RV Provider
Canon RV Series provider

Version 1.0.1

User's guide

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【Revision history】

Version	Date	Content
1.0.0	2016-04-14	First edition.
1.0.1	2017-09-21	RV Version2.0.0 用コマンド対応 【修正】 ・SaveImage -受信文字列にファイル名称が 2 つ存在する場合，受信戻り値が追加されるよう修正 ・InputPin -コマンドの説明文の誤りを修正 ・2.3.エラーコード -新規エラーコードを一覧に追加 ・2.2.1 CaoWorkSpacce::AddController メソッド -オプション文字列 Position の対応表を修正 【新規追加】 ・2.1.1. 制限事項 作成 -RV プロバイダでのコマンドを実行する上での制限事項として，データ分割機能を無効にすること旨を追加 -位置姿勢返却モードに 0 を設定できない旨を追加 ・以下の新規コマンド作成 -GetScannerInfo -QueryGraspID -SyncCatchPoint -PoseWork3 -PoseWork3Async -PoseNext3 -PoseMultiWork3 -PoseMultiWork3Async -GetTime -CaptureImage

Contents

1. Introduction

This book is Canon Manufactured by 3 D Machine vision systems RV For series CAO Provider, in RV Is a user's Guide for the provider.

RV The provider Ethernet The connected RV For series PC By running RC I/f Module TCP/IP , To connect, to send and receive commands.

2. provider overview

2.1. overview

RV Provider, as how to run command CaoController: ICommand::execute By provides the way.

CaoController: ICommand::execute The TCP/IP Via, machine vision system RC I/f The response for the command module and a string.

2.1.1. 制限事項

RV プロバイダは，RC I/F モジュールの環境設定の「送受信するデータを分割する」機能に対応していません．「送受信するデータを分割する」の値を「false」に設定してください．

また，位置姿勢情報の対象を RC I/F モジュール準拠に設定する機能に対応していません．送信時の位置姿勢返却モードは 0 に設定しないでください．

2.2. methods and properties

2.2.1. CaoWorkspace::AddController method

In-sight Provider is AddController Communication connections, and set the connection parameter for communications,... Square brackets in ("[]") indicates optional in. Also, underlined in the explanation of each parameter indicates when no option is specified, the default value.

Format AddController(<bstrCtrlName:VT_BSTR>,<bstrProvName:VT_BSTR>,
<bstrPcName:VT_BSTR > , <bstrOption:VT_BSTR>)

bstrCtrlName : [in] Controller name Any

bstrProvName : [in] Provider name Fixed value =" CaoProv.Canon.RV"

bstrPcName : [in] Run machine name of the provider

bstrOption : [in] The option string

Lists below to specify the option string.

Figure 2-1 CaoWorkspace::AddControlleroption string

Options	Meaning
Conn =<Connection parameter>	Required. Sets the communication and connection parameters. For more information 2.2.1.1 See...
Timeout[=<timeout>]	Send/receive timeout (MS) Specifies the. (Default value:500)
Delimiter[=<number of the command delimiter>]	Command API Of the specified delimiter characters. 0: Comma

	1: Half-width space 2: Horizontal TAB 3: CR
Terminator[=<command line code at the end of>]	Command specifies the type of line break code to be appended at the end. 0: No line break code 1: CR 2: LF 3: CRLF
Position=[<position and attitude information to be returned for>]	Specifies the position and attitude information to be returned. RC I/f Of the set according to the setting. 0：ワーク(重心) 1：ワーク(CAD 原点) 2：ハンド(P4) 3：ハンド(P4),ハンド(P3) 4：ワーク(重心)，ハンド(P4) 5：ワーク(CAD 原点)，ハンド(P4) 6：ワーク(重心)，ハンド(P4)，ハンド(P3) 7：ワーク(CAD 原点)，ハンド(P4)，ハンド(P3) 8：ワーク(重心)，ワーク(CAD 原点)，ハンド(P4)，ハンド(P3)
Timestamp=[<taken at timestamp >]	Specifies the presence of the output of the start time and end time. True: To output False: Does not print

2.2.1.1. Conn option

In the following Conn Options Connection Indicates the parameter string.

- **Ethernet Device**

  "eth:<IP Address>[:<Port No>]"

  <IP Address> : : Required. IP address.
  Ex) "127.0.0.1"

  <Port No> : : RC I / F Specifies the port number of the module.
  (Default：8889)
  Ex) "127.0.0.1:8889"

Example

```
Dim caoEng as CaoEngine
Dim caoCtrl as CaoController

Set caoEng  = New caoEngine
Set caoCtrl = caoEng.Workspaces(0).AddController("RV", "caoProv.Canon.RV", "",
"conn=eth:192.168.0.1, timeout=800")
```

2.2.2. CaoController::Executemethod

RC I/f Performs a send/receive command with the module. No. 1 argument to the command name, no. 2 argument specifies the parameter of the command. More information about each command 2.4 module command reference and see...

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

bstrCommandName: [in] command

vntParam : [in] parameter

2.3. Error code

When you run the command RC I/f Vision status from module HRESULT As returned.

S_OK (0) : Normal, error no

0x80100000 + 3D Vision error code: 3 D Vision error occurred

0x8011xxxx Own prescribed errors :

Example: LoadTask When you run.

hr = 0x80103203: Task number limit error (10 Hex:12803)

3 D Vision errors Table 2-2, , -3 table 2 table 2-4 see. What 's Canon 3D machine vision systemuseries Guide, see.

Its own provisions errors Table 2-5 see.

What other provider of common errors ORIN2SDK Programmersuseries Guide, see..

Table 2-2 3DVision fatal error

number(10decimal notation)	Description
63489	LED Abnormal temperature rise
63490	LED Abnormal circuit
63491	FAN Abnormal

63492	Ethernet I/f Abnormal
63493	USB I/f Abnormal
63494	Serial I/f Abnormal
63495	RAM Read Error
63496	RAM Write Error
63497	ROM Read Error
63498	ROM Write Error
63499	投影用デバイス異常
63500	Camera Error
63501	LED Temperature abnormal termination
63502	Interrupt I/f Abnormal
63503	System startup errors
63504	EEPROM Abnormal
63505	RTC Abnormal
63712	Device disconnect
63728	3D Scanner communication timeout
62465	An attempt to allocate memory failed
61959	ファイル破損エラー(致命的)
61972	Activation error

Table 2-3 3DVision alert error

number(10decimal notation)	Description
29698	HDD Lack of residual space
29190	“測距ずれ量の計測”機能における測距ずれ許容量超過 マーカー1 点の場合:測距ずれ量 マーカー2 点以上で「補正を実施する」にチェック無しの場合:測距ずれ量 マーカー2 点以上で「補正を実施する」にチェック有りの場合:補正後の残差
29189	Mode number error

Table 2-4 3DVision common errors

number(10decimal notation)	Description
12801	Unknown command
12802	Out of sequence command (-Mode and command- one Chi)
12803	Task number limit error
12804	Calibrated scene number error
12806	Incomplete task error
12807	File corruption errors(一時的)
12808	Tasks not already loaded error
12809	Unmeasured work
12810	Number of scenes not set
12811	Calibrated scene number out of range
12812	Application busy state
12813	Marker detection failure
12814	Pallet measurement failed
12815	Grasp information ID Error
12816	CF palette
12817	Marker position bad
12818	Rogue 3 D Scanner locations ID The specified
12819	RV Not calibrated
12820	Time out work measurement
12821	撮影未実施(タスク未ロード,ワーク計測未実施の場合)
12822	ファイル保存失敗
12823	ワークの最大個数設定エラー
12824	探索する ROI 数設定エラー
12825	POSE_NEXT のシーケンスエラー(事前に複数の認識ワークを通知している状態)
12826	ROI(部品検出領域)サイズ倍率設定エラー(ROI サイズ倍率の設定が範囲外)
12827	GPU リソースエラー(指定された ROI(部品検出領域)サイズ倍率だとリソースが不足する場合)
12828	ROI(部品検出領域)の中心座標エラー
12829	認識スコア閾値設定エラー

12830	概略検出ワーク上限数設定エラー
12831	モデルフィッティングワーク上限数設定エラー
12832	把持候補出力上限数設定エラー
12833	露光時間設定エラー
12834	位置姿勢返却モードエラー
12835	CAD 原点未登録
12836	スキャナー未接続
12964	把持情報不一致

Table 2-5 Your own rules error codes list

Error Name	Error number	Description
E_STATUS_ERROR	0x80100000 | RVError	3D Machine John system error
E_INVALID_COMMAND	0x80110001	The command string is invalid.
E_NOT_EQUAL_ID	0x80110002	The command string sent to the ID Mismatch
E_RECIEVED_PACKET	0x80110003	Command string received is abnormal
E_GET_STATUS	0x80110004	Error occurred when parsing the command string received
E_NO_DATA	0x80110005	Not receive the command string
E_LENGTH_ORVER	0x80110006	The command string length too
E_COMMAND_EXCUTING	0x80110007	While executing an asynchronous command is
E_COMMAND_NOTEXCUTE	0x80110008	Rather than performing an asynchronous command GetCommandResult Ran

2.4. command reference

This chapter CaoController: ICommand::execute Describes each command methods. Description of each command for more 's Canon 3D Please refer to the reference guide machine vision systemuseries communications.

Table 2-6 CaoController::Executecommand list

RV	command	Features	

command			
Communication commands			
LOAD_TASK	LoadTask	Reads the task information from information management file.	P15
	LoadTaskAsync	In the asynchronous LoadTask Run.	P15
FREE_TASK	FreeTask	Open the task information.	P16
	FreeTaskAsync	In the asynchronous FreeTask Run.	P16
POSE_PALLET	PosePallet	Measure the position and orientation of the palette.	P16
	PosePalletAsync	In the asynchronous PosePallet Run.	P17
POSE_WORK	PoseWork	Measure the position and orientation of the work capable of grasping.	P18
	PoseWorkAsync	In the asynchronous PoseWork Run.	P19
POSE_WORK2	PoseWork2	PoseWork Run. You can change the parameters of work measurement. Hand P3 Of position and shooting start and end time and attitude you can get.	P20
	PoseWork2Async	In the asynchronous PoseWork2 Run.	P22
POSE_MULTI_WORK	PoseMultiWork	Position and posture of workpiece holding can be measured and will return to all the candidates. You can change the parameters of work measurement.	P24
	PoseMultiWorkAsync	In the asynchronous PoseMultiWorkAsync Run.	P26
POSE_NEXT	PoseNext	Without a new measurement, gets the runner-up was calculated by measuring the last available grip work position.	P27
POSE_NEXT2	PoseNext2	PoseNext Run. Hand P3 position also available.	P29
QUERY_STATUS	QueryStatus	3 D Retrieves the State of a machine vision system.	P30
READY_CALIB	ReadyCalib	RV Sets the number of scene marker measurements in calibration.	P31
CALIB_MARKER	CalibMarker	RV Measures the center coordinate of the calibration markers.	P31
CATCH_POINT	CatchPoint	Set the workpiece gripped position information.	P32
VER_VISION	VerVision	3 D Gets the version information for the machine vision system.	P33
QUERY_MODE	QueryMode	3 D Gets the running mode of the machine vision system.	P34
READY_RIM	ReadyRim	Set the measurement number of scenes on the pallet surface estimation.	P35
INPUT_RIM	InputRim	Sets the used palette plane estimated robot positions.	P35
SCANNER_POS	ScannerPos	3 D Sets the position of the scanner.	P36

FREE_ALL	FreeAll	Open all the task information is loaded.	P36
	FreeAllAsync	In the asynchronous FreeAll Run.	P37
READY_CORRECT	ReadyCorrect	Sets the number of markers measuring scene for calculating the coordinate transformation adjustment parameter.	P37
POSE_CORRECT	PoseCorrect	Does the center position coordinate measurement of markers.	P37
SAVE_IMAGE	SaveImage	Save the last image was taken.	P39
INPUT_PIN	InputPin	Enter the coordinate Center of the robot pin tip.	P39
GET_SCANNER_INFO	GetScannerInfo	接続されている 3D スキャナーの情報を取得します.	P40
QUERY_GRASP_ID	QueryGraspID	ロボットコントローラの同期状態の情報を取得します.	P41
SYNC_CATCH_POINT	SyncCatchPoint	ワーク・ハンドの位置・姿勢の情報を取得します.	P42
POSE_WORK3	PoseWork3	PoseWork を実行します. ワーク計測に関するパラメータの変更も行えます. 撮影開始・終了時刻も取得できます. 位置・姿勢の情報を取得する対象を変更できます.	P43
	PoseWork3Async	非同期で PoseWork3 を実行します.	P46
POSE_NEXT3	PoseNext3	PoseNext を実行します. 撮影開始・終了時刻も取得できます. 位置・姿勢の情報を取得する対象を変更できます.	P47
POSE_MULTI_WORK3	PoseMultiWork3	PoseMultiWork を実行します. ワーク計測に関するパラメータの変更も行えます. 撮影開始・終了時刻も取得できます. 位置・姿勢の情報を取得する対象を変更できます.	P49
	PoseMultiWork3Async	非同期で PoseMultiWork3 を実行します.	P52
GET_TIME	GetTime	撮影時間とタクトタイムを取得します.	P54
CAPTURE_IMAGE	CaptureImage	画像を撮影し, ビットマップ画像形式で取得します.	P55
Custom commands			
-	ExecuteCommand	RC I/f To send the command string module, run command.	P55
	ExecuteCommandAsync	In the asynchronous ExecuteCommand Run.	P56
-	ClearPacket	RC I/f Remove the response results from the modules.	P56
-	SetTimeout	When you receive a response Timeout Sets the time.	P56
-	GetTimeout	When you receive a response Timeout Gets the time.	P57
-	GetCommandResult	Gets the result of the asynchronous command.	P57

2.4.1. communication commands

2.4.1.1. CaoController::Execute("LoadTask") command

Tasks related to measuring the work load from file.

Format LoadTask (<TaskID>)

Argument : [in]<TaskID>: Task loading ID [VT_I4]

Return value : None

Task (Workshop) It is possible to load more than one task at the same time, switch to the dynamic (maximum 8 Up).

Example

```
Dim iTaskID as Integer = 1
m_caoCtrl.Execute "LoadTask", iTaskID
```

2.4.1.2. CaoController::Execute("LoadTaskAsync") command

In the asynchronous LoadTask Executes the command.

Format LoadTaskAsync (<TaskID>)

Argument : [in]<TaskID>: Task loading ID [VT_I4]

Return value : None

After you run "GetCommandResult" Verify the results in the command. "GetCommandResult" , and to use other commands before youE_COMMAND_EXCUTING of the error occurs.

E_TIMEUOT (0x80000900) The event, again "GetCommandResult" You can receive command. When you can't get the results "ClearPacket" remove the execution state in the command.

Example

```
Dim iTaskID as Integer = 1
m_caoCtrl.Execute "LoadTask", iTaskID

m_caoCtrl.Execute "GetCommandResult"
```

2.4.1.3. CaoController::Execute ("FreeTask") command

LoadTask In the open task information is loaded.

Format FreeTask (<TaskID>)

Argument : [in]<TaskID>: Releasing tasks ID [VT_I4]

Return value : None

To release all the task information is loaded, FreeAll Please use the command.

Example

```
Dim iTaskID as Integer = 1
m_caoCtrl.Execute "FreeTask", iTaskID
```

2.4.1.4. CaoController::Execute ("FreeTaskAsync") command

In the asynchronous FreeTask Run.

Format FreeTaskASync (<TaskID>)

Argument : [in]<TaskID>: Releasing tasks ID [VT_I4]

Return value : None

After you run "GetCommandResult" Verify the results in the command. "GetCommandResult" , and to use other commands before youE_COMMAND_EXCUTING of the error occurs.

E_TIMEUOT (0x80000900) The event, again "GetCommandResult" You can receive command. When you can't get the results "ClearPacket" remove the execution state in the command.

Example

```
Dim iTaskID as Integer = 1
m_caoCtrl.Execute "FreeTaskAsync", iTaskID

m_caoCtrl.Execute "GetCommandResult"
```

2.4.1.5. CaoController::Execute ("PosePallet") command

Measure the position and orientation of the palette.

Format PosePallet (<TaskID>)

Argument : [in]<TaskID>: TaskID [VT_I4]

Return value : [out] Palette location (<Tx>, <Ty>,< Tz>, <Rx>, <Ry>, <Rz>)
[VT_R8 | VT_ARRAY]

<Tx> : Translation vector x
<Ty> : Translation vector y
<Tz> : Translation vector z
<Rx> : Rotation matrix x
<Ry> : Rotation matrix y
<Rz> : Rotation matrix z

The measurements palette, task ID The palette that belong to the specified task.

Example

```
Dim vntPose As Object
vntPose = m_caoCtrl.Execute("PosePallet", 1)
```

2.4.1.6. CaoController::Execute ("PosePalletAsync") command

In the asynchronous PosePAlletAsync Run.

Format PosePalletAsync (<TaskID>)

Argument : [in]<TaskID>: TaskID [VT_I4]

Return value : None

After you run "GetCommandResult" Verify the results in the command. "GetCommandResult" , and to use other commands before youE_COMMAND_EXCUTING of the error occurs.

E_TIMEUOT (0x80000900) The event, again "GetCommandResult" You can receive command. When you can't get the results "ClearPacket" remove the execution state in the command.

Example

```
Dim vntPose As Object
call m_caoCtrl.Execute("PosePalletAsync", 1)

vntPose = m_caoCtrl.Execute("GetCommandResult")
```

2.4.1.7. CaoController::Execute ("PoseWork") command

Measure the position and orientation of the work capable of grasping.

Format PoseWork (< TaskID >)

Argument : [in]<TaskID>: Work like measuring tasks ID (VT_I4)

Return value : [out] Work information (<Pallet>, <Work>, <Value>, <HandID>, <WorkPos>, <Shield>, <Num>, <Pos1>,<Pos2>,<Pos3>,<Pos4>,<Pos5>) [VT_VARIANT|VT_ARRAY]

<Pallet> : Palette-spatial information [VT_I4]
0 : empty, 1 : non-empty, 65535 : don't judge
<Work> : With or without grasping potential [VT_I4]
0 : No suggestions, 1 : Candidate and
<Value> : Work values [VT_I4]
<HandID> : Grasp information ID [VT_I4]
<WorkPos> : Position and posture of work(Tx, Ty, Tz, Rx, Ry, Rz) [VT_R8|VT_ARRAY]
<Shield> : WHL [VT_R8]
<Num> : The number of locally higher dimensional measurement points [VT_I4]
<Posn(n=1~5)> : A high degree of local position (X, Y, Z) [VT_R8|VT_ARRAY]

Instrument for work, tasks ID On is the work belongs to the specified task.

Attention) < Shild > that returns the value of a real number. Example)3.8% ⇒ 3.8 99.9% ⇒ 99.9

Example

```
Dim vntRet As Object
Dim iTaskID As Integer = 1
vntRet = m_caoCtrl.Execute("PoseWork", iTaskID)

Dim iPallet As Integer
Dim iWork As Integer
Dim iValue As Integer
Dim iHandID As Integer
Dim vntWorkPos As Object
Dim dblShield As Double
Dim iNum As Integer
Dim vntPos(4) As Object
Dim iCnt As Integer
```

```
iPallet = vntRet(0)
iWork = vntRet(1)
iValue = vntRet(2)
iHandID = vntRet(3)
vntWorkPos = vntRet(4)
dblShield = vntRet(5)
iNum = vntRet(6)
For iCnt = 0 To 4
    vntPos(iCnt) = vntRet(7 + iCnt)
Next
```

2.4.1.8. CaoController::Execute ("PoseWorkAsync") command

In the asynchronous PoseWork Run.

Format PoseWorkAsync (< TaskID >)

Argument : [in]<TaskID>: Work like measuring tasks ID (VT_I4)

Return value : [out] None

After you run "GetCommandResult" Verify the results in the command. "GetCommandResult" , and to use other commands before youE_COMMAND_EXCUTING of the error occurs.

E_TIMEUOT (0x80000900) The event, again "GetCommandResult" You can receive command. When you can't get the results "ClearPacket" remove the execution state in the command.

Example

```
Dim vntRet As Object
Dim iTaskID As Integer = 1
call m_caoCtrl.Execute("PoseWorkAsync", iTaskID)

vntret = m_caoCtrl.Execute("GetCommandResult")
Dim iPallet As Integer
Dim iWork As Integer
Dim iValue As Integer
Dim iHandID As Integer
Dim vntWorkPos As Object
Dim dblShield As Double
Dim iNum As Integer
Dim vntPos(4) As Object
Dim iCnt As Integer

iPallet = vntRet(0)
iWork = vntRet(1)
iValue = vntRet(2)
iHandID = vntRet(3)
vntWorkPos = vntRet(4)
dblShield = vntRet(5)
iNum = vntRet(6)
For iCnt = 0 To 4
    vntPos(iCnt) = vntRet(7 + iCnt)
```

```
Next
```

2.4.1.9. CaoController::Execute ("PoseWork2") command

Measure the position and orientation of the work capable of grasping.

You can change the setting in work measurement parameters, specified in this command.

Not affect the parameter is omitted.

Format PoseWork2(<TaskID> [, <ROISize>, <ROIX>, <ROIY>, <Score>, <WorkMax>, <FitMax>, <CatchMax>, <Exposure>])

Argument : [in] Parameter

<TaskID>: Work like measuring tasks ID [VT_I4]

<ROISize>: ROI Of size, 1~4(GUP メモリ依存) [VT_I4]

<ROIX>: ROI The location of the Center X, 1～2048 [VT_I4]

<ROIY>: ROI The location of the Center Y, 1～2048 [VT_I4]

<Score>: Recognition score threshold, 1.0～100.0 [VT_R8]]

<WorkMax>: General limit of detection work, 1～100 [VT_I4]

<FitMax>: Maximum number of model fitting work, 1～20 [VT_I4]

<CatchMax>: Grasp potential output limit, 1～20 [VT_I4]

<Exposure>: Exposure time [VT_R8]

0.05 - 54.0 On can be set in the range（RV1100）

0.05 - 47.0 On can be set in the range（RV500，RV300）

Return value : [out] Workshop information (<Pallet>, <Work>, <Value>, <HandID>, <WorkPos>[, <HandP3>], <Shield>, <Num>, <Pos1>,<Pos2>,<Pos3>,<Pos4>,<Pos5> [,<StartTime>, <EndTime>]) [VT_VARIANT|VT_ARRAY]

<Pallet> : Palette-spatial information [VT_I4]

0 : empty, 1 : non-empty, 65535 :don't judge

<Work> : With or without grasping potential [VT_I4]

0 : No suggestions, 1 : Candidate and

<Value> : Work values [VT_I4]

<HandID> : Grasp information ID [VT_I4]

<WorkPos> : Position and posture of workpiece X, Y, Z, Rx, Ry, Rz) [VT_R8|VT_ARRAY]

<HandP3>: Work or hand P3 Of position(*2)

(X, Y, Z, Rx, Ry, Rz) [VT_R8|VT_ARRAY]

<Shield> : WHL(*1) [VT_R8]

<Num> : The number of locally higher dimensional measurement 3D points [VT_I4]

<Posn(n=1~5)> : A high degree of local position (X, Y, Z) [VT_R8|VT_ARRAY]

<StartTime>: Start time(*2) [VT_BSTR]

<EndTime>: Shooting ends (*2) [VT_BSTR]

Instrument for work, tasks ID On is the work belongs to the specified task.

Attention)

* Shild < 1 > Will return the value of a real number. Example)3i8% ⇒ 3.8 99.9% ⇒ 99.9

* 2 RC I/f The format of the return value depends on the setting.

< HandP3 > The AddController Of options Position = 3 Output at a specified time.

< StartTime > and < EndTime > The AddController Of options Timestamp = True Output at a specified time.

Example

```
Dim vntRet As Object
Dim iCnt As Integer

Dim iTaskID As Integer = 1

Dim iPallet As Integer
Dim iWork As Integer
Dim iValue As Integer
Dim iHandID As Integer
Dim vntWorkPos As Object
Dim vntHandP3 as Object
Dim dblShield As Double
Dim iNum As Integer
Dim vntPos(4) As Object
Dim strStartTime as String
Dim strEndTime as String

' --------------- Parameter is omitted ------------
Set caoCtrl = caoEng.Workspaces(0).AddController("RV", "caoProv.Canon.RV", "",
"conn=eth:192.168.0.1")
vntRet = caoCtrl.Execute("PoseWork2", iTaskID)

iPallet = vntRet(0)
iWork = vntRet(1)
iValue = vntRet(2)
iHandID = vntRet(3)
vntWorkPos = vntRet(4)
dblShield = vntRet(5)
iNum = vntRet(6)
For iCnt = 0 To 4
    vntPos(iCnt) = vntRet(7 + iCnt)
Next
```

```
' --------------- Parameter settings ------------
Dim iROISize as Integer = 2
Dim iROIX as Integer = 512
Dim iROIY as Integer = 512
Dim dScore as Double = 88.8
Dim iWorkMax as Integer = 50
Dim iFitMax as Integer = 10
Dim iCatchMax as Integer = 8
Dim dExposure as Double = 40.4

Set caoCtrl = caoEng.Workspaces(0).AddController("RV", "caoProv.Canon.RV", "",
"conn=eth:192.168.0.1")
vntRet = caoCtrl.Execute("PoseWork2", Array(iTaskID, iROISize, iROIX, iROIY, dScore,
iWorkMax, iFitMax, iCatchMax, dExposure))

iPallet = vntRet(0)
iWork = vntRet(1)
iValue = vntRet(2)
iHandID = vntRet(3)
vntWorkPos = vntRet(4)
dblShield = vntRet(5)
iNum = vntRet(6)
For iCnt = 0 To 4
    vntPos(iCnt) = vntRet(7 + iCnt)
Next

' --------------- RC I/F IN P3 AND TAKING TIME OUT ------------
Set caoCtrl = caoEng.Workspaces(0).AddController("RV", "caoProv.Canon.RV", "",
"conn=eth:192.168.0.1, Position=3, Timestamp=true")
vntRet = caoCtrl.Execute("PoseWork2", iTaskID)

iPallet = vntRet(0)
iWork = vntRet(1)
iValue = vntRet(2)
iHandID = vntRet(3)
vntWorkPos = vntRet(4)
vntHandP3 = vntRet(5)
dblShield = vntRet(6)
iNum = vntRet(7)
For iCnt = 0 To 4
    vntPos(iCnt) = vntRet(8 + iCnt)
Next
strStartTime = vntRet(13)
strEndTime = vntRet(14)
```

2.4.1.10. CaoController::Execute ("PoseWork2Async") command

In the asynchronous PoseWork2 Run.

Format PoseWork2Async(<TaskID> [, <ROISize>, <ROIX>, <ROIY>, <Score>, <WorkMax>, <FitMax>, <CatchMax>, <Exposure>])

Argument : [in] Parameter

<TaskID>: Work like measuring tasks ID [VT_I4]

<ROISize>: ROI Of size, 1~4(GUP メモリ依存) [VT_I4]

<ROIX>: ROI The location of the Center X, 1～2048 [VT_I4]
<ROIY>: ROI The location of the Center Y, 1～2048 [VT_I4]
<Score>: Recognition score threshold, 1.0～100.0 [VT_R8]]
<WorkMax>: General limit of detection work, 1～100 [VT_I4]
<FitMax>: Maximum number of model fitting work, 1～20 [VT_I4]
<CatchMax>: Grasp potential output limit, 1～20 [VT_I4]
<Exposure>: Exposure time [VT_R8]
0.05 - 54.0 On can be set in the range(RV1100)
0.05 - 47.0 On can be set in the range(RV500, RV300)

Return value : None

After you run "GetCommandResult" Verify the results in the command. "GetCommandResult" , and to use other commands before youE_COMMAND_EXCUTING of the error occurs.
E_TIMEUOT (0x80000900) The event, again "GetCommandResult" You can receive command. When you can't get the results "ClearPacket" remove the execution state in the command.

Example

```
Dim vntRet As Object
Dim iCnt As Integer

Dim iTaskID As Integer = 1

Dim iPallet As Integer
Dim iWork As Integer
Dim iValue As Integer
Dim iHandID As Integer
Dim vntWorkPos As Object
Dim vntHandP3 as Object
Dim dblShield As Double
Dim iNum As Integer
Dim vntPos(4) As Object
Dim strStartTime as String
Dim strEndTime as String


' --------------- Parameter settings ------------
Dim iROISize as Integer = 2
Dim iROIX as Integer = 512
Dim iROIY as Integer = 512
Dim dScore as Double = 88.8
Dim iWorkMax as Integer = 50
Dim iFitMax as Integer = 10
Dim iCatchMax as Integer = 8
Dim dExposure as Double = 40.4

Set caoCtrl = caoEng.Workspaces(0).AddController("RV", "caoProv.Canon.RV", "",
"conn=eth:192.168.0.1")
caoCtrl.Execute("PoseWork2Async", Array(iTaskID, iROISize, iROIX, iROIY, dScore,
iWorkMax, iFitMax, iCatchMax, dExposure))
```

```
vntRet = caoctrl.Execute("GetCommandResult")

iPallet = vntRet(0)
iWork = vntRet(1)
iValue = vntRet(2)
iHandID = vntRet(3)
vntWorkPos = vntRet(4)
dblShield = vntRet(5)
iNum = vntRet(6)
For iCnt = 0 To 4
    vntPos(iCnt) = vntRet(7 + iCnt)
Next
```

2.4.1.11. CaoController::Execute ("PoseMultiWork") command

Position and posture of workpiece holding can be measured and will return to all the candidates.

Instrument for work, tasks ID On is the work belongs to the specified task.

Most of the work Large Until they reach the number search ROI Set in the number of ROI Continues to explore.

Most of the work Large To explore, even if it does not reach the number of ROI Number search is complete, and returns a response.

You can change the setting in work measurement parameters, specified in the command

Format PoseMultiWork (<TaskID>, <WorkMaxCnt>, <ROICnt> [,<ROISize>, <ROIX1>, <ROIY1>, ... <ROIXn>, <ROIYn>, <Score>, <WorkMax>, <FitMax>, <CatchMax>, <Exposure>)

Argument : [in]Parameter (VT_VARIANT | VT_ARRAY)

<TaskID>: Belongs to measure the work tasks ID [VT_I4]

<WorkMaxCnt>: The maximum number of work [VT_I4]

<ROICnt>: To explore the ROI Number of [VT_I4]

<ROISize>: ROI OF SIZE , 1～4 [VT_I4]

<ROIXn>: ROI THE LOCATION OF THE CENTERX, 1～2048 (*1) [VT_I4]

<ROIYn>: ROI THE LOCATION OF THE CENTERY, 1～2048 (*1) [VT_I4]

<Score>: Recognition score threshold , 1.0～100.0 [VT_R8]

<WorkMax>: Maximum number of model fitting work , 1～100 [VT_I4]

<FitMax>: Maximum number of model fitting work , 1～20 [VT_I4]

<CatchMax>: Holding candidate out Power Limit , 1～20 [VT_I4]

<Exposure>: Exposure time [VT_R8]
0.05～54.0（RV1100）
0.05～47.0 (RV500，RV300）

Return value : [out] Workshop information (<Pallet>, <WorkCnt>, <Value>, <HandID>, <WorkPos1> [,HandP31], ... ,<WorkPosn> [, <HandP3n>], <Shield>, <Num>, <Pos1>,<Pos2>,<Pos3>,<Pos4>,<Pos5> [, <StartTIme>, [EndTime]]) [VT_VARIANT|VT_ARRAY]

<Pallet> : Palette-spatial information [VT_I4]
0 : empty, 1 : non-emtpy, 65535 : don't judge
<WorkCnt> : Number of candidates holding [VT_I4]
<Value> : Work values [VT_I4]
<HandID> : Grasp information ID [VT_I4]
<WorkPosn> : Position and posture of workpiece (*3) (Tx, Ty, Tz, Rx, Ry, Rz) [VT_R8|VT_ARRAY]
<HandP3n>: Hand P3 Of position (* 2, 3) (X, Y, Z, Rx, Ry, Rz) [VT_R8 | VT_ARRAY]
<Shield> : WHL [VT_R8]
<Num> : The number of locally higher dimensional measurement 3D points [VT_I4]
<Posn(n=1~5)> : A high degree of local position (X, Y, Z) [VT_R8|VT_ARRAY]
<StartTime>: Start time(*2) [VT_BSTR]
<EndTime>: Shooting ends (*2) [VT_BSTR]

Attention)

* 1 ROI The location of the Center X, Y On is to explore the ROI Should set the same number only.

* 2 RC I/f The format of the return value depends on the setting.

< HandP3 > The AddController Of options Position = 3 Output at a specified time.

< StartTime > and < EndTime > The AddController Of options Timestamp = True Output at a specified time.

* 3 Co-ordinates and hand P3 In return a fraction of the number of candidates holding positions.

Example

```
Dim vntRet As Object
Dim iTaskID As Integer = 1
vntRet = m_caoCtrl.Execute("PoseNext", iTaskID)

Dim iPallet As Integer
Dim iWork As Integer
Dim iValue As Integer
Dim iHandID As Integer
Dim vntWorkPos As Object
Dim dblShield As Double
Dim iNum As Integer
Dim vntPos(4) As Object
Dim iCnt As Integer

iPallet = vntRet(0)
iWork = vntRet(1)
iValue = vntRet(2)
iHandID = vntRet(3)
vntWorkPos = vntRet(4)
dblShield = vntRet(5)
iNum = vntRet(6)
For iCnt = 0 To 4
    vntPos(iCnt) = vntRet(7 + iCnt)
Next
```

2.4.1.12. CaoController::Execute ("PoseMultiWorkAsync") command

In the asynchronous PoseMultiWork Run.

Format PoseMultiWorkAsync (<TaskID>, <WorkMaxCnt>, <ROICnt> [,<ROISize>, <ROIX1>, <ROIY1>, ... <ROIXn>, <ROIYn>, <Score>, <WorkMax>, <FitMax>, <CatchMax>, <Exposure>)

Argument : [in]Parameter (VT_VARIANT | VT_ARRAY)

<TaskID>: Belongs to measure the work tasks ID [VT_I4]

<WorkMaxCnt>: he maximum number of work [VT_I4]

<ROICnt>: To explore the ROI Number of [VT_I4]

<ROISize>: ROI OF SIZE , 1～4 [VT_I4]

<ROIXn>: ROI THE LOCATION OF THE CENTERX, 1～2048 (*1) [VT_I4]

<ROIYn>: ROI THE LOCATION OF THE CENTERY, 1～2048 (*1) [VT_I4]

<Score>: Recognition score threshold , 1.0～100.0 [VT_R8]

<WorkMax>: Maximum number of model fitting work , 1～100 [VT_I4]

<FitMax>: Maximum number of model fitting work , 1～20 [VT_I4]

<CatchMax>: Holding candidate out Power Limit , 1～20 [VT_I4]

<Exposure>: Exposure time [VT_R8]
0.05～54.0(RV1100)
0.05～47.0 (RV500, RV300)

Return value : None

After you run "GetCommandResult" Verify the results in the command. "GetCommandResult" , and to use other commands before youE_COMMAND_EXCUTING of the error occurs.
E_TIMEUOT (0x80000900) The event, again "GetCommandResult" You can receive command. When you can't get the results "ClearPacket" remove the execution state in the command.

Example

```
Dim vntRet As Object
Dim iTaskID As Integer = 1
vntRet = m_caoCtrl.Execute("PoseNextAsync", iTaskID)

Dim iPallet As Integer
Dim iWork As Integer
Dim iValue As Integer
Dim iHandID As Integer
Dim vntWorkPos As Object
Dim dblShield As Double
Dim iNum As Integer
Dim vntPos(4) As Object
Dim iCnt As Integer

iPallet = vntRet(0)
iWork = vntRet(1)
iValue = vntRet(2)
iHandID = vntRet(3)
vntWorkPos = vntRet(4)
dblShield = vntRet(5)
iNum = vntRet(6)
For iCnt = 0 To 4
    vntPos(iCnt) = vntRet(7 + iCnt)
Next
```

2.4.1.13. CaoController::Execute ("PoseNext") command

新たな計測はせず, 直近の計測で算出した次点の把持可能 Position and posture of workpiece を返します.

Format PoseNext (< TaskID >)

<TaskID> : [in] Work like measuring tasks ID (VT_I4)

Return value : [out] Workshop information (<Pallet>, <Work>, <Value>,

<HandID>, <WorkPos>, <Shield>, <Num>,
<Pos1>,<Pos2>,<Pos3>,<Pos4>,<Pos5>)
[VT_VARIANT|VT_ARRAY]

<Pallet> : Palette-spatial information [VT_I4]
0 : empty, 1 : non-emtpy, 65535 : don't judge
<Work> : With or without grasping potential [VT_I4]
0 : None, 1 : Candinate and
<Value> : Work values [VT_I4]
<HandID> : Grasp information ID [VT_I4]
<WorkPos> : Position and posture of workpiece (Tx, Ty, Tz, Rx, Ry, Rz) [VT_R8|VT_ARRAY]
<Shield> : WHL [VT_R8]
<Num> : The number of locally higher dimensional measurement 3D points [VT_I4]
<Posn(n=1~5)> : A high degree of local position (X, Y, Z) [VT_R8|VT_ARRAY]

Before PoseWork Was deemed impossible by reason of robot holding candidates work, work Mountain , Do not decide, rather than measures to runner-up at the last measurement (gripping first runner-up)-grip can be work Returns the position.

Example

```
Dim vntRet As Object
Dim iTaskID As Integer = 1
vntRet = m_caoCtrl.Execute("PoseNext", iTaskID)

Dim iPallet As Integer
Dim iWork As Integer
Dim iValue As Integer
Dim iHandID As Integer
Dim vntWorkPos As Object
Dim dblShield As Double
Dim iNum As Integer
Dim vntPos(4) As Object
Dim iCnt As Integer

iPallet = vntRet(0)
iWork = vntRet(1)
iValue = vntRet(2)
iHandID = vntRet(3)
vntWorkPos = vntRet(4)
dblShield = vntRet(5)
iNum = vntRet(6)
For iCnt = 0 To 4
    vntPos(iCnt) = vntRet(7 + iCnt)
Next
```

2.4.1.14. CaoController::Execute ("PoseNext2") command

Without a new instrument, can grasp work calculated on the measurement of the most recent runner-up position and posture, the returns on the hand grip position.

Before POSE_WORK Or POSE_WORK2 In deemed impossible by reason of robot grasping holding candidate received work, work Mountain , Do not decide, without measuring the new runner-up in the most recent measurement (holding priority Runner-up) of available grip work position and returns a posture or hand grip position.

Format PoseNext2 (< TaskID >)

<TaskID> : [in] Work like measuring tasks ID (VT_I4)

Return value : [out] Workshop information (<Pallet>, <Work>, <Value>, <HandID>, <WorkPos> [, HandP3], <Shield>, <Num>, <Pos1>,<Pos2>,<Pos3>,<Pos4>,<Pos5>) [VT_VARIANT|VT_ARRAY]

<Pallet> : Palette-spatial information [VT_I4]
0 : empty, 1 : non-emtpy, 65535 : don't judge
<Work> : With or without grasping potential [VT_I4]
0 : None, 1 : Candidate and
<Value> : Work values [VT_I4]
<HandID> : Grasp information ID [VT_I4]
<WorkPos> : Position and posture of workpiece (Tx, Ty, Tz, Rx, Ry, Rz) [VT_R8|VT_ARRAY]
<HandP3>: Hand P3 Of position (* 1) (X,Y,Z, Rx, Ry, Rz) [VT_R8 | VT_ARRAY]
<Shield> : WHL [VT_R8]
<Num> : The number of locally higher dimensional measurement 3D points [VT_I4]
<Posn(n=1~5)> : A high degree of local position (X, Y, Z) [VT_R8|VT_ARRAY]

Attention)

* 1 RC I/f The format of the return value depends on the setting.

< HandP3 > The AddController Of options Position = 3 Output at a specified time.

Example

```
            Dim vntRet As Object
            Dim iTaskID As Integer = 1

            m_caoCtrl = cao.AddController("RV", "CaoProv.Canon.RV", "", "conn=eth:192.168.0.1,
Position=3")
            vntRet = m_caoCtrl.Execute("PoseNext2", iTaskID)

            Dim iPallet As Integer
            Dim iWork As Integer
            Dim iValue As Integer
            Dim iHandID As Integer
            Dim vntWorkPos As Object
            Dim vntHandP3 as Object
            Dim dblShield As Double
            Dim iNum As Integer
            Dim vntPos(4) As Object
            Dim iCnt As Integer

            iPallet = vntRet(0)
            iWork = vntRet(1)
            iValue = vntRet(2)
            iHandID = vntRet(3)
            vntWorkPos = vntRet(4)
            vntHandP3 = vntRet(5)
            dblShield = vntRet(6)
            iNum = vntRet(7)
            For iCnt = 0 To 4
                vntPos(iCnt) = vntRet(8 + iCnt)
            Next
```

2.4.1.15. CaoController::Execute ("QueryStatus") command

RC I/f From the module 3 D Queries the State of a machine vision system.

Format QueryStatus

Argument : None

Return value : None

System is unusual if only HRESULT , Returns an error code. Error details are 2.3 Please refer to the chapter.

Example

```
        m_caoCtrl.Execute "QueryStatus"
```

2.4.1.16. CaoController::Execute ("ReadyCalib") command

RV Calibration marker position measurement, Line Sets the scene number will be scheduled.

Format ReadyCalib(<Num>)

Argument : [in]<Num>: RV In the calibration markers to measure scene number (VT_I4)

Return value : None

And the robot 3 D Calculates the centerpoint of marker made gripping robots for more than one position in the calibration of the relative position of the machine vision, image processing, coordinate transformation parameters calculated from them. And set the scene number will be the marker position measurement in advance, this command in 3D machine vision recognition software notifies the... In addition,3D machine vision recognition software the robot and 3D information needed to calibrate the machine vision do load measurement preparation in advance.

Attention) Using the robot after installation 3D use this command when you want to the scanner calibration.

Attention) Scene number 4 scene more than they should be.

Example

```
Dim iNum as Integer = 5
m_caoCtrl.Execute "ReadyCalib", iNum
```

2.4.1.17. CaoController::Execute ("CalibMarker") command

RV Measures the center coordinate of calibration markers.

Format CalibMarker (<Scene>, <Pos>)

: [in]Parameter [VT_VARAINT | VT_ARRAY]
<Scene>: Scene number [VT_I4]
<Pos>: Robot coordinate marker (Tx, Ty, Tz)
[VT_R8 | VT_ARRAY]

Return value : None

Markers the measurement results

· Scene number

· Robot coordinates (x, y, z)

· Vision coordinates the vision positioning the marker

Store it on the set.

If already has already measured the scene number again was measurement specified, overwrites existing data. (Estimated user scene marker measurement this function remapped)

The maximum number of scenes ReadyCalib , Is the number of scenes. Scene number exceeds the maximum number of scenes is given

If causes an error.

* By using the robot after installation 3 D Use this command when you want to the scanner calibration.

Example

```
Dim vntParam(1) As Object
Dim iNum As Integer = 1
Dim dblPos(2) As Double
dblPos(0) = 10
dblPos(1) = 20
dblPos(2) = 50
vntParam(0) = iNum
vntParam(1) = dblPos
m_caoCtrl.Execute("CalibMarker", vntParam)
```

2.4.1.18. CaoController::Execute ("CatchPoint") command

Set the workpiece gripped position information.

Format CatchPoint(<TaskID>, <HandID>, <ToolPos>, <AploachPos>, <PickPos>)

Argument : [in] Parameter
<TaskID>: Work like measuring tasks ID [VT_I4]
<HandID>: Grasp information ID [VT_I4]
<ToolPos>: Tool coordinates (Tx, Ty, Tz, Rx, Ry, Rz)
[VT_R8 | VT_ARRAY]
<AploachPos>: Approach position (Tx, Ty, Tz, Rx, Ry, Rz)
[VT_R8 | VT_ARRAY]
<PickPos>: 把持位置 (Tx, Ty, Tz, Rx, Ry, Rz)
[VT_R8 | VT_ARRAY]

Return value : None

From the robot controller informs the following data as a result of the work holding instruction instruction.

- Position and orientation of the approach
- Holding position and posture
- Position and orientation of the end effector (flange) from hand tip

· This position (approach ⇒ grasping) in holding holding information identifier

, Task ID To string the management holding will be.

In order to determine position and orientation of the approach, grip, end-effector (flange) seen from hand tip, in interference detection position robot can grip is used.

Approach position and the position's posture and hand position in the robot coordinate system.

From the end-effector (flange) coordinates of the hand tip (Tool coordinates) , The robot's checker and calibrated using the advance..

Example

```
Dim vntParams(4) As Object
Dim iTaskID As Integer = 1
Dim iHandID As Integer = 5
Dim dblTool(5) As Double
Dim dblApproach(5) As Double
Dim dblPickPos(5) As Double

dblTool(0) = 10
dblTool(1) = 0
dblTool(2) = 20
dblTool(3) = 0
dblTool(4) = 0
dblTool(5) = 0

dblApproach(0) = 300
dblApproach(1) = 0
dblApproach(2) = 350
dblApproach(3) = 180
dblApproach(4) = 0
dblApproach(5) = 180

dblPickPos(0) = 300
dblPickPos(1) = 0
dblPickPos(2) = 250
dblPickPos(3) = 180
dblPickPos(4) = 0
dblPickPos(5) = 180

vntParams(0) = iTaskID
vntParams(1) = iHandID
vntParams(2) = dblTool
vntParams(3) = dblApproach
vntParams(4) = dblPickPos

m_caoCtrl.Execute("CatchPoint", vntParams)
```

2.4.1.19. CaoController::Execute ("VerVision") command

Contact the version number of the machine vision system.

Format VerVision

Argument : None

Return value : [out] Version information (<Vision>, <Scanner>)
[VT_BSTR | VT_ARRAY]

<Vision> : Version number of the machine vision system
AAA.BBB.CCC
AAA : Major BBB: minor CCC: Revision
<Scanner> : 3D The version number of the scanner
XXXX

Example

```
Dim vntRet As Object
Dim strVision As String
Dim strScanner As String

vntRet = m_caoCtrl.Execute("VerVision")
strVision = vntRet(0)
strScanner = vntRet(1)
```

2.4.1.20. CaoController::Execute ("QueryMode") command

Contact the State of the running mode of the machine vision system.

Format QueryMode

Argument : None

Return value : [out] Run mode number [VT_I4]
0 : Runtime
1 : Preliminary Setup (RV calibration)
2 : Preliminary Setup (RV calibration check)
3 : Preliminary Setup (grasping instructions)
4 : Preliminary Setup (and other)
5 : Preliminary Setup (palette plane estimate)

Startup mode 0 Or 4 And has been... , 12,3,5 of to each mode, mode 4 after the transition. (For Setup and run-time program is running in a separate process. ）

Example

```
Dim iMode As Integer
iMode = m_caoCtrl.Execute("QueryMode")
```

2.4.1.21. CaoController::Execute ("ReadyRim") command

Set the measurement number of scenes on the pallet surface estimation.

Format ReadyRim(<SceneNum>)

Argument : [in] <SceneNum> Number of scenes in robot pin finger [VT_I4]

Return value : None

Pallet top surface parameters to calculate, using coordinates from the robot pin refers to more than one position during the pallet surface estimation,... Therefore, you should pin point coordinate input number set in advance.

Using this command, 3 D Indicates the number of machine vision recognition software.

Also, 3 D Machine vision recognition software does load measurement preparation in advance information that is required on the pallet surface estimation.

Example

```
Dim iSceneNum As Integer = 5
iMode = m_caoCtrl.Execute("SceneNum", iSceneNum)
```

2.4.1.22. CaoController::Execute ("InputRim") command

Enter the coordinate Center of the robot pin tip to use palette plane estimation.

Format InputRim(<SceneID>, <RobVec>)

Argument : [in] Parameter [VT_VARIANT | VT_ARRAY]
< SceneID>: Scene number measured in robot pin finger [VT_I4]
<RobVec>: Robot coordinates pin tip (Tx, Ty, Tz)
[VT_R8 | VT_ARRAY]

Return value : None

3D Machine vision recognition software

· Scene number

· Robot coordinates (x, y, z)

Store it on the set.

If you already entered the scene number again were prompted, overwrite the existing data. (Estimated users enter the scene pin point this function remapped. ）

The maximum number of scenes ReadyRim , Is the number of scenes. If the specified scene number exceeds the maximum number of scenes, and errors.

Example

```
Dim iSceneNum As Integer = 5
iMode = m_caoCtrl.Execute("SceneNum", iSceneNum)
```

2.4.1.23. CaoController::Execute ("ScannerPos") command

3D Sets the position of the scanner.

Format InputRim(<ScannerID>)

Argument : [in]<ScannerID>: Scanner locations ID [VT_I4]

Return value : None

More than one 3 D Scanner (3 D Machine vision head), when the position is Machine vision system 3 D Specifies the scanner position.

* This command is, slider with response options interest For Only when using For Is possible.

Example

```
Dim iScannerID As Integer = 1
m_caoCtrl.Execute("ScannerPos", iScannerID)
```

2.4.1.24. CaoController::Execute ("FreeAll") command

LoadTask , Releases all of the tasks that are loaded.

Format FreeAll

Argument : None

Return value : None

Example

```
m_caoCtrl.Execute("FreeAll")
```

2.4.1.25. CaoController::Execute ("FreeAllAsync") command

In the asynchronous FreeAll Run.

Format FreeAllAsync

Argument : None

Return value : None

After you run "GetCommandResult" Verify the results in the command. "GetCommandResult" , and to use other commands before youE_COMMAND_EXCUTING of the error occurs.

E_TIMEUOT (0x80000900) The event, again "GetCommandResult" You can receive command. When you can't get the results "ClearPacket" remove the execution state in the command.

Example

```
m_caoCtrl.Execute("FreeAllAsync")
m_caoCtrl.Execute("GetCommandResult")
```

2.4.1.26. CaoController::Execute ("ReadyCorrect") command

Ranging one notifies the measuring scene number of the marker as a marker measurement for calculating the correction value for the coordinate transformation parameters from the amount of advance preparation,...

Format ReadyCorrect(<SceneNum>)

Argument : [in] <SceneNum>: Scene number [VT_I4]

Return value : None

Example

```
m_caoCtrl.Execute("ReadyCorrect", 5)
```

2.4.1.27. CaoController::Execute ("PoseCorrect") command

In the marker Heart Position coordinate measuring Line Is...

Format PoseCorrect(<Scene>)

Argument : [in] <Scene>: Scene number [VT_I4]

Return value : [out] Measurement results (< MarkerResult >, < CorrectEnable >, < ResidualMax >, < Residual >, < DistanceMax >, and < Distance >) [VT_VARIANT | VT_ARRAY]

< MarkerResult >: Measurement end of all markers / Unfinished [VT_I4]
All markers when the measurement end 1
Measurement of all markers are incomplete or when registering a marker 0
< CorrectEnable >: Compensation can be / (Not possible) [VT_I4]
Complete measurement and correction of 1
Non-compensation instrumentation unfinished or registering the markers 0
< ResidualMax >: Corrected residuals Maximum length [VT_R8]
< Residual >: Corrected residuals (X, Y, Z composition maximum) [VT_R8 | VT_ARRAY]
< DistanceMax >: Ranging shift of Maximum length [VT_R8]
< DistanceX >: Ranging shift of (X, Y, Z composition maximum) [VT_R8 | VT_ARRAY]

Example

```
Dim vntRet as Object

vntRet = m_caoCtrl.Execute("PoseCorrect", 2)

Dim iMarkerResult as Integer
Dim iCorrectEnable as Integer
Dim dResidualMax as Double
Dim vntResidual as Object
Dim dDistance as Double
Dim vntDistance as Object

iMarkerResult = vntRet(0)
iCorrectEnable = vntRet(1)
dResidualMax = vntRet(2)
vntResidual = vntRet(3)
dDistance = vntRet(4)
vntDistance = vntRet(5)
```

2.4.1.28. CaoController::Execute ("SaveImage") command

Save the last image was taken.

The specified image was taken at this time, in the folder .cdm3 The extension Child On will be saved in the file format.

Format SaveImage

Argument : None

Return value : ファイル名称が一つの場合
[out] <Name> File name [VT_BSTR]

ファイル名称が二つの場合
[out] ファイル名称リスト(<Name1>,<Name2>) [VT_BSTR | VT_ARRAY]

<Name1>: ファイル名称 1 [VT_BSTR]
<Name2>: ファイル名称 2 [VT_BSTR]

Not yet taken time, or fails on Imaging image file of what has been taken, the file name 0 Immigration Will be...

Example

```
Dim vntName as Object
vntName = m_caoCtrl.Execute("SaveImage")

Dim strFileName1 As String
Dim strFileName2 As String

'-------------ファイル名称が一つの場合------------------
strFileName1 = vntName

'-------------ファイル名称が二つの場合------------------
strFileName1 = vntName(0)
strFileName2 = vntName(1)
```

2.4.1.29. CaoController::Execute ("InputPin") command

システム上向きを表すベクトルを教示するためのロボットピン先端の中心座標の入力を行います.

Format InputPin (<Scene>, <RobPos>)

Argument : [in] Parameter [VT_VARIANT | VT_ARRAY]
<SceneNum>: Scene number [VT_I4]
<RobPos>: Robot coordinates pin tip (X, Y, Z)
[VT_R8 | VT_ARRAY]

Return value : None

Example

```
Dim vntParams(2) as Object
Dim iScene as integer
Dim dPos(3) as Double

iScene = 5
dPos(0) = 10.0
dPos(0) = 20.0
dPos(0) = 30.0

vntParams(0) = iScene
vntParams(1) = dPos

m_caoCtrl.Execute("InputPin", vntParams)
```

2.4.1.30. CaoController::Execute("GetScannerInfo")コマンド

接続されている 3D スキャナーの情報(型式, シリアル ID, 通信部のファームウェアバージョン, FPGA のファームウェアバージョン, 投影用デバイスのファームウェアバージョン)を取得します.

書式 GetScannerInfo

引数 : なし

戻り値 : [out] 3D スキャナーの情報
(<TypeName>,<SerialID>,<CommFirmware>,
<FpgaFirmware>,<DeviceFirmware>)[VT_BSTR | VT_ARRAY]

< TypeName >:型式 [VT_BSTR]
< SerialID >: シリアル ID[VT_BSTR]
<CommFirmware>: 通信部のファームウェアバージョン[VT_ BSTR]
< FpgaFirmware >: FPGA のファームウェアバージョン [VT_ BSTR]
<DeviceFirmware>: 投影用デバイスのファームウェアバージョン [VT_ BSTR]

使用例

```
Dim vntRet as Object
vntRet = m_caoCtrl.Execute("GetScannerInfo")

Dim bstrTypeName as String
Dim bstrSerialID as String
Dim bstrCommFirmware as String
Dim bstrFpgaFirmware as String
Dim bstrDeviceFirmware as String

bstrTypeName = vntRet(0)
bstrSerialID = vntRet(1)
bstrCommFirmware = vntRet(2)
bstrFpgaFirmware = vntRet(3)
bstrDeviceFirmware = vntRet(4)
```

2.4.1.31. CaoController::Execute("QueryGraspID")コマンド

タスクに登録されている把持 ID 数と，各把持 ID のロボットコントローラとの同期状態の情報を取得します.

書式　QueryGraspID(<TaskID>)

引数　：　[in]<TaskID>: タスク ID　[VT_I4]

戻り値　：　[out] 把持情報 (<HandInfoNum> ,[<HandIDN >,<SynsStateN>))
[VT_I4 | VT_ARRAY]

<HandInfoNum >:タスク内の全把持情報の数 [VT_I4]
<HandIDN（N= 1~HandInfoNum）>把持 IDN の ID [VT_I4]
<SynsStateN（N= 1~HandInfoNum）>把持 IDN の同期状態
[VT_I4]

使用例

```
Dim vntRet as Object
Dim iTaskID As Integer = 1
vntRet = m_caoCtrl.Execute("QueryGraspID" , iTaskID)


'-------------タスク内の全把持情報の数が 2 個の場合
Dim iHandInfoNum As Integert
Dim iHandID(1) As Integer
Dim iSynsState(1) As Integer

iHandInfoNum = vntRet(0)
vntHandInfo(0) = vntRet(1)
```

```
vntSynsState(0) = vntRet(2)
vntHandInfo(1) = vntRet(3)
vntSynsState(1) = vntRet(4)
```

2.4.1.32. CaoController::Execute("SyncCatchPoint")コマンド

ロボット座標系のワークの位置・姿勢と，アプローチ状態でのハンド先端の位置・姿勢，把持状態でのハンド先端の位置・姿勢を取得します..

書式　SyncCatchPoint(<TaskID>, <HandInfoID>, <ToolPos>, <UpdateFlag>)

引数　：　[in] パラメータ [VT_VARIANT | VT_ARRAY]
<TaskID>: タスク ID[VT_I4]
<HandInfoID>: 把持 ID[VT_I4]
<ToolPos>: フランジからツールツール先端の座標・回転角度 (Tx,TyTz,Rx,Ry,Rz)
[VT_R8 | VT_ARRAY]
<UpdateFlag>: 更新フラグ[VT_I4]

戻り値　：　[out] 位置・姿勢情報 (<WorkPos> ,<AproachPos> ,<PickPos>)
[VT_VARIANT | VT_ARRAY]

<WorkPos>: ロボット座標系におけるワークの座標 (Tx, Ty, Tz, Rx, Ry, Rz)
[VT_R8 | VT_ARRAY]
<AploachPos>: アプローチ状態でのロボット座標系におけるツール位置・回転角度 (Tx, Ty, Tz, Rx, Ry, Rz)
[VT_R8 | VT_ARRAY]
<PickPos>: 把持状態でのロボット座標系におけるツールの座標・回転角度 (Tx, Ty, Tz, Rx, Ry, Rz)
[VT_R8 | VT_ARRAY]

使用例

```
Dim vntRet As Object
Dim iTaskID As Integer = 1
Dim iHandInfoID As Integer = 5
Dim dblToolPos(5) As Double
```

```
dblToolPos(0) = 0
dblToolPos(1) = 0
dblToolPos(2) = 112
dblToolPos(3) = 0
dblToolPos(4) = 0
dblToolPos(5) = 0

Dim iUpdateFlag As Integer = 0

Dim vntTool As Object
Dim vntApproach As Object
Dim vntPickPos As Object
vntRet = m_caoCtrl.Execute("SyncCatchPoint", iTaskID, iHandInfoID, dblToolPos, iUpdateFlag)

vntTool = vntRet(0)
vntApproach = vntRet(1)
vntPickPos = vntRet(2)
```

2.4.1.33. CaoController::Execute("PoseWork3")コマンド

把持可能なワークの位置・姿勢を計測します.

ワーク計測に関するパラメータについて, 本コマンドで指定することで設定値を変更することができます.

パラメータ省略時には変更されません.

取得する位置姿勢情報の対象について, 本コマンドで指定することで対象を変更することができます.

書式　PoseWork3(<TaskID>, <Mode> [, <ROISize>, <ROIX>, <ROIY>, <Score>, <WorkMax>, <FitMax>, <CatchMax>, <Exposure>])

引数　:　[in] パラメータ

<TaskID>: 計測したいワークのタスク ID [VT_I4]

<Mode>: 位置姿勢返却モード(*4) [VT_I4]

<ROISize>: ROI(部品検出領域)サイズ倍率 [VT_I4]

<ROIX>: ROI の中心位置 X, 1～2048 [VT_I4]

<ROIY>: ROI の中心位置 Y, 1～2048 [VT_I4]

<Score>: 認識スコアの閾値, 1.0～100.0 [VT_R8]]

<WorkMax>: 概略検出ワーク上限数, 1～100 [VT_I4]

<FitMax>: モデルフィッティングワーク上限数, 1～20 [VT_I4]

<CatchMax>: 把持候補出力上限数, 1～20 [VT_I4]

<Exposure>: 露光時間 [VT_R8]

0.05～54.0 の範囲で設定可能(RV1100)

0.05～47.0 の範囲で設定可能(RV500, RV300)

戻り値　:　[out] ワーク情報 (<Pallet>, <Work>, <Value>, <HandID>, <WorkPos>, <Shield>, <Num>[, <Posn>]

[,<StartTime>, <EndTime>]) [VT_VARIANT|VT_ARRAY]

<Pallet>： パレット空情報 [VT_I4]
0： 空である, 1： 空でない, 65535： 空判定ができない
<Work>： 把持候補の有無 [VT_I4]
0： 候補なし, 1： 候補あり
<Value>： ワーク評価値 [VT_I4]
<HandID>： 把持情報ID [VT_I4]
<WorkPosN(N = 1 ~ 4)>： ワーク又はハンドの位置・姿勢(X, Y, Z, Rx, Ry, Rz) (*4) [VT_R8|VT_ARRAY]
<Shield>： 遮蔽率(*1) [VT_R8]
<Num>：3次元計測点が局地的に高い位置の個数 [VT_I4]
<Posn(n=1~5)>： 局地的に高い位置 (X, Y, Z)(*2) [VT_R8|VT_ARRAY]
<StartTime>: 撮影開始時刻(*3) [VT_BSTR]
<EndTime>: 撮影終了時刻(*3) [VT_BSTR]

計測対象のワークは, タスク ID で指定されたタスクに属するワークです.
注意)
*1 <Shield>は実数の値を返します. 例)3.8% ⇒ 3.8 99.9% ⇒ 99.9
*2<Posn>は結果取得時の<Num>の値により出力の個数が変化します.
*3 RC I/F の設定により戻り値の形式が異なります.
<StartTime>,<EndTime>は AddController のオプション Timestamp=True を指定した時に出力します.
*4 <WrokPosN(N = 1~4)>の個数 N は送信時の<Mode>の値によって増減します.
<Mode> = 0 :使用不可
<Mode> = 1,2,3 : N = 1
<Mode> = 4,5,6 : N = 2
<Mode> = 7,8 : N = 3
<Mode> = 9 : N = 4

使用例

```
Dim vntRet As Object

Dim iTaskID As Integer = 101
Dim iMode As Integer = 1

Dim iPallet As Integer
Dim iWork As Integer
Dim iValue As Integer
Dim iHandID As Integer
```

```
Dim vntWorkHand As Object
Dim dblShield As Double
Dim iNum As Integer
Dim vntPos As Object
Dim strStartTime as String
Dim strEndTime as String

' -------------- パラメータ省略時 ------------
m_caoCtrl = cao.AddController ("RV", "caoProv.Canon.RV", "", "conn=eth:192.168.0.1")
vntRet = m_caoCtrl.Execute("PoseWork3", iTaskID, iMode)

iPallet = vntRet(0)
iWork = vntRet(1)
iValue = vntRet(2)
iHandID = vntRet(3)
vntWorkPos = vntRet(4)
dblShield = vntRet(5)
iNum = vntRet(6)
vntPos = vntRet(7)


' -------------- パラメータ設定時 ------------
 Dim vntParam(9) As Object
 vntParam(0) = iTaskID
 vntParam(1) = iMode
 vntParam(2) = 2 ' Size
 vntParam(3) = 512 ' ROIX
 vntParam(4) = 512 ' ROIY
 vntParam(5) = 88.8 ' Score
 vntParam(6) = 50 ' WorkMax
 vntParam(7) = 10 ' FitMax
 vntParam(8) = 8 ' CatchMax
 vntParam(9) = 40.4 ' Exposure


 m_caoCtrl = cao.AddController ("RV", "caoProv.Canon.RV", "", "conn=eth:192.168.0.1")

 vntRet = m_caoCtrl.Execute("PoseWork3", vntParam)

 iPallet = vntRet(0)
 iWork = vntRet(1)
 iValue = vntRet(2)
 iHandID = vntRet(3)
 vntWorkPos = vntRet(4)
 dblShield = vntRet(5)
 iNum = vntRet(6)
 vntPos = vntRet(7)


' -------------- RC I/F で撮影時刻を出力している時 ------------
 m_caoCtrl = cao.AddController ("RV", "caoProv.Canon.RV", "", "conn=eth:192.168.0.1,
Timestamp=true")
 vntRet = m_caoCtrl.Execute("PoseWork3", iTaskID,iMode)

 iPallet = vntRet(0)
 iWork = vntRet(1)
 iValue = vntRet(2)
 iHandID = vntRet(3)
 vntWorkPos = vntRet(4)
 dblShield = vntRet(5)
 iNum = vntRet(6)
 vntPos = vntRet(7)
 strStartTime = vntRet(8)
 strEndTime = vntRet(9)
```

2.4.1.34. CaoController::Execute("PoseWork3Async")コマンド

非同期で PoseWork3 を実行します.

書式 PoseWork3Async(<TaskID>, <Mode> [, <ROISize>, <ROIX>, <ROIY>, <Score>, <WorkMax>, <FitMax>, <CatchMax>, <Exposure>])

引数 : [in] パラメータ
<TaskID>: 計測したいワークのタスク ID [VT_I4]
<Mode>: 位置姿勢返却モード [VT_I4]
<ROISize>: ROI(部品検出領域)サイズ倍率 [VT_I4]
<ROIX>: ROI の中心位置 X, 1～2048 [VT_I4]
<ROIY>: ROI の中心位置 Y, 1～2048 [VT_I4]
<Score>: 認識スコアの閾値, 1.0～100.0 [VT_R8]]
<WorkMax>: 概略検出ワーク上限数, 1～100 [VT_I4]
<FitMax>: モデルフィッティングワーク上限数, 1～20 [VT_I4]
<CatchMax>: 把持候補出力上限数, 1～20 [VT_I4]
<Exposure>: 露光時間 [VT_R8]
0.05～54.0 の範囲で設定可能(RV1100)
0.05～47.0 の範囲で設定可能(RV500, RV300)

戻り値 : なし

実行後"GetCommandResult"コマンドで実行結果を確認してください. "GetCommandResult"を実行する前に他のコマンドを使用すると, E_COMMAND_EXCUTING のエラーが発生します.

E_TIMEUOT(0x80000900)が発生した場合は, 再度"GetCommandResult"を使用してコマンド実行結果を受信できます. 結果が受信できない時は"ClearPacket"コマンドで実行状態を解除してください.

使用例

```
Dim vntRet As Object

Dim iTaskID As Integer = 101
Dim iMode As Integer = 1

Dim vntParam(9) As Object
vntParam(0) = iTaskID
vntParam(1) = iMode
vntParam(2) = 2 ' Size
vntParam(3) = 512 ' ROIX
vntParam(4) = 512 ' ROIY
vntParam(5) = 88.8 ' Score
```

```
vntParam(6) = 50 ' WorkMax
vntParam(7) = 10 ' FitMax
vntParam(8) = 8 ' CatchMax
vntParam(9) = 40.4 ' Exposure

m_caoCtrl = cao.AddController ("RV", "caoProv.Canon.RV", "", "conn=eth:192.168.0.1")

m_caoCtrl.Execute("PoseWork3Async", vntParam)

vntRet = caoctrl.Execute("GetCommandResult")

iPallet = vntRet(0)
iWork = vntRet(1)
iValue = vntRet(2)
iHandID = vntRet(3)
vntWorkPos = vntRet(4)
dblShield = vntRet(5)
iNum = vntRet(6)
vntPos = vntRet(7)
```

2.4.1.35. CaoController::Execute("PoseNext3")コマンド

新たな計測はせず，直近の計測で算出した次点の把持可能ワークの位置・姿勢，もしくはハンドの把持位置・姿勢について返します．

取得する位置姿勢情報の対象について，本コマンドで指定することで対象を変更することができます．

先に POSE_WORK3 で受け取った把持候補ワークをロボット側の理由で把持不可能と判断した場合に，ワーク山は崩れていないと判断し，新たに計測せずに直近の計測での次点（把持優先順の次点）の把持可能ワークの位置・姿勢，もしくはハンドの把持位置・姿勢を返します．

書式　PoseNext3 (< TaskID > , <Mode>)

<TaskID> : [in] パラメータ
<TaskID>: 計測したいワークのタスク ID [VT_I4]
<Mode>: 位置姿勢返却モード(*3) [VT_I4]

戻り値 : [out] ワーク情報 (<Pallet>, <Work>, <Value>, <HandID>, <WorkPos>, <Shield>, <Num>[, <Posn>])
[VT_VARIANT|VT_ARRAY]

<Pallet>： パレット空情報 [VT_I4]
0： 空である， 1： 空でない， 65535： 空判定ができない
<Work>： 把持候補の有無 [VT_I4]
0： 候補なし， 1： 候補あり
<Value>： ワーク評価値 [VT_I4]
<HandID>： 把持情報ID [VT_I4]
<WorkPosN(N = 1~4)>： ワーク又はハンドの位置・姿勢(X, Y, Z, Rx, Ry, Rz) (*3) [VT_R8|VT_ARRAY]
<Shield>： 遮蔽率(*1) [VT_R8]

<Num> : 3次元計測点が局地的に高い位置の個数 [VT_I4]
<Posn(n=1~5)> : 局地的に高い位置 (X, Y, Z) (*2)
[VT_R8|VT_ARRAY]

注意)
*1 <Shield>は実数の値を返します. 例)3.8% ⇒ 3.8 99.9% ⇒ 99.9
*2 <Posn>は結果取得時の<Num>の値により出力の個数が変化します.
*3 <WrokPosN(N = 1~4)>の個数 N は送信時の<Mode>の値によって増減します.
<Mode> = 0 :使用不可
<Mode> = 1,2,3 : N = 1
<Mode> = 4,5,6 : N = 2
<Mode> = 7,8 : N = 3
<Mode> = 9 : N = 4

使用例

```
Dim vntRet As Object
Dim iTaskID As Integer = 101
Dim iMode As Integer = 1

m_caoCtrl = cao.AddController("RV", "CaoProv.Canon.RV", "", "conn=eth:192.168.0.1,
Position=3")
vntRet = m_caoCtrl.Execute("PoseNext3", iTaskID, iMode)

Dim iPallet As Integer
Dim iWork As Integer
Dim iValue As Integer
Dim iHandID As Integer
Dim vntWorkPos As Object
Dim dblShield As Double
Dim iNum As Integer
Dim vntPos As Object

iPallet = vntRet(0)
iWork = vntRet(1)
iValue = vntRet(2)
iHandID = vntRet(3)
vntWorkPos = vntRet(4)
dblShield = vntRet(5)
iNum = vntRet(6)
vntPos = vntRet(7)
```

2.4.1.36. CaoController::Execute("PoseMultiWork3")コマンド

把持可能なワークの位置・姿勢を計測し，全ての候補を返却します．

計測対象のワークは，タスク ID で指定されたタスクに属するワークです．探索する ROI は，中心位置と共に複数個指定することができます．

ワークの最大個数に達しない場合でも探索する ROI 数の探索が完了すると，応答を返します．

取得する位置姿勢情報の対象について，本コマンドで指定することで対象を変更することができます．

ワーク計測に関するパラメータについて，本コマンドで指定することで設定値を変更することができます．

書式　PoseMultiWork3(<TaskID>, <WorkMaxCnt>, <ROICnt>, <Mode>, [, <ROISize>, <ROIX>, <ROIY>, <Score>, <WorkMax>, <FitMax>, <CatchMax>, <Exposure>])

引数　：　[in] パラメータ

<TaskID>: 計測したいワークのタスク ID [VT_I4]

<WorkMaxCnt>: ワークの最大個数 [VT_I4]

<ROICnt>: 探索する ROI 数 [VT_I4]

<Mode>: 位置姿勢返却モード(*5) [VT_I4]

<ROISize>: ROI（部品検出領域）サイズ倍率 [VT_I4]

<ROIX>: ROI の中心位置 X, 1～2048 [VT_I4]

<ROIY>: ROI の中心位置 Y, 1～2048 [VT_I4]

<Score>: 認識スコアの閾値, 1.0～100.0 [VT_R8]]

<WorkMax>: 概略検出ワーク上限数, 1～100 [VT_I4]

<FitMax>: モデルフィッティングワーク上限数, 1～20 [VT_I4]

<CatchMax>: 把持候補出力上限数, 1～20 [VT_I4]

<Exposure>: 露光時間 [VT_R8]

0.05～54.0 の範囲で設定可能（RV1100）

0.05～47.0 の範囲で設定可能（RV500，RV300）

戻り値　：　[out] ワーク情報 (<Pallet>, <WorkNum>[, <Value>, <HandID>, <WorkPos>, <Shield>], <Num>[,<Posn>] [,<StartTime>, <EndTime>]) [VT_VARIANT|VT_ARRAY]

<Pallet>：パレット空情報 [VT_I4]

0：空である，1：空でない， 65535：空判定ができない

<WorkNum>：把持候補の数 [VT_I4]

<Value>：ワーク評価値 [VT_I4](*2)

<HandID>：把持情報ID [VT_I4] (*2)

<WorkPosN(N = 1~4)>：ワーク又はハンドの位置・姿勢(X, Y, Z, Rx, Ry, Rz) (*5) [VT_R8|VT_ARRAY] (*2)

<Shield> : 遮蔽率(*1) [VT_R8] (*2)
<Num> : 3次元計測点が局地的に高い位置の個数 [VT_I4]
<Posn(n=1~5)> : 局地的に高い位置 (X, Y, Z)(*3)
[VT_R8|VT_ARRAY]
<StartTime>: 撮影開始時刻(*4) [VT_BSTR]
<EndTime>: 撮影終了時刻(*4) [VT_BSTR]

計測対象のワークは, タスク ID で指定されたタスクに属するワークです.
注意)
*1 <Shield>は実数の値を返します. 例)3.8% ⇒ 3.8 99.9% ⇒ 99.9
*2<Value>,<HandID>,<WorkPos>,<Shield>は, 結果取得時の<WorkNum>の値により出力の個数が変化します.
<WorkNum>の値が 0 の場合は戻り値として取得できません.
*3<Posn>は結果取得時の<Num>の値により出力の個数が変化します.
*4 RC I/F の設定により戻り値の形式が異なります.
<StartTime>,<EndTime>は AddController のオプション Timestamp=True を指定した時に出力します.
*5 <WrokPosN(N = 1~4)>の個数 N は送信時の<Mode>の値によって増減します.
<Mode> = 0 :使用不可
<Mode> = 1,2,3 : N = 1
<Mode> = 4,5,6 : N = 2
<Mode> = 7,8 : N = 3
<Mode> = 9 : N = 4

使用例

```
Dim vntRet As Object
Dim iCnt As Integer


Dim iTaskID As Integer = 101
Dim iWorkNum As Integer = 1
Dim iROICnt As Integer = 1
Dim iMode As Integer = 1

Dim iPallet As Integer
Dim iWorkNum As Integer
Dim iNum As Integer
Dim vntPos As Object
Dim strStartTime as String
Dim strEndTime as String

' -------------- パラメータ省略時 ------------
m_caoCtrl = cao.AddController "RV", "caoProv.Canon.RV", "", "conn=eth:192.168.0.1"
vntRet = m_caoCtrl.Execute("PoseMultiWork3", iTaskID, iMode)

iPallet = vntRet(0)
```

```
iWorkNum = vntRet(1)

If iWorkNum = 0
      vntPos = vntRet(2)
      iNum = vntRet(3)
      If iNum <> 0
            vntPos = vntRet(4)
      Endif
Else
      Dim vntValue(iWorkNum) As Object
      Dim vntHandID(iWorkNum) As Object
      Dim vntWorkPos(iWorkNum) As Object
      Dim vntShield(iWorkNum) As Object

      For iCnt 0 to iWorkNum
            vntValue(iCnt) = vntRet(2 + (iCnt * 4))
            vntHandID(iCnt) = vntRet(3 + (iCnt * 4))
            vntWorkPos(iCnt) = vntRet(4 + (iCnt * 4))
            vntShield(iCnt) = vntRet(5 + (iCnt * 4))
      Next
      iNum = vntRet(6 + (iWorkNum * 4))
      vntPos = vntRet(7 + (iWorkNum * 4))
Endif


' -------------- パラメータ設定時 ------------
Dim vntParam(11) As Object
vntParam(0) = iTaskID
vntParam(1) = iWorkMaxCnt
vntParam(2) = iROICnt
vntParam(3) = iMode
vntParam(4) = 2 ' Size
vntParam(5) = 512 ' ROIX
vntParam(6) = 512 ' ROIY
vntParam(7) = 88.8 ' Score
vntParam(8) = 50 ' WorkMax
vntParam(9) = 10 ' FitMax
vntParam(10) = 8 ' CatchMax
vntParam(11) = 40.4 ' Exposure


 m_caoCtrl = cao.AddController ("RV", "caoProv.Canon.RV", "", "conn=eth:192.168.0.1")

 vntRet = m_caoCtrl.Execute("PoseMultiWork3", vntParam)

If iWorkNum = 0
      vntPos = vntRet(2)
      iNum = vntRet(3)
      If iNum <> 0
            vntPos = vntRet(4)
      Endif
Else
      Dim vntValue(iWorkNum) As Object
      Dim vntHandID(iWorkNum) As Object
      Dim vntWorkPos(iWorkNum) As Object
      Dim vntShield(iWorkNum) As Object

      For iCnt 0 to iWorkNum
            vntValue(iCnt) = vntRet(2 + (iCnt * 4))
            vntHandID(iCnt) = vntRet(3 + (iCnt * 4))
            vntWorkPos(iCnt) = vntRet(4 + (iCnt * 4))
            vntShield(iCnt) = vntRet(5 + (iCnt * 4))
      Next
      iNum = vntRet(6 + (iWorkNum * 4))
      vntPos = vntRet(7 + (iWorkNum * 4))
Endif
```

```
' -------------- RC I/F で撮影時刻を出力している時 -------------
m_caoCtrl = cao.AddController ("RV", "caoProv.Canon.RV", "", "conn=eth:192.168.0.1,
Timestamp=true")
vntRet = m_caoCtrl.Execute("PoseMultiWork3", iTaskID,iMode)

If iWorkNum = 0
      vntPos = vntRet(2)
      iNum = vntRet(3)
      If iNum = 0
               strStartTime = vntRet(4)
               strEndTime = vntRet(5)
      Else
               vntPos = vntRet(4)
               strStartTime = vntRet(5)
               strEndTime = vntRet(6)
      Endif
Else
      Dim vntValue(iWorkNum) As Object
      Dim vntHandID(iWorkNum) As Object
      Dim vntWorkHand(iWorkNum) As Object
      Dim vntShield(iWorkNum) As Object

      For iCnt 0 to iWorkNum
               vntValue(iCnt) = vntRet(2 + (iCnt * 4))
               vntHandID(iCnt) = vntRet(3 + (iCnt * 4))
               vntWorkHandPos(iCnt) = vntRet(4 + (iCnt * 4))
               vntShield(iCnt) = vntRet(5 + (iCnt * 4))
      Next
      iNum = vntRet(6 + (iWorkNum * 4))
      vntPos = vntRet(7 + (iWorkNum * 4))
      strStartTime = vntRet(8 + (iWorkNum * 4))
      strEndTime = vntRet(9 + (iWorkNum * 4))
Endif
```

2.4.1.37. CaoController::Execute("PoseMultiWork3Async")コマンド

非同期で PoseMultiWork3 を実行します.

書式　PoseMultiWork3Async(<TaskID>, <Mode> [, <ROISize>, <ROIX>, <ROIY>, <Score>, <WorkMax>, <FitMax>, <CatchMax>, <Exposure>])

引数　：　[in] パラメータ

<TaskID>: 計測したいワークのタスク ID [VT_I4]

<Mode>: 位置姿勢返却モード [VT_I4]

<ROISize>: ROI(部品検出領域)サイズ倍率 [VT_I4]

<ROIX>: ROI の中心位置 X, 1～2048 [VT_I4]

<ROIY>: ROI の中心位置 Y, 1～2048 [VT_I4]

<Score>: 認識スコアの閾値, 1.0～100.0 [VT_R8]]

<WorkMax>: 概略検出ワーク上限数, 1～100 [VT_I4]

<FitMax>: モデルフィッティングワーク上限数, 1～20 [VT_I4]
<CatchMax>: 把持候補出力上限数, 1～20 [VT_I4]
<Exposure>: 露光時間 [VT_R8]
0.05～54.0 の範囲で設定可能(RV1100)
0.05～47.0 の範囲で設定可能(RV500, RV300)

戻り値 : なし

実行後"GetCommandResult"コマンドで実行結果を確認してください. "GetCommandResult"を実行する前に他のコマンドを使用すると, E_COMMAND_EXCUTING のエラーが発生します.

E_TIMEUOT(0x80000900)が発生した場合は, 再度"GetCommandResult"を使用してコマンド実行結果を受信できます. 結果が受信できない時は"ClearPacket"コマンドで実行状態を解除してください.

使用例

```
Dim vntRet As Object
Dim iCnt As Integer


Dim iTaskID As Integer = 101
Dim iWorkNum As Integer = 1
Dim iROICnt As Integer = 1
Dim iMode As Integer = 1

Dim iPallet As Integer
Dim iWorkNum As Integer
Dim iNum As Integer
Dim vntPos As Object
Dim strStartTime as String
Dim strEndTime as String
Dim vntParam(11) As Object

vntParam(0) = iTaskID
vntParam(1) = iWorkMaxCnt
vntParam(2) = iROICnt
vntParam(3) = iMode
vntParam(4) = 2 ' Size
vntParam(5) = 512 ' ROIX
vntParam(6) = 512 ' ROIY
vntParam(7) = 88.8 ' Score
vntParam(8) = 50 ' WorkMax
vntParam(9) = 10 ' FitMax
vntParam(10) = 8 ' CatchMax
vntParam(11) = 40.4 ' Exposure


 m_caoCtrl = cao.AddController ("RV", "caoProv.Canon.RV", "", "conn=eth:192.168.0.1")
 m_caoCtrl.Execute("PoseMultiWork3Async", vntParam)

 vntRet = caoctrl.Execute("GetCommandResult")

If iWorkNum = 0
```

```
        vntPos = vntRet(2)
        iNum = vntRet(3)
        If iNum <> 0
                vntPos = vntRet(4)
        Endif
Else
        Dim vntValue(iWorkNum) As Object
        Dim vntHandID(iWorkNum) As Object
        Dim vntWorkHand(iWorkNum) As Object
        Dim vntShield(iWorkNum) As Object

        For iCnt 0 to iWorkNum
                vntValue(iCnt) = vntRet(2 + (iCnt * 4))
                vntHandID(iCnt) = vntRet(3 + (iCnt * 4))
                vntWorkHandPos(iCnt) = vntRet(4 + (iCnt * 4))
                vntShield(iCnt) = vntRet(5 + (iCnt * 4))
        Next
        iNum = vntRet(6 + (iWorkNum * 4))
        vntPos = vntRet(7 + (iWorkNum * 4))
Endif
```

2.4.1.38. CaoController::Execute("GetTime")コマンド

撮影時間とタクトタイムを取得します.

書式　GetTime(<TaskID>)

引数　：　[in]<TaskID>: タスク ID　[VT_I4]

戻り値　：　[out] 時間情報 (<PhotoTime> ,<TactTime>)

[VT_R8 | VT_ARRAY]

<PhotoTime>: 撮影時間[VT_R8]

<TactTime>: タクトタイム[VT_R8]

使用例

```
Dim vntRet As Object
Dim iTaskID As Integer = 1
vntRet = m_caoCtrl.Execute("GetTime", iTaskID)

Dim dblPhotoTime As Double
Dim dblTactTime As Double


dblPhotoTime = vntRet(0)
dblTactTime = vntRet(1)
```

2.4.1.39. CaoController::Execute("CaptureImage")コマンド

画像を撮影し, ビットマップ画像形式で取得します.

書式　CaptureImage(<Mode>, <Param>)

引数　：　[in] パラメータ [VT_VARIANT | VT_ARRAY]
< Mode>: パラメーター指定モード [VT_I4]
<Param>: 指定パラメーター(*1)
Mode = 0: <TaskID>: タスク ID [VT_I4]
Mode = 1: <ExPosure>: 露光時間 [msec] [VT_R8]

戻り値　：　[out] ビットマップ画像情報 [VT_UI1| VT_ARRAY]

*1 第一引数<Mode>の値によって第二引数<Param>の型と意味が変更されます.

使用例

```
Dim vntRet As Object
Dim iMode As Integer = 1
Dim iTaskID As Integer = 10
Dim dblExposure As Double = 30.0

'-----------タスク指定モードの場合---------------
vntRet = m_caoCtrl.Execute("CaptureImage", iMode, iTaskID)

'-----------露光時間指定モードの場合---------------
vntRet = m_caoCtrl.Execute("CaptureImage", iMode, dblExposure)
```

2.4.2. Custom command

2.4.2.1. CaoController::Execute ("ExecuteCommand") command

RC I/f To send the command string module, run command.

Format　ExecuteCommand(<Command>)

Argument　：　[in]<Command>: Command string [VT_BSTR]

Return value　：　[out] Command response string [VT_BSTR]

Example

```
Dim strRet as String
strRet = m_caoCtrl.Execute("ExecuteCommand", "LOAD_TASK,1")
```

2.4.2.2. CaoController::Execute ("ExecuteCommandAsync") command

in the asynchronous ExecuteCommand Run.

Format ExecuteCommandAsync(<Command>)

Argument : [in]<Command>: Command string [VT_BSTR]

Return value : none

After you run "GetCommandResult" Verify the results in the command. "GetCommandResult" , and to use other commands before youE_COMMAND_EXCUTING of the error occurs.

E_TIMEUOT (0x80000900) The event, again "GetCommandResult" You can receive command. When you can't get the results "ClearPacket" remove the execution state in the command.

Example

```
Dim strRet as String
m_caoCtrl.Execute("ExecuteCommand", "LOAD_TASK,1")
strRet = m_caoCtrl.Execute("GetCommandResult", "LOAD_TASK,1")
```

2.4.2.3. CaoController::Execute ("ClearPacket") command

Clear the received packets.

If you were running an asynchronous command, clears the execution state.

Format ClearPacket

Argument : None

Return value : None

Example

```
m_caoCtrl.Execute("ClearPacket")
```

2.4.2.4. CaoController::Execute ("SetTimeout") command

Timeout Sets the time.

Format SetTimeout (<Timeout>)

Argument : [in]<Timeout>: Timeout time msec [VT_I4]

Return value : None

Example

```
m_caoCtrl.Execute("SetTimeout", 1000)
```

2.4.2.5. CaoController::Execute ("GetTimeout") command

Gets the asynchronous command execution results.

Format GetTimeout

Argument : None

Return value : [out] Timeout time msec [VT_I4]

Example

```
Dim iTimeout as integer
iTimeout = m_caoCtrl.Execute("GetTimeout")
```

2.4.2.6. CaoController::Execute ("GetCommandResult") command

Gets the asynchronous command execution results.

Format GetTimeout

Argument : None

Return value : [out] Asynchronous commands return value

The return value depends on the asynchronous command before.

Example

```
Dim vntPoseData as Object

m_caoCtrl.Execute("PoseWorkAsync", 1)
vntPoseData = m_caoCtrl.Execute("GetCommandResult")
```