

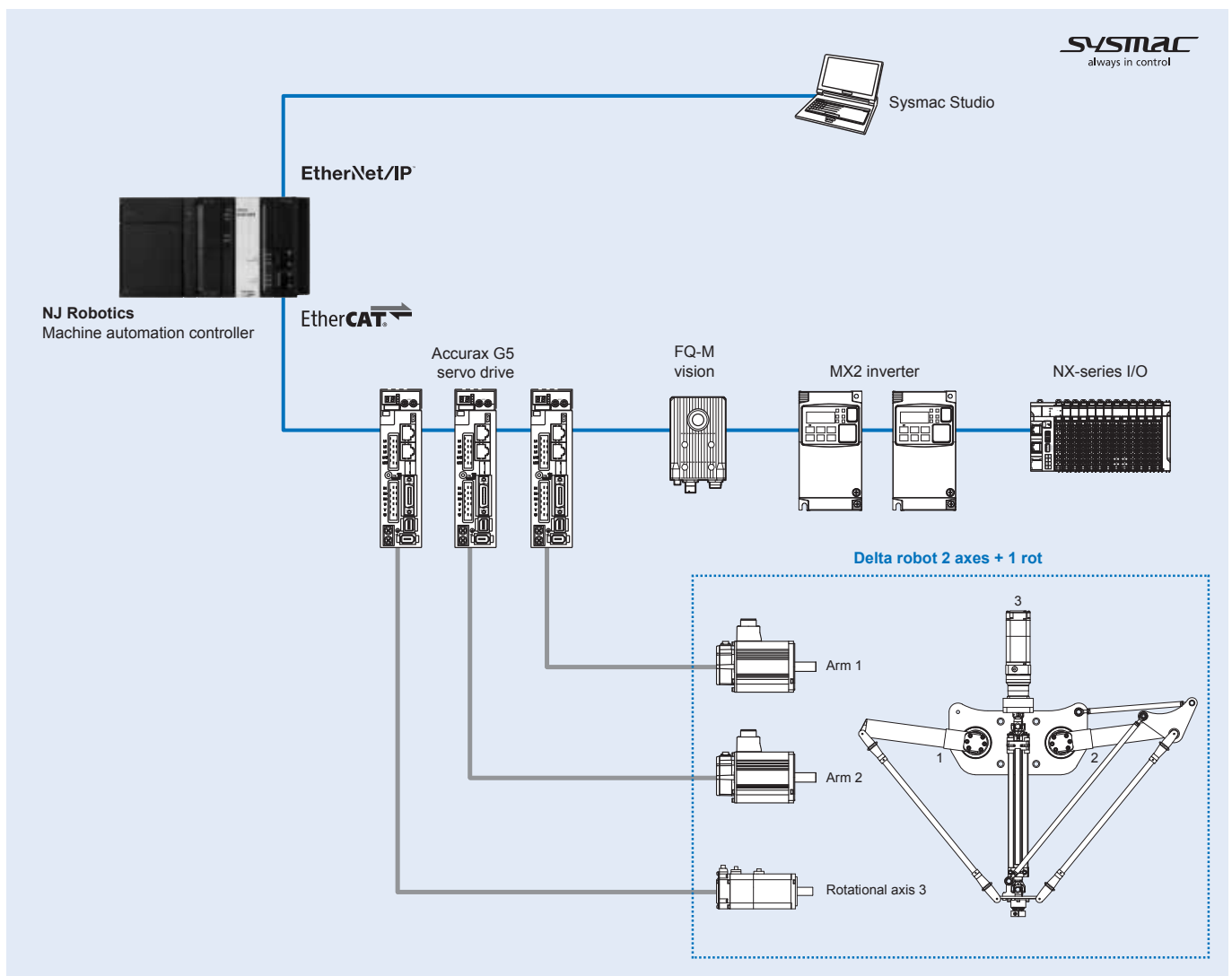
# Delta robot 2 axes + 1 rot

The design concept with a minimum of mechanical components results in a high quality robot

- Robot control integrated in the NJ robotics controller
- Control of up to 8 robots by one controller
- Degrees of freedom: 2 + 1 (rotational axis optional)
- Up to 200 cycle per minute
- Models from 800 to 1,500 mm working range
- Payload range: 3 to 35 kg
- IP65 protection class
- ISO mount gripper interface
- Low maintenance, easy access to components



## System configuration



Note: Servo motors included in the Delta robot.

## Specifications

### Delta robot XXL

Model		CR_UGD21500_R	CR_UGD21500_NR	
Working volume	X axis (stroke)	1,500 mm		
	Z axis (stroke) <sup>1</sup>	347 mm (maximum 1,500 mm)		
	θ axis (rotation angle)	±180 deg (default setting, it can be changed)	-	
Servo motor	Arm 1, 2	Model	R88M-K3K030C-BS2	
		Capacity	3000 W	
	Rotational axis 3	Model	R88M-K40030T-BS2	-
		Capacity	400 W	-
Repeatability <sup>2</sup>	X, Z axis	±0.4 mm		
	θ axis	±0.2 deg	-	
Maximum payload		35 kg		
Maximum through-put <sup>3</sup>		45 CPM <sup>4</sup>		
θ axis maximum torque		According to the servo motor		
Travel limit		1. Soft limit, 2. Mechanical stopper (X, Y, Z axis)		
Noise level		< 70 dB (A)		
Ambient temperature		Operating: 5°C to 45°C / Storage: -25°C to 60°C		
Relative humidity		Max. 90%		
Protection class		IP65		
Weight (kg)		80 kg		

<sup>1</sup> For further details please check the dimensional drawing in the next section.

<sup>2</sup> This is the value at a constant ambient temperature.

<sup>3</sup> With 5 kg payload. When reciprocating 500 mm in vertical, 300 mm in horizontal and 100 mm in vertical directions.

<sup>4</sup> CPM: Cycle per minutes. Check the note 3 for the cycle definition.

### Delta robot XL

Model		CR_UGD21000_R	CR_UGD21000_NR	
Working volume	X axis (stroke)	1,000 mm		
	Z axis (stroke) <sup>1</sup>	342 mm (maximum 1,000 mm)		
	θ axis (rotation angle)	±180 deg (default setting, it can be changed)	-	
Servo motor	Arm 1, 2	Model	R88M-K2K030C-BS2	
		Capacity	2000 W	
	Rotational axis 3	Model	R88M-K40030T-BS2	-
		Capacity	400 W	-
Repeatability <sup>2</sup>	X, Z axis	±0.4 mm		
	θ axis	±0.2 deg	-	
Maximum payload		30 kg		
Maximum through-put <sup>3</sup>		50 CPM <sup>4</sup>		
θ axis maximum torque		According to the servo motor		
Travel limit		1. Soft limit, 2. Mechanical stopper (X, Y, Z axis)		
Noise level		< 70 dB (A)		
Ambient temperature		Operating: 5°C to 45°C / Storage: -15°C to 60°C		
Relative humidity		Max. 90%		
Protection class		IP65		
Weight (kg)		75 kg		

<sup>1</sup> For further details please check the dimensional drawing in the next section.

<sup>2</sup> This is the value at a constant ambient temperature.

<sup>3</sup> With 5 kg payload. When reciprocating 500 mm in vertical, 300 mm in horizontal and 100 mm in vertical directions.

<sup>4</sup> CPM: Cycle per minutes. Check the note 3 for the cycle definition.

**Delta robot**

Model		CR_UGD2800_R	CR_UGD2800_NR	
Working volume	X axis (stroke)	800 mm		
	Z axis (stroke) <sup>1</sup>	209 mm (maximum 800 mm)	265 mm (maximum 800 mm)	
	θ axis (rotation angle)	±180 deg (default setting, it can be changed)		
Servo motor	Arm 1, 2	Model	R88M-K1K030T-BS2	
		Capacity	1000 W	
	Rotational axis 3	Model	R88M-K40030T-BS2	-
		Capacity	400 W	-
Repeatability <sup>2</sup>	X, Z axis	±0.3 mm		
	θ axis	±0.2 deg		
Maximum payload	3 kg			
Maximum through-put <sup>3</sup>	200 CPM <sup>4</sup>			
θ axis maximum torque	According to the servo motor		-	
Travel limit	1. Soft limit, 2. Mechanical stopper (X, Y, Z axis)			
Noise level	< 70 dB (A)			
Ambient temperature	Operating: 5°C to 45°C / Storage: -15°C to 60°C			
Relative humidity	Max. 90%			
Protection class	IP65			
Weight (kg)	40 kg			

<sup>1</sup> For further details please check the dimensional drawing in the next section.

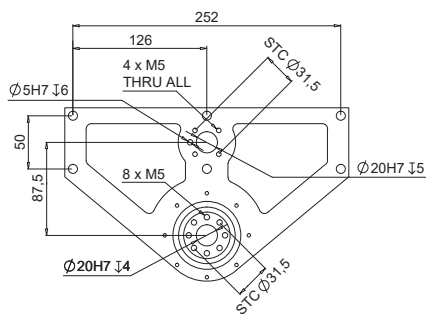
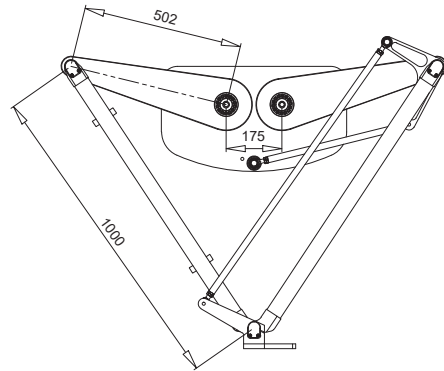
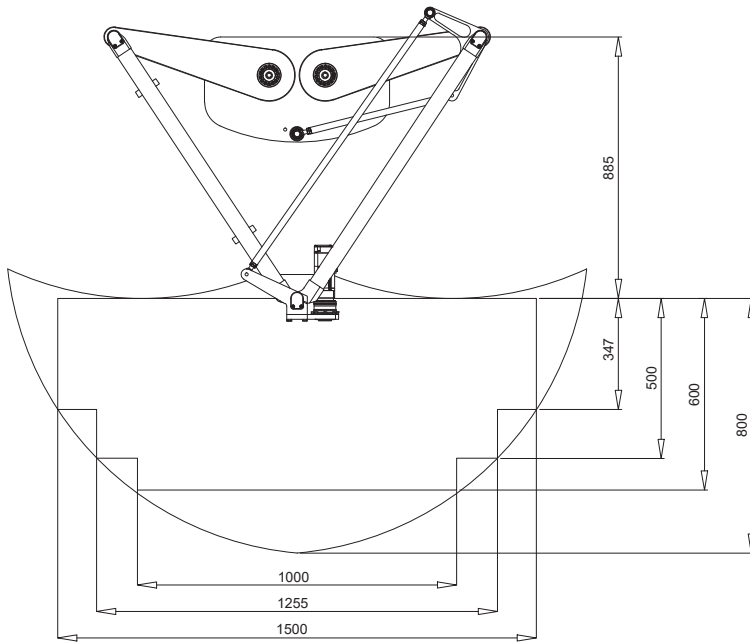
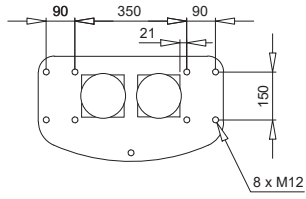
<sup>2</sup> This is the value at a constant ambient temperature.

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

<sup>4</sup> CPM: Cycle per minutes. Check the note 3 for the cycle definition.

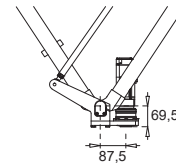
## Dimensions

Delta robot XXL  
 CR\_UGD21500\_□R

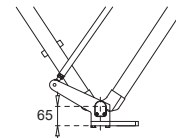


Gripper dimensions

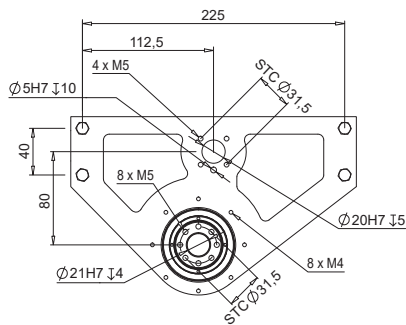
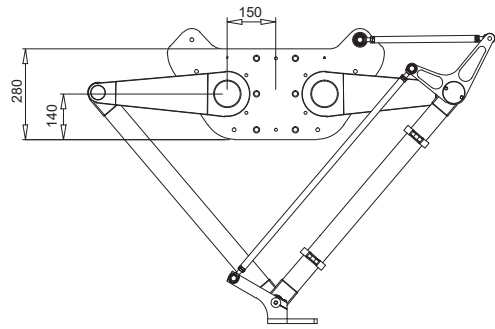
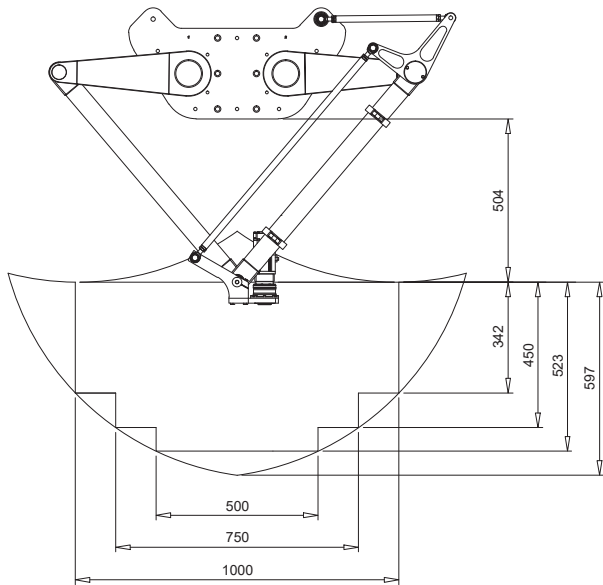
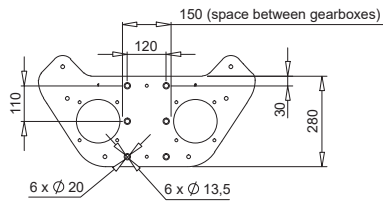
With rotational axis



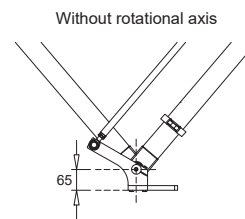
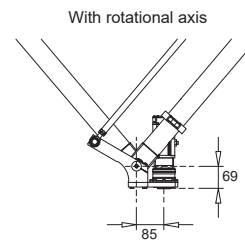
Without rotational axis



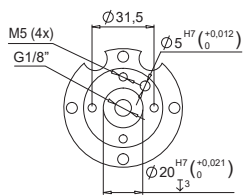
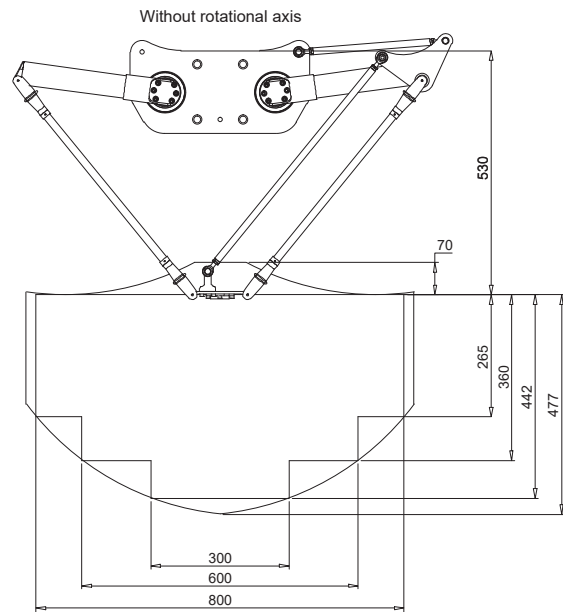
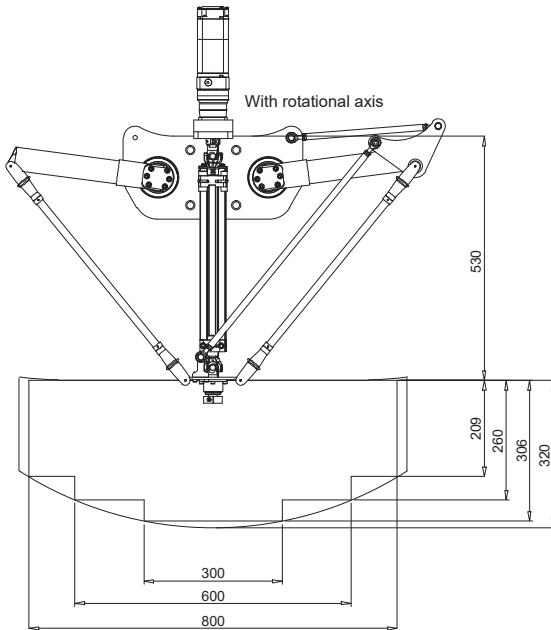
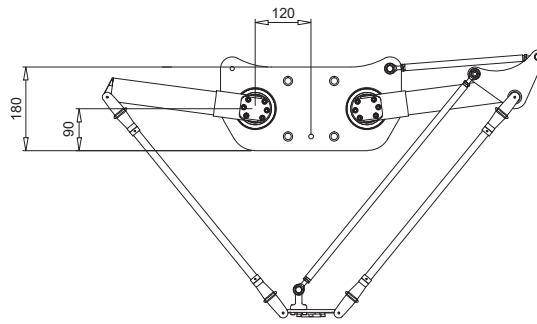
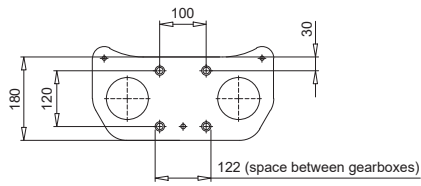
Delta robot XL  
CR\_UGD21000\_□R



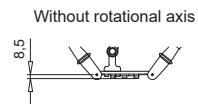
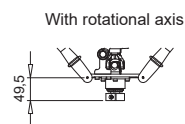
Gripper dimensions



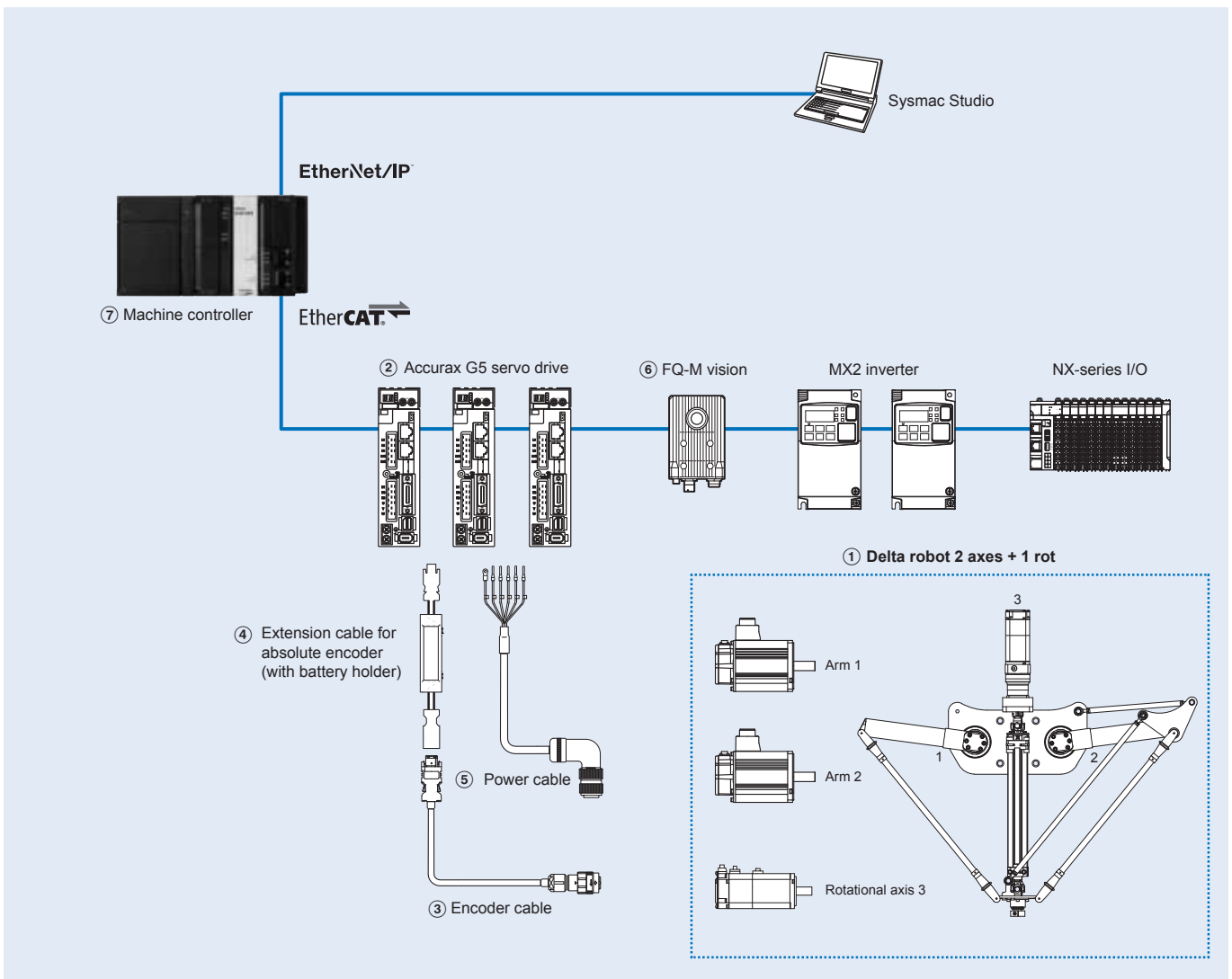
Delta robot  
CR\_UGD2800 □R



Gripper dimensions

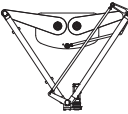
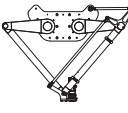
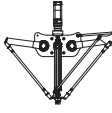


Ordering information



**Note:** Servo motors included in the Delta robot.

## Delta robot 2 axes + 1 rot series

Symbol	Model	Max. payload	Working range	Description	Axis	Applicable servo drive (2)
 <p>Delta robot XXL</p>	CR_UGD21500_R	35 kg	1,500 × 347 mm (Max. 800)	2 + 1 axes	Arm 1	R88D-KN30F-ECT
	CR_UGD21500_NR				Arm 2	R88D-KN30F-ECT
					Rotational 3	R88D-KN04H-ECT
	2 axes			Arm 1	R88D-KN30F-ECT	
	Arm 2	R88D-KN30F-ECT				
 <p>Delta robot XL</p>	CR_UGD21000_R	30 kg	1,000 × 342 mm (Max. 597)	2 + 1 axes	Arm 1	R88D-KN20F-ECT
	CR_UGD21000_NR				Arm 2	R88D-KN20F-ECT
					Rotational 3	R88D-KN04H-ECT
	2 axes			Arm 1	R88D-KN20F-ECT	
	Arm 2	R88D-KN20F-ECT				
 <p>Delta robot</p>	CR_UGD2800_R	3 kg	800 × 209 mm (Max. 320)	2 + 1 axes	Arm 1	R88D-KN15H-ECT
	CR_UGD2800_NR				Arm 2	R88D-KN15H-ECT
			Rotational 3		R88D-KN04H-ECT	
	2 axes		Arm 1	R88D-KN15H-ECT		
	Arm 2	R88D-KN15H-ECT				

## Encoder cables

Symbol	Applicable Delta robots	Model	Appearance
③	CR_UGD21500 (Arm 1, 2) CR_UGD21000 (Arm 1, 2) CR_UGD2800 (Arm 1, 2)	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
	CR_UGD21500 (Rotational axis 3) CR_UGD21000 (Rotational axis 3) CR_UGD2800 (Rotational axis 3)	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 and brake cables

Symbol	Applicable Delta robots		Model	Appearance		
⑤	CR_UGD21500	Arm 1, 2	Power cable with brake	1.5 m	R88A-CAGD001-5BR-E	
				3 m	R88A-CAGD003BR-E	
				5 m	R88A-CAGD005BR-E	
				10 m	R88A-CAGD010BR-E	
				15 m	R88A-CAGD015BR-E	
				20 m	R88A-CAGD020BR-E	
		Rotational axis 3	Power cable without brake	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	
		Rotational axis 3	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		
	CR_UGD21000	Arm 1, 2	Power cable with brake	1.5 m	R88A-CAKF001-5BR-E	
				3 m	R88A-CAKF003BR-E	
				5 m	R88A-CAKF005BR-E	
				10 m	R88A-CAKF010BR-E	
				15 m	R88A-CAKF015BR-E	
				20 m	R88A-CAKF020BR-E	
Rotational axis 3		Power cable without brake	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		
Rotational axis 3		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			
CR_UGD2800	Arm 1, 2	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 3	Power cable without brake	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		
	Rotational axis 3	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	Functions	Delta robot control	Axes	Model	
⑦ NJ Robotics	CPU unit	Logic sequence, motion, robotics and database connection	Control of up to 8 Delta robot depending on the number of axes supported by the CPU	16	NJ501-4320
				64	NJ501-4500
				32	NJ501-4400
				16	NJ501-4300
				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.