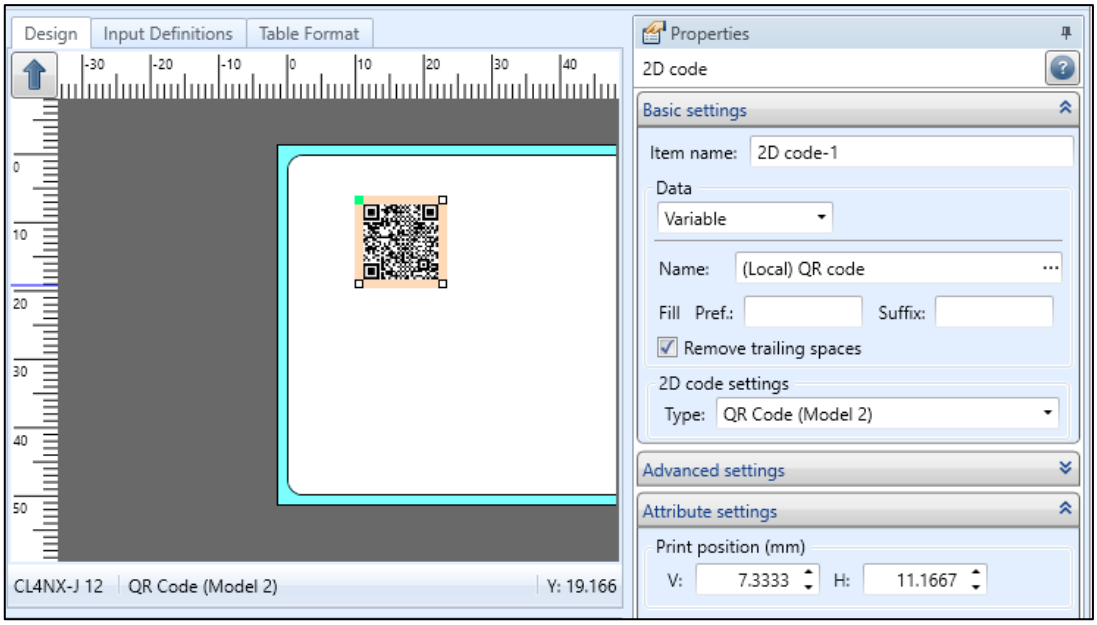
Continue the creation of the necessary variables in the same way.



4. To use with QR code, put the items together with the Join variable.
   Select the created variables in order.



5. Set the Join variable created in QR code in the Design screen. This is the end of settings.



This completes "10: Binary Information Setup Function (2D Code)".

11: Using the RFID Write Function

Let's write data to IC tags using the RFID write function.

1. What Is the RFID Write Function?

The RFID write function is to write data to IC tags.

To use the RFID write function, change the operation mode to Advanced Mode.

Printers supporting this function are CL4NX-J series, L'esprit R412v-RFID, and RFID model of EtVie Ev212R-RFID.

2. Types and Capacities of IC Tags

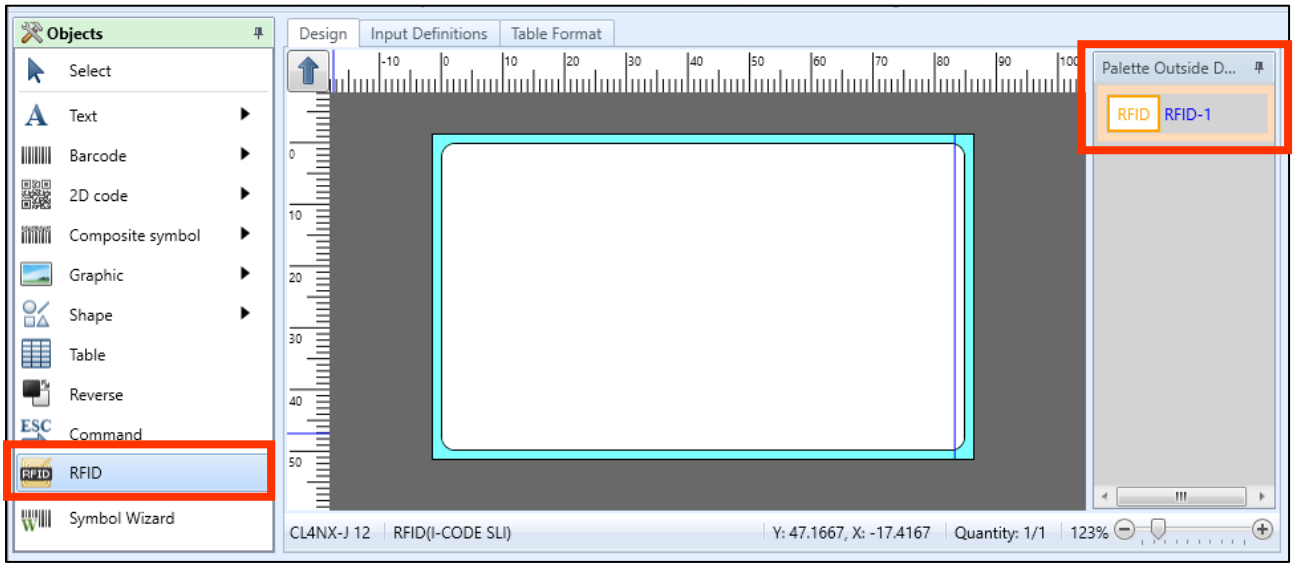
The manufacturers and capacity of various types of IC tags are listed below.
If the capacity of the specified information exceeds the limit, the excessed data will not be written.

IC Tag Type	Manufacturer	Capacity (bytes)
I-CODE SLI	Philips Semiconductors	112
Tag-it HF-I	Texas Instruments	256
my-d *	Infineon	1000

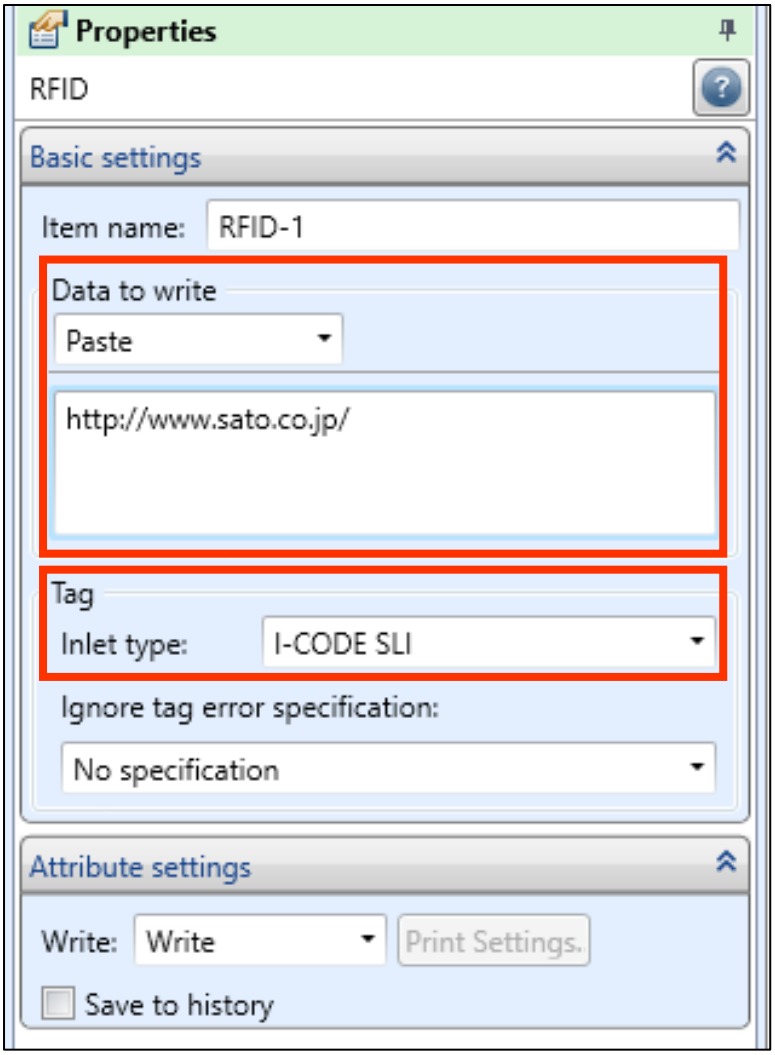
* my-d has two types of inlets whose maximum capacity is 232 bytes and 1,000 bytes.
If data exceeding the maximum capacity is to be written on the 232-byte tag, an RFID tag error occurs.

3. Writing in RFID Data

Select “RFID” on the Object pane and place it on the Design screen. The Palette Outside Design is displayed and the RFID icon id added.



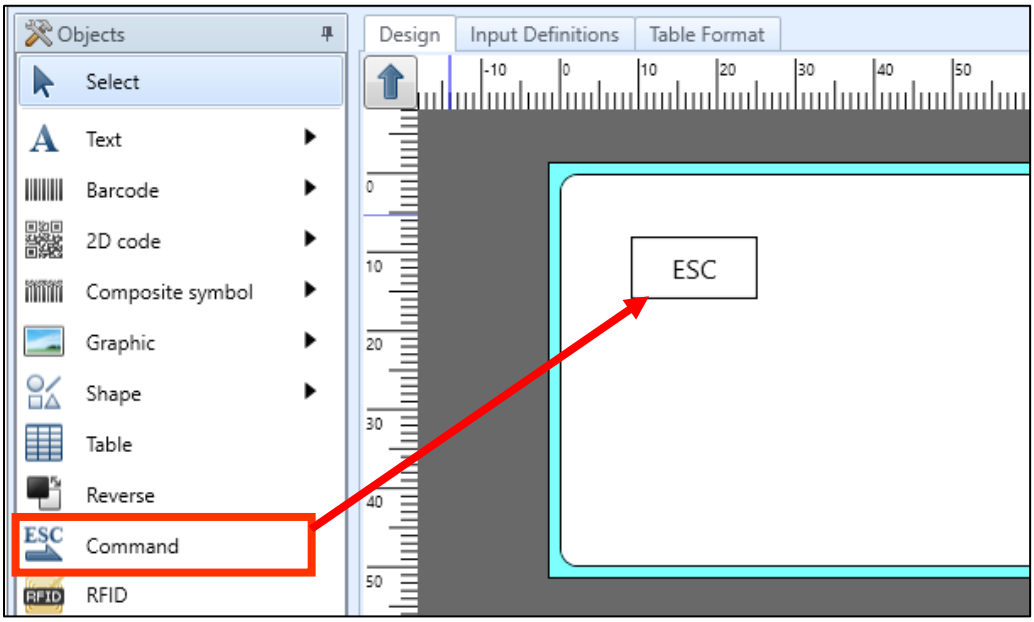
Enter the data to be written on the Properties pane and select the “Inlet type” to be used.



4. Writing in Other IC Tag

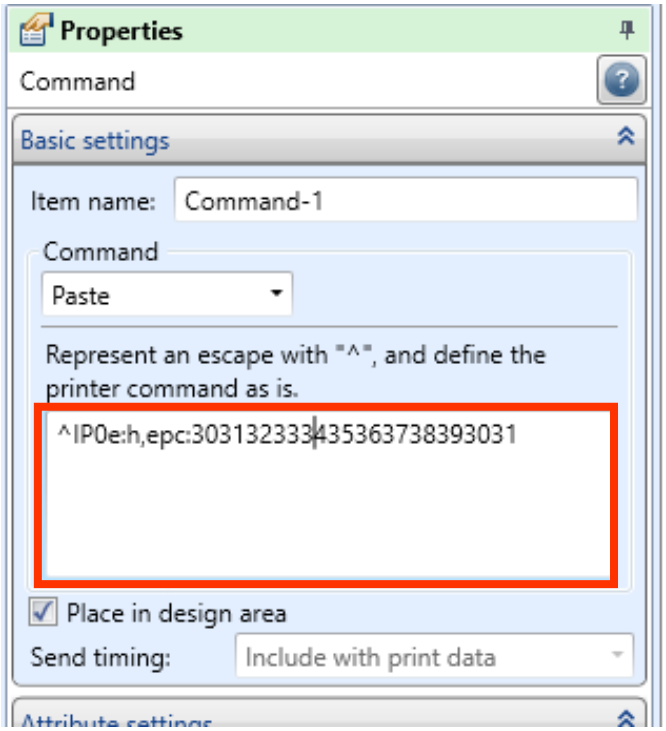
To use IC tags other than I-CODE SLI, Tag-it HF-I, and my-d, describe the printer command (SBPL) with the command object and write it.

Select “Command” on the Object pane and place it on the Design screen and the ESC icon is added.

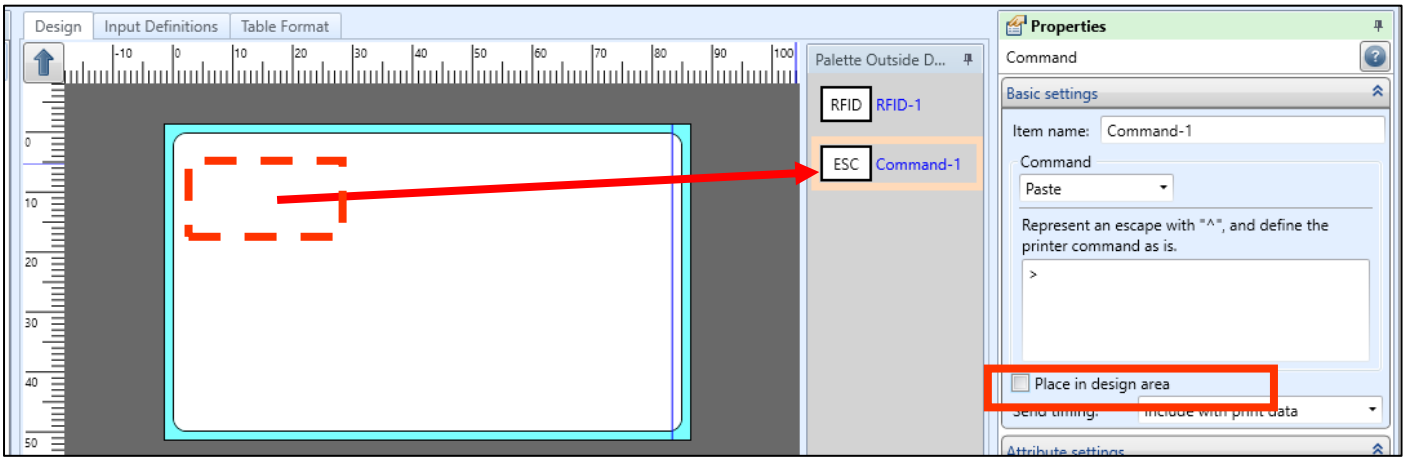


Set the printer command (SBPL)* to be written on the Properties pane.
*For creating method of SBPL, please contact our sales office.

Example: Specify the command to write data with any length in EPC area on the IC chip manufacturer advanced specification tag.



As the RFID command does not require the position information, remove the check of “Place in design area”. The ESC icon moves from the Design screen to Palette Outside Design.



When printing, the set contents will be written to the IC tag.

This completes “11: Using the RFID Write Function”.

12: Using the Condition Variable

The condition variable enables you to change print content according to complicated conditions such as changing the font size according to the input number of digits, or changing characters to be joined according to the number of input items.

1. What is the Condition Variable?

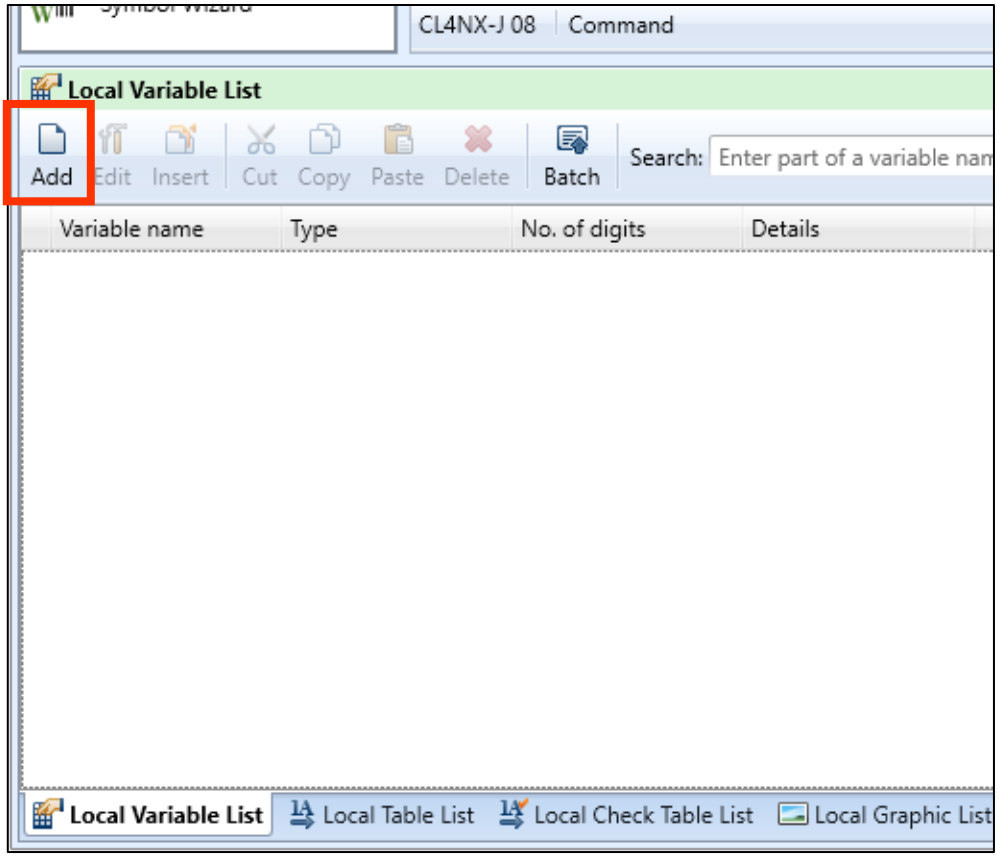
The condition variable is a function to judge True or False by setting a conditional expression.
It can be used to print the value according to the conditions or used as print conditions for objects.

To use the condition variable, change the operation mode to Advanced Mode.

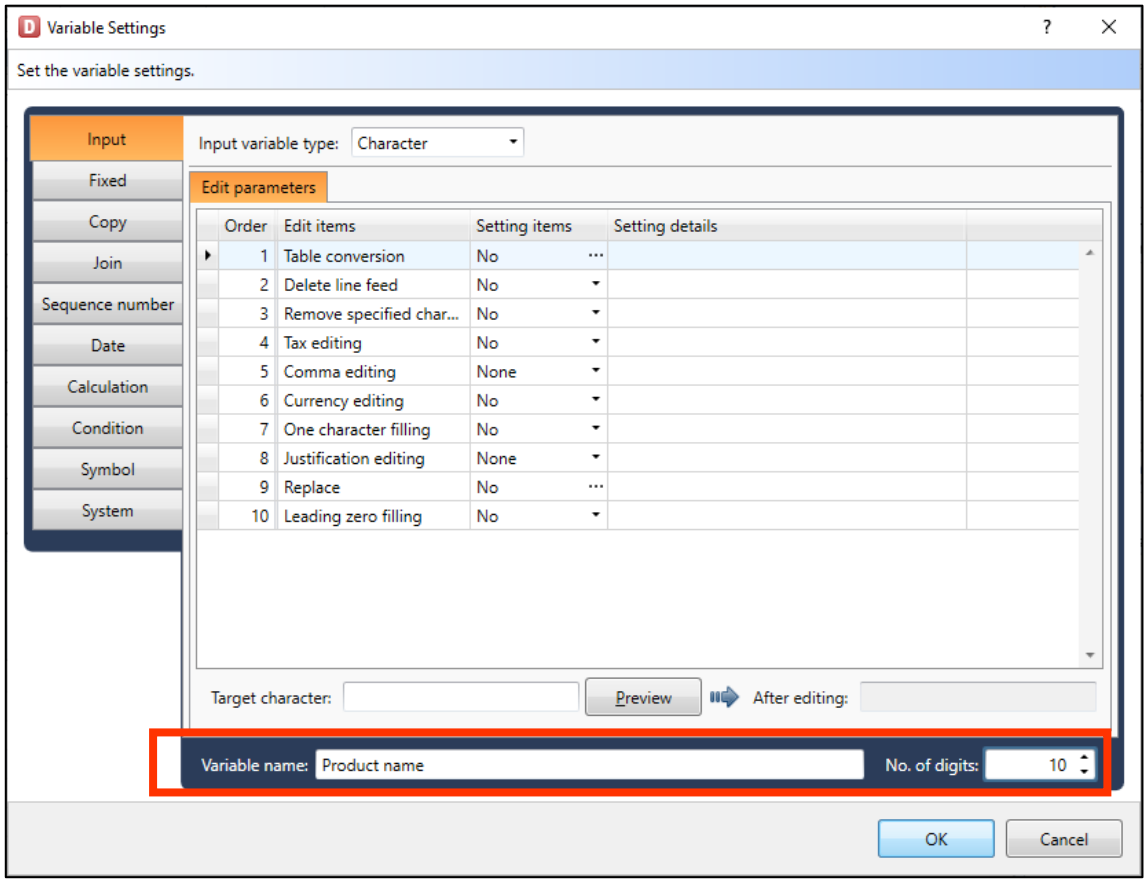
2. Creating a Condition Variable

Create “Condition Variable” and “Print Condition for Variable” to make the font size smaller when the input number of digits is more than 5 digits.

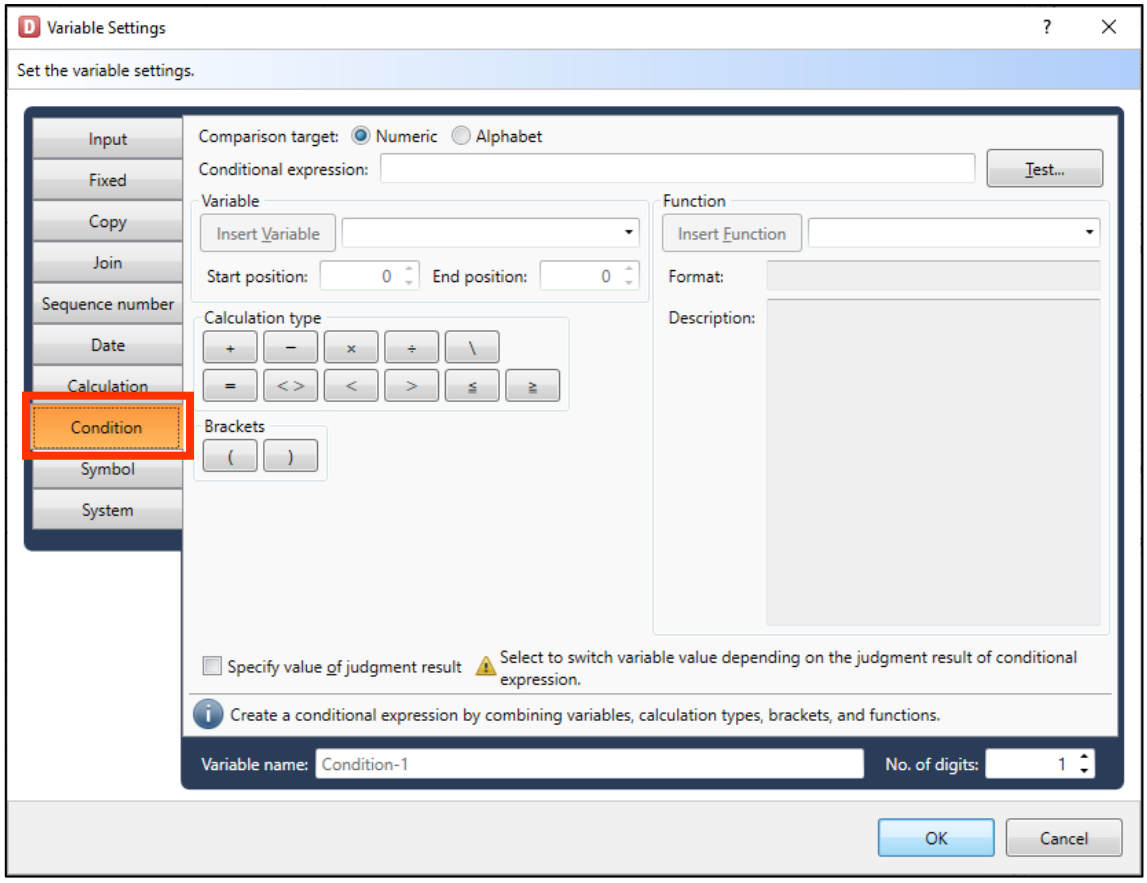
1. Select “Add” on the Local Variable List.



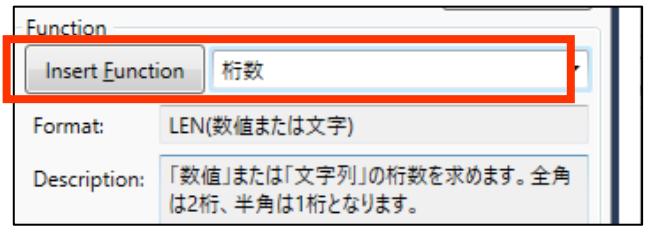
2. Set “Product name” in Variable name and “10” in No. of digits.



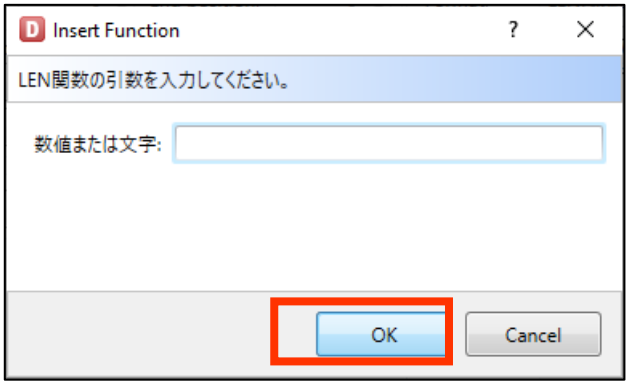
3. Then create a condition variable.



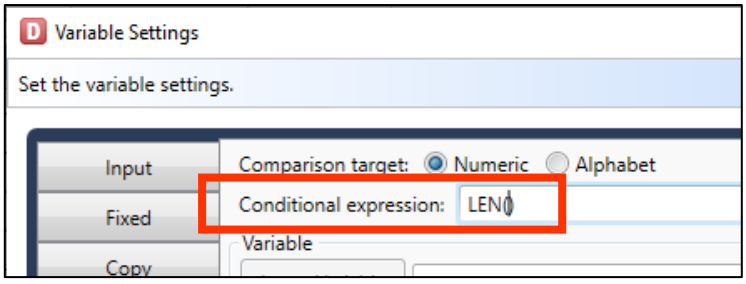
4. On the function list, select No. of digits and click “Insert Variable”.



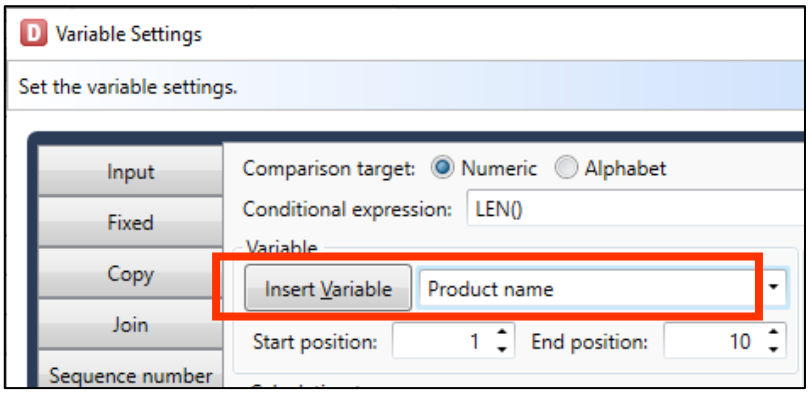
5. Click “OK”.



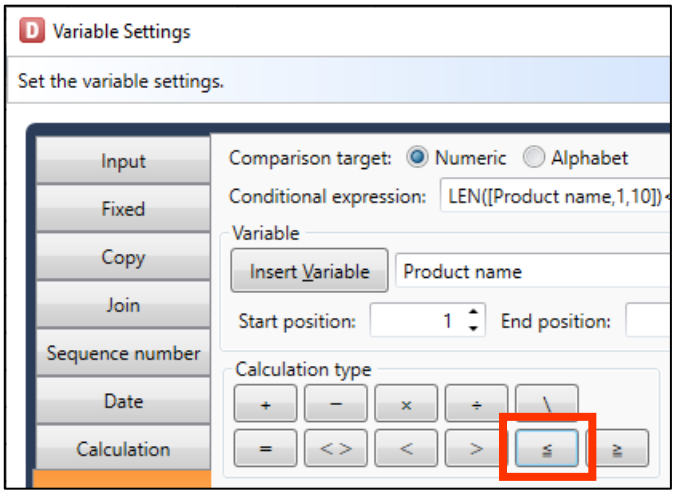
6. Place the cursor between “(” and “)” of “LEN()”.



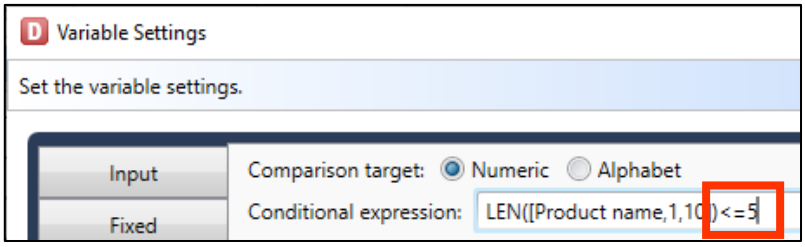
7. Select the input variable created in step 2 on the Variable list and click “Insert Variable”.



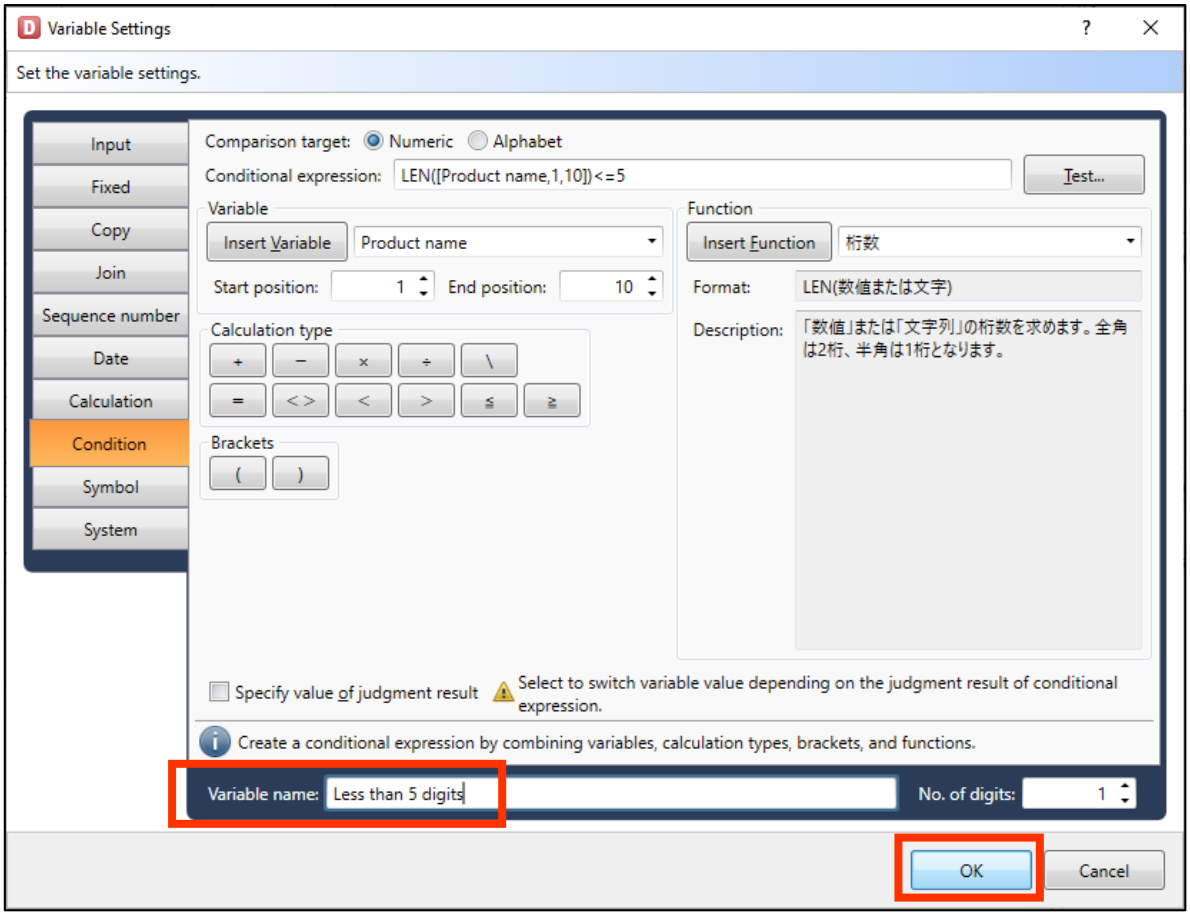
8. Click the end of Conditional expression and press “≦”.



9. Enter “5” at the end of Conditional expression.



10. Enter “Less than 5 digits” in Variable name and click “OK”.



This completes creating Variable.

Then combine Condition Variable and Print Condition for the items below.

About Conditional expression

LEN([Product Name,1,10])≦5

(1) (2) (3)

(1) LEN(xxx) : Calculate the number of digits of data specified in parenthesis.

(2) [Xxx,a,b] : Use digits a to b of the input variable “xxx”.

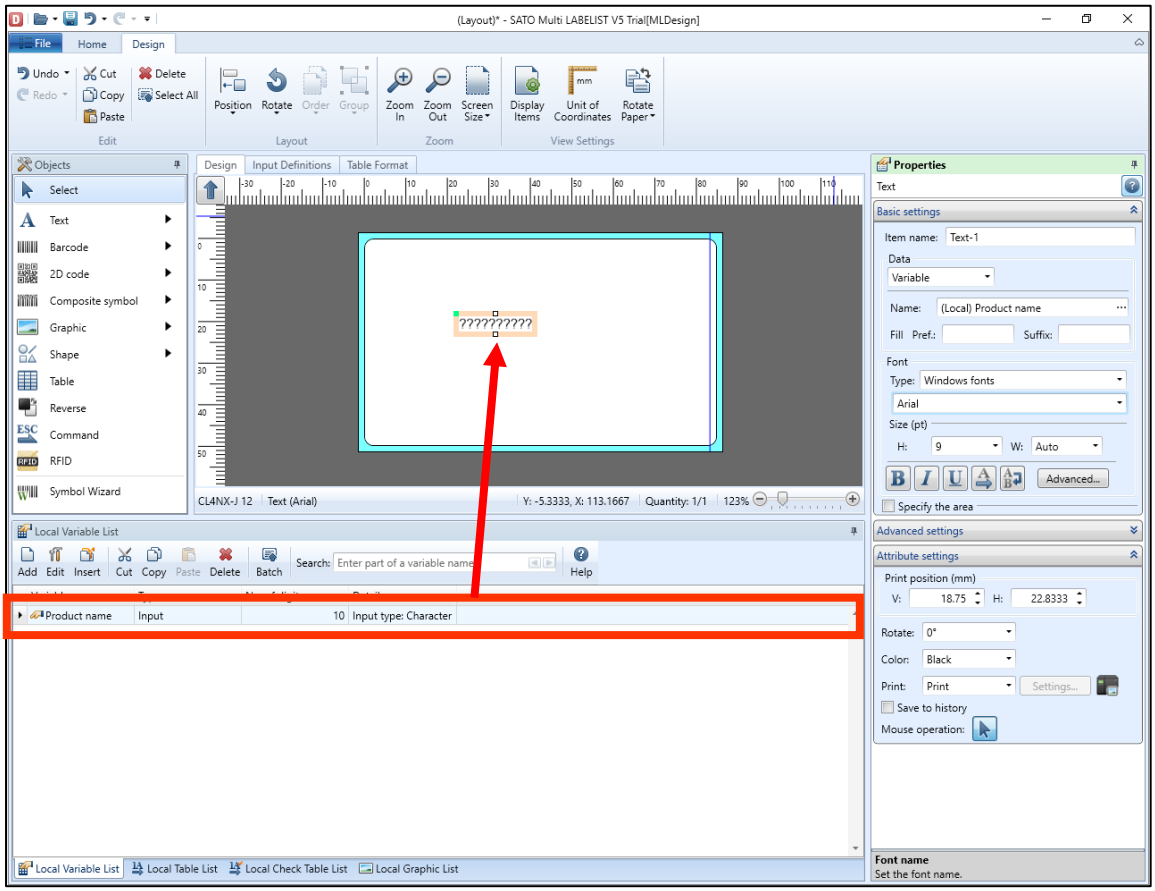
(3) A≦B : If A is less than or equal to B, it is True, and if it is greater, it is False.

According to the set Conditional expression, it is True when the product name of less than or equal to 5 digits, or False when it is greater than 5 digits.

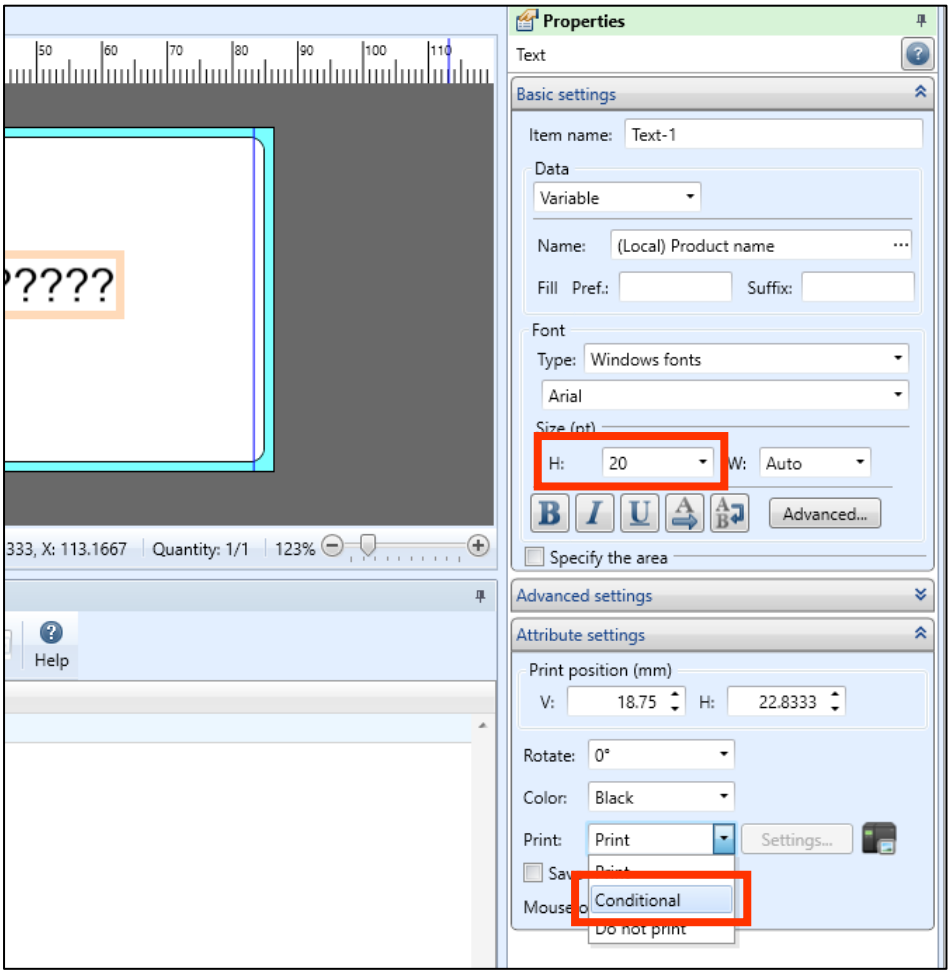
3. Creating an Object

If the input number of digits is greater than 5, set the print condition so that the characters with different font size are placed in the same position.

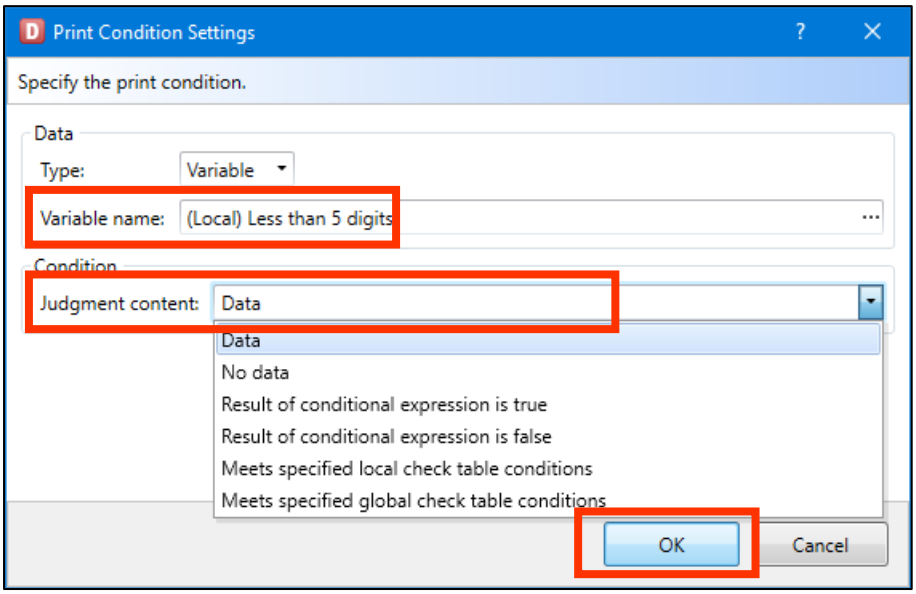
1. Drag and drop the input variables from the Local Variable List to the Design screen.



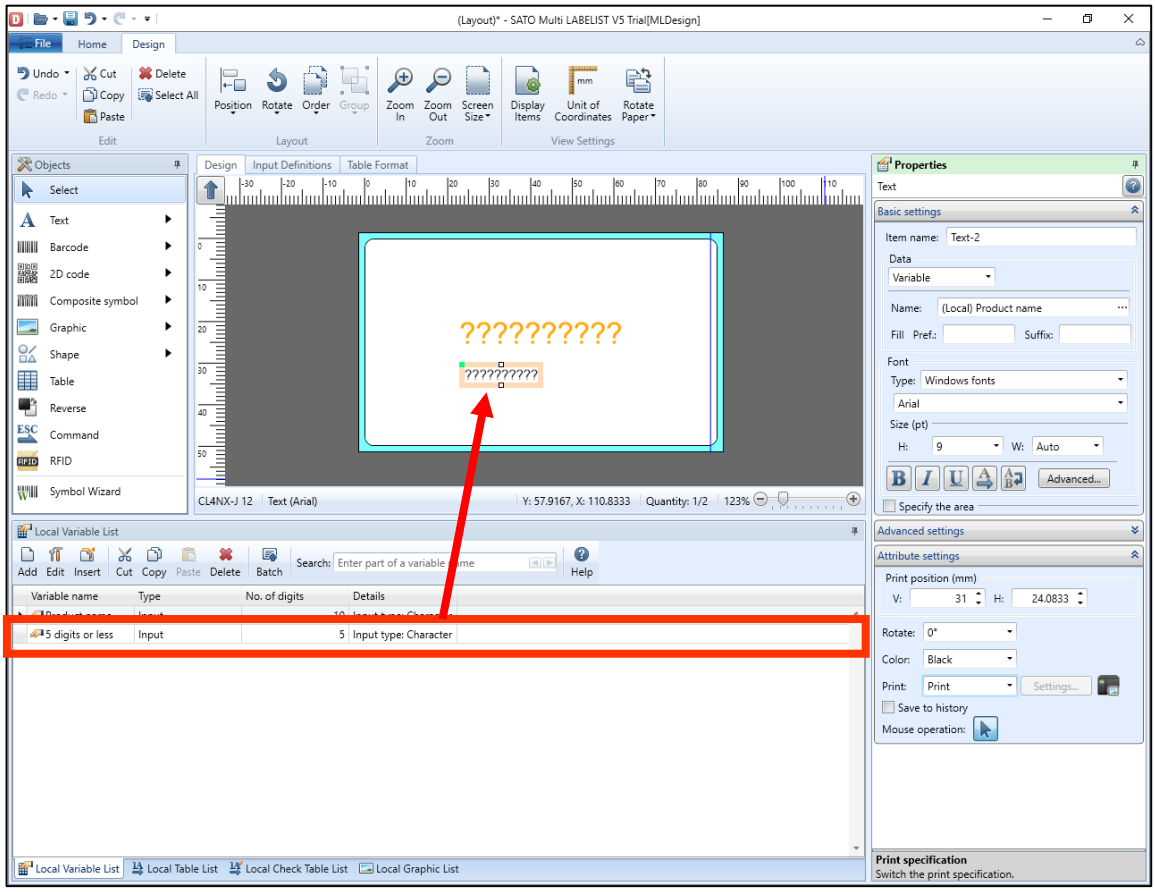
2. Set the Font Size to “20” and select “Conditional” in Print.



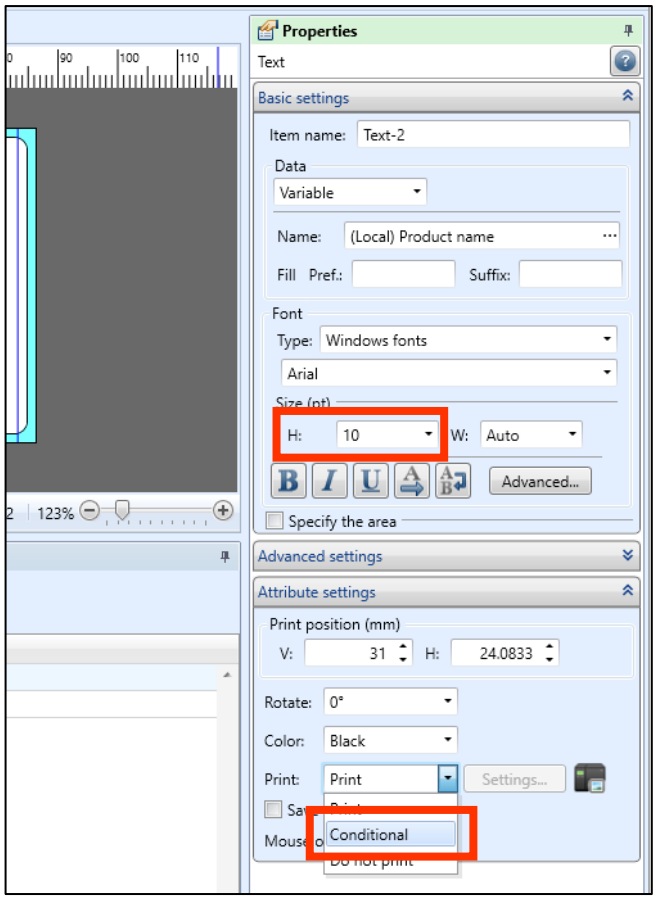
3. Specify the condition variable in Variable name, select “Result of conditional expression is true.” in Judgment content, and click “OK”.



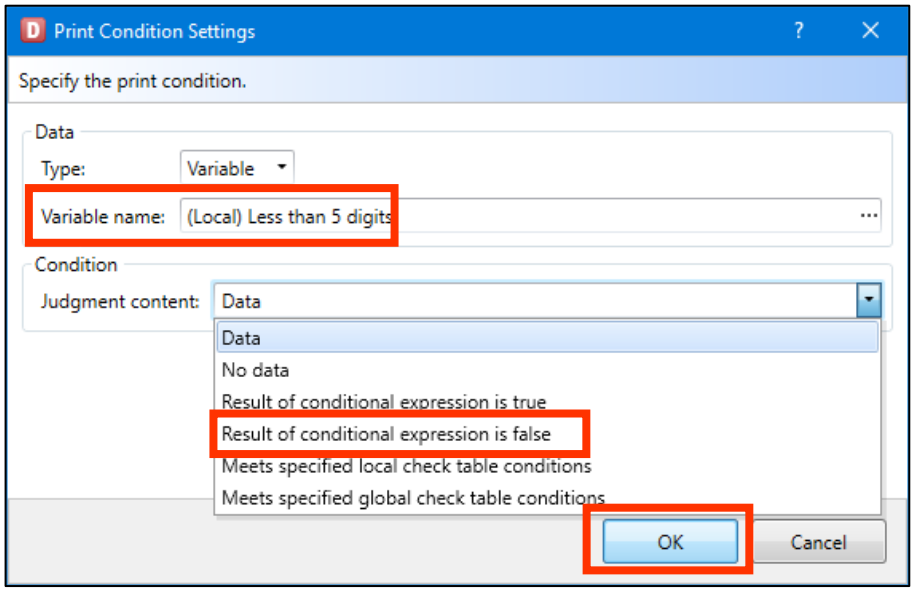
4. Drag & drop the input variables from the Local Variable List to the Design screen.



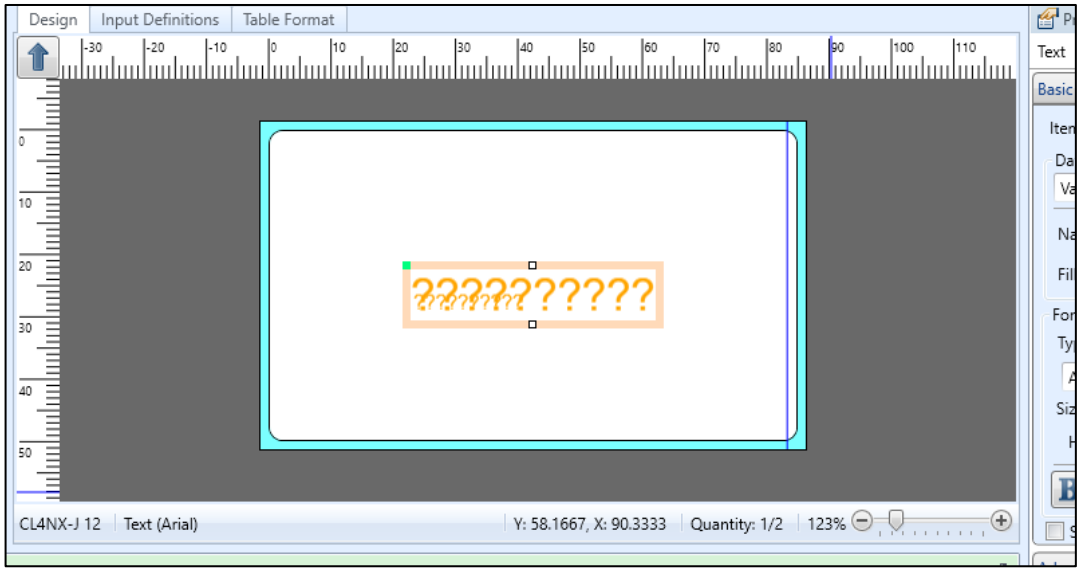
5. Set the Font Size to “10” and select “Conditional” in Print.



6. Specify the condition variable in Variable name, select “Result of conditional expression is false.” in Judgment content, and click “OK”.



7. Place both items at the same position.

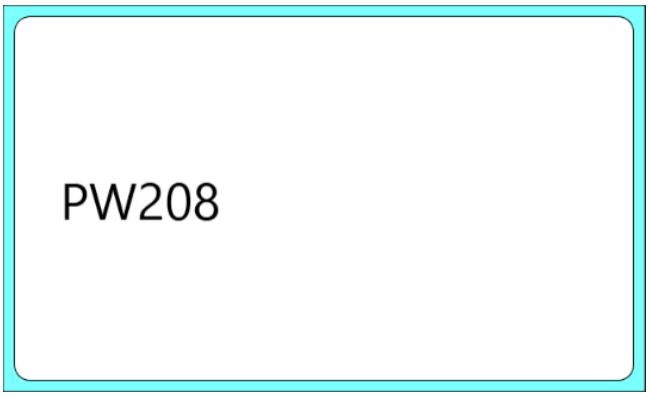


This completes creating an Object. Assign a name to the layout and save it and check it on the print or preview screen.

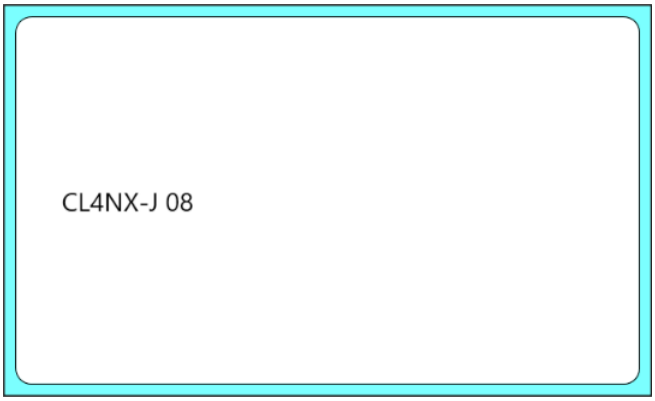
4. Checking the Print Results

Start a layout file created in MLPrint.
Print the layout and check that it is printed according to the set conditions.

Enter “PW208” in Product name.
The name matches the condition of 5 characters or less, so it is printed with the Font size “20”.



Enter “CL4NX-J08” in Product name and print it.
The name matches the condition of more than 5 characters, so it is printed with the Font size “10”.



This completes “12: Using the Condition Variable”.

13: Using GS1 DataMatrix

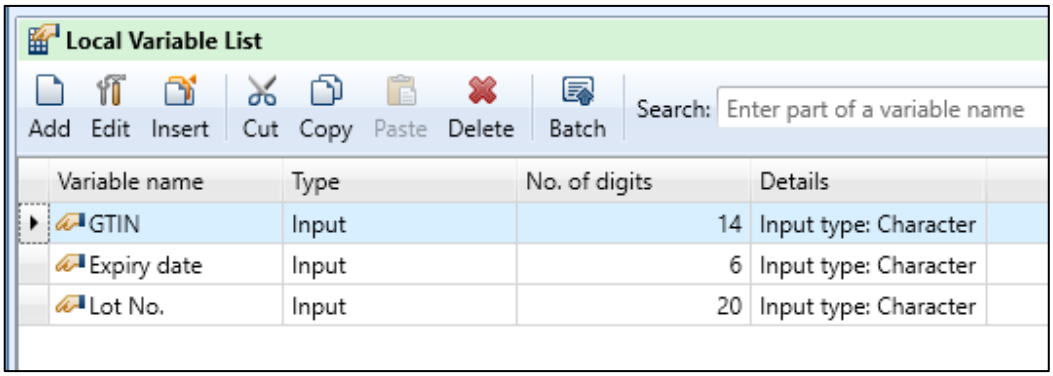
1. What is GS1 DataMatrix?

GS1 DataMatrix is a symbol that the data created according to the specified format is printed with DataMatarix, using AI (Application Identifier).

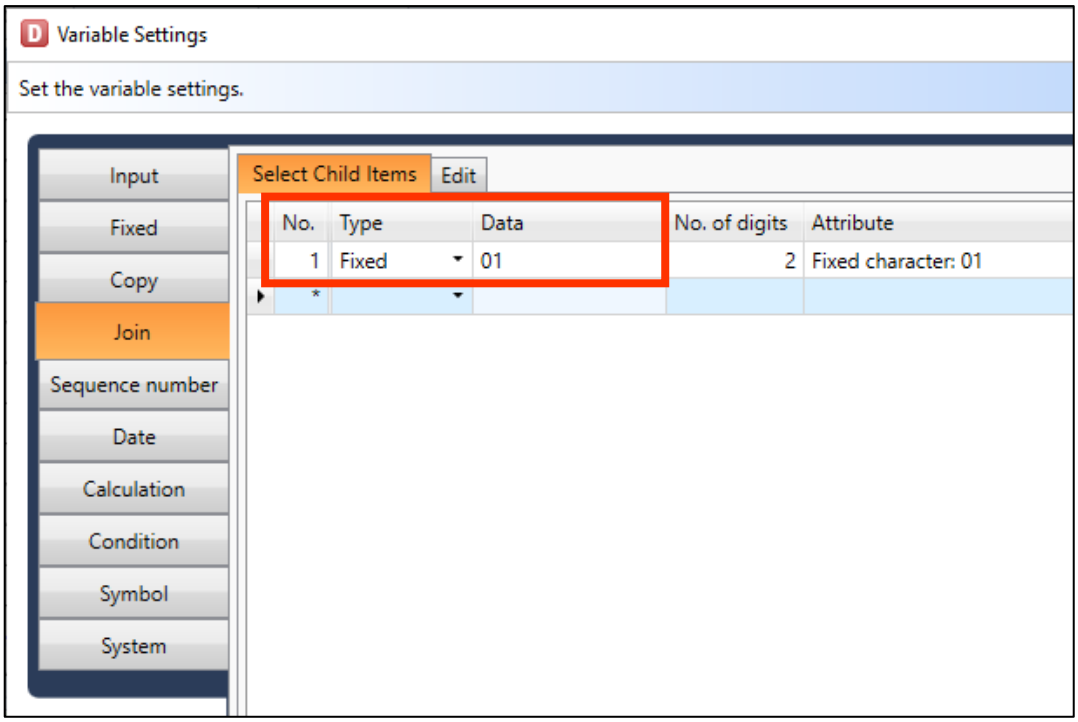
2. Creating a Join Variable

Create a join variable of GTIN, expiry date, and lot No.

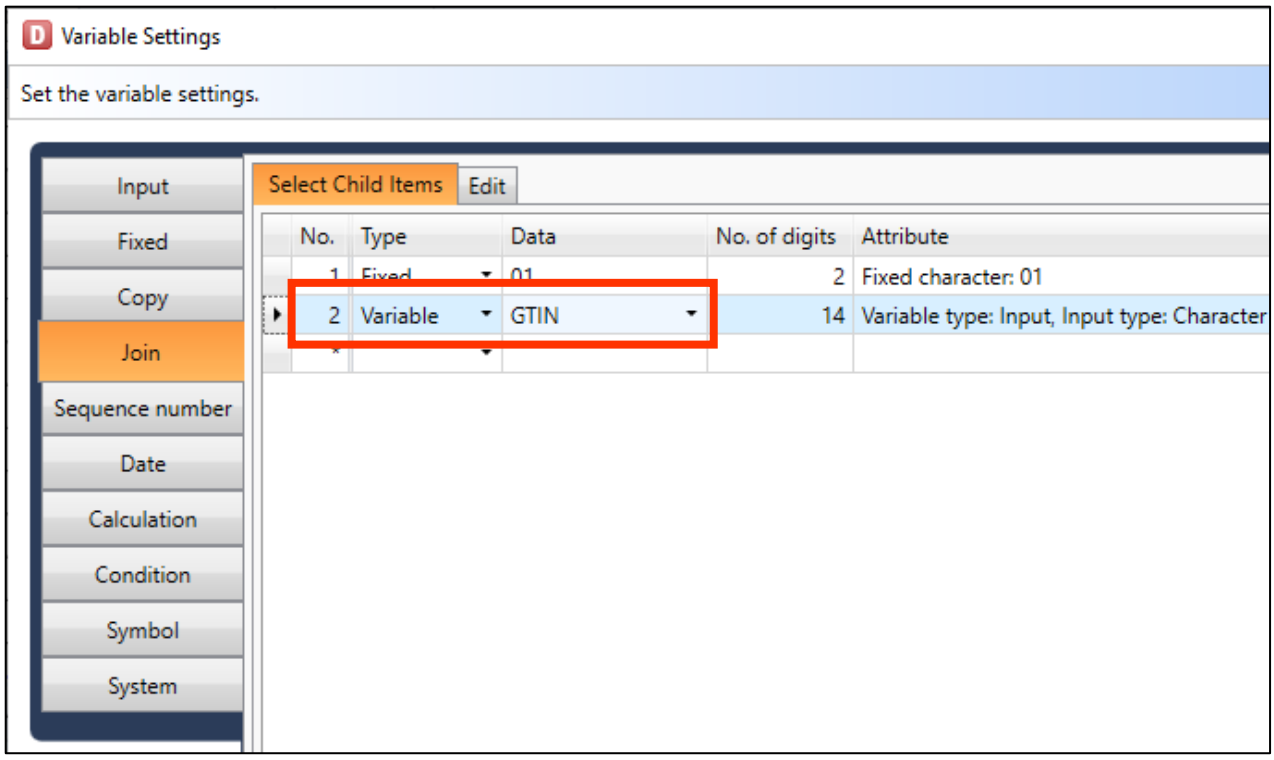
1. Create variables to input the data.
   Using the settings shown below, create input variables.



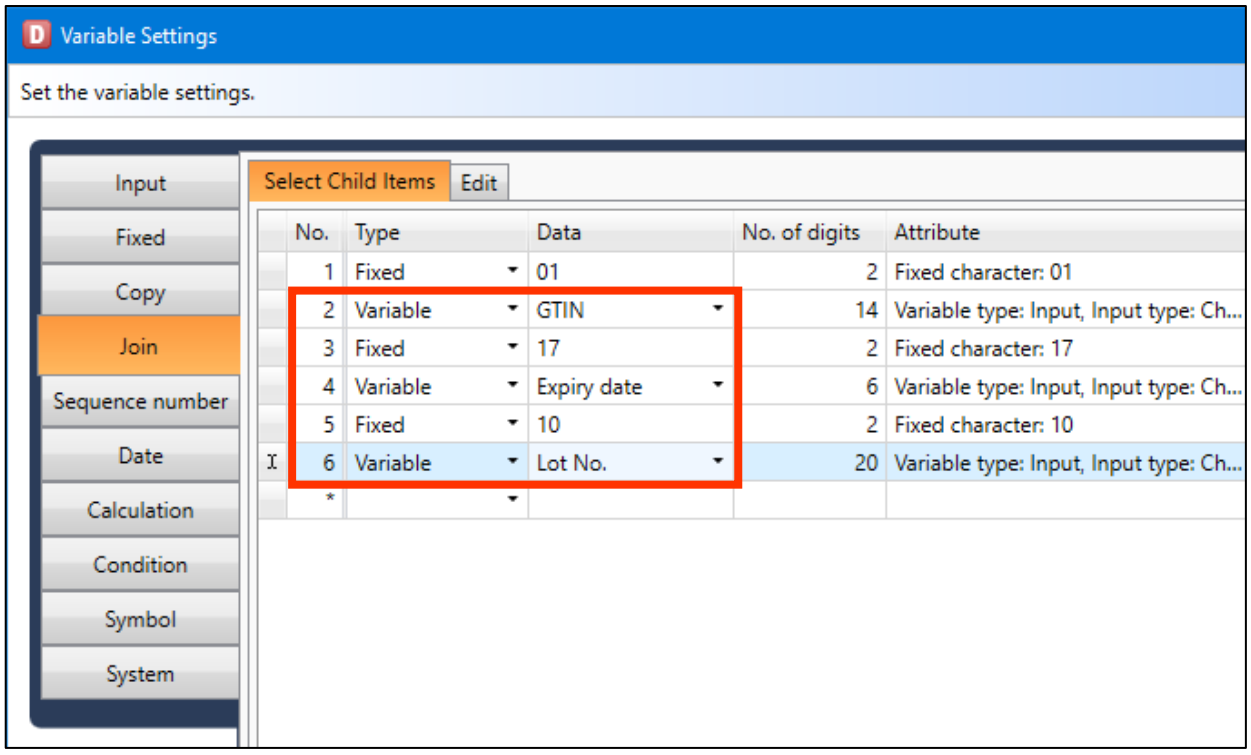
2. Enter “01” for “Fixed” of Type of Joint variable.



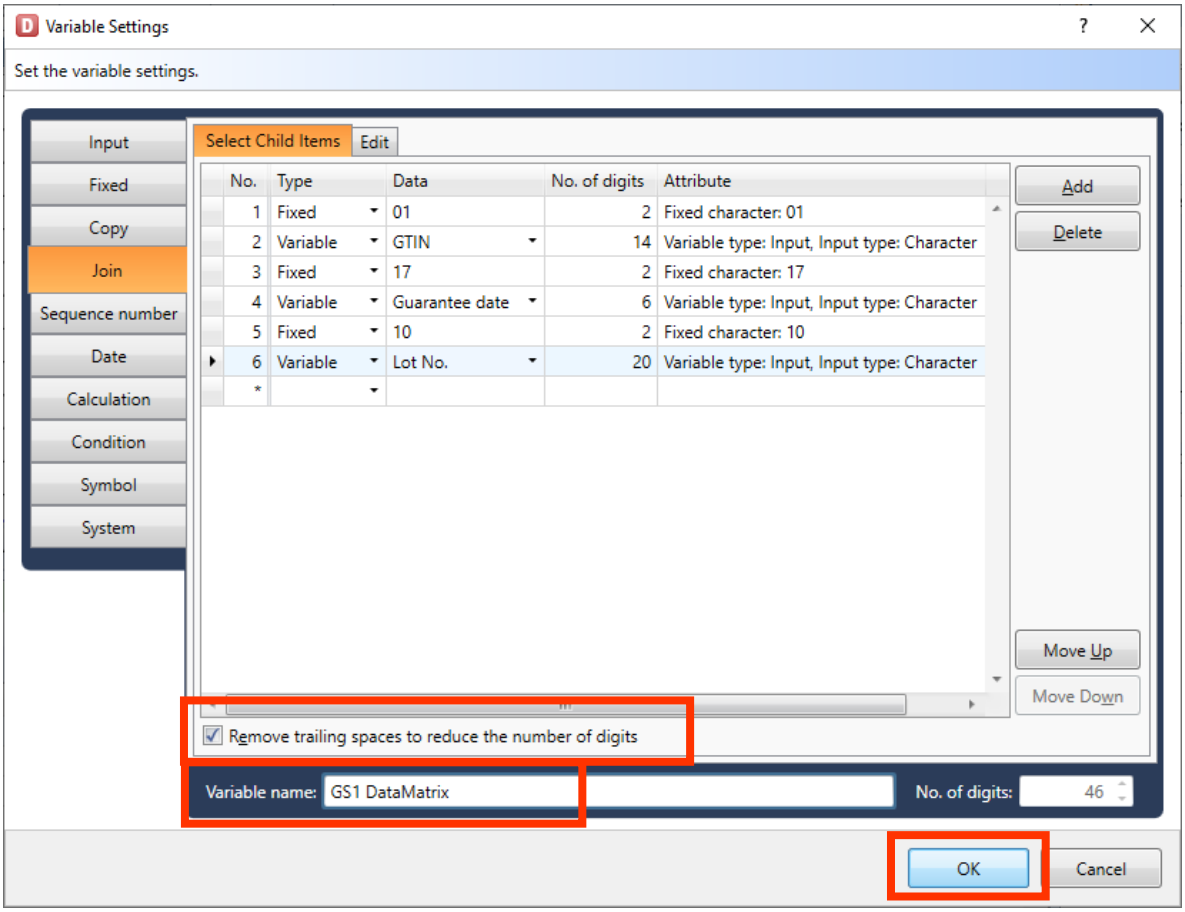
3. Select “Variables” in Type and “GTIN” in Data for the next item.



4. In the same way, set “Expiry date” for AI17 and “Lot No.” for AI10.



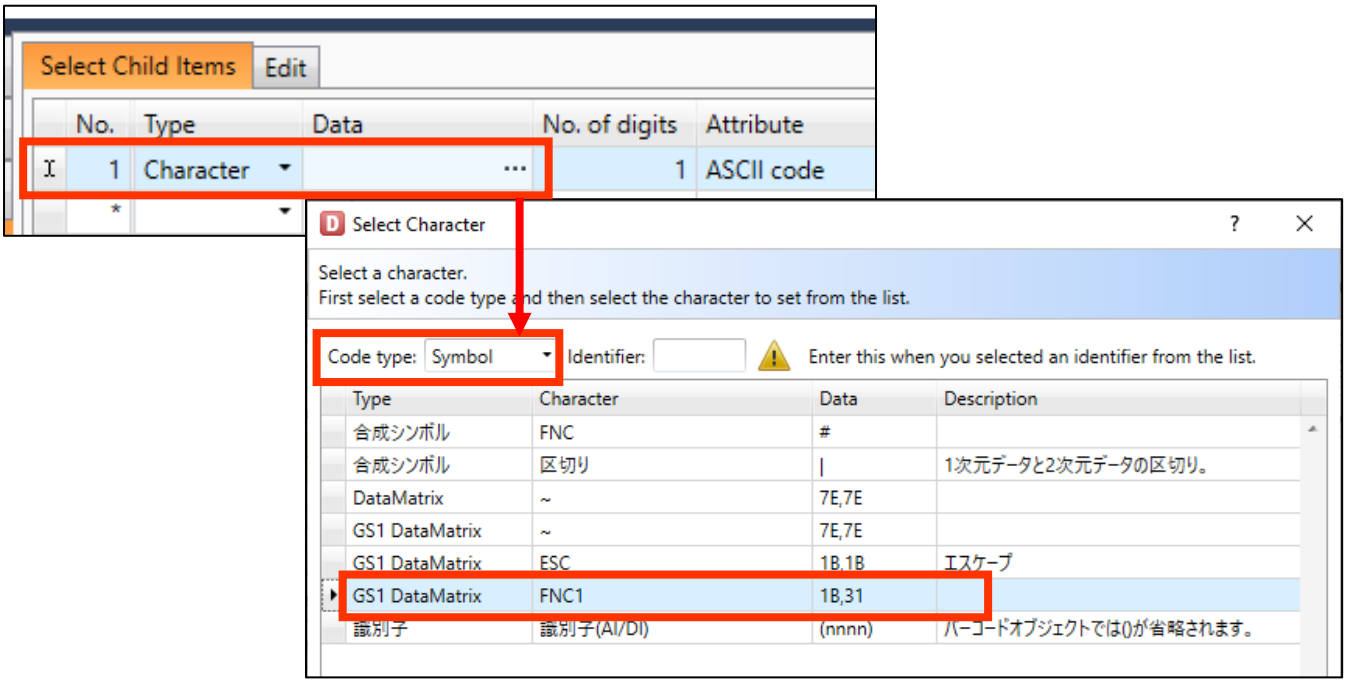
5. Enable “Remove trailing spaces to reduce the number of digits”, enter “GS1 DataMatrix” in Variable name, and click “OK”.



This completes creating Variable.
Then set the variable for an Object and print it.

■ When you set FNC1 at the end of a variable digit.

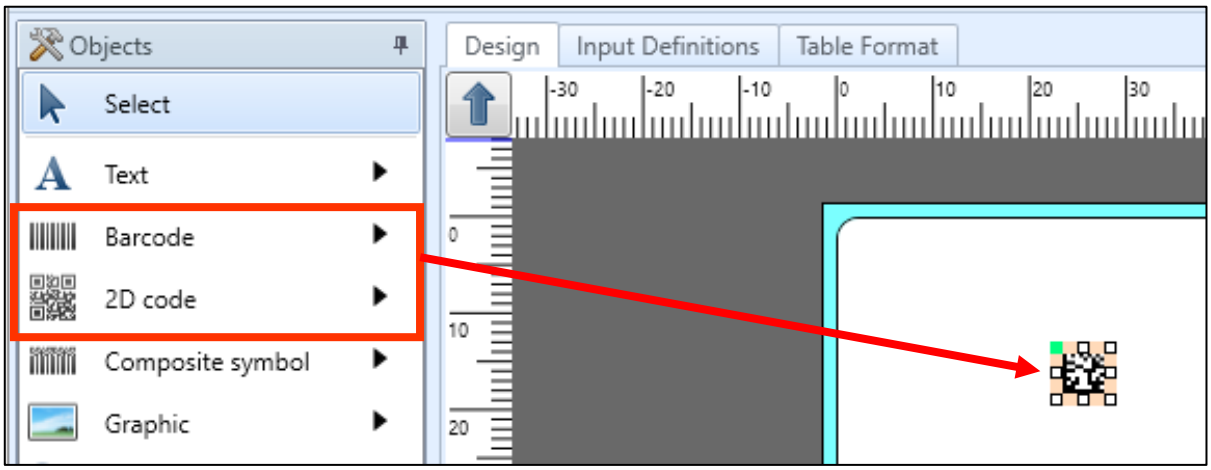
To add another AI after the variable digit AI, data separator FNC1 should be specified. Select “Character” for Type in Join variable and select “GS1 DataMatrix-FNC1” on the Symbol list of a code type.



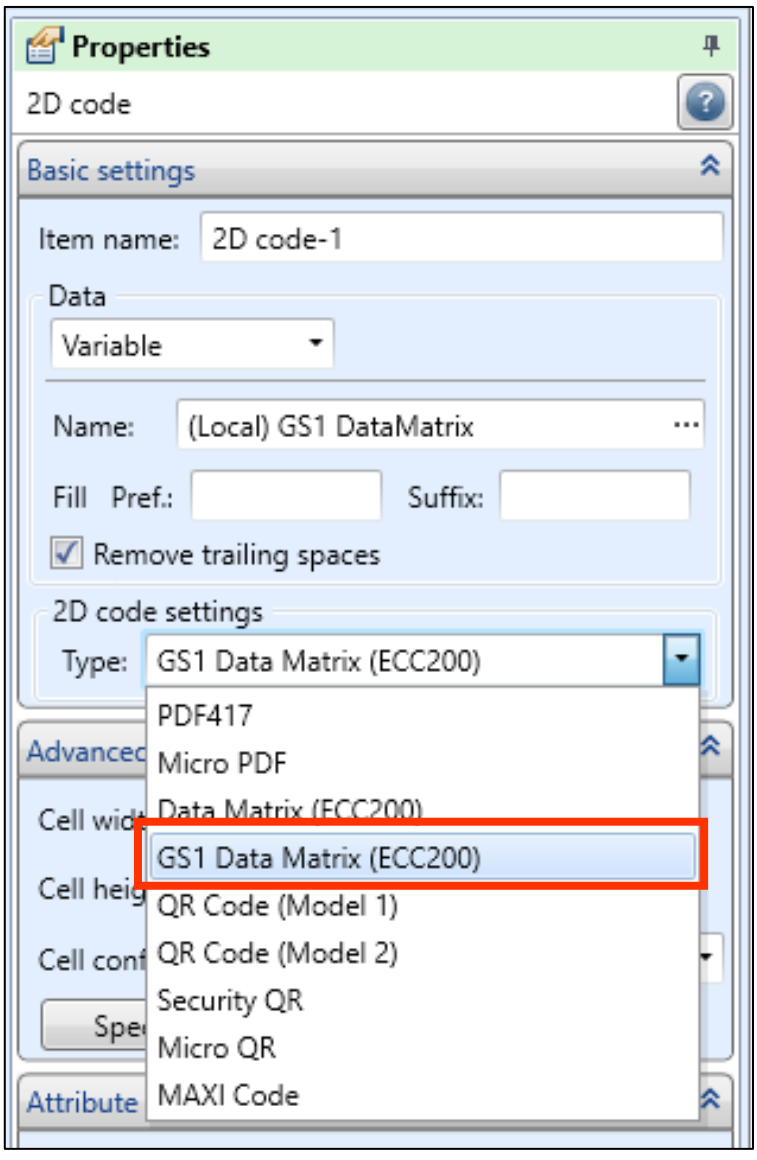
3. Creating an Object

Set the Symbol Variable to 2D Code Object and print GS1 DataMatrix.

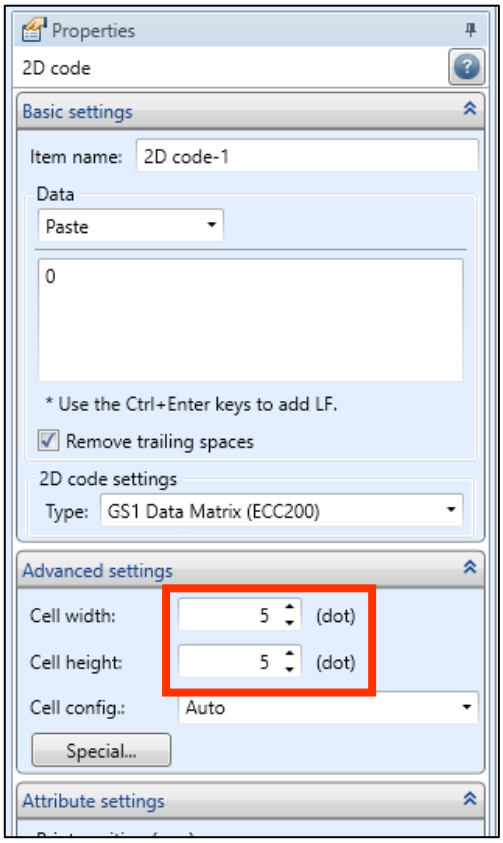
1. Place a 2D Code object on the Design screen.



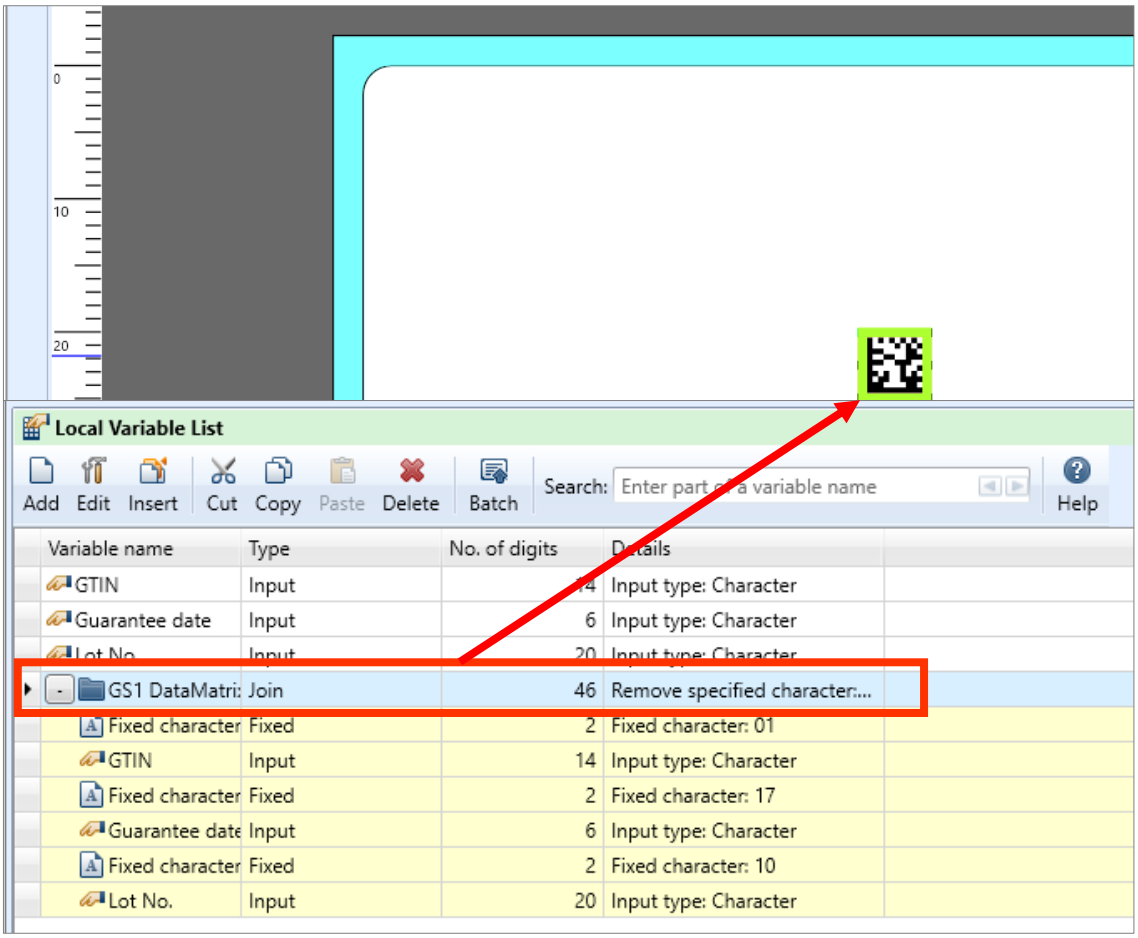
2. Select “GS1 Data Matrix (ECC200)” on the Properties pane



3. Open the Advanced settings on the Properties pane, set “5” (dot) in Cell width and Cell height.



4. Drag and drop the Join variable.



This completes creating a 2D Code Object.
Lastly, open the layout in MLPrint, print and check whether the GS1 DataMatrix that saves GTIN, the expiry date, quantity, and lot No.

It is easily checked by “GS1 Japan Scan” whether it conforms to GS1 specifications.
http://www.dsri.jp/application/js1japanscan/

(Example) When GTIN “04993191000002”, guarantee data “201231”, Lot No. “A0123” are entered

This completes “13: Using GS1 DataMatrix”.