

# Standard specifications

## Rating

### ● Three-phase 200V power supply

Model FR-D720-□K		0.1	0.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15
Model FR-D720-□-NA		008	014	025	042	070	100	165	238	318	—	—
Applicable motor capacity (kW)*1		0.1	0.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15
Output	Rated capacity (kVA)*2	0.3	0.6	1.0	1.7	2.8	4.0	6.6	9.5	12.7	17.9	23.1
	Rated current (A)	0.8	1.4	2.5	4.2	7.0	10.0	16.5	23.8	31.8	45.0	58.0
	Overload current rating*3	150% 60s, 200% 0.5s (inverse-time characteristics)										
	Rated voltage*4	Three-phase 200 to 240V										
	Regenerative braking torque*5	150%			100%			50%			20%	
Power supply	Rated input AC voltage/frequency	Three-phase 200 to 240V 50Hz/60Hz										
	Permissible AC voltage fluctuation	170 to 264V 50Hz/60Hz										
	Permissible frequency fluctuation	±5%										
	Power supply capacity (kVA)*6	0.4	0.7	1.2	2.1	4.0	5.5	9.0	12.0	17.0	20.0	27.0
Protective structure (JEM1030)		Enclosed type (IP20)										
Cooling system		Self-cooling					Forced air cooling					
Approximate mass (kg)		0.5	0.5	0.8	1.0	1.4	1.4	1.8	3.6	3.6	6.5	6.5

### ● Three-phase 400V power supply

Model FR-D740-□K		0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	
Model FR-D740-□-NA		012	022	036	050	080	120	160	—	—	
Model FR-D740-□(SC)-EC		012	022	036	050	080	120	160	—	—	
Model FR-D740-□K-CHT		0.4	0.75	1.5	2.2	3.7	5.5	7.5	—	—	
Applicable motor capacity (kW)*1		0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	
Output	Rated capacity (kVA)*2	0.9	1.7	2.7	3.8	6.1	9.1	12.2	17.5	22.5	
	Rated current (A)	1.2	2.2	3.6	5.0	8.0	12.0	16.0	23.0	29.5	
	Overload current rating*3	150% 60s, 200% 0.5s (inverse-time characteristics)									
	Rated voltage*4	Three-phase 380 to 480V									
	Regenerative braking torque*5	100%			50%			20%			
Power supply	Rated input AC voltage/frequency	Three-phase 380 to 480V 50Hz/60Hz									
	Permissible AC voltage fluctuation	325 to 528V 50Hz/60Hz									
	Permissible frequency fluctuation	±5%									
	Power supply capacity (kVA)*6	1.5	2.5	4.5	5.5	9.5	12.0	17.0	20.0	28.0	
Protective structure (JEM1030)		Enclosed type (IP20)									
Cooling system		Self-cooling				Forced air cooling					
Approximate mass (kg)		1.3	1.3	1.4	1.5	1.5	3.3	3.3	6.0	6.0	

\*1 The applicable motor capacity indicated is the maximum capacity applicable for use of the Mitsubishi 4-pole standard motor.

\*2 The rated output capacity indicated assumes that the output voltage is 230V for three-phase 200V class and 440V for three-phase 400V class.

\*3 The % value of the overload current rating indicated is the ratio of the overload current to the inverter's rated output current. For repeated duty, allow time for the inverter and motor to return to or below the temperatures under 100% load.

\*4 The maximum output voltage does not exceed the power supply voltage. The maximum output voltage can be changed within the setting range. However, the pulse voltage value of the inverter output side voltage remains unchanged at about  $\sqrt{2}$  that of the power supply.

\*5 The braking torque indicated is a short-duration average torque (which varies with motor loss) when the motor alone is decelerated from 60Hz in the shortest time and is not a continuous regenerative torque. When the motor is decelerated from the frequency higher than the base frequency, the average deceleration torque will reduce. Since the inverter does not contain a brake resistor, use the optional brake resistor when regenerative energy is large. (The option brake resistor cannot be used for 0.1K and 0.2K.) A brake unit (FR-BU2) may also be used.

\*6 The power supply capacity varies with the value of the power supply side inverter impedance (including those of the input reactor and cables).

● Single-phase 200V power supply

Model FR-D720S-□K		0.1	0.2	0.4	0.75	1.5	2.2
Model FR-D720S-□-NA		008	014	025	042	070	100
Model FR-D720S-□(SC)-EC		008	014	025	042	070	100
Model FR-D720S-□K-CHT		0.1	0.2	0.4	0.75	1.5	2.2
Applicable motor capacity (kW)*1		0.1	0.2	0.4	0.75	1.5	2.2
Output	Rated capacity (kVA)*2	0.3	0.6	1.0	1.7	2.8	4.0
	Rated current (A)	0.8	1.4	2.5	4.2	7.0	10.0
	Overload current rating*3	150% 60s, 200% 0.5s (inverse-time characteristics)					
	Rated voltage*4	Three-phase 200 to 240V					
	Regenerative braking torque*5	150%		100%		50% 20%	
Power supply	Rated input AC voltage/frequency	Single-phase 200 to 240V 50Hz/60Hz					
	Permissible AC voltage fluctuation	170 to 264V 50Hz/60Hz					
	Permissible frequency fluctuation	±5%					
	Power supply capacity (kVA)*6	0.5	0.9	1.5	2.3	4.0	5.2
Protective structure (JEM1030)		Enclosed type (IP20)					
Cooling system		Self-cooling				Forced air cooling	
Approximate mass (kg)		0.5	0.5	0.9	1.1	1.5	2.0

● Single-phase 100V power supply

Model FR-D710W-□K		0.1	0.2	0.4	0.75
Model FR-D710W-□-NA		008	014	025	042
Applicable motor capacity (kW)*1		0.1	0.2	0.4	0.75
Output	Rated capacity (kVA)*2	0.3	0.6	1.0	1.7
	Rated current (A)	0.8	1.4	2.5	4.2
	Overload current rating*3	150% 60s, 200% 0.5s (inverse-time characteristics)			
	Rated voltage	Three-phase 200 to 230V*7, *8			
	Regenerative braking torque*5	150%		100%	
Power supply	Rated input AC voltage/frequency	Single-phase 100 to 115V 50Hz/60Hz			
	Permissible AC voltage fluctuation	90 to 132V 50Hz/60Hz			
	Permissible frequency fluctuation	±5%			
	Power supply capacity (kVA)*6	0.5	0.9	1.5	2.5
Protective structure (JEM1030)		Enclosed type (IP20)			
Cooling system		Self-cooling			
Approximate mass (kg)		0.6	0.7	0.9	1.4

\*1 The applicable motor capacity indicated is the maximum capacity applicable for use of the Mitsubishi 4-pole standard motor.

\*2 The rated output capacity indicated assumes that the output voltage is 230V.

\*3 The % value of the overload current rating indicated is the ratio of the overload current to the inverter's rated output current. For repeated duty, allow time for the inverter and motor to return to or below the temperatures under 100% load. If the automatic restart after instantaneous power failure function (Pr: 57) or power failure stop function (Pr: 261) is set and power supply voltage is low while load becomes bigger, the bus voltage decreases to power failure detection level and load of 100% or more may not be available.

\*4 The maximum output voltage does not exceed the power supply voltage. The maximum output voltage can be changed within the setting range. However, the pulse voltage value of the inverter output side voltage remains unchanged at about  $\sqrt{2}$  that of the power supply.

\*5 The braking torque indicated is a short-duration average torque (which varies with motor loss) when the motor alone is decelerated from 60Hz in the shortest time and is not a continuous regenerative torque. When the motor is decelerated from the frequency higher than the base frequency, the average deceleration torque will reduce. Since the inverter does not contain a brake resistor, use the optional brake resistor when regenerative energy is large. (The option brake resistor cannot be used for 0.1K and 0.2K.) A brake unit (FR-BU2) may also be used.

\*6 The power supply capacity varies with the value of the power supply side inverter impedance (including those of the input reactor and cables).

\*7 For single-phase 100V power input model, the maximum output voltage is twice the amount of the power supply voltage and cannot be exceeded.

\*8 In a single-phase 100V power input model, the output voltage may fall down when the load is heavy, and larger output current may flow compared to a three-phase input model. Use the motor with less load so that the output current is within the rated motor current range.

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## Common specifications

Control specifications	<b>Control method</b>		Soft-PWM control/high carrier frequency PWM control (V/F control, General-purpose magnetic flux vector control, and Optimum excitation control are available)
	<b>Output frequency range</b>		0.2 to 400Hz
	<b>Frequency setting resolution</b>	<b>Analog input</b>	0.06Hz/60Hz (terminal2, 4: 0 to 10V/10 bits) 0.12Hz/60Hz (terminal2, 4: 0 to 5V/9 bits) 0.06Hz/60Hz (terminal4: 0 to 20mA/10 bits)
		<b>Digital input</b>	0.01Hz
	<b>Frequency accuracy</b>	<b>Analog input</b>	Within ±1% of the max. output frequency (25°C ±10°C)
		<b>Digital input</b>	Within 0.01% of the set output frequency
	<b>Voltage/frequency characteristics</b>		Base frequency can be set from 0 to 400Hz. Constant-torque/variable torque pattern can be selected
	<b>Starting torque</b>		150% or more (at 1Hz)...when General-purpose magnetic flux vector control and slip compensation is set
	<b>Torque boost</b>		Manual torque boost
	<b>Acceleration/deceleration time setting</b>		0.1 to 3600s (acceleration and deceleration can be set individually), Linear and S-pattern acceleration/deceleration modes are available.
<b>DC injection brake</b>		Operation frequency (0 to 120Hz), operation time (0 to 10s), and operation voltage (0 to 30%) can be changed	
<b>Stall prevention operation level</b>		Operation current level (0 to 200%), and whether to use the function or not can be selected	
Operation specifications	<b>Frequency setting signal</b>	<b>Analog input</b>	Two terminals Terminal 2: 0 to 10V and 0 to 5V are available Terminal 4: 0 to 10V, 0 to 5V, and 4 to 20mA are available
		<b>Digital input</b>	The signal is entered from the operation panel or parameter unit. Frequency setting increment can be set.
	<b>Start signal</b>		Forward and reverse rotation or start signal automatic self-holding input (3-wire input) can be selected.
	<b>Input signal (five terminals)</b>		The following signals can be assigned to Pr.178 to Pr.182 (input terminal function selection): multi-speed selection, remote setting, second function selection, terminal 4 input selection, JOG operation selection, PID control valid terminal, external thermal input, PU-External operation switchover, V/F switchover, output stop, start self-holding selection, forward rotation, reverse rotation command, inverter reset, PU-NET operation switchover, External-NET operation switchover, command source switchover, inverter operation enable signal, and PU operation external interlock.
	<b>Operational functions</b>		Maximum/minimum frequency setting, frequency jump operation, external thermal relay input selection, automatic restart after instantaneous power failure operation, forward/reverse rotation prevention, remote setting, second function, multi-speed operation, regeneration avoidance, slip compensation, operation mode selection, offline auto tuning function, PID control, computer link operation (RS-485), Optimum excitation control, power failure stop, speed smoothing control, MODBUS RTU
	<b>Output signal</b>		The following signals can be assigned to Pr.190, Pr.192 and Pr.197 (output terminal function selection): inverter operation, up-to-frequency, overload alarm, output frequency detection, regenerative brake pre-alarm, electronic thermal relay function pre-alarm, inverter operation ready, output current detection, zero current detection, PID lower limit, PID upper limit, PID forward/reverse rotation output, fan alarm*1, heatsink overheat pre-alarm, deceleration at an instantaneous power failure, PID control activated, PID output interruption, safety monitor output, safety monitor output 2, during retry, life alarm, current average value monitor, remote output, alarm output, fault output, fault output 3, and maintenance timer alarm.
	<b>Open collector output (two terminals)</b> <b>Relay output (one terminal)</b>		The following signals can be assigned to Pr.54 FM terminal function selection: output frequency, output current (steady), output voltage, frequency setting, converter output voltage, regenerative brake duty, electronic thermal relay function load factor, output current peak value, converter output voltage peak value, reference voltage output, motor load factor, PID set point, PID measured value, output power, PID deviation, motor thermal load factor, and inverter thermal load factor. Pulse train output (1440 pulses/s/full scale)
Indication	<b>Operation panel</b> <b>Parameter unit (FR-PU07)</b>	<b>Operating status</b>	The following operating status can be displayed: output frequency, output current (steady), output voltage, frequency setting, cumulative energization time, actual operation time, converter output voltage, regenerative brake duty, electronic thermal relay function load factor, output current peak value, converter output voltage peak value, motor load factor, PID set point, PID measured value, PID deviation, inverter I/O terminal monitor, output power, cumulative power, motor thermal load factor, inverter thermal load factor, and PTC thermistor resistance.
		<b>Fault record</b>	Fault record is displayed when a fault occurs. Past 8 fault records (output voltage/current/frequency/cumulative energization time right before the fault occurs) are stored.
	<b>Interactive guidance</b>		Function (help) for operation guide *2
Protective/warning function	<b>Protective function</b>		Overcurrent during acceleration, overcurrent during constant speed, overcurrent during deceleration, overvoltage during acceleration, overvoltage during constant speed, overvoltage during deceleration, inverter protection thermal operation, motor protection thermal operation, heatsink overheat, input phase loss *3 *4, output side earth (ground) fault overcurrent at start*3, output short circuit, output phase loss, external thermal relay operation *3, PTC thermistor operation*3, parameter error, PU disconnection, retry count excess *3, CPU fault, brake transistor alarm, inrush resistance overheat, analog input error, stall prevention operation, output current detection value exceeded *3, safety circuit fault
	<b>Warning function</b>		Fan alarm*1, overcurrent stall prevention, overvoltage stall prevention, PU stop, parameter write error, regenerative brake pre-alarm *3, electronic thermal relay function pre-alarm, maintenance output *3, undervoltage, operation panel lock, password locked, inverter reset, safety stop
Environment	<b>Surrounding air temperature</b>		-10°C to +50°C maximum (non-freezing) *5
	<b>Ambient humidity</b>		90%RH or less (non-condensing)
	<b>Storage temperature*6</b>		-20°C to +65°C
	<b>Atmosphere</b>		Indoors (without corrosive gas, flammable gas, oil mist, dust and dirt etc.)
	<b>Altitude/vibration</b>		Maximum 1000m above sea level, 5.9m/s <sup>2</sup> or less at 10 to 55Hz (directions of X, Y, Z axes)

\*1 As the 0.75K or lower are not provided with the cooling fan, this alarm does not function.

\*2 This operation guide is only available with option parameter unit (FR-PU07).

\*3 This protective function is not available in the initial status.

\*4 This protective function is available with the three-phase power input specification model only.

\*5 When using the inverters at the surrounding air temperature of 40°C or less, the inverters can be installed closely attached (0cm clearance).

\*6 Temperatures applicable for a short time, e.g. in transit.

# Outline Dimension Drawings

- FR-D720-0.1K to 0.75K
- FR-D720S-0.1K to 0.75K
- FR-D710W-0.1K to 0.4K

1-φ5 hole

Rating plate

Inverter Model	D	D1
FR-D720-0.1K, 0.2K FR-D720S-0.1K, 0.2K FR-D710W-0.1K	80.5	10
FR-D710W-0.2K	110.5	10
FR-D720-0.4K	112.5	42
FR-D720-0.75K	132.5	62
FR-D720S-0.4K FR-D710W-0.4K	142.5	42
FR-D720S-0.75K	162.5	62

(Unit: mm)

- FR-D720-1.5K to 3.7K
- FR-D740-0.4K to 3.7K
- FR-D720S-1.5K
- FR-D710W-0.75K

2-φ5 hole

Rating plate

FAN \*

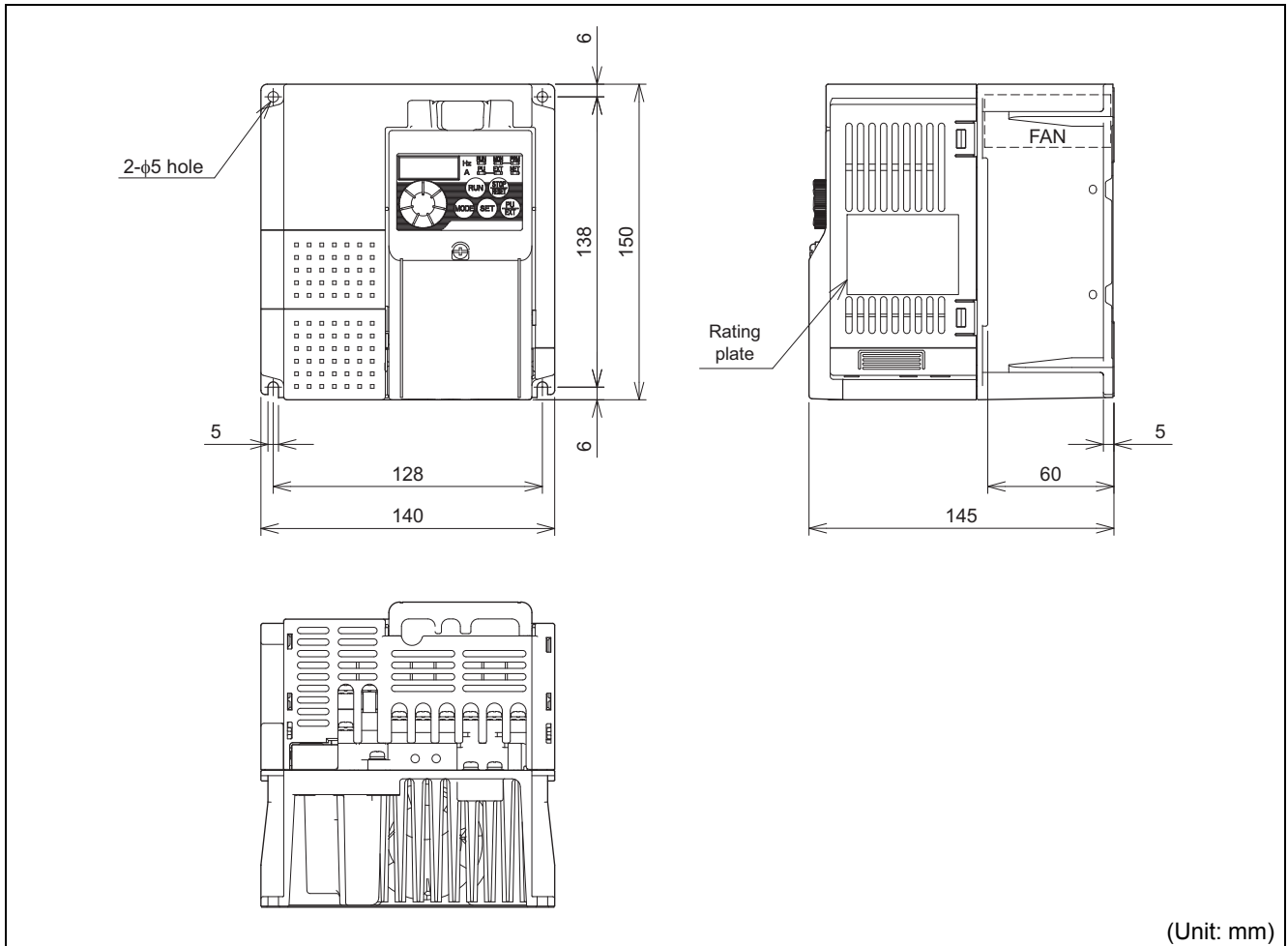
\* FR-D740-0.4K, 0.75K, FR-D710W-0.75K are not provided with the cooling fan.

Inverter Model	W	W1	D	D1
FR-D720-1.5K, 2.2K FR-D740-1.5K	108	96	135.5	60
FR-D740-0.4K, 0.75K			129.5	54
FR-D740-2.2K FR-D720S-1.5K			155.5	60
FR-D740-3.7K			165.5	60
FR-D710W-0.75K	170	158	149.5	54
FR-D720-3.7K			142.5	66.5

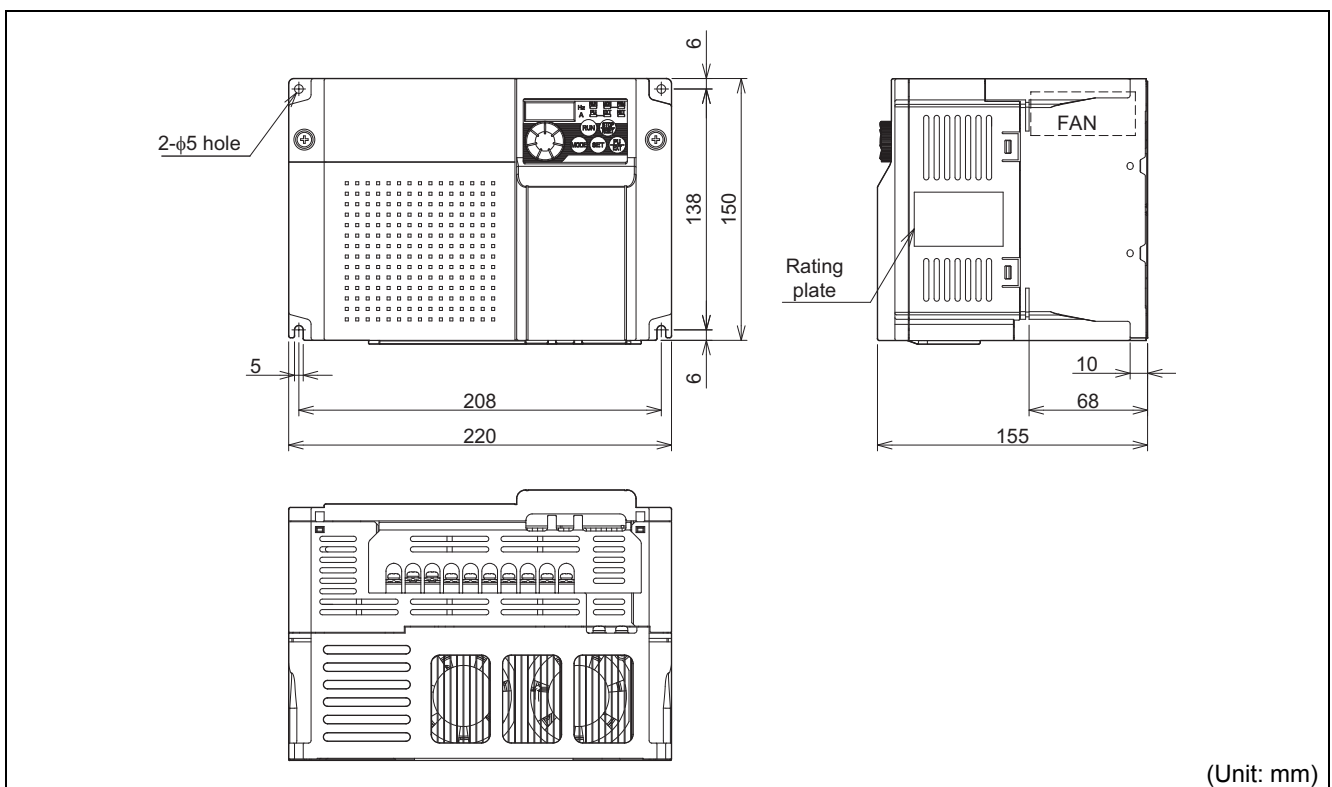
(Unit: mm)

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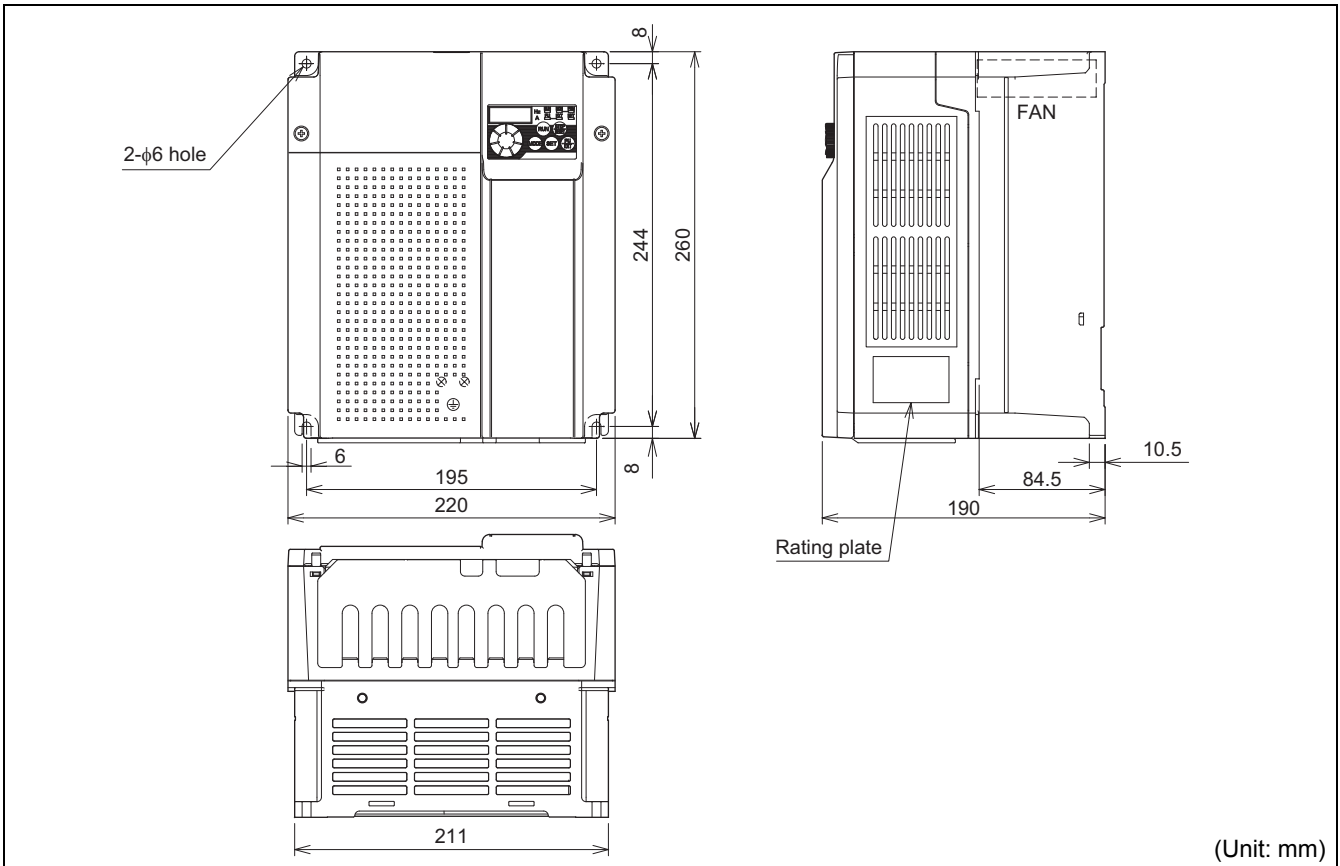
●FR-D720S-2.2K



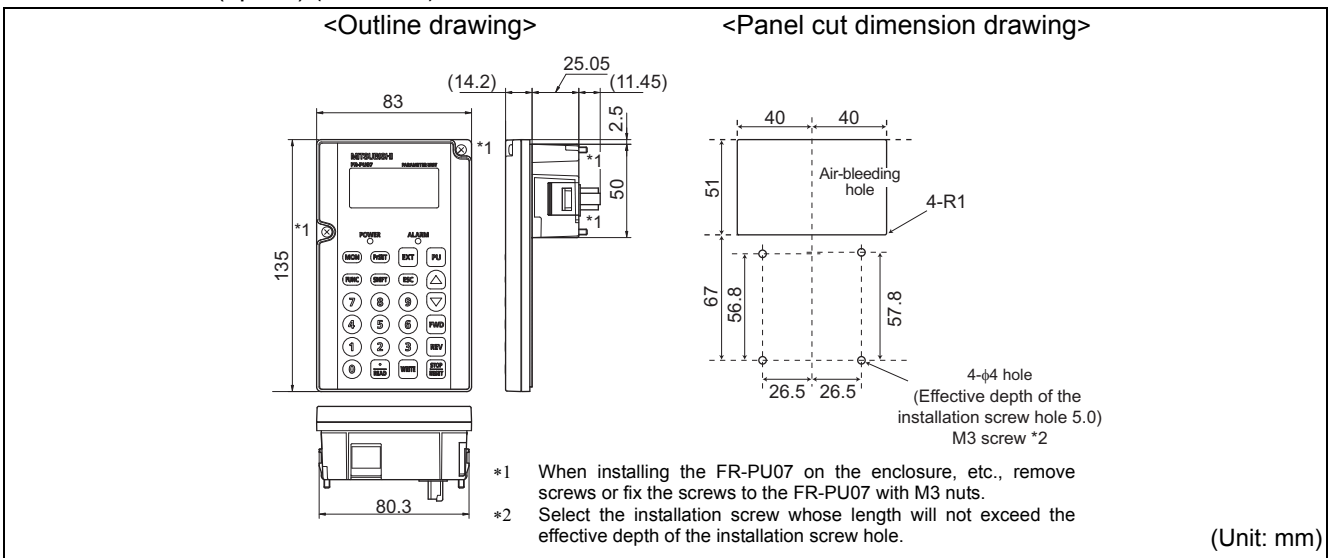
●FR-D720-5.5K, 7.5K  
●FR-D740-5.5K, 7.5K



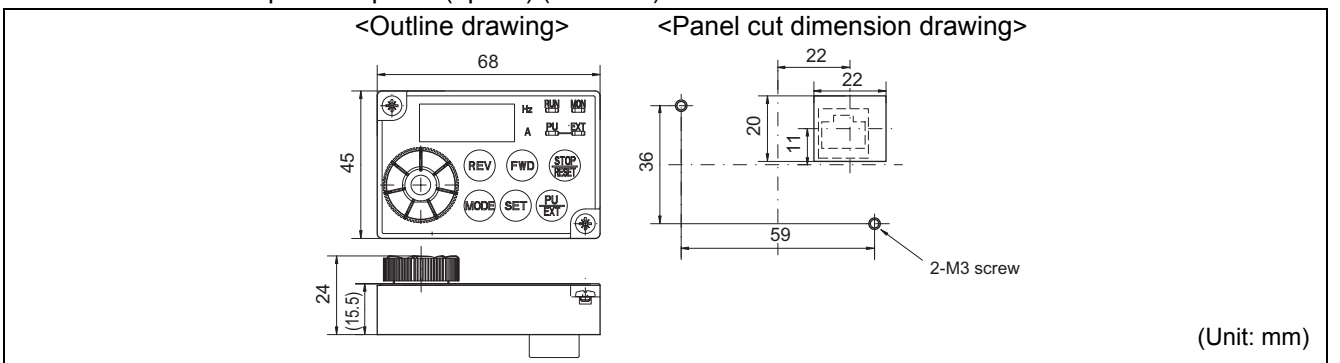
- FR-D720-11K, 15K
- FR-D740-11K, 15K



- Parameter unit (option) (FR-PU07)



- Enclosure surface operation panel (option) (FR-PA07)



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