

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.68



Programming box
 ▶ **HPB/HPB-D**
P.585



Support software for PC
 ▶ **POPCOM+**
P.578

Basic specifications

Item	Model	SR1-X			SR1-P			
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			W74 × H210 × D146mm		W99 × H210 × D146mm	
Weight		1.54kg			1.54kg		1.92kg	
Input power supply	Control power supply	Single phase AC100 to 115/200 to 230V +/-10% maximum 50/60Hz						
	Motor 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	
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 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 input 16 points					
		I/O output	Dedicated Output 4 points, General output 16 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)						
		Slots	1					
	Options	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.193	SR1-P ▶ PHASER P.239
CE marking		Field networks

Model Overview

Name	SR1-X	SR1-P
Controllable robot	Single-axis robot FLIP-X	Linear motor single-axis robot PHASER
Input power	05 / 10 driver Single phase 100 to 115V/200 to 230V +/-10% maximum (50/60Hz)	20 driver Single phase 200 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	Single-axis	
Origin search method	Absolute/Incremental	Incremental/Semi-absolute

Ordering method

SR1-X

Controller

Driver
 05: 100W or less
 10: 200W
 20: 400 to 600W

Usable for CE
 No entry: Standard
 E: CE marking

Regenerative unit^{Note1}
 No entry: None
 R: RG1

Input/Output Selection
 N: NPN
 P: PNP
 CC: CC-Link
 DN: DeviceNet™
 PB: PROFIBUS
 YC: YC-Link^{Note2}

Battery
 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

Controller

Driver
 05: 100W or less
 10: 200W
 20: 400 to 600W

Usable for CE
 No entry: Standard
 E: CE marking

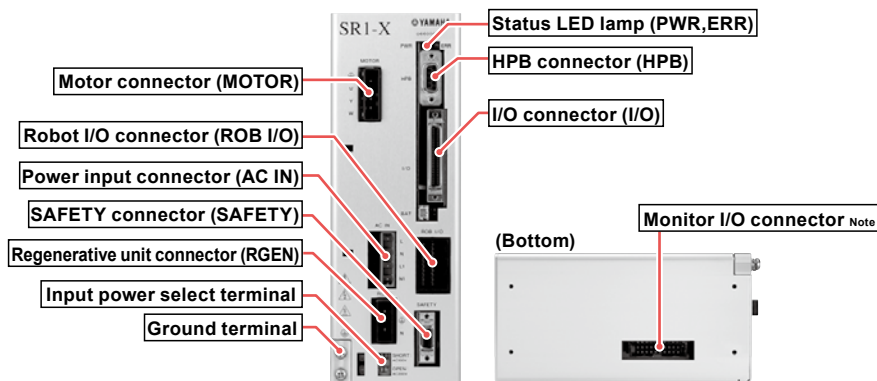
Regenerative unit^{Note1}
 No entry: None
 R: RG1

Input/Output Selection
 N: NPN
 P: PNP
 CC: CC-Link
 DN: DeviceNet™
 PB: PROFIBUS
 YC: YC-Link^{Note2}

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.

Item	Model	SR1-X	SR1-P
Options	Programming box	HPB, HPB-D (with enable switch)	
	Support software for PC	POPCOM+	
	Operating temperature	0°C to 40°C	
General specifications	Storage temperature	-10°C to 65°C	
	Operating humidity	35% to 85%RH (non-condensing)	
General specifications	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



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

Articulated robots
 YA
 Linear conveyor modules
 LCM100
 Motor-less single-axis actuators
 Robonity
 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
 IVY2 Electric gripper
 Option

Driver / regenerative unit selection table

SR1-X

		FLIP-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	
Driver selection	SR1-X 05	●	●	●	●		●	●	●	●		●										●	●	●	●	●		
	SR1-X 10					●					●		●	●														●
	SR1-X 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				

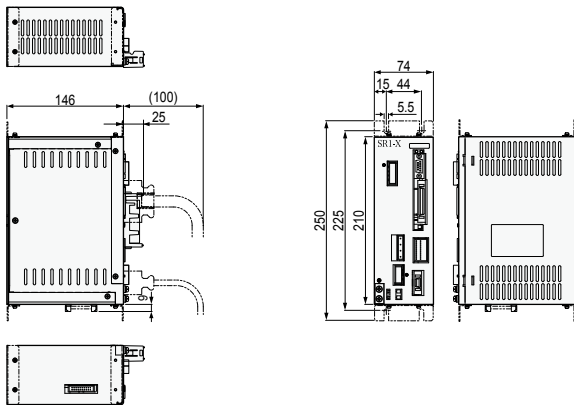
- ① Regenerative unit is needed if using in a perpendicular position and movement stroke is 700mm or more.
 ② Regenerative unit is needed if using in a perpendicular position.
 ③ Regenerative unit is needed if using in a perpendicular position, using at maximum speeds exceeding 1000mm per second, or 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

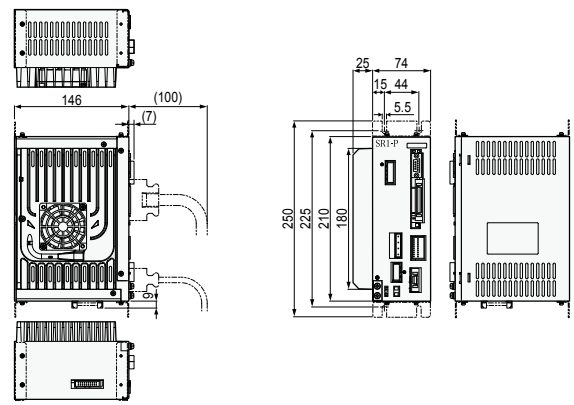
		PHASER								
		MR16/MR16D	MR16H/MR16HD	MR20/MR20D	MR25/MR25D	MF7/MF7D	MF15/MF15D	MF20/MF20D	MF30/MF30D	MF75/MF75D
Driver selection	SR1-P 05	●								
	SR1-P 10		●		●	●	●	●		
	SR1-P 20			●					●	●
Regenerative unit	No entry (None)	●	●	●	●	●	●			
	R (RG1)							●	●	
	R (RGU-2)									●

Dimensions

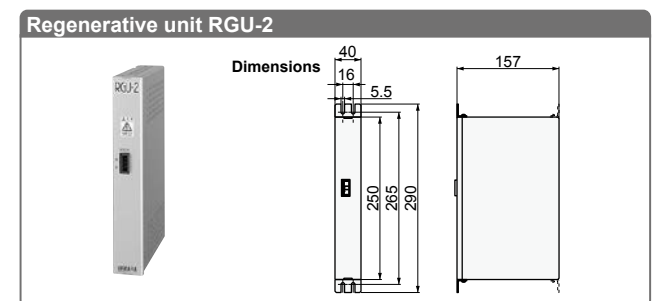
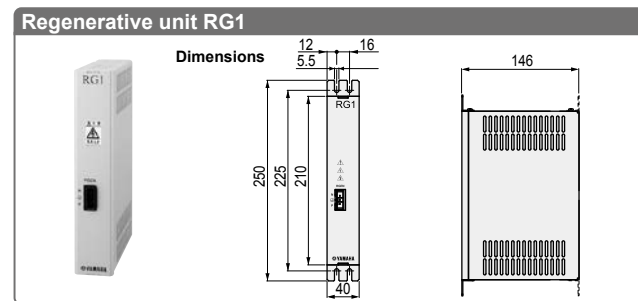
SR1-X/SR1-P 05 - 10



SR1-X/SR1-P 20



Regenerative unit RG1 / RGU-2



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.

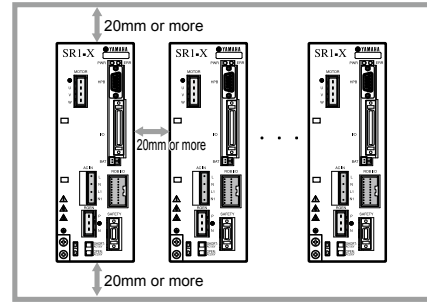
Basic specifications

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.

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

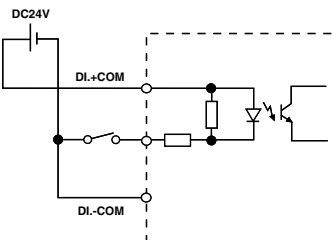
Terminal number	Signal name	Function
1	DI.+COM	Input supply+common
2	SERVO	Return to servo on
3	INC-PT	Relative point transfer
4	ABS-PT	Absolute point transfer
5	STEP-R	Step run
6	DI 0	General input 0
7	DI 1	General input 1
8	DI 2	General input 2
9	DI 3	General input 3
10	DI 4	General input 4
11	DI 5	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

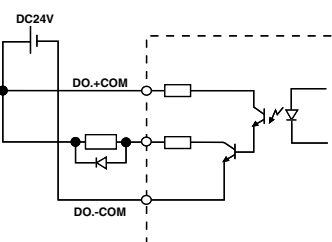
Input circuit

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



Output circuit

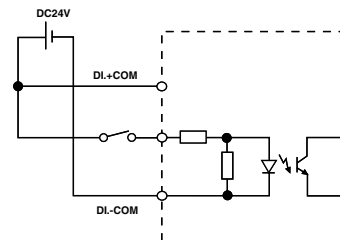
- Form : NPN open collector output (negative common type)
Photo coupler insulation type
- Load : 50mA/point
- Answering time : 1ms or less



PNP type input/output circuit

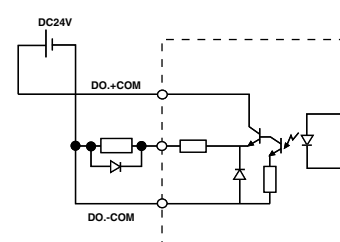
Input circuit

- 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



Articulated robots
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SCARA robots
YK-X
Pick & place robots
YP-X
CLEAN
CONTROLLER INFORMATION
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Pulse string driver
Robot controller
IVZ
Electric gripper
Option

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/2,750mAh
Data holding time	About 1 year (in state with no power applied)
Dimensions	φ17 × L53mm
Weight ^{Note1}	22g



Model KAS-M53G0-11

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.

- SR1-X
- RCX222

● **Battery case**

This is the absolute battery holder.



Model KBG-M5395-00

- SR1-X
- RCX222

See next page for optional parts

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 SCARA robots
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 CONTROLLER
 INFORMATION
 Robot positioner
 Pulse string driver
 Robot controller
 I/YZ 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.578** 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.



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 **P.585** HPB/HPB-D

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



	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.623).

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Option