

Standard specifications

MC004NFF60041

1st Edition : November 23, 2016
2st Edition : July 31, 2017

KAWASAKI HEAVY INDUSTRIES, LTD.
ROBOT DIVISION

Specification :	90101-2568DEB
(Arm) :	90151-0189DEA
(Controller) :	90152-0048DEB

[1] Robot Arm

1. Model	MC004N-B		
2. Type	Articulated robot		
3. Degree of freedom	6 axes		
4. Axis specification	Operating axis	Max. operating range	Max. speed
	Arm rotation (JT1)	+ 180 ° ~ − 180 °	200 ° /s
	Arm out-in (JT2)	+ 135 ° ~ − 95 °	180 ° /s
	Arm up-down (JT3)	+ 60 ° ~ − 155 °	225 ° /s
	Wrist swivel (JT4)	+ 270 ° ~ − 270 °	700 ° /s
	Wrist bend (JT5)	+ 120 ° ~ − 120 °	500 ° /s
	Wrist twist (JT6)	+ 270 ° ~ − 270 °	350 ° /s
5. Repeatability	±0.05 mm (at the tool mounting surface)		
6. Max. payload	4 kg		
7. Max. speed	5000 mm/s (at the center of tool mounting surface)		
8. Load capacity of wrist			
		Max. torque	Moment of inertia*
	JT4	8.5 N・m	0.20 kg・m2
	JT5	8.5 N・m	0.20 kg・m2
	JT6	4.0 N・m	0.10 kg・m2
	Note * Each value in this table shows allowable moment of inertia of JT4/JT5/JT6 when max. allowed torque is applied to each axis. If more detailed data is required for your application, please contact Kawasaki.		
9. Driving motor	Brushless AC Servomotor		
10. Working range	See attached drawing		
11. Mass	25 kg (without options)		
12. Color	White 12-MTJ-500938(Epoxy paint)		
13. Installation	Floor or Ceiling mounting		
14. Environment cond.	(Temperature) 10 ~ 35 °C, (Humidity) 35 ~ 85 %, no dew, nor frost allowed		
15. Cleanliness	ISO class 5 (Fed. Std. 209D class 100 (0.5μm))		
16. Built-in utilities			
	Air port	2 ports (Rc1/4) in the Connector Panel	
	Sensor harness	Sensor harness (8 circuits), wired inside robot arm	
	Valve	Double solenoid/ Single solenoid valves (2 units max.) Pneumatic piping for hand (φ4 × max 4 lines)	
17. Degree of protection	Wrist : IP67 Arm : IP65		
18. Connector panel	Backside connector panel		
19. I/O type	NPN(sink) type		
20. Options			
	I/O type	PNP(source) Type	
21. Others	Consult Kawasaki about maintenance parts and spare parts.		

[2] Controller			
1. Model	F60		
2. Enclosure	Protection level: IP20 Open structure / Direct cooling system *1		
3. Dimensions	See attached drawing		
4. Number of controlled axes	Max.8 axes (standard 6 axes, option 2 axes)		
5. Servo control and drive system	Full Digital Servo System		
6. Type of control	Teach mode	Joint, Base, Tool, Fixed Tool (option) operation mode	
	Repeat mode	Joint, Linear, Circular (option) interpolation	
7. Teaching method	Teaching or AS language programming		
8. Memory capacity	16 MB		
9. External operation signals	External Emergency stop, External Hold, etc.		
10. Number of Option board slots	2 slots		
11. Operation panel	Teach/Repeat SW, Emergency Stop SW		
12. Communication I/F	Ethernet (1000BASE-T/100BASE-TX/10BASE-T)	2port	
	USB2.0	3port	
	RS-232C	2port	
13. Mass	See attached drawing		
14. Power requirement	AC200 V - AC230 V±10%, 50/60 Hz, 1 phases, Max. 2.0 kVA		
15. Ground	Less than 100 Ω (robot dedicated ground) Leakage current: max. 100 mA		
16. Ambient temperature	0 - 45℃		
17. Relative humidity	35 - 85 % (non-condensation)		
18. Color	Munsell: 5Y8.5/1 equivalent		
19. Teach Pendant	TFT color display (5.7 inch LCD) with touch panel Emergency Stop SW, Teach Lock SW and Enable SW		
20. Safety Circuit	Category: 4, Performance Level: e (EN ISO13849-1) *2		
21. Number of General purpose I/O signals	IN:16 OUT:16 with an I/O connector. (50pin with cover)		
22. Standard Options			
TP sheet language	English or Japanese or Chinese		
Power/Signal cable	5m, 10m, 15m		
Teach Pendant cable	5m, 10m, 15m		
23. Other Options			
Number of additional I/O signals	Inside Controller	I/O board(IN:32 OUT:32) ···up to 2 boards	
	Remote I/O	Remote I/O unit(IN:32 OUT:32) ···up to 4 units	
	Total max I/O number	IN:128 OUT:128	
Intake Filter	Dusts more than 1mm diameter do not get into the controller from intake FAN		
Enclosure	Protection level: IP54 Enclosed structure / Indirect cooling system (Ambient temperature 0 - 45 °C) *3		
Motor brake release	Manual brake release switch BOX		
PC cable (RS-232C)	1.5 m, 3 m		
External axes control	Additional amplifier and harnesses for external axes		
Extended safety functions	Cubic-S(Motion area monitoring, Joint monitoring, Speed monitoring etc.) *3		
Teach Pendant option	Connector for TP less		
Fast check mode	Fast check mode Switch		
Others	Field BUS, Software PLC, Analog input/output, Conveyor Synchronization, Bluetooth		
24. Others	Consult Kawasaki about maintenance parts and spare parts.		

NOTE*1

Cooling of the electronic components in this open construction F60 controller is achieved by circulation of ambient air.

The enclosure is designed to protect personnel from coming in contact with hazardous parts inside the controller.

There is no protection to less than 10 mm of alien substance and water.

Please consider ①② and ③ and select the option about protection to the environmental specification

①There is no or few non-conductive dusts & particles(influence for the controller is little) ...Option is not needed.

②There is high possibility that non-conductive dusts & particle will get into controller. ...Select the option Intake Filter or Enclosed structure

③There is high possibility that conductive dusts & particle will get into controller. ...Select the option Enclosed structure

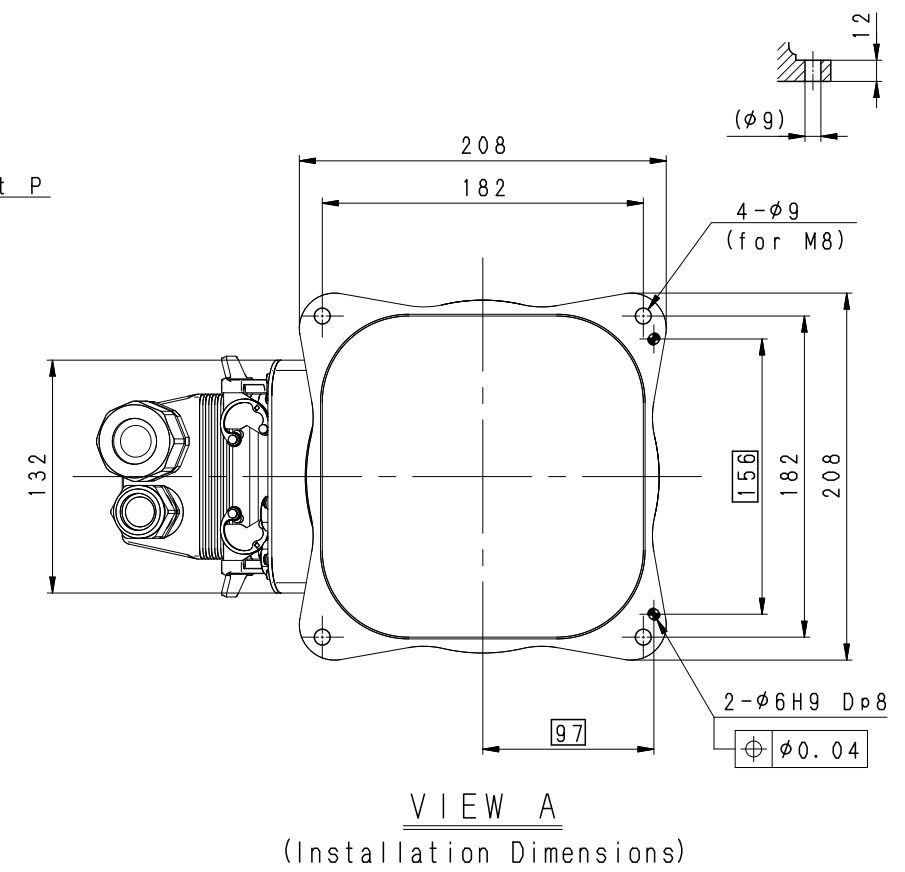
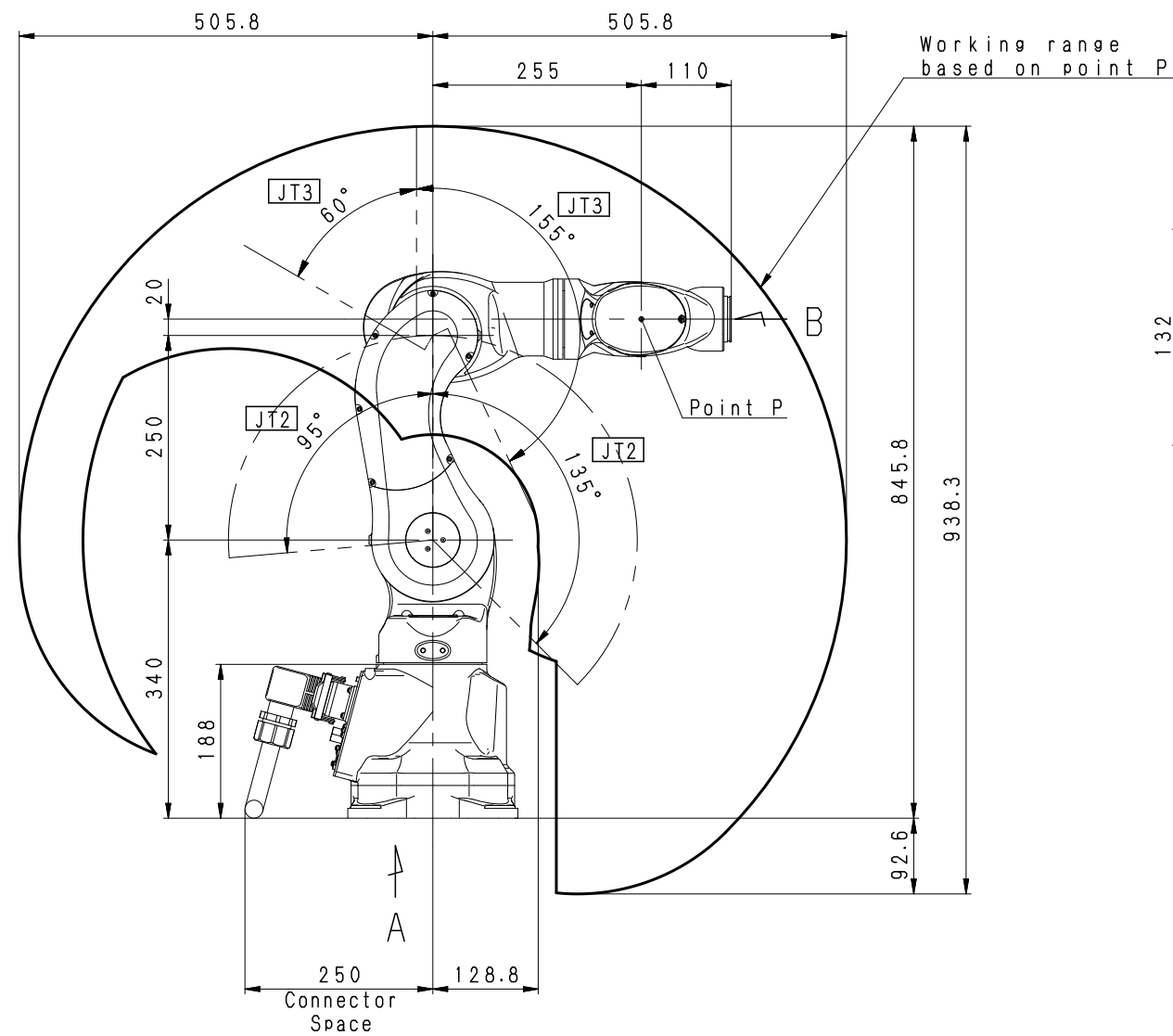
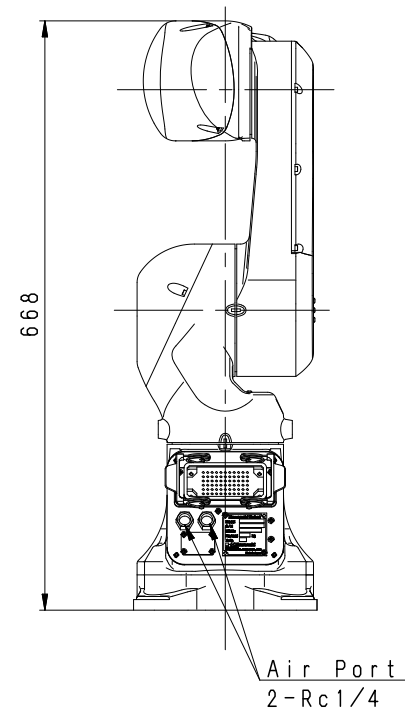
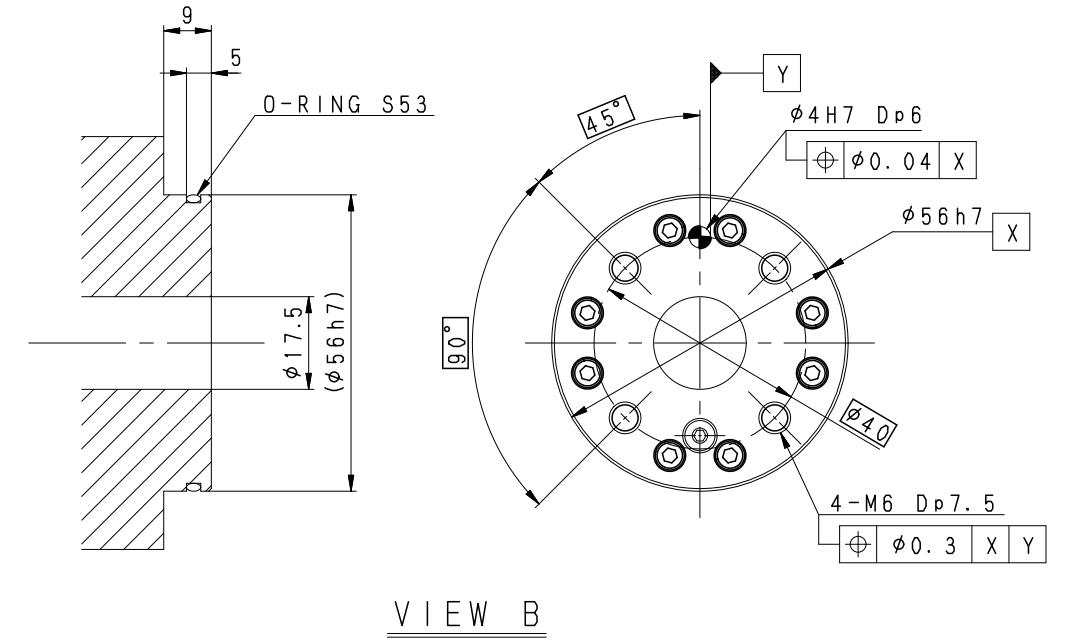
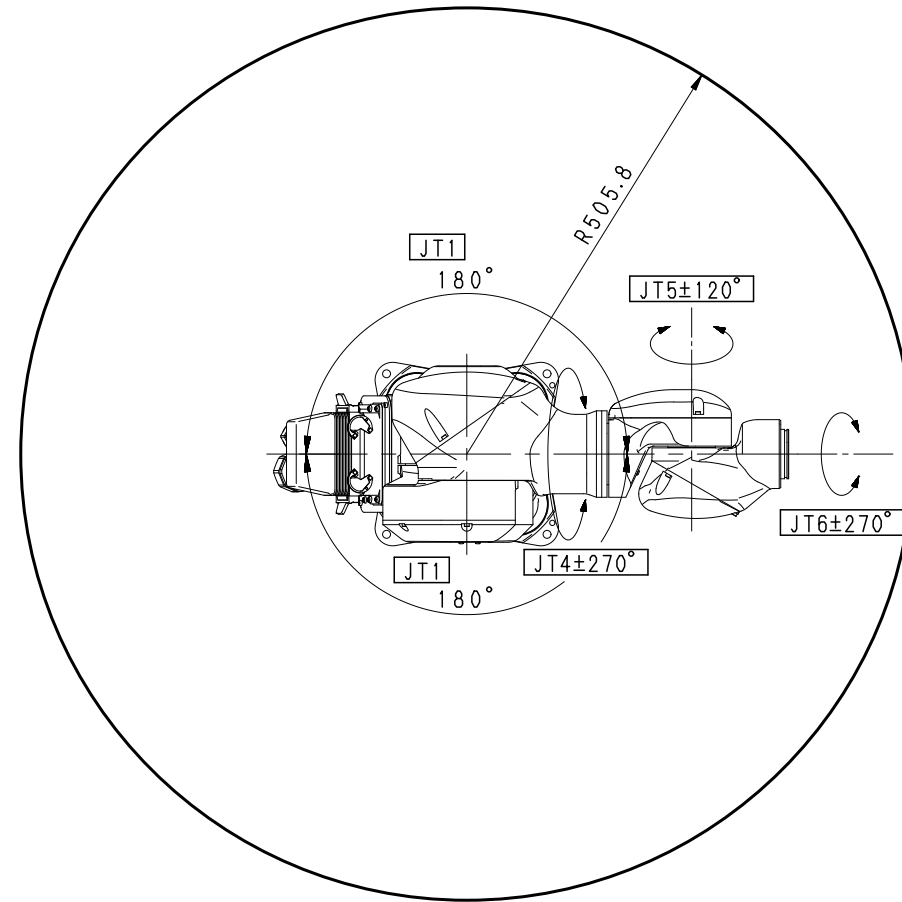
NOTE*2

Category and Performance level (PL) are determined by the whole system and conditions.

The safety circuit of this controller is available in the system of category: up to 4, PL: up to e.

NOTE*3

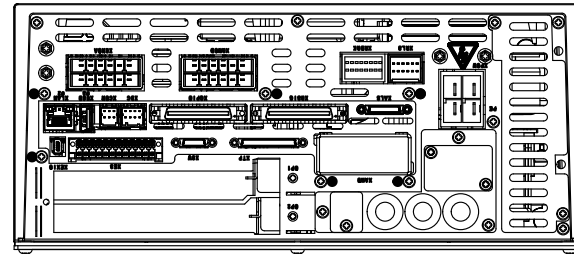
Attaching additional unit makes size of a controller larger.



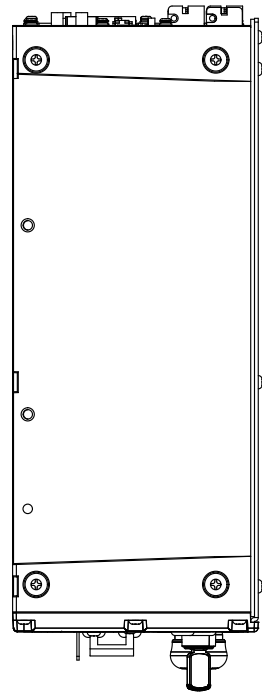
MC004N
WORKING RANGE

F60 CONTROLLER

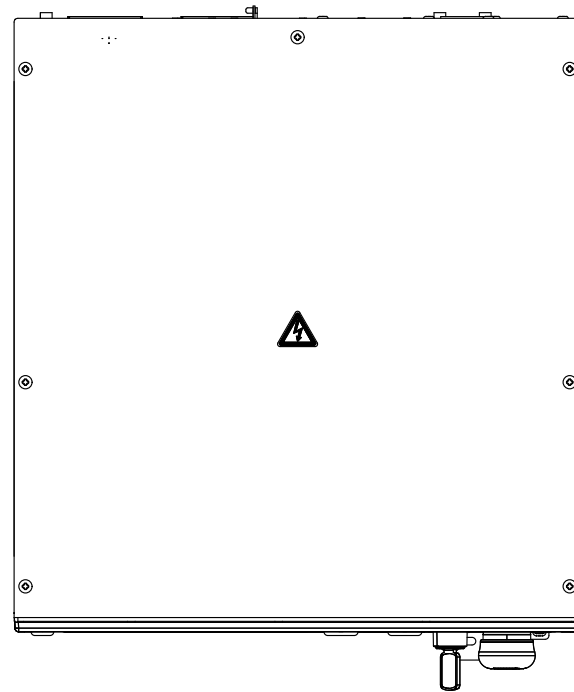
MASS : 8.3Kg (Without any options)



REAR VIEW

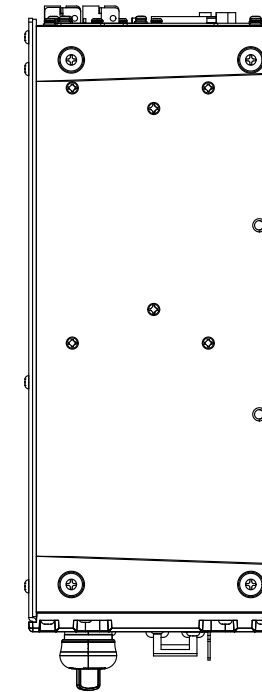


SIDE VIEW

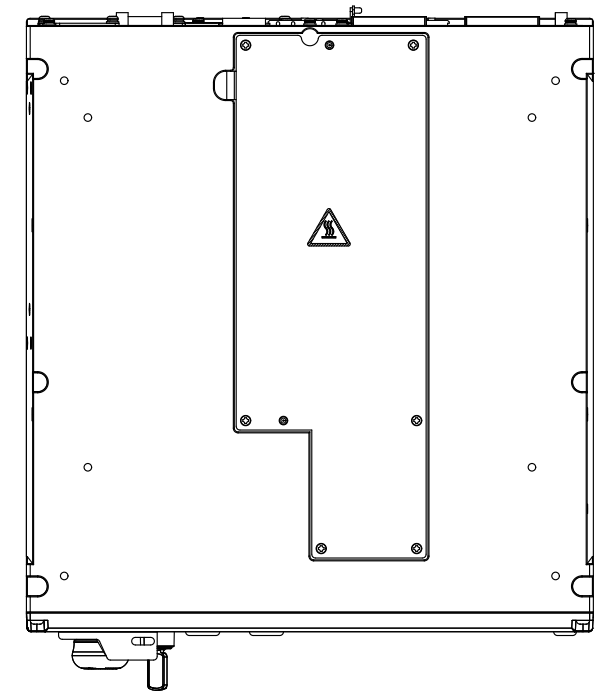


TOP VIEW

320

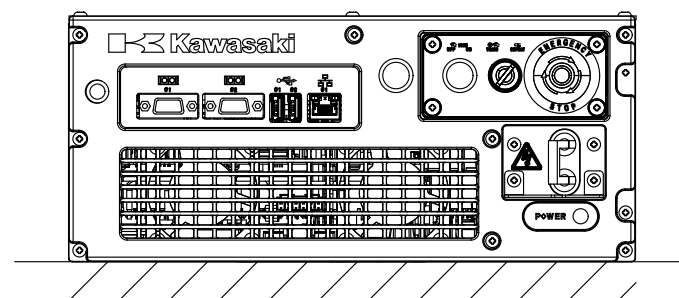
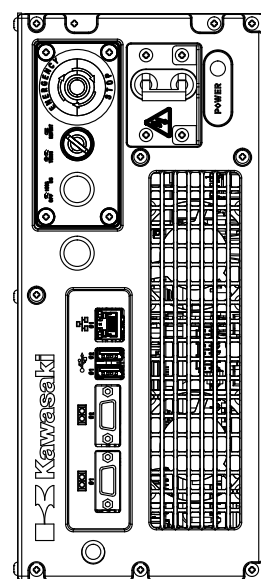


SIDE VIEW



BOTTOM VIEW

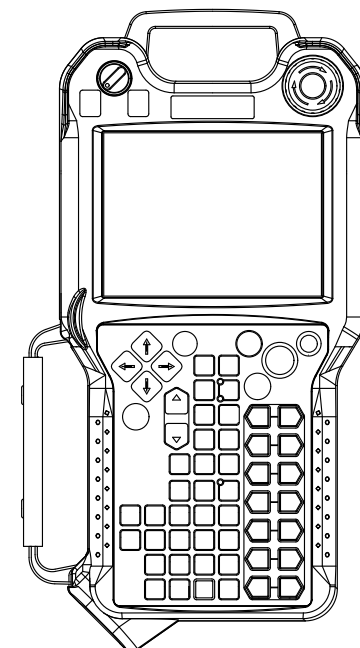
Vertical Mount



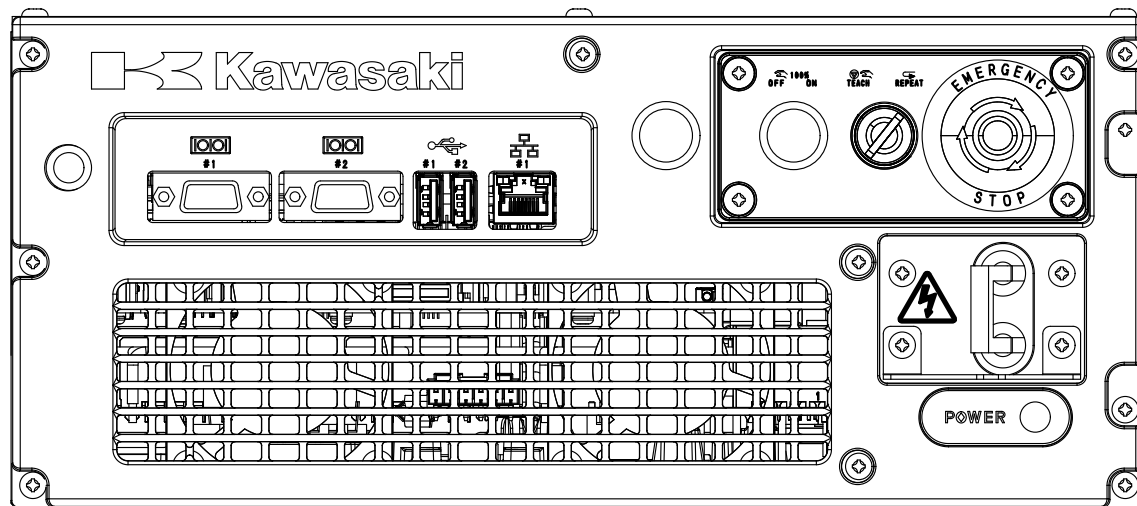
300

FRONT VIEW

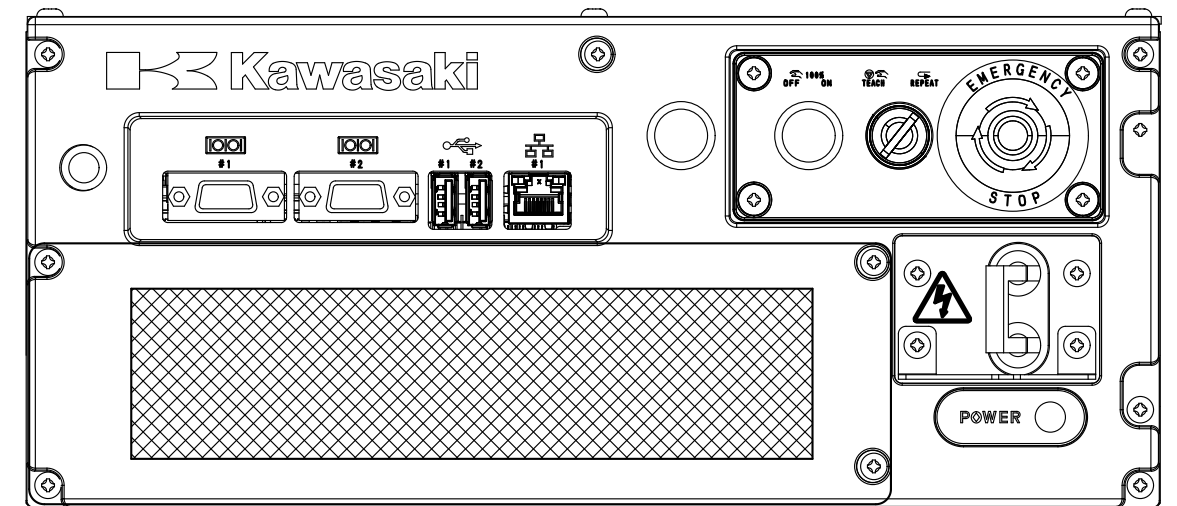
130



① Open Structure
Standard



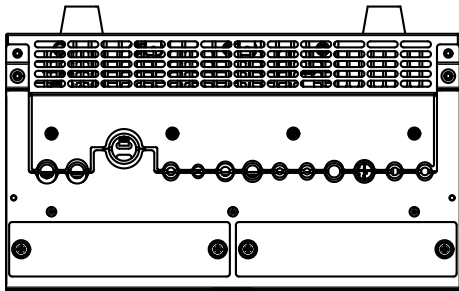
② Open Structure
With Intake Filter



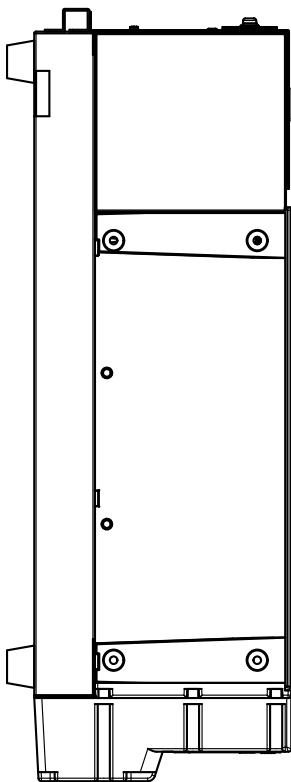
③Enclosed Structure

F60 CONTROLLER

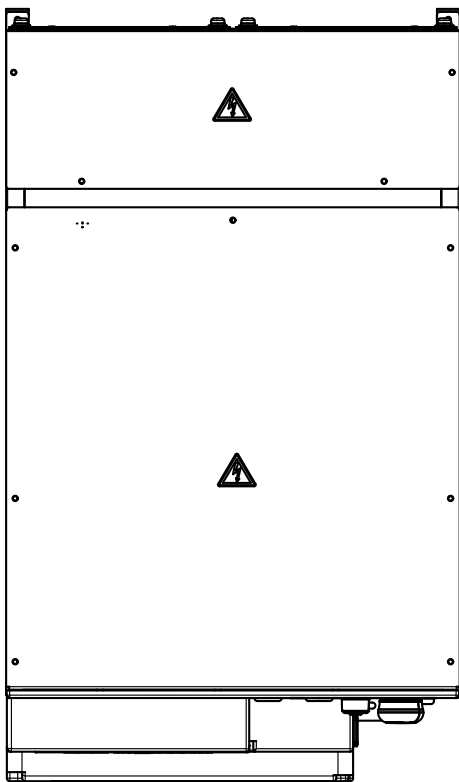
MASS:16Kg
(With Enclosed Structure option)



REAR VIEW



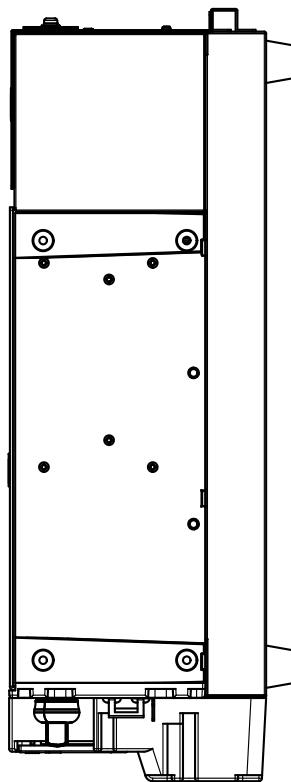
SIDE VIEW



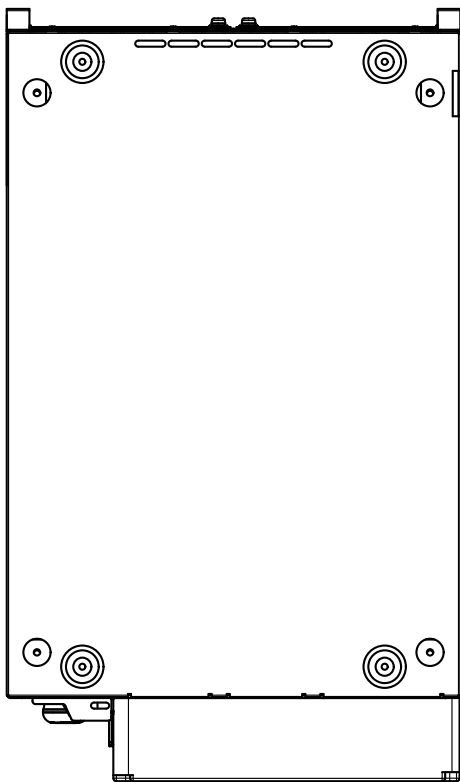
TOP VIEW



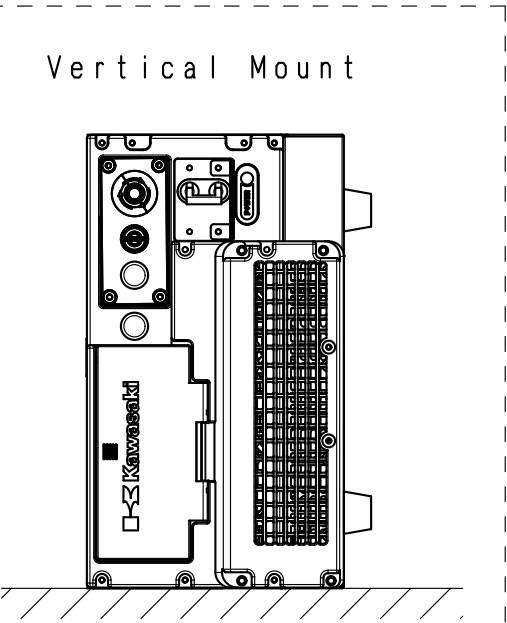
500



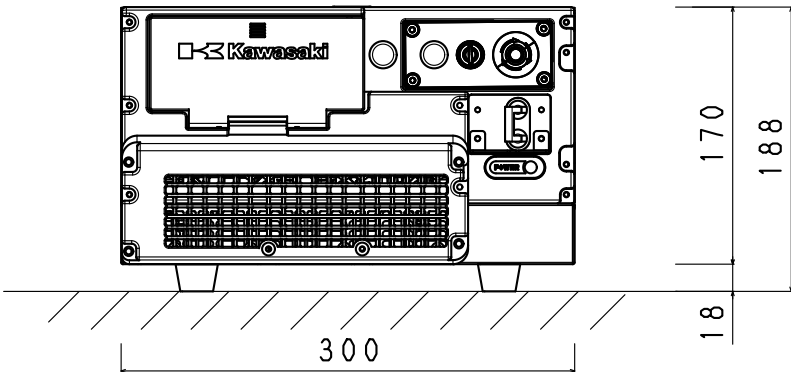
SIDE VIEW



BOTTOM VIEW



Vertical Mount



FRONT VIEW

300

170

188

18