YA Articulated robots
LCM Linear conveyor modules
GX Single-axis robots
Robonity Motor-less single axis actuator
TRANSERVO Compact single-axis robots
FLIP-X Single-axis robots
PHASER Linear motor single-axis robots
XY-X Cartesian robots
YK-X SCARA robots
YP-X Pick & place robots
CLEAN
CONTROLLER
INFORMATION
Robot positioner
Pulse string driver
Robot controller
RCX/iVY2+ Electric gripper
Option

SR1-X/SR1-P

● Robot controller with advanced functions

Compact design with high performance.
Although with one axis, functions of upper class controllers.

Main functions ▶ P.98

Programming box	Support software for PC
▶ HPB/HPB-D P.699	▶ POPCOM+ P.690

SR1-X

SR1-P

■ Basic specifications

Item			SR1-X			SR1-P		
Basic specifications	Driver model		SR1-X05	SR1-X10	SR1-X20	SR1-P05	SR1-P10	SR1-P20
	Applicable motor output		200V 100W or less	200V 200W or less	200V 600W or less	200V 100W or less	200V 200W or less	200V 600W or less
	Number of controllable axes		Single-axis					
	Controllable robots		Single-axis robot FLIP-X (exclude T4L, T5L)			Linear motor single-axis robot PHASER		
	Maximum power consumption		400VA	600VA	1400VA	400VA	600VA	1400VA
	Capacity of the connected motor		100W	200W	600W	100W	200W	600W
	Dimensions		W74 × H210 × D146mm		W99 × H210 × D146mm	W74 × H210 × D146mm		W99 × H210 × D146mm
	Weight		1.54kg		1.92kg	1.54kg		1.92kg
	Input power supply	Control power supply	Single phase AC100 to 115/200 to 230V +/-10% maximum 50/60Hz					
		Main power supply	Single phase AC100 to 115/200 to 230V +/-10% maximum 50/60Hz		Single phase AC200 to 230V +/-10% maximum 50/60Hz	Single phase AC100 to 115/200 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		Programming, I/O point tracing, Remote command, Operation using RS-232C communication					
	Position indication units		mm (millimeters), deg (degrees)					
	Speed setting		1% to 100% (Setting by 1% unit)					
	Acceleration setting		1. Automatic speed setting per robot No. and payload 2. Setting based on acceleration and deceleration parameter (Setting by 1% unit)					
	Resolution		16384 P/rev			1µm		
	Origin search method		Absolute, Incremental			Incremental, Semi-absolute		
Program	Program language		YAMAHA SRC					
	Multitasks		4 tasks maximum					
	Point-data input method		Manual data input (coordinate value input), Direct teaching, Teaching playback					
Memory	Programs		100 programs 255 steps / 1 programs 3000 steps / total					
	Points		1000 points					
External input/output	STD.DIO	I/O input	Dedicated input 8 points, General input16 points					
		I/O output	Dedicated Output4 points, General output16 points					
	SAFETY		Emergency stop input (Normal close contact point input), service mode input					
	Brake output		Relay contact			–		
	Origin sensor input		Connectable to DC 24V normally-closed contact sensor					
	External communications		RS-232C: 1CH (For communication with HPB / HPB-D or PC)					
	Analog input/output		Input 1ch (0 to +10V) Output 2ch (0 to +10V)					
	Options	Slots	1					
		Type	NPN/PNP: Dedicated input 8 points, Dedicated Output 4 points, General input 16 points, General output 16 points					
			CC-Link: Dedicated input 16 points, Dedicated Output 16 points, General input 32 points, General output 32 points					
			DeviceNet™: Dedicated input 16 points, Dedicated Output 16 points, General input 32 points, General output 32 points					
			PROFIBUS: Dedicated input 16 points, Dedicated Output 16 points, General input 32 points, General output 32 points					

Controllable robot	SR1-X ▶ FLIP-X P.295	SR1-P ▶ PHASER P.341
CE marking	○	
Field networks	CC-Link DeviceNet PROFIBUS	

■ Model Overview

Name	SR1-X	SR1-P
Controllable robot	Single-axis robot FLIP-X	Linear motor single-axis robot PHASER
Input power	Control power supply	05 / 10 / 20 driver Single phase 100 to 115V/200 to 230V AC +/-10% maximum (50/60Hz)	
	Main power supply	05 / 10 driver Single phase 100 to 115V/200 to 230V AC +/-10% maximum (50/60Hz) 20 driver Single phase 200 to 230V AC +/-10% maximum (50/60Hz)	
Operating method	Programming / I/O point tracing / Remote command / Operation using RS-232C communication	
Maximum number of controllable axes	Single-axis	
Origin search method	Absolute/Incremental	Incremental/Semi-absolute

■ Ordering method

▌ SR1-X

SR1-X – [ ] – [ ] – [ ] – [ ] – [ ]

Controller	Driver	Usable for CE	Regenerative unit [Note1]	Input/Output Selection	Battery
	05: 100W or less 10: 200W 20: 400 to 600W	No entry: Standard E: CE marking	No entry: None R: RG1	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS YC: YC-Link [Note2]	No entry: None (Incremental specification) B: Battery (Absolute specification)

Note 1. Driver selection and regenerative unit selection depends on the robot type. See the selection table on the next page for selecting the driver/regenerative circuit.
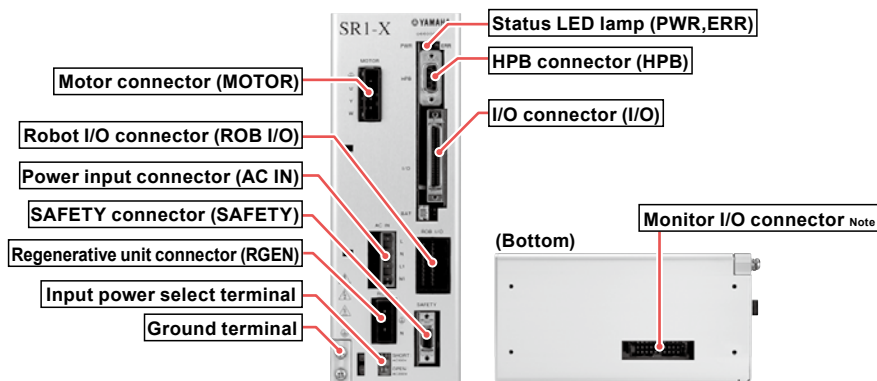Note 2. Available only for the slave.

▌ SR1-P

SR1-P – [ ] – [ ] – [ ] – [ ] – [ ]

Controller	Driver	Usable for CE	Regenerative unit [Note1]	Input/Output Selection
	05: 100W or less 10: 200W 20: 400 to 600W	No entry: Standard E: CE marking	No entry: None R: RG1 [Note2]	N: NPN P: PNP CC: CC-Link DN: DeviceNet™ PB: PROFIBUS YC: YC-Link [Note3]

Note 1. Driver selection and regenerative unit selection depends on the robot type. See the selection table on the next page for selecting the driver/regenerative circuit.
Note 2. For the MF75, the regenerative unit is "RGU-2".
Note 3. Available only for the slave.

	Item	SR1-X	SR1-P
Options	Programming box	HPB, HPB-D (with enable switch)	
	Support software for PC	POPCOM⁺	
General specifications	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	–
	Absolute data backup period	1 year (in state with no power applied)	–
	Noise immunity	IEC61000-4-4 Level 3	

■ Part names

Status LED lamp (PWR,ERR)
HPB connector (HPB)
Motor connector (MOTOR)
I/O connector (I/O)
Robot I/O connector (ROB I/O)
Power input connector (AC IN)
SAFETY connector (SAFETY)
Regenerative unit connector (RGEN)
Monitor I/O connector Note
Input power select terminal
Ground terminal
(Bottom)

Note. Cable for monitor I/O (option) is required when using this connector.

653

Articulated robots YA
Linear conveyor modules LCM
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Pick & place robots YP-X
CLEAN
CONTROLLER
INFORMATION
Robot positioner
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RCX/iVY2+ Electric gripper
Option

SR1-X/SR1-P

■ Driver / regenerative unit selection table

■ SR1-X

			T4LH/C4LH	T5LH/C5LH	T6L/C6L	T9	T9H	F8/C8	F8L/C8L	F8LH/C8LH	F10/C10	F10H	F14/C14	F14H/C14H	GF14XL	F17/C17	F17L/C17L	GF17XL	F20/C20	F20N	N15/N15D	N18/N18D	B10	B14	B14H	R5	R10	R20
															FLIP-X													
Driver selection	SR1-X	05	●	●	●	●		●	●	●	●		●										●	●	●	●		
		10					●					●		●	●													●
		20														●	●	●	●	●	●	●						
Regenerative unit	No entry (None)		●	●	●	①	②	●	●	●	①	②	①	②	●	③		⑥	③	④			●	●	⑤	●	●	●
	R (RG1)					①	②				①	②	①	②		③	●	⑥	③	④	●	●			⑤			

① Regenerative unit is needed if using in a perpendicular position and movement stroke is 700mm or more.
② Regenerative unit is needed if using in a perpendicular position.
③ Regenerative unit is needed if using in a perpendicular position, using at maximum speeds exceeding 1000mm per second, or if using high leads (40).
④ Regenerative unit is needed if using at maximum speeds exceeding 1000mm per second.
⑤ Regenerative unit is needed if using at maximum speeds exceeding 1250mm per second.
⑥ Regenerative unit is needed if using at maximum speeds exceeding 750mm per second.
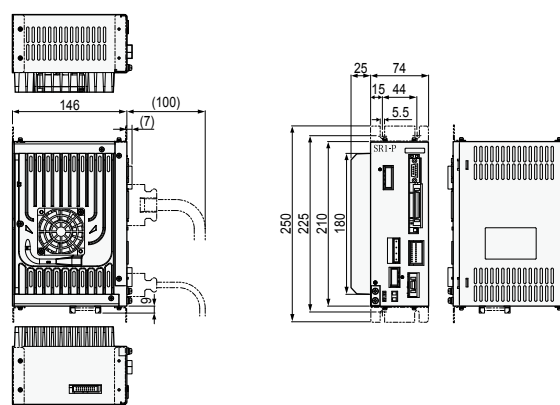
■ SR1-P

			PHASER				
			MF7/MF7D	MF15/MF15D	MF20/MF20D	MF30/MF30D	MF75/MF75D
Driver selection	SR1-P	05					
		10	●	●	●		
		20				●	●
Regenerative unit	No entry (None)	●	●				
	R (RG1)				●	●	
	R (RGU-2)						●

■ Dimensions

■ SR1-X/SR1-P 05 - 10
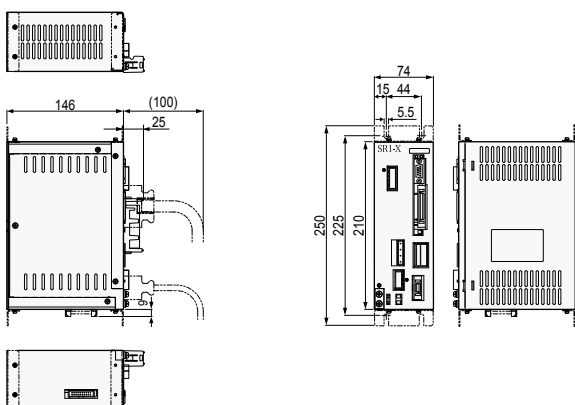
■ SR1-X/SR1-P 20

■ Regenerative unit RG1 / RGU-2

Regenerative unit RG1

Dimensions

Regenerative unit RGU-2
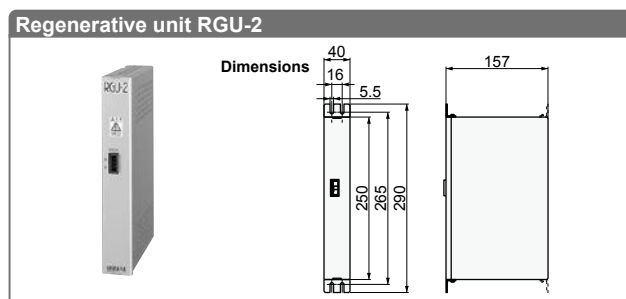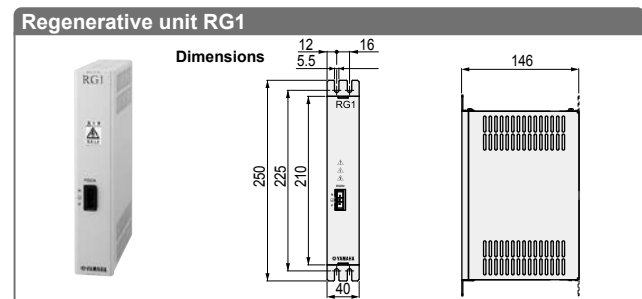
Dimensions

● Basic specifications

Item	RG1
Model	KBG-M4107-0A (Including accessory)
Dimensions	W40 × H210 × D146mm
Weight	0.8kg
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.

● Basic specifications

Item	RGU-2
Model	KS5-M4107-0A (Including accessory)
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.

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CLEAN
CONTROLLER
INFORMATION
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RCX/iVY2+ Electric gripper
Option

■ Installation conditions

- Install the SR1-X/SR1-P inside the control panel.
- Install the SR1-X/SR1-P on a vertical wall.
- Install the SR1-X/SR1-P in a well ventilated location, with space on all sides of the SR1-X/SR1-P (See fig. at right.).
- Ambient temperature : 0 to 40°C
- Ambient humidity : 35 to 85% RH (no condensation)
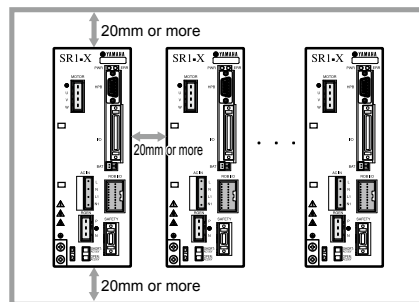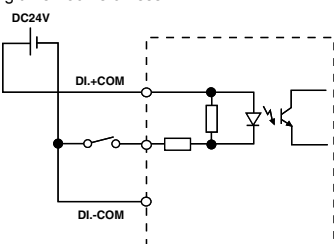
■ [NPN, PNP type] Input/Output list

Terminal number	Signal name	Function
1	DI.+COM	Input supply+common
2	SERVO	Return to servo on
3	INC-PT	Relative point transfer
4	ABS-PT	Absolute point transfer
5	STEP-R	Step run
6	DI 0	General input 0
7	DI 1	General input 1
8	DI 2	General input 2
9	DI 3	General input 3
10	DI 4	General input 4
11	DI 5	General input 5
12	DI 6	General input 6
13	DI 7	General input 7
14	DO.+COM	Output supply+common
15	DO.+COM	Output supply+common
16	END	Execution result (Execution complete)
17	BUSY	Executing the command
18	DO 0	General output 0
19	DO 1	General output 1
20	DO 2	General output 2
21	DO 3	General output 3
22	DO 4	General output 4
23	DO 5	General output 5
24	DO 6	General output 6
25	DO 7	General output 7

Terminal number	Signal name	Function
26	DI.-COM	Input supply-common
27	AUTO-R	Auto run
28	RESET	Reset
29	ORG-S	Return to the origin
30	ALMRST	Alarm reset
31	DI 8	General input 8
32	DI 9	General input 9
33	DI 10	General input 10
34	DI 11	General input 11
35	DI 12	General input 12
36	DI 13	General input 13
37	DI 14	General input 14
38	DI 15	General input 15
39	DO.-COM	Output supply-common
40	DO.-COM	Output supply-common
41	READY	Available to operate (Ready for operation)
42	UTL	Utility output
43	DO 8	General output 8
44	DO 9	General output 9
45	DO 10	General output 10
46	DO 11	General output 11
47	DO 12	General output 12
48	DO 13	General output 13
49	DO 14	General output 14
50	DO 15	General output 15

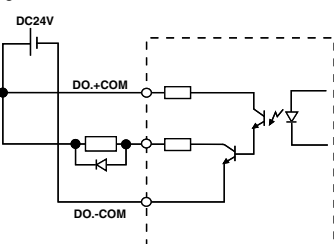## ■ NPN type input/output circuit

Input circuit
- Form : DC input (positive common type) Photo coupler insulation type
- Input power supply : 5mA/point
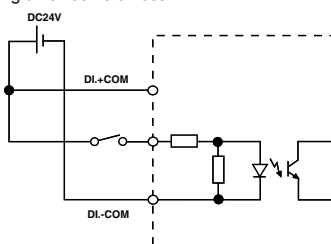- Answering time : 30ms or less

Output circuit
- Form : NPN open collector output (negative common type) Photo coupler insulation type
- Load : 50mA/point
- Answering time : 1ms or less
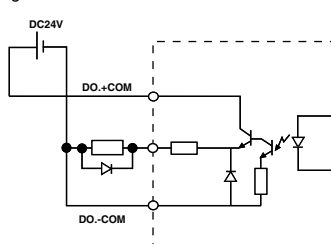
■ PNP type input/output circuit

Input circuit
- Form : DC input (negative common type) Photo coupler insulation type
- Input power supply : 5mA/point
- Answering time : 30ms or less

Output circuit
- Form : PNP open collector output (positive common type) Photo coupler insulation type
- Load : 50mA/point
- Answering time : 1ms or less

SR1-X/SR1-P

■ SAFETY connector signals

Terminal number	Signal name	Meaning
1	DI.COM	Input supply common
2	LOCK	Interlock
3	SVCE	SERVICE mode
4	DO.COM	Output supply common
5	MPRDY	Main power ready
6	NC	NC
7	NC	NC
8	NC	NC
9	NC	NC
10	NC	NC
11	EMG1	Emergency stop 1
12	EMG2	Emergency stop 2
13	NC	NC
14	NC	NC

■ Robot Language Table

Command	Description
MOVA	Moves to a point data position.
MOVI	Moves from current position by amount of point data.
MOVF	Moves until a specified DI input is received.
JMP	Jumps to a specified label in the specified program.
JMPF	Jumps to a specified label in a specified program according to the input condition.
JMPB	Jumps to a specified label in a specified program when general-purpose input or memory input is in the specified state.
L	Defines the jump destination for a JMP or JMPF statement.
CALL	Runs another program.
DO	Turns general-purpose output or memory output on or off.
WAIT	Waits until general-purpose input or memory input is in the specified state.
TIMR	Waits the specified amount of time before advancing to the next step.
P	Defines point variable.
P+	Adds 1 to point variable.
P-	Subtracts 1 from point variable.
SRVO	Turns servo on or off.
STOP	Temporarily stops program execution.
ORGN	Performs return-to-origin.
TON	Runs a specified task.
TOFF	Stops a specified task.
JMPP	Jumps to a specified label when the axis position condition meets the specified conditions.
MAT	Defines a matrix.
MSEL	Specifies a matrix to move.
MOVM	Moves to a specified pallet work position on matrix.
JMPC	Jumps to a specified label when the counter array variable C equals the specified value.
JMPD	Jumps to a specified label when the counter variable D equals the specified value.
CSEL	Specifies an array element for counter array variable C.
C	Defines counter array variable C.
C+	Adds a specified value to counter array variable C.
C-	Subtracts a specified value from counter array variable C.
D	Defines counter variable D.
D+	Adds a specified value to counter variable D.
D-	Subtracts a specified value from counter variable D.
SHFT	Shifts the coordinate position by amount of specified point data.
IN	Stores bit information on specified general-purpose input or memory input into counter variable D.
OUT	Outputs the value of counter variable D to specified general-purpose output or memory output.
LET	Shifts the coordinate position by amount of specified point data.

Accessories and part options

SR1-X/SR1-P

■ **Standard accessories**

● **Power connector + wiring connection lever**

Model	KAS-M5382-00

| LCC140 |
| TS-X |
| TS-P |
| SR1-X |
| SR1-P |
| RCX320 |
| RCX221 |
| RCX222 |
| RCX340 |

● **Safety connector**

Connector plug model	KBG-M4424-00
Connector cover model	KBG-M4425-00

| SR1-X |
| SR1-P |

● **HPB dummy connector**
Attach this to the HPB connector during operation with the programming box HPB removed.

Model	KDK-M5163-00

| LCC140 |
| SR1-X |
| SR1-P |

● **NPN / PNP connector**

Connector plug model	KBH-M4424-00
Connector cover model	KBH-M4425-00

| SR1-X |
| SR1-P |
| RCX320 |
| RCX340 |

● **L type stay**
Use to install the controller.

Model	KBG-M410H-00

Note. Model No. is for a single bracket (L type stay).

| SR1-X |
| SR1-P |

● **Absolute battery**
Battery for absolute data back-up.
(Not included with the SR1-P)

● **Basic specifications**

Item	Absolute battery
Battery type	Lithium metallic battery
Battery capacity	3.6V/2,700mAh
Data holding time	About 1 year (in state with no power applied)
Dimensions	φ17 × L53mm
Weight Note1	21g

Model	KAS-M53G0-12

| SR1-X |
| RCX222 |

Note 1. Weight of battery itself.
Note. The absolute battery is subject to wear and requires replacement.
If trouble occurs with the memory then remaining battery life is low so replace the absolute battery. The battery replacement period depends on usage conditions. But generally you should replace the battery after about 1 year counting the total time after connecting to the controller and left without turning on the power.

● **Battery case**
This is the absolute battery holder.

Model	KBG-M5395-00

| SR1-X |
| RCX222 |

YA
Articulated robots

LCM
Linear conveyor modules

GX
Single-axis robots

Robonity
Motor-less single axis actuator

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Compact single-axis robots

FLIP-X
Single-axis robots

PHASER
Linear motor single-axis robots

XY-X
Cartesian robots

YK-X
SCARA robots

YP-X
Pick & place robots

CLEAN

CONTROLLER

INFORMATION

Robot positioner

Pulse string driver

Robot controller

RCXi/iVY2+
Electric gripper

Option

■ Options

● Cable for monitor I/O

Cable to connect I/O connector of SR1 monitor. The cable is 1.5m long with its end cut and left as it is.
Required when using analog input / output and feedback pulse output.

Model	KBG-M4421-00

SR1-X
SR1-P

● Support software for PC P.690 POPCOM+

POPCOM+ is a simple to use application software that makes tasks such as robot operation, writing-editing programs, and point teaching easy to visually understand.

Model	KBG-M4966-00

LCC140
ERCD
SR1-X
SR1-P

● Environment

OS	Windows XP (32bit), Vista, 7, 8 / 8.1, 10 (Supported version: V.2.1.1 or later)
CPU	Processor that meets or exceeds the suggested requirements for the OS being used.
Memory	Suggested amount of memory or more for the OS being used.
Hard disk	50MB of available space required on installation drive.
Disk operation	RS-232C
Applicable controllers	SRCX to SR1, DRCX, TRCX, ERCX, ERCD, LCC140 Note 1

Note 1. LCC140 is applicable to Ver. 2.1.1 or later.
Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

● Data cables

Communication cable for POPCOM+.
Select from USB cable or D-sub cable.

USB   **D-Sub**

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

Note. This USB cable supports Windows 2000/XP or later.
Note. Data cable jointly used for POPCOM+, VIP+, RCX-Studio Pro.
Note. USB driver for communication cable can also be downloaded from our website.

LCC140
ERCD
SR1-X
SR1-P
RCX320
RCX221
RCX222
RCX340

● Programming box HPB/HPB-D P.699

This device can perform all operations such as manual robot operation, program entry and edit, teaching and parameter settings.

HPB   **HPB-D**

	HPB	HPB-D
Model	KBB-M5110-01	KBB-M5110-21
Enable switch	–	3-position
CE marking	Not supported	Applicable

LCC140
ERCD
SR1-X
SR1-P

● YC-Link board (with connection cable)

Model	KBG-M4400-60

SR1-X
SR1-P

Note. Use the converter cable if changing to the SR1-X, SR1-P from a system using SRCX, SRCP. (See P.743).

Articulated robots YA
Linear conveyor modules LCM
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Compact single-axis robots TRANSERVO
Single-axis robots FLIP-X
Linear motor single-axis robots PHASER
Cartesian robots XY-X
SCARA robots YK-X
Pick & place robots YP-X
CLEAN
CONTROLLER
INFORMATION
Robot positioner
Pulse string driver
Robot controller
RCX/YY2+ Electric gripper
Option