


Unity Pro

Variables Management Using Microsoft Excel

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Safety Information



Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

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About the Book



At a Glance

Document Scope

The Microsoft Excel tool allows you to:

- Define or modify application variables using Excel.
- Generate an XML file that can be imported into Unity Pro application.

Validity Note

This document is valid for Unity Pro 10.0 or later.

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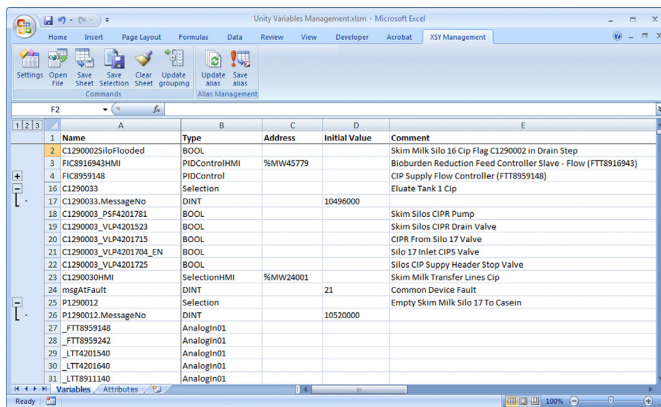
Chapter 1

Introduction

Introduction

Overview

The tool uses Excel features to create, edit, sort, or filter Unity Pro application variables. Overview of the **Variables** sheet:



	Name	Type	Address	Initial Value	Comment
2	C1290025iloFlooded	BOOL			Skim Milk Silo 16 Cip Flag C129002 in Drain Step
3	FCB8916943HMI	PIDControlHMI	%MW45779		Bioburden Reduction Feed Controller Slave - Flow (FTT8916943)
4	FCB8959148	PIDControl			CIP Supply Flow Controller (FTT8959148)
16	C129003	Selection			Eluate Tank 1 Cip
17	C129003.MessageNo	DINT		10496000	
18	C129003_PSF4201781	BOOL			Skim Silos CIPR Pump
19	C129003_VLP4201523	BOOL			Skim Silos CIPR Drain Valve
20	C129003_VLP4201715	BOOL			CIPR From Silo 17 Valve
21	C129003_VLP4201704_EN	BOOL			Silo 17 Inlet CIPS Valve
22	C129003_VLP4201725	BOOL			Silos CIP Supply Header Stop Valve
23	C129003HMI	SelectionHMI	%MW24001		Skim Milk Transfer Lines Cip
24	msgAFault	DINT		21	Common Device Fault
25	P1290012	Selection			Empty Skim Milk Silo 17 To Casern
26	P129013.MessageNo	DINT		10520000	
27	_FTT8959148	AnalogIn01			
28	_FTT8959242	AnalogIn01			
29	_LTT4201540	AnalogIn01			
30	_LTT4201640	AnalogIn01			
31	_LTT8911340	AnalogIn01			

Prerequisite

The tool is a template Excel file (**Unity Variables Management.xlsm**) containing a visual basic program.

Enable macros execution in Microsoft Excel to use the tool:

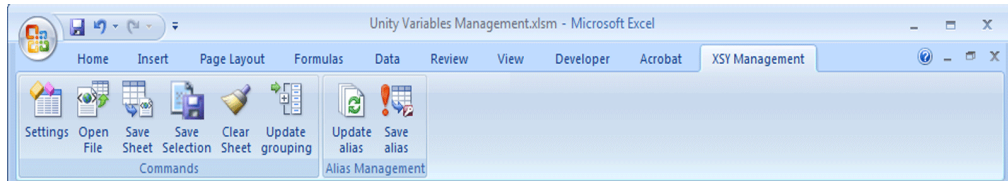


Excel Template Content

The file consists of two Excel sheets:

- **Variables:** The Unity Pro variables are managed in this sheet.
- **Attributes:** Contains all variable attributes.

The Excel ribbon contains a new tab called **XSY Management** with commands to help Unity Pro variables management:



Chapter 2

Excel Template Content

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
XSX Management Tab Description	12
Attributes Excel Sheet	15

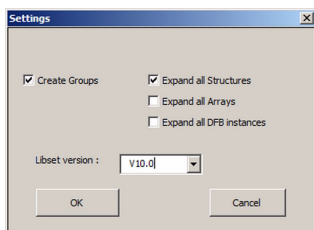
XSY Management Tab Description

This chapter describes the function of each command in the **XSY Management** tab.

Settings Command

The **Settings** command allows you to view and modify the variable presentation settings.

Click **Settings**, the following dialog box appears:



NOTE: The settings modification is not automatically applied to the current Excel sheet. To apply the settings, a new **Open file** command needs to be performed.

Settings command description:

Parameter	Check box	Description
Create Groups	X	Structured variables (DDT), array variables, or DFB instances can be expanded or contracted. This setting uses Excel outline features to create a hierarchical view of variables. NOTE: Excel outline is limited to 8 levels.
	–	The variable view is expanded and cannot be contracted.
Expand all Structures	X	The tool lists all fields of the DDT when DDT definition is part of the loaded file.
	–	Only the subfields having overwritten attributes are listed in the Excel sheet.
X Check box selected. – Check box deselected. N.A. Not applicable.		

Parameter	Check box	Description
Expand all Arrays	X	The tool lists all elements of the ARRAY variable. NOTE: For large arrays, selecting the Expand all Arrays check box may have an impact on performance. It may also reach the Excel limit regarding the number of lines.
	–	Only array elements having overwritten attributes are listed in the Excel sheet.
Expand all DFB instances	X	The tool lists all elements of the DFB instances, except private variables.
	–	Only DFB elements having overwritten attributes are listed in the Excel sheet.
Libset version	N.A.	Select the libset version in order to use the right types definition. IODDT, DDT, and Device DDT provided by Unity Pro are stored inside Unity Pro libset and inside the Excel tool. Both libset versions need to be identical.
X Check box selected. – Check box deselected. N.A. Not applicable.		

Example of **Variables** sheet display with **Create Groups** check box selected:

	A	B
1	Name	Type
1686	_VLP8914005	DigitalValve02
1687	_VLP8914005.Eng	BOOL
1688	_VLP8914005.Deng	BOOL
1689	_VLP8914005.Valve	ValveDigital
1714	_VLP8914005.HMI4x	ValveDigitalHMI
1721	_VLP8914005.Out	BOOL
1722	P1290001_VLP4201502	BOOL
1723	CIT8959247	AnalogIn01
1737	FBI_61	Selection01
1738	FBI_61.StepNo	UINT
1739	FBI_61.StepTime	TIME
1740	FBI_61.Select	Selection
1741	FBI_61.Select.MsgBuffer	FaultMessage
1742	FBI_61.Select.MsgBuffer.FaultAckAll	BOOL
1743	FBI_61.Select.MsgBuffer.FaultAckFirst	BOOL
1744	FBI_61.Select.MsgBuffer.Count	INT
1745	FBI_61.Select.MsgBuffer.Message	ARRAY[0..9] OF DINT
1746	FBI_61.Select.MsgBuffer.Message[0]	DINT
1747	FBI_61.Select.MsgBuffer.Message[1]	DINT
1748	FBI_61.Select.MsgBuffer.Message[2]	DINT

Open File Command

The **Open File** command allows you to select a file exported from Unity Pro (.xsy). The file is loaded into the Excel sheet according to the chosen settings.

Attributes columns are added automatically based on attributes available in the file loaded.

Save Sheet Command

The **Save Sheet** command allows you to save the Excel sheet into a file using Unity Pro variable export format (.xsy).

Click **Save Sheet**, a save file dialog box is displayed to select a directory and enter a file name.

NOTE: Fields of structure (DDT) or array element without overwritten attribute are not saved in the file. For example, if the **Expand all Structures** or **Expand all Arrays** setting is enabled, the Excel sheet contains the complete description of all the sub elements but the saved file only contains the elements having overwritten attributes. This means that lines only having **Name** and **Type** information are not included in the saved file.

NOTE: If the sheet has been opened using the **Open File** command, the file saved using the **Save Sheet** command contains all DFB and DDT definitions.

NOTE: The tool is processing all contiguous lines contained in the Excel sheet. The saving stops on the first line with no variable name, so it is recommended not to insert empty lines in the Excel sheet.

Save Selection Command

The **Save Selection** command allows you to save the selected lines of the Excel sheet into a file using Unity Pro variable export format (.xsy).

Click **Save Selection**, a save file dialog box is displayed to select a directory and enter a file name.

Clear Sheet Command

The **Clear Sheet** command allows you to clear the complete Excel sheet (only the sheet headers are kept).

Update grouping Command

The **Update grouping** command allows you to update the existing groups in the Excel sheet.

The line grouping operation is based on variable naming, subfields and array elements.

NOTE: Variables have to be sorted in alphabetical order before issuing an **Update grouping** command.

Update alias Command

The **Update alias** command updates the Excel sheet to have a consistent vision when using **Alias** and/or **Alias of** column.

Save alias Command

The **Save alias** command allows you to export only the **Alias** variables from the Excel sheet to a file using Unity Pro variable export format (.xsy).

Click **Save alias**, a save file dialog box is displayed to select a directory and enter a file name.

Attributes Excel Sheet

Overview

The **Attributes** Excel sheet eases the management of the variables attributes.

Overview of the **Attributes** sheet:

	A	B	C	D	E	F	G	H
	Excel Attribute name	XML attribute name	Val1 XML	Val1 Excel	Val2 XML	Val2 Excel	Val3 XML	Val3 Excel
1	Excel Attribute name	XML attribute name						
2	Name	name						
3	Comment	comment						
4	Address	topologicalAddress						
5	Type	typeName						
6	HMI Variable	isVariableHMI	-1	True	0	False		
7	Initial Value	value						
8	Save	save	-1	True	0	False		
9	Constant	isConstant	-1	True	0	False		
10	Custom Comment	customerString						
11	RW Program	programAccessRight	2	True	1	False		
12	Global Data	enetVariable						
13	Global Data Group	enetGroup						
14	Global Data ID	enetDataID						

Content

The **Attributes** sheet contains several information:

- **Excel Attribute name** column: Name of the attribute used in the Excel **Variables** sheet.
NOTE: The Excel attribute name can be changed. For example, the names may be changed with the names used in the Unity Pro editor.
- **XML attribute name** column: Name of the attribute used in Unity Pro XML file.
NOTE: The XML attribute name must not be modified because it is used to read information into the Unity Pro XML file.

NOTE: Some attributes have a predefined Excel/XML correspondence.

Attributes Management

To facilitate the understanding of attributes and attributes value, it is possible to customize their display.

To customize the display, enter in each pair of columns (starting at column C) a couple of values to make the correspondence between the value used in the Unity Pro XML file (for example, **Val2 XML** column) and the value displayed in the Excel **Variables** sheet (for example, **Val2 Excel** column).

Example:

The **HMI Variable** Excel attribute has two values predefined:

- **Val1 XML = -1**
- **Val1 Excel = True**

In this example, any occurrence of the value **-1** is replaced by the value **True** in the **Attributes** sheet, for the **HMI Variable** attribute.

If a new attribute, which is not part of this sheet, is loaded when opening an XML file, a new row is added in this sheet and the value extracted from the XML file is copied in the **Valx Excel** column. The **Valx XML** value can then be customized to have a clearer view in the **Variables** sheet.

NOTE: Some attributes available in the Unity Pro **Data Editor** are not displayed in the Excel tool. For example, the attributes which are just providing information (like the **Used** attribute) are not displayed.

Alias Attribute

The tool is performing a specific treatment for variables **Alias** attributes.

In Unity Pro, there are two attributes called **Alias** and **Alias of** linked together. On any modification of one attribute, the other is immediately updated.

A part of this behavior is also implemented in the Excel tool. If the **Alias** attribute is modified, the **Alias of** attribute of the associated variable is automatically updated.

Creating an Alias

To create an alias, proceed as follows:

- Add an alias name in the column **Alias**.
- The **Alias** variable is automatically created if it does not exist.
- The **Alias of** information of the alias variable is automatically updated.
- Save the file.

On file saving action, only the **Alias of** attribute is stored into the saved file (.xsy).

Chapter 3

Tool Limitations

Limitations

DDT and DFB Limitation

The tool does not allow working on DDT or DFB type definition.

Attributes Limitations

The Excel tool attributes management has the following limitations:

- Wrong or inconsistent values are not checked and Unity Pro rejects them during the import.
- Unsupported attributes are not checked.

For example, setting **Time stamping** attributes on an INT type variable is not allowed, but it is not checked by the Excel tool. Unity Pro rejects those attributes during import.