Kawasaki Robotics

Standard Specifications

F60 Controller

1st ed. June-05,2020
3rd ed. August-28,2023

Kawasaki Heavy Industries, Ltd.
Robot Business Division

Specification number： 90152-0081DEC

Controller specifications

1. Model	F60 (A-type/B-type)	
(Robot type)	BA/RA/RC	RS003/RS005/RS007/RS006L/RS010N/RS013N MC/MS
2. Dimensions	Open structure:	W300×D320×H130mm
	Enclosed structure:	W300×D500×H188mm
3. Construction[*1]	Open structure:	Direct cooling system, IP20 equivalent
	Enclosed structure:	Indirect cooling system, IP54 equivalent
4. Controlled axes	Std. 6 axes (Max 8 axes)	
5. Memory capacity	16MB	
6. I/O signals	External operation sig.:	Ext. Emergency Stop, Ext. HOLD signal etc.
	General-purpose I/O sig.:	Input(16), Output(16) I/O signal connector(50pin) with cover
7. Cable length	Robot cable:	5m (Opt.7/10/15/20/25/30/35/40m)
	Teach pendant cable:	5m (Opt.10/15/20/25/30/35/40/45m[※2])
8. Mass	Open structure:	8.3kg
(without options)	Enclosed structure:	16kg
9. Power requirements	AC200-AC230V±10%、50/60Hz、1 phase, Max. 2kVA	
10. Ground	Less than 100 Ω (robot dedicated ground), Leakage current: max. 100 mA	
11. Installation environment	Ambient temperature:	0 - 45°C
	Relative humidity:	35 - 85% (non-condensation)
12. Teach Pendant	Color LCD with touch panel Emergency Stop SW, Teach Lock SW and Enable SW English/Chinese/Japanese Selectable	
13. Operation panel	Emergency Stop SW, Teach/Repeat SW	
14. External interface	Ethernet: 2 ports (1000BASE-T/100BASE-TX/10BASE-T) USB2.0: 3 ports, USB2.0: 1 ports(Teach pendant)[※3], RS-232C: 2 ports	
15. Type of control	Teach mode:	Joint, Base, Tool operation mode (option) Fixed Tool operation mode
	Repeat mode:	Joint, Linear interpolation mode (option) Circular interpolation mode
16. Teaching method	Easy operation teaching or AS language programming	
17. Color	Munsell: 5Y8.5/1 equivalent	
18. Safety Circuit	Category: 4, Performance Level: PL e (EN ISO13849-1) [*4]	
19. Arc welding I/F	Arc-welding I/F PC board [*5] (Standard for Arc-welding robot)	

20. Options				
	Enclosed structure	Additional enclosed unit for open structure cabinet		
	External axes control	Additional amplifier and External axes harnesses		
	General purpose I/O[*6] Analog I/O[*6]	In-cabinet:	General purpose I/O board[*5] (Input 32, Output 32) I/O signal connector(50pin) with cover Analog I/O board[*5] (Input 4, Output 4)	
		Remote I/O:	Remote general I/O unit (Input 32, Output 32) I/O signal connector(50pin) with cover Remote analog I/O unit (Input 4, Output 4)	
	Teach Pendant option	Connector for TP less		
	Operation panel option	Fast check mode Switch		
	External memory	USB memory		
	PC cable (RS-232C)	1.5m, 3m		
	Motor brake release	Manual brake release switch		
	Extended safety functions	A-type[*7 *11] Cubic-S option	Motion area monitoring, Joint monitoring, Speed monitoring, etc. Safety I/O signal	
		B-type[*11] CoreCubic-S option	Motion area monitoring, Joint monitoring, Speed monitoring, etc.	
			Safety I/O signal[*9] (In-cabinet)	Safety I/O board[*5 *6 *10] (Input 8, Output 8)
	Safety Standards[*8]	CE / UL[*9] / KCs / UKCA		
	Others	Field BUS(Master[*5], Slave), Software PLC, External operation panel box（5/10/15/20/25/30m）, Conveyor Synchronization[*5] , Bluetooth, Vision application, Tool tip movement amount output function[*5] and so on		

Consult Kawasaki about maintenance parts and spare parts.

*1 The open structure (IP20 or equivalent) is protected against human contact to the dangerous parts inside the controller, but there is no protection against infiltration of water or small foreign matters. It can be used in an environment of up to pollution degree 2 as stipulated by IEC 60664-1. (Pollution degree 2 is an environment where conductive foreign matter, conductive dust, or water-containing dust does not occur, for example in an office or a clean factory.)

In an environment of pollution degree 3 such as the following, use an optional sealed chasses (IP54 or equivalent).
• An environment where dust exists in the surrounding, or where fine dust is abundant.
• An environment where conductive pollution or conductive pollution due to condensation may occur.
• An environment where water or water-containing foreign matters, etc., may infiltrate.

*2 Only B-type controller can use 35/40/45m teach pendant cable.

*3 Only B-type controller can be used.

*4 Performance Level (PL) and categories are determined according to the overall configuration of the safety system.

*5 There are two optional slots inside the F60 controller, and up to two pieces of the parts listed in *5 can be installed. Refer to the below for some of the combination examples.

- General-purpose I/O board 2 pcs ·····	2 slots	(supported)
- General-purpose I/O board + Analog I/O board ·····	2 slots	(supported)
- General-purpose I/O board + Fieldbus master ·····	2 slots	(supported)
- Arc interface board + General-purpose I/O board ·····	2 slots	(supported)
- General-purpose I/O board + General-purpose I/O board + Conveyor	3 slots	(not supported)

Option slots are used as options below.
・Analog I/O
・Field bus (Master)
・Conveyor Synchronization
・Arc welding I/F
・Tool tip movement amount output function
・Safety I/O board

*6 Note that for the general-purpose I/O and analog I/O, there are restrictions to the maximum number of signals, respectively.

General-purpose I/O ·····	Input(128)/Output(128)
Analog I/O ·····	Input(8)/Output(8)

*7 An approximately 40 mm is added to the height when the Cubic-S unit is installed.

*8 The controller complies with safety standards, but some robot arms do not, so please contact us for details.

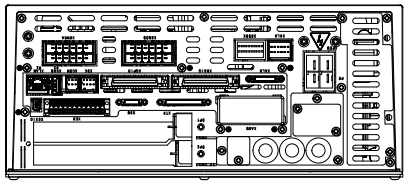
*9 Manual brake release switch and connector protection parts on the back of the controller are needed.

*10 Only B-type controller can be used.

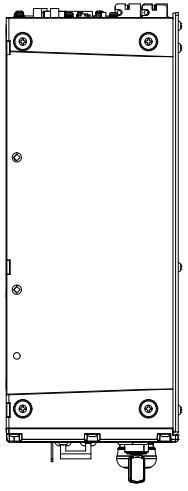
*11 There are two types of F60 controllers: A-type and B-type.
A-type is compatible with "Cubic-S" of safety function as an option.
B-type is compatible with "CoreCubic-S" of safety function as an option.
A-type and B-type controllers can be distinguished only by the "Model" field of the rating plates.
(The underlined parts of the following model examples)
・Model example of A-type controller：30F60F-**A*****, F60F-**A*****
・Model example of B-type controller：30F60F-**B*****, F60F-**B*****
Some robot models are incompatible with the B-type controller, so please contact us for details.

F60 CONTROLLER

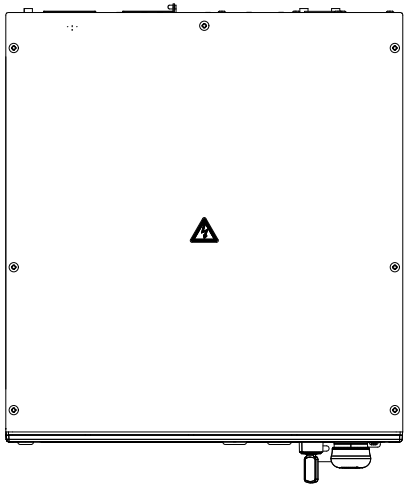
MASS：8.3Kg (Without any options)



REAR VIEW

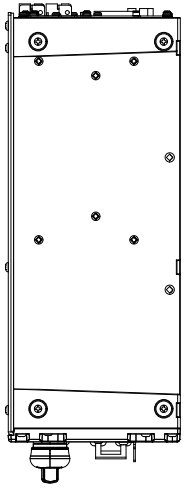


SIDE VIEW

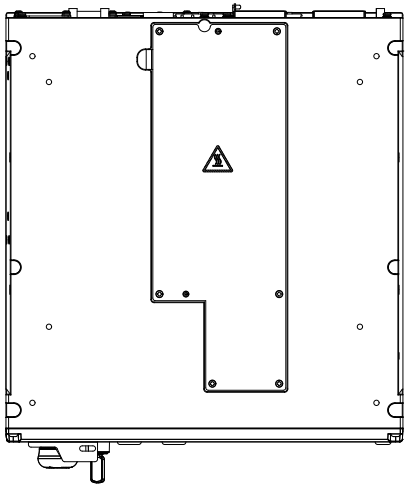


TOP VIEW

320

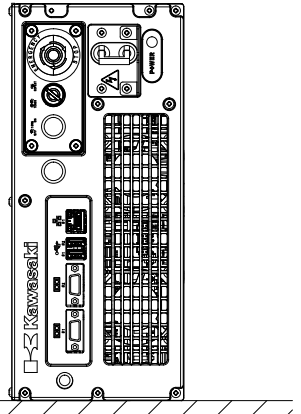


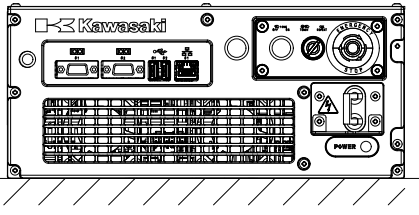
SIDE VIEW



BOTTOM VIEW

Vertical Mount

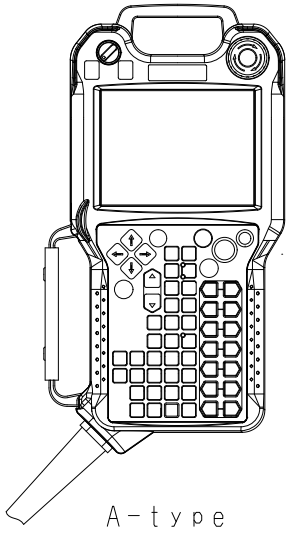




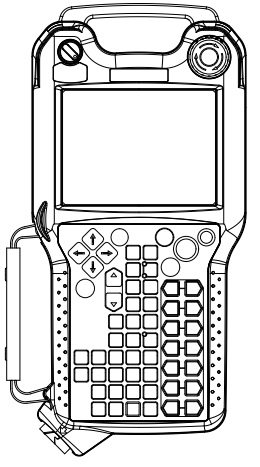
130

300

FRONT VIEW

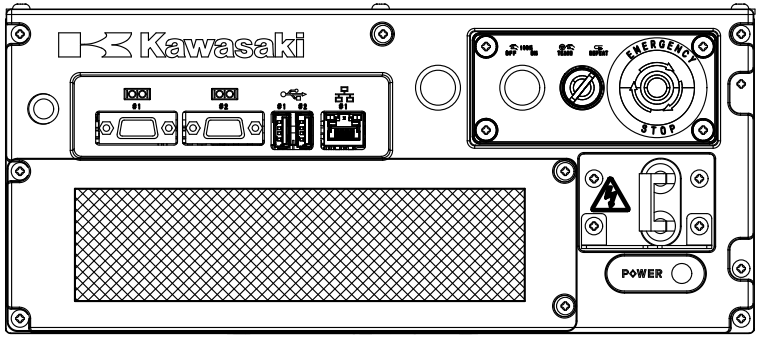


A-type

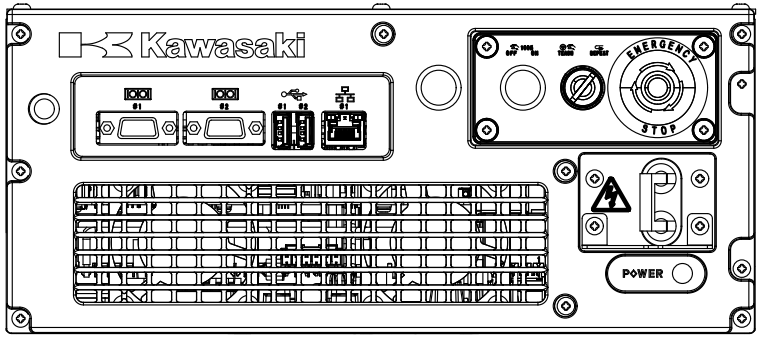


B-type

①Open Structure
With Intake Filter
(Standard)



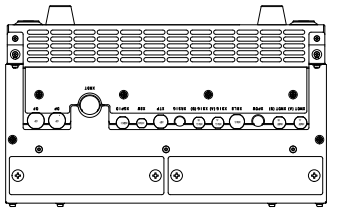
②Open Structure
Without Intake Filter
(Option)



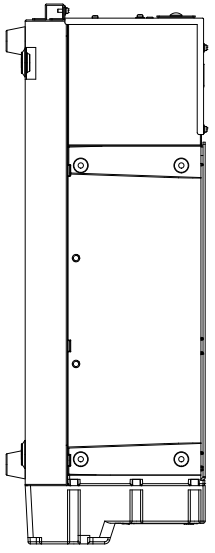
F60 CONTROLLER

③Enclosed Structure

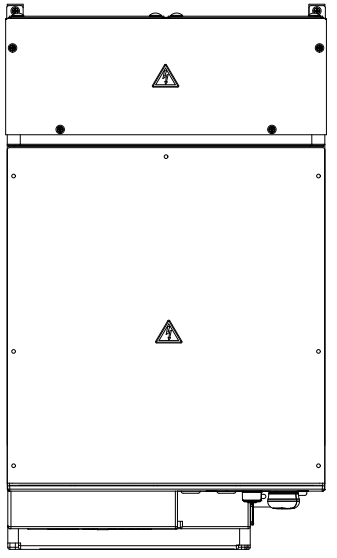
MASS：16Kg
(With Enclosed Structure option)



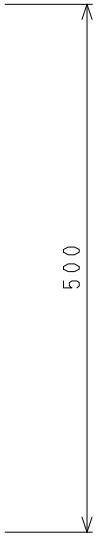
REAR VIEW

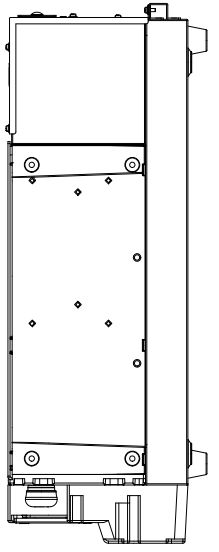


SIDE VIEW

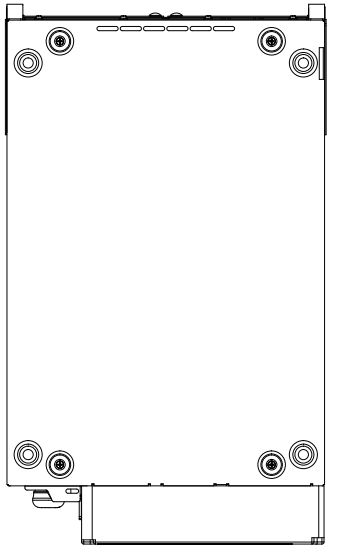


TOP VIEW



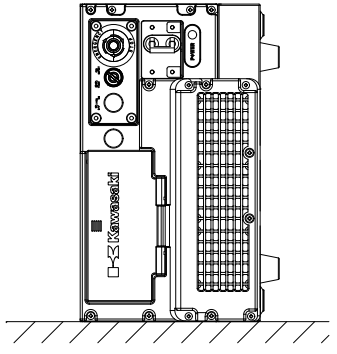


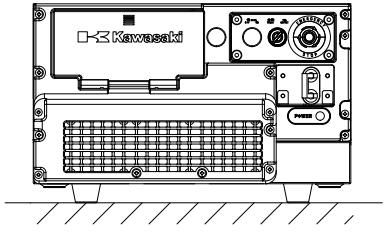
SIDE VIEW



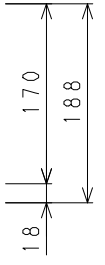
BOTTOM VIEW

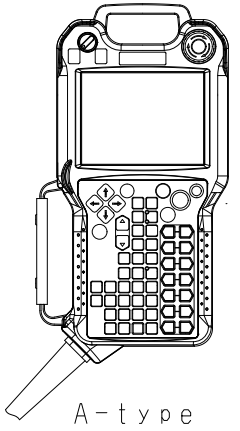
Vertical Mount



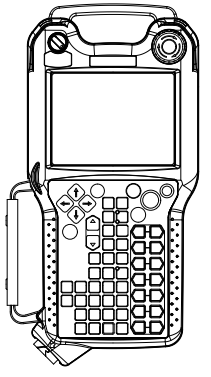


FRONT VIEW





A-type



B-type