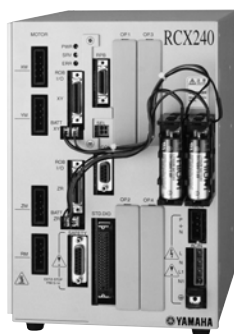


1 to 4 axis

RCX240

● Robot controller with advanced functions

An advanced multi-axial controller newly developed based on long years of actual results! Along with a full range of functions, great engineering also makes it extremely easy to use!



Main functions ▶ P.037

Features

1 RCX141 and RCX142 united into one unit

Besides Cartesian and SCARA robots, this controller also handle a mixed combination of single axis robot FLIP-X and linear single-axis robot PHASER.

2 The absolute position data hold time: 1 year

The current position information is monitored even during a long vacation, while the controller is kept unused and while it is transported so that the return to the origin process is not required when the controller is activated again.

3 Linear and circular interpolation in 2 and 3 dimensions

These functions ensure smooth and high precision operation ideal for tasks such as sealing.

4 Passing point output

The general-purpose output can be turned on or off at the specified point during interpolation tasks without having to stop robot operation along that axis.

5 Area check output

During robot operation, this function sends an I/O output when the robot enters a preset area or zone.

6 Push function

This function controls the motor torque during grip and press-fit operation.

7 Dual-synchronous drive function

The RX240 includes a dual-drive function for simultaneously driving 2 axes. The dual drive function is effective on Cartesian robots for conveying heavy-weight payloads and long strokes along the Y axis.

8 Multitasking function

This function simultaneously runs multiple (maximum of 8 tasks) in parallel on robot peripheral equipment, etc.

9 2-robot control & auxiliary axis control

Assigning 2 robot units as main and sub allows multitasking as well as operating these robots asynchronously.

10 Supports a full range of options

Select from parallel I/O boards (NPN/PNP), and network options (CC-Link, DeviceNet, Profibus, Ethernet). Also supports the iVY board and tracking boards.

11 Capable of using additional function of "YC-Link option" for additional axis

Linking the RCX series controller with the SR1 series single-axis controller allows controlling a maximum of 8 axes (synchronous control of 6 axes).

12 Utilizes system assets from prior models RCX141 / RCX142

This RCX240 is compatible with systems using the RCX141, RCX142 and so can be shifted unchanged to function as host/upstream device on those systems.

Model Overview

Name	RCX240
Power	Single phase : AC200V to 230V +/-10% maximum (50/60Hz)
Operating method	Programming / I/O point tracing / Remote command / Operation using RS-232C communication
Maximum number of controllable axes	4 axes maximum
Position detection method	Incremental / Absolute
Controllable robot	Cartesian robot XY-X / SCARA robot YK-XG / Single-axis robot FLIP-X / Linear motor single-axis robot PHASER / Pick & place robot YP-X
Programming box	RPB / RPB-E (with enable switch) P.413
Support software for PC	VIP+ P.410 / VIP

Basic specifications

Item	Model	RCX240	
Basic specifications	Number of controllable axes	4 axes maximum (Control simultaneously: 4 axes)	
	Controllable robots	Single-axis robot FLIP-X, Linear motor single-axis robot PHASER, Cartesian robot XY-X, SCARA robot YK-XG, Pick & place robot YP-X	
	Maximum power consumption	2500VA	
	Capacity of the connected motor	1600W	
	Dimensions	W180 × H250 × D235mm	
	Weight	6.5kg	
	Input power supply	Control power supply Motor power supply	Single phase AC200 to 230V +/-10% maximum (50/60Hz) Single phase AC200 to 230V +/-10% maximum (50/60Hz)
Axis control	Drive method	AC full-digital software servo	
	Position detection method	Multi-turn resolver with data backup function, Magnetic linear scale	
	Operating method	PTP (Point to Point), Linear interpolation, Circular interpolation, ARCH	
	Coordinate system	Joint coordinates, Cartesian coordinates	
	Position indication units	Pulses, mm (millimeters), deg (degrees)	
	Speed setting	1% to 100% (In units of 1%. However speed is in units of 0.01% during single-axis operation by DRIVE statement.)	
	Acceleration setting	1. Automatic acceleration setting based on robot model type and end mass parameter 2. Setting based on acceleration and deceleration parameter (Setting by 1% unit)	
Program	Resolution	16384 P/rev, 1µm	
	Origin search method	Incremental, Absolute, Semi-absolute	
	Program language	YAMAHA BASIC (Conforming to JIS B8439 SLIM Language)	
	Multitasks	8 tasks maximum	
	Sequence program	1 program	
	Point-data input method	Manual data input (coordinate value input), Direct teaching, Teaching playback	
	Memory	Memory capacity	364KB (total capacity of program and points) (available program capacity during use of maximum number of points is 84KB)
Programs		100 program (Max.) 9,999: maximum lines per program 98KB: maximum capacity per program	
Points		10,000 points: maximum numbers of points	
Memory Backup battery		Lithium metallic battery (service life 4 years at 0°C to 40°C)	
Internal flash memory		512KB (ALL data only)	
STD.DIO		I/O input I/O output	General input 16 points, dedicated input 10 points (NPN / PNP specifications selectable) General output 8 points, dedicated output 11 points
SAFETY		Emergency stop input (Relay contact), Service mode input (NPN/PNP specification is set according to STD. DIO setting)	
External input/output	Brake output	Relay contact	
	Origin sensor input	Connectable to DC 24V normally-closed contact sensor	
	External communications	RS232C: 1CH D-SUB9 (female) RS422: 1CH (Dedicated RPB)	
	Options	Slots	4
		Type	Optional input/output (NPN/PNP): General input 24 points / General output 16 points
			CC-Link: Dedicated input 16 points, Dedicated Output 16 points, General input 96 points, General output 96 points (4 nodes occupied)
			DeviceNet: Dedicated input 16 points, Dedicated Output 16 points, General input 96 points, General output 96 points
			Profibus: Dedicated input 16 points, Dedicated Output 16 points, General input 96 points, General output 96 points
			Ethernet: IEEE802.3 10Mbps (10BASE-T)
			iVY: Camera input (2ch), camera trigger input, PC connection input
Tracking: AB phase input, lighting trigger input, lighting power supply input/output			
Lighting control: lighting trigger input, lighting power supply input/output			
Options	Programming box	RPB, RPB-E (with enable switch)	
	Support software for PC	VIP+ / VIP	
	Operating temperature	0°C to 40°C	
	Storage temperature	-10°C to 65°C	
	Operating humidity	35% to 85%RH (non-condensing)	
	Absolute backup battery	Lithium metallic battery 3.6V 5400mAh (2700mAh × 2)	
	Absolute data backup period	1 year (in state with no power applied)	
General specifications	Noise immunity	IEC61000-4-4 Level 3	
	Protective structure	IP10	

Power capacity

The required power supply capacity and heat emission will vary depending on the robot type and number of axes.
 Using the following table as a general guide consider the required power supply preparation and control panel size, controller installation, and cooling method.

(1) When connected to SCARA robot

Robot type				Power capacity (VA)	Generated heat amount (W)
Standard type	Clean type	Dust-proof & drip-proof type	Ceiling-mount / inverse type		
YK180X, 220X	-	-	-	500	63
YK250XH, 350XH, 400XH	YK250XCH, 350XCH, 400XCH	YK250XP, 350XP, 400XP	YK300XHS, 400XHS	1000	75
-	YK500XC, 600XC	YK500XP, 600XP	YK500XS, 600XS	1500	88
YK550X, 500XG, 600XG	-	-	-	1700	93
-	YK700XC, 800XC, 1000XC	YK700XP, 800XP, 1000XP	YK700XS, 800XS, 1000XS	2000	100
YK600XGH, 700XG, 800XG, 900XG, 1000XG, 1200X	-	-	-	2500	113

(2) When connected to 2 axis (Cartesian robot and/or multi-axis robot)

Axial current sensor value ^{Note}		Power capacity (VA)	Generated heat amount (W)
X axis	Y axis		
05	05	600	65
10	05	800	70
10	10	1000	75
20	05	1100	78
20	10	1300	83
20	20	1700	93

(3) When connected to 3 axis (Cartesian robot and/or multi-axis robot)

Axial current sensor value ^{Note}			Power capacity (VA)	Generated heat amount (W)
X axis	Y axis	Z axis		
05	05	05	700	68
10	05	05	900	73
10	10	05	1000	75
10	10	10	1200	80
20	05	05	1200	80
20	10	05	1300	83
20	10	10	1500	88
20	20	05	1600	90
20	20	10	1800	95
20	20	20	2000	95

(4) When connected to 4 axis (Cartesian robot and/or multi-axis robot)

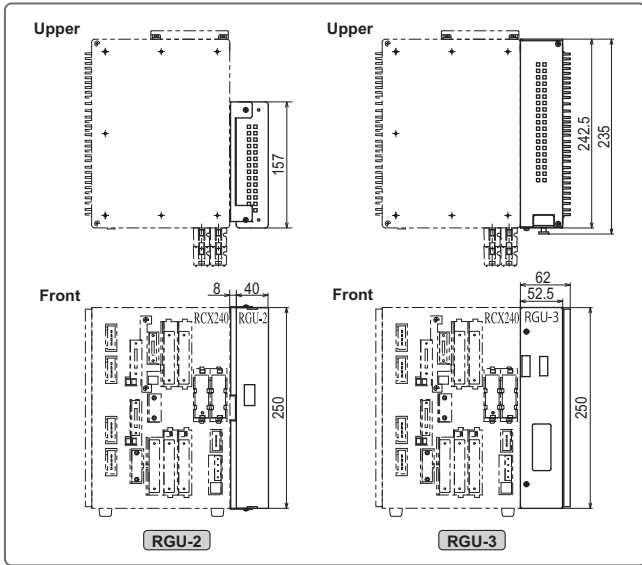
Axial current sensor value ^{Note}				Power capacity (VA)	Generated heat amount (W)
X axis	Y axis	Z axis	R axis		
05	05	05	05	800	70
10	05	05	05	1000	75
10	10	05	05	1100	78
10	10	10	05	1300	83
10	10	10	10	1400	85
20	05	05	05	1200	80
20	10	05	05	1400	85
20	10	10	05	1500	88
20	10	10	10	1700	93
20	20	05	05	1600	90
20	20	10	05	1800	95
20	20	10	10	2000	100
20	20	20	05	2100	103
20	20	20	10	2200	105
20	20	20	20	2500	113

Note. Even if axial current sensor values for each axis are interchanged no problem will occur.

Note. Motor capacity vs. current sensor table

Connected motor capacity	Current sensor
100W or less	05
200W	10
400W or more	20

Regenerative unit



RGU-2 basic specifications



Item	RGU-2
Model	KX0-M4107-20 (including cable supplied with unit)
Dimensions	W40 × H250 × D157mm
Weight	0.9kg
Regenerative voltage	Approx. 380V or more
Regenerative stop voltage	Approx. 360V or less
Accessory	Cable for connection with controller (300mm)

Note. Always leave an empty space (gap of about 20mm) between this unit and the adjacent controller. Also, always use the dedicated cable when connecting the controller.

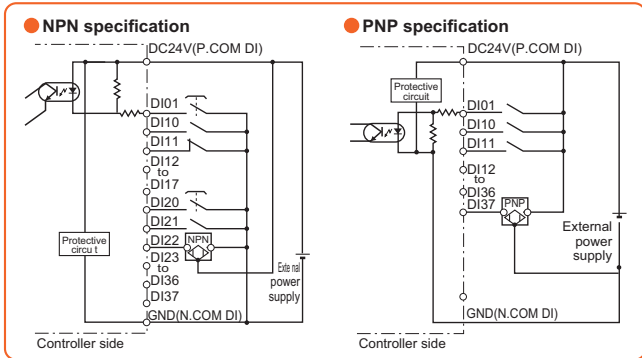
RGU-3 basic specifications



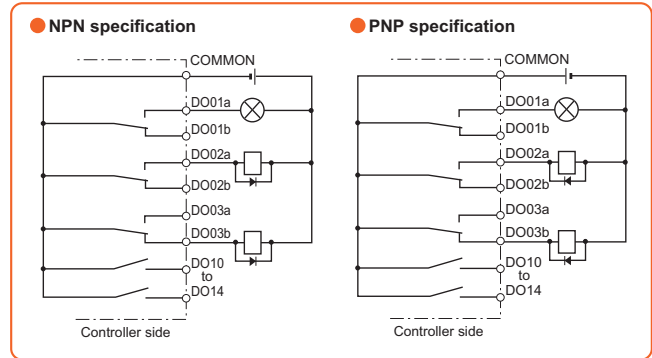
Item	RGU-3
Model	KX0-M4107-30 (including cable supplied with unit)
Dimensions	W62 × H250 × D242.5mm
Weight	3.7kg
Regenerative voltage	Approx. 380V or more
Regenerative stop voltage	Approx. 360V or less
Accessory	Cable for connection with controller (300mm)

Note. Cannot be installed as a separate unit.

Example of input signal connection



Example of output signal connection



Emergency input signal connections

