

DIAMView

Software Development
Environment

Wendy
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Outline

- Variable dictionary overview
- Variable dictionary management tool
- Variable group right-click function
- Variable dictionary script

Purpose

After this chapter, you will learn ...

- ... Basic operation and management of variables
- ... The function of the variable group
- ... Commonly used scripts of variable dictionary

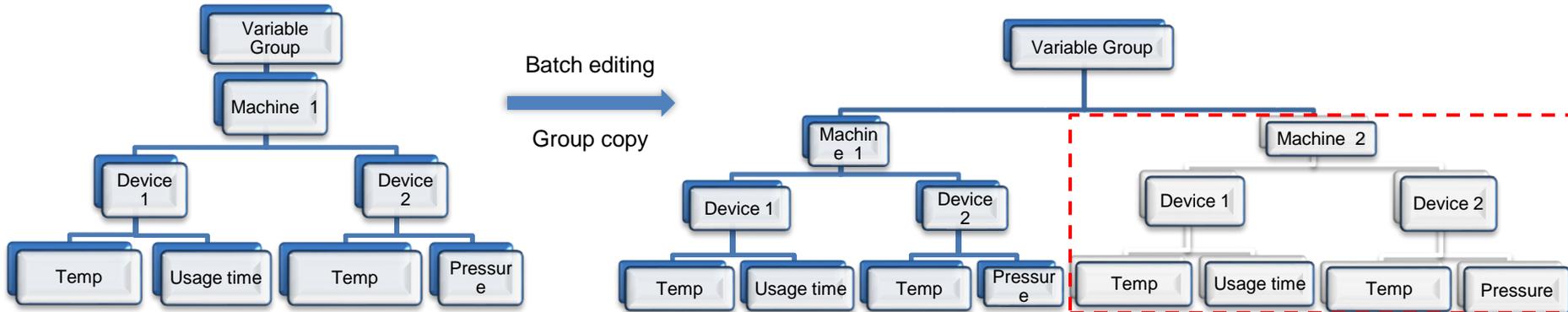
Outline

- Variable dictionary overview
- Variable dictionary management tool
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- Variable dictionary script

Variable dictionary overview

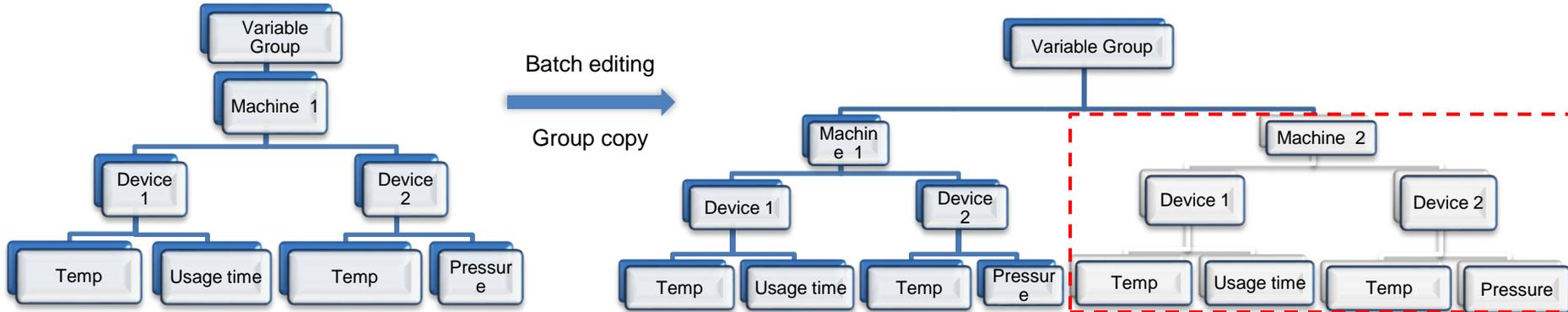
➤ Engineering projects require various types of variables to participate in data interaction to present and control production site conditions in real time. The variable dictionary is a collection of variables in a project, and the variable group is a unit for grouping and managing variables.

- Quickly add, delete, insert, batch add, import and export, modify variables
- Quickly add, delete, copy, paste, rename, import and export variable groups to improve development efficiency



Variable dictionary overview

- Support intelligent replacement, reference browsing, usage statistics, error checking and other functions
- Ordered variable grouping and sorting operations
- Support tree structure variable management and steeples grouping
- Add variable expansion domain function to realize variable grouping



- Variable dictionary overview
- **Variable dictionary management tool**
- Variable group right-click function
- Variable dictionary script



Variable dictionary management tool

➤ Variable dictionary management tool operation:

1. Variable dictionary editing window

- Edit actions such as variable addition, insertion, deletion, batch addition, import and export

2. Variable Browser

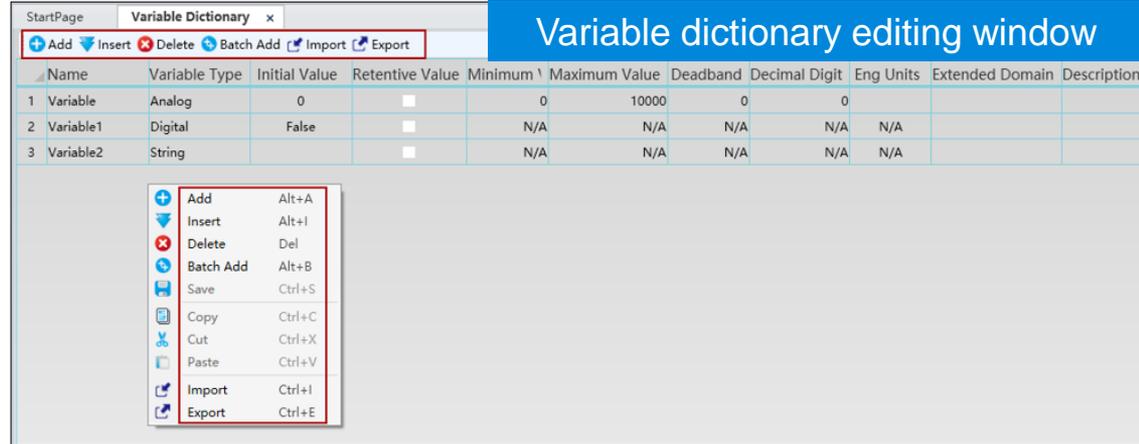
- To filter variables by variable group, variable type, variable name

3. Expression window

- Set conditional expressions in conditional programs

➤ Basic operation of variables

Add	Add a variable, the newly added variable is displayed in the variable list in the variable editing area
Insert	Insert a variable, the newly inserted variable is displayed above the inserted variable
Delete	Delete a variable
Batch Add	Batch add function can add multiple variables at once
Import	Import external variable configuration files to improve the efficiency of variable configuration
Export	Variable configuration information can be exported as an excel file, supporting xls and xlsx formats
Copy	Copy variables
Cut	Shear variable
Paste	Paste variables



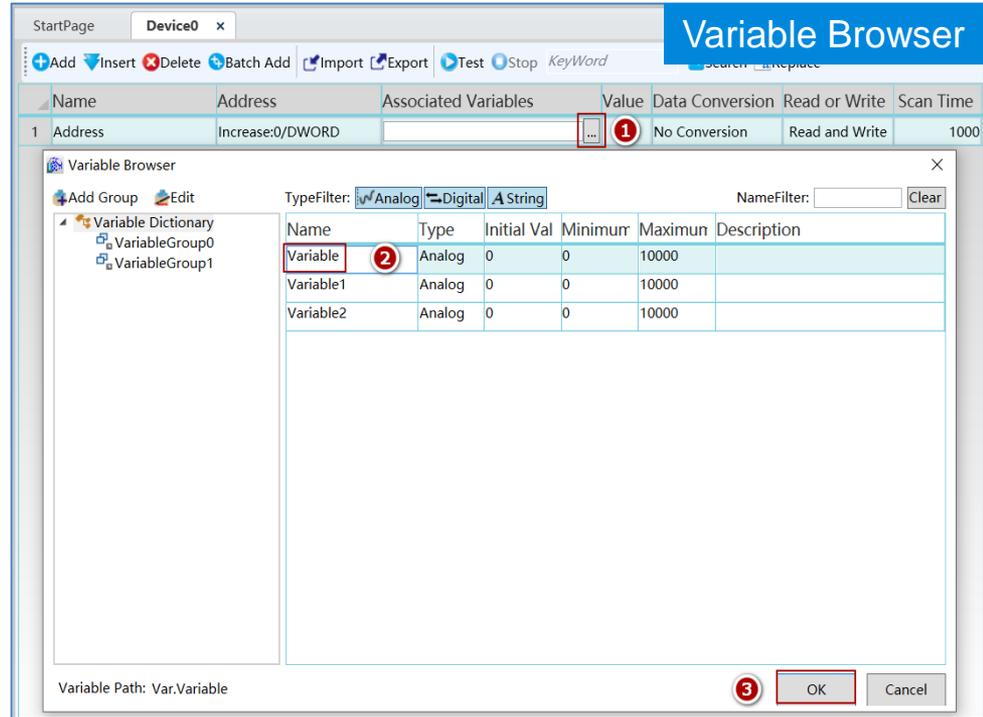
Variable dictionary editing window

Name	Variable Type	Initial Value	Retentive Value	Minimum	Maximum Value	Deadband	Decimal Digit	Eng Units	Extended Domain	Description
Variable	Analog	0	<input type="checkbox"/>	0	10000	0	0			
Variable1	Digital	False	<input type="checkbox"/>	N/A	N/A	N/A	N/A	N/A		
Variable2	String		<input type="checkbox"/>	N/A	N/A	N/A	N/A	N/A		

- Add (Alt+A)
- Insert (Alt+I)
- Delete (Del)
- Batch Add (Alt+B)
- Save (Ctrl+S)
- Copy (Ctrl+C)
- Cut (Ctrl+X)
- Paste (Ctrl+V)
- Import (Ctrl+I)
- Export (Ctrl+E)

✘ Refer to the section "6.3 Variables" in the user manual.

- **Variable Browser Operation example:**
- ① Click the Select Variable button to open the variable browser
 - ② Select the variable to be linked
 - ③ Click "OK"
 - ④ The variables in the IO variable association variable dictionary, the association is successful



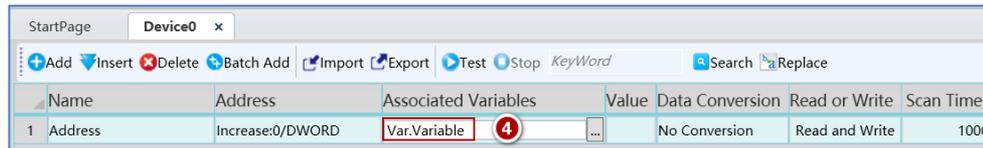
Variable Browser

TypeFilter: Analog Digital String NameFilter: Clear

Name	Type	Initial Val	Minimum	Maximum	Description
Variable	Analog	0	0	10000	
Variable1	Analog	0	0	10000	
Variable2	Analog	0	0	10000	

Variable Path: Var.Variable

OK Cancel



Name	Address	Associated Variables	Value	Data Conversion	Read or Write	Scan Time
1 Address	Increase:0/DWORD	Var.Variable		No Conversion	Read and Write	1000

➤ **Variable Browser**

- When configuring variables in the associated variable dictionary for IO variables, alarm variables, operating variables, and historical variables, the variable browser is used;
- Here is an example of the variables in the IO variable associated variable dictionary;

➤ Expression window Operation example:

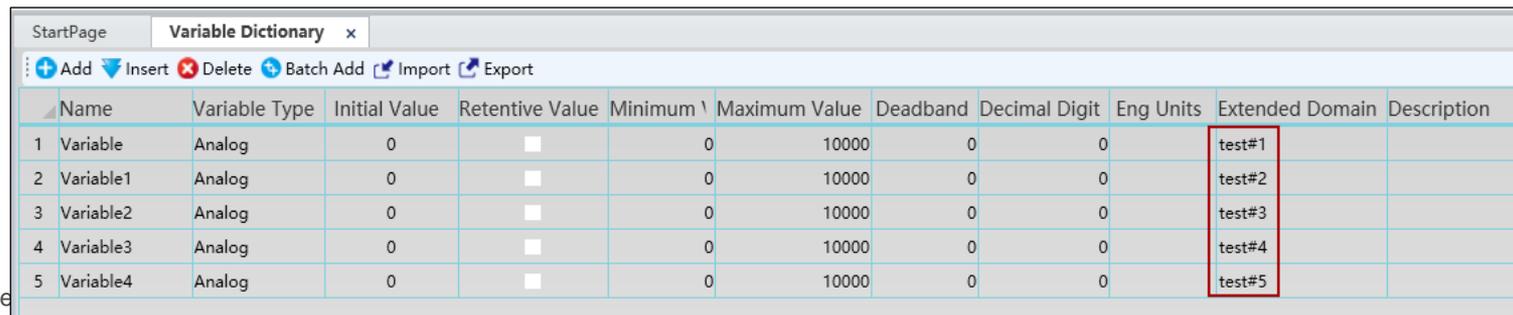
- Associate variables in variable dictionary for conditional expressions in conditional programs
- ① Click the select button to open the expression window
 - ② Select the variable to be linked
 - ③ Click "OK"
 - ④ Conditional expression associated variable success

Name	IsEnable	Expression	Trigger Mode	Time Interval (ms)	Script Content
1 ConditionScript	✓		... ① change	N/A	

Name	IsEnable	Expression	Trigger Mode	Time Interval (ms)	Script Content
1 ConditionScript	✓	Var.Variable ④	... Value change	N/A	

- The extended domain is the second naming of the variable dictionary. Through the extended domain, the value of the variable can be obtained in batches using a script. The name of the extended domain is: extended domain name + "#" + serial number;

Extended domain script	Examples of extended domain scripts
<ul style="list-style-type: none"> • GetExtendedDomainVars: Get the variables of the extended domain • GetExtendedDomainCount: Get the number of variables in the extended domain 	<pre>List = VarCmd.GetExtendedDomainVars("test",0) Count = VarCmd.GetExtendedDomainCount("test",0) For i = 0 To count - 1 GetObjectByName("Label10"&i).Text = CStr(List(i)) Next</pre>



Name	Variable Type	Initial Value	Retentive Value	Minimum Value	Maximum Value	Deadband	Decimal Digit	Eng Units	Extended Domain	Description
1 Variable	Analog	0	<input type="checkbox"/>	0	10000	0	0		test#1	
2 Variable1	Analog	0	<input type="checkbox"/>	0	10000	0	0		test#2	
3 Variable2	Analog	0	<input type="checkbox"/>	0	10000	0	0		test#3	
4 Variable3	Analog	0	<input type="checkbox"/>	0	10000	0	0		test#4	
5 Variable4	Analog	0	<input type="checkbox"/>	0	10000	0	0		test#5	

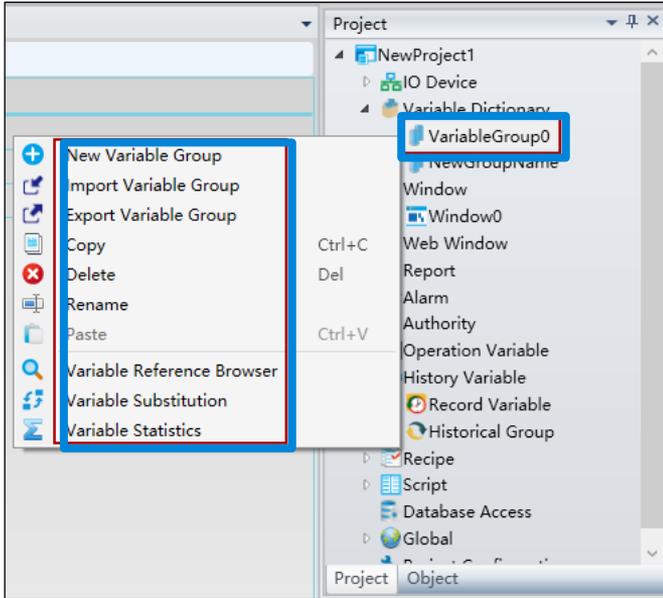
- Variable dictionary overview
- Variable dictionary management tool
- **Variable group right-click function**
- Variable dictionary script

Right-click function of variable group

- The variable group is to manage a group of variables that have a logical relationship in the project together, such as dividing the variable group according to the function module of the variable in the project and the position of the variable in the project. The variable group supports batch operation and electrodeless grouping.

- **Variable group right-click function**

- **Variable group function description**



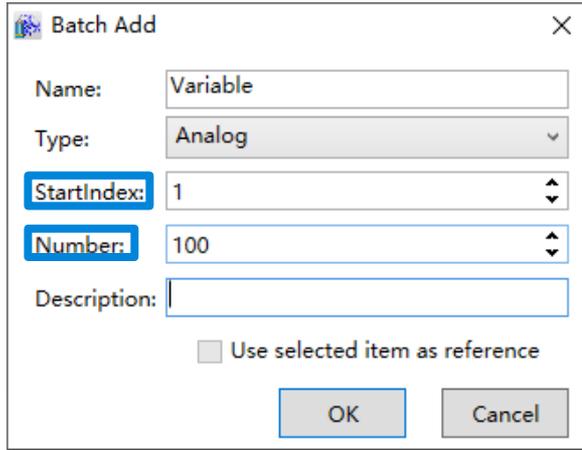
Import Variable Group	Import variable group, import the exported variable group excel file
Export Variable Group	The exported variable group is saved as an excel file, which can be created and modified in the excel file
Copy	Copy the variable group, DIAView will automatically copy every variable contained
Paste	Paste variable groups
Variable Reference Browser	Variable reference browsing, to view all variables used in the "variable dictionary"
Variable Substitution	Replace one variable in the project with another
Variable Statistics	Count the total number of variables used in the project and the usage of variables
Variable Parameter Setting	Variable parameter setting, the value displayed by each variable during IO communication failure

Batch operation of variable groups

➤ DIAView supports batch new creation of variables, copy and paste of variable groups, import and export.

• Import and export of variable groups

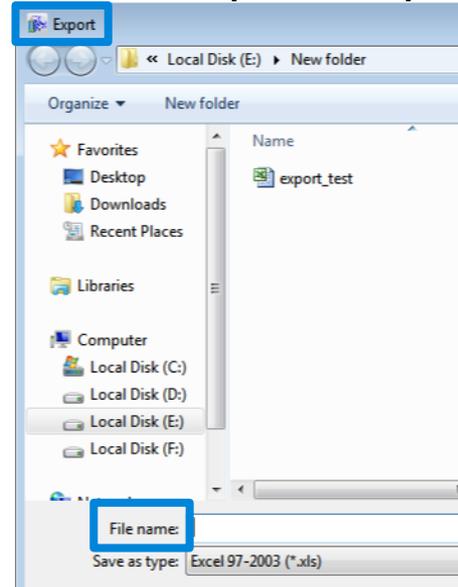
• Variable new batch



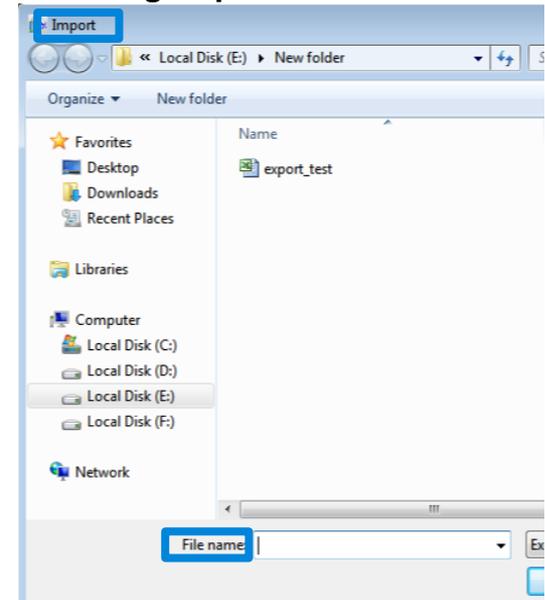
The 'Batch Add' dialog box contains the following fields and controls:

- Name: Variable
- Type: Analog
- StartIndex: 1
- Number: 100
- Description: (empty)
- Use selected item as reference
- OK button
- Cancel button

- **StartIndex:** start index of adding variables in batches;
- **Number:** add variables in batches;

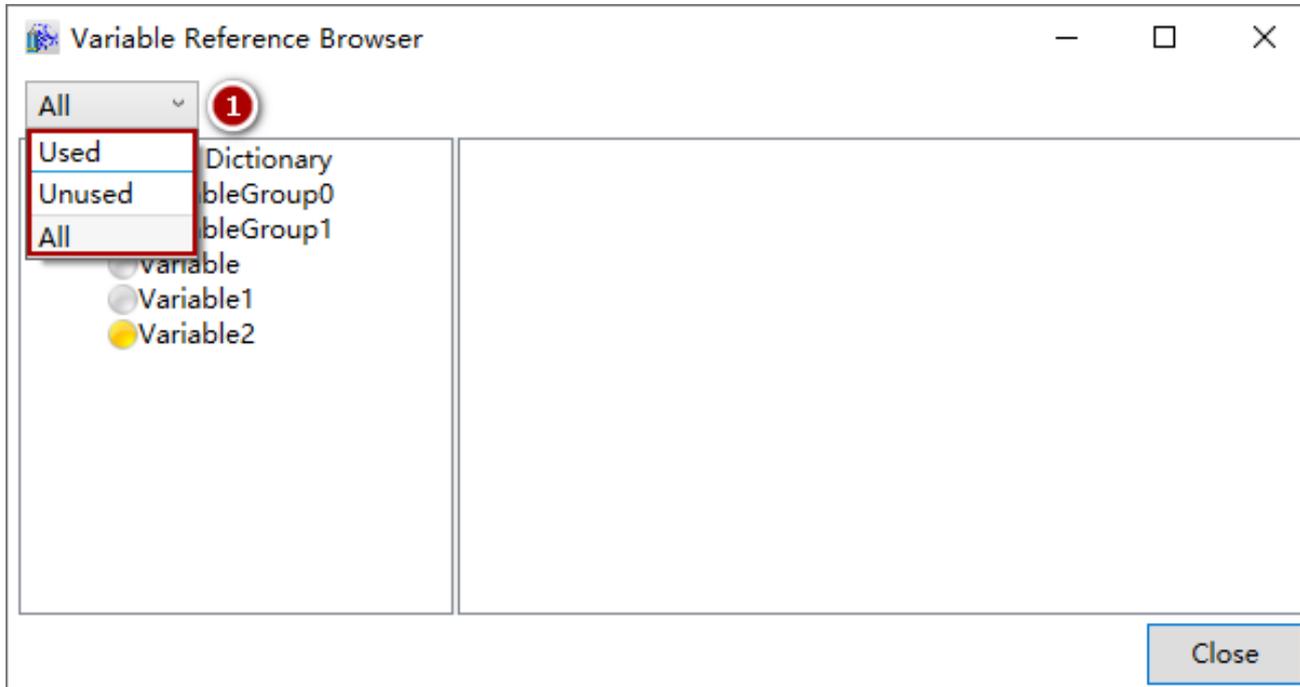


- **File name:** The file name saved by the batch export variable or the file name selected by the batch import variable;
- **Save as type:** file type, supports Excel xls format and xlsx format by default;



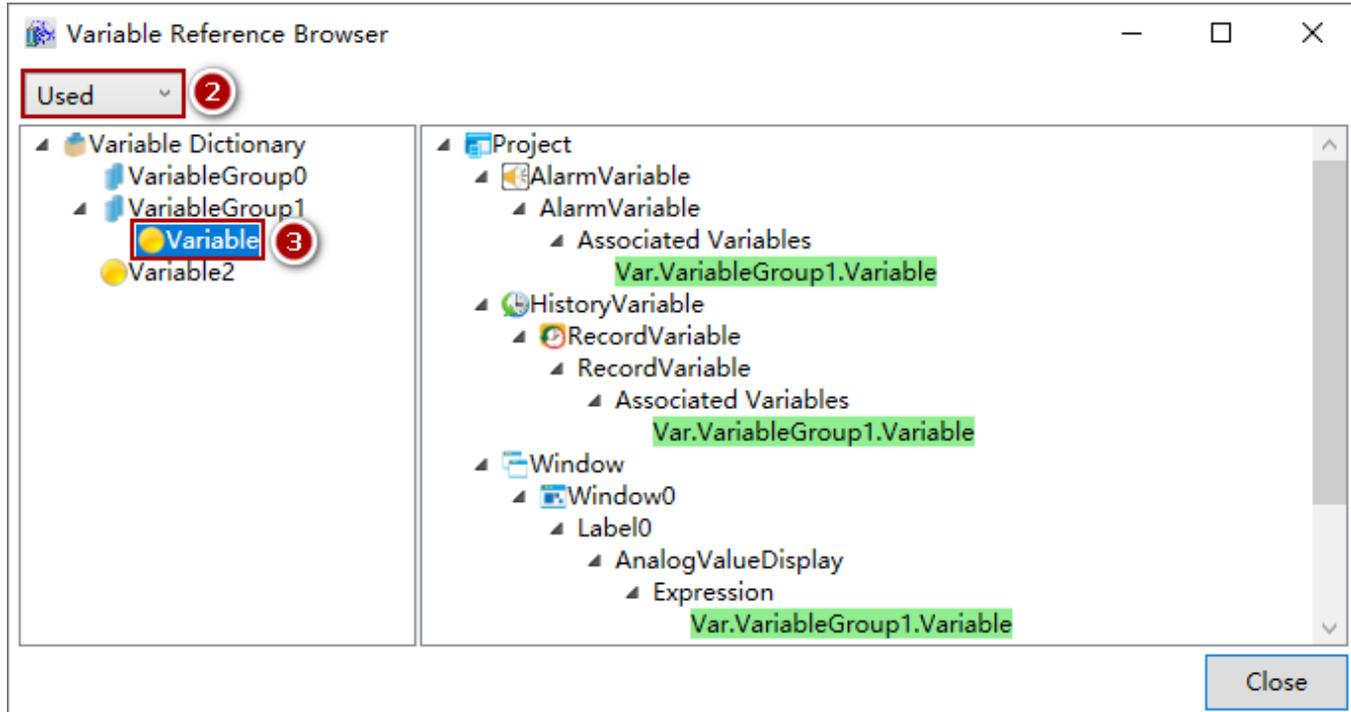
➤ Variable reference browsing: check the status of all variables in the "variable dictionary"

① Filter "used variables", "unused variables" and "all variables"



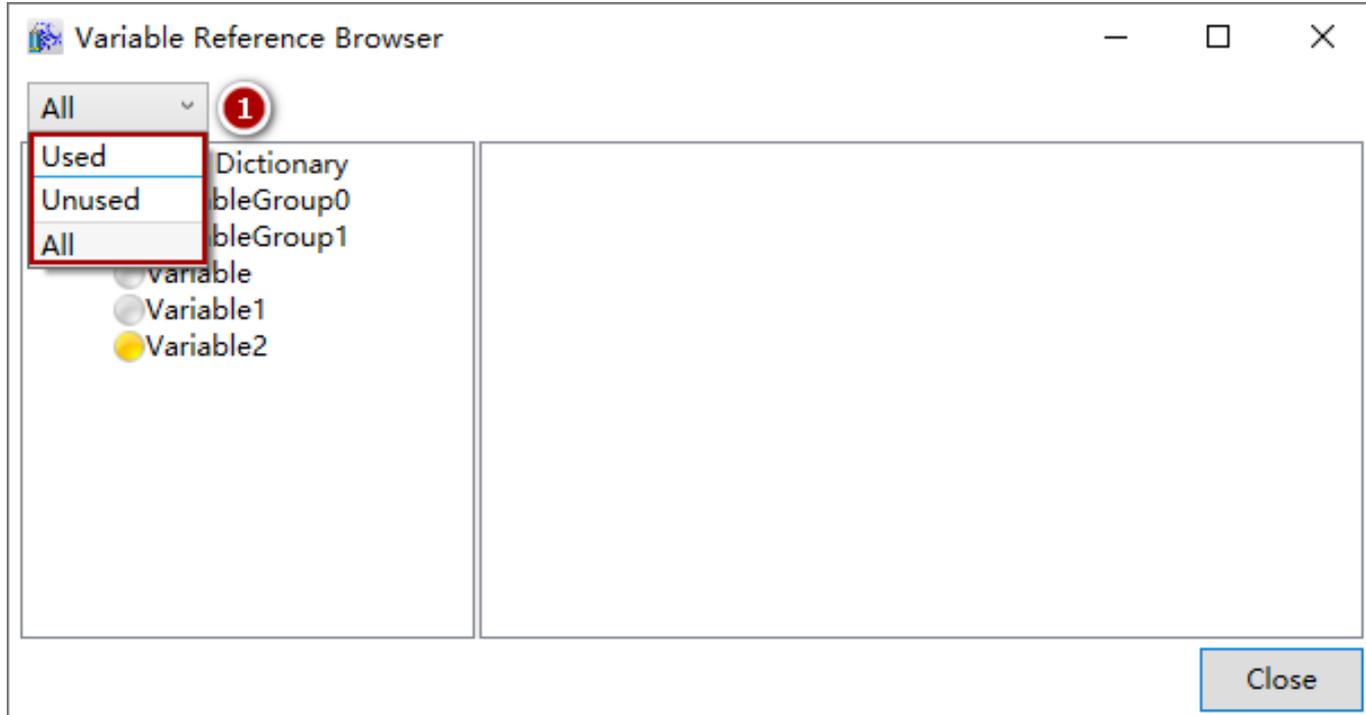
Variable reference

- ② Select "Used Variables"
- ③ Select Variable, the right window lists all the reference information of the variable;



➤ Variable reference browsing: check the status of all variables in the "variable dictionary"

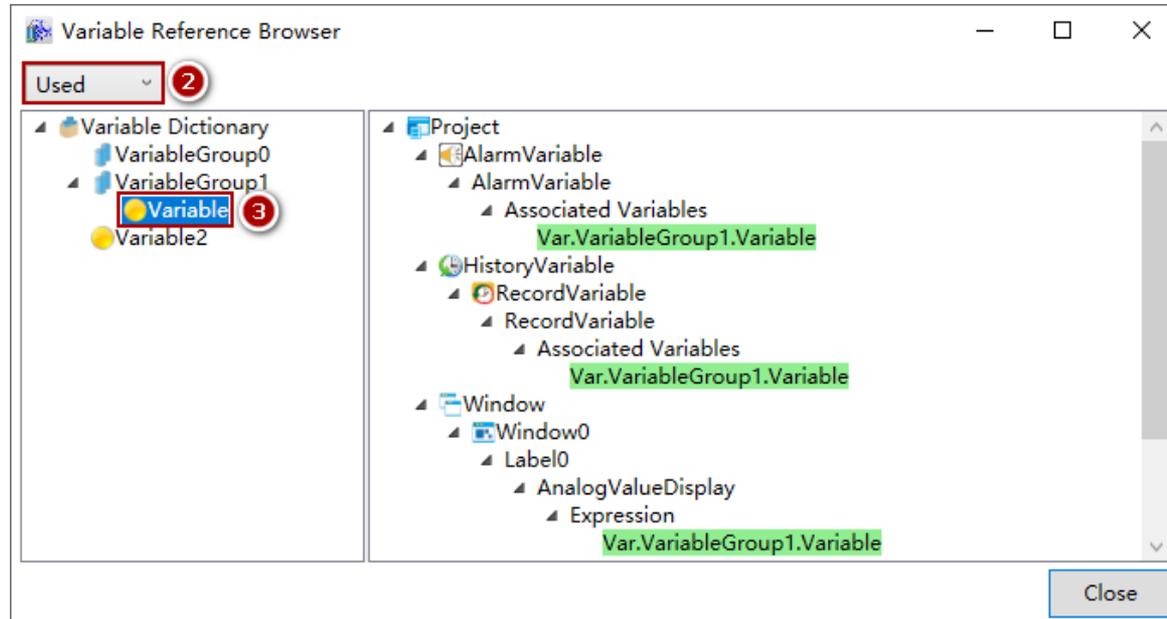
① Filter "used variables", "unused variables" and "all variables"



➤ Variable substitution: Replace one variable in the project with another variable.

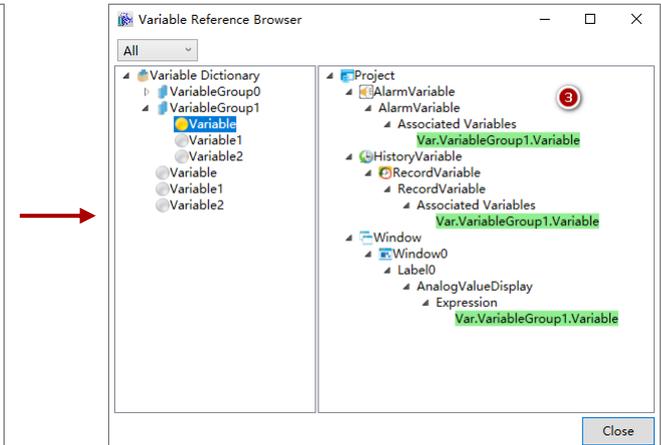
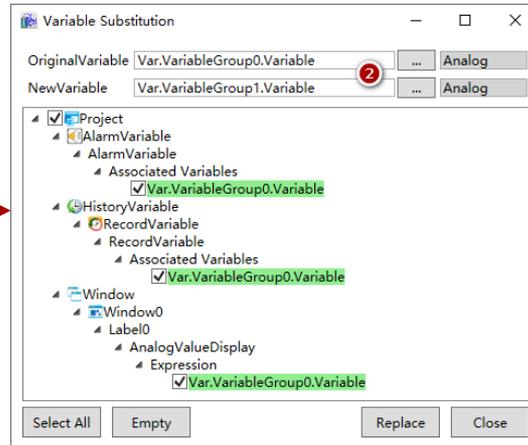
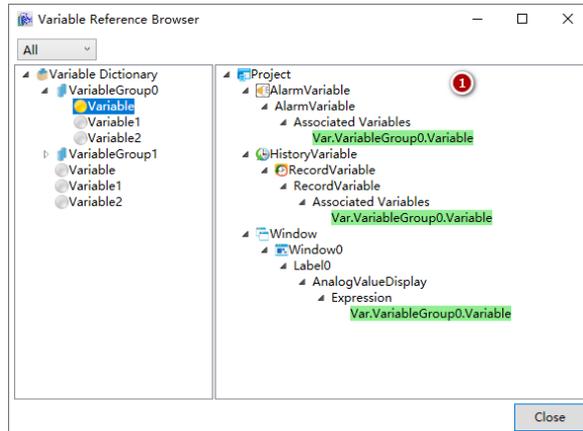
② Select "Used Variables"

③ Select Variable, the right window lists all the reference information of the variable;



Variable substitution

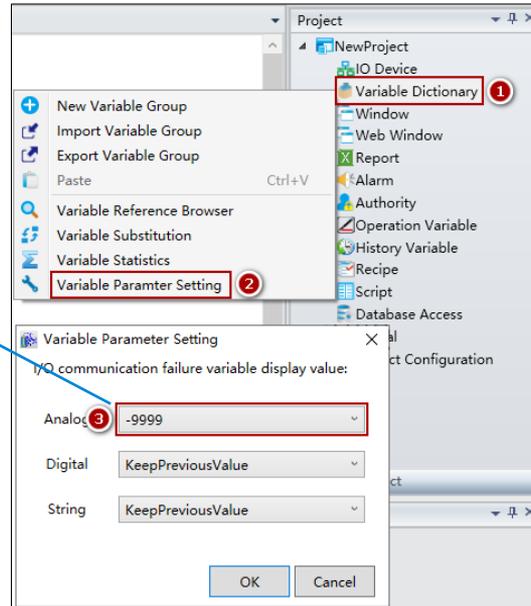
- Variable substitution: Replace one variable in the project with another variable.
 - ① Check some variables, part of a variable is replaced with another variable in the project
 - ② Check "Select All" to replace all variables in the project with another variable
 - ③ Complete variable substitution



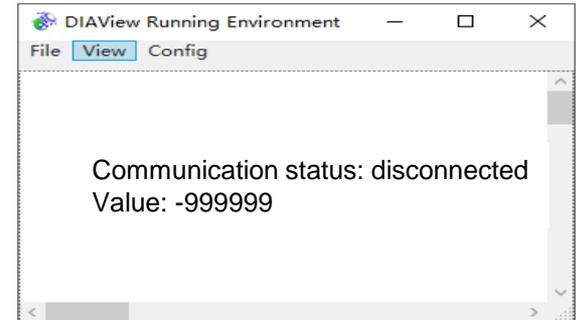
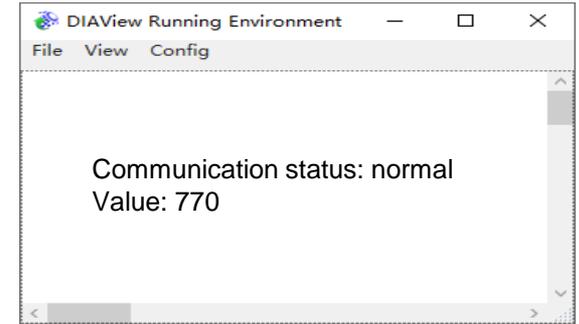
Variable parameter setting

- When the IO communication fails, the value displayed by each variable
 - When the communication between DIAView and PLC is normal, the variable reads the value in PLC in real time
 - When the communication between DIAView and PLC is disconnected, the variable obtains the set fault value

Variable type	IO communication failure value
Analog	Keep the previous value, 0, -9999
Digital	Keep the previous value, True, False
String	Keep the previous value, ? ? ? ?



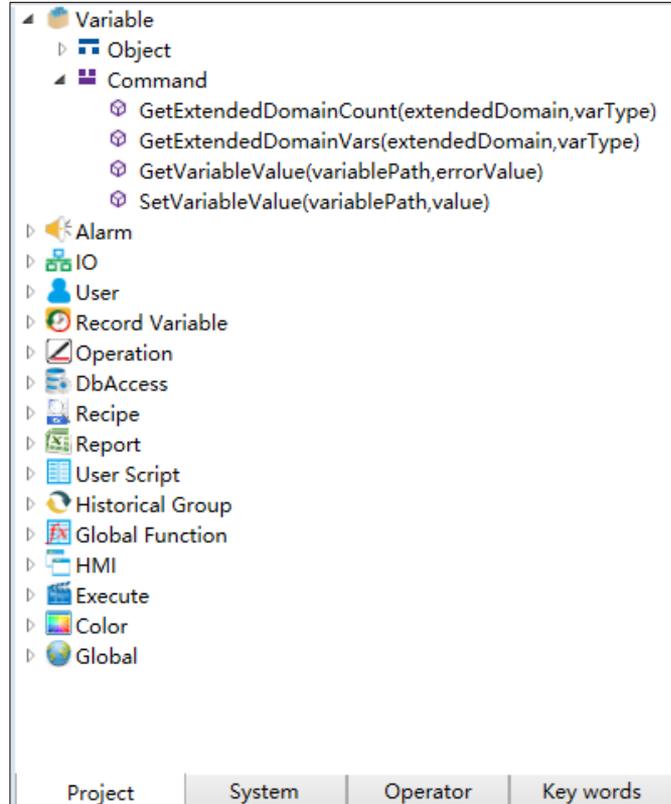
result →



Variable dictionary script

- When users configure window button events, screen programs, and user program scripts, the software provides simple and easy-to-use script properties and methods to complete some special tasks and functions.

- **Variable dictionary public methods**



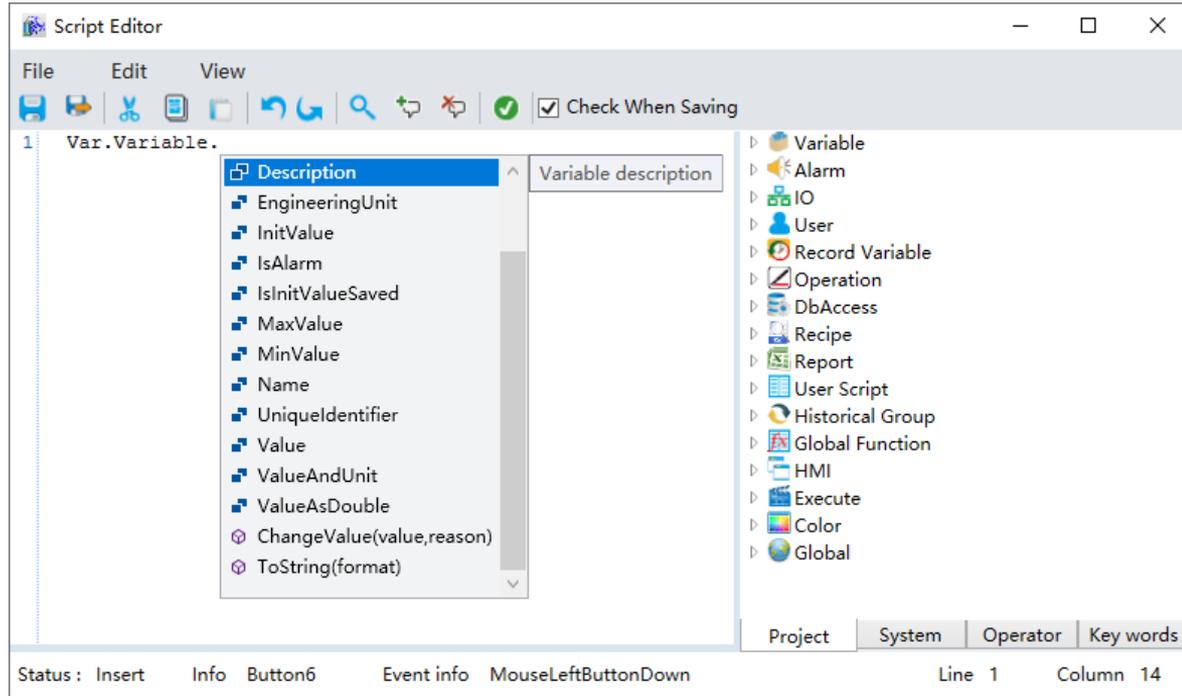
Variable

- Object
 - Command
 - GetExtendedDomainCount(extendedDomain,varType)
 - GetExtendedDomainVars(extendedDomain,varType)
 - GetVariableValue(variablePath,errorValue)
 - SetVariableValue(variablePath,value)
 - Alarm
 - IO
 - User
 - Record Variable
 - Operation
 - DbAccess
 - Recipe
 - Report
 - User Script
 - Historical Group
 - Global Function
 - HMI
 - Execute
 - Color
 - Global

Project System Operator Key words

➤ List of methods and properties of variable objects

- **GetExtendedDomainCount:** Get the number of variables in the specified extended domain and the specified variable type;
- **GetExtendedDomainVars:** Get the variable set of the specified extended domain and the specified variable type;
- **GetVariableValue:** Get the variable value of the specified variable path;
- **SetVariableValue:** Set the variable value of the specified variable path;



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