

**HITACHI**

**ADJUSTABLE FREQUENCY CONTROLS**

# J100 series

**IGBT CONTROL**



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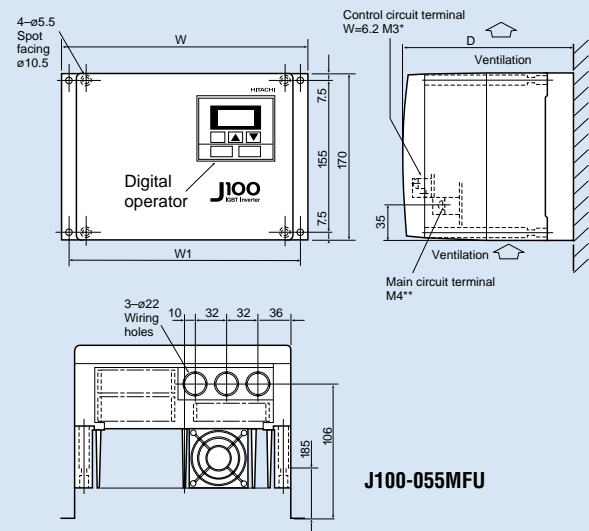
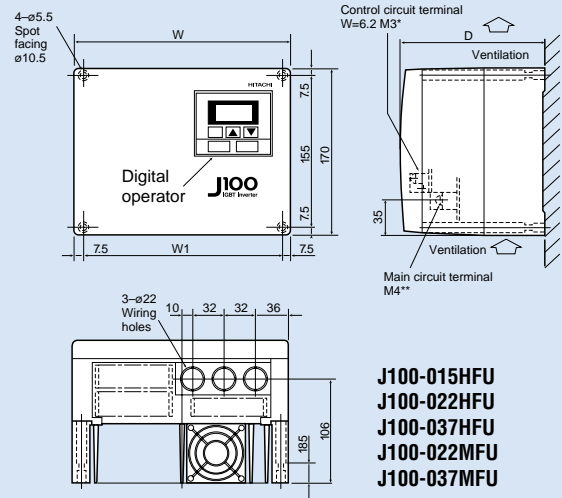
## J100 series

### IGBT CONTROL



- Sensorless Vector Control
- Compact, quiet, powerful
- 150% torque minimum at 3Hz

## Dimensions



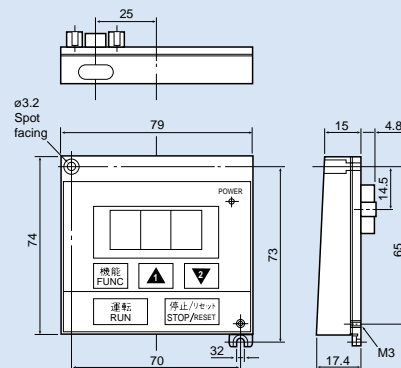
Model	W	W1	D
J100-015HFU	220	205	146
J100-022HFU	220	205	146
J100-037HFU	260	243	146
J100-022MFU	220	205	146
J100-037MFU	220	205	146
J100-055MFU	260	243	163

•The J100 series is constructed to prevent fitting screws from falling through holes. Fitting can be done without fear of dropping screws

\* M3 1.7 x 3.0 for European version

\*\* M4 5.2 x 5.2 for European version

## Digital Operator



Item		J100 series					
Model name		J100-015HFU	J100-022HFU	J100-037HFU	J100-022MFU	J100-037MFU	J100-055MFU
Applicable motor rating (max. HP)*HP for US version		1.5 / 2	2.2 / 3	3.7 / 5	3	5	7.5
Continuous output (kVA)	380V	2.5	3.5	5.7	—	—	—
	460V	2.9	4.0	6.5	—	—	—
	575V	—	—	—	3.8	5.3	8.6
Rated AC input power supply		3 phase 380 to 415V±10%, 50Hz±5% 3 phase 400 to 460V±10%, 60Hz±5%			3 phase (3 wire) 575V±10%, 60Hz±5%		
Rated output voltage		3 phase 380 to 460V			3 phase 575V (corresponding to input voltage)		
Rated output current (A)		3.8	5.3	8.6	3.8	5.3	8.6
Enclosure		IP20					
Control specification	Control system		Space vector PWM				
	Power device		Intelligent Power Module (IGBT)				
	Torque control		Sensorless vector, V/F control				
	Output frequency range		0.5 to 360Hz			0.5 to 120Hz 0.5 to 360Hz	
	Maximum frequency adjustment		+15Hz				
	Frequency resolution		0.01Hz				
	Setting frequency resolution		Digital setting: 0.1Hz (min. set freq.; 0.1Hz) Analog setting: fmax/1000 (at 10V input) fmax/ 500 (at 5V input)				
	Frequency accuracy		Digital setting: 0.01%				
	Analog setting:		±0.2% (25°C ± 10°C)				
	Starting torque		150% at 3Hz (Hitachi standard 4 pole motor and rated voltage)				
	Braking torque (Approx.)	DC injection braking	70%(50Hz) 30%(60Hz)	20%	30%	20%	20%
Dynamic braking (with external resistor)		150%	100%	150%	100%	100%	
Input signal	Frequency setting	Digital operator	Setting by ▲ ▼				
		External signal	0 to 5V, 0 to 10V DC<nominal>(input impedance 30kΩ). 4 to 20mA <nominal>(input impedance 250Ω). Potentiometer: 500Ω to 2kΩ (2W). variable resistor.				
	Forward/reverse run and stop	Digital operator	Run/stop (forward or reverse run selected by command)				
		External signal	Forward run/stop (1a contact)[reverse run selectable at terminal assignment (1a/1b selectable)]				
	Multistage speed run		8 speeds max.				
	Soft lock		Possible by shorting terminals (or by using commands)				
	Fault reset		Fault reset, output momentary cutoff				
	Voltage/current input selection		Frequency setting voltage input, current input, individual input terminals provided (selectable by operator)				
Intelligent input terminal		REV (reverse run command), FRS (free run stop command), CFI to 3 ((multistage speed setting), USP (unattended start protection setting), 2CH (2-stage acceleration/deceleration command), DB (external DC injection brake command), RS (reset input), STN (initial setting), SFT (soft lock), SET (2nd setting selection), EXT (external trip)					
Output signal	Intelligent output terminal		AR (frequency arrival signal), RUN (running signal), OL (overload previous notice signal)				
	Frequency monitor		Analog meter (0 to 10V DC, 1mA full scale), digital frequency signal/analog current monitor or analog torque monitor selectable by remote operator				
Alarm output contact		ON at inverter alarm (1c contact output)					
Other functions		V/F characteristic selection, output current, DC voltage monitor, output frequency indication, alarm indication (history for up to three occurrences)					
Protection functions**		Overcurrent, Overvoltage, Undervoltage, Overload limiter, Electronic thermal, Temperature abnormality, ***Ground fault protection upon starting					
Ambient temperature		-10 to 40°C (-10 to 50°C without cover except US version), 14 to 104°F (14 to 122°F without cover except for US version)					
Ambient relative humidity		20~90% RH (no dew condensation)					
Vibration		5.9m/s <sup>2</sup> (0.6G) 10 to 55Hz					
Altitude		1000m (3,300 feet) or less above sea level, indoors (no dust or corrosive gas)					
Option	Remote operator		DOP-OEA (without cable)				
	Copy unit		DRW-OEA (without cable)				
	Cable	ICA-IJ (1m), ICA-3J (3m) for connection to DOP-OEA, DRW-OEA					
		ICJ-1(1m), ICJ-3 (3m) for extension to J100 digital operator					
Others		External braking resistor, analog operation panel					
Approx. mass (Lbs/Kg)		6.8/3.3	6.8/3.4	7.6/3.4	7.0/3.4	7.0/3.4	8.0/3.9

\* US version is open type equipment.

\*\* Overspeed protection is not provided.

\*\*\* Ground fault protection function protects INVERTER against its damage, but cannot save person. In this case, put an earth leakage current circuit on the input power.

\*\*\*\* Harmonically compensated line and load reactors are recommended for reliable system operation.

Function name	Details	Alarm code
<b>Power module protection</b> (Overcurrent protection)	When there is a short circuit on the inverter output side or a lock of the motor shaft, overcurrent can damage the inverter. Consequently, the internal overcurrent and temperature abnormalities of the power module will be detected and the output will be shut down at the above-normal condition.	During constant speed <b>E 1</b>
		During deceleration <b>E 2</b>
		During acceleration <b>E 3</b>
		When stopped <b>E 4</b>
<b>Overload protection</b>	When the motor is overloaded by detecting inverter's output-side current, the inverter's internal electronic thermal relay warning occurs and inverter output is shut down.	<b>E 5</b>
<b>Braking resistor overload protection</b>	When the regenerative braking resistor working working time ratio is exceeded, overvoltage caused by the operational stop of the braking circuit is detected and inverter output is shut down.	<b>E 6</b>
<b>Overvoltage protection</b>	When converter voltage exceeds normal levels because of regenerative energy from the motor, the protective circuit is activated and inverter output is shut down.	<b>E 7</b>
<b>EEPROM error</b>	Output is shut down when the inverter's internal EE PROM (memory) becomes abnormal as a result of external noise, abnormal temperature rises, etc.	<b>E 8</b>
<b>Undervoltage protection</b>	When the inverter's incoming voltage falls, the control circuit may function abnormally, the motor overheats, and the torque becomes inadequate, etc. Because of these possibilities, output is shut down when the incoming voltage is less than around 150 to 160 V (for 200V class), 300 to 320 V (for 400V class).	<b>E 9</b>
<b>CT error</b>	Output is shut down when the inverter's internal CT (current detector) operates abnormally.	<b>E 10</b>
<b>CPU error</b>	Inverter output is shut down when the internal CPU operates inaccurately or abnormally.	<b>E 11</b>
<b>External trip</b>	When external equipment and devices operate abnormally, the inverter will read in these signals and shut output down. (Use for interlocking by reading in these signals to control terminal No. 1. The remote operator is needed for switchover.)	<b>E 12</b>
<b>USP error</b> (Unattended start protection)<when USP function selected>	Provides an error display when the power is on under the run condition of inverter in the terminal mode. (For recovery, release RUN before restart)	<b>E 13</b>
<b>Ground fault Protection</b>	Inverter output is shut down when the internal CPU operates inaccurately or abnormally.	<b>E 14</b>

## Alarm history monitor method

