Scanner Provider
DENSO Scanner Provider

Version 1.0.6

User’s guide

November 7, 2022

Remarks:

This document is translated into English by machine translation.

[Revision history]

Version	Date	Contents
1.0.0	2018-01-09	First edition.
1.0.1	2018-04-27	Unicode option delete. Fixed a bug that null character was added at the end of scan string when executing CaoController :: Execute Raw method.
1.0.2	2018-08-10	Specification change of ImageCapture, MemUpload command. Processing when Timeout option was omitted was Improved. Appendix A was added.
	2018-11-05	Add supplement to Variable list.
	2019-01-08	Add Hardware.
1.0.3	2019-11-25	Adding Encode Options to AddController.
1.0.4	2020-02-14	Adding Sleep Options to AddController.
1.0.5	2020-03-26	Fixed a bug that could not be put in BSTR type to @QUEUE. Fixed the behavior of ImageCapture Added handling method in IoT Data Share Manual refined overall
1.0.6	2021-01-21	Fixed a handle leak when an abnormal value is specified in the AddController option. Fixed the problem that the controller is not cleared when deleting the controller when using the queue.
	2022-11-07	Add Hardware. Minor revisions to User’s Guide.

[Hardware]

Model	Notes
AT series	
GT series	
SE series	RFID control for SE1-BUB is not supported.
WS series	
QK series	
QB series	
QD series	
SF series	
SC1-QB	

Contents

1. Introduction

This document is a user’s guide of Scanner provider that is a CAO provider for DENSO code scanner.

Scanner provider outputs data from a code scanner. Also, this provider enables to capture images by sending a command.

This document describes the functions and the implemented methods of Scanner provider.

1.1. Connection Configuration

Figure 1-1 shows the overall configuration of the provider and code scanner.

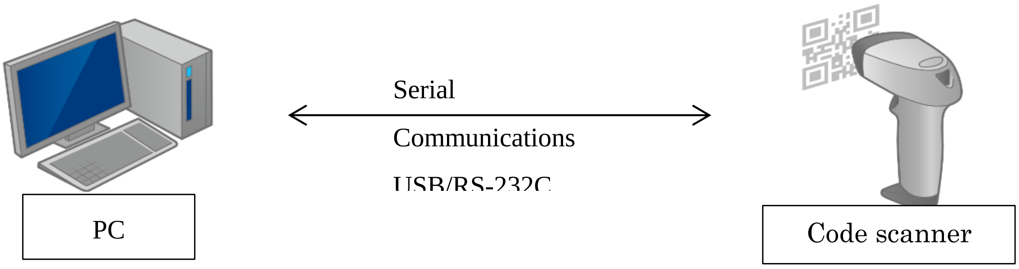


Figure 1-1 Connection Configuration Diagram

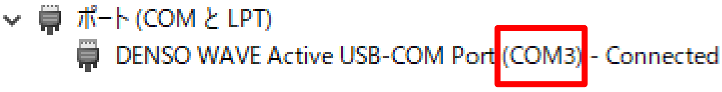
The code scanner and the provider perform serial communication. RS232C cable and USB cable exist in the communication cable, and the supported cables vary depending on the type of the code scanner. If you are using a USB cable, Active USB-COM port driver of the Virtual COM driver is required separately.[1]

Connection method	Required software
RS-232C	Not required
USB	Active USB-COM port driver

1.1.1. USB-connection by Active USB-COM port driver

Follow Active USB-COM port driver installer to connect the code scanner.

Check the port (see Fig. 1-2) in Device Manager. Note that the COM port number labeled Connected is required when connecting with this provider.Figure 1-2 Connecting the scanner with a USB cable1



ポート (COM と LPT)

DENSO WAVE Active USB-COM Port (COM3) - Connected

Figure 1-2 Connecting the scanner with a USB cable1

[1] Active USB-COM port driver is available from DENSO-WAVE https://www.denso-wave.com/ja/.

1.1.2. Operation mode

1.1.2.1. Event mode

In event type mode, a OnMessage event is generated when the code scanner acquires data. This allows the client to retrieve values from the data stored in Message object retrieved by this event.

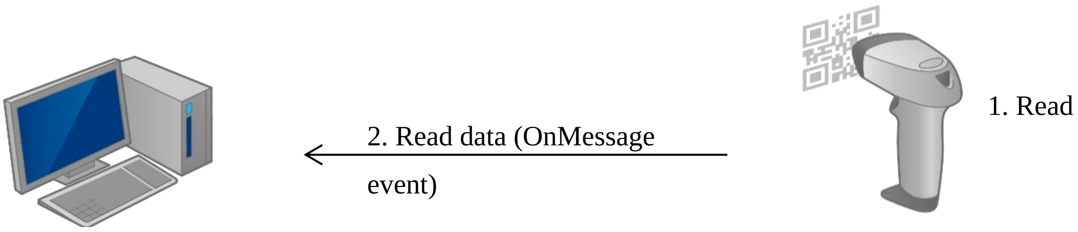
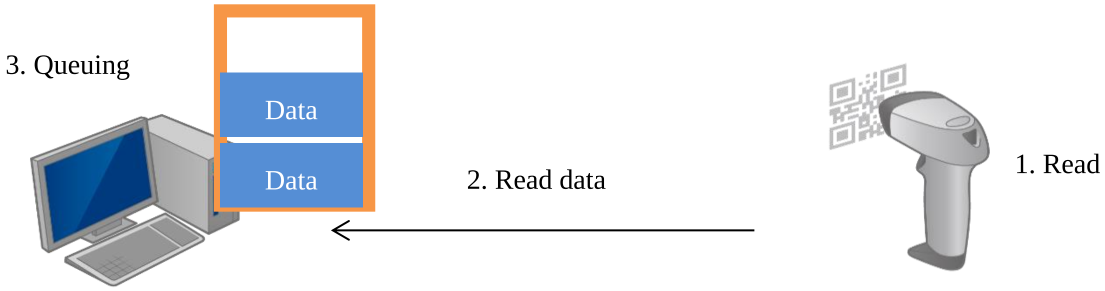


Figure 1-2 Operation Flow in Event Mode1

1.1.2.2. Queue mode

In cue mode, when data is acquired from the code scanner, it is first queued to the queue (first-in, first-out buffer). The client program can retrieve the value from the queue at any timing using the "@QUEUE" system variable. If more than 100 readings are performed, they are discarded.



1.1.2.3. Command type mode

In command type mode, when the system variable "@ONE_SHOT" is used to obtain the value, the command is sent to obtain the data. This mode is only available when the code scanner is set to continuous read mode.

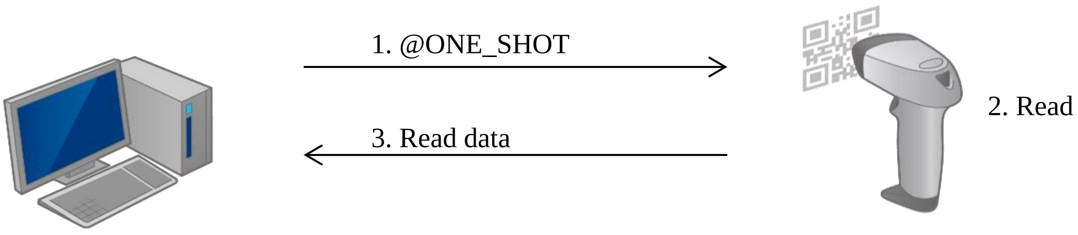


Figure 1-3 Operation Flow in Command Mode1

2. Outline of provider

2.1. Outline

There are two ways to obtain values by using a code scanner; push (event) method that outputs a value at the code scan timing, pull (stock) method that obtains a value by sending a command to the code scanner.

Scanner provider implements queue and event in order to get values by push method. Users can select one of them at the timing of AddController.

As a method to get the value by the command method, @ONE_SHOT variable is implemented in the variable class and OneShot command is implemented in the Execute command.

The file format of Scanner provider is DLL (Dynamic Link Library). Table 2-1 shows the details.

Table 2-1 Scanner provider

File name	CaoProvDENSOScanner.dll
ProgID	CaoProv.DENSO.Scanner
Registration	regsvr32 CaoProvDENSOScanner.dll
Deregistration	regsvr32 /u CaoProvDENSOScanner.dll

2.1.1. Operation mode

2.1.1.1. Command mode

Under the command mode, the provider sends a start command and stop command to a code scanner to store the scanned data into "@ONE_SHOT". This operation mode is available only when the code scanner is set to the continuous reading mode.

2.1.1.2. Event mode

Under the event mode, the provider issues an OnMessage event when a code scanner scans data. Therefore, a client can obtain a value directly from the data stored in the Message object that is obtained by this event.

2.1.1.3. Queue mode

Under the queue mode, once the provider obtains data from a code scanner, the data is stored in the queue (FIFO buffer). A client program can obtain value from the queue by using "@QUEUE" system variable at any timing

2.1.2. Communication format

Table 2-2 shows the default settings of code scanner's communication format. When you change the format, be sure to set "BCC" as "Disabled" always. If you set Code mark and Digit number to "Enabled", these are treated as a part of receiving data. Header and terminator are not included in the receiving data.

Table 2-2 Default setting of the communication format

Parameter	Default value
Header	none
Terminator	CR
Code mark transmission	Disabled
Digit number transmission	Disabled
BCC transmission	Disabled (fixed)

2.1.3. Image capture function

Scanner provider provides an image capture function for some code scanners.

To use the image capture function, you need to send an image capture command with Controller::Execute method. Obtained image data is transferred to the client by OnMessage event. Data is stored in Value property of Message object as a binary array.

Note that the obtained image data will not be stored in the queue, even if the image scanner function is used under the queue mode. In this case, image data is always sent by an event.

2.2. Method and property

2.2.1. CaoWorkspace::AddController method

Scanner provider establishes communication by referring to the connection parameters for communication when AddController is executed.

In this timing, you can specify the data communication format, connection parameter, and timeout.

```
AddController
(
    "<Controller name>",          // controller name
    "CaoProv.DENSO.Scanner ",     // Provider name Fixed
    "<computer name>",            // computer name where provider runs.
    "<option>"                    // option string
)
```

The following shows a list of option string items.

Table 2-3 Option strings of CaoWorkspace::AddController

Option	Description
Conn=<connection parameter>	Required. Specify the communication format and connection parameter. For details, see 0.
Trigger[=<operation mode>]	Provider operation mode ‘1’- Event enabled ‘2’- Queue enabled ‘3’-Command enabled It can be read using Execute(OneShot) or variable(@ONE_SHOT) (Default : 1)
Protocol[=<communication option>]	Specify the communication protocol, header and terminator. (Default : “0:0:0”) For details, see 2.2.1.2.
Timeout[=<timeout period>]	Specify the timeout period at the data sending and receiving. (Default : 500)
MessageMax[=<number of message objects created>]	Specify the maximum number of message object created by Scanner provider. (Default : 100)
Encode[=<Read data encoding>]	Sets the encoding for read data output. ‘1’ - current Windows ANSI codepage[2], ‘2’ - UTF-8 (Default: 1)
Sleep [= <reception wait interval>]	Set the waiting time for receiving read data from the scanner. Valid only when the Trigger option is 3. (Default: 1)

[2] Depends on the language of your operating system.

2.2.1.1. Conn option

The following shows connection parameter strings for Conn option. Items enclosed with square brackets (“[]”) are omittable. Underlined part shows the default value when the option is not specified.

“com:<COM Port>[:<BaudRate>[:<Parity>:<DataBits>:<StopBits>]]”

<COM Port> : COM port number ‘1’-COM1, ‘2’-COM2, …

<BaudRate> : Communication speed 4800, 9600, 19200, 38400, 57600, 115200.

<Parity> : Parity ‘N’-NONE, ‘E’-EVEN, ‘O’-ODD.

<DataBits> : Data bit count ‘7’-7 bits ‘8’-8 bits.

<StopBits> : Stop bit count ‘1’-1 bit , ‘2’-2 bits.

2.2.1.2. Protocol option

The following shows parameter strings for Protocol option. Items enclosed with square brackets (“[]”) are omittable. Underlined part shows the default value when the option is not specified.

“Protocol =[<Protocol>[:<Header>[:<Term>]]]”

<Protocol> : Communication protocol
‘0’-Non-acknowledge mode ‘1’-ACK/NAK mode.

<Header> : Specify a header
‘0’- none, ‘1’-STX(0x05)

<Term> : Specify a terminator
‘0’-CR(0x0D), ‘1’-LF(0x0A), ‘2’-CR+LF(0x0D0A), ‘3’-ETX(0x03)

2.2.2. CaoController::AddVariable method

Obtain a variable object. Variable names that can be specified by this method are only the system variables written in 2.3. Variable list. This method will fail if any variable name not listed in Table 2-3 is specified.

```
AddVariable
(
    "<variable name>",            // system variable name
    "<option>"                    // option strings (not used)
)
```

2.2.3. CaoController::AddVariableNames property

This obtains the system variable name list written in 2.3. Variable list.

2.2.4. CaoController::Execute method

This method sends a command to a code scanner. Specify a command name for the first argument and command parameter for the second argument. The header and terminator set by 2.2.1.2 Protocol option are added to the command (the first argument), and the command is sent to the code scanner. Execution result will not be returned.

For details of each command, refer to Chaper 3 Command Reference.

Syntax Execute (<bstrCommandName:VT_BSTR>, [<vntParam : VT_VARIANT>])

bstrCommandName : [in] Command Name

vntParam : [in] Parameter

2.2.5. CaoController::OnMessage event

Once the Scanner provider receives data, the provider sends data to the client as an OnMessage event of CaoController class. The received data will be stored in Message::Value property as-is.

OnMessage event is classified to three types; event mode, image scanner function, and image scanner function (thumbnail) and the type is specified by Message::Number property. Table 2-4 shows the correspondence between Message::Number property and the data expression.

Table 2-4 Correspondence between Message::Number property and data expression

Number property	Data expression	Data type
1	Code data	VT_BSTR
2	Image data (Capture image)	VT_UI1 | VT_ARRAY
3	Image data (Thumbnail image)	VT_UI1 | VT_ARRAY

2.2.6. CaoVariable::get_Value property

This property obtains a value that corresponds to a system variable written in 2.3. Variable list.

2.2.7. CaoVariable::put_Value property

This property is implemented only when the system variable name is "@QUEUE".

If the specified value is VT_BSTR, the data will be stored in the queue.

If the specified value is VT_EMPTY, buffer is cleared and the queue will be empty.

2.3. Variable list

2.3.1. Controller class

Table 2-5 Controller class System variable list

Variable name	Data type	Description	Attribute	
			get	put
@ONE_SHOT	VT_BSTR	Send a read command to a code scanner to obtain data that has been read within the specified time period. To use this variable, you need to set the code scanner to the continuous reading mode. [Attention] “R” and “Z” are sent to the code scanner separately. @ONE_SHOT is not available if the code scanner does not support these commands. For the support condition of these commands, please refer to the code scanner manual you use. Also, it can be used only when Trigger of option argument at AddController is '3'.	✓	–
@ID	VT_BSTR	Obtain the serial number of the code scanner.	✓	–
@MAKER_NAME	VT_BSTR	"DENSO WAVE Inc."	✓	–
@VERSION	VT_BSTR	Obtain the firmware version of the code scanner.	✓	–
@QUEUE	VT_BSTR	Queue that stores scanned value.	✓	✓
@QUEUE_SIZE	VT_I4	Current queue size	✓	–
@QUEUE_MAX	VT_I4	The maximum queue size Fixed to “100”	✓	–
@STATE	VT_I4	Connection state 0:Disconnected, 1:Connected, 2:Error *Valid only with RS-232 connection. When connected to USB, it is fixed at 1: Connected.	✓	–

< supplement>

The amount of time it takes to get values from the @VERISON and @ID variables depends on the Timeout set in the AddController options.

This is due to the fact that the receiving thread waiting for a scanner response is running and the socket used for command transmission is used. The socket is opened for each Timeout to allow command transmission, and the acquisition time varies.

If you want to shorten the acquisition time, set the acquisition time to a shorter Timeout.

2.4. Error code

Table 2-3 shows the unique error codes defined by the Scanner provider.

Table 2-6 Unique error code list

Error Name	Error Number	Description
E_OPTION_INVALID	0x80100001	If the trigger option is other than 3, this error will be returned if you do the following operation. Execute ("OneShot") Execute ("ImageCapture") Execute ("MemUpload") Get @OneShot variable. Please set the Trigger option to 3 and try again.

For about ORiN2 common errors, refer to the error code section of ORiN2programming guide

3. Command reference

This chapter describes each command of CaoController::Execute method.

Table3-1 CaoController::Execute command list

Command	Function	
Command transmission		
Raw	Send a code scanner-dedicated command.	p. 12
Image acquisition		
ImageCapture	Capture an image	p. 13
MemUpload	Capture an image (available for certain models)	p. 13
Message queue operation		
QueueClear	Clear the message queue.	p. 14
Send read command		
OneShot	Send a readable command to the code scanner.	p. 14

3.1. Command transmission

3.1.1. CaoController::Execute ("Raw") command

Send a command to a scanner.

For information about available command types, refer to the user’s manual of the code scanner you use.

Note that IMAGEOUT command and MEMUPLOAD command are not available in this method. For such commands, use “ImageCapture” method or “MemUpload” method that are listed in Chapter 3 Command reference.

Syntax Raw(<bstrParam >)

bstrParam : [in] Command string that is sent to the code scanner

Return value : [out] Nothing

Return value shows whether the command has been sent successfully. If the scanner responds with a command,

- OnMessage event when the operation mode is "event enabled"
- @QUEUE if the operation mode is “Queue-Enabled”

You receive.

Example 1) Load the setting (memory #1)

```
‘ ”LOAD” command send by Raw command
ctrl.Execute “Raw”, ”LOAD#1”
```

Example 2) Software reset

```
‘ ”RESET” command send by Raw command
ctrl.Execute “Raw”, ”RESET”
```

3.2. Image acquisition

3.2.1. CaoController::Execute ("ImageCapture") command

Obtain images from a code scanner.

Syntax ImageCapture(<iSize >, <iType>, <iThumbnail>)

iSize : [in] Size of the captured image (VT_UI1)
Image size differs depending on the code scanner you use.
For details, refer to the user’s manual of the code scanner you use.
0:1/1 size
1:1/4 size
2:1/16 size

iType : [in] Image output area (VT_UI1)
0:Full screen
1:Screen center

iThumbnail : [in] Availability of thumbnail image
0 : Thumbnail transmission is disabled.
1 : 1/4 size JPEG thumbnail transmission is enabled.

Return value : [out] Nothing

To receive images, use OnMessage event.

[Attention]

This method uses “IMAGEOUT” command of a code scanner; however, file types are limited to BMP for a capture image and to JPEG for a thumbnail image.

<CAUTION>

It can be used only when Trigger of option argument at AddController is '3'.

Example

```
‘ Imagecapture
ctrl.Execute “ImageCapture”, Array(0,0,0)
```

3.2.2. CaoController::Execute ("MemUpload") command

Obtain images from a code scanner.

Some code scanners, such as QB series, can obtain images by using this command. For details, refer to the user’s manual of the code scanner you use.

Syntax MemUpload(<iMemNumber >)

iMemNumber : [in] Image memory number (VT_UI1) (0 to 255)
The image memory number varies according to a scanner. For details, refer to the user’s manual of the code scanner you use.

Return value : Nothing

Images are received by OnMessage event.

<CAUTION>

It can be used only when Trigger of option argument at AddController is '3'.

Example

```
‘ MemUpload
ctrl.Execute “MemUpload”,0
```

3.3. Message queue Operation

3.3.1. CaoController::Execute ("QueueClear") command

Clear the message queue.

Syntax QueueClear()

Return value : Command transmission result

Example

```
‘ QueueClear
ctrl.Execute ″QueueClear″
```

3.4. Send read command

3.4.1. CaoController::Execute ("OneShot") command

Send a readable command to the code scanner, read something, or send a read stop command after a certain period of time.

Syntax OneShot(<iTimeout>)

iTimeout : [in] Read wait time (VT_UI1)
Please specify it in milliseconds.

Return value : [out] Read result(VT_BSTR)

<CAUTION>

It can be used only when Trigger of option argument at AddController is '3'.

Example

```
Private read As String
‘ OneShot
Set read = ctrl.Execute(”OneShot”, 500)
```

4. Sample program

The following sample shows how to output QR code data to text format.

List 4-1 **SampleText.frm**

```
Private eng As CaoEngine
Private WithEvents ctrl As CaoController

Private Sub Form_Load()

    Set eng = New CaoEngine

    'Connect with a scanner
    Set ctrl = eng.Workspaces(0).AddController(″Sample″,  _
                                               ″CaoProv.DENSO.Scanner″,   _
                                               ″″,  _
                                               ″Conn=com:1:38400:N:8:1,   _
                                                Trigger=1,   _
                                                Protocol=0:0:0”)
End Sub

'Receive data
Private Sub ctrl_OnMessage(ppCaoMess As CAOLib.ICaoMessage)

    text1.Text = ppCaoMess.Value

End Sub
```

The following sample shows how to save image data that has been obtained by image capture function into a file.

List 4-2 **SampleImage.frm**

```
Private eng As CaoEngine
Private WithEvents ctrl As CaoController

Private Sub Form_Load()

    Set eng = New CaoEngine

    'Connect with a scanner
    Set ctrl = eng.Workspaces(0).AddController(″Sample″,  _
                                               ″CaoProv.DENSO.Scanner″,  _
                                               ″″,  _
                                               ″Conn=com:1:38400:N:8:1,  _
                                                Trigger=1,  _
                                                Protocol=0:0:0″)
End Sub

‘Send an image capture command
Private Sub Command1_Click()

    ctrl.Execute “ImageCapture”,  Array(0, 0, 0)

End Sub

‘ Receive an image
Private Sub ctrl_OnMessage(ByVal pICaoMess As CAOLib.ICaoMessage)
    ‘ Save the image data to a temporary file.
    Open ″picture.bmp″ For Binary As #1
    Dim byData() As Byte
    byData = pICaoMess.Value
    Put #1,  ,  byData
    Close #1

End Sub
```

5. How IoT Data Share Uses Providers

This section describes how to create and use Scanner providers in IoT Data Share.

5.1. Project Overview

Learn how to create a project that stores scanner read data in items.

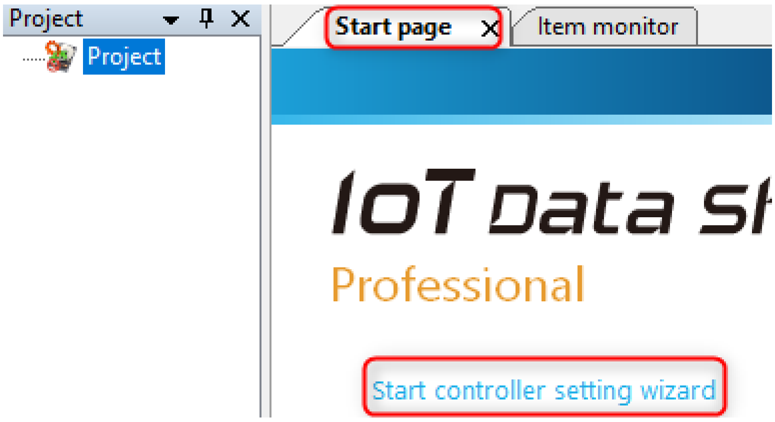
The project to be created is created under the following conditions.

IoT Data Share	Version	1.10.0
Scanner	Type	GT20Q-SM
	Setting	All item defaults In particular, the trigger switch is in "auto-off mode".
COM port number		5

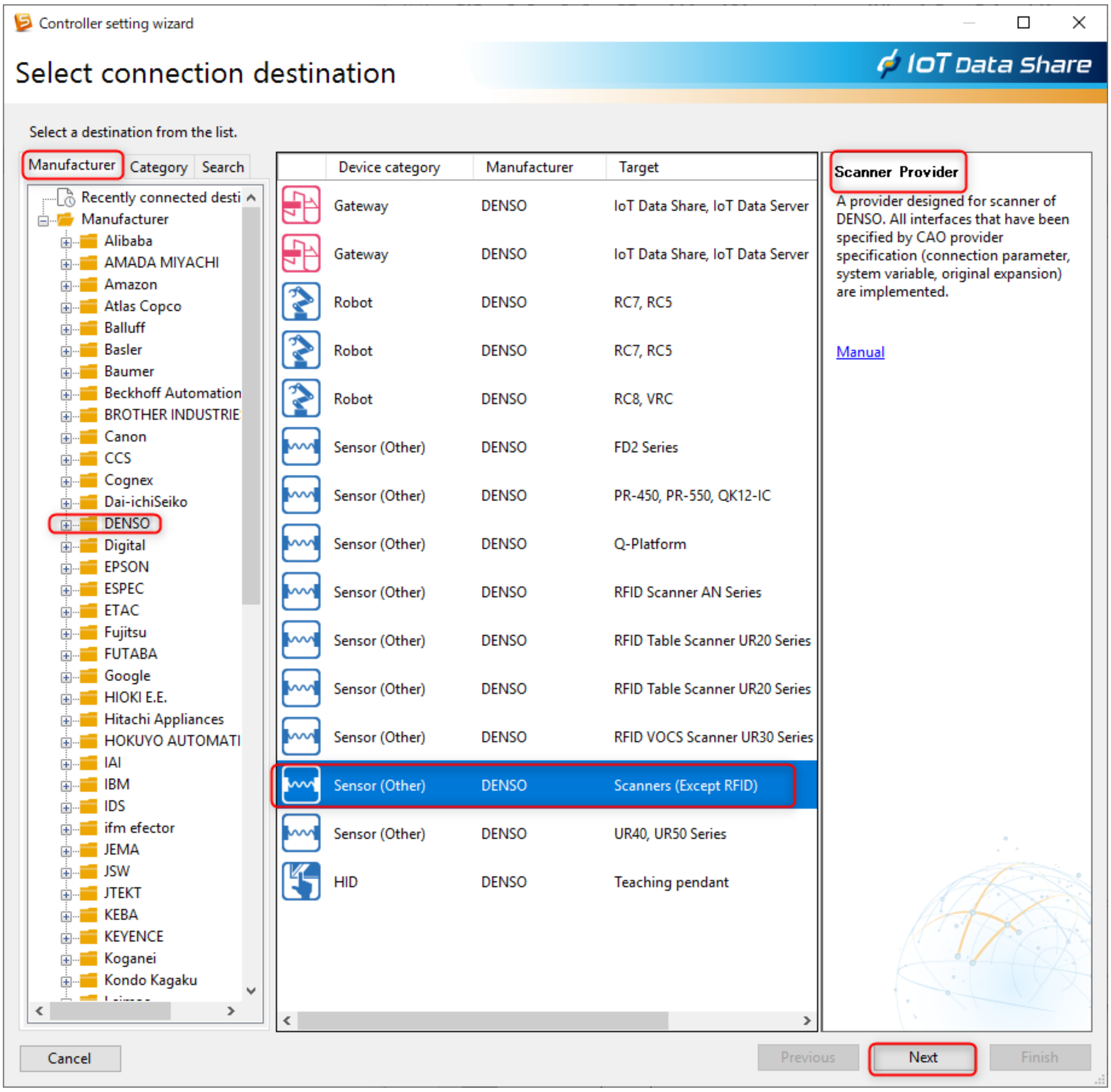
5.2. Project creation

5.2.1. Controller added

Create a project and configure the controllers that use Scanner providers.

Step	Description
1	Press Launch the Controller Configuration Wizard on the Start page.  Project Project Start page Item monitor IoT Data Sh Professional Start controller setting wizard

2	Select "DENSO" and Scanner providers from the manufacturer field and press "Next".



Controller setting wizard

Select connection destination

Select a destination from the list.

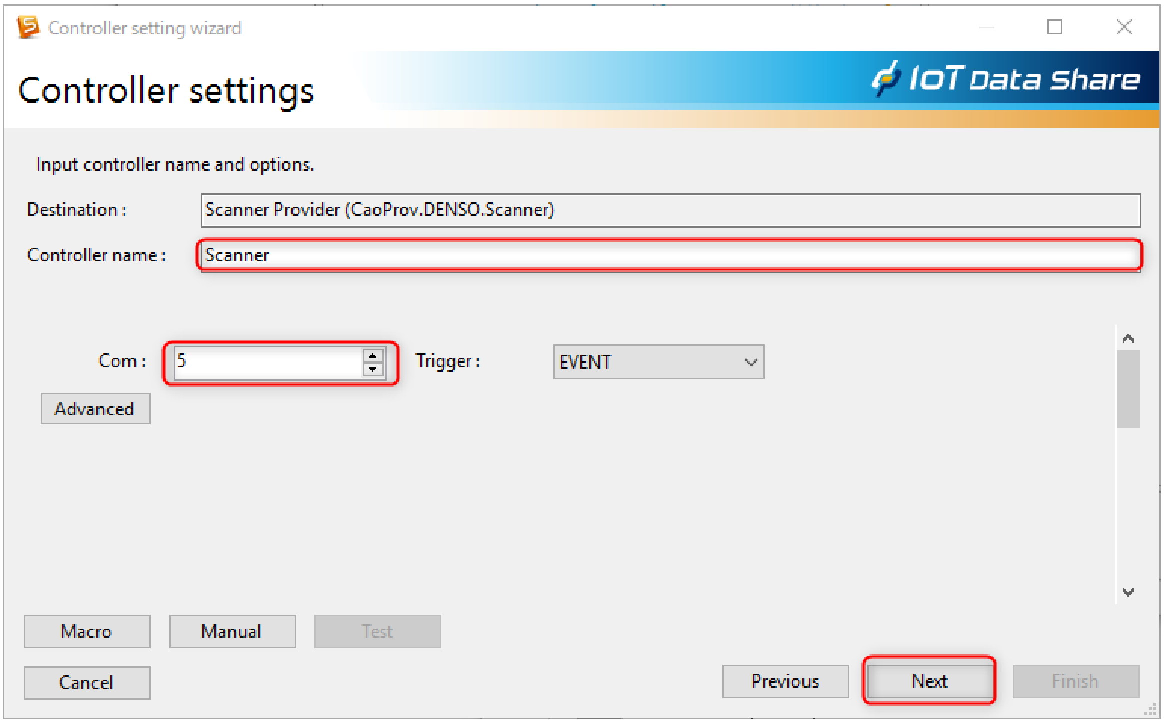
- Recently connected desti
- Manufacturer
  - Alibaba
  - AMADA MIYACHI
  - Amazon
  - Atlas Copco
  - Balluff
  - Basler
  - Baumer
  - Beckhoff Automation
  - BROTHER INDUSTRIE
  - Canon
  - CCS
  - Cognex
  - Dai-ichiSeiko
  - DENSO
  - Digital
  - EPSON
  - ESPEC
  - ETAC
  - Fujitsu
  - FUTABA
  - Google
  - HIOKI E.E.
  - Hitachi Appliances
  - HOKUYO AUTOMATI
  - IAI
  - IBM
  - IDS
  - ifm efector
  - JEMA
  - JSW
  - JTEKT
  - KEBA
  - KEYENCE
  - Koganei
  - Kondo Kagaku

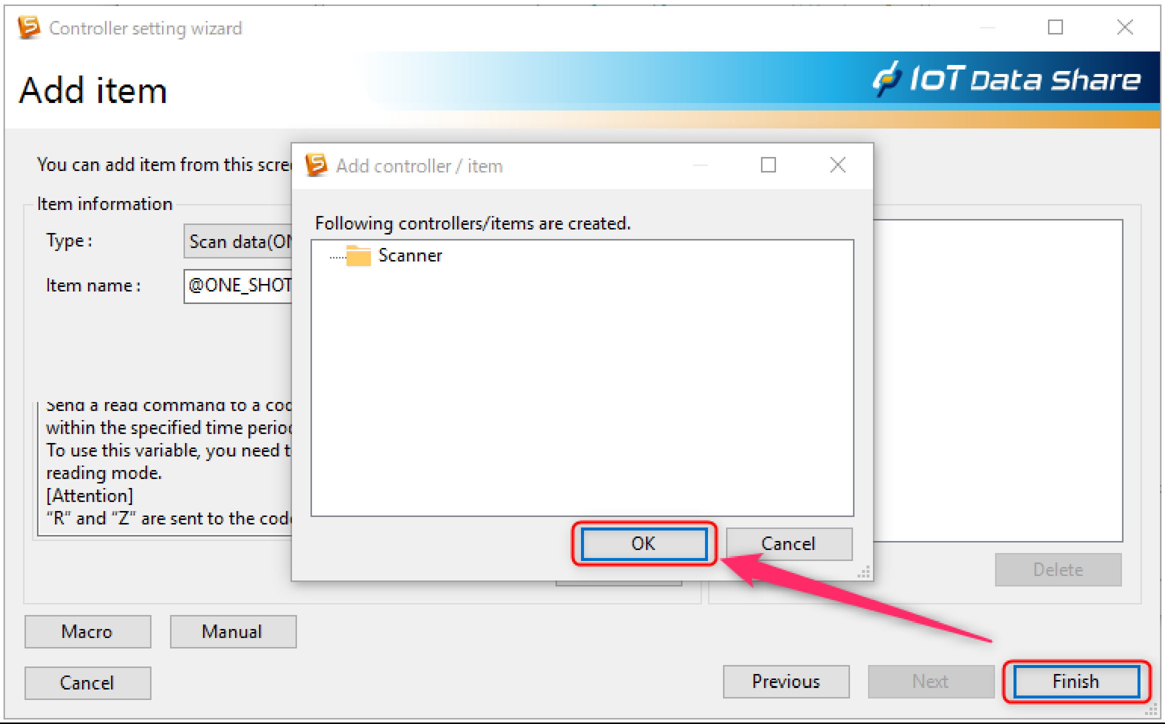
Device category	Manufacturer	Target
Gateway	DENSO	IoT Data Share, IoT Data Server
Gateway	DENSO	IoT Data Share, IoT Data Server
Robot	DENSO	RC7, RC5
Robot	DENSO	RC7, RC5
Robot	DENSO	RC8, VRC
Sensor (Other)	DENSO	FD2 Series
Sensor (Other)	DENSO	PR-450, PR-550, QK12-IC
Sensor (Other)	DENSO	Q-Platform
Sensor (Other)	DENSO	RFID Scanner AN Series
Sensor (Other)	DENSO	RFID Table Scanner UR20 Series
Sensor (Other)	DENSO	RFID Table Scanner UR20 Series
Sensor (Other)	DENSO	RFID VOCS Scanner UR30 Series
Sensor (Other)	DENSO	Scanners (Except RFID)
Sensor (Other)	DENSO	UR40, UR50 Series
HID	DENSO	Teaching pendant

Scanner Provider

A provider designed for scanner of DENSO. All interfaces that have been specified by CAO provider specification (connection parameter, system variable, original expansion) are implemented.

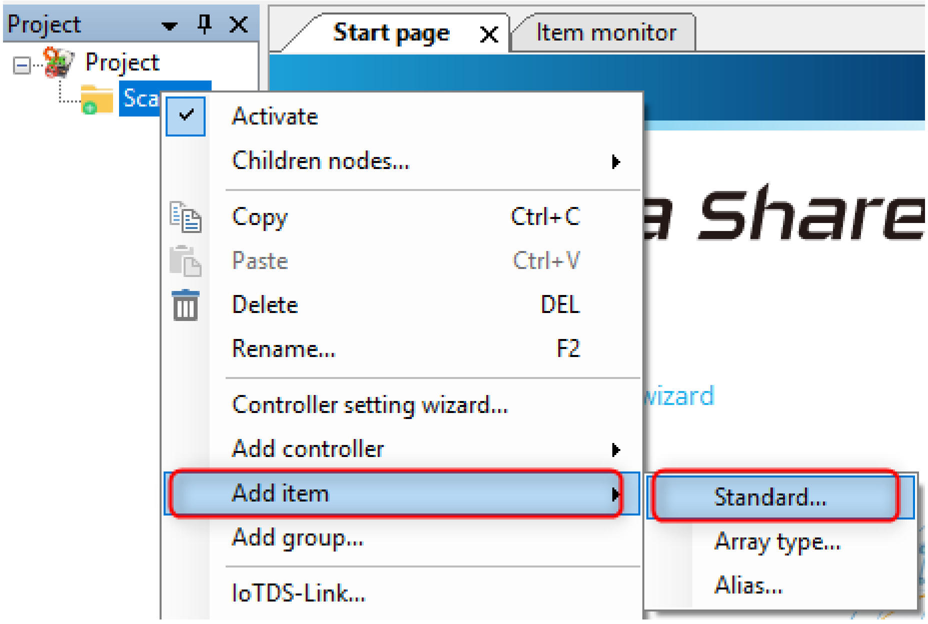
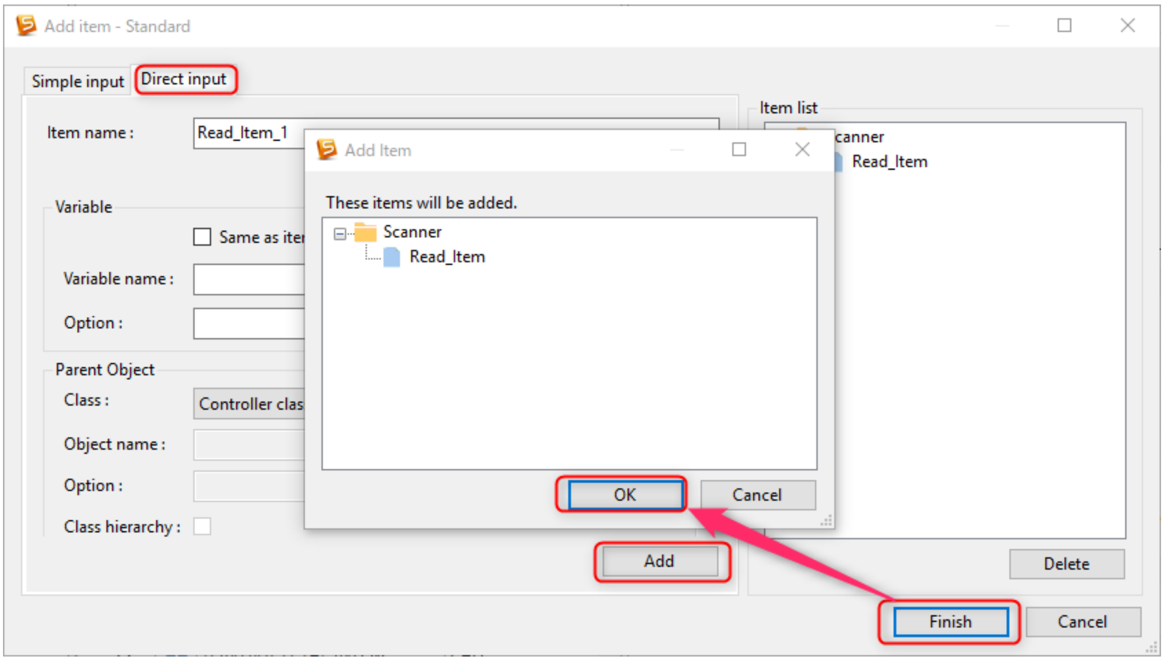
Manual

3	Enter the COM port number confirmed in chapter 1.1.1 in "Port No." and press the "Next" button.1.1.1 Enter an arbitrary name for the controller name. In this case, Scanner is entered.  Input controller name and options. Destination : Scanner Provider (CaoProv.DENSO.Scanner) Controller name : Scanner Com : 5 Trigger : EVENT Controller setting wizard Controller settings IoT Data Share Advanced Macro Manual Test Cancel Previous Next Finish

4	Press the "Finish" button, and then press the "OK" button in the dialog that appears.  Controller setting wizard Add item You can add item from this scre Item information Type : Scan data(ON Item name : @ONE_SHOT Send a read command to a cod within the specified time perio To use this variable, you need t reading mode. [Attention] “R” and “Z” are sent to the cod Add controller / item Following controllers/items are created. Scanner IoT Data Share OK Cancel Delete Macro Manual Cancel Previous Next Finish

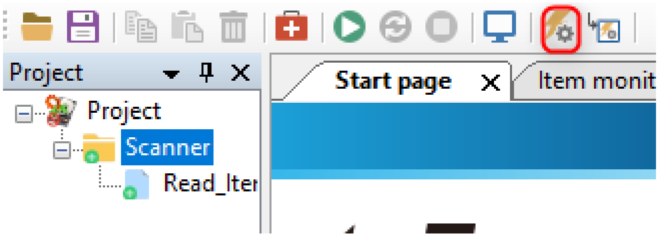
5.2.2. Add Item

Adds an item that stores read data.

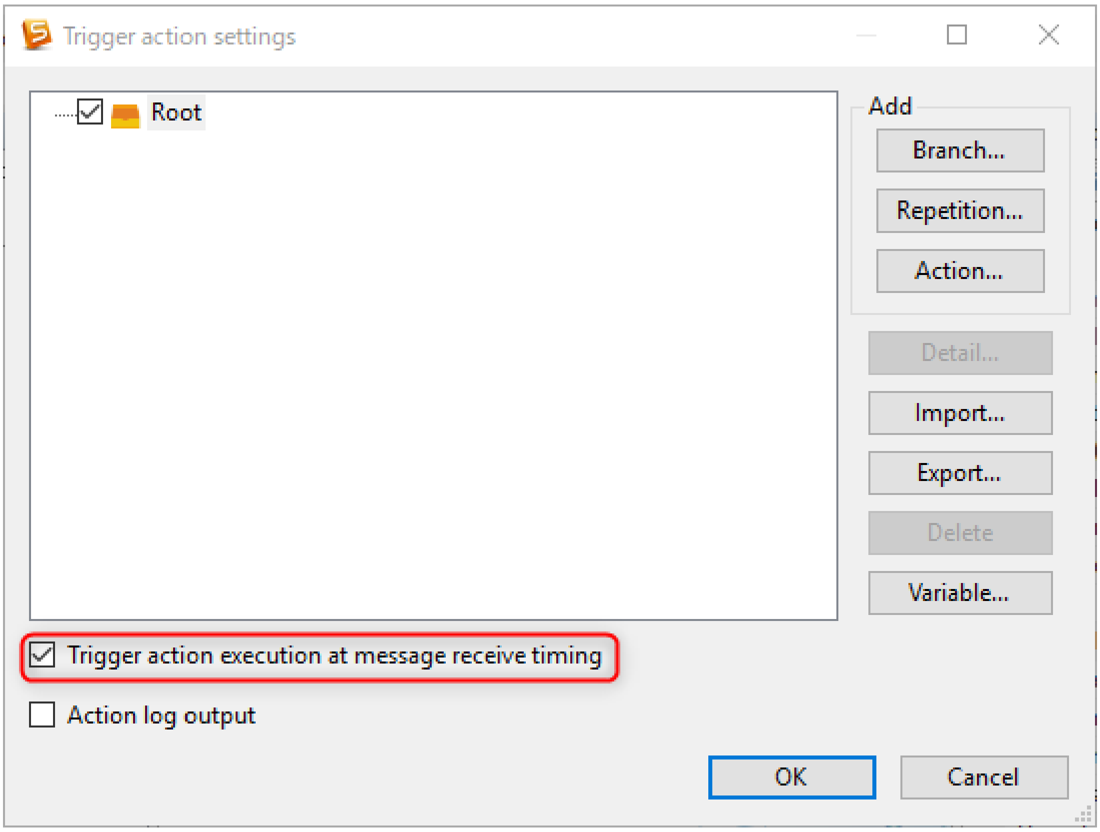
Step	Description
1	5.2.1  Project Project Sca Start page Item monitor a Share wizard Activate Children nodes... Copy Ctrl+C Paste Ctrl+V Delete DEL Rename... F2 Controller setting wizard... Add controller Add item Add group... IoTDS-Link... Standard... Array type... Alias...
2	Select the Direct Input tab, press the Add button, then the Finish button, and then press the OK button in the dialog that appears. Enter any item name for the item name. In the example, Read_Item is entered.  Add item - Standard Item name : Read_Item_1 Class : Controller clas Add Item These items will be added. Scanner Read_Item Simple input Direct input Variable □ Same as ite Variable name : Option : Parent Object Object name : Option : Class hierarchy : □ Item list canner Read_Item OK Cancel Add Delete Finish Cancel

5.2.3. Trigger action setting

Configure the trigger action to store the read data in the items added in Section 5.2.2.5.2.2

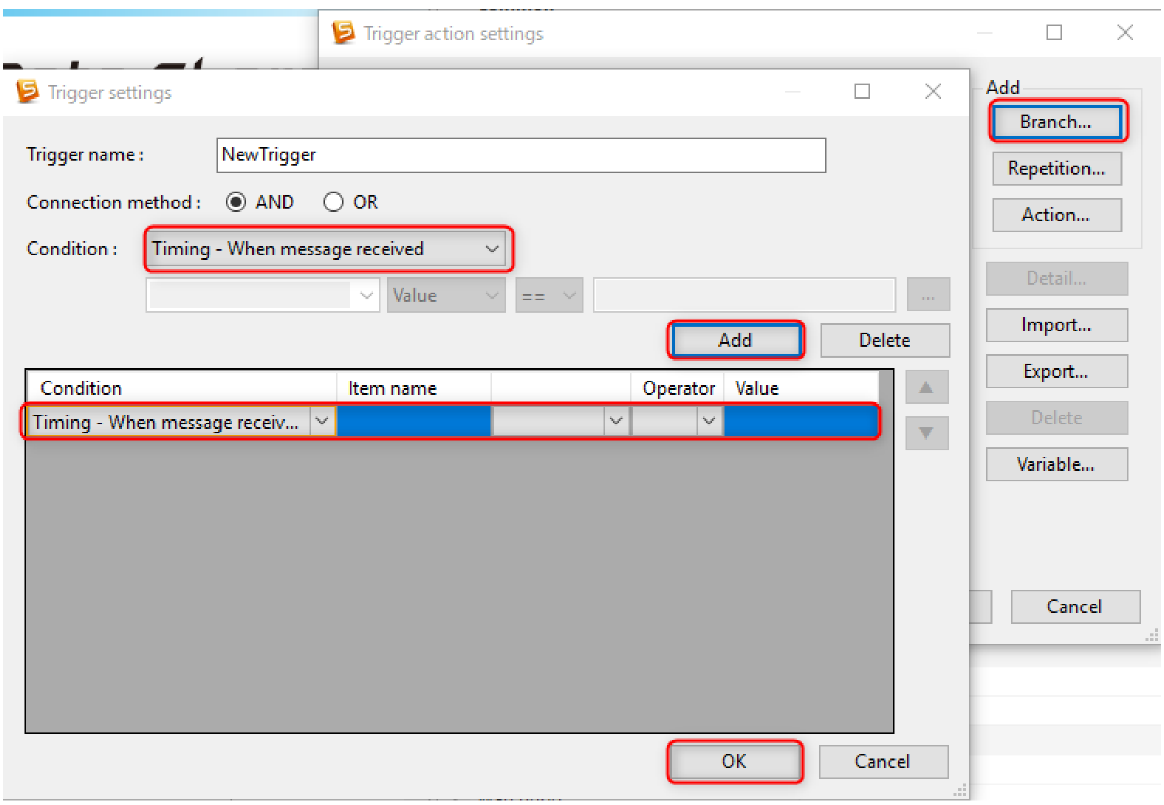
<table>
<tr><th>Step</th><th>Description</th></tr>
<tr><td>1</td><td>Press the red-framed icon on the toolbar.


Project
Project
Scanner
Read_Iter
Start page
Item monit

</td></tr>
<tr><td>2</td><td>Select the "Trigger action execution at message is receive timing" check box.

Trigger action settings
☑ Root
☑ Trigger action execution at message receive timing
☐ Action log output

Add
Branch...
Repetition...
Action...
Detail...
Import...
Export...
Delete
Variable...
OK
Cancel

</td></tr>
<tr><td>3</td><td>Press the Branch button to display the Trigger Setting dialog box.
In this dialog, set the following items and press the Add button followed by the OK button.<table><tr><td>Conditions</td><td>Timing-When message received</td></tr></table></td></tr>
</table>



Trigger settings

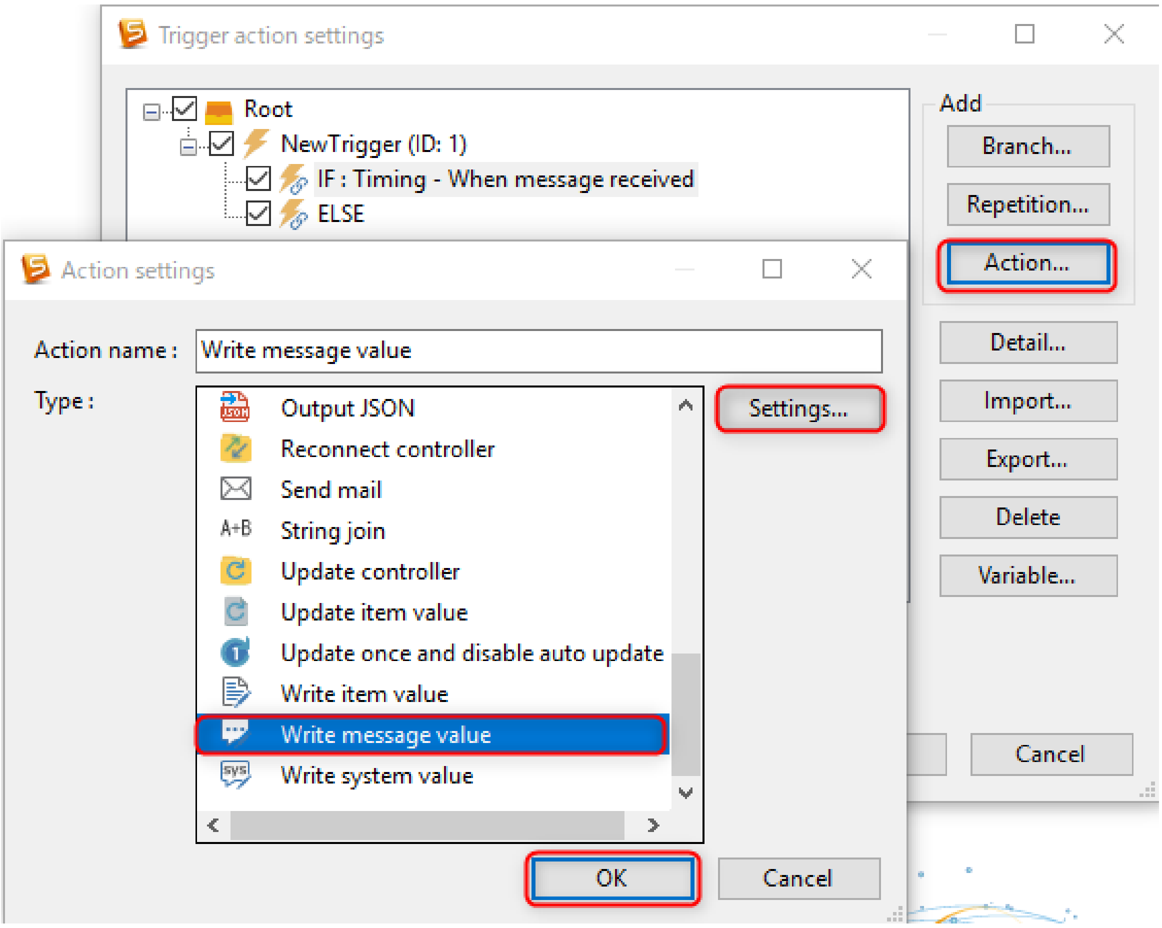
Trigger name : NewTrigger

Connection method : ● AND ○ OR

Condition : Timing - When message received

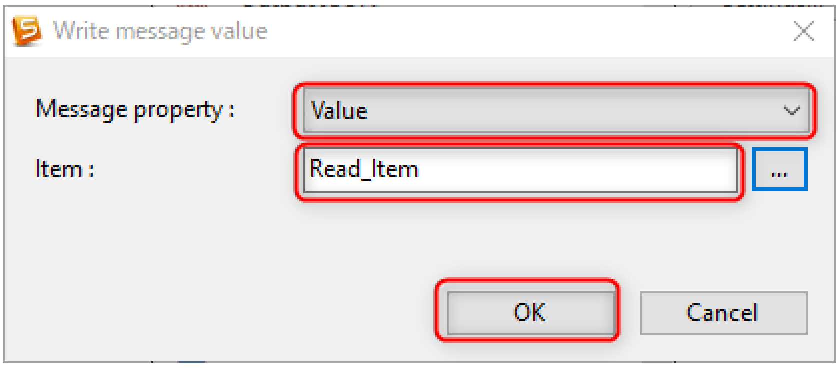
Condition	Item name		Operator	Value
Timing - When message receiv...				

4 Press the Action button, select Write Message Value from the Action Settings dialog box, and then press the Set button.



Action name : Write message value

5 In the message value writing setting, make the settings shown below and press the "OK" button.



Message property : Value

Item : Read_Item

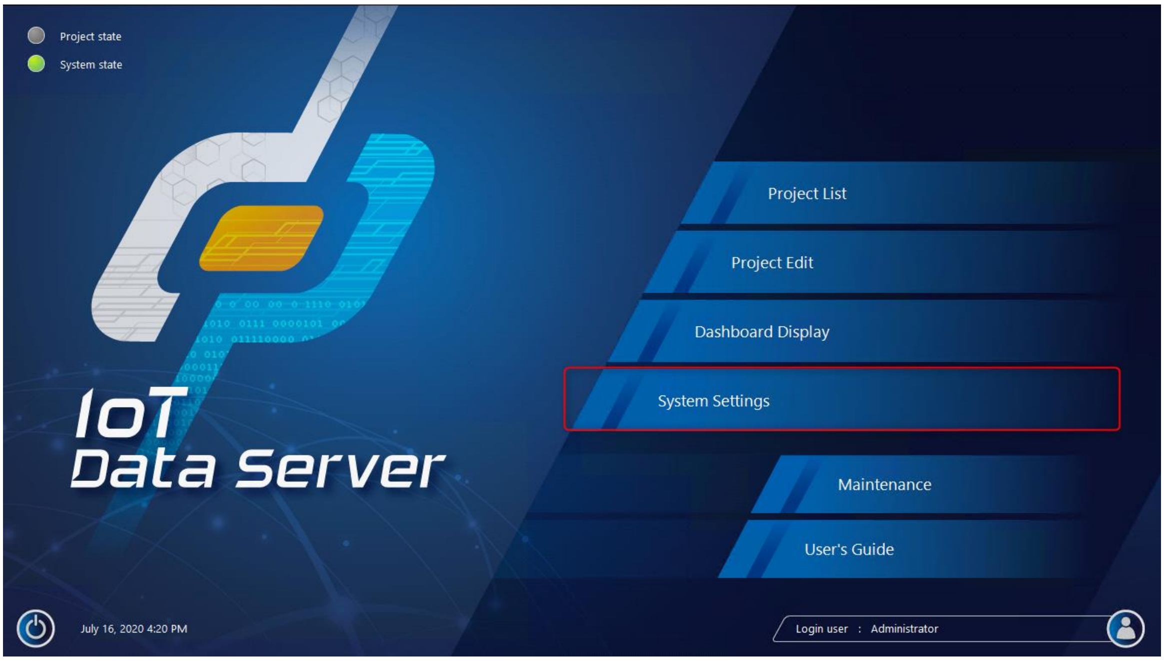
Appendix A. How to Set Up USB-Code Scanners in IoT Data Server

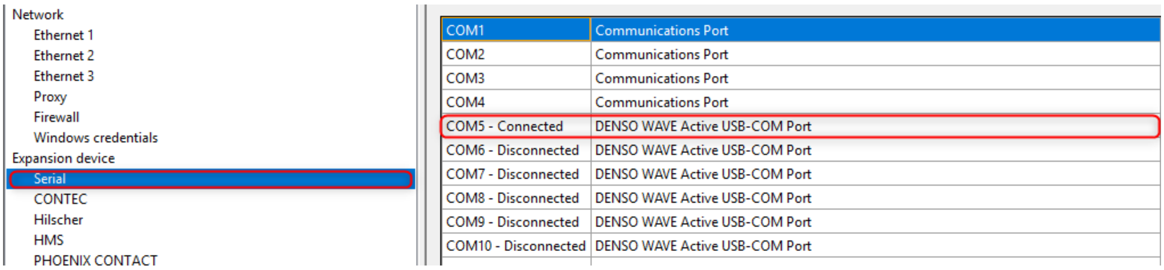
This section describes how to check and set the COM-port number when using Scanner providers in IoT Data Server.

USB-type code scanners can be used with IoT Data Server versions of Version 1 3.0 and later.

Appendix A.1. How to check the COM port number of the USB code scanner

Determine the COM-port number required for AddController.

Step	Description
1	Insert the code scanner into the USB port.
2	Select System Settings from the top screen.  Project state System state IoT Data Server Project List Project Edit Dashboard Display System Settings Maintenance User's Guide July 16, 2020 4:20 PM Login user : Administrator
3	Press "Extended device"-"Serial communication" from the tree on the left to display the COM port number list. From the list, check the COM port number displayed as "COM*-Connected" in "DENSO WAVE Active USB-COM Port". In the illustration below, COM5 are equivalent.

	 Network Ethernet 1 Ethernet 2 Ethernet 3 Proxy Firewall Windows credentials Expansion device Serial CONTEC Hilscher HMS PHOENIX CONTACT COM1 Communications Port COM2 Communications Port COM3 Communications Port COM4 Communications Port COM5 - Connected DENSO WAVE Active USB-COM Port COM6 - Disconnected DENSO WAVE Active USB-COM Port COM7 - Disconnected DENSO WAVE Active USB-COM Port COM8 - Disconnected DENSO WAVE Active USB-COM Port COM9 - Disconnected DENSO WAVE Active USB-COM Port COM10 - Disconnected DENSO WAVE Active USB-COM Port <For RS-232C> RS-232C port and port number are already attached, so see IoT Data Server documentation.

Appendix A.2. How to use with IoT Data Server

In IoT Data Server, Active USB-COM port drivers for the number of USB ports are installed in advance, and when the code scanner is inserted, COM port numbers are temporarily assigned in ascending order. The COM port number is reset when the IoT Data Server is turned off, so if you turn on the power again and insert the code scanner, the port number may change.

Follow the steps below to permanently associate the USB port with the COM port number.

The following procedure is not necessary when connecting to a USB port that has already been assigned a COM port number.

Step	Operation
1	Connect the scanner to the USB with the IoT Data Server powered off.
2	When IoT Data Server is turned on, it restarts several times and recognizes the scanner.
3	On the IoT Data Server top screen, check the [System Settings] - [Serial Communication] screen.
4	[DENSO WAVE Active USB - COM Port (COM **)] Confirm the items that are connected. After that, the confirmed COM number is allocated to the USB port connected in step 1. You can use it by entering the confirmed COM number in the COM port of the Conn option of AddController.

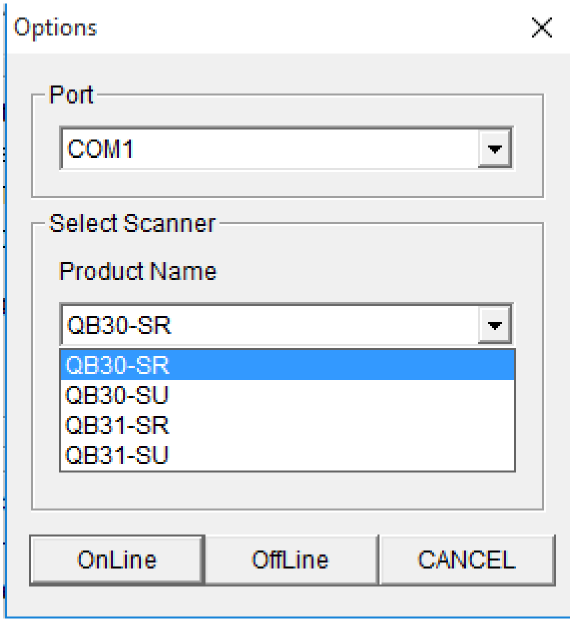
Appendix B. Setting method by code scanner setting software

This appendix uses the code scanner QB30-SR as an example, and the @ONE_SHOT variable with the configuration software (QB Setting) as an example. Table 5-1 lists the products and versions used in this appendix.Table 5-1: Operation check products and versions51

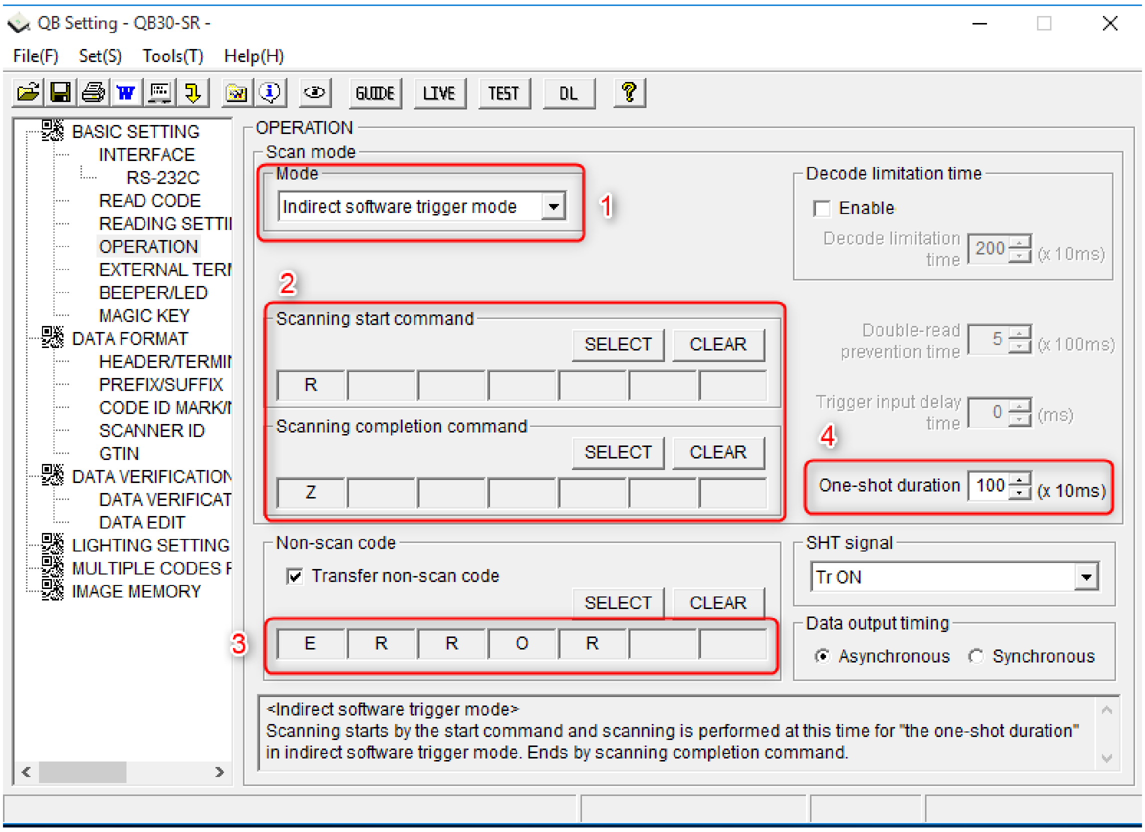
Table 5-1: Operation check products and versions51

Product	Version
QB30-SR	1.19
QB Setting	1.2.1

Appendix B.1. Setting Procedure

Step	Description	
1	Start QB Setting. In the window immediately after startup (see the figure on the right), select the connected COM port number and the type of QB30 device to be connected. Press OnLine to connect to the selected COM port using the device type and display the setting window. Press OffLine to open the settings window for the device type.	 Options Port: COM1 Select Scanner Product Name: QB30-SR QB30-SR QB30-SU QB31-SR QB31-SU OnLine OffLine CANCEL

2



OPERATION

Scan mode

Mode: Indirect software trigger mode

Scanning start command: R

Scanning completion command: Z

Decode limitation time: □ Enable; Decode limitation time 200 (x 10ms)

Double-read prevention time 5 (x 100ms)

Trigger input delay time 0 (ms)

One-shot duration 100 (x 10ms)

Non-scan code: ☑ Transfer non-scan code; E R R O R

SHT signal: Tr ON

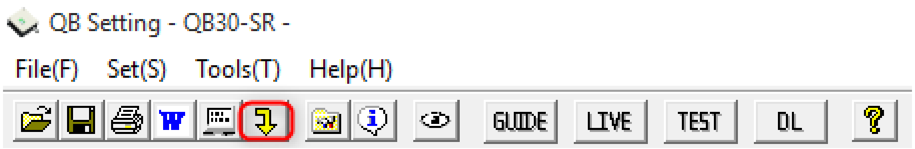
Data output timing: ● Asynchronous ○ Synchronous

<Indirect software trigger mode>
Scanning starts by the start command and scanning is performed at this time for "the one-shot duration" in indirect software trigger mode. Ends by scanning completion command.

Select "Operation" from the tree on the left and set it as shown above.

The overview of each setting item is as follows.

No.	Introduction
1	Scan mode: indirect software trigger mode A mode in which the command can control read start/stop.
2	Scanning start command: R Set the command to be sent as the read start command. For the @ONE_SHOT variable, the read start command is assumed to be R, so set "R" here. Scanning completion command: Z Set the command to be sent as the read stop start command. Since the @ONE_SHOT variable assumes Z as the read stop command, set "Z" here.
3	Non-scan code: Optional Sets the character string to be returned when one-shot time elapses without being able to be read.
4	One-shot duration: Optional This is the time to read after receiving the read start command. If the code cannot be read after this time, the code scanner sends unread code.

5	 QB Setting - QB30-SR - File(F) Set(S) Tools(T) Help(H) GUIDE LIVE TEST DL Press the icon surrounded by a red frame to reflect the setting to QB30-SR.

Appendix B.2. Operation check

Use CaoTester to check the operation in this section.

Step	Description
1	Start CaoTester and set AddController options as follows: AddController: Conn=com:1,Trigger=3,Timeout=1500 Change the Com port number to a number that can be connected. Set Timeout to one-shot time or longer that is set for the code scanner.
2	AddVariable the @ONE_SHOT variable.
3	Place the QR-code in a position where it can be read and GetValue. When read: The scanned content is displayed next to GetValue. If it cannot be read: The unread code set in the code scanner is displayed. ※Unread code is not returned and a timeout error (HRESULT) is returned if it cannot be read in the one-shot time of the code scanner > Timeout optional status of AddController. To use unread codes to determine readability, set Timeout to one-shot time < AddController.