Hitachi appliance Ltd.
Heat shock examination device provider

Version 1.1.3

User's guide

December 30, 2018

Remarks:
This document uses the machine translation.

【 revision history 】

Version	Date	Content
1.1.0	2018-09-28	Add the following variables. @LASTMEAS_SETTING_STATUS @LASTMEAS_SETTING_STATUS_STRING @LASTMEAS_CHECK_STATUS @LASTMEAS_CHECK_STATUS_STRING An optional ..retrying.. frequency is added to the following variables. @MEASUREMENT_STATUS @LASTMEAS_SETTING_STATUS @LASTMEAS_CHECK_STATUS SETTING_STATUS CHECK_STATUS
1.1.1	2018-10-01	The argument of each command of CaoController::Execute can be omitted and correct the becoming it trouble.
1.1.2	2018-10-29	Correct the problem that the memory leak is generated when CaoController is deleted.
1.1.3	2018-11-30	Bug fixed, SETTING_STATUS and CHECK_STATUS. Logic of data acquisition. Objection correction.

【 Operation check model 】

Model name	Firmware version	Notes
ES-207LHS	-	Connection/cutting is repeated for the Web optional substrate device at each communication.

Content

1. Introduction

This book is an user's guide of the HITACHI HeatShock provider that reads data to the heat shock examination device made of Hitachi appliance Ltd..

The HITACHI HeatShock provider is made based on information described in "Optional Ethernet communication.pdf of (90R04187)" of the Hitachi appliance Ltd. making, and connects it with the heat shock examination device by the TCP/IP communication. The heat shock examination device made of Hitachi appliance Ltd. is named a heat shock examination device at the following, and the provider is named HeatShock provider.

The underFigure1-1However, it becomes a whole of device block diagram with [hon] provider.

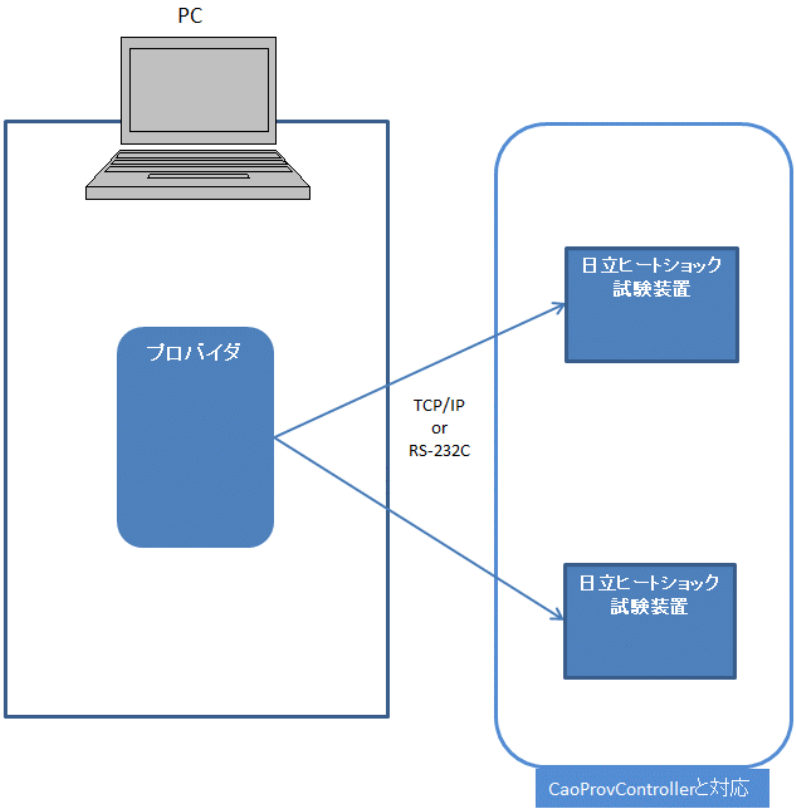


Figure1-1Whole block diagram

Moreover, figure where this provider and correspondence each device were shown is the under. Figure1-2It becomes it.

(* It is one example. It is not because everything is shown.)

Figure1-2HeatShock provider and figure for data of Hitachi heat shock examination device

1.1. Environment and version that this book assumes

Client PC operates on Windows, and the targeted testing set assumes the environment that Ethernet connection is possible. The development setting of PC can be developed in case of the programming environment that supports Component Object Model (COM and Component Object Model).

1.2. Source that becomes reference

C++ and Java though all the programming cases with this book have been described with Visual Basic 6.0 . It is possible to develop in various program languages such as NET. Refer to "ORiN2 programming guide" for use.

"ORiN 2 programming guide" corresponds to the following files of the ORiN2 SDK installation folder.

- ORiN2¥CAO¥Doc¥ORiN2_ProgrammersGuide_<lang>.pdf

- Replace with the language character string of each environment and read the part of < lang >.

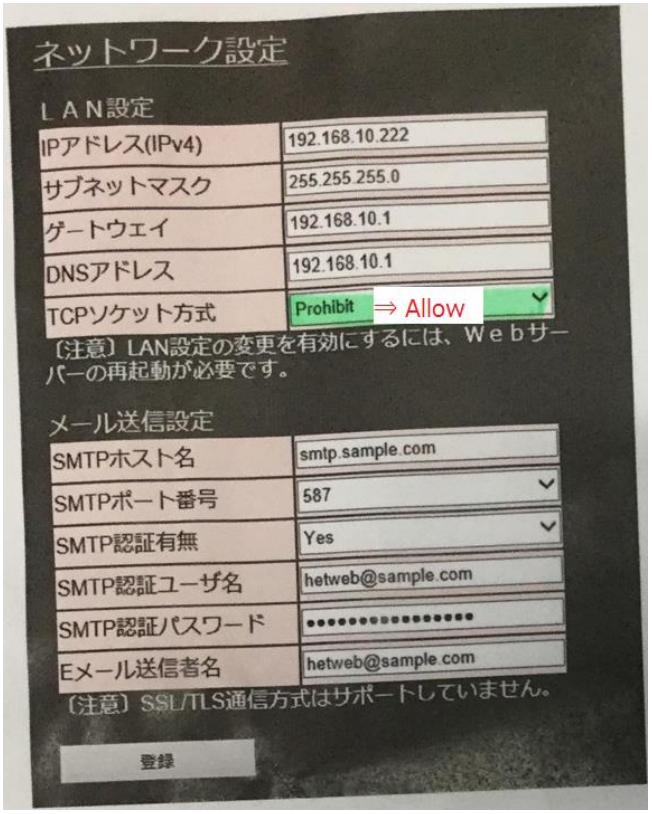
ORiN2 needed in developing the application that uses the provider and COM/DCOM are explained while exchanging the example for basic knowledge and the technology.

2. Environmental setup for application development

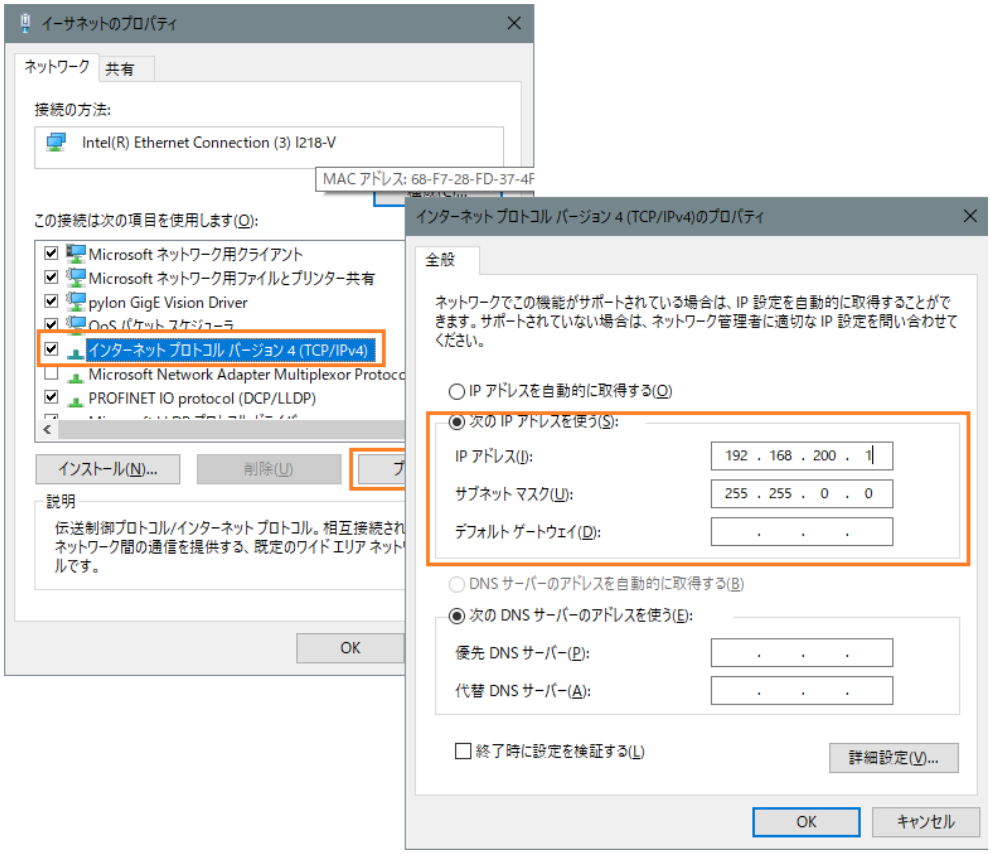
2.1. Connection of heat shock examination device and client PC

The procedure for connecting client PC with the Hitachi environmental examination device by TCP/IP is described.

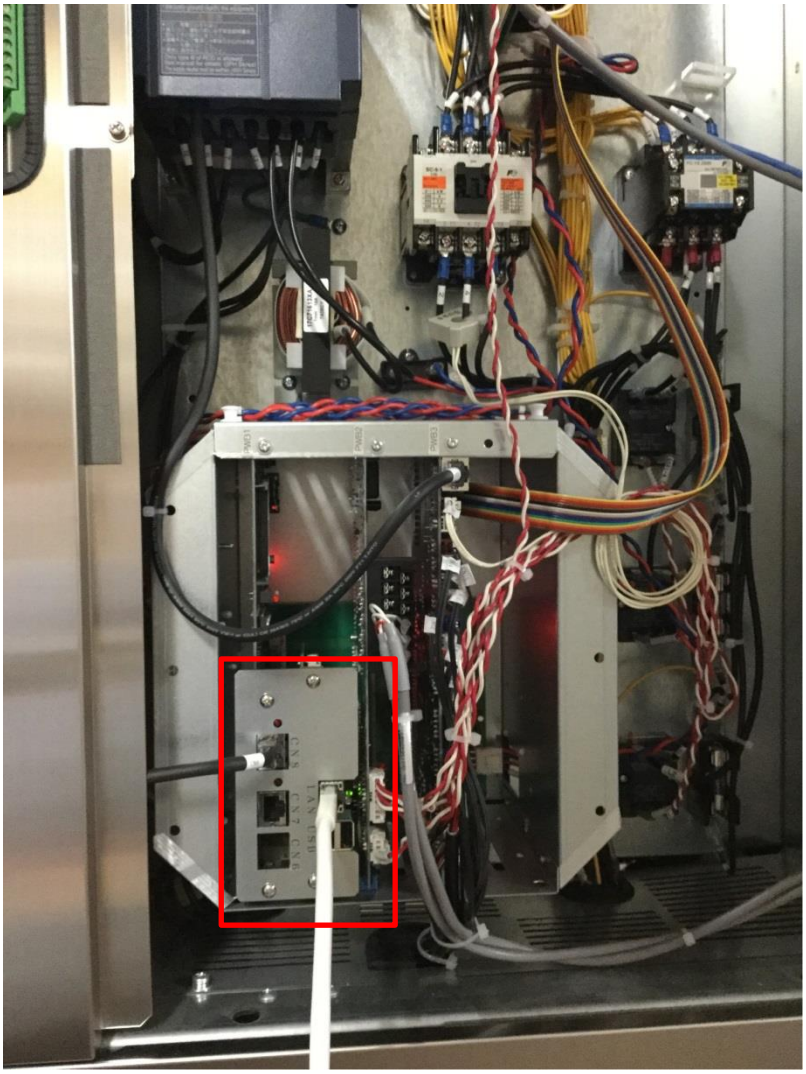
1. Input Allow to the TCP socket method of LAN setting → described in "Environmental examination device Web interface quick start guide" and reactivate.



2. Execute Internet portal site version 4(TCP/Ipv4) → property button from the property in the communication port to be used on client PC, and set Internet Protocol address and the subnet mask according to the network transmission setting of the heat shock examination device.



3. A right side of the heat shock examination device is opened, and connect a part of LAN cable with LAN port, and connect another edge with LAN port of client PC as shown in the figure below.



2.2. Setup of PC development setting

2.2.1. Manual installation of HeatShock provider

The HeatShock provider is executed, and start the command prompt by the manager authority, and execute the regsvr32 command when you register the registry by hand power.

Table2-1HeatShock provider

File name	CaoProvHITACHIHeatShock.dll
ProgID	CaoProv.HITACHI.HeatShock
Registry registration	regsvr32 CaoProvHITACHIHeatShock.dll

Blotting out of registry registration	regsvr32 /u CaoProvHITACHIHeatShock.dll

3. Command reference

3.1. Command list

Table3-1Command list

Category	Method/property	Function	Reference
CaoWorkspace	AddController	Connect it with the controller.	P.11
CaoController	AddVariable	Connect it with the user system variable.	P.13
	GetVariableNames	Acquisition of list of user system variable	P.14
	Execute	Execution of command being mounted by controller class	P.14
CaoVariable	get_Value	Acquisition of value	P.22
	put_Value	Setting of value	P.22

3.2. Method property

3.2.1. CaoWorkspace::AddController method

Generate the Controller object.

Optional, each specify information to connect it with the device.

The specification of AddController is shown as follows.

Format

```
AddController
(
        "< controller name >"          // Controller name (arbitrariness)
        "CaoProv.HITACHI.HeatShock",   // Provider name (fixation)
        "< machine name >"             // Provider execution machine name (unused)
        "< option >"                   // Optional character string
)
```

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

Table3-2Optional character string of CaoWorkspace::AddController

Option	Indispensability	Explanation	Range of value	Default value
Conn=com:<Port No>	✓[1]	Match the COM port number	-	Baud

[1] Com, ETH のどちらか必須.

Option	Indispensability	Explanation	Range of value	Default value
[:< baud rate >:< parity >:< data bit >:< stop bit >]		of the connection destination to the environment and specify it.		rate: 9600 Parity: NONE Number of data bits: 7bit Number of stop bits: 1bit
CONN=ETH:<IP>:[<Port>]	✓[1]	Match Internet Protocol address and the port of the connection destination to the environment and specify it.	-	Port: 50000
Timeout=< Sending and receiving time-out time >	-	Set sending and receiving time-out time ms.	1000 -	1000
Delimiter=< delimiter >	-	[2] Specify the delimiter used by the communication.	0:CR+LF 1:CR 2:LF	1
Board=< Communication substrate >	-	Specify the communicated substrate.	0:Excluding the following 1:Web optional substrate	0
RetryInterval=<Interval retrying >	-	Specify rest time (ms) until it is retried to fail in the communication.	0 - 10000	250

[2] CONN オプションで ETH を指定した場合，指定の有無に関わらずデフォルト値が適用されます.

Option	Indispensability	Explanation	Range of value	Default value
Retry=<retrying frequency>	-	Specify the maximum value of the retrial frequency when it fails in the communication.	0 - 50	4
Delay=<Transmission DeLay time>	-	Set DeLay time between each communication ms.	0 or more	250

Usage example

```
AddController("Controller","CaoProv.HITACHI.HeatShock","HeatShock","CONN=ETH:192.168.0.1,Timeout=1000,
Delimiter=1,Board=0")
```

3.2.2. CaoController::AddVariable method

Generate the CaoVariable object from CaoController. To the variable identifierTable3-4Only the shown [ni] variable identifier can be used.

The specification of AddVariable is shown as follows.

Format

```
AddVariable
(
        "< variable identifier >"               // Variable identifier
        "< option >"            // Optional character string
)
```

There is no variable that can specify the option in the HeatShock provider.

Usage example

```
AddVariable("MEASUREMENT_STATUS", "")
// Add the measured variable.
```

3.2.3. CaoController::GetVariableNames method

Acquire the list of the variable identifier and the system variable identifier that can be specified by the AddVariable method.

3.2.4. CaoController::Execute method

Execute the method with Controller.
Specify a necessary argument for the argument for the method.

The specification of Execute is shown as follows.

Format

```
Execute
(
        "< method name >" // Method name
        "< argument >"            // Argument
)
```

The method list that can be specified with Execute is shown as follows.

Table3-3CaoController::Execute method list

Method name	Explanation	Reference
GetMeasurementStatus	Acquire the measurement.	P.15
GetMeasurementStatusString	Acquire the life value (character string) in which the measurement is obtained because of the communication.	P.16
GetLastMeasSettingStatus	Acquire the setting of the pattern number acquired while measured immediately before.	P.16
GetLastMeasSettingStatusString	Acquire the setting of the pattern number acquired while measured immediately before in the life value (character string) obtained because of the communication.	P.17
GetSettingStatus	Acquire the setting.	P.18
GetSettingStatusString	Acquire the setting in the life value	P.19

	(character string) obtained because of the communication.	
GetLastMeasCheckStatus	Acquire the confirmation of the pattern number acquired while measured immediately before.	P.19
GetLastMeasCheckStatusString	Acquire the confirmation of the pattern number acquired while measured immediately before in the life value (character string) obtained because of the communication.	P.20
GetCheckStatus	Acquire the confirmation.	P.21
GetCheckStatusString	Acquire the confirmation in the life value (character string) obtained because of the communication.	P.22

3.2.4.1. GetMeasurementStatus

Acquire the measurement.

Item	Type explanation			
vntParam	VT_I4			A mode of receive data abnormality (0x80110007) specifies the frequency retrying ..generation... It is possible to omit it. Range of value: 0 - 50 Default value: 4
pVal	VT_ARRAY | VT_I4			
		0	VT_I4	The pattern number is returned.
		1	VT_I4	The examination area is returned. 0:Low temperature and 1: Normal temperature and 2: High temperature
		2	VT_I4	The measurement examination room temperature degree is returned.
		3	VT_I4	The measurement preheating temperature is returned.
		4	VT_I4	Measurement [**] cool temperate degree is returned.
		5	VT_I4	The passage examination time is returned.
		6	VT_I4	Passage cycle number is returned.
		7	VT_I4	Passage defrosting cycle number is returned.
		8	VT_I4	The state of the device is returned.

		9	VT_I4	The preparation driving is returned. 0:1 excluding the preparation driving: the preparation driving and 2: The preparation completion.
		10	VT_I4	The defrosting driving is returned. 0:1 excluding the defrosting driving: The defrosting driving.
		11	VT_I4	The examination completion is returned. 0:Incomplete examination and 1: Examination completion
		12	VT_I4	The door openness is returned. 0:[Tobirahei] and 1: [Tobirahira]
		13	VT_I4	The alarm number is returned.

Usage example

```
Dim vArray() As Long
vArray = caoController.Execute("GetMeasurementStatus")
```

3.2.4.2. GetMeasurementStatusString

Acquire the measurement in the life value (character string) obtained because of the communication.

Item	Type explanation	
vntParam	None	
pVal	VT_BSTR	The measurement state character string is returned.

Usage example

```
Dim vValue As String
vValue = caoController.Execute("GetMeasurementStatusString")
```

3.2.4.3. GetLastMeasSettingStatus

Acquire the setting of the pattern number acquired while measured immediately before. Acquire the setting of pattern number 1 when you never acquire the measurement.

Item	Type explanation	
vntParam	VT_I4	A mode of receive data abnormality (0x80110007) specifies the frequency retrying ..generation... It is possible to omit it. Range of value: 0 - 50 Default value: 4

pVal	VT_ARRAY | VT_I4		
	0	VT_I4	The pattern number is returned.
	1	VT_I4	The examination area is returned. 0:Low temperature and 1: Normal temperature and 2: High temperature
	2	VT_I4	The set examination room temperature degree is returned.
	3	VT_I4	The set preheating temperature is returned.
	4	VT_I4	The set [**] cool temperate degree is returned.
	5	VT_I4	The set examination time is returned.
	6	VT_I4	Set cycle number is returned.
	7	VT_I4	Set defrosting cycle number is returned.
	8	VT_I4	The state of the device is returned.
	9	VT_I4	The preparation driving is returned. 0:1 excluding the preparation driving: the preparation driving and 2: The preparation completion.
	10	VT_I4	The defrosting driving is returned. 0:1 excluding the defrosting driving: The defrosting driving.
	11	VT_I4	The examination completion is returned. 0:Incomplete examination and 1: Examination completion
	12	VT_I4	The door openness is returned. 0:[Tobirahei] and 1: [Tobirahira]
	13	VT_I4	The alarm number is returned.

Usage example

```
Dim vArray() As Long
vArray = caoController.Execute("GetLastMeasSettingStatus")
```

3.2.4.4. GetLastMeasSettingStatusString

Acquire the setting of the pattern number acquired while measured immediately before in the life value (character string) obtained because of the communication. Acquire the setting of pattern number 1 when you never acquire the measurement.

Item	Type explanation	
vntParam	None	
pVal	VT_BSTR	The set state character string is returned.

Usage example

```
Dim vValue As String
vValue = caoController.Execute("GetLastMeasSettingStatusString")
```

3.2.4.5. GetSettingStatus

Acquire the setting.

Item	Type explanation			
vntParam	VT_ARRAY | VT_I4			
		0	VT_I4	Specify the pattern number.
		1	VT_I4	A mode of receive data abnormality (0x80110007) specifies the frequency retrying ..generation... It is possible to omit it. Range of value: 0 - 50 Default value: 4
pVal	VT_ARRAY | VT_I4			
		0	VT_I4	The pattern number is returned.
		1	VT_I4	The examination area is returned. 0:Low temperature and 1: Normal temperature and 2: High temperature
		2	VT_I4	The set examination room temperature degree is returned.
		3	VT_I4	The set preheating temperature is returned.
		4	VT_I4	The set [**] cool temperate degree is returned.
		5	VT_I4	The set examination time is returned.
		6	VT_I4	Set cycle number is returned.
		7	VT_I4	Set defrosting cycle number is returned.
		8	VT_I4	The state of the device is returned.
		9	VT_I4	The preparation driving is returned. 0:1 excluding the preparation driving: the preparation driving and 2: The preparation completion.
		10	VT_I4	The defrosting driving is returned. 0:1 excluding the defrosting driving: The defrosting driving.
		11	VT_I4	The examination completion is returned. 0:Incomplete examination and 1: Examination completion

		12	VT_I4	The door openness is returned. 0:[Tobirahei] and 1: [Tobirahira]
		13	VT_I4	The alarm number is returned.

Usage example

```
Dim vArray() As Long
vArray = caoController.Execute("GetSettingStatus", 1)
```

3.2.4.6. GetSettingStatusString

Acquire the setting in the life value (character string) obtained because of the communication.

Item	Type explanation	
vntParam	VT_I4	Specify the pattern number.
pVal	VT_BSTR	The set state character string is returned.

Usage example

```
Dim vValue As String
vValue = caoController.Execute("GetSettingStatusString", 1)
```

3.2.4.7. GetLastMeasCheckStatus

Acquire the confirmation of the pattern number acquired while measured immediately before. Acquire the confirmation of pattern number 1 when you never acquire the measurement.

Item	Type explanation			
vntParam	VT_I4			A mode of receive data abnormality (0x80110007) specifies the frequency retrying ..generation... It is possible to omit it. Range of value: 0 - 50 Default value: 4
pVal	VT_ARRAY | VT_I4			
		0	VT_I4	The pattern number is returned.
		1	VT_I4	The examination area is returned. 0:Low temperature and 1: Normal temperature and 2: High temperature
		2	VT_I4	The set examination room temperature degree is returned.
		3	VT_I4	The set preheating temperature is returned.

		4	VT_I4	The set [**] cool temperate degree is returned.
		5	VT_I4	The set examination time is returned.
		6	VT_I4	Set cycle number is returned.
		7	VT_I4	Set defrosting cycle number is returned.
		8	VT_I4	The state of the device is returned.
		9	VT_I4	The preparation driving is returned. 0:1 excluding the preparation driving: the preparation driving and 2: The preparation completion.
		10	VT_I4	The defrosting driving is returned. 0:1 excluding the defrosting driving: The defrosting driving.
		11	VT_I4	The examination completion is returned. 0:Incomplete examination and 1: Examination completion
		12	VT_I4	The door openness is returned. 0:[Tobirahei] and 1: [Tobirahira]
		13	VT_I4	The alarm number is returned.

Usage example

```
Dim vArray() As Long
vArray = caoController.Execute("GetLastMeasCheckStatus")
```

3.2.4.8. GetLastMeasCheckStatusString

Acquire the confirmation of the pattern number acquired while measured immediately before in the life value (character string) obtained because of the communication. Acquire the confirmation of pattern number 1 when you never acquire the measurement.

Item	Type explanation	
vntParam	None	
pVal	VT_BSTR	The set state character string is returned.

Usage example

```
Dim vValue As String
vValue = caoController.Execute("GetLastMeasCheckStatusString")
```

3.2.4.9. GetCheckStatus

Acquire the confirmation.

Item	Type explanation			
vntParam	VT_ARRAY | VT_I4			
		0	VT_I4	Specify the pattern number.
		1	VT_I4	A mode of receive data abnormality (0x80110007) specifies the frequency retrying ..generation... It is possible to omit it. Range of value: 0 - 50 Default value: 4
pVal	VT_ARRAY | VT_I4			
		0	VT_I4	The pattern number is returned.
		1	VT_I4	The examination area is returned. 0:Low temperature and 1: Normal temperature and 2: High temperature
		2	VT_I4	The set examination room temperature degree is returned.
		3	VT_I4	The set preheating temperature is returned.
		4	VT_I4	The set [**] cool temperate degree is returned.
		5	VT_I4	The set examination time is returned.
		6	VT_I4	Set cycle number is returned.
		7	VT_I4	Set defrosting cycle number is returned.
		8	VT_I4	The state of the device is returned.
		9	VT_I4	The preparation driving is returned. 0:1 excluding the preparation driving: the preparation driving and 2: The preparation completion.
		10	VT_I4	The defrosting driving is returned. 0:1 excluding the defrosting driving: The defrosting driving.
		11	VT_I4	The examination completion is returned. 0:Incomplete examination and 1: Examination completion
		12	VT_I4	The door openness is returned. 0:[Tobirahei] and 1: [Tobirahira]
		13	VT_I4	The alarm number is returned.

Usage example

```
Dim vArray() As Long
vArray = caoController.Execute("GetCheckStatus", 1)
```

3.2.4.10. GetCheckStatusString

Acquire the confirmation in the life value (character string) obtained because of the communication.

Item	Type explanation	
vntParam	VT_I4	Specify the pattern number.
pVal	VT_BSTR	The confirmation state character string is returned.

Usage example

```
Dim vValue As String
vValue = caoController.Execute("GetCheckStatusString", 1)
```

3.2.5. CaoVariable::get_Value method

Acquire the value of the variable that corresponds to the object.
The mounting situation and the data type of the variable are "Table3-4Refer to".

3.2.6. CaoVariable::put_Value method

Set the value to the variable that corresponds to the object.
The mounting situation and the data type of the variable are "Table3-4Refer to".

3.3. Variable list

3.3.1. Controller class

The variable list that can be used in the CaoController class is shown below.

Table3-4Controller class variable list

Variable identifier	Data type	Explanation	Value	
			get	put
@MAKER_NAME	VT_BSTR	Acquire the acquisition of the manufacturer name.	○	-
@VERSION	VT_BSTR	Acquire the version of DLL.	○	-
@MEASUREMENT_STATUS	VT_ARRAY | VT_I4	Acquire it while measured.	○	-

@MEASUREMENT_STATUS_STRING	VT_BSTR	Acquire the measurement of the life value (character string) obtained because of the communication.	○	-
@LASTMEAS_SETTING_STATUS	VT_ARRAY | VT_I4	Acquire the setting of the pattern number acquired while measured immediately before.	○	-
@LASTMEAS_SETTING_STATUS_STRING	VT_BSTR	Acquire the setting of the pattern number acquired while measured immediately before in the life value (character string) obtained because of the communication.	○	-
@LASTMEAS_CHECK_STATUS	VT_ARRAY | VT_I4	Acquire the confirmation of the pattern number acquired while measured immediately before.	○	-
@LASTMEAS_CHECK_STATUS_STRING	VT_BSTR	Acquire the confirmation of the pattern number acquired while measured immediately before in the life value (character string) obtained because of the communication.	○	-
SETTING_STATUS	VT_ARRAY | VT_I4	Set acquisition	○	-
SETTING_STATUS_STRING	VT_BSTR	Acquire the setting of the life value (character string) obtained because of the communication.	○	-
CHECK_STATUS	VT_ARRAY | VT_I4	Confirmed acquisition	○	-
CHECK_STATUS_STRING	VT_BSTR	Acquire the confirmation of the life value (character string) obtained because of the communication.	○	-

3.3.1.1. @MAKER_NAME

Acquire the manufacturer name.

Data type

Type explanation	
VT_BSTR	Acquire the manufacturer name.

Usage example

```
Dim makerName As CaoVariable
Set makerName = controller.AddVariable("@MAKER_NAME")

Dim makerNameValue As String
makerNameValue = makerName.Value
```

3.3.1.2. @VERSION

Acquire the version of DLL.

Data type

Type explanation	
VT_BSTR	Acquire the version of DLL.

Usage example

```
Dim version As CaoVariable
Set version = controller.AddVariable("@VERSION")

Dim versionValue As String
versionValue = version.Value
```

3.3.1.3. @MEASUREMENT_STATUS

Acquire it while measured.

Option

Option	Indispensability	Explanation	Range of value	Default value
Retry	--	..retrying.. frequency when a mode of receive data abnormality (0x80110007) is generated is specified.	0 - 50	4

Data type

Type explanation			
VT_ARRAY | VT_I4			
	0	VT_I4	The pattern number is returned.
	1	VT_I4	The examination area is returned. 0:Low temperature and 1: Normal temperature and 2: High temperature
	2	VT_I4	The measurement examination room temperature degree is returned.
	3	VT_I4	The measurement preheating temperature is returned.
	4	VT_I4	Measurement [**] cool temperate degree is returned.
	5	VT_I4	The passage examination time is returned.
	6	VT_I4	Passage cycle number is returned.
	7	VT_I4	Passage defrosting cycle number is returned.
	8	VT_I4	The state of the device is returned.
	9	VT_I4	The preparation driving is returned. 0:1 excluding the preparation driving: the preparation driving and 2: The preparation completion.
	10	VT_I4	The defrosting driving is returned. 0:1 excluding the defrosting driving: The defrosting driving.
	11	VT_I4	The examination completion is returned. 0:Incomplete examination and 1: Examination completion
	12	VT_I4	The door openness is returned. 0:[Tobirahei] and 1: [Tobirahira]
	13	VT_I4	The alarm number is returned.

Usage example

```
Dim measurement As CaoVariable
Set measurement = controller.AddVariable("@MEASUREMENT_STATUS")

Dim measurementValue() As Long
measurementValue = measurement.Value
```

3.3.1.4. @MEASUREMENT_STATUS_STRING

Data type

Type explanation

VT_BSTR	The measurement state character string is returned.

Usage example

```
Dim measurementStr As CaoVariable
Set measurementStr = controller.AddVariable("@MEASUREMENT_STATUS_STRING")

Dim measurementValue As String
measurementValue = measurementStr.Value
```

3.3.1.5. @LASTMEAS_SETTING_STATUS

Acquire the setting of the pattern number acquired while measured immediately before. Acquire the setting of pattern number 1 when you never acquire the measurement.

Option

Option	Indispensability	Explanation	Range of value	Default value
Retry	--	..retrying.. frequency when a mode of receive data abnormality (0x80110007) is generated is specified.	0 - 50	4

Data type

Type explanation			
VT_ARRAY | VT_I4			
	0	VT_I4	The pattern number is returned.
	1	VT_I4	The examination area is returned. 0:Low temperature and 1: Normal temperature and 2: High temperature
	2	VT_I4	The set examination room temperature degree is returned.
	3	VT_I4	The set preheating temperature is returned.
	4	VT_I4	The set [**] cool temperate degree is returned.
	5	VT_I4	The set examination time is returned.
	6	VT_I4	Set cycle number is returned.
	7	VT_I4	Set defrosting cycle number is returned.
	8	VT_I4	The state of the device is returned.

	9	VT_I4	The preparation driving is returned. 0:1 excluding the preparation driving: the preparation driving and 2: The preparation completion.
	10	VT_I4	The defrosting driving is returned. 0:1 excluding the defrosting driving: The defrosting driving.
	11	VT_I4	The examination completion is returned. 0:Incomplete examination and 1: Examination completion
	12	VT_I4	The door openness is returned. 0:[Tobirahei] and 1: [Tobirahira]
	13	VT_I4	The alarm number is returned.

Usage example

```
Dim lastMeasSetting As CaoVariable
Set lastMeasSetting = controller.AddVariable("@LASTMEAS_SETTING_STATUS")

Dim lastMeasSettingValue() As Long
lastMeasSettingValue = lastMeasSetting.Value
```

3.3.1.6. @LASTMEAS_SETTING_STATUS_STRING

Acquire the setting of the pattern number acquired while measured immediately before in the life value (character string) obtained because of the communication. Acquire the setting of pattern number 1 when you never acquire the measurement.

Data type

Type explanation	
VT_BSTR	The set state character string is returned.

Usage example

```
Dim lastMeasSettingStr As CaoVariable
Set lastMeasSettingStr = controller.AddVariable("@LASTMEAS_SETTING_STATUS_STRING")

Dim lastMeasSettingValue As String
lastMeasSettingValue = lastMeasSettingStr.Value
```

3.3.1.7. @LASTMEAS_CHECK_STATUS

Acquire the confirmation of the pattern number acquired while measured immediately before. Acquire

the confirmation of pattern number 1 when you never acquire the measurement.

Option

Option	Indispensability	Explanation	Range of value	Default value
Retry	--	..retrying.. frequency when a mode of receive data abnormality (0x80110007) is generated is specified.	0 - 50	4

Data type

Type explanation			
VT_ARRAY | VT_I4			
	0	VT_I4	The pattern number is returned.
	1	VT_I4	The examination area is returned. 0:Low temperature and 1: Normal temperature and 2: High temperature
	2	VT_I4	The set examination room temperature degree is returned.
	3	VT_I4	The set preheating temperature is returned.
	4	VT_I4	The set [**] cool temperate degree is returned.
	5	VT_I4	The set examination time is returned.
	6	VT_I4	Set cycle number is returned.
	7	VT_I4	Set defrosting cycle number is returned.
	8	VT_I4	The state of the device is returned.
	9	VT_I4	The preparation driving is returned. 0:1 excluding the preparation driving: the preparation driving and 2: The preparation completion.
	10	VT_I4	The defrosting driving is returned. 0:1 excluding the defrosting driving: The defrosting driving.
	11	VT_I4	The examination completion is returned. 0:Incomplete examination and 1: Examination completion
	12	VT_I4	The door openness is returned. 0:[Tobirahei] and 1: [Tobirahira]
	13	VT_I4	The alarm number is returned.

Usage example

```
Dim lastMeasCheck As CaoVariable
Set lastMeasCheck = controller.AddVariable("@LASTMEAS_CHECK_STATUS")

Dim lastMeasCheckValue() As Long
lastMeasCheckValue = lastMeasCheck.Value
```

3.3.1.8. @LASTMEAS_CHECK_STATUS_STRING

Acquire the confirmation of the pattern number acquired while measured immediately before in the life value (character string) obtained because of the communication. Acquire the confirmation of pattern number 1 when you never acquire the measurement.

Data type

Type explanation	
VT_BSTR	The set state character string is returned.

Usage example

```
Dim lastMeasCheckStr As CaoVariable
Set lastMeasCheckStr = controller.AddVariable("@LASTMEAS_CHECK_STATUS_STRING")

Dim lastMeasCheckValue As String
lastMeasCheckValue = lastMeasCheckStr.Value
```

3.3.1.9. SETTING_STATUS

Acquire it while set.

Option

Option	Indispensability	Explanation	Range of value	Default value
Pattern	○	Specify the acquired pattern number.	1 - 2147483647	-
Retry	--	..retrying.. frequency when a mode of receive data abnormality (0x80110007) is generated is specified.	0 - 50	4

Data type

Type explanation
VT_ARRAY | VT_I4

	0	VT_I4	The pattern number is returned.
	1	VT_I4	The examination area is returned. 0:Low temperature and 1: Normal temperature and 2: High temperature
	2	VT_I4	The set examination room temperature degree is returned.
	3	VT_I4	The set preheating temperature is returned.
	4	VT_I4	The set [**] cool temperate degree is returned.
	5	VT_I4	The set examination time is returned.
	6	VT_I4	Set cycle number is returned.
	7	VT_I4	Set defrosting cycle number is returned.
	8	VT_I4	The state of the device is returned.
	9	VT_I4	The preparation driving is returned. 0:1 excluding the preparation driving: the preparation driving and 2: The preparation completion.
	10	VT_I4	The defrosting driving is returned. 0:1 excluding the defrosting driving: The defrosting driving.
	11	VT_I4	The examination completion is returned. 0:Incomplete examination and 1: Examination completion
	12	VT_I4	The door openness is returned. 0:[Tobirahei] and 1: [Tobirahira]
	13	VT_I4	The alarm number is returned.

Usage example

```
Dim setting As CaoVariable
Set setting = controller.AddVariable("SETTING_STATUS_1", "Pattern=1")

Dim settingValue() As Long
settingValue = setting.Value
```

3.3.1.10. SETTING_STATUS_STRING

Acquire it while set.

Option

Option	Indispensability	Explanation	Range of value	Default value
Pattern	○	Specify the acquired pattern number.	1 - 2147483647	-

Data type

Type explanation	
VT_BSTR	The set state character string is returned.

Usage example

```
Dim settingStr As CaoVariable
Set settingStr = controller.AddVariable("SETTING_STATUS_STRING_1", "Pattern=1")

Dim settingValue As String
settingValue = settingStr.Value
```

3.3.1.11. CHECK_STATUS

Acquire it while confirmed.

Option

Option	Indispensability	Explanation	Range of value	Default value
Pattern	○	Specify the acquired pattern number.	1 - 2147483647	-
Retry	--	..retrying.. frequency when a mode of receive data abnormality (0x80110007) is generated is specified.	0 - 50	4

Data type

Type explanation			
VT_ARRAY | VT_I4			
	0	VT_I4	The pattern number is returned.
	1	VT_I4	The examination area is returned. 0:Low temperature and 1: Normal temperature and 2: High temperature
	2	VT_I4	The set examination room temperature degree is returned.
	3	VT_I4	The set preheating temperature is returned.
	4	VT_I4	The set [**] cool temperate degree is returned.
	5	VT_I4	The set examination time is returned.
	6	VT_I4	Set cycle number is returned.

	7	VT_I4	Set defrosting cycle number is returned.
	8	VT_I4	The state of the device is returned.
	9	VT_I4	The preparation driving is returned. 0:1 excluding the preparation driving: the preparation driving and 2: The preparation completion.
	10	VT_I4	The defrosting driving is returned. 0:1 excluding the defrosting driving: The defrosting driving.
	11	VT_I4	The examination completion is returned. 0:Incomplete examination and 1: Examination completion
	12	VT_I4	The door openness is returned. 0:[Tobirahei] and 1: [Tobirahira]
	13	VT_I4	The alarm number is returned.

Usage example

```
Dim checkStatus As CaoVariable
Set checkStatus = controller.AddVariable("CHECK_STATUS_1", "Pattern=1")

Dim checkStatusValue() As Long
checkStatusValue = checkStatus.Value
```

3.3.1.12. CHECK_STATUS_STRING

Acquire it while confirmed.

Option

Option	Indispensability	Explanation	Range of value	Default value
Pattern	○	Specify the acquired pattern number.	1 - 2147483647	-

Data type

Type explanation	
VT_BSTR	The confirmation state character string is returned.

Usage example

```
Dim checkStr As CaoVariable
Set checkStr = controller.AddVariable("CHECK_STATUS_STRING_1", "Pattern=1")

Dim checkStrValue As String
checkStrValue = checkStr.Value
```

Appendix A. Error code

In this provider, an original error code exists. Details are the following. Table3-5Refer to [wogo].

Refer to the chapter of the error code of "ORiN2 programming guide" for the ORiN2 commonness error.

Table3-5Original error code table

Error number	Explanation
0x80110001	The indispensable option doesn't exist.
0x80110002	The mistake is found in the optional Conn specification.
0x80110003	Optional Timeout is outside the range.
0x80110004	Optional Delimiter is outside the range.
0x80110005	Optional Board is outside the range.
0x80110006	The numerical value of receive data is a unsetting. There is a possibility that the heat shock examination device initializes it. Inquire of the manufacturer.
0x80110007	[3]It is different from the mode that the mode of the received data demanded. Do and specify it for a bigger value of ..retrying.. frequency when happening frequently.
0x80110008	Optional RetryInterval is outside the range.
0x80110009	Optional Retry is outside the range.
0x8011000A	Receive data is outside assumption. Ethernet communication
0x8011000B	Optional Delay is outside the range.
0x8011000C	Optional Pattern is outside the range.

Appendix B. Table for communication protocol command

The correspondence table of the command described in referred the communication specifications and the command of the provider is described. The description of the communication command name row follows the description of the communication specifications.

[3] 発生原因は不明ですが，設定状態取得コマンド(C3)，確認状態取得コマンド(CD)を送信した際に，測定状態データを受信する現象が発生することが確認されています．

CaoController::Execute

Command name	Communication command name
GetMeasurementStatus	C2 (Put it into the state of the measurement).
GetMeasurementStatusString	
GetLastMeasSettingStatus	C3 (Change to the setting). C4 = pattern number (Set the pattern number).
GetLastMeasSettingStatusString	
GetSettingStatus	
GetSettingStatusString	
GetLastMeasCheckStatus	CD (Put it into the state of the confirmation). C4 = pattern number (Set the pattern number).
GetLastMeasCheckStatusString	
GetCheckStatus	
GetCheckStatusString	

CaoVariable

Variable identifier	Communication command name
@MEASUREMENT_STATUS	C2 (Put it into the state of the measurement).
@MEASUREMENT_STATUS_STRING	
@LASTMEAS_SETTING_STATUS	C3 (Change to the setting). C4 = pattern number (Set the pattern number).
@LASTMEAS_SETTING_STATUS_STRING	
SETTING_STATUS	
SETTING_STATUS_STRING	
@LASTMEAS_CHECK_STATUS	CD (Put it into the state of the confirmation). C4 = pattern number (Set the pattern number).
@LASTMEAS_CHECK_STATUS_STRING	
CHECK_STATUS	
CHECK_STATUS_STRING	

Appendix C. Sample program

The sample that does the device and the data communication is described.

Sample	Sample.pcs

```
Sub Main
    ..'.. object
    Dim engine As CaoEngine
    Dim workspace As CaoWorkspace
    Dim controller As CaoController
```

```
    Dim var As CaoVariable

     ..'.. generation of CaoEngine object
    Set engine = New CaoEngine
     ..'.. generation of CaoWorkspace object
    Set workspace = engine.AddWorkspace("NewWrks", "")
     ..'.. generation of CaoController object
    "Heat shock" Set controller =  Workspace.AddController (_
                          "CaoProv.HITACHI.HeatShock", _
                          "", _
                          "conn=eth:10.4.122.125, timeout=15000, Board=1")
    Measurement state variable ..'.. making
    var = controller.AddVariable("@MEASUREMENT_STATUS")
    ..'.. acquire the measurement.
    Dim Value() As Long
    Value = caoVariable.Value

     ..'.. delete the variable from CaoController.
    Call controller.Variables.Remove(var.Index)
    Set var = Nothing
     ..'.. delete CaoController from CaoWorkspace.
    Call workspace.Controllers.Remove(controller.Index)
     ..'.. deletion of CaoController
    Set controller = Nothing
     ..'.. delete CaoWorkspace from CaoEngine.
    Call engine.Workspaces.Remove(workspace.Index)
     ..'.. deletion of CaoWorkspace
    Set workspace = Nothing
     ..'.. deletion of CaoEngine
    Set engine = Nothing
End Sub
```