YAMAHA
Revs your Heart

3D simulator function
Program template function
Custom window creation function

RCX 3 Series CONTROLLER PROGRAMMING SOFTWARE

RCX-Studio 2020

Robot operation from start up to maintenance

New features to greatly reduce startup time
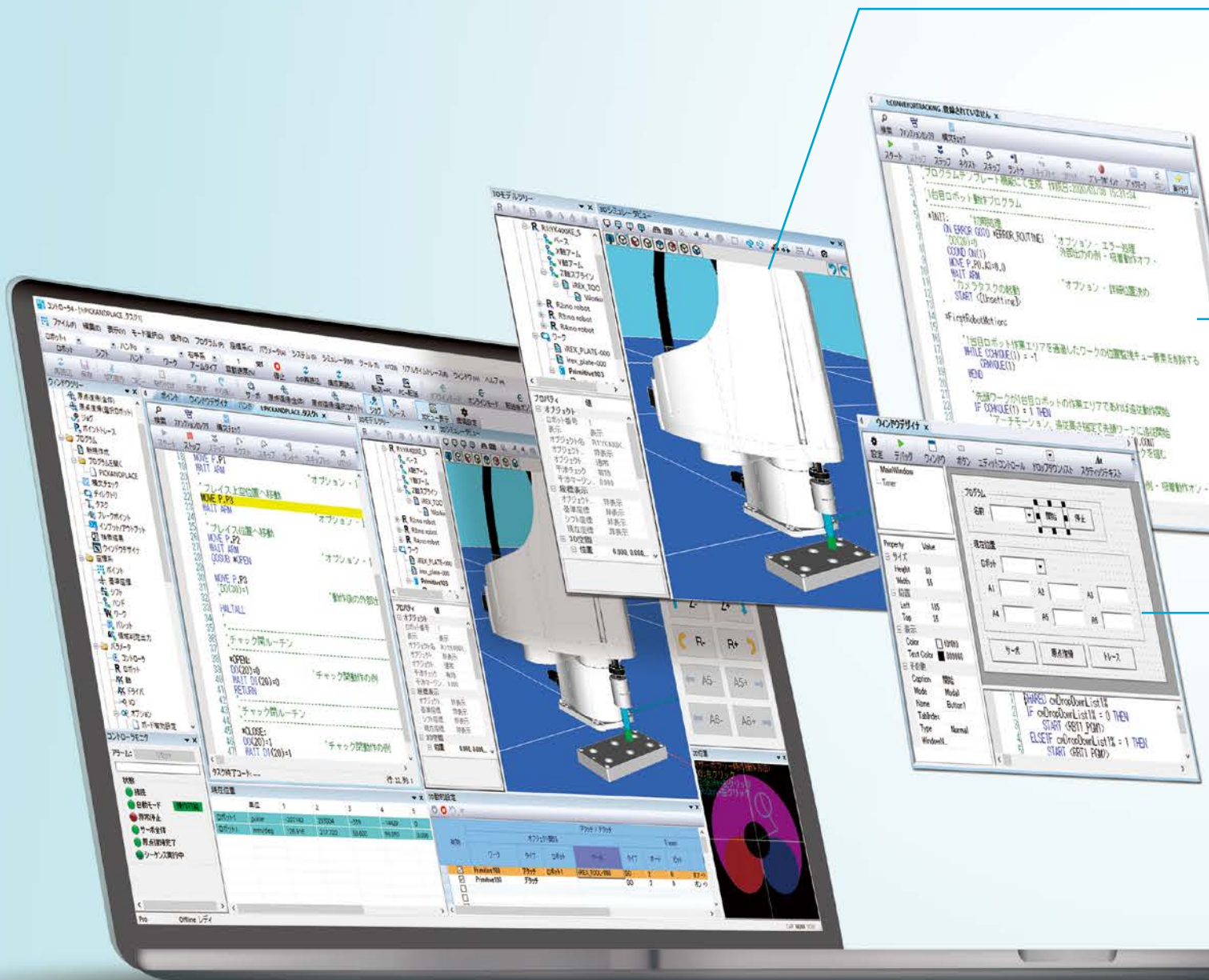
Programming software for RCX 3 series controllers

RCX-Studio 2020

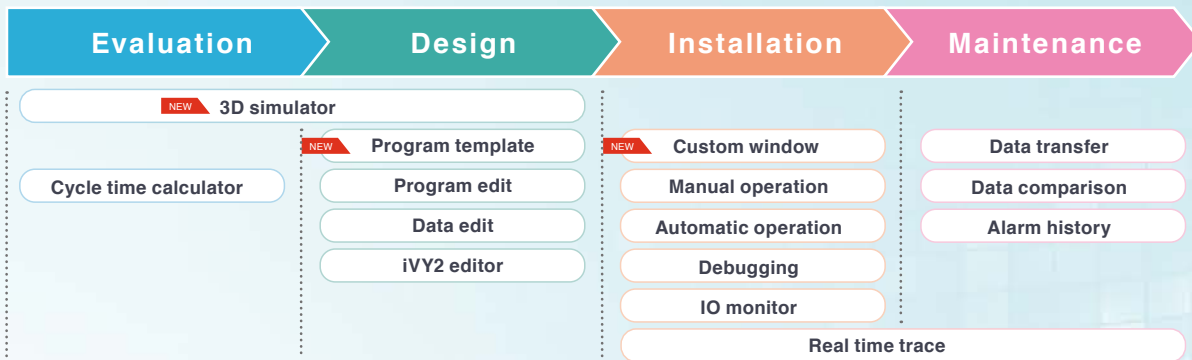**RCX-Studio 2020 Basic** **RCX-Studio 2020 Pro**

Improves production startup time
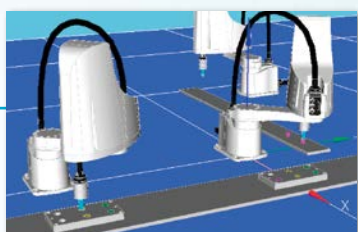
Start programming before robot delivery

New functions such as 3D simulator function and program template (program template automatic creation function) are added for ease of user operation.

Evaluation	Design	Installation	Maintenance

NEW 3D simulator			
	NEW Program template	**NEW** Custom window	Data transfer
Cycle time calculator	Program edit	Manual operation	Data comparison
	Data edit	Automatic operation	Alarm history
	iVY2 editor	Debugging	
		IO monitor	
		Real time trace	

NEW

3D simulator

See 04P.

Layout can be verified beforehand without connecting robot.

Robots and peripheral devices are displayed in 3D, and the robot operation is simulated on PC.

▸ Robot layout, teaching, and debugging can be performed.
▸ Interference between the robot and peripheral units can be checked without any actual machine. This contributes to reducing the time until the equipment operates.

NEW

Program template (Program template automatic creation function)
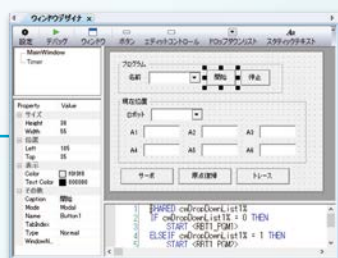
See 06P.

Program creation time can be shortened greatly.

Program templates for 10 types of applications are incorporated. Just following the steps to perform the operation creates a program template automatically.

NEW

Custom window creation

See 08P.

Operation screens suitable for the customer's equipment can be created.

GUIs for operators that are displayed on the panel computer can be created.

Other existing functions

See 09P.

All useful features from RCX-Studio Pro are succeeded to help supporting from startup to maintenance.

Cycle time calculator	Real time trace	Data comparison

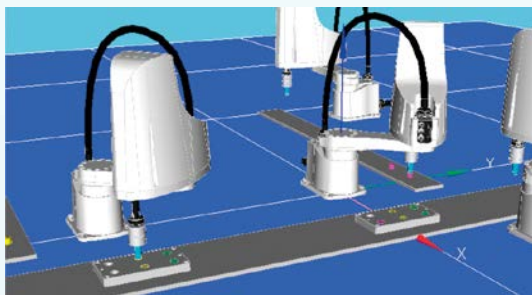# Layout verification, teaching, and debugging without connecting robots

NEW

3D simulator

Robots and peripheral devices are displayed in 3D, and the robot operation is simulated.

RCX-Studio 2020 **Basic** RCX-Studio 2020 **Pro**
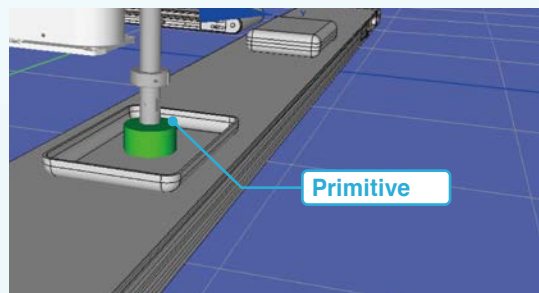
3D CAD Data imported

■ Multiple robots are supported (up to 4 robots).

Importable data STL, Wavefront OBJ, VRML2.0, STEP*

* Only Pro version is supported. Supported format: AP204, AP214

Teaching virtual robot on screen

■ Teaching of the current position can be performed by moving virtual robots using the jog or mouse operation.

Interference with the production units is checked to avoid collision with other devices.

■ Interference between the robot and peripheral device is checked.
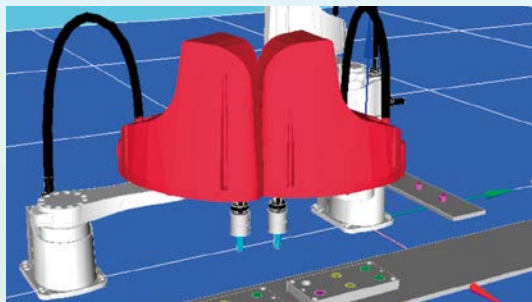
* Interference check is performed at the screen drawing timing. Therefore, the interference may not be detected depending on the execution environment and operation status of the software. To perform the accurate check, it is recommended to decrease the operation speed of the robot and perform the check several times.

Video capture

Peripheral devices are displayed using primitives.

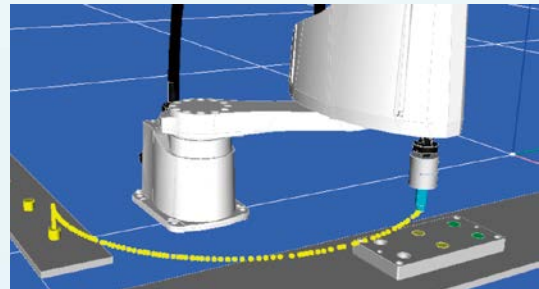■ Peripheral devices and workpieces can be displayed using simple shapes (primitives).
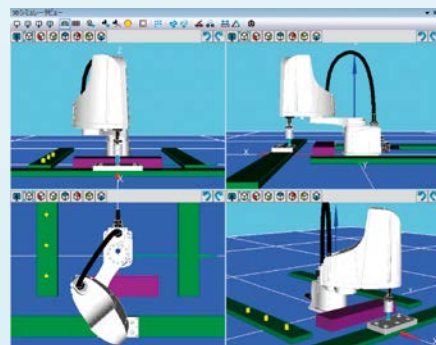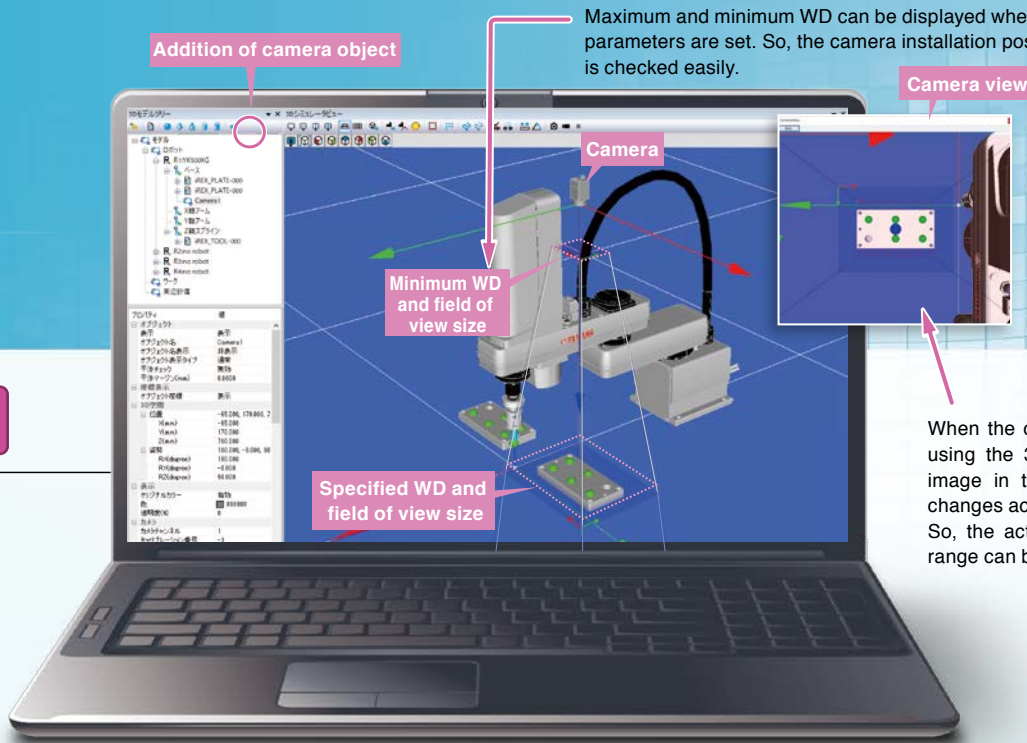

Primitive

Operation area is verified by tracing the movement of end-of-arm effector and parts

■ Visually tracing robot move
■ Movement of workpiece and end effector can be displayed.

Multi-angle View (Screen division function)

■ Layout can be checked from multiple viewpoints at the same time.

■ The simulation results are output as a video.

Maximum and minimum WD can be displayed when the parameters are set. So, the camera installation position is checked easily.

Addition of camera object

Camera view

Camera

Minimum WD and field of view size

Specified WD and field of view size

RCX-Studio 2020 **Basic**   RCX-Studio 2020 **Pro**

When the camera is moved using the 3D emulator, the image in the camera view changes accordingly.
So, the actual field of view range can be checked.

From camera layout examination to operation verification can be performed on the 3D emulator.

Camera layout can be examined.

■ Camera object can be placed on the 3D emulator.
Maximum and minimum WD (work distance), and field of view range are displayed depending on the combination of camera, lens, and close-up ring.
Pre-verification of optimal combination and installation position can be performed.

Program simulation containing vision commands can be performed.

■ Test execution of programs containing vision commands can be performed.
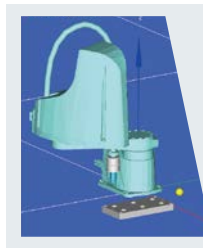 * Supported from Ver. 3.2.0

RCX-Studio 2020 **Pro**

STEP data file can be imported.
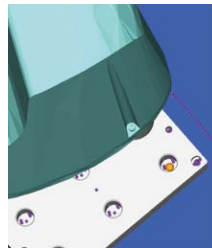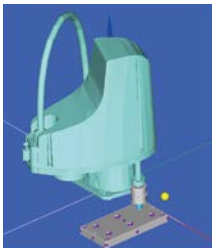
Pro

Characteristic points with STEP file data are displayed.
For the STEP data, characteristic points of the 3D CAD data are displayed. Clicking the characteristic point moves the robot.
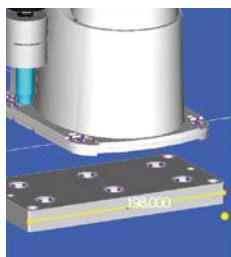

For Basic

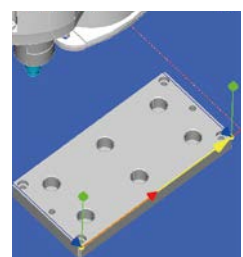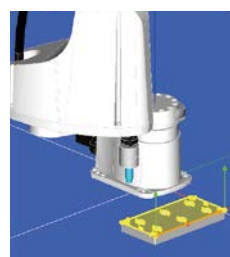For data other than the STEP data, characteristic points of the 3D CAD data are not displayed.

Measurement of distance and angle

With STEP file data the distance and angle can be measured using the characteristic points on the edge.

Creation of edge point data

With STEP file data the characteristic points on the edge can be converted into the point data.

Easy programming with wizards.

Program template

Program templates of ten types of applications

RCX-Studio 2020 **Basic**   RCX-Studio 2020 **Pro**

Just following the steps to perform the operation creates a program automatically.

Robot application selection

Application is selected from the dialog box.

Setting with wizards

Option function selection

Program template is created automatically.
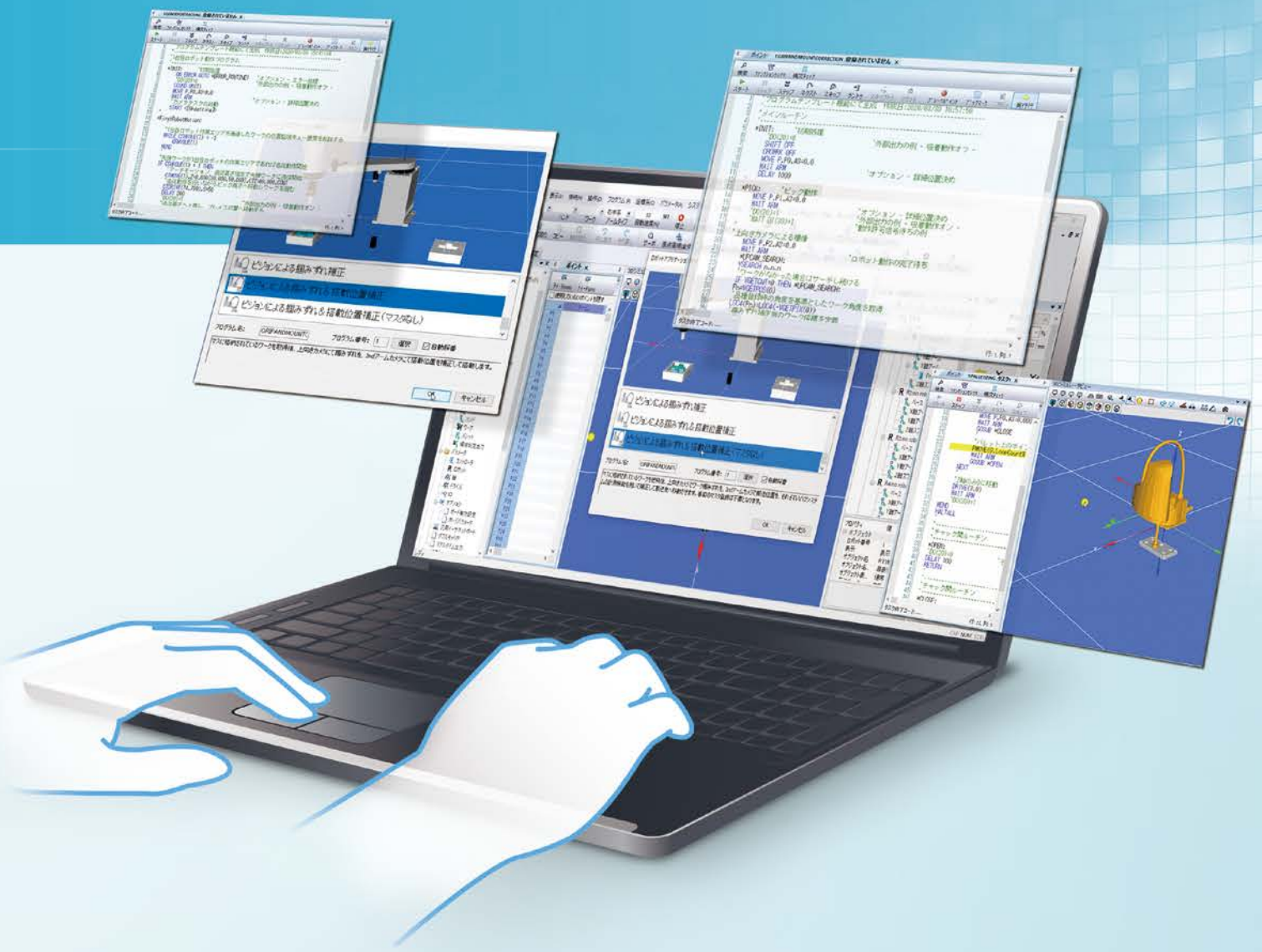
Supported applications

- Pick & place
- Palletizing
- Dispensing work
- Execution program switching
- Conveyor tracking
- Pallet picking using vision
- Dispensing with vision
- Gripping deviation correction using vision
- Parts orientation adjustment on the fly with vision
- Parts orientation adjustment on the fly with vision (without master)
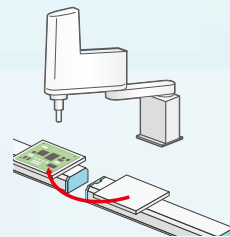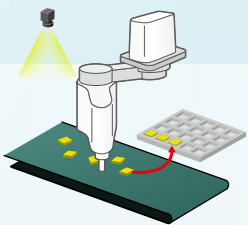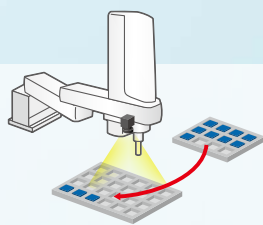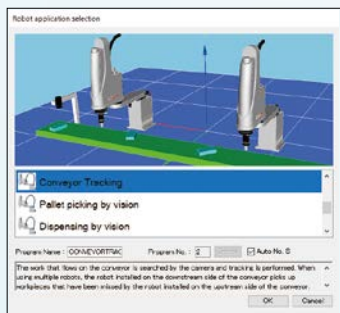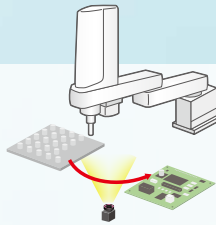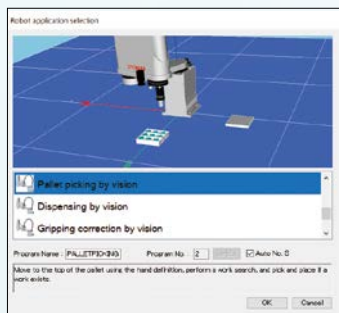

Pick & place
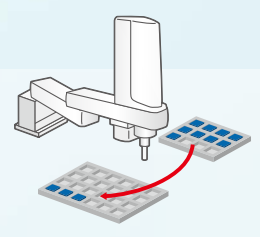
Palletizing

Programming process without command input to save time

Conveyor tracking

Pallet picking using vision

Parts orientation adjustment on the fly with vision
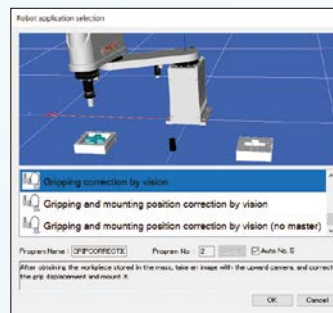
Switching execution program
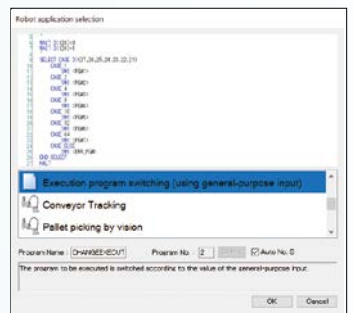
Customizing operation screen

NEW

Custom window creation

Easy creation of GUI for operators on PC

RCX-Studio 2020 **Basic** RCX-Studio 2020 **Pro**

Creating customized display on PC for operators

Existing window can be displayed.

◉ Servo
◉ Return-to-origin
◉ Point trace

Button press and timer cycle processes are described in robot language.

MyGUI

Shortcut is created using "Save".

Operation screens for operators

Start by touching the dedicated shortcut.

Screen is started instead of Studio.

Studio's existing window display

Functions necessary for operation can be narrowed down. Operation screens suitable for the customer's equipment can be created to prevent troubles such as data erasing or rewriting due to misoperation.

Abundant functions that are succeeded from "RCX-Studio Pro" support the
YAMAHA robot operation from the startup to the maintenance work.

Pre-investigation before purchase

Preceding start before delivery

Software improvement
investigation after operation start

RCX-Studio 2020 Basic　RCX-Studio 2020 Pro
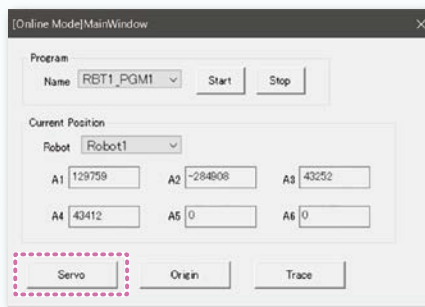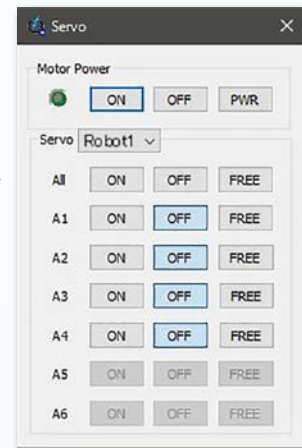
Functions succeeded from "RCX-Studio Pro".

▶ Cycle time calculation

Cycle time between two points is calculated simply only with two steps.
By entering a robot model and position data, it will calculate the cycle time.

▶ Real time trace

Internal information on the controller is output continuously.
Robot status can be checked in real time.

Obtainable data

- **I/O status**
- **Programming task status**
- **Task number being executed**
- **Controller temperature**

- **Driver status**
  Tolerance, out effective position,
  reference pulse, current pulse,
  command speed, current speed,
  command current, present current,
  motor load factor, driver load factor

Tolerance

Feedback Current

Current Pulse
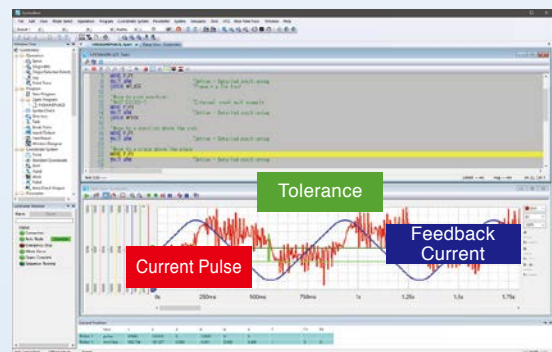
▶ Data comparison

Difference between two specified data is displayed visually.
Direct comparison with the online data can be performed
to greatly reduce the maintenance time.

2 data is selected to compare them.
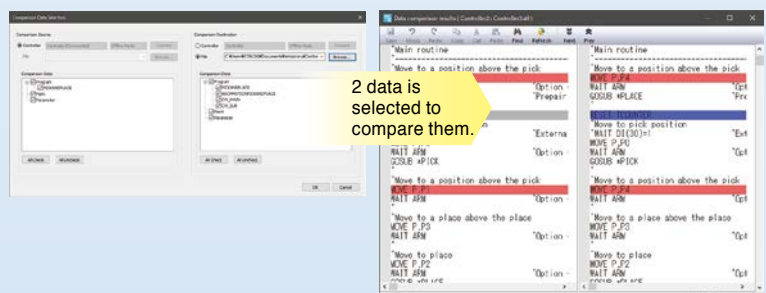
◆ Specifications

Software

Software can be downloaded from YAMAHA's WEB site together with RCX-Studio 2020 Basic or RCX-Studio 2020 Pro.

RCX-Studio 2020

Basic specifications

Product name	RCX-Studio 2020 Basic	RCX-Studio 2020 Pro
Type Note1	KCX-M4990-40	KCX-M4990-50
License management	USB key (blue) Note2	USB key (purple)
Supported language	Japanese, English, Chinese	
OS Note3	Microsoft Windows 7 SP1(32/64bit) / 8.1 (32 bit / 64 bit) / 10 (32 bit / 64 bit)	
Execution environment	.NET Framework 4.5 or more	
CPU	Recommended: Intel Core i5 2 GHz or more, Minimum: Intel Celeron 2 GHz or more, 3D-SIM is invalid.: Intel Core 2 Duo 2 GHz or more	
Memory	Recommended: 8 GB or more, Minimum: 4 GB or more, 3D-SIM is invalid: 1 GB or more	
Hard disk capacity	1GB of available space required on installation drive	
Communication Port	Communication cable: Serial communication port, Ethernet port, or USB port	
Others	Dedicated commutation cable (For D-Sub or USB) Ethernet cable (category 5 or better) USB port: 1 port (For USB key)	
Applicable controller	RCX340/RCX320	
Applicable robot	YAMAHA robot that can be connected to the RCX340, RCX320.	

Note1. This shows the software package type. The software is common to two products and can be downloaded from YAMAHA's WEB site.
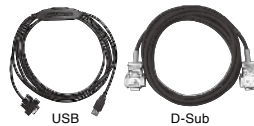Note2. Common to the conventional model RCX-Studio Pro.
Note3. Microsoft, Windows 7, Windows 8.1, and Windows 10 are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.
   Other company names and product names listed in this manual may be the trademarks or registered trademarks of their respective companies.

Data cables (5m)

Communication cable for RCX-Studio 2020.
Select from USB cable or D-sub cable.

Model	USB type (5m)	KBG-M538F-00
	D-Sub type 9pin-9pin (5m)	KAS-M538F-10

USB   D-Sub

Note. This USB cable supports Windows 2000/XP or later.
Note. The communication cable is common to POPCOM+, VIP+, RCX-Studio Pro, and RCX-Studio 2020.
Note. USB driver for communication cable can also be downloaded from our website.

Ethernet cable (category 5 or higher) is also supported.

USB key

To use the functions of RCX-Studio 2020 without restrictions, a dedicated USB key is required.
There will be limitations of software functions (see below chart):

Functions		When the USB key is not connected	RCX-Studio 2020 Basic (blue) Note.2	RCX-Studio 2020 Pro (purple) Note.2
Backup/restore by data transfer with controller		Valid Note1.	Valid	Valid
Controller operation in online mode		Invalid	Valid	Valid
File read (opening data)		Invalid	Valid	Valid
File save		Invalid	Valid	Valid
Real Time Trace		Only data save is invalid.	Valid	Valid
Cycletime Calculator		Invalid	Valid	Valid
iVY2 editor		Invalid	Valid	Valid
Data Difference		Except data saving	Valid	Valid
3D simulator function		Only capturing is invalid.	Valid	Valid
Custom window		Valid	Valid	Valid
Program template		Only file output is invalid.	Valid	Valid
CAD data read	STL, OBJ, VRML	Valid	Valid	Valid
	STEP	Invalid	Invalid	Valid
CAD to point conversion		Invalid	Invalid	Valid

Note1. USB key connection is required for backup when connected in offline mode.
Note2. USB key color

MEMO

●Specifications and appearance are subject to change without prior notice.

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