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

Robot driver | **Single-axis** | **RDV series**

RDV-X/RDV-P

● Only for pulse train control

These are high-performance robot drivers for the FLIP-X series and PHASER series which support pulse train command input.

Main functions ▶ P.62

Support software for PC
▶ **RDV-Manager**
P.582

RDV-X   RDV-P

■ Basic specifications

Item	Model	RDV-X			RDV-P			
Driver model		RDV-X205	RDV-X210	RDV-X220	RDV-P205	RDV-P210	RDV-P220	RDV-P225
Number of controllable axes		Single-axis						
Controllable robots		Single-axis robot FLIP-X			Linear motor single-axis robot PHASER			
Basic specifications	Capacity of the connected motor	200V 100W or less	200V 200W or less	200V 600W or less	200V 100W or less	200V 200W or less	200V 400W or less	200V 750W or less
	Maximum power consumption	0.3kVA	0.5kVA	0.9kVA	0.3kVA	0.5kVA	0.9kVA	1.3kVA
	Dimensions	W40×H160×D140mm		W40×H160×D170mm	W40×H160×D140mm		W40×H160×D170mm	W55×H160×D170mm
	Weight	0.7kg		1.1kg	0.7kg		1.1kg	1.2kg
	Input power supply — Control power supply	Single phase 200 to 230V +10%, -15%, 50/60Hz +/-5%						
	Input power supply — Motor power supply	Single phase / 3-phase 200 to 230V +10%, -15%, 50/60Hz +/-5%						
Axis control	Position detection method	Resolver			Magnetic linear scale			
	Control system	Sine-wave PWM (pulse width modulation)						
	Control mode	Position control						
	Maximum speed Note 1	5000rpm			3.0m/s			
Input/output related function	Position command input	Line driver signal (2M pps or less) (1) Forward pulse + reverse pulse (2) Sign pulse + Command pulse (3) 90-degree phase difference 2-phase pulse command One of (1) to (3) is selectable.						
	Input signal	24V DC contact point signal input (usable for sink/source) (24V DC power supply incorporated) (1) Servo ON (2) Alarm reset (3) Torque limit (4) Forward overtravel (5) Reverse overtravel (6) Origin sensor Note 3 (7) Return-to-origin (8) Pulse train input enable (9) Deviation counter clear						
	Output signal	Open collector signal output (usable for sink/source) (1) Servo ready (2) Alarm (3) Positioning completed (4) Return-to-origin complete						
	Relay output signal	Braking cancel signal (24V 375mA)		-				
	Position output	Phase A, B signal output: Line driver signal output Phase Z signal output: Line driver signal output / open collector signal output N/8192 (N=1 to 8191), 1/N (N=1 to 64) or 2/N (N=3 to 64)						
	Monitor output	Selectable items: 2ch, 0 to +/-5V voltage output, speed detection value, torque command, etc.						
Internal function	Display	5-digit number indicator, Control power LED						
	External operator	PC software "RDV-Manager" monitoring function, parameter setting function, operation tracing function, trial operation function, etc. USB2.0 is used. Windows Vista / 7 / 8 / 8.1 personal computer can be connected.						
	Regenerative braking circuit	Included (but without braking resistor)						
	Dynamic brake Note 4	Included (Operation conditions can be set.) (No DB resistor, connection: 2-phase short circuit)						Included (Operation conditions can be set.) (with DB resistor, connection: 2-phase short circuit)
	Protective function Note 2	Semi-enclosure type (IP20)						
	Protective functions	Over-current, overload, braking resistor overload, main circuit overvoltage, memory error, etc.						

Controllable robot	RDV-X ▶ FLIP-X Note 1	P.193	RDV-P ▶ PHASER	P.239	Note 1. Exclude T4 / T5 / C4 / C5 / YMS
CE marking	○		Field networks	—	

■ Model Overview

Name		RDV-X	RDV-P
Controllable robot		Single-axis robot FLIP-X Note 1	Linear motor single-axis robot PHASER
Input power	Main power supply	Single phase / 3-phase 200 to 230V +10% to -15% (50/60Hz +/-5%)	
	Control power supply	Single phase 200 to 230V +10% to -15% (50/60Hz +/-5%)	
Operating method		Pulse train control	
Maximum number of controllable axes		Single-axis	
Origin search method		Incremental	

■ Ordering method

■ RDV-X

RDV-X

Controller	Power-supply voltage	Driver Note	–	Regenerative unit Note
	2: AC200V	05: 100W or less		RBR1
		10: 200W or less		RBR2
		20: 600W or less		

Note. Driver selection and regenerative unit selection depend on the robot type.
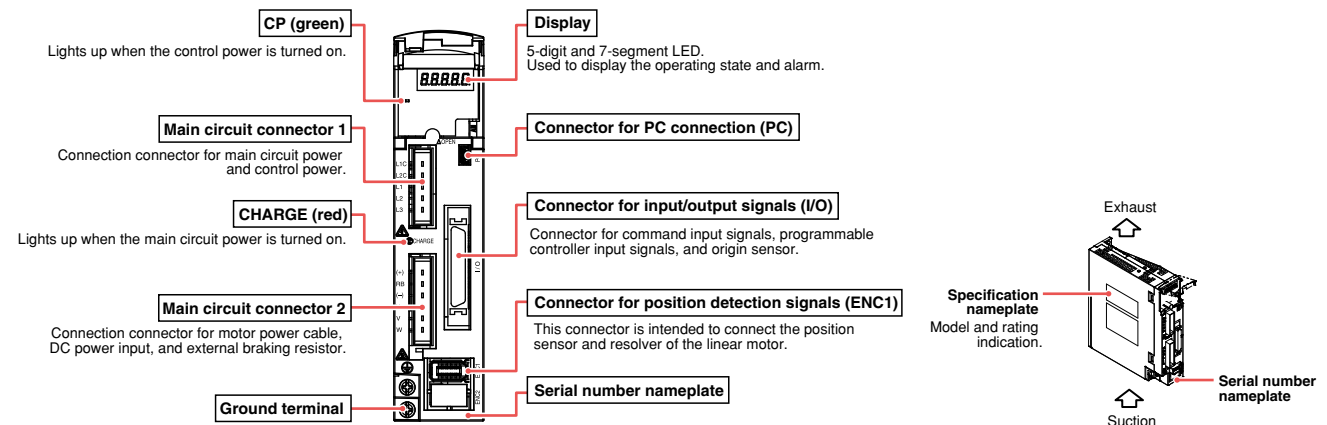See the selection table on the next page for selecting the driver/regenerative circuit.

■ RDV-P

RDV-P

Controller	Power-supply voltage	Driver Note	–	Regenerative unit Note
	2: AC200V	05: 100W or less		No entry: None
		10: 200W or less		RBR1
		20: 400W or less		RBR2
		25: 750W or less		

Note. Driver selection and regenerative unit selection depend on the robot type.
See the selection table on the next page for selecting the driver/regenerative circuit.

Item		RDV-X			RDV-P			
Driver model		RDV-X205	RDV-X210	RDV-X220	RDV-P205	RDV-P210	RDV-P220	RDV-P225
Options	Support software for PC	RDV-Manager						
General specifications	Operating temperature	0°C to +55°C						
	Storage temperature Note 5	-10°C to +70°C						
	Operating humidity	20% to 90%RH (non-condensing)						
	Vibration Note 6	5.9m/s² (0.6G) 10 to 55Hz						

Note 1. These data are parameters and calculation range in controlling the robot driver and do not indicate the capacity of the robot at the maximum speed.
Note 2. JIS C 0920 (IEC60529) is used as the base for the protection method.
Note 3. GXL-8FB (made by SUNX) or FL7M-1P5B6-Z (made by YAMATAKE) is used for the origin sensor. The power consumption of the origin sensor is 15mA or less (at open output) and only 1 unit of the origin sensor is connected to each robot driver. (future specification)
Note 4. Use the dynamic brake for emergency stop. Note that the braking may be less effective depending on the robot model.
Note 5. The storage temperature is the temperature in the non-energized state including transportation.
Note 6. The JIS C 60068-2-6:2010 (IEC 60068-2-6:2007) test method is uses as the base.

■ Part names

CP (green)
Lights up when the control power is turned on.

Display
5-digit and 7-segment LED.
Used to display the operating state and alarm.

Main circuit connector 1
Connection connector for main circuit power and control power.

Connector for PC connection (PC)

CHARGE (red)
Lights up when the main circuit power is turned on.

Connector for input/output signals (I/O)
Connector for command input signals, programmable controller input signals, and origin sensor.

Main circuit connector 2
Connection connector for motor power cable, DC power input, and external braking resistor.

Connector for position detection signals (ENC1)
This connector is intended to connect the position sensor and resolver of the linear motor.

Ground terminal

Serial number nameplate

Exhaust

Specification nameplate
Model and rating indication.

Serial number nameplate

Suction

Articulated robots YA
Linear conveyor modules LCM100
Motor-less single axis actuator 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
Electric gripper iVY2
Option

YA Articulated robots
LCM100 Linear conveyor modules
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
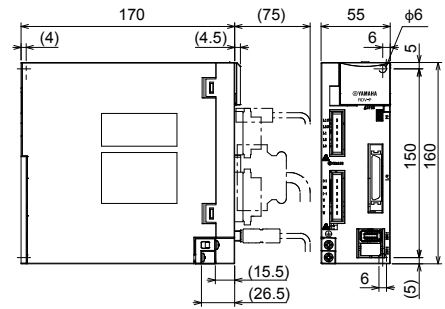IVY2 Electric gripper
Option

RDV-X/RDV-P

■ Dimensions

■ RDV-X205/210 RDV-P205/210
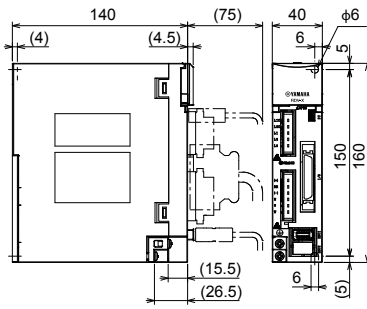
■ RDV-X220 RDV-P220
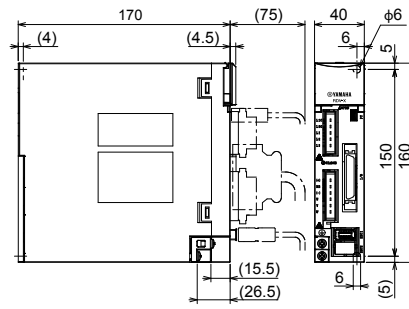
■ RDV-P225

■ Driver / regenerative unit selection table

■ RDV-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	N18	N15D	N18D	B10	B14	B14H	R5	R10	R20
Driver selection	RDV-X	05	●	●	●	●		●	●	●	●		●												●	●		●	●	
		10					●					●		●														●			●
		20													●	●	●	●	●	●	●	●	●	●						
Regenerative unit	No entry (None)		●	●																										
	RBR1				●	●	●	●	●	●	●	●	●	●	●	❶	❶	●	❶	●	●	●	●	●	●	●	●	●	●	●
	RBR2															❶	❶		❶											

❶ If placed horizontally the RBR1 is required, if placed vertically then RBR2 is required.

■ RDV-P

			PHASER				
			MF7/MF7D	MF15/MF15D	MF20/MF20D	MF30/MF30D	MF75/MF75D
Driver selection	RDV-P	05					
		10	●	●	●		
		20				●	
		25					●
Regenerative unit	No entry (None)						
	RBR1		●	●	●	●	
	RBR2						●

■ Regenerative unit RBR1 / RBR2 dimensions

The regenerative unit is a device that converts the braking current generated when the motor decelerates into heat.
Regenerative unit is required for specified Yamaha models and for operation with loads having large inertia.
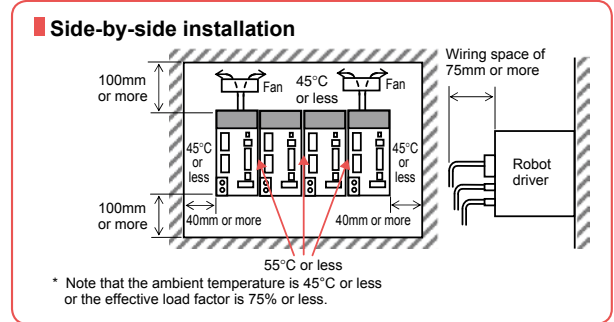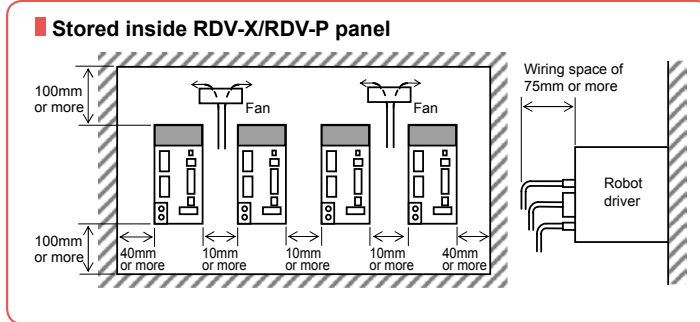
Regenerative unit RBR1

Dimensions

Regenerative unit RBR2

Dimensions
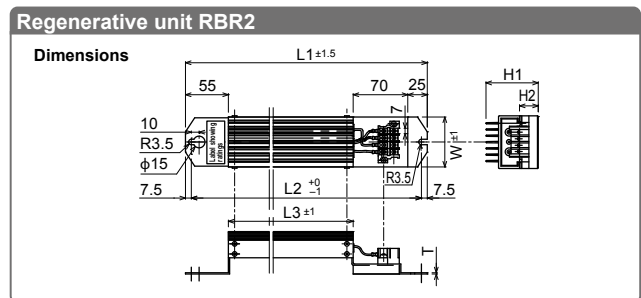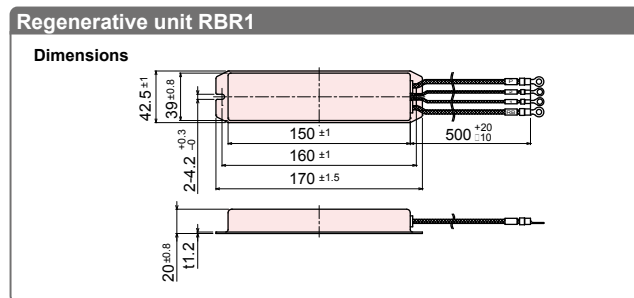
● Regenerative unit RBR1 / RBR2 basic specifications

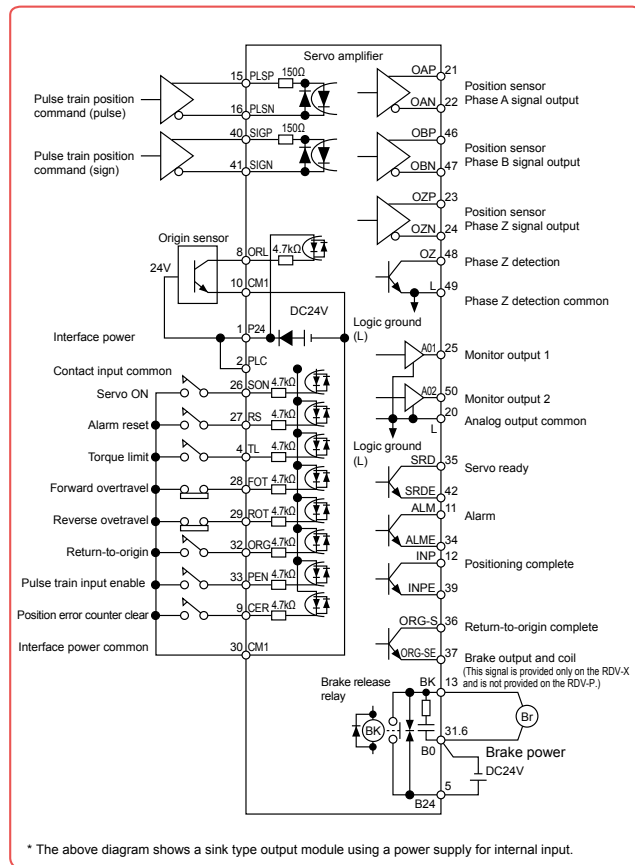| Item	RBR1	RBR2
Model	KBH-M5850-00	KBH-M5850-10
Capacity type	120W	200W
Resistance value	100Ω	100Ω
Permissible braking frequency	2.5%	7.5%
Permissible continuous braking time	12 sec.	30 sec.
Weight	0.27kg	0.97kg

Note. The internal thermal contact point capacity is AC250V, 2A max. ON (b contact point) in the normal state.
Note. The built-in thermal fuse prevents abnormal heat generation which occurs by an erroneous use. (not resettable)
Note. When the thermal relay has worked, reduce the regeneration energy by either stopping the servo amplifier or making the deceleration time longer.
Note. With the regenerative unit, specifications and whether or not required may vary depending on each robot and its operation conditions.

Articulated robots YA
Linear conveyor modules LCM100
Motor-less single axis actuator 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

■ Installation conditions

- Install the RDV-X/RDV-P on a vertical metal wall.
- Install the RDV-X/RDV-P in a well ventilated location, with space on all sides of the RDV-X/RDV-P.
- Ambient temperature: 0 to 55°C
- Ambient humidity: 20 to 90% RH (no condensation)
- When placing two or more robot drivers in one operating panel, install them as shown in the figure below.

■ Stored inside RDV-X/RDV-P panel

■ Side-by-side installation

* Note that the ambient temperature is 45°C or less or the effective load factor is 75% or less.

■ Input / output signal connection diagram

* The above diagram shows a sink type output module using a power supply for internal input.

■ List of RDV-P / RDV-X terminal functions

Type	Terminal symbol	Terminal name	Description
Input signal	P24	Interface power	Supplies 24V DC for contact inputs. Connecting this signal to the PLC terminal allows using the internal power supply. Use this terminal only for contact input. Do not use for controlling external equipment connected to the driver, such as brakes.
	CM1	Interface power common	This is a ground signal for the power supply connected to P24. If using the internal power supply then input a contact signal between this signal and the contact-point signal.
	PLC	Intelligent input common	Connect this signal to the power supply common contact input. Connect an external supply or internal power supply (P24).
	SON	Servo ON	Setting this signal to ON turns the servo on (supplies power to motor to control it). Additionally, this signal is also used for estimating magnetic pole position when FA-90 is set to oFF4, oFF5.
	RS	Alarm reset	After an alarm has tripped, inputting this signal cancels the alarm. But before inputting this reset signal, first set the SON terminal to OFF and eliminate the cause of the trouble.
	TL	Torque limit	When this signal is ON, the torque limit is enabled.
	FOT	Forward overtravel	When this signal is OFF, the robot will not run in forward direction. (Forward direction limit signal)
	ROT	Reverse overtravel	When this signal is OFF, the robot will not run in reverse direction. (Reverse direction limit signal)
	ORL	Origin sensor	Input an origin limit switch signal showing the origin area.
	ORG	Return-to-origin	Inputting this signal starts return-to-origin operation.
	PEN	Pulse train input enable	When this signal is turned on, the pulse train position command input is enabled.
	CER	Position error counter clear	Inputting this signal clears the position deviation (position error) counter. (Position command value is viewed as current position.)
Output signal	SRD SRDE	Servo ready	This signal is output when the servo is ready to turn on (with main power supply turned on and no alarms tripped)
	ALM ALME	Alarm	This signal is output when an alarm has tripped. (This signal is ON in normal state and OFF when an alarm has tripped.)
	INP INPE	Positioning complete	This signal is output when the deviation between the command position and current position is within the preset positioning range.
	ORG-S ORG-SE	Return-to-origin complete	This signal is output when the return-to-origin is completed successfully.
Relay output	BK (B24) Note 1	Brake release relay output	When the servo is ON, this terminal outputs a signal to allow releasing the brake. (FLIP-X series only)
Monitor output	AO1	Monitor output 1	Outputs speed detection values, torque commands, etc. as analog signal voltages for monitoring. Signals to output are selected by setting parameters. These signals are only for monitoring. Do not use for control.
	AO2	Monitor output 2	
	L	Monitor output common	This is the ground for the monitor signal.
Position command	PLSP	Position command pulse (pulse signal)	Select one of the following signal forms as the pulse-train position command input. 1. Command pulse + direction signal 2. Forward direction pulse train + reverse direction pulse train 3. Phase difference 2-phase pulse
	PLSN		
	SIGP	Position command pulse (sign signal)	
	SIGN		
Position sensor monitor	OAP	Position sensor Phase A signal	Outputs monitor signal obtained by dividing "phase A" signal of position sensor.
	OAN		
	OBP	Position sensor Phase B signal	Outputs monitor signal obtained by dividing "phase B" signal of position sensor.
	OBN		
	OZP	Position sensor Phase Z signal	Outputs monitor signal for position sensor "phase Z" signal.
	OZN		
	OZ	Phase Z detection	Outputs monitor signal for position sensor "phase Z" signal.
	L	Phase Z detection common	
Braking power input	B24 Note 1	Brake power input	Input 24V DC brake power to this terminal.
	B0 Note 1	Brake power common	Common terminal input for brake power.

Note 1. B24, BO and BK are available only with RDV-X, and not with RDV-P.

Accessories and part options
RDV-X/RDV-P

■ Standard accessories

● **I/O connector (no brake wiring)**

| Model | KBH-M4420-00 |

RDV-X
RDV-P

● **I/O connector (with brake wiring)**

| Model | KBH-M4421-00 |

RDV-X
RDV-P

● **Power supply connector**

| Model | KEF-M4422-00 |

RDV-X
RDV-P

■ Options

● **Support software RDV-Manager**   P.582

| Model | KEF-M4966-00 |

RDV-X
RDV-P

● **Environment**

OS	Windows Vista SP1 (32bit) Note 1, 7, 8 / 8.1
CPU	Pentium4 1.8GHz or more (Recommend)
Memory	1GB or more
Hard disk	1GB of available space required on installation drive.
Disk operation	USB
Applicable controllers	RDV series

Note 1. SP1 (service pack 1) or higher.
Note. Windows is the registered trademark of US Microsoft Corporation in U.S.A. and other countries.

● **Communication cable**
Communication cable to connect PC and a controller.

| Model | KEF-M538F-00 |

RDV-X
RDV-P

Articulated robots YA

Linear conveyor modules LCM100

Motor-less single axis actuator 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