

X series

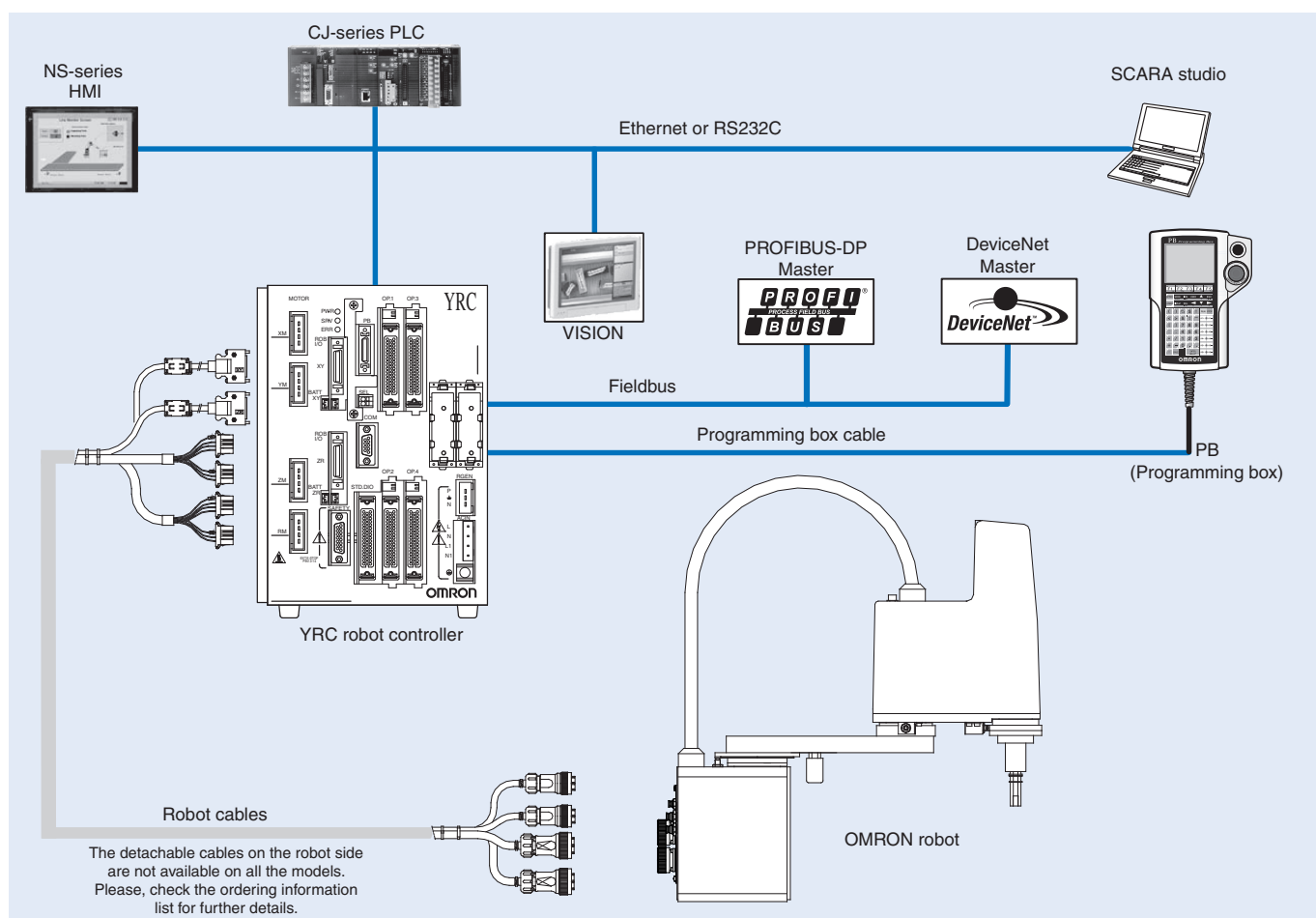
SCARA robots

SCARA robots for industrial applications:

- Higher precision and speed.
- Easier to use.
- Higher rigidity.
- Very compact design.



System configuration



YRC Robot controller

Specifications

Item		Description
YRC		YRC robot controller
Basic specifications	Number of controllable axes	4 axes maximum (Control simultaneously: 4 axes)
	Controllable robots	SCARA robots
	Maximum power consumption	2500 VA
	Capacity of the connected motor	1600 W
	Dimensions (WxHxD)	180x250x235 mm
	Weight	6.5 kg
	Input power supply	Control power supply
		Motor power supply
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)
	Resolution	16384 P/rev, 1 micron
	Origin search method	Incremental, absolute, semi-absolute
Program	Program language	PSEUDO-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	364 KB (total capacity of program and points) (available program capacity during use of maximum number of points is 84 KB)
	Programs	100 program (Max.) 9.999: maximum lines per program 98 KB: maximum capacity per program
	Points	10.000 points: maximum number of points
	Memory Backup battery	Lithium metallic battery (service life 4 years at a 0°C to 40°C)
	Internal flash memory	512 KB (ALL data only)
External input/output	STD.DIO	I/O input
		I/O output
	SAFETY	Emergency stop input (Relay contact), Service mode input (NPN/PNP specification is set according to STD.DIO setting)
	Brake output	Relay contact
	Origin sensor input	Connectable to DC 24 V normally-closed contact sensor
	External communications	RS232C: 1CH D-SUB9 (female) RS422: 1CH (Dedicated PB)
	Options	Slots
		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
Options	Programming box	PB (with enable switch)
	Support software for PC	SCARA STUDIO
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 3.6 V 5400 mAh (2700 mAh x 2)
	Absolute data backup period	1 year (in state with no power applied)
	Noise immunity	IEC61000-4-4 Level 3
Protective structure		IP10

YRC-Optional Input/Output unit (PNP/NPN)

Item	Description
R6YACMA241 (NPN) R6YACMA242 (PNP)	Optional Input/Output unit
Optional Input/Output (NPN/PNP)	24 General purpose input, 16 General purpose output

YRC-DeviceNet slave unit

Item		Description
R6YACDRT01		DeviceNet slave unit
Applicable controllers		YRC
Applicable DeviceNet specifications		Volume 1 Release 2.0 / Volume 2 Release 2.0
Device Profile Name		Generic Device (device number 0)
Number of occupied CH *1		Normal: Input/Output 24ch each, Compact: Input/Output 2ch each
MAC ID setting		0 to 63
Transmission speed setting		500 Kbps, 250 Kbps, 125 Kbps (set using DIP switch on board)
DeviceNet I/O *2	Normal	General input 96 points, General output 96 points, Dedicated input 16 points, Dedicated output 16 points
	Compact	General input 16 points, General output 16 points, Dedicated input 16 points, Dedicated output 16 points
Parallel external I/O		The master module and up to four ports can be controlled regardless of the robot program by using the pseudoserialization function
Network length	Overall length *3	100 m/500 Kbps, 250 m/250 Kbps, 500 m/125 Kbps
	Branch length / Overall branch length	6 m max./39 m max., 6 m max./78 m max., 6 m max./156 m max.
Monitor LED		MS (Module Status), NS (Network Status)

*1 Use the robot parameter to select Normal or Compact.

*2 Controller I/O are updated every 10ms.

*3 These values apply when a thick cable is used. The distance is less when a fine cable is used or when thick and fine cables are mixed in use.

YRC-Profibus slave unit

Item	Description
R6YACPRT01	Profibus slave unit
Applicable controllers	YRC
Communication profile	Profibus-DP slave
Number of occupied nodes	1 node
Setting of station address	1 to 99 (set using Rotary switch on board)
Setting of communication speed	9.6 Kbps, 19.2 Kbps, 93.75 Kbps, 187.5 Kbps, 500 Kbps, 1.5 Mbps, 3 Mbps, 6 Mbps, 12 Mbps (automatic recognition)
Profibus I/O ^{*1}	General input 96 points, General output 96 points, Dedicated input 16 points, Dedicated output 16 points
Parallel external I/O	The master module and up to four ports can be controlled regardless of the robot program by using the pseudoserialization function
Overall length	100 m/3 M-6 M-12 Mbps, 200 m/1.5 Mbps, 400 m/500 Kbps, 1000 m/187.5 Kbps, 1200 m/9.6 K- 19.2 K-93.75 Kbps
Monitor LED	RUN, ERR, SD, RD, DATA-EX

*1 The shortest I/O update interval of the controller is 10 ms but the actual I/O update time varies depending on the update time with the master station.

YRC-Ethernet unit

Item	Description
R6YACETN01	Ethernet unit
Applicable controllers	YRC
Network specification	As specified for Ethernet (IEEE802.3)
Connector specification	RJ-45 connector (8-pole modular connector) 1 port
Baud rate	10 Mbps (10BASE-T)
Communication mode	Half Duplex (Half-duplex)
Network protocol	Application layer: TELNET / Transport layer: TCP / IP Network layer: IP, ICMP, ARP / Data link layer: CSMA / CD Physical layer: 10BASE-T
Number of simultaneous log inputs	1
Setting of IP address, etc.	Set from PB
Monitor LED	Run, Collision, Link, Transmit, Receive

YRC-VISION board basic specifications

Item		Description
R6YACVI01		VISION board
Basic specifications	Applicable controller	YRC
	Pixels	640 (H) x 480 (V) (300,000 pixels, VGA)
	Settable part types	40 part types
	Connectable cameras	Maximum 2 units ^{*1}
	Camera types	Double speed compatible analog camera
	Memory	128 MB SDRAM, 256 MB miniSD card
	External I/F	Ethernet (100BASE-TX)
Search method		Edge search (Correlative edge filter, Sobel filter)
Image input	Trigger	S/W trigger, H/W trigger, Camera internal synch
	External trigger input	2 points
Functions	Search function	Position offset, Auto registry of point data
Setup support functions		Calibration, image storage function ^{*2} (all images / specified image)

*1 If connecting 2 units, then must be the same model.

*2 Requires Windows PC.

Accessories for YRC-VISION board

Item	Description
R6YACS1	CCD CAMERA
R6YACCV003	Camera cable 3.5 m
R6YACCV006	Camera cable 6 m
R6YACCV009	Camera cable 9.5 m (3.5 m + 6 m)
R6YACLE008	Lens 8 mm
R6YACLE012	Lens 12 mm
R6YACLE016	Lens 16 mm
R6YACLE025	Lens 25 mm
R6YACLR005	Close up ring 0.5 mm
R6YACLR010	Close up ring 1.0 mm
R6YACLR020	Close up ring 2.0 mm
R6YACLR050	Close up ring 5.0 mm

YRC-Tracking board basic specifications

Item		Description
R6YACTR01		Tracking board
Basic specifications	Applicable controller	YRC
	Lighting control section	Number of lighting connected units
		Up to 2 units
		Light adjusting system
		PWM control (0 to 100%) (Cycle 60 KHz) Stroboscopic light (10 to 33000 μs)
		Trigger
	Pulse input section	S/W trigger, H/W trigger
		External trigger input
		2 points
		Lighting power input
		12 VDC or 24 VDC (Supplied from outside commonly to 2 channels)
		Lighting output
		When DC 12 V is supplied: Less than 30 W with 2 channels totaled When DC 24 V is supplied: Less than 60 W with 2 channels totaled
		Number of encoder connected units
		Up to 2 units
		Encoder power source
		DC 5 V (Less than 500 mA with 2 channels totaled) (Supplied from controller)
		Applicable encoder
		Line driver equivalent to 26LS31 / 26C31 (Conforming to RS422)
		Input phase
		A, $\bar{A}$, B, $\bar{B}$, Z, $\bar{Z}$
		Maximum response frequency
		2 MHz
		Counter / Step-up multiplication
		0 to 65535 / Double, quadruple
		Other
		Provided with broken wire detect function

Note: The tracking board is required when using the tracking function.

Accessories for YRC-Tracking board

Item	Description
R6YACCR005	Encoder cable for tracking 10m

YRC-Lighting control board basic specifications

Item	Description
R6YACLI01	Lighting control board
Basic specifications	Applicable controller
	YRC
	Number of lighting connected units
	Up to 2 units
	Light adjusting system
	PWM control (0 to 100%) (Cycle 60KHz) Stroboscopic light (10 to 33000us)
	Trigger
	S/W trigger, H/W trigger
External trigger input	2 points
	Lighting power input
	12VDC or 24VDC (Supplied from outside commonly to 2 channels)
Lighting output	When DC12V is supplied: Less than 30W with 2 channels totaled
	When DC24V is supplied: Less than 60W with 2 channels totaled

Accessories for YRC-PB (Programming box)

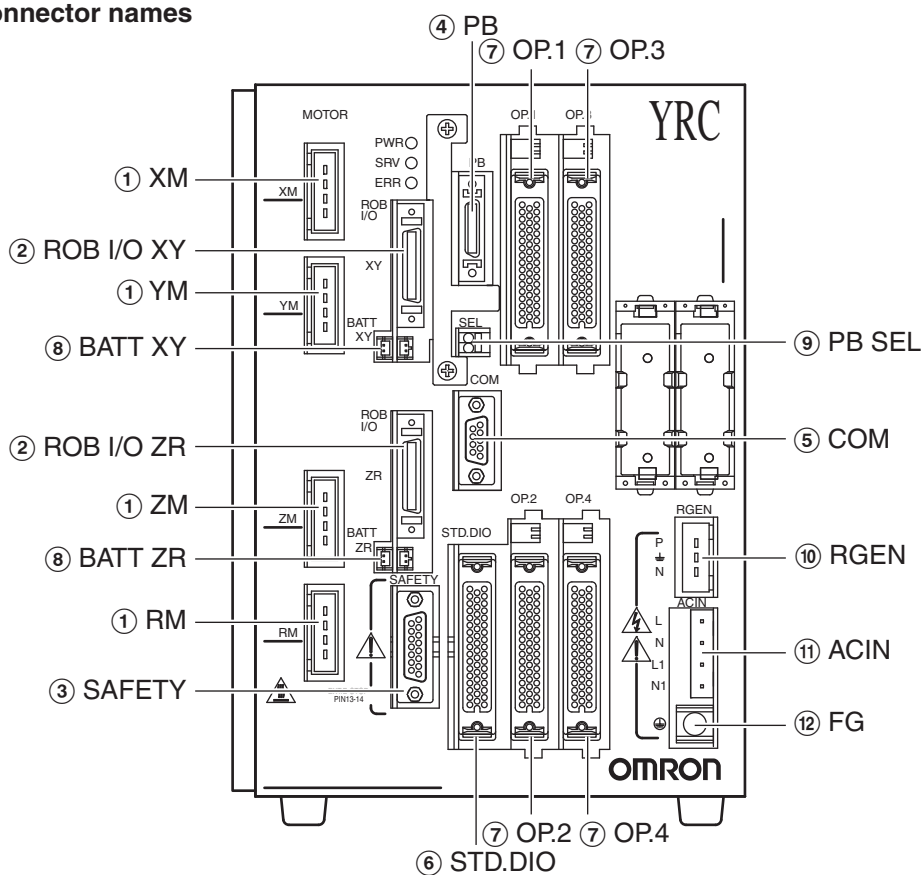
Item	Description
R6YACPB005E	Programming box cable 5m
R6YACPB012E	Programming box cable 12m

Accessories for YRC-SCARA studio software

Item	Description
R6YACSSC1	Support software SCARA studio
R6YACCC005	Communication cable 9-9 pin

YRC-Nomenclature

Connector names

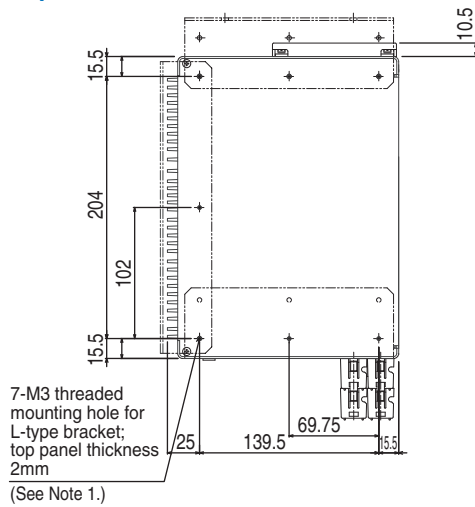


	Connector name	Function
①	XM/YM/ZM/RM	Connectors for servomotor drive
②	ROB I/O [XY/ZR]	Connectors for servomotor feedback and sensor signals
③	SAFETY	Input/output connector for safety function such as emergency stop
④	PB	Connector for PB
⑤	COM	RS-232C interface connector.
⑥	STD.DIO	Connector for dedicated input/output and standard generalpurpose input/output
⑦	OP.1 ,2, 3, 4	Conectors attached to optional expansion I/O boards
⑧	BATT [XY/ZR]	Battery connector for absolute backup
⑨	PB SEL	PB selector switch contact
⑩	RGEN [P/±/N]	Connector for regenerative unit
⑪	AC IN [L/N/L1/N1]	Terminal block for power cable. Use ring-tongue terminals to make connections.
⑫	FG	Ground terminal (±) . Provide Class D grounding (100 ohms or less) .

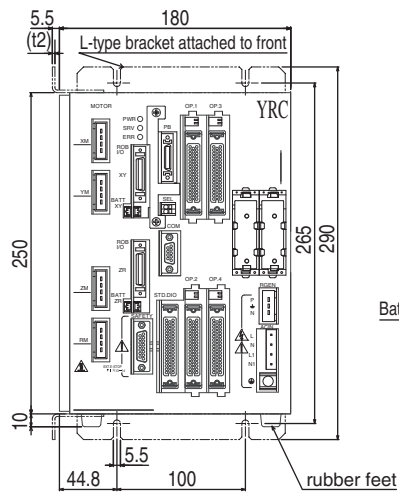
Dimensions

Standard YRC

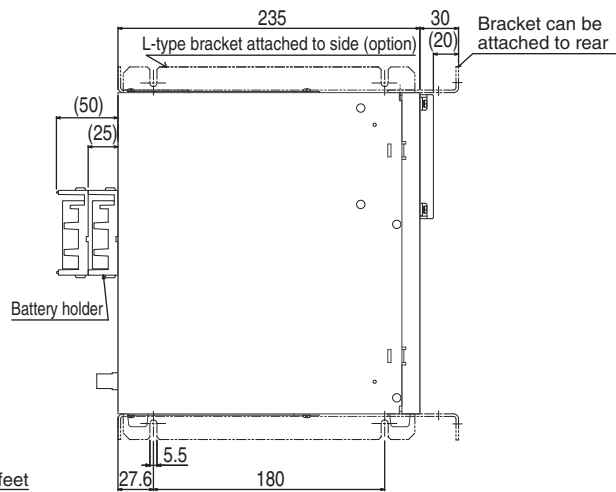
Top view



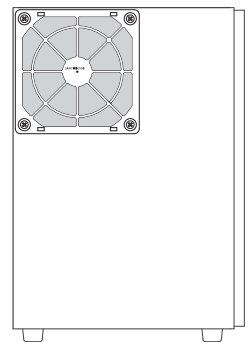
Front view



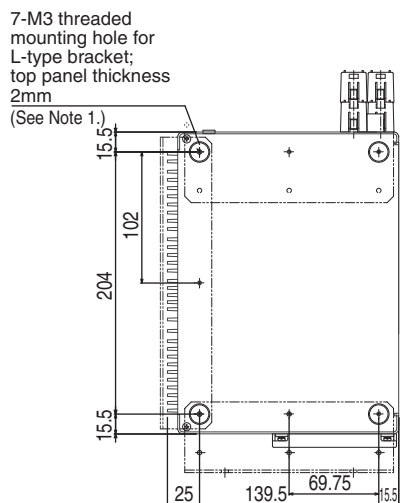
Side view



Rear view



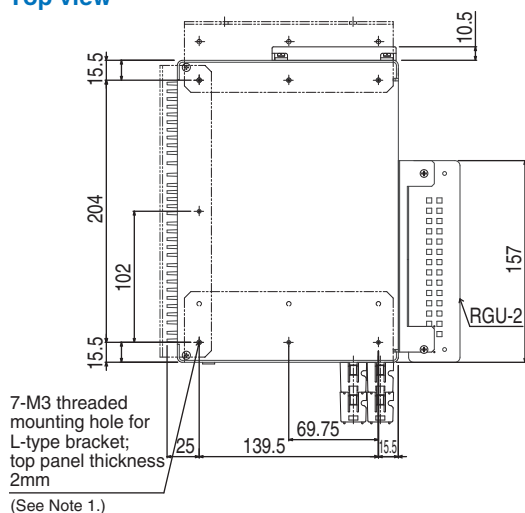
Bottom view



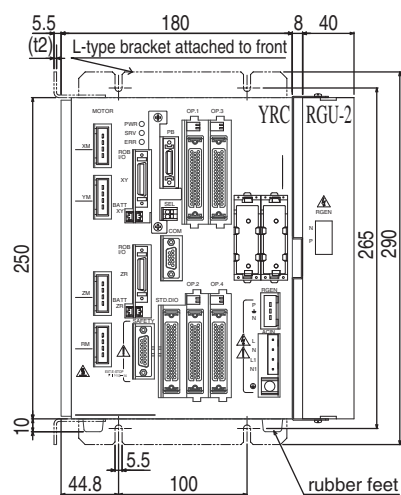
Note 1: When installing this controller using the supplied L-type brackets, remove the rubber feet on the bottom plate.

YRC with RGU2 option installed

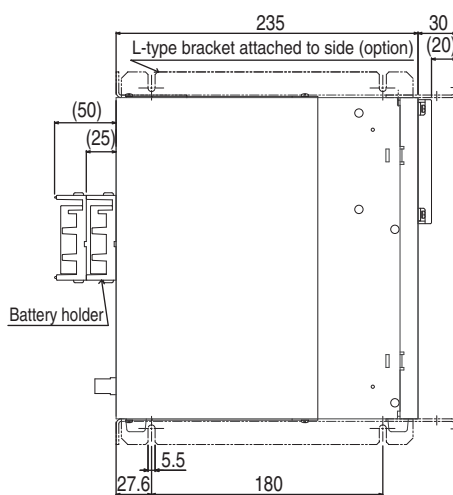
Top view



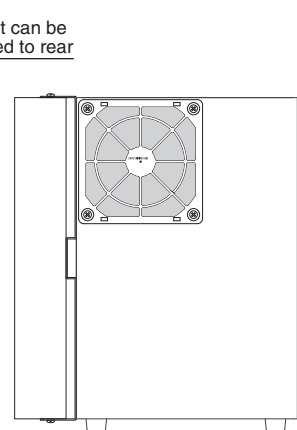
Front view



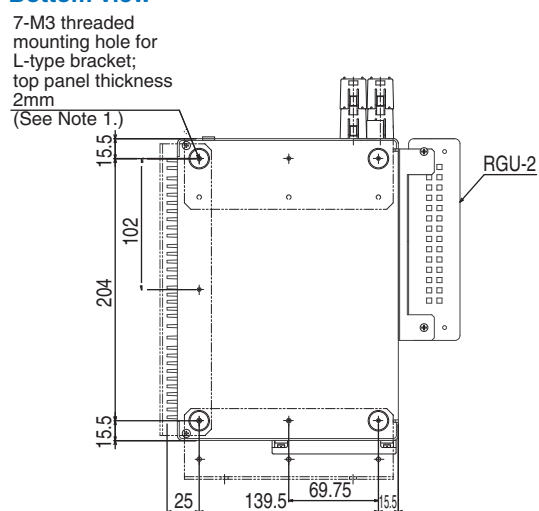
Side view



Rear view

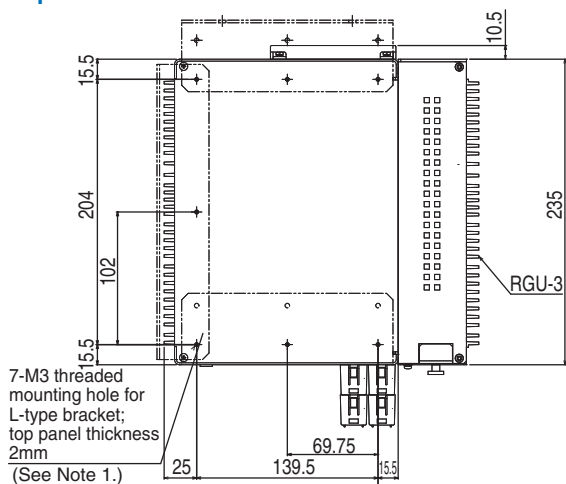


Bottom view

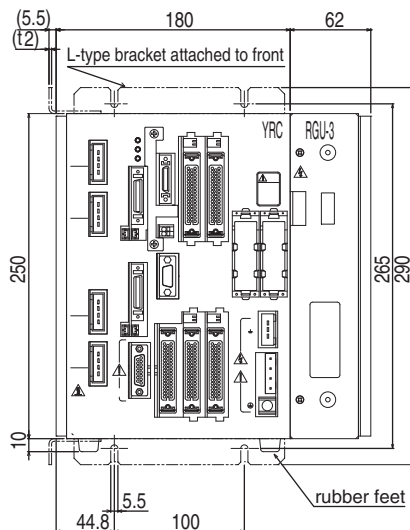


YRC with RGU3 option installed

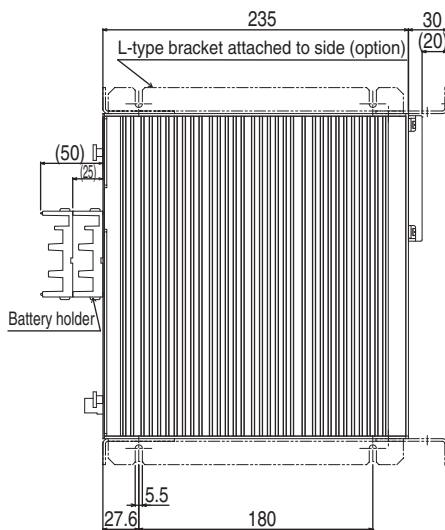
Top view



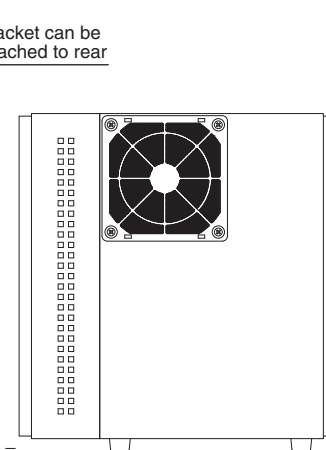
Front view



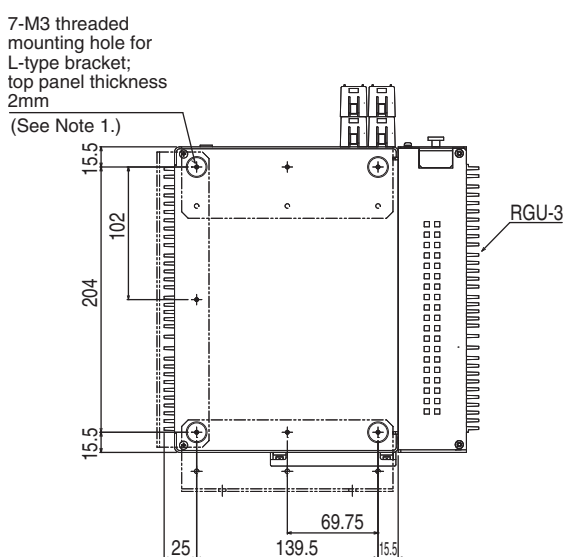
Side view



Rear view



Bottom view



R6YXH250 X SERIES

Specifications

	X axis	Y axis	Z axis	R axis
Reach (mm)	250			
Maximum payload (kg)	3			
Repeatability ^{*1} (XYZ:mm) (R:°)	+/-0.01		+/-0.01	+/-0.005
Axis specifications	Arm length (mm)	125	125	150
	Rotation range (°)	+/-115	+/-140	----
Deceleration mechanism	Speed reducer	Harmonic drive	Harmonic drive	Ball screw
	Transmission method	Motor to speed reducer	Harmonic drive	Timing belt transmission
	Speed reducer to output	Direct-coupled	Timing belt transmission	Timing belt transmission
AC servo motor output (W)	200	100	100	100
Maximum speed (XYZ:m/sec) (R:°/sec)	4		1	1020
Standard cycle time: with 2kg payload ^{*2} (sec)	0.54			
R axis allowable moment inertia ^{*3} (kgm ²)	0.05			
User wiring (sq x pcs)	0.2 x 10			
User tubing (Outer diameter)	Ø4 x 3			
Movement limit setting	1.Soft limit 2.Mechanical stopper (X, Y, Z axis)			
Robot cable length (m)	Standard: 3.5 Option: 5, 10			
Weight (kg) (Excluding robot cable)	15			

*1 This is the value at a constant ambient temperature. (X,Y axes)

*2 When moving 25mm in vertical direction and 300mm in horizontal direction reciprocally.

*3 There are limits to the setting of the acceleration coefficient.

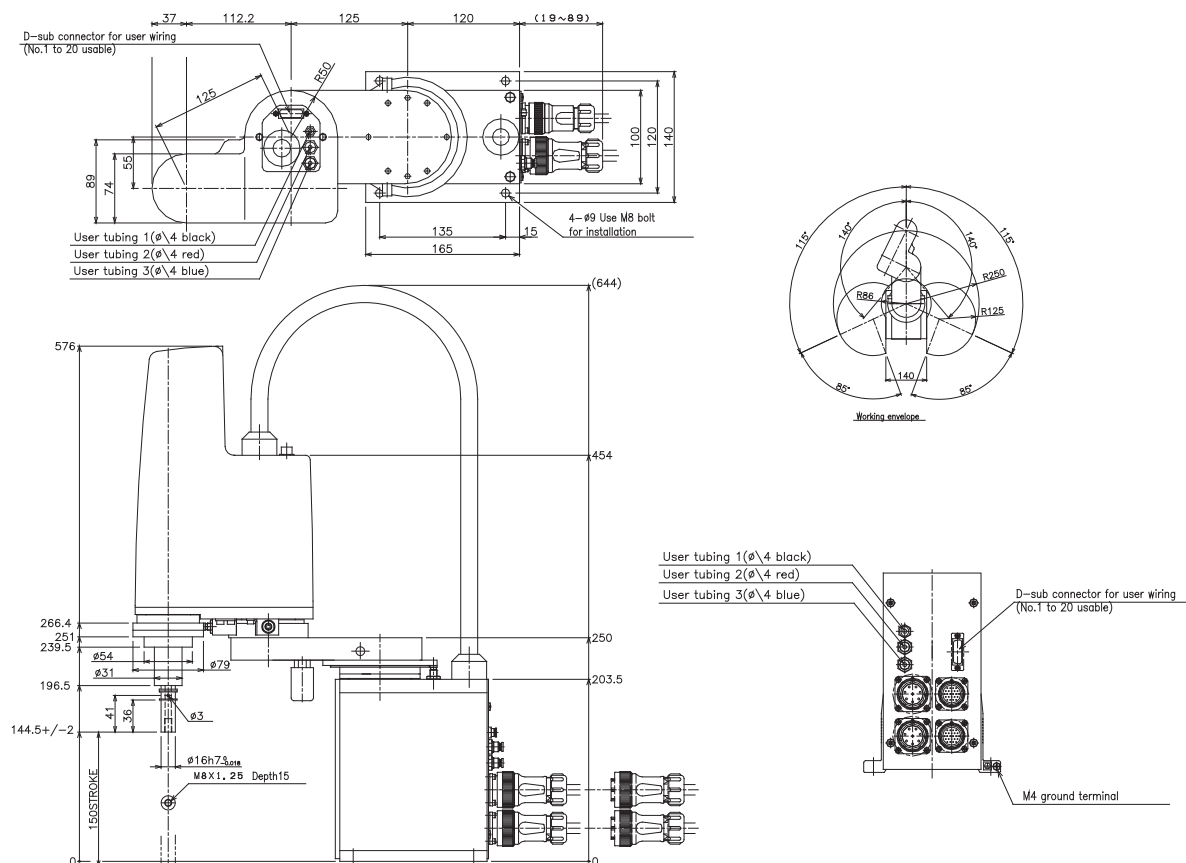
Controller

Controller	Power consumption (VA)	Operating method
YRC	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Ordering information

Description	Model
SCARA Reach: 250mm, Vertical Stroke: 150mm, Max. payload: 3kg.	R6YXH250150YRC

Dimensions



R6YXH350 X SERIES

Specifications

	X axis	Y axis	Z axis	R axis
Reach (mm)	350			
Maximum payload (kg)	3			
Repeatability ^{*1} (XYZ:mm) (R:°)	+/-0.01		+/-0.01	+/-0.005
Axis specifications	Arm length (mm)	125	150	----
	Rotation range (°)	+/-115	+/-140	----
Deceleration mechanism	Speed reducer	Harmonic drive	Harmonic drive	Ball screw
	Transmission method	Motor to speed reducer Speed reducer to output	Timing belt transmission	Timing belt transmission
AC servo motor output (W)	200	100	100	100
Maximum speed (XYZ:m/sec) (R:°/sec)	5		1	1020
Standard cycle time: with 2kg payload ^{*2} (sec)	0.54			
R axis allowable moment inertia ^{*3} (kgm ²)	0.05			
User wiring (sq x pcs)	0.2 x 10			
User tubing (Outer diameter)	Ø4 x 3			
Movement limit setting	1.Soft limit 2.Mechanical stopper (X, Y, Z axis)			
Robot cable length (m)	Standard: 3.5 Option: 5, 10			
Weight (kg) (Excluding robot cable)	15			

*1 This is the value at a constant ambient temperature. (X,Y axes)

*2 When moving 25mm in vertical direction and 300mm in horizontal direction reciprocally.

*3 There are limits to the setting of the acceleration coefficient.

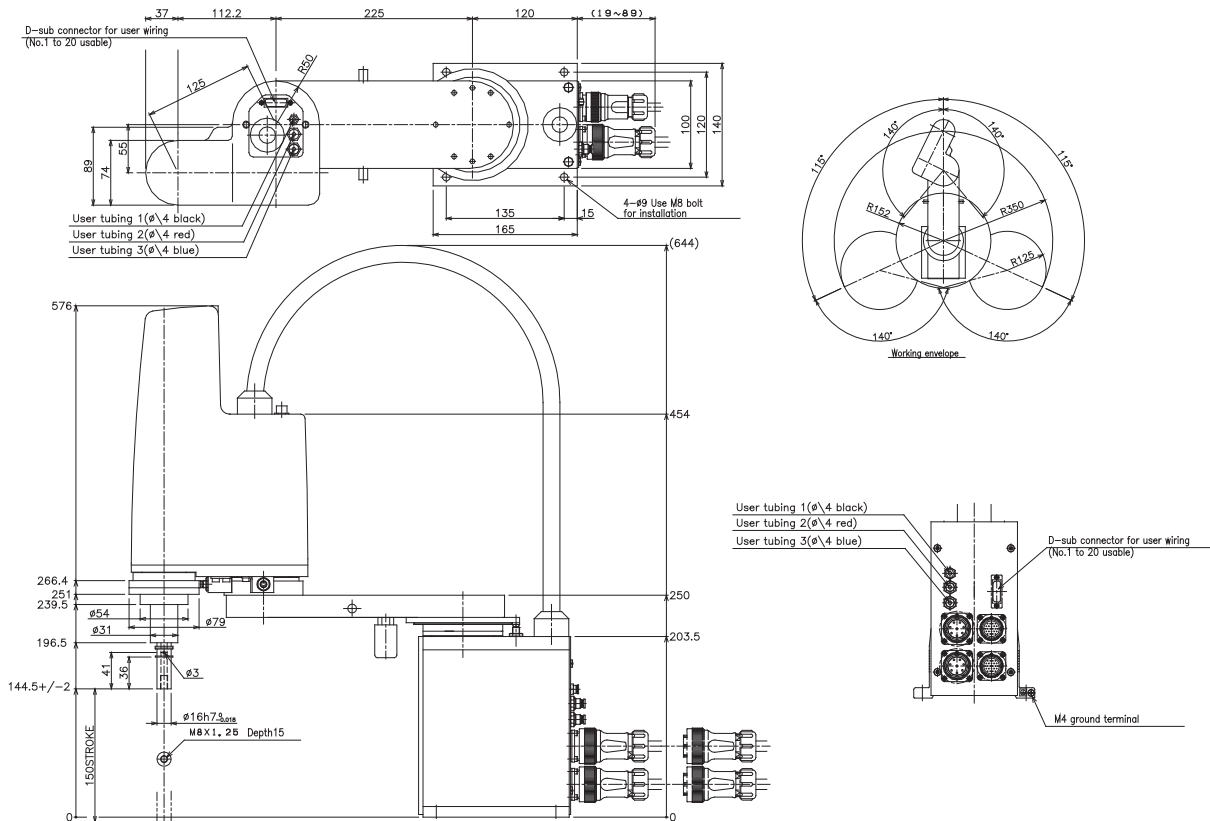
Controller

Controller	Power consumption (VA)	Operating method
YRC	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Ordering information

Description	Model
SCARA Reach: 350mm, Vertical Stroke: 150mm, Max. payload: 3kg.	R6YXH350150YRC

Dimensions



R6YXH400 X SERIES

Specifications

	X axis	Y axis	Z axis	R axis
Reach (mm)	400			
Maximum payload (kg)	3			
Repeatability ^{*1} (XYZ:mm) (R:°)	+/-0.01		+/-0.01	+/-0.005
Axis specifications	Arm length (mm)	175	150	----
	Rotation range (°)	+/-115	+/-140	----
Deceleration mechanism	Speed reducer	Harmonic drive	Harmonic drive	Ball screw
	Transmission method	Motor to speed reducer	Timing belt transmission	Timing belt transmission
	Speed reducer to output	Direct-coupled		
AC servo motor output (W)	200	100	100	100
Maximum speed (XYZ:m/sec) (R:°/sec)	6		1	1020
Standard cycle time: with 2kg payload ^{*2} (sec)	0.49			
R axis allowable moment inertia ^{*3} (kgm ²)	0.05			
User wiring (sq x pcs)	0.2 x 10			
User tubing (Outer diameter)	Ø4 x 3			
Movement limit setting	1.Soft limit 2.Mechanical stopper (X, Y, Z axis)			
Robot cable length (m)	Standard: 3.5 Option: 5, 10			
Weight (kg) (Excluding robot cable)	15			

*1 This is the value at a constant ambient temperature. (X,Y axes)

*2 When moving 25mm in vertical direction and 300mm in horizontal direction reciprocally.

*3 There are limits to the setting of the acceleration coefficient.

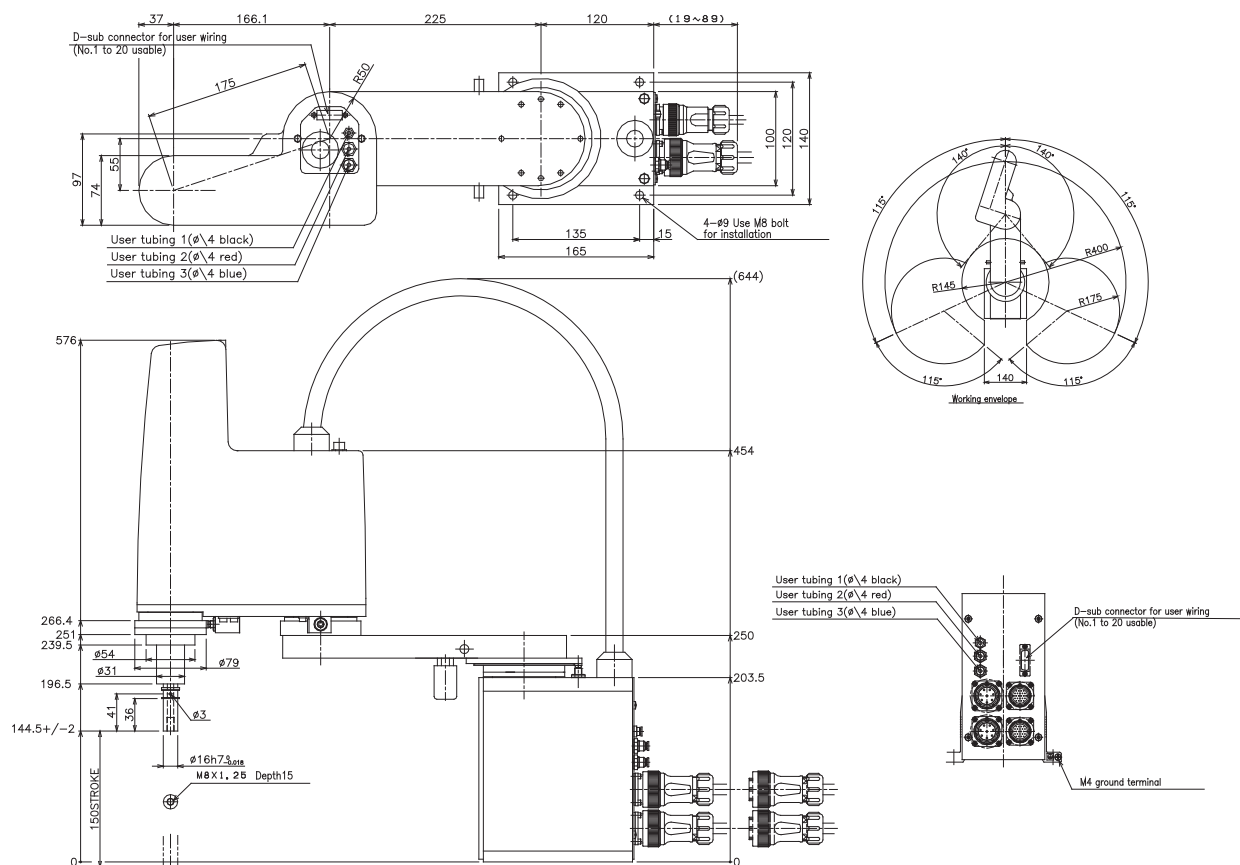
Controller

Controller	Power consumption (VA)	Operating method
YRC	1000	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Ordering information

Description	Model
SCARA Reach: 400mm, Vertical Stroke: 150mm, Max. payload: 3kg.	R6YXH400150YRC

Dimensions



R6YXX1200 X SERIES

Specifications

	X axis	Y axis	Z axis	R axis
Reach (mm)	1200			
Maximum payload (kg)	50			
Repeatability ^{*1} (XYZ:mm) (R:°)	+/-0.05		+/-0.02	+/-0.005
Axis specifications	Arm length (mm)	600	400	----
	Rotation range (°)	+/-125	+/-150	----
Deceleration mechanism	Speed reducer	Planetary gear	Planetary gear	Ball screw
	Transmission method	Motor to speed reducer	Timing belt transmission	Timing belt transmission
	Speed reducer to output	Direct-coupled		
AC servo motor output (W)	900	800	600	400
Maximum speed (XYZ:m/sec) (R:°/sec)	7.4		0.75	600
Standard cycle time: with 2kg payload ^{*2} (sec)	0.91			
R axis allowable moment inertia ^{*3} (kgm ²)	2.45			
User wiring (sq x pcs)	0.2 x 20			
User tubing (Outer diameter)	Ø6 x 3			
Movement limit setting	1.Soft limit 2.Mechanical stopper (X, Y, Z axis)			
Robot cable length (m)	Standard: 3.5 Option: 5, 10			
Weight (kg) (Excluding robot cable)	124			

*1 This is the value at a constant ambient temperature. (X,Y axes)

*2 When moving 25mm in vertical direction and 300mm in horizontal direction reciprocally.

*3 There are limits to the setting of the acceleration coefficient.

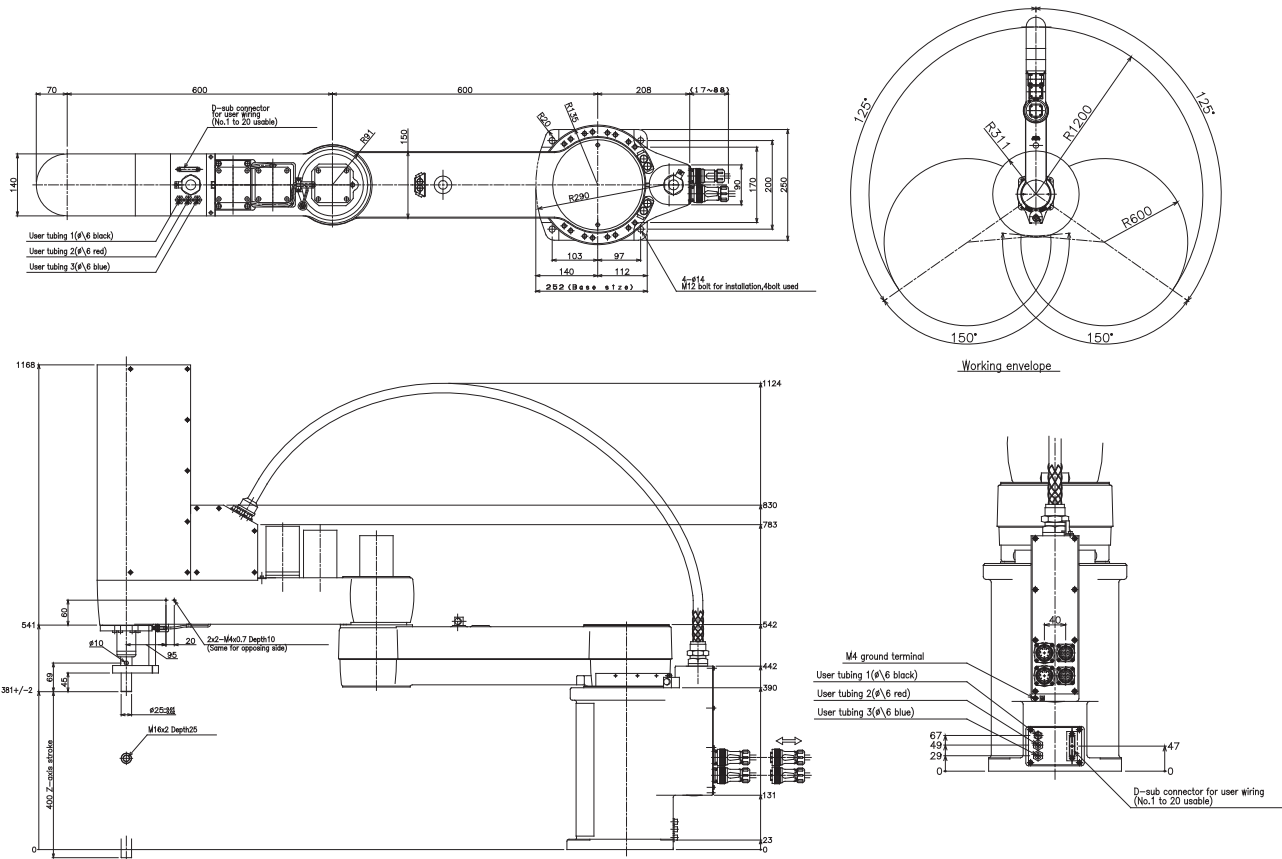
Controller

Controller	Power consumption (VA)	Operating method
YRC	2500	Programming / I/O point trace / Remote command / Operation using RS-232C communication

Ordering information

Description	Model
SCARA Reach: 1200mm, Vertical Stroke: 400mm, Max. payload: 50kg.	R6YXX1200400YRC

Dimensions



SCARA Robots X series

Ordering information

	Series	Reach (mm)	Z-axis stroke (mm)	Payload (kg)	Robot item code	RGU	Robot cable length (m)	Cable item code	Detachable robot cable
R6Y	XH	250	150	3	R6YXH250150YRC	N.A.	3.5	R6YACCX003XGX	●
							5.0	R6YACCX005XGX	●
							10.0	R6YACCX010XGX	●
	XH	350	150	3	R6YXH350150YRC	N.A.	3.5	R6YACCX003XGX	●
							5.0	R6YACCX005XGX	●
							10.0	R6YACCX010XGX	●
	XH	400	150	3	R6YXH400150YRC	N.A.	3.5	R6YACCX003XGX	●
							5.0	R6YACCX005XGX	●
							10.0	R6YACCX010XGX	●
	XX	1200	400	50	R6YXX1200400YRC	RGU2	3.5	R6YACCX003XGX	●
							5.0	R6YACCX005XGX	●
							10.0	R6YACCX010XGX	●

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.