

General Purpose Robot Arm for Industry Use

ZERO

Delta Robot Specifications

- Manipulator Specifications 2**
- Manipulator Dimensions 3**
- Range of Movement. 9**
- Recommended End-effector Structure.11**
- ZC1XXX Specifications12**
- ZC1XXX Dimensions13**
- ZC2XXX Specifications14**
- ZC2XXX Dimensions15**
- JOG Stick Specifications16**
- JOG Stick Dimensions17**
- Teaching Pendant Specifications18**
- Teaching Pendant Dimensions19**

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February 2025

Manipulator Specifications

Item		Unit	ZRC-0306N	ZRC-0306R	ZRC-0313N	ZRC-0313R	ZRC-0316N	ZRC-0316R	
Structure		—	Parallel robot						
Type		—	mid-size			full-size			
Degrees of motion freedom		—	3	4	3	4	3	4	
Mount direction		—	Floor (frame option), Ceiling						
Drive system		—	BLDC motor						
Position detection method		—	Multi-turn Absolute Encoder (Battery Backup)						
Position control method		—	Servo control						
Break		—	Electromagnetic Brake						
Payload ^(*)		Maximum	kg			3	2	2	1
Work area		—	Φ 600 x H200			Φ 1300 x H300		Φ 1600 x H300	
Motion range		J1	160 (-60 ~ +100)			135 (-90 ~ +45)			
		J2	160 (-60 ~ +100)			135 (-90 ~ +45)			
		J3	160 (-60 ~ +100)			135 (-90 ~ +45)			
		Roll	—	720 (± 360)		—	720 (± 360)	—	720 (± 360)
Resultant Velocity ^(*)		XYZ	mm/s			1800			
		Roll	deg/s			—	1000	—	1350
Repeatability		XYZ	mm			±0.1			
		Roll	deg			—	±0.02	—	±0.02
TCP permissible load inertia ^(*)		Standard	kg·m ²			0.025			
		Maximum				(evaluation is in progress)			
Dimensions		—	827 x 827 x 667			2050 x 2050 x 1900			
Weight		kg	16(body only), 26(with frame)	17(body only), 27(with frame)	80(body only),	81(body only),	80(body only),	81(body only),	
Power consumption		W	600			3000			
Compatible controller		—	ZC1***			ZC2***			
Manipulator cable length		m	3			5			
Manipulator mount		—	M10 screws at 6 spots			M10 screws at 9 spots			
End-effector mount		—	(refer the dimension drawing)						

*1) The payload includes loads of tasks, weight of tools, and so. Allowable torque exceeding error c 13 and overload error c 14 may occur even within specification depending on the posture, speed, acceleration/deceleration time, direction of operation, etc. Adjust motion factors and variables then.

*2) Value is for a reference.

*3) Depends on operating conditions, such as acceleration and deceleration.

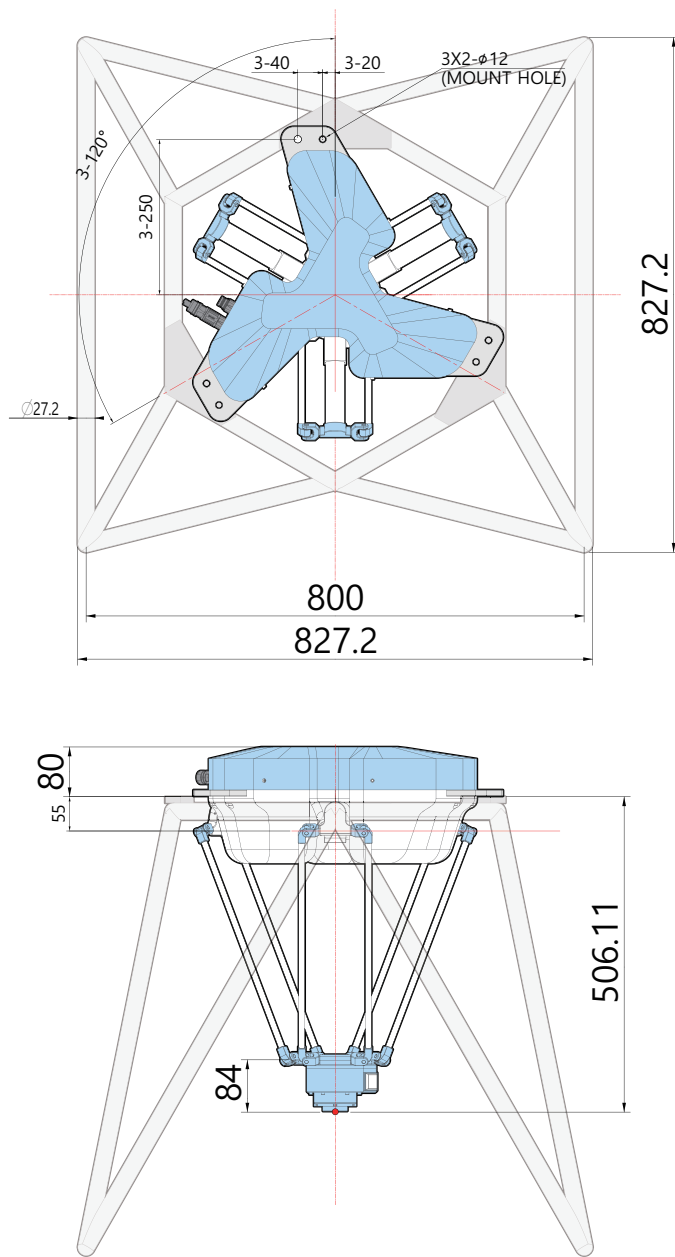
Replenishment) This product is a stop category "0". Corresponds to PL = d.

Manipulator Dimensions

ZRC-0306N

DOF: 3

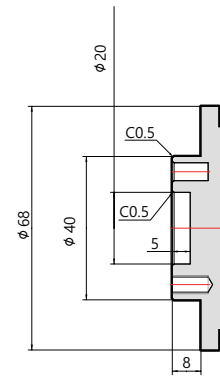
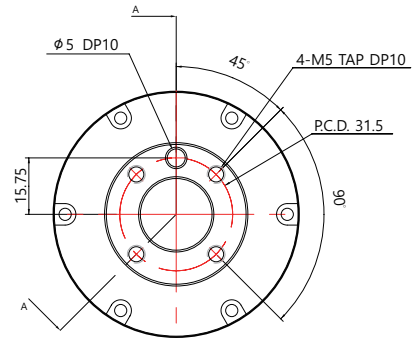
Normal Type



Not to Scale
(mm)

Tool center point

for end-effector attachment



단면 A-A

Operation range is limited to stoppers and software to avoid being out of range.

The shape of the frame is an example. The shape and dimension can be changed due to product improvement or circumstances.

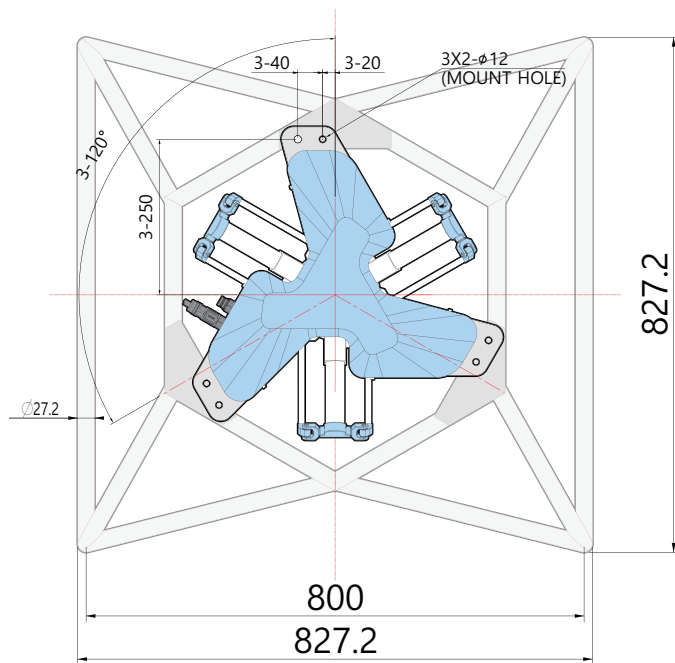
Mounting on frame

To mount on frame, Using M10 hex sockethead cap screws of at least 30 mm long is recommended.

ZRC-0306R

DOF: 4

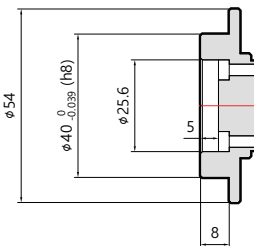
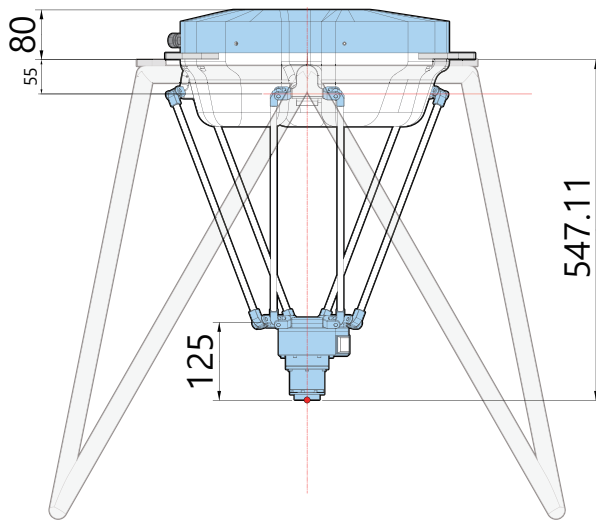
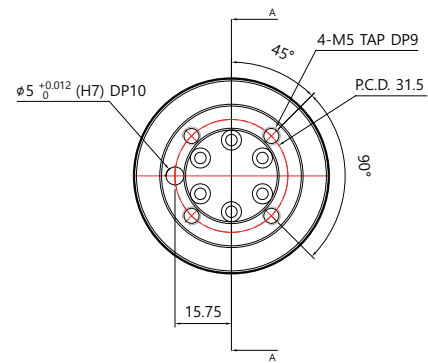
Normal Type



Not to Scale
(mm)

Tool center point

for end-effector attachment



단면 A-A

Operation range is limited to stoppers and software to avoid being out of range.

The shape of the frame is an example. The shape and dimension can be changed due to product improvement or circumstances.

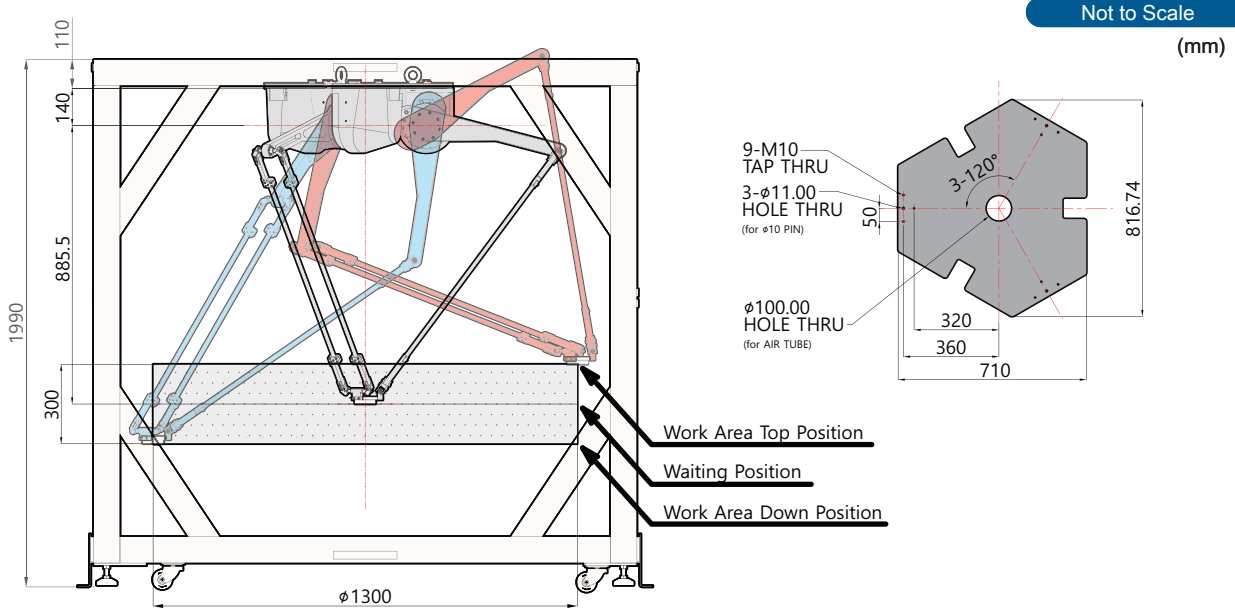
Mounting on frame

To mount on frame, Using M10 hex sockethead cap screws of at least 30 mm long is recommended.

ZRC-0313N

DOF: 3

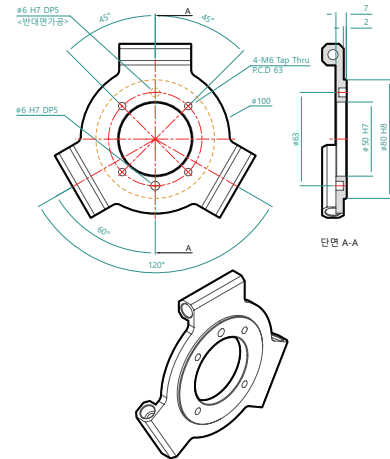
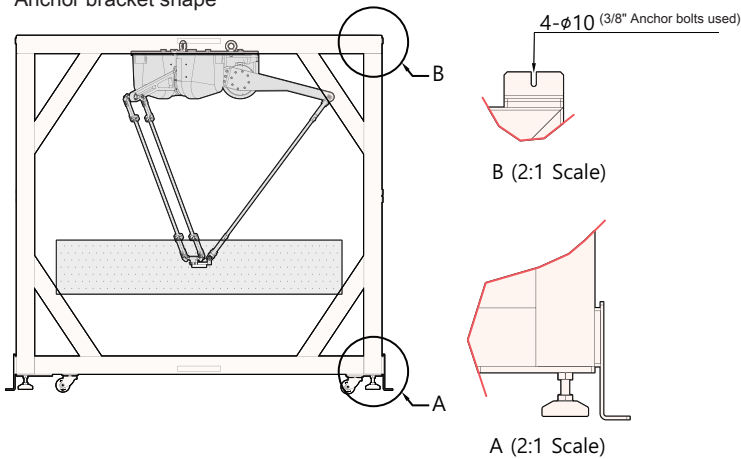
Normal Type



Tool center point

for end-effector attachment

Anchor bracket shape



Operation range is limited to stoppers and software to avoid being out of range.

The shape of the frame is an example. The shape and dimension can be changed due to product improvement or circumstances.

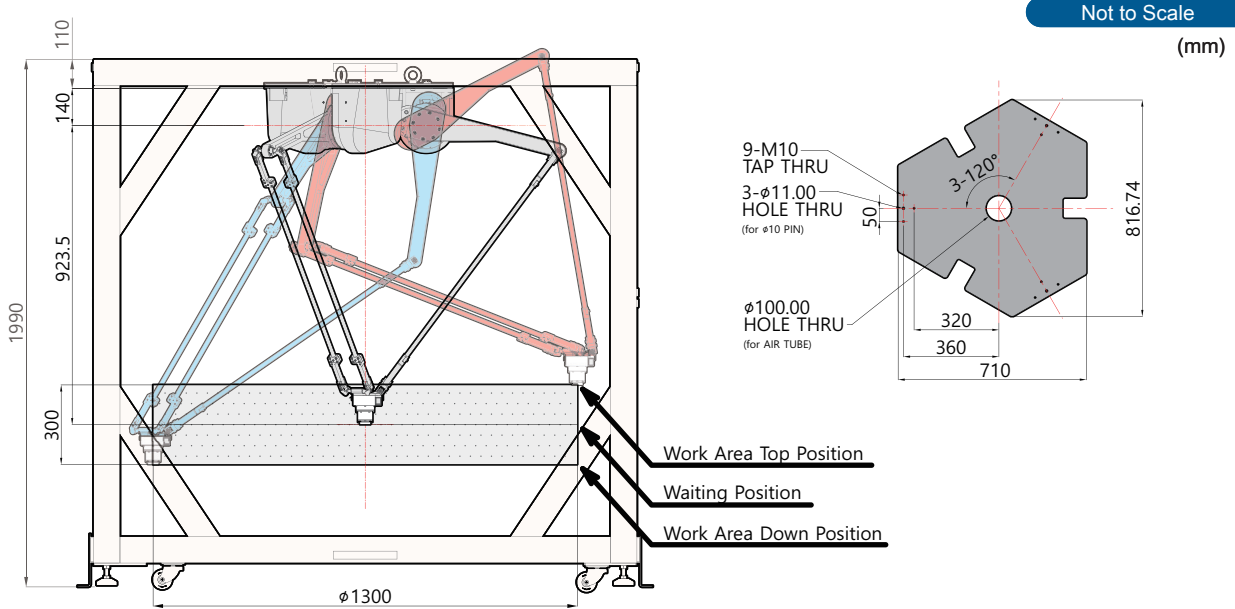
Mounting on frame

To mount on frame, Using M10 hex sockethead cap screws.

ZRC-0313R

DOF: 4

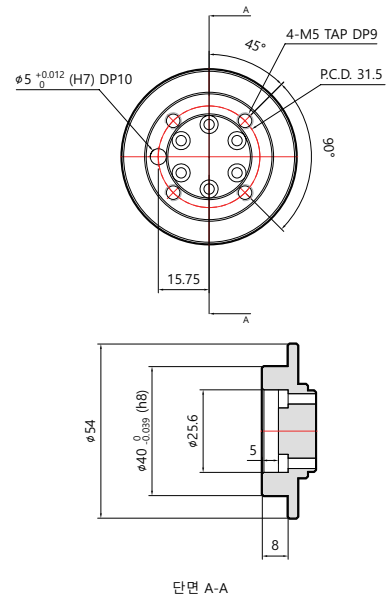
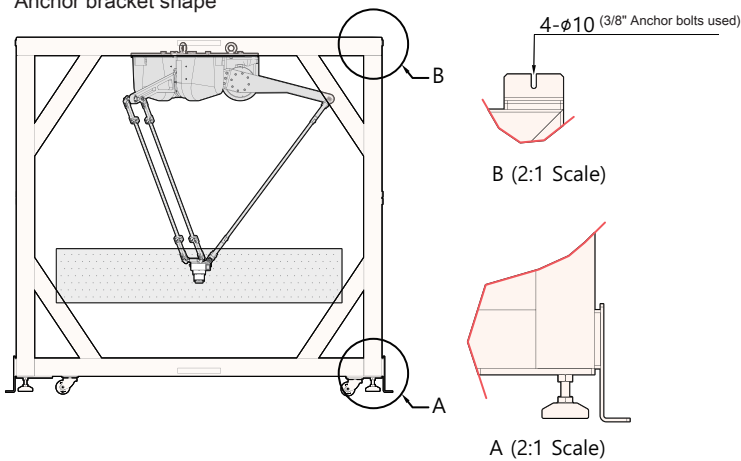
Normal Type



Tool center point

for end-effector attachment

Anchor bracket shape



Operation range is limited to stoppers and software to avoid being out of range.

The shape of the frame is an example. The shape and dimension can be changed due to product improvement or circumstances.

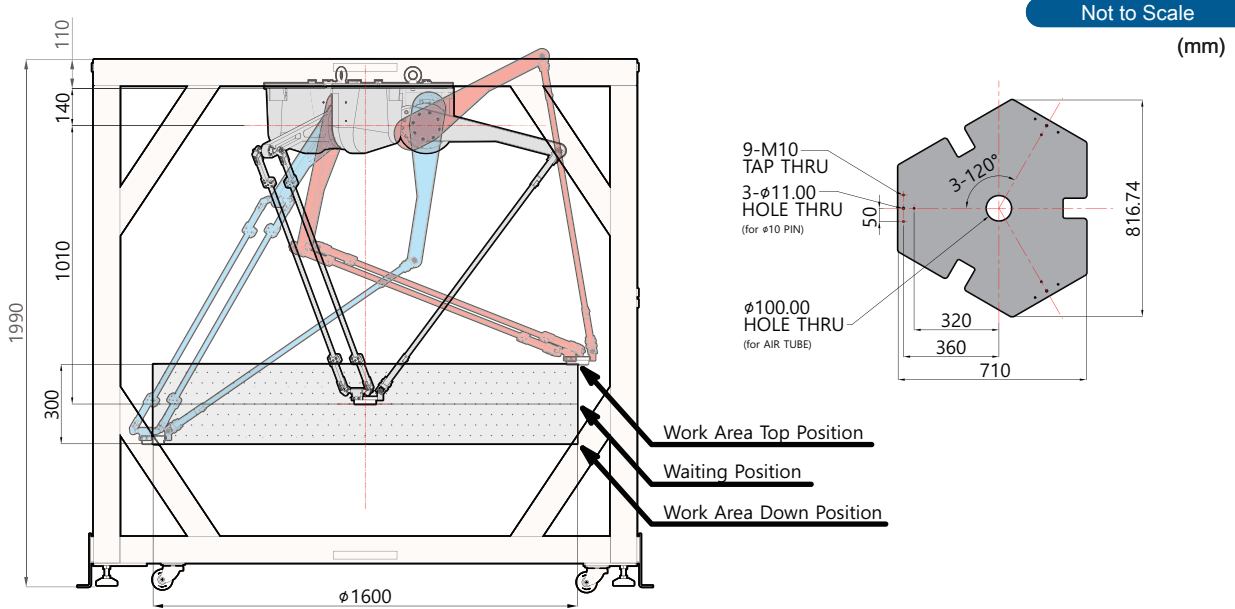
Mounting on frame

To mount on frame, Using M10 hex sockethead cap screws.

ZRC-0316N

DOF: 3

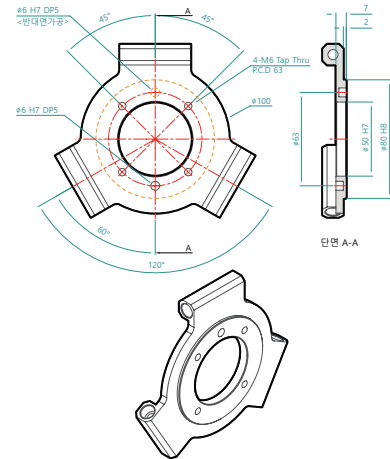
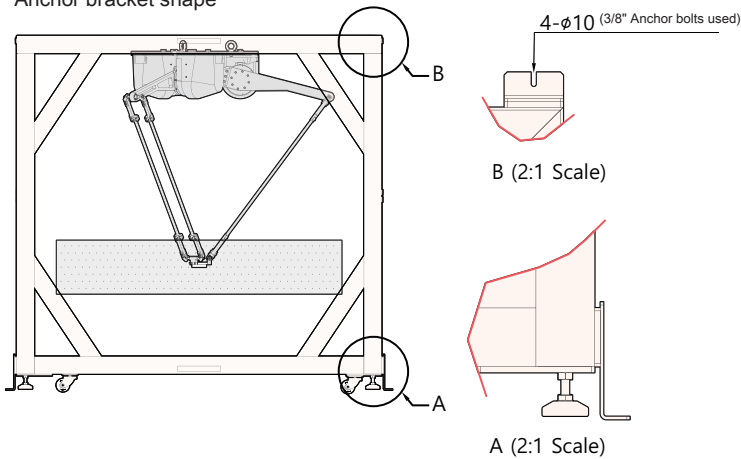
Normal Type



Tool center point

for end-effector attachment

Anchor bracket shape



Operation range is limited to stoppers and software to avoid being out of range.

The shape of the frame is an example. The shape and dimension can be changed due to product improvement or circumstances.

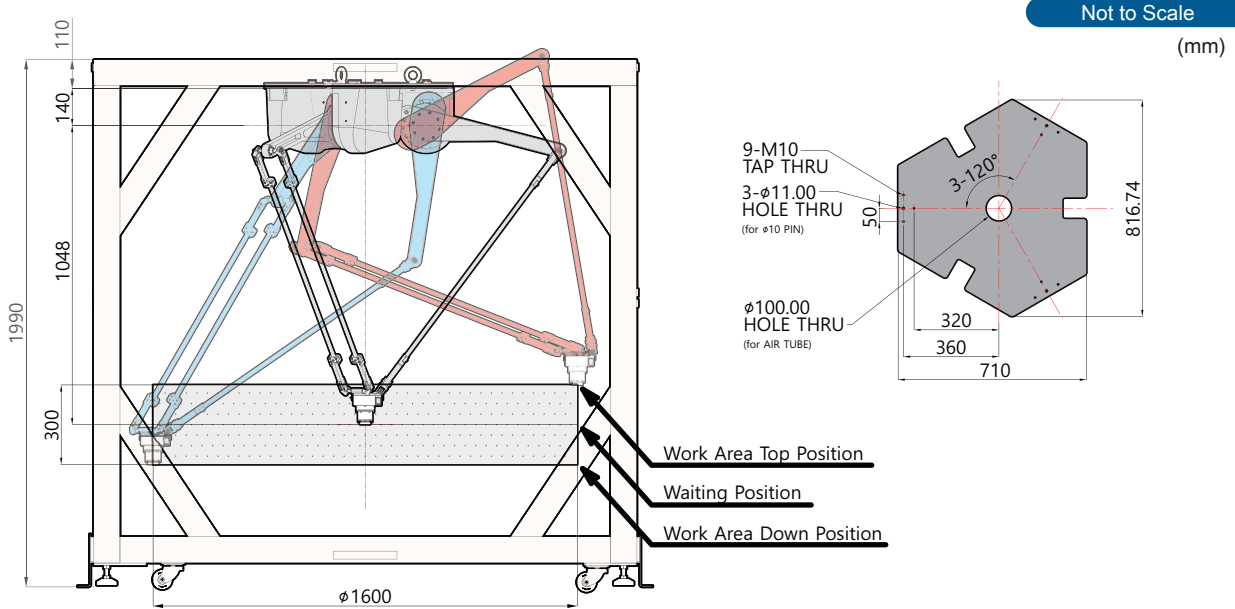
Mounting on frame

To mount on frame, Using M10 hex sockethead cap screws.

ZRC-0316R

DOF: 4

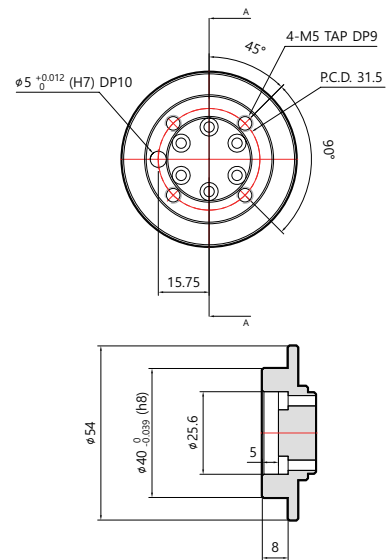
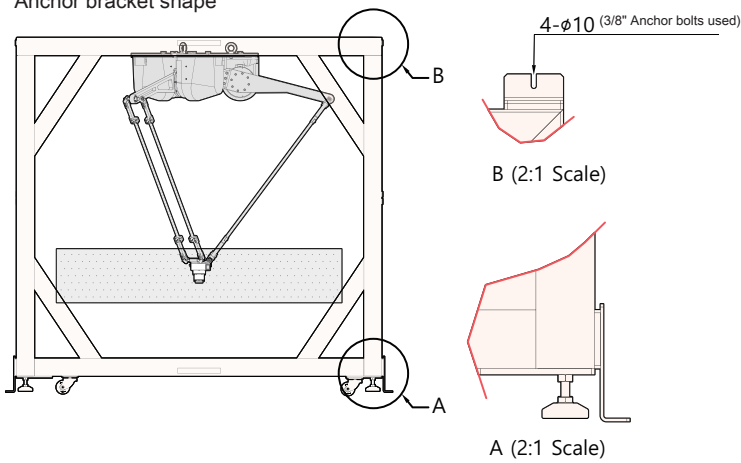
Normal Type



Tool center point

for end-effector attachment

Anchor bracket shape



단면 A-A

Operation range is limited to stoppers and software to avoid being out of range.

The shape of the frame is an example. The shape and dimension can be changed due to product improvement or circumstances.

Mounting on frame

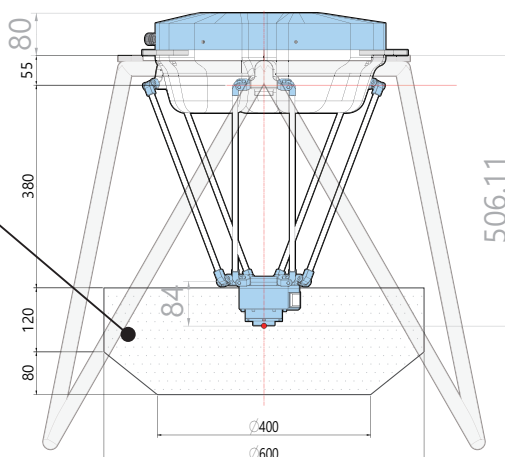
To mount on frame, Using M10 hex sockethead cap screws.

Range of Movement

ZRC-0306N

Diameter of range: 600 mm

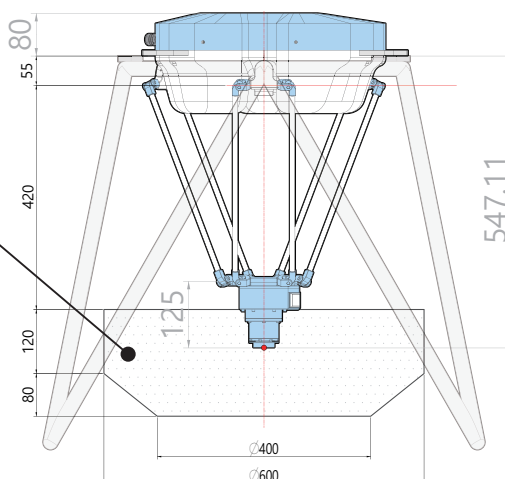
Maximum reachable range of the tool center point :
 Ø 600, H200 Cylinder



ZRC-0306R

Diameter of range: 600 mm

Maximum reachable range of the tool center point :
 Ø 600, H200 Cylinder

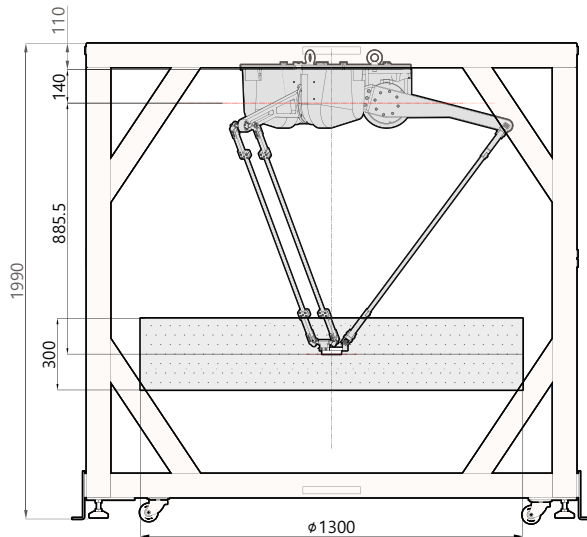


Operation range is limited to stoppers and software to avoid being out of range.

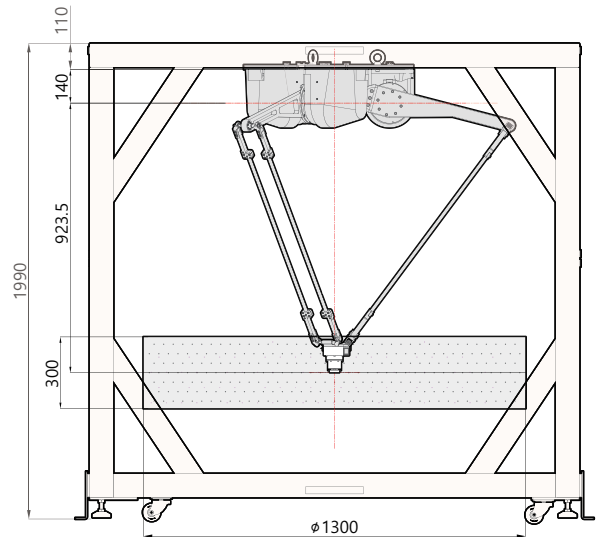
The shape of the frame is an example. The shape and dimension can be changed due to product improvement or circumstances.

ZRC-0313N, ZRC-0313R

Diameter of range: 1300 mm



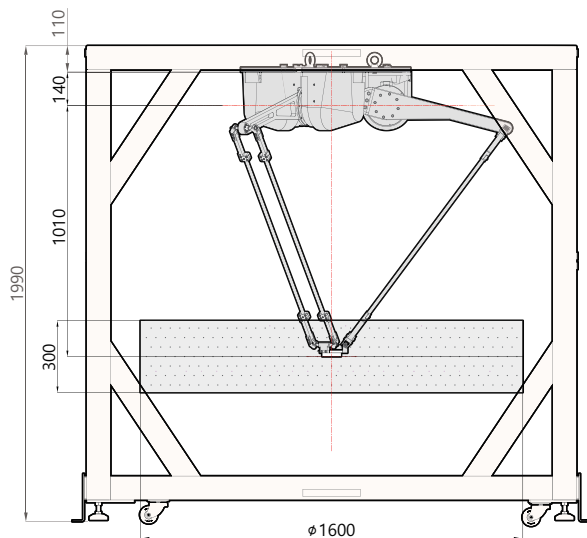
ZRC-0313N



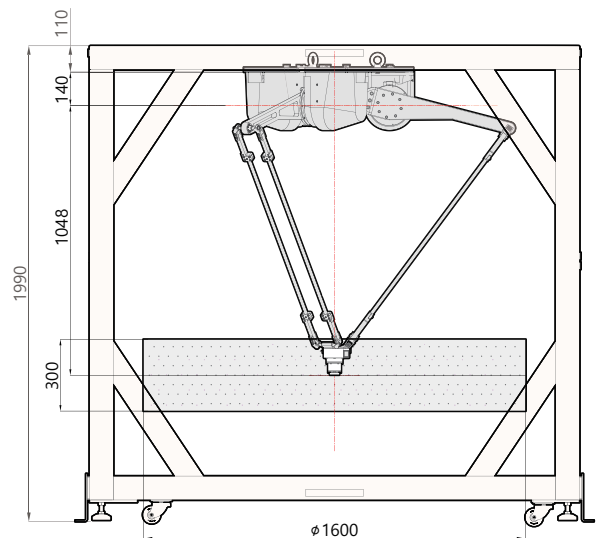
ZRC-0313R

ZRC-0316N, ZRC-0316R

Diameter of range: 1600 mm



ZRC-0316N



ZRC-0316R

Operation range is limited to stoppers and software to avoid being out of range.

The shape of the frame is an example. The shape and dimension can be changed due to product improvement or circumstances.

Recommended End-effector Structure



Caution



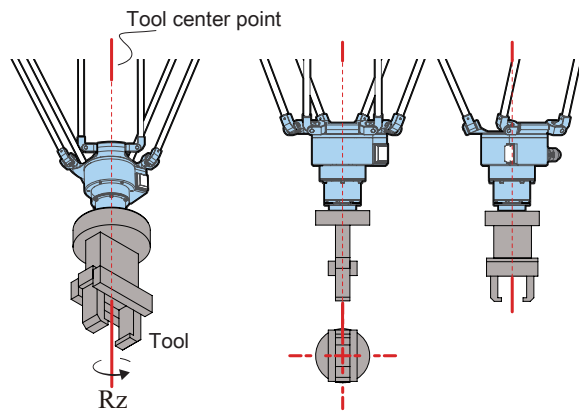
When designing an end-effector which will be attached to the tool center point, thoroughly validate manipulator postures and motion ranges. See below for examples.



Example 1 Recommended

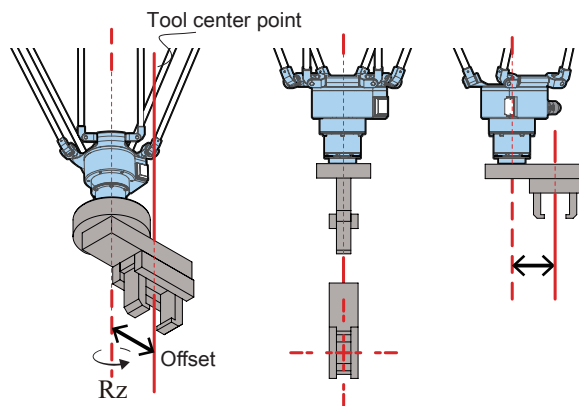
The rotational axis of Rz and the central axis of the tool are coaxial.

Note that the longer the distance between the tool center point and the end of the tool is, the larger the payload to the manipulator becomes, which may result in vibrations or slower motion speed.



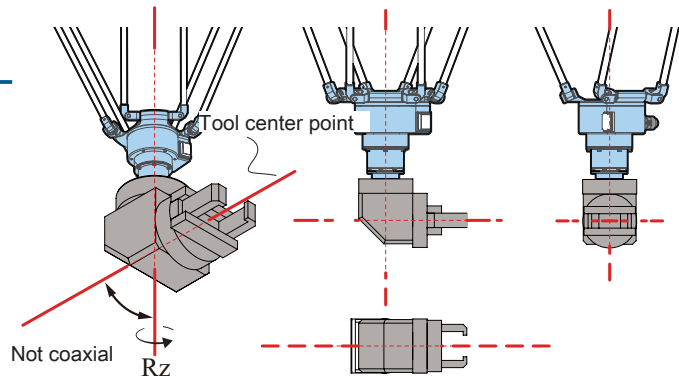
Example 2 Not Recommended

Because an offset exists between the central axis of the tool and the Rz rotational axis, the robot may become unable to handle a workpiece.



Example 3 Not Recommended

Because the central axis of the tool and the Rz rotational axis are not coaxial, the robot may become unable to handle a work piece.



ZC1XXX Specifications

Item	ZC1000	ZC1001	Note
Compatible Manipulator	ZERO series		In case using Teaching Pendant(ZP1000) ZC1001 is necessary
Dimensions	(See a dimension drawing)		The overhang is not included
Weight	5 kg		—
Number of Control Axes	6 axes		—
General Specifications	Programming Method	Off-line programming with a PC	
	Programming language	Python	
	Storage Memory	eMMC	
	Teaching method	PC Jog Stick	PC Jog Stick Teaching Pendant
Display function	7-segment display panel	3 digits	
	Status LED indicators	3 lamps	
Interface (Controller)	Manipulator Connector	1 Port	
	Input	16 Bit	
	Output	16 Bit	
	Safety	1 Port	
	Ethernet	2 Port	
	USB	2 Port	
	JOG Stick	1 Port	
Interface (Arm I/O)	Digital input	8 Bit	
	Digital output	4 Bit	
	Asynchronous communication	1 Ch	
	Power output	24 V	
Specifications of Power supply ^(*)	Voltage	Single-phase 100 VAC - 240 VAC	
	Frequency	50 Hz - 60 Hz	
	Current	2.7 A, 230 VAC / 5.4 A, 115 VAC	
	In-rush current	75 A, 230 VAC	
	leakage current	5.0 mA, 240 VAC	
Rated short circuit current	1,500 A		UL File No. E10480
Grounding	Type 3 grounding or above		Grounding resistance value of 100 Ω or below
Safety	Rating	ISO 10218-1	
	Voltage-resistance	1,500 VAC	
	Insulation resistance	1 M Ω or above	
EMC	EN61000-6-2:2005 EN55011 : 2009+A1:2010		Heavy industrial level

^{*)} Voltage variation should be within input voltage range

Be no power outage more than 20 ms.

Gain sufficient power including in-rush current

Use fuses with rated current: 8A, rated breaking capacity: AC250 V / 1,500A

The specification items and their contents described in this document are general information. For more details, please refer to a copy of the document " SPECIFICATIONS" included in the product.

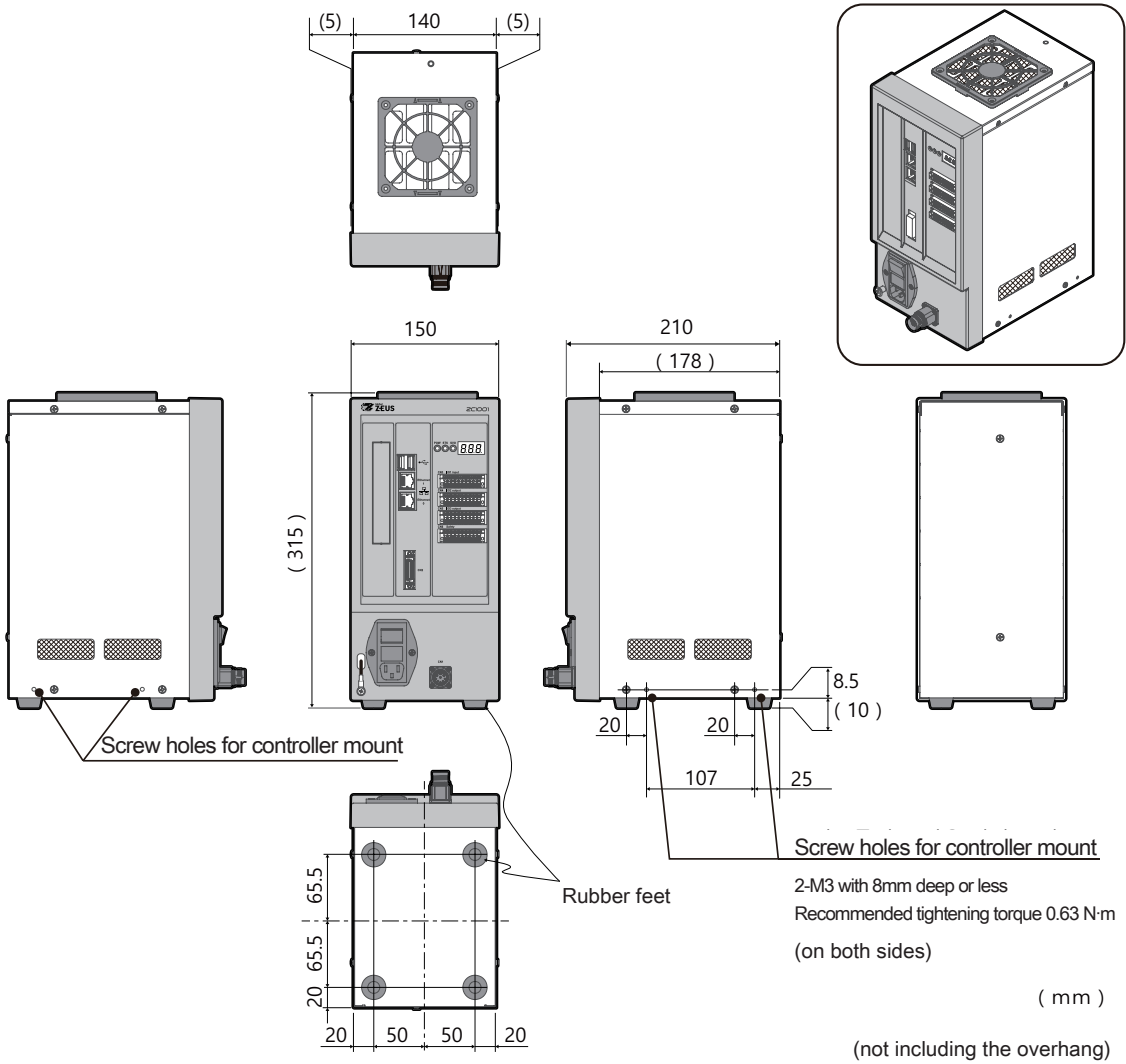
ZC1XXX Dimensions



CAUTION



When designing a metal fitting, make it so that the cover fixing screws are 20 mm away from the controller mount holes and also the air inlets will not be blocked.



ZC2XXX Specifications

Item		ZC 2000	Note
Compatible Manipulator		ZERO full-size manipulator	—
General Specifications	Dimensions	(See a dimension drawing)	The overhang is not included
	Weight	43 kg	—
	Number of Control Axes	3 axes (4 axes option)	—
	Programming Method	Off-line programming with a PC	Application programs are transferred with TFP and executed.
	Programming language	Python	Use the special libraries for the robot operation
	Storage Memory	eMMC	—
	Teaching method	PC Jog Stick Teaching Pendant	Monitoring, storing and controlling data via http with a web browser
Display function	Status LED indicators	3 lamps	—
Interface	Manipulator Connector	1 Port	—
	Input	16 Bit	Isolated; selection of high-side or low-side
	Output	16 Bit	Isolated; selection of high-side or low-side
	Safety	1 Port	EMS x 2; Mode; Servo-On input Servo power monitor
	Ethernet	2 Port	—
	USB	2 Port	—
	JOG Stick	1 Port	A special input device I/F for teaching
Specifications of Power supply ^(*)	Voltage	3 Φ AC 200V - 240V	—
	Frequency	50 Hz - 60 Hz	—
	Current	4 A, AC 220V	—
Grounding		Type 3 grounding or above	Grounding resistance value of 100m Ω or below
Safety	Rating	ISO 10218-1	Certified
	Voltage-resistance	AC 1,000 V	1/P-FG, 1 second (IEC 60204-1 certified)
	Insulation resistance	1 M Ω or above	1/P -FG, DC 500V (IEC 60204-1 certified)
EMC		EN61000-6-2:2005 EN55011 : 2009+A1:2010	Heavy industrial level

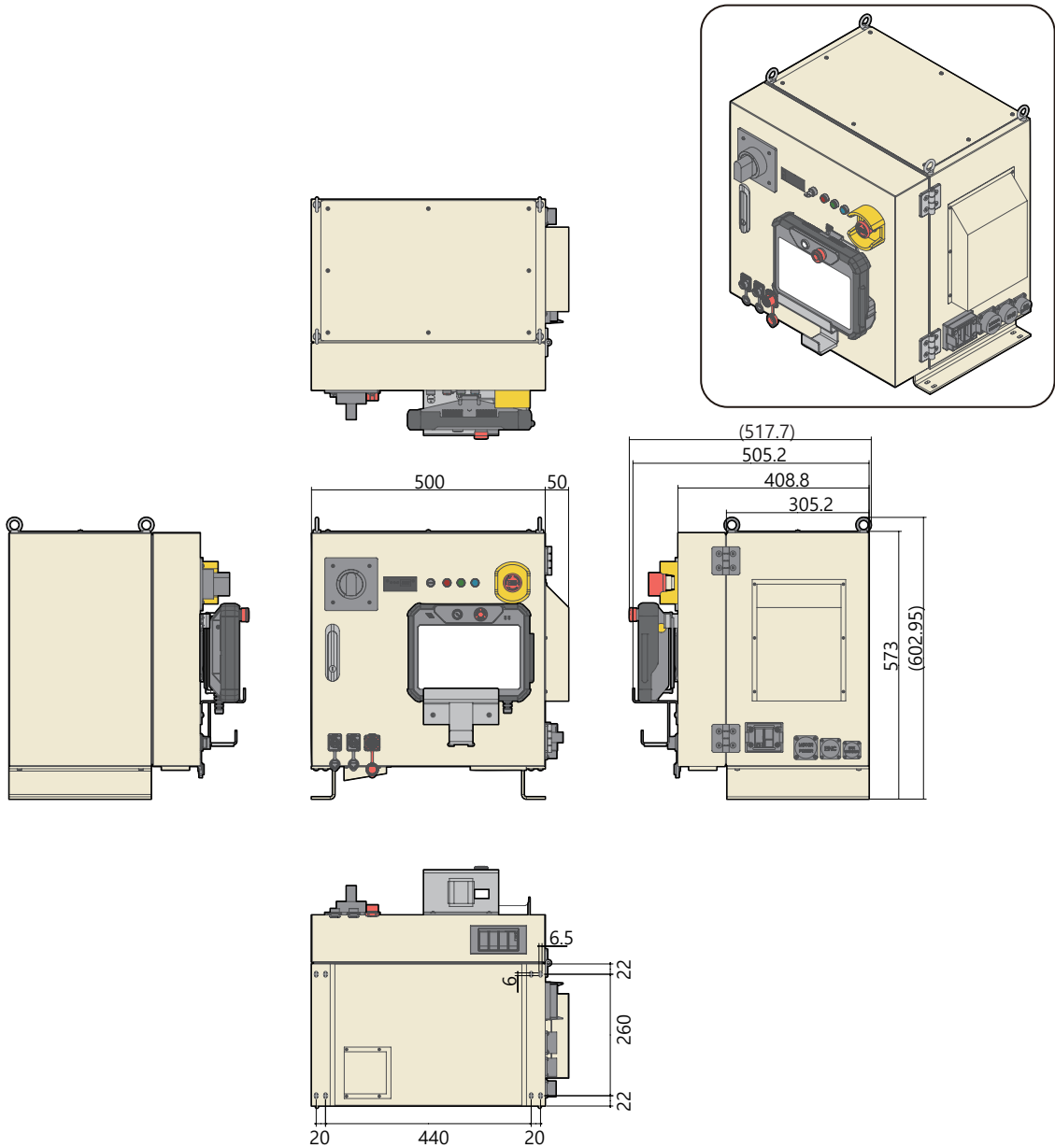
*) Voltage variation should be within input voltage range

Be no power outage more than 20 ms.

Gain sufficient power including in-rush current

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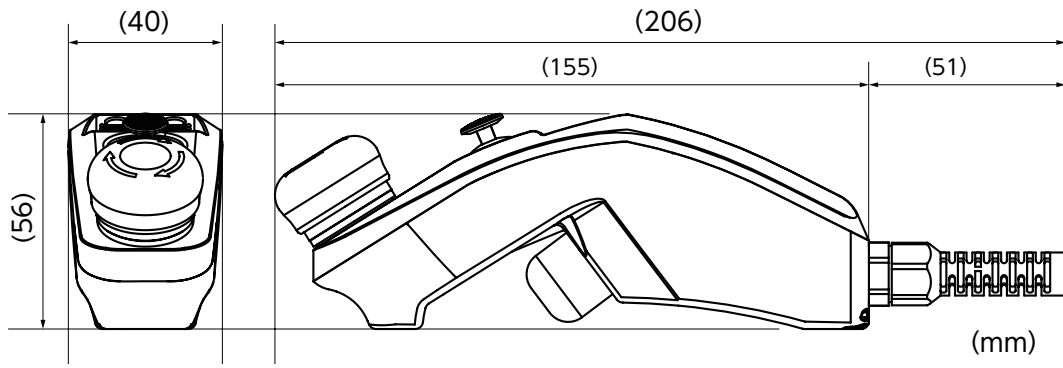
ZC2XXX Dimensions



JOG Stick Specifications

	Item	Specification	Remark
General Specifications	Model	ZJ1000	—
	Dimensions	H56 mm × D155 mm × W40 mm	Not including a cable
	Weight	600 g or less	—
	Frame material	ABS resin	Color: Yellow / Black
	Power supply volatage	DC24 V ± 10%	—
	Power consumption	5 W or less	—
	Cable length	5 m	—
Environmental Specifications	Operating temperature	0 °C – 40 °C	—
	Operating humidity	30 % – 85 %	—
	Storage temperature	- 40 °C – 85 °C	—
	Storage humidity	10 % – 90 %	—
	Cooling	Natural cooling	—

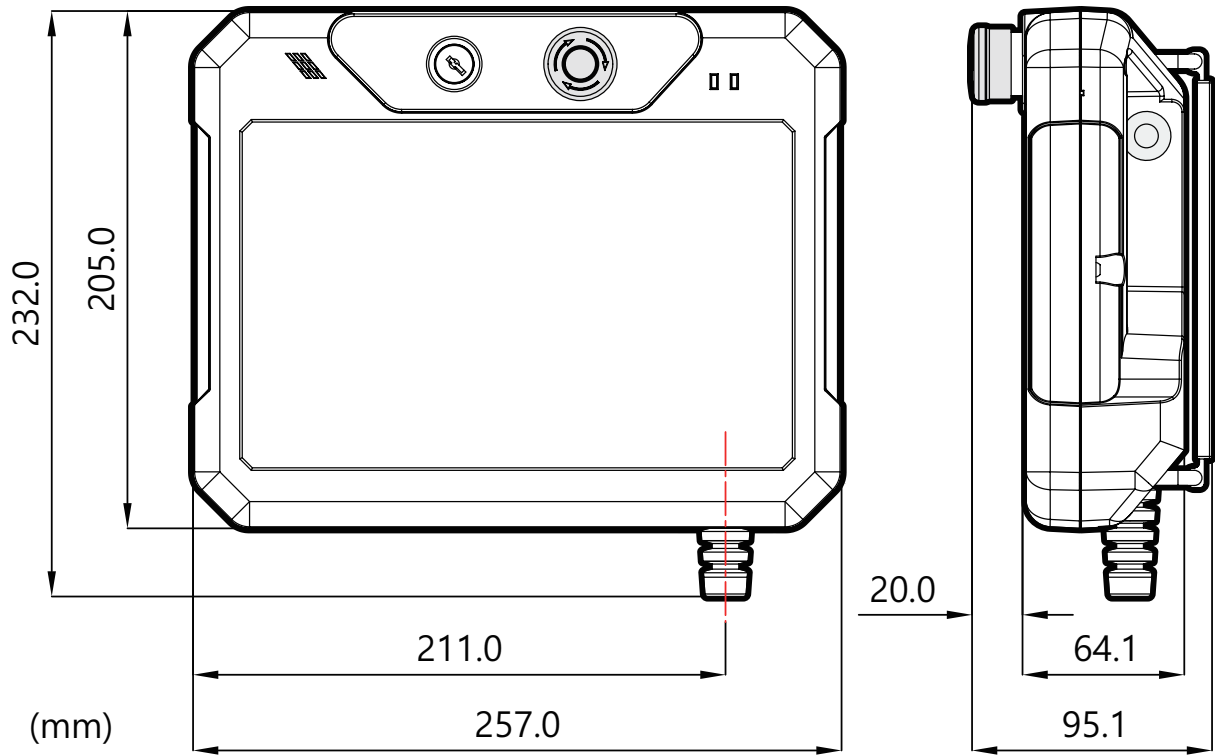
JOG Stick Dimensions



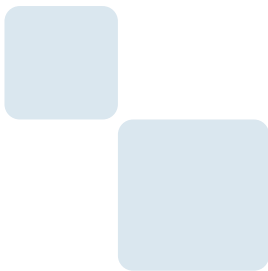
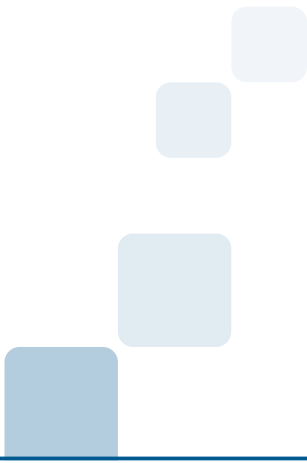
Teaching Pendant Specifications

	Item	Specification	Remark
General Specifications	Model	ZP1000	—
	Dimensions	H95.1 mm × D257 mm × W205 mm	Not including a cable
	Weight	1.2 kg or less	—
	Frame material	PC + ABS resin	Color: Black
	Power supply volatage	DC24 V ± 10%	—
	Power consumption	12 W or less	—
	Cable length	3 m	—
Environmental Specifications	Operating temperature	0 °C – 40 °C	—
	Operating humidity	30 % – 85 %	—
	Storage temperature	- 40 °C – 85 °C	—
	Storage humidity	10 % – 90 %	—
	Cooling	Natural cooling	—

Teaching Pendant Dimensions



(not including the bumper and cable)



Customer service center

ZEUS : 132, Anyeongnam-ro, Hwaseong-si, Gyeonggi-do, South Korea

e-mail : zero@globalzeus.com
