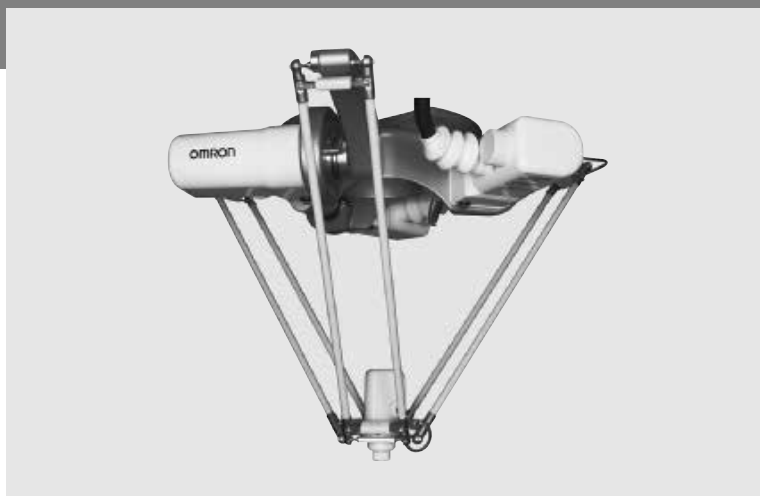


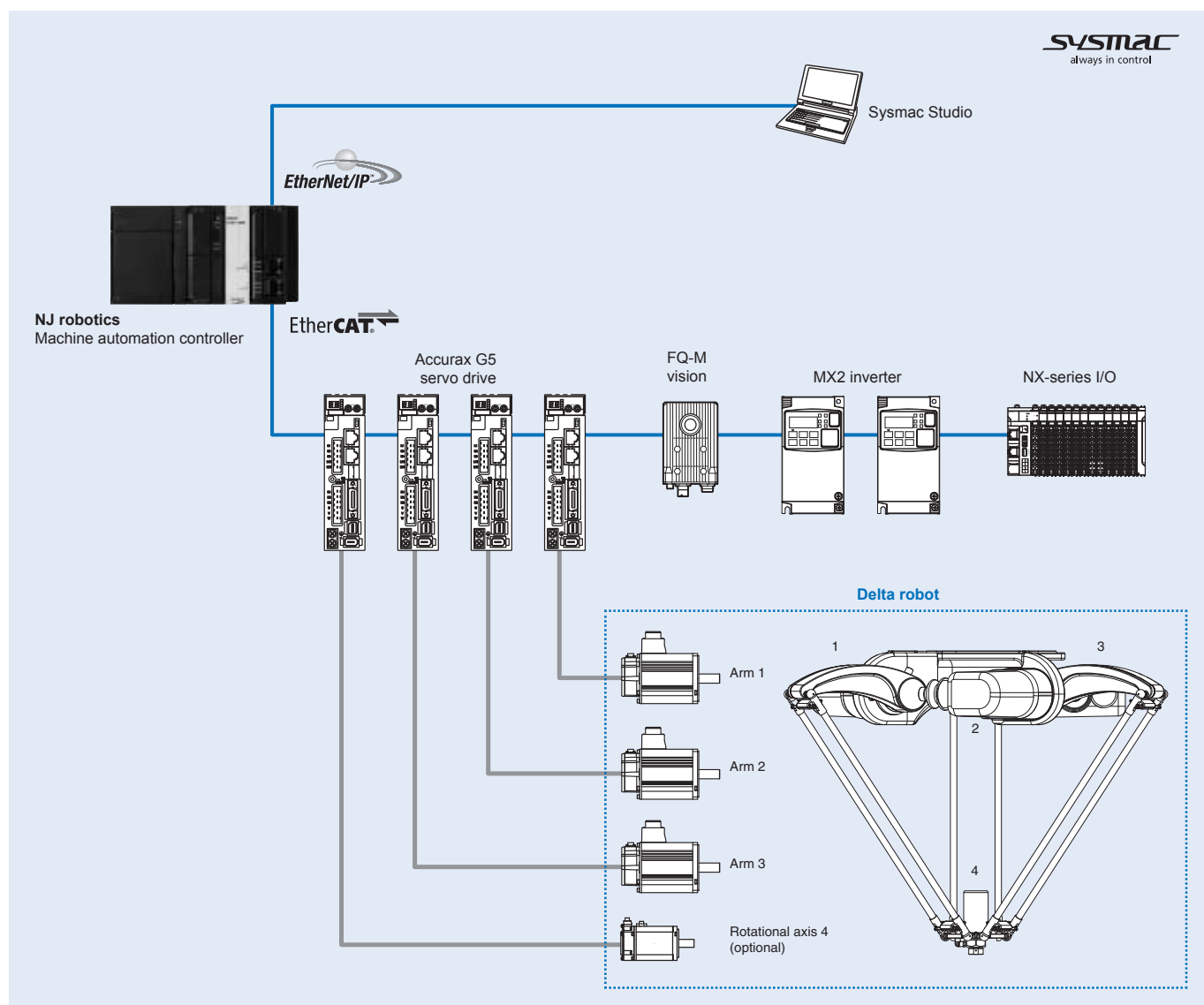
Delta robot

The fastest picking system integrated in the Sysmac platform

- Robot control integrated in the NJ robotics controller
- Control of up to 8 robots by one controller
- Degrees of freedom: 3 + 1 (rotational axis optional)
- Up to 200 cycle per minutes
- Up to 3 kg payload
- 2 different types of robot arms: Delta and Mini Delta robot models
- IP67 and IP65 models



System configuration



Note: Servo motors included in the Delta robot.

Specifications

Washdown Delta robot specifications

Model		R6Y31110H03067NJ5	R6Y31110L03067NJ5	R6Y30110S03067NJ5
Working volume	X, Y axis (stroke)	Ø 1100 mm		
	Z axis (stroke) ¹	300 mm (maximum Ø 1100 mm) / 450 mm (center Ø 580 mm)		
	θ axis (rotation angle)	±180 deg (default setting, it can be changed)		—
Servo motor	Arm 1, 2, 3	Model	R88M-K1K030T-BS2	
		Capacity	1000 W	
	Rotational axis 4	Model	R88M-K10030T-S2	R88M-K05030T-S2
		Capacity	100 W	50 W
Repeatability ²	X, Y, Z axis	±0.2 mm		
	θ axis	±0.1 deg		—
Maximum payload		3 kg		
Maximum through-put ³		150 CPM ⁴		
θ axis tolerable moment of inertia ⁵		0.035 kgm ²	0.01 kgm ²	—
User tubing (outer diameter)		Ø 6		
Travel limit		1. Soft limit, 2. Mechanical stopper (X, Y, Z axis)		
Noise level		< 73.7 dB (A)		
Ambient temperature		0 to 45°C		
Relative humidity		Max. 85%		
Protection class		IP67		
Weight (kg)		75 kg		

¹ For further details please check the dimensional drawing in the next section.

² This is the value at a constant ambient temperature.

³ With 0.1 kg payload. When reciprocating 305 mm in horizontal and 25 mm in vertical directions.

⁴ CPM: Cycle per minutes. Check the note 3 for the cycle definition.

⁵ There are limits to acceleration coefficient settings.

Delta robot specifications

Model		CR_UGD4_R	CR_UGD4_NR
Working volume	X, Y axis (stroke)	Ø 1100 mm	
	Z axis (stroke) ¹	250 mm (maximum Ø 1100 mm) / 400 mm (center Ø 580 mm)	
	θ axis (rotation angle)	±180 deg (default setting, it can be changed)	—
Servo motor	Arm 1, 2, 3	Model	R88M-K1K030T-BS2
		Capacity	1000 W
	Rotational axis 4	Model	R88M-K1K030T-BS2
		Capacity	1000 W
Repeatability ²	X, Y, Z axis	±0.3 mm	—
	θ axis	±0.4 deg	—
Maximum payload		2 kg	
Maximum through-put ³		150 CPM ⁴	
θ axis maximum torque		According to the servo motor	—
User tubing (outer diameter)		Ø 8 ⁵	
Travel limit		1. Soft limit, 2. Mechanical stopper (X, Y, Z axis)	
Noise level		< 68 dB (A)	
Ambient temperature		5°C to 45°C	
Relative humidity		Max. 90%	
Protection class		IP65	
Weight (kg)		65 kg	

¹ For further details please check the dimensional drawing in the next section.

² This is the value at a constant ambient temperature.

³ With 0.1 kg payload. When reciprocating 305 mm in horizontal and 25 mm in vertical directions.

⁴ CPM: Cycle per minutes. Check the note 3 for the cycle definition.

⁵ Only for the air suctioning. The air injection is not allowed.

Mini Delta robot specifications

Model		CR_UGD4MINI_R	CR_UGD4MINI_NR
Working volume	X, Y axis (stroke)	Ø 500 mm	
	Z axis (stroke) ^{*1}	135 mm (maximum Ø 450 mm)	155 mm (maximum Ø 500 mm)
	θ axis (rotation angle)	±180 deg (default setting, it can be changed)	—
Servo motor	Arm 1, 2, 3	Model	R88M-K40030T-BS2
		Capacity	400 W
	Rotational axis 4	Model	R88M-K40030T-BS2
		Capacity	400 W
Repeatability ^{*2}	X, Y, Z axis	±0.2 mm	
	θ axis	±0.3 deg	
Maximum payload		1 kg	
Maximum through-put ^{*3}		200 CPM ^{*4}	
θ axis maximum torque		According to the servo motor	—
User tubing (outer diameter)		Ø 8 ^{*5}	
Travel limit		1. Soft limit, 2. Mechanical stopper (X, Y, Z axis)	
Noise level		< 68 dB (A)	
Ambient temperature		5°C to 45°C	
Relative humidity		Max. 90%	
Protection class		IP65	
Weight (kg)		25 kg	

^{*1} For further details please check the dimensional drawing in the next section.

^{*2} This is the value at a constant ambient temperature.

^{*3} With 0.1 kg payload. When reciprocating 305 mm in horizontal and 25 mm in vertical directions.

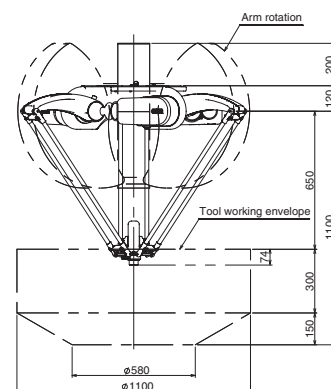
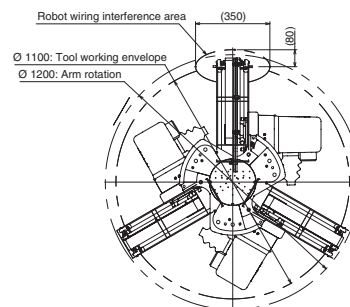
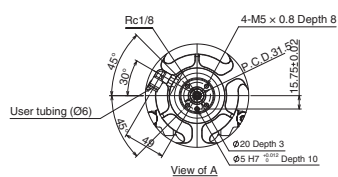
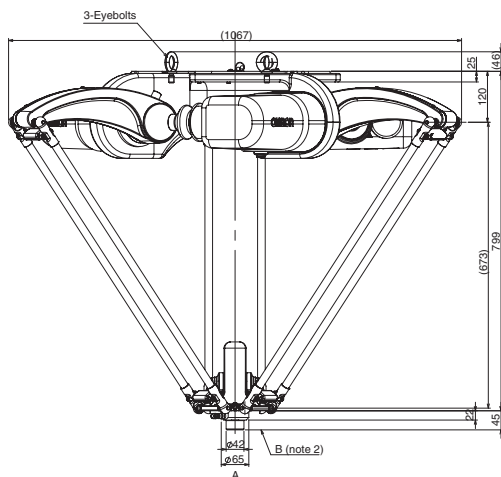
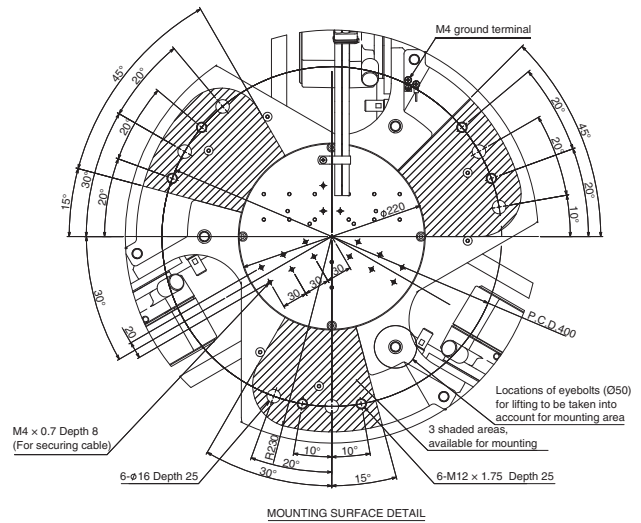
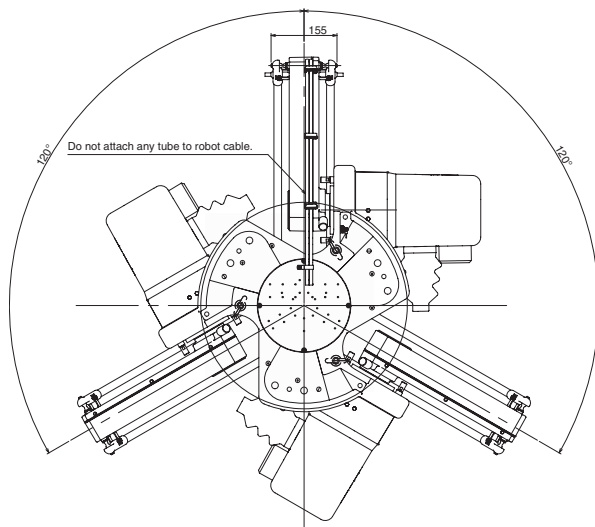
^{*4} CPM: Cycle per minutes. Check the note 3 for the cycle definition.

^{*5} Only for the air suctioning. The air injection is not allowed.

Dimensions

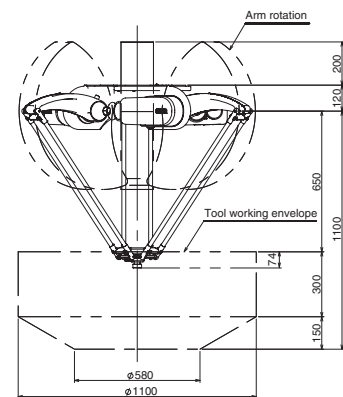
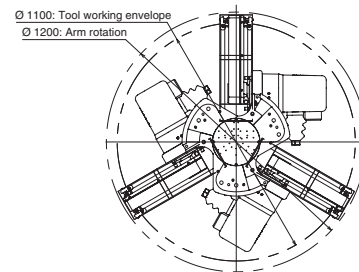
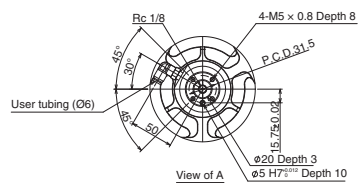
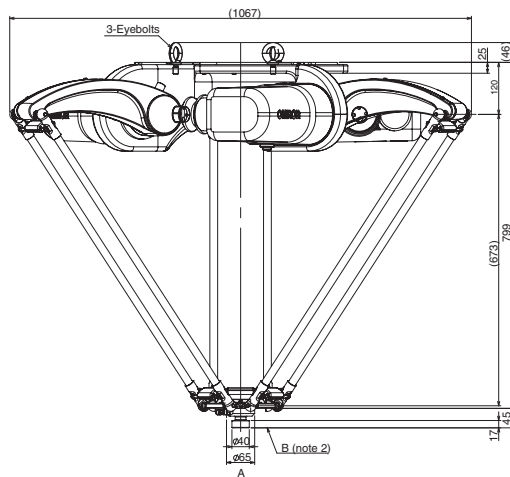
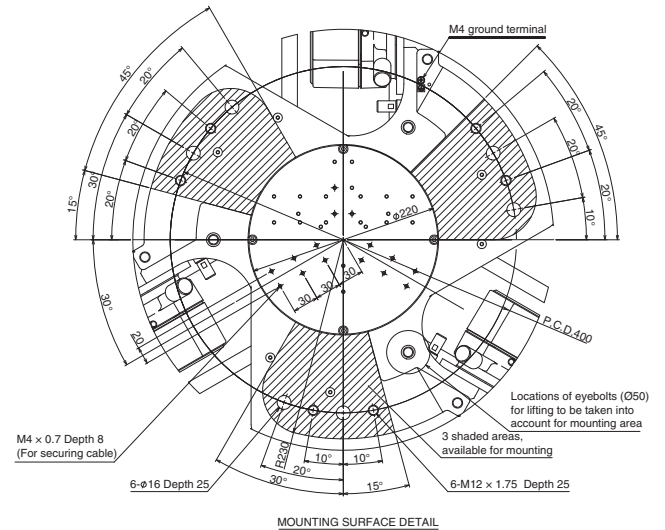
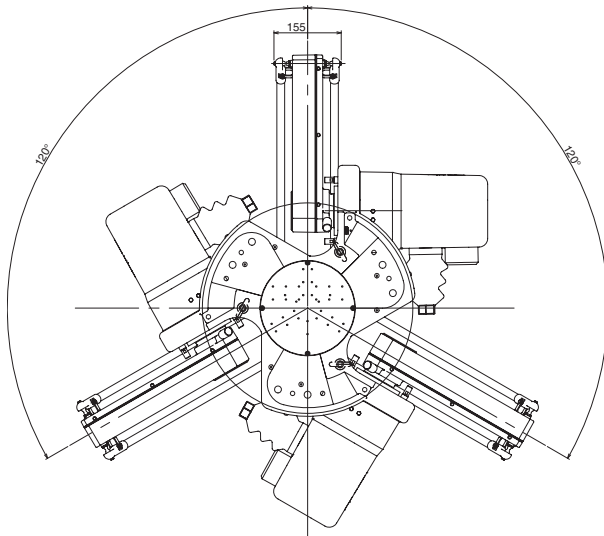
Washdown Delta robot dimensions

R6Y31110□03067NJ5 (3 axes + 1 rotational axis)



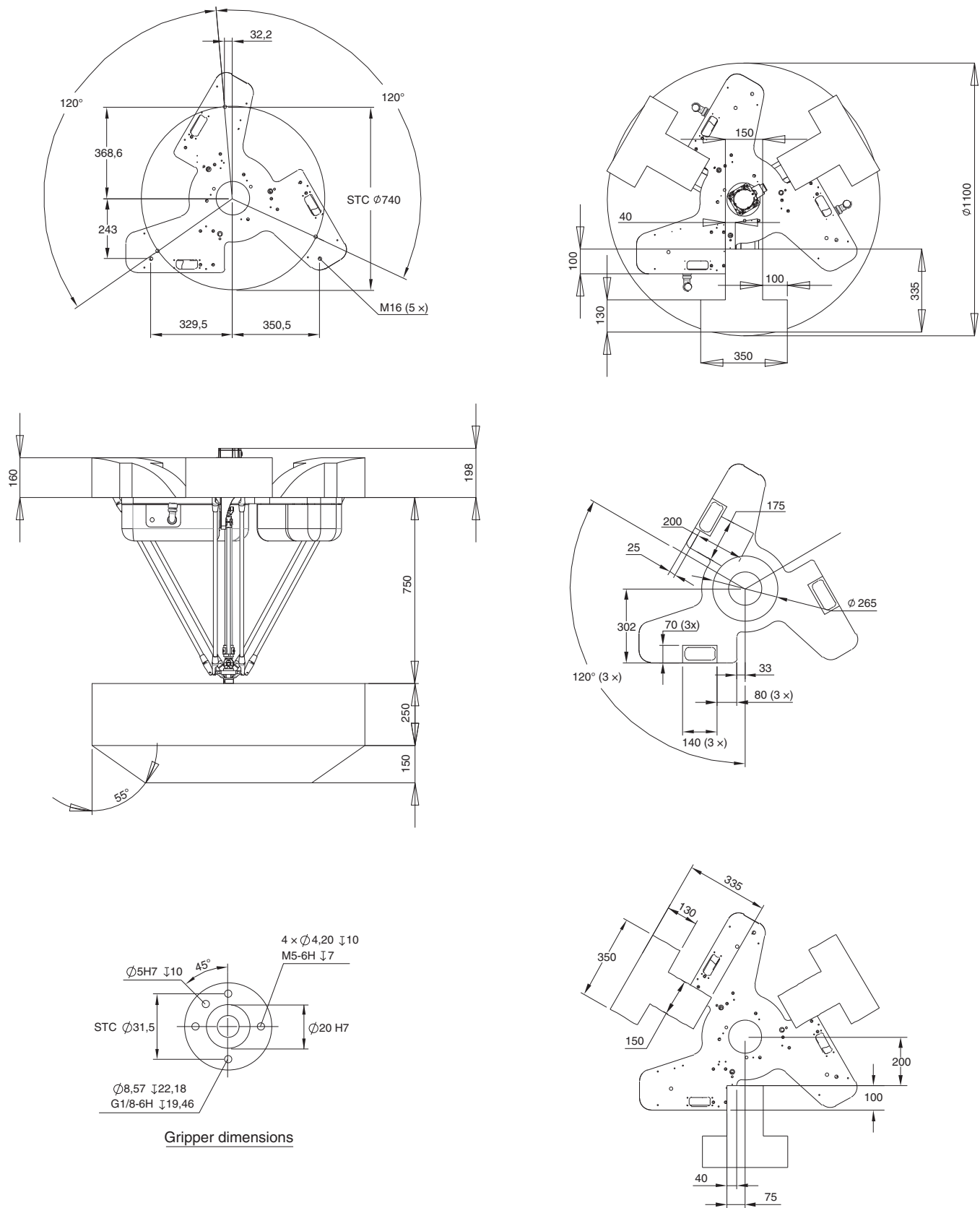
Note: The three areas of the robot base are available for mounting. Leave other area unoccupied for other needs (e.g. wiring). Also note the locations of the eyebolts when designing a mounting frame. Any part of end-effector should not stick out above the surface of B.

R6Y30110S03067NJ5 (3 axes)

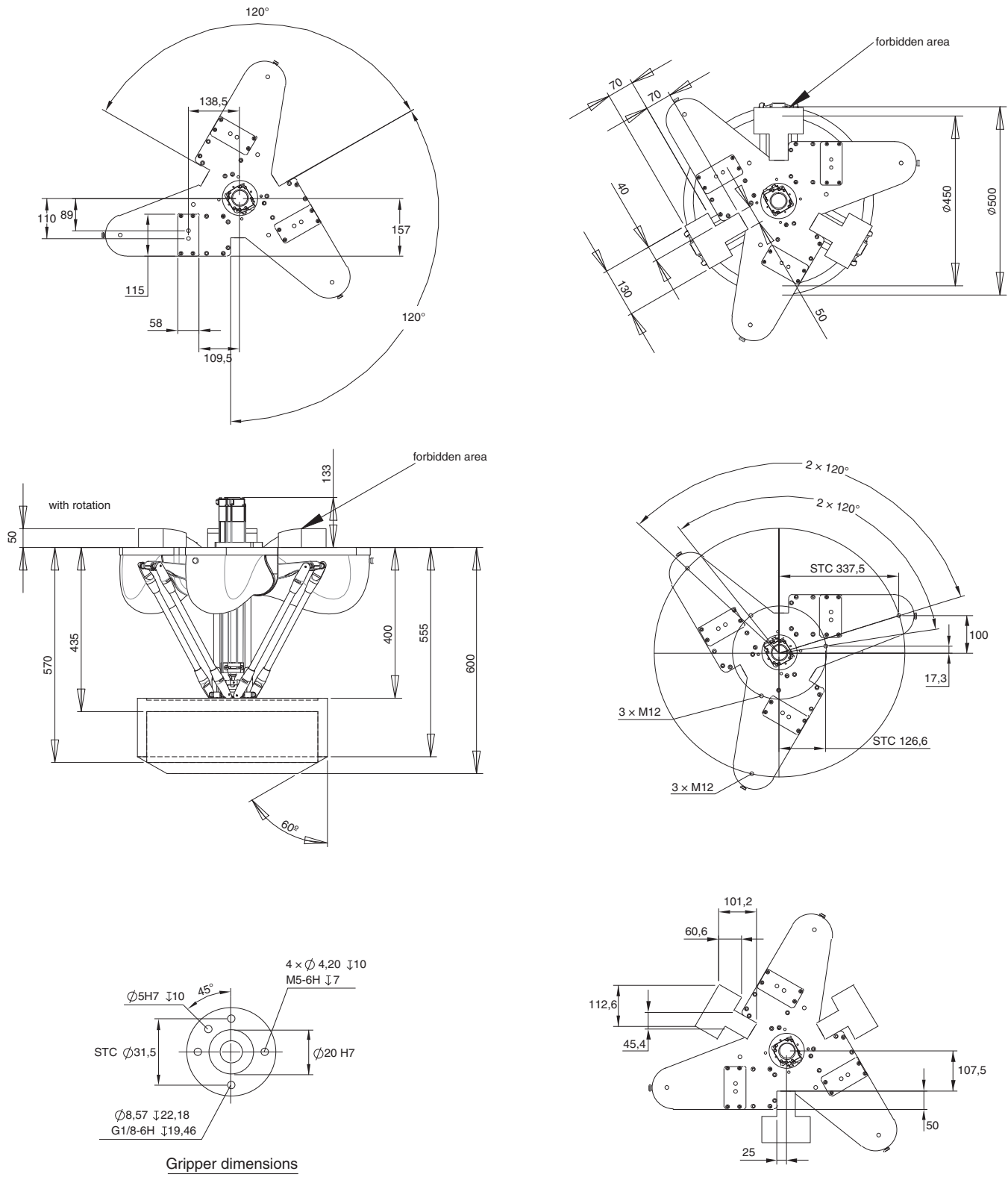


Note: The three areas of the robot base are available for mounting. Leave other area unoccupied for other needs (e.g. wiring). Also note the locations of the eyebolts when designing a mounting frame. Any part of end-effector should not stick out above the surface of B.

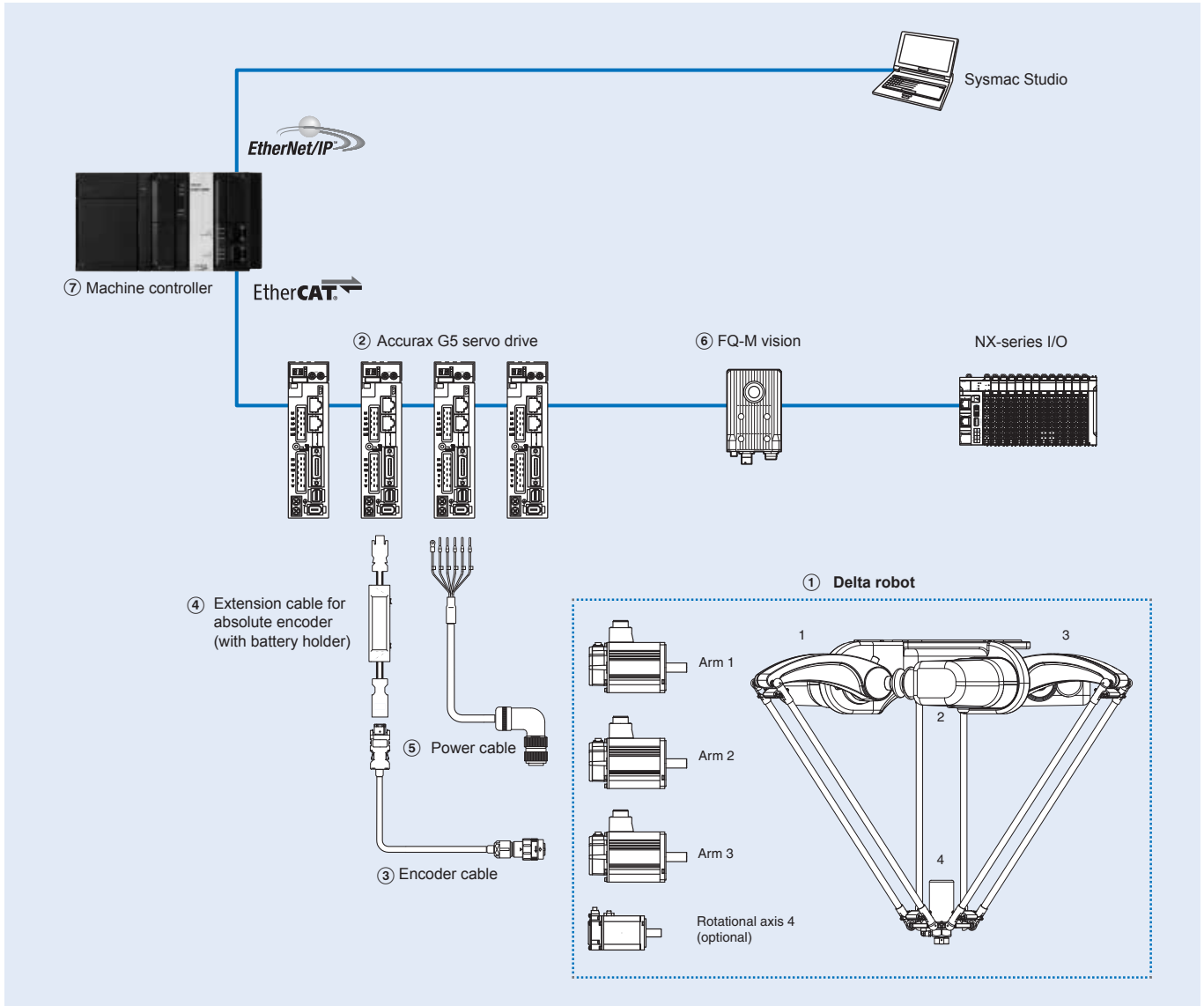
Delta robot dimensions
CR_UGD4_□R



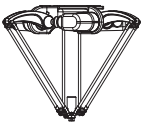
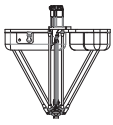
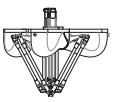
Mini Delta robot dimensions
CR_UGD4MINI_□R



Ordering information



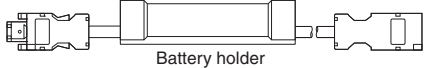
Delta robot

Symbol	Model	Max. payload	Description	Axis	(2) Applicable servo drive
①  Washdown Delta robot	R6Y31110H03067NJ5	3 kg	3 axes	With high inertia rotational axis	Arm 1 R88D-KN15H-ECT
					Arm 2 R88D-KN15H-ECT
					Arm 3 R88D-KN15H-ECT
					Rotational 4 R88D-KN01H-ECT
	R6Y31110L03067NJ5		3 axes	With low inertia rotational axis	Arm 1 R88D-KN15H-ECT
					Arm 2 R88D-KN15H-ECT
					Arm 3 R88D-KN15H-ECT
					Rotational 4 R88D-KN01H-ECT
	R6Y30110S03067NJ5		3 axes	Without rotational axis	Arm 1 R88D-KN15H-ECT
					Arm 2 R88D-KN15H-ECT
					Arm 3 R88D-KN15H-ECT
①  Delta robot	CR_UGD4_R	2 kg	3 axes	With rotational axis	Arm 1 R88D-KN15H-ECT
					Arm 2 R88D-KN15H-ECT
					Arm 3 R88D-KN15H-ECT
					Rotational 4 R88D-KN15H-ECT
	CR_UGD4_NR		3 axes	Without rotational axis	Arm 1 R88D-KN15H-ECT
					Arm 2 R88D-KN15H-ECT
					Arm 3 R88D-KN15H-ECT
①  Mini Delta robot	CR_UGD4MINI_R	1 kg	3 axes	With rotational axis	Arm 1 R88D-KN04H-ECT
					Arm 2 R88D-KN04H-ECT
					Arm 3 R88D-KN04H-ECT
					Rotational 4 R88D-KN04H-ECT
	CR_UGD4MINI_NR		3 axes	Without rotational axis	Arm 1 R88D-KN04H-ECT
					Arm 2 R88D-KN04H-ECT
					Arm 3 R88D-KN04H-ECT

Encoder cables

Symbol	Applicable Delta robots	Model	Appearance
③	Washdown Delta robot / Delta robot	1.5 m R88A-CRKC001-5NR-E	
		3 m R88A-CRKC003NR-E	
		5 m R88A-CRKC005NR-E	
		10 m R88A-CRKC010NR-E	
		15 m R88A-CRKC015NR-E	
		20 m R88A-CRKC020NR-E	
	Mini Delta robot	1.5 m R88A-CRKA001-5CR-E	
		3 m R88A-CRKA003CR-E	
		5 m R88A-CRKA005CR-E	
		10 m R88A-CRKA010CR-E	
		15 m R88A-CRKA015CR-E	
		20 m R88A-CRKA020CR-E	

Absolute encoder battery cable (encoder extension cable only)

Symbol	Specifications	Model	Appearance
④	Absolute encoder battery cable	Battery not included 0.3 m R88A-CRGD0R3C-E	
		Battery included 0.3 m R88A-CRGD0R3C-BS-E	
	Absolute encoder backup battery	2.000 mA.h, 3.6 V — R88A-BAT01G	

Power cables

Symbol	Applicable Delta robots				Model	Appearance
⑤	Washdown Delta robot	Arm 1, 2, 3	Power cable with brake	1.5 m	R88A-CAGB001-5BR-E	
				3 m	R88A-CAGB003BR-E	
				5 m	R88A-CAGB005BR-E	
				10 m	R88A-CAGB010BR-E	
				15 m	R88A-CAGB015BR-E	
				20 m	R88A-CAGB020BR-E	
		Rotational axis 4	Power cable with-out brake	1.5 m	R88A-CAGB001-5SR-E	
				3 m	R88A-CAGB003SR-E	
				5 m	R88A-CAGB005SR-E	
				10 m	R88A-CAGB010SR-E	
				15 m	R88A-CAGB015SR-E	
				20 m	R88A-CAGB020SR-E	
	Delta robot	Arm 1, 2, 3 and rotational axis 4	Power cable with brake	1.5 m	R88A-CAGB001-5BR-E	
				3 m	R88A-CAGB003BR-E	
				5 m	R88A-CAGB005BR-E	
				10 m	R88A-CAGB010BR-E	
				15 m	R88A-CAGB015BR-E	
				20 m	R88A-CAGB020BR-E	
	Mini Delta robot	Arm 1, 2, 3 and rotational axis 4	Power cable	1.5 m	R88A-CAKA001-5SR-E	
				3 m	R88A-CAKA003SR-E	
				5 m	R88A-CAKA005SR-E	
				10 m	R88A-CAKA010SR-E	
				15 m	R88A-CAKA015SR-E	
				20 m	R88A-CAKA020SR-E	
Brake cable			Brake cable	1.5 m	R88A-CAKA001-5BR-E	
				3 m	R88A-CAKA003BR-E	
				5 m	R88A-CAKA005BR-E	
				10 m	R88A-CAKA010BR-E	
				15 m	R88A-CAKA015BR-E	
				20 m	R88A-CAKA020BR-E	

Vision

Name	Type		Model
⑥ FQ-M series	Color	NPN	FQ-MS120-ECT
		PNP	FQ-MS125-ECT
	Monochrome	NPN	FQ-MS120-M-ECT
		PNP	FQ-MS125-M-ECT

Machine controller

Name	Delta robot		Axes	Model
⑦ NJ robotics	CPU unit	Control of up to 8 Delta robot depending on the number of axes supported by the CPU	64	NJ501-4500
			32	NJ501-4400
			16	NJ501-4300
		Control of one Delta robot	16	NJ501-4310
	Power supply unit			NJ-PA3001 (220 VAC)
				NJ-PD3001 (24 VDC)

Computer software

Specifications	Model
Sysmac Studio version 1.03 or higher	SYSMAC-SE2□□□

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

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