PLCnext Engineer

How to Import/Export Global Variables

For PLCnext Engineer ver. 2020.6 and Above

1. Introduction:

Starting in PLCnext Engineering 2020.6, a new feature was introduced that will allow the Import and Export of Global Variables (Tags) with (*.csv) format. This format can be done with Excel™ or a Text Editor.

At this time, only Global Scope Variables can use this feature.

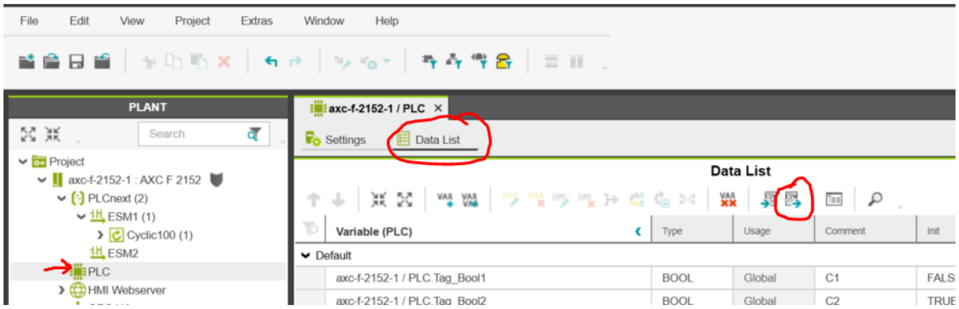
This Document shows how to use the Import/Export Feature. Please note that this document does not go into every single nuance, but does give a very good basic understanding. It is suggested to use this document as a basic starting point to get the features working, then expand the use of the Tools to meet the required needs.

1. Exporting Global Variables.

Starting with PLCnext Version 2020.6, Exporting the entire Global Variable list is available with a click of a button. The Export uses a standard format with all Variable Attributes and can be viewed/edited using Excel™ (or other spreadsheet) or even a basic Text Editor.

To Access this feature, see below:

PLC -> Data List -> Export to CSV File…



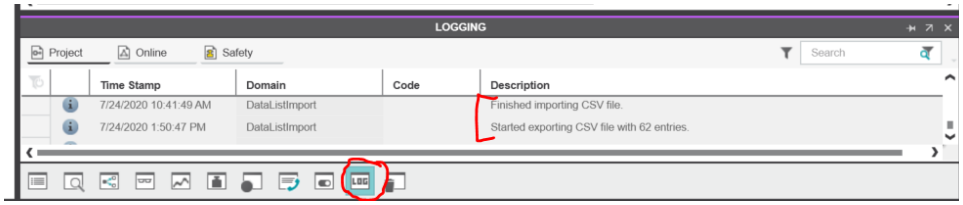
Data List

Variable (PLC)	Type	Usage	Comment	Init
Default				
axc-f-2152-1 / PLC.Tag_Bool1	BOOL	Global	C1	FALS
axc-f-2152-1 / PLC.Tag_Bool2	BOOL	Global	C2	TRUE

After the Clicking of the 'Export Icon' , a prompt will appear to type in a File Name and select Chosen Path.

Note: Hover of the Icons (and Pause for about 2 seconds).. a Description of the Icon will automatically appear.

The Status of the Export (Success or No Success) and the number of Variables (Entries) will appear in the 'Logging -> Project' – Similar to below, where 62 Variables were exported:



Time Stamp	Domain	Code	Description
7/24/2020 10:41:49 AM	DataListImport		Finished importing CSV file.
7/24/2020 1:50:47 PM	DataListImport		Started exporting CSV file with 62 entries.

It is now possible to view and/or edit the complete listing of Global Variables in a program.

2. Creating Variable File for Importing.

Instead of Typing in Variables One by One inside of PLCnext, it may be desired to create an entire list or copy a list from a previous project. Using Excel™ (or similar Spreadsheet program) or even a basic Text Editor - this is now possible.

PLCnext Engineer does require certain attributes of the file for a correct Import. Below are 3 Basic options to accomplish.

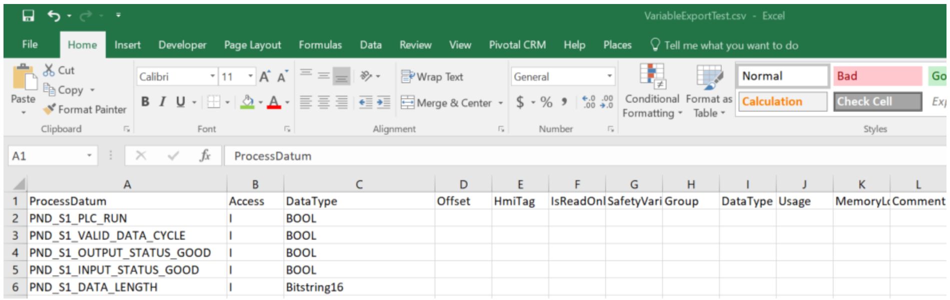
Note: If using Excel™, please refer to **Section 3,** it contains the Proper Saving method of the Files to be properly Imported into PLCnext Engineer. Failure to follow the recommendations may result in an unsuccessful import.

2.1 Modify a File that has been previously Exported in Excel™

A very simple way would be to Export the Existing Variables Lists (see Section 1), modify the file, then import the file again into PLCnext Engineer. The following is an example of an Exported Global Variable File (viewed in Excel™).

Note: The file has the extension "*.csv". We trying to open the file, one must make sure that either "All Files (*.*) or *.csv" are selected in the Open File Section.

When opened, it will look similar to the following:



	A	B	C	D	E	F	G	H	I	J	K	L
1	ProcessDatum	Access	DataType	Offset	HmiTag	IsReadOnl	SafetyVari	Group	DataType	Usage	MemoryL	Comment
2	PND_S1_PLC_RUN	I	BOOL									
3	PND_S1_VALID_DATA_CYCLE	I	BOOL									
4	PND_S1_OUTPUT_STATUS_GOOD	I	BOOL									
5	PND_S1_INPUT_STATUS_GOOD	I	BOOL									
6	PND_S1_DATA_LENGTH	I	Bitstring16									

To modify this file to be re-imported into PLCnext Engineer, select and delete all Rows 2+. The reason is that if one were to leave the all Variables from the Export – Importing the entire list will create duplicates in the project and deleting them manually in PLCnext Engineer would be required

The Critical Information that needed by PLCnext for user tags is located in Row 1 / Columns P-Z. *Do not Modify Row1 or the File may Fail to Import correctly.*
The Default Values for the Columns are in **BOLD** (if one exists):

P = Variable (name of Variable. Must meet PLCnext Requirements…no special characters, size, etc).

Q = Group (if organized into a Group name, enter Here)

R = DataType (ie. BOOL, REAL, WORD, etc..)

S = Usage (must be **Global)**
T = Comment (Optional String text to describe Variable)
U = InitValue (forced Initial Value on Power On)
V = IsRetain (**FALSE**= Not Retained / TRUE=Retained)
W= IsConstant (**FALSE** = Variable is writeable / TRUE=Variable is not writeable)
X = isOPC (**FALSE** = not viewable by OPC Client / TRUE= viewable by OPC Client)
Y = isHmi (**FALSE** = not viewable by eHMI / TRUE= viewable by eHMI)
Z = isProficloud (**FALSE** = not written to ProfiCloud / TRUE= written to ProfiCloud)

After deleting Rows 2+, move to Cell P2 and begin entering the Variables according to the above list until complete.

It is required to Enter Valid Data for Columns P (Variable) and R (Data Type). The rest are Optional and if not entered (or Blank), will go to the **Default** Values listed above.

Goto Section 3. to Properly Save the file with the correct PLCnext Format. If the file is not saved correctly, PLCnext Engineering will not be able to read the file successfully.

2.2 Create an Variable from a ‘New’ Excel™ File

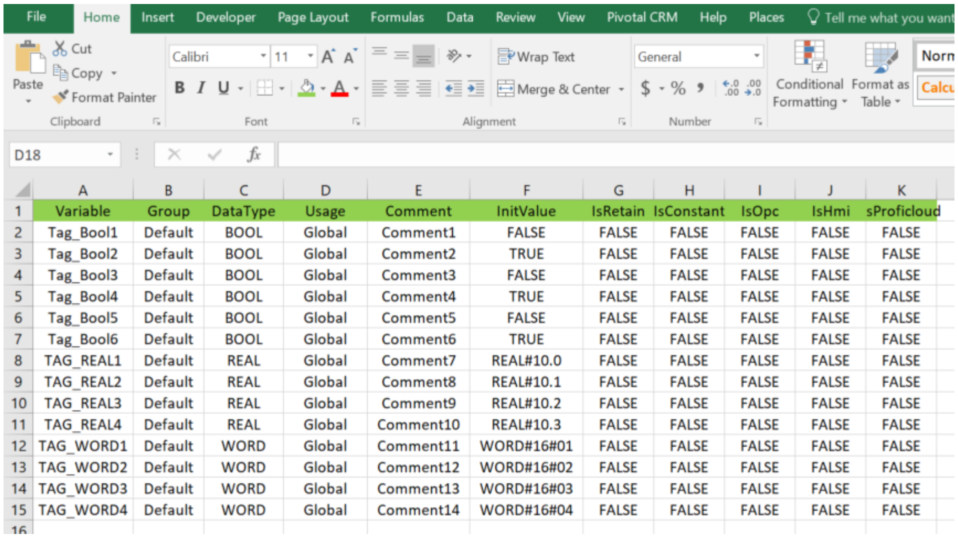
When Creating an Excel file for Importing, Note that Row 1 is the ‘Definition’ Row. PLCnext Engineering uses ‘Definition’ to decode what information is being imported and what the data means.

NOTE: It is NOT important where the ‘Definition’ Row starts, but the Data Columns must formatted properly for valid Import into PLCnext Engineer.

This File can be simple and only needs to include the important variable information. The Following is the List of suggested Data for each Variable:

Variable (must meet PLCnext Requirements…no special characters, size, etc).
Group (if organized into a Group name, enter Here)
DataType (ie. BOOL, REAL, WORD, etc..)
Usage (must be **Global)**
Comment (Optional String text to describe Variable)
InitValue (forced Initial Value on Power On)
IsRetain (**FALSE**= Not Retained / TRUE=Retained)
IsConstant (**FALSE** = Variable is writeable / TRUE=Variable is not writeable)
isOPC (**FALSE** = not viewable by OPC Client / TRUE= viewable by OPC Client)
isHmi (**FALSE** = not viewable by eHMI / TRUE= viewable by eHMI)
isProficloud (**FALSE** = not written to ProfiCloud / TRUE= written to ProfiCloud)

Below is an Example of an Correctly laid out Excel™ File with All basic Parameters:
NOTE: It is CRITCAL that the Names in Row 1 are spelled and entered correctly for Import into PLCnext Engineer !!!

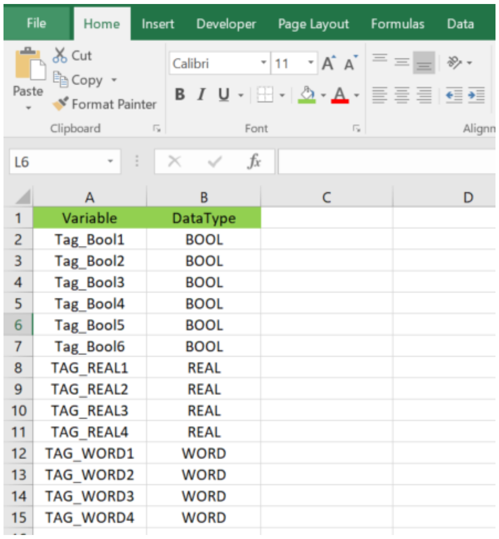


	A	B	C	D	E	F	G	H	I	J	K
1	Variable	Group	DataType	Usage	Comment	InitValue	IsRetain	IsConstant	IsOpc	IsHmi	sProficloud
2	Tag_Bool1	Default	BOOL	Global	Comment1	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
3	Tag_Bool2	Default	BOOL	Global	Comment2	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE
4	Tag_Bool3	Default	BOOL	Global	Comment3	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
5	Tag_Bool4	Default	BOOL	Global	Comment4	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE
6	Tag_Bool5	Default	BOOL	Global	Comment5	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
7	Tag_Bool6	Default	BOOL	Global	Comment6	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE
8	TAG_REAL1	Default	REAL	Global	Comment7	REAL#10.0	FALSE	FALSE	FALSE	FALSE	FALSE
9	TAG_REAL2	Default	REAL	Global	Comment8	REAL#10.1	FALSE	FALSE	FALSE	FALSE	FALSE
10	TAG_REAL3	Default	REAL	Global	Comment9	REAL#10.2	FALSE	FALSE	FALSE	FALSE	FALSE
11	TAG_REAL4	Default	REAL	Global	Comment10	REAL#10.3	FALSE	FALSE	FALSE	FALSE	FALSE
12	TAG_WORD1	Default	WORD	Global	Comment11	WORD#16#01	FALSE	FALSE	FALSE	FALSE	FALSE
13	TAG_WORD2	Default	WORD	Global	Comment12	WORD#16#02	FALSE	FALSE	FALSE	FALSE	FALSE
14	TAG_WORD3	Default	WORD	Global	Comment13	WORD#16#03	FALSE	FALSE	FALSE	FALSE	FALSE
15	TAG_WORD4	Default	WORD	Global	Comment14	WORD#16#04	FALSE	FALSE	FALSE	FALSE	FALSE
16											

Note: Row 1 is Green in the above for explanation purposes only !

In the example on the previous page, all Basic Variable Data was included. However, this is not Required. Only 2 Columns are a Variable and DataType are *Required* – the rest can be added as needed. In this Case, the other parameters will be assigned to their **Default** values, as explained at the beginning of this section.

An example of a Minimal variable assignment would be:



	A	B	C	D
1	Variable	DataType		
2	Tag_Bool1	BOOL		
3	Tag_Bool2	BOOL		
4	Tag_Bool3	BOOL		
5	Tag_Bool4	BOOL		
6	Tag_Bool5	BOOL		
7	Tag_Bool6	BOOL		
8	TAG_REAL1	REAL		
9	TAG_REAL2	REAL		
10	TAG_REAL3	REAL		
11	TAG_REAL4	REAL		
12	TAG_WORD1	WORD		
13	TAG_WORD2	WORD		
14	TAG_WORD3	WORD		
15	TAG_WORD4	WORD		

Note: Row 1 is Green in the above for explanation purposes only!

To complete, only add the Columns of the Data that are required, making this a very simple process.

Note: When a file is Imported, ALL variables in the file will be placed in the Global (PLC) location. If an Imported Tag already exists, the file will still be imported, however, a 'Duplicate' variable compile error will occur. One of the duplicates will need to be removed to successfully compile.

Goto Section 3. to Properly Save the file with the correct PLCnext Format. If the file is not saved correctly, PLCnext Engineering will not be able to read the file successfully.

2.3 Create an *.csv File using a basic text Editor

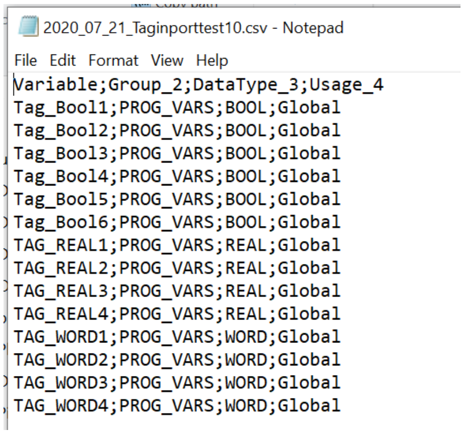
If Excel™ is not available or one simply wants to just type the Variables into a text file and then Import into PLCnext Engineer, this section demonstrates how to accomplish this task.

NOTE: The Data must formatted properly for valid Import into PLCnext Engineer.

This File can be simple and only needs to include the important variable information. The Following is the List of suggested Data for each Variable:

Variable (must meet PLCnext Requirements…no special characters, size, etc).
Group (if organized into a Group name, enter Here)
DataType (ie. BOOL, REAL, WORD, etc..)
Usage (must be **Global)**
Comment (Optional String text to describe Variable)
InitValue (forced Initial Value on Power On)
IsRetain (**FALSE**= Not Retained / TRUE=Retained)
IsConstant (**FALSE** = Variable is writeable / TRUE=Variable is not writeable)
isOPC (**FALSE** = not viewable by OPC Client / TRUE= viewable by OPC Client)
isHmi (**FALSE** = not viewable by eHMI / TRUE= viewable by eHMI)
isProficloud (**FALSE** = not written to ProfiCloud / TRUE= written to ProfiCloud)

Below is an Example of a Text File (using NOTEPAD™) with All basic Parameters:
NOTE: It is CRITCAL that the Names in first Row are spelled and entered correctly for Import into PLCnext Engineer !!!


2020_07_21_Taginporttest10.csv - Notepad
File Edit Format View Help

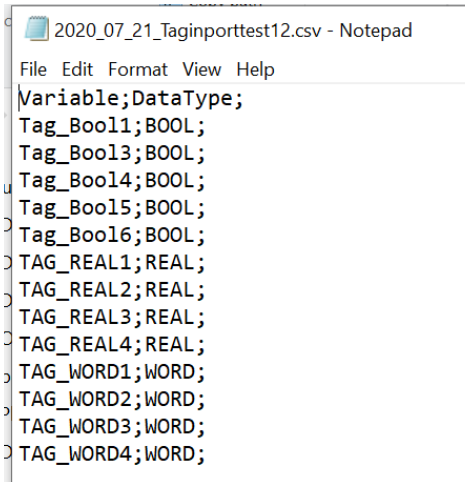
```
Variable;Group_2;DataType_3;Usage_4
Tag_Bool1;PROG_VARS;BOOL;Global
Tag_Bool2;PROG_VARS;BOOL;Global
Tag_Bool3;PROG_VARS;BOOL;Global
Tag_Bool4;PROG_VARS;BOOL;Global
Tag_Bool5;PROG_VARS;BOOL;Global
Tag_Bool6;PROG_VARS;BOOL;Global
TAG_REAL1;PROG_VARS;REAL;Global
TAG_REAL2;PROG_VARS;REAL;Global
TAG_REAL3;PROG_VARS;REAL;Global
TAG_REAL4;PROG_VARS;REAL;Global
TAG_WORD1;PROG_VARS;WORD;Global
TAG_WORD2;PROG_VARS;WORD;Global
TAG_WORD3;PROG_VARS;WORD;Global
TAG_WORD4;PROG_VARS;WORD;Global
```

All variables are to be separated with a semicolon (;) not a comma. PLCnext Engineer Looks for the semicolon to decipher the Columns properly.

Make sure that to maintain the proper amount of data and semicolons throughout the document, so PLCnext Engineer can properly import the data into the Variables Listing.

NOTE: When saving the file, make sure the Extension of the File is ".csv", as PLCnext Engineer only recognizes this extension for import.

A very basic Implementation would be as follows:



2020_07_21_Taginporttest12.csv - Notepad
File Edit Format View Help

```
Variable;DataType;
Tag_Bool1;BOOL;
Tag_Bool3;BOOL;
Tag_Bool4;BOOL;
Tag_Bool5;BOOL;
Tag_Bool6;BOOL;
TAG_REAL1;REAL;
TAG_REAL2;REAL;
TAG_REAL3;REAL;
TAG_REAL4;REAL;
TAG_WORD1;WORD;
TAG_WORD2;WORD;
TAG_WORD3;WORD;
TAG_WORD4;WORD;
```

All variables are to be separated with a semicolon (;) not a comma. PLCnext Engineer looks for the semicolon to decipher the columns properly.

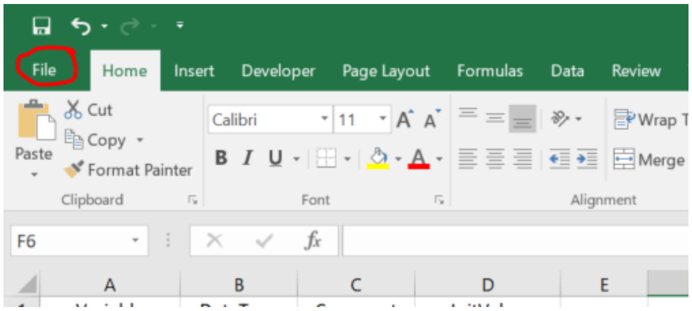
NOTE: When saving the file, make sure the Extension of the File is ".csv", as PLCnext Engineer only recognizes this extension for import.

3. Process for Saving an Excel™ File ready for PLCnext Engineer.

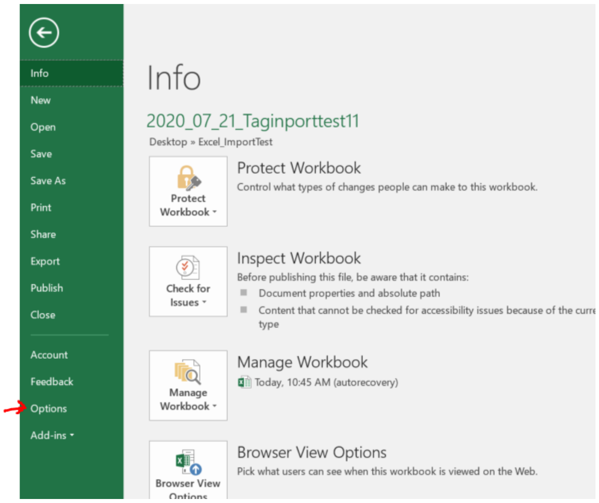
Once the Excel™ file has been created, it is required that the file follows a specific format. PLCnext Engineer uses the '*.csv' format for importing variables, but it requires a semicolon between values, instead of a comma. Normally, a comma is used in *.csv format.

To accomplish this, please use the following steps before saving.

In Excel™, Top Menu choose-> "File"



Select -> "Options"



Info

2020_07_21_Taginporttest11

Desktop » Excel_ImportTest

Protect Workbook

Control what types of changes people can make to this workbook.

Inspect Workbook

Before publishing this file, be aware that it contains:

- Document properties and absolute path
- Content that cannot be checked for accessibility issues because of the curre type

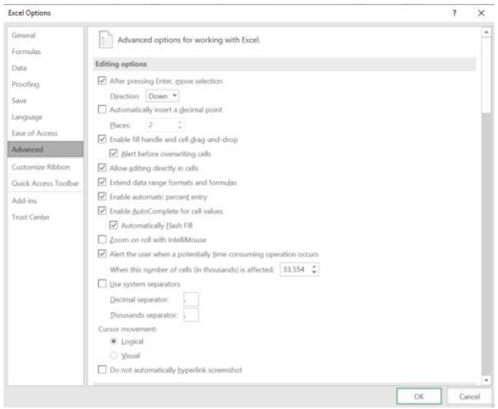
Manage Workbook

Today, 10:45 AM (autorecovery)

Browser View Options

Pick what users can see when this workbook is viewed on the Web.

The Following will appear:



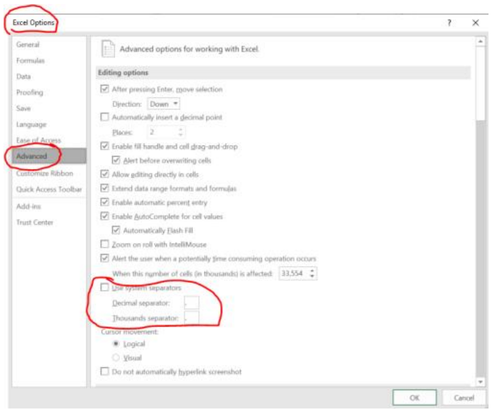
Excel Options

Advanced options for working with Excel.

Editing options

- ☑ After pressing Enter, move selection
  - Direction: Down
- □ Automatically insert a decimal point
  - Places: 2
- ☑ Enable fill handle and cell drag-and-drop
  - ☑ Alert before overwriting cells
- ☑ Allow editing directly in cells
- ☑ Extend data range formats and formulas
- ☑ Enable automatic percent entry
- ☑ Enable AutoComplete for cell values
  - ☑ Automatically Flash Fill
- □ Zoom on roll with IntelliMouse
- ☑ Alert the user when a potentially time consuming operation occurs
  - When this number of cells (in thousands) is affected: 33,554
- □ Use system separators
  - Decimal separator: ,
  - Thousands separator: ,
- Cursor movement:
  - ● Logical
  - ○ Visual
- □ Do not automatically hyperlink screenshot

Select -> ‘Advanced”



Excel Options

Advanced options for working with Excel.

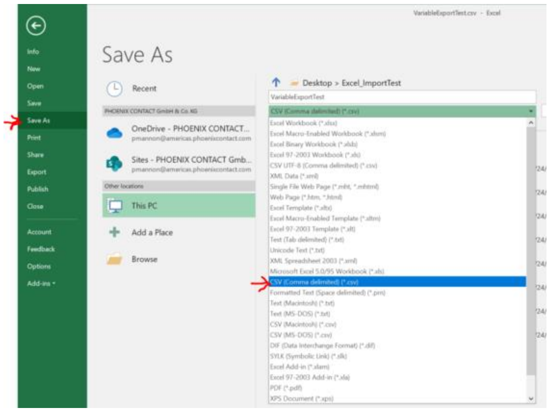
Editing options

☑ After pressing Enter, move selection
Direction: Down
□ Automatically insert a decimal point
Places: 2
☑ Enable fill handle and cell drag-and-drop
☑ Alert before overwriting cells
☑ Allow editing directly in cells
☑ Extend data range formats and formulas
☑ Enable automatic percent entry
☑ Enable AutoComplete for cell values
☑ Automatically Flash Fill
□ Zoom on roll with IntelliMouse
☑ Alert the user when a potentially time consuming operation occurs
When this number of cells (in thousands) is affected: 33,554
□ Use system separators
Decimal separator: ,
Thousands separator: ,
Cursor movement:
● Logical
○ Visual
□ Do not automatically hyperlink screenshot

- Uncheck the “Use system Separators’
- In the “Decimal separator:” box, enter a comma (,).
- Do not change the ‘Thousands separator”.
- Click ‘OK’ to Close the Window.

Do not change any other settings.

When editing of the variables in the File are Complete, save the File with the desired name and location – use Type “CSV (Comma delimited) (*.csv) as below:



VariableExportTest.csv - Excel

Save As

Desktop > Excel_ImportTest

VariableExportTest

CSV (Comma delimited) (*.csv)

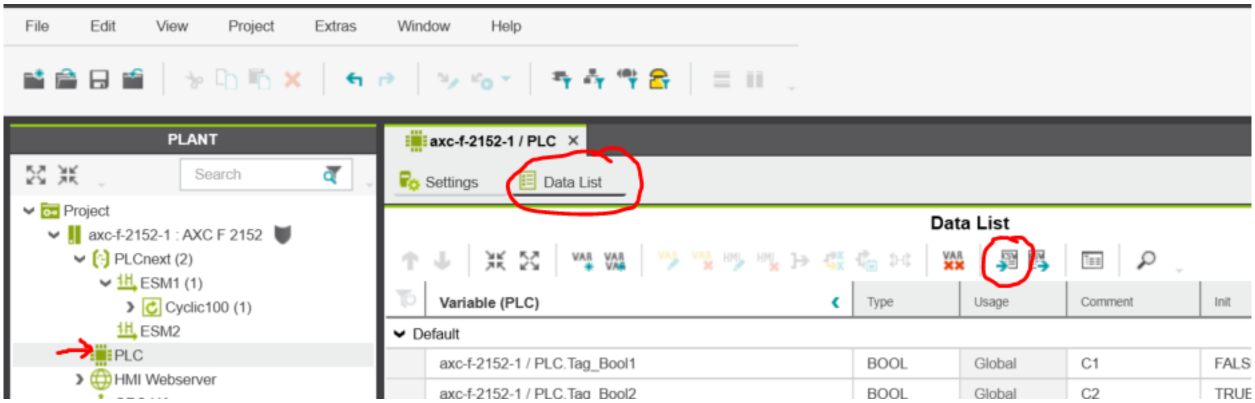
Info
New
Open
Save
Save As
Print
Share
Export
Publish
Close
Account
Feedback
Options
Add-ins
Recent
PHOENIX CONTACT GmbH & Co. KG
OneDrive - PHOENIX CONTACT...
pmannon@americas.phoenixcontact.com
Sites - PHOENIX CONTACT Gmb...
pmannon@americas.phoenixcontact.com
Other locations
This PC
Add a Place
Browse
Excel Workbook (*.xlsx)
Excel Macro-Enabled Workbook (*.xlsm)
Excel Binary Workbook (*.xlsb)
Excel 97-2003 Workbook (*.xls)
CSV UTF-8 (Comma delimited) (*.csv)
XML Data (*.xml)
Single File Web Page (*.mht, *.mhtml)
Web Page (*.htm, *.html)
Excel Template (*.xltx)
Excel Macro-Enabled Template (*.xltm)
Excel 97-2003 Template (*.xlt)
Text (Tab delimited) (*.txt)
Unicode Text (*.txt)
XML Spreadsheet 2003 (*.xml)
Microsoft Excel 5.0/95 Workbook (*.xls)
CSV (Comma delimited) (*.csv)
Formatted Text (Space delimited) (*.prn)
Text (Macintosh) (*.txt)
Text (MS-DOS) (*.txt)
CSV (Macintosh) (*.csv)
CSV (MS-DOS) (*.csv)
DIF (Data Interchange Format) (*.dif)
SYLK (Symbolic Link) (*.slk)
Excel Add-in (*.xlam)
Excel 97-2003 Add-in (*.xla)
PDF (*.pdf)
XPS Document (*.xps)

4. Importing a ‘*.csv’ File into PLCnext Engineer.

The file that was created using any of the variations from Section 2, can now simply be Imported into PLCnext Engineer.

To Access this feature, see below:

PLC -> Data List -> Import from CSV File…

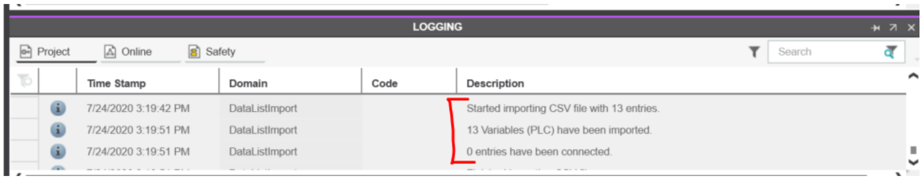


Variable (PLC)	Type	Usage	Comment	Init
Default				
axc-f-2152-1 / PLC.Tag_Bool1	BOOL	Global	C1	FALS
axc-f-2152-1 / PLC.Tag_Bool2	BOOL	Global	C2	TRUE

After the Clicking of the ‘Import Icon’ , a prompt will appear to Select the existing File (and Path) that is to be imported.

Note: Hover of the Icons (and Pause for about 2 seconds).. a Description of the Icon will automatically appear.

The Status of the Import (Success or No Success) and the number of Variables (Entries) will appear in the ‘Logging -> Project’ – Similar to below, where 13 Variables were imported from a *.csv file:



Time Stamp	Domain	Code	Description
7/24/2020 3:19:42 PM	DataListImport		Started importing CSV file with 13 entries.
7/24/2020 3:19:51 PM	DataListImport		13 Variables (PLC) have been imported.
7/24/2020 3:19:51 PM	DataListImport		0 entries have been connected.

It is now possible to view and/or edit the complete listing of Global Variables in a program.