Dummy PLC provider

Version 1.2.0

User's guide

February 3, 2022

Remarks:

[Revision History]

Version	Date	Content
1.0.0	2015-09-01	First edition.
1.0.1	2017-08-21	Deleted the installer-related description from Overview.
1.0.2	2017-08-21	Added CaoController::get_VariableNames. Added Elem and Array for the option of CaoController::AddVariable method. Changed to be able to give any character string to a variable name.
1.1.0	2018-09-13	Added system variable of CaoController class. {@ERROR_CODE, @BUSY_STATUS, @NORMAL_STATUS, @CURRENT_DATETIME, @RANDOM}
	2020-09-28	Fixed typos in Elem option.
1.2.0	2022-02-03	Supports multiple startups.

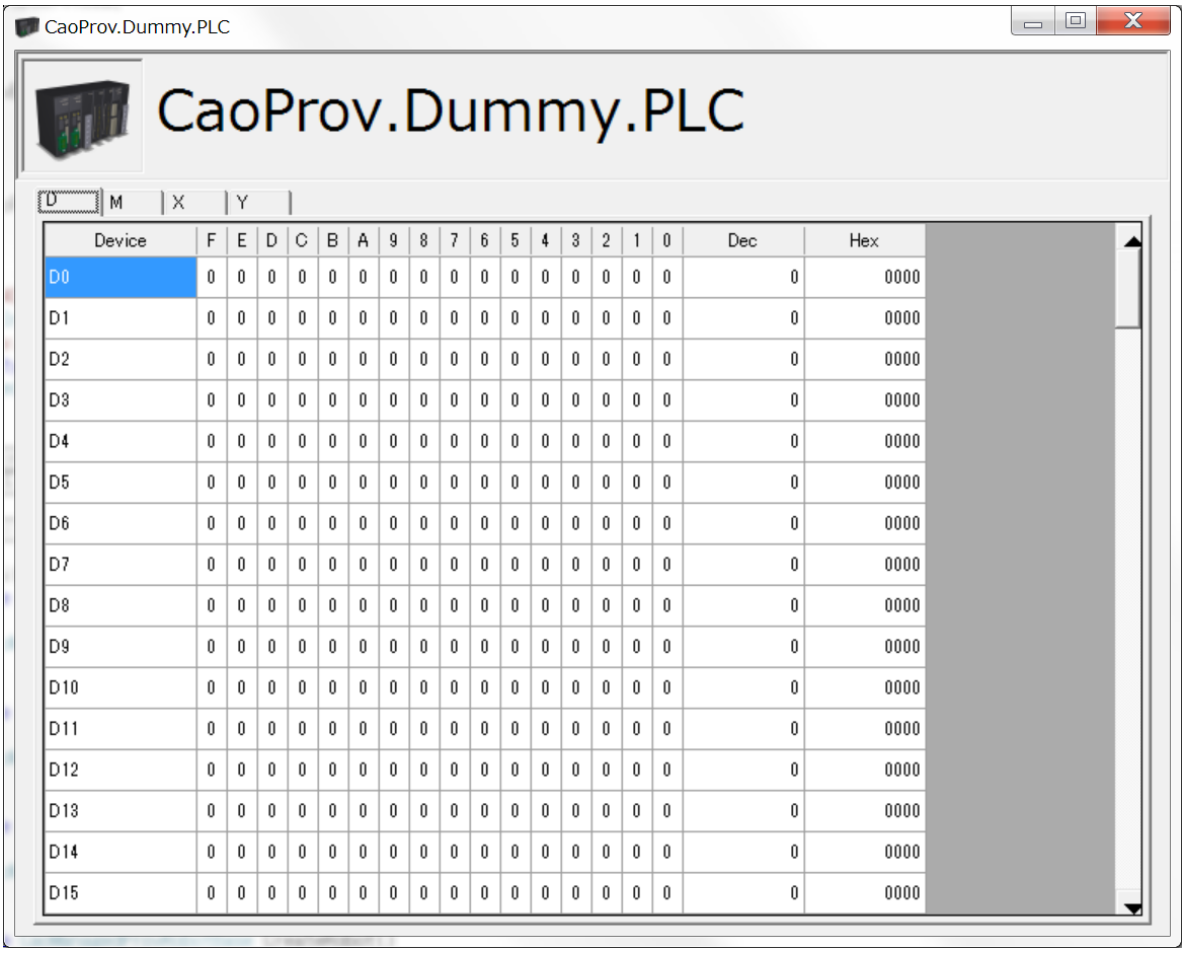
Contents

1. Introduction

This is a user's guide of Dummy PLC provider.

Dummy PLC provider allows to simulate data acquisition and setup of Data register (D), Internal relay (M), Input (X), and Output (Y) by using a virtual PLC without connecting to a real PLC.

Dummy PLC provider allows to display up to 50 screens in conjunction with other Dummy provider.



Device	F	E	D	C	B	A	9	8	7	6	5	4	3	2	1	0	Dec	Hex
D0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000
D15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0000

Figure 1 Dummy provider screen for PLC

2. Overview of provider

2.1. Overview

Dummy PLC provider is a CAO provider that enables to set/obtain data and to check the execution result for each device of Register (D), Internal relay (M), Input (X), and Output (Y) by using a virtual PLC.

The file type is DLL (Dynamic Link Library) and is dynamically loaded by CAO engine when it is used.

Table 2-1 Dummy PLC provider

File name	CaoProvDummyPLC.dll
ProgID	CaoProv.Dummy.PLC

2.2. Method and Properties

2.2.1. CaoWorkspace::AddController method

Dummy PLC provider establishes a connection to a virtual PLC by referring to parameters that have been passed at the AddController method execution.

Format AddController(<bstrCtrlName:BSTR>,<bstrProvName:BSTR>,
<bstrPcName:BSTR > [,<bstrOption:BSTR>])

<bstrCtrlName> : [in] Controller name
Specify a unique arbitrary string for each connection.
* An error (0x80000205) occurs if the same name is specified by a different application or computer.
If an empty string ("") is entered, CAO engine automatically assigns a unique controller name.

<bstrProvName> : [in] Option character string
Fixed value = "CaoProv. Dummy.PLC

<bstrPcName> [in] Computer name to execute provider
For a local connection, enter an empty string ("").
To establish a remote connection, specify a target computer name.

<bstrOption> [in] Option character string

The list specified for an optional character string is shown as follows.

Table2-1 Optional character string of CaoWorkspace::AddController

Option	Explanation
@Multi	Unspecified : Does not use multiple boots. If multiple dummy robot providers are running, the status of the dummy robot generated without checking first is referenced. Specified : Use multiple boots. Start a dummy robot that has an independent state for each controller. (default : Unspecified)

2.2.2. CaoController::AddVariable method

AddVariable method on CaoController class is a method to access variables. In this provider, a variable name is specified by entering <device code><address>.

Please refer to 2.3Variable list for other system variables.

Format AddVariable(<bstrName:BSTR > [,<bstrOption:BSTR>])

< bstrName> : [in] Variable name "<device code><address>"

< bstrOption> : [in] Option character string

Table 2-2 CaoController::AddVariable variable name

Variable name	Meaning
<device code>	A device held by dummy PLC Bit device : M, X, Y Word device : D
<address>	An address of variable specified by device. * Specify the address in either decimal or hexadecimal. Base number that can be specified depends on each device. Decimal : D, M Hexadecimal : X, Y

(Example) "X0", " Y1F", "D50", "M350"

Table 2-3 CaoController::AddVariable option string

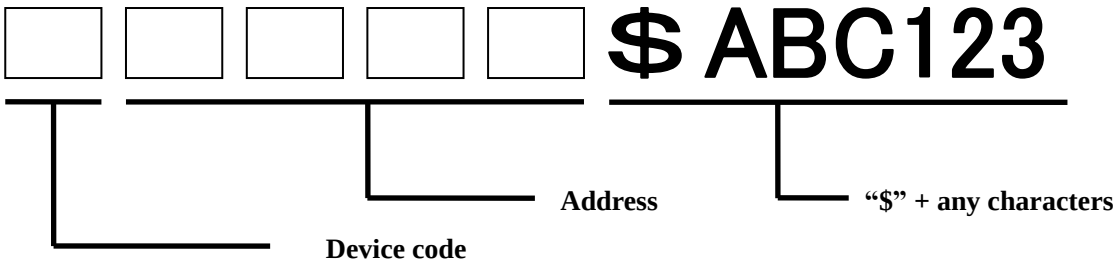
Option	Meaning
Type=<VariableType>	Specify a variable type to obtain a bit device by “Bit” or “Word”. If “Word” is entered when a bit device (X, Y, or M) is specified, the result is obtained by WORD unit (16 bits). When this entry is omitted, this depends on the device where the variable specifies. If a variable is specified as a bit device, this will be “Bit”. If a variable is specified as a word device, this will be “Word”. Example: “X0”, “Type = Word” Obtain values from X0 to X15 as “Word”.
Elem=<Elements count>	Specify the number of variables. From the address of the specified device, obtain the number of elements by the device unit. This should be 1 when it is omitted. Example:“X0”, “Elem= 5” Obtain values from X0 to X4 as Bit. Example:“D7”, “Elem= 3” Obtain values from D7 to D9 as Word. Example:“M50”, “Type= Word, Elem= 2” Obtain values from M50 to M81 as Word.
Elements=<Elements count>	Specify the number of variables. From the address of the specified device, obtain the number of elements by the device unit. * If both Elem option and Elements option are specified, the entry of Elem option is prioritized. * Way to specify is similar to a way of Elem option.
Array=< True or False >	Specify whether value is obtained as array type even if only one element is retrieved. If this option is True, the read value is retrieved as array type. If this option is False, the read value is retrieved as the specified data type. This should be False when it is omitted.

2.2.2.1. Using characters in a variable name

To register several variables that have the same address and same area type identifier, add any characters with a dollar sign (“$”) after the address part of a variable name. This is practical if you prepare several option patterns for identical address..

The following format shows how to add characters.

Format common to Bit (Word) address entry



2.2.3. CaoController::get_VariableNames

Obtain the code list of device held by dummy PLC.

Please refer to 2.3Variable list for other system variables.

2.2.4. CaoVariable::get_Value property

Obtain variable values corresponding to an object. The values (short or short type array) obtained here are the values of device corresponding to the variable name and option character string that have been specified at the execution of CaoController::AddVariable method on CaoController class.

2.2.5. CaoVariable::put_Value property

Set variable values corresponding to an object. By setting Short type or Short type array, you can enter values, which have the format specified by the option character string, to the device corresponding to the variable name specified at the execution of AddVariable on CaoController class.

2.3. Variable list

2.3.1. Controller class

Table 2-2 Controller class variable list

Variable identifier	Data type	Explanation	Attribute	
			get	put
@CURRENT_DATETIME	VT_DATE	Current time	√	-
@BUSY_STATUS	VT_BOOL	true = During program operation, false = Program halted	√	-
@NORMAL_STATUS	VT_BOOL	true = normal, false = abnormal (error occurring) (Due to dummy operation, always true)	√	-
@ERROR_CODE	VT_I4	Acquires the number of the error occurring as a decimal value. If no error occurred, 0 is returned. (Due to dummy operation, always 0)	√	-
@RANDOM	VT_R8	Returns a random value between 0.0 and 1.0.	√	-

2.4. Setting of Ini file

The maximum number of elements of each device can be set or changed from the Setting section of the ini file. If the ini file does not have information of the maximum number of elements of device, 8192 will be used as a default value.

The ini file that lists the setup is stored in the following path.

" <ORiN2 SDK installation folder>¥CAO¥ProviderLib¥Dummy¥Bin¥PLC.ini"

[Settings]

"<device code>_MAX=<The maximum number of elements>"

2.4.1. Sample file

The setting of the sample file is as follows.

D device : D0 to D127

M device : M0 to M127

X device : X0 to X7F

Y device : Y0 to Y7F

PLC.ini

```
[Settings]
D_MAX=128
M_MAX=128
X_MAX=128
Y_MAX=128
```