HITACHI
Inspire the Next

VARIABLE FREQUENCY DRIVE

SJ700 & SJ700B series

Powerful Inverter with Sensorless Vector Control

For More Precise Control

For General Purpose Use

Hitachi Industrial Equip

EMPOWER CORPORATION (SELATAN) SDN BHD
(Co No : 150420-H) GST No : 000470700032
45 & 45A Jalan Bakawali 36, Taman Johor Jaya, 81100 Johor Bahru, Johor, Malaysia
Tel : 607-3511288 (4 Lines) Fax : 607-3511292 Email : sales@empowercorp.biz

New Line up

SJ700D series

(Models: 3-ph,200V class 0.4 to 55kW,3-ph,400V class 0.75 to 132kW)

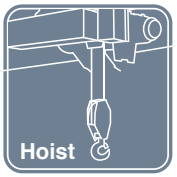
1 Dual rating

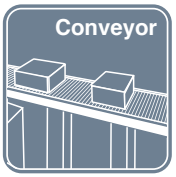
- SJ700D can be used for both heavy and normal duty.
- One-frame-size smaller SJ700D may be applicable for variable torque applications.

SJ700
SJ700D-150LFF3
(15kW)

Heavy duty:

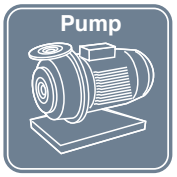
15kW
(overload capacity:150%,60sec)

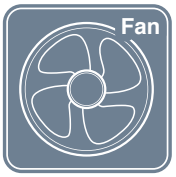




Nomal duty:

18.5kW
(Overload capacity:120%,60sec)





2 EzSQ improvement (1task/2ms⇒5 tasks/2ms)

- By separating codes to be repeated as loops in different tasks, overall execution can be faster.

3 RS485 (Modbus-RTU) communication speed is improved (Max19.2kbps⇒115.2kbps speed is improved)

- Approx. 6 times faster communication in comparison with the prior model is now supported. Additionally, more communication commands are available.

4 LCD operator (Optional:WOP) upgrade

- 5-line LCD operator
- Real time clock built in
- 4 sets of user parameter configurations can be saved and transferred.
- Two color backlight that distinguish trip status
- User selectable content for display.

5 Versatile functions

- Phase loss input protection : covers not only the input but output as well.
- Automatic return to the initial display (b164):
  Without operating for 10 minutes, the display returns to the initial display automatically.

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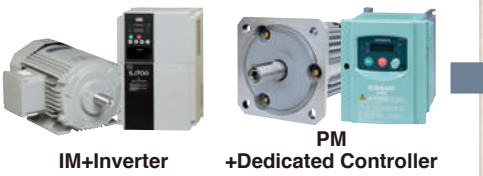
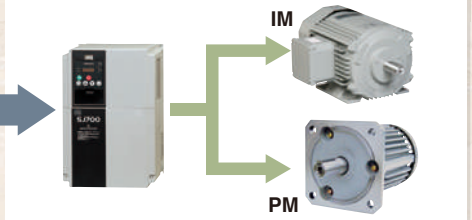
The Hitachi SJ700D-3 series succeed the SJ700-2 series with the additional and enhanced features

6 Induction motor & permanent magnetic motor control with one inverter (PM motor control : ordering production)

- The SJ700D series inverter can drive both induction motors (IM)and permanent magnetic motors (PM).





Details of enhancement (Comparison between SJ700-2 and SJ700D-3)

No.	item		Enhanced function, added parameters, etc.		Remarks
1	Model	SJ700D-004 to 550LFF3/LFEF3/LUF3 SJ700D-007 to 1320HFF3/HFEF3/1500HFUF3			
2	Added function	Constant torque/ Variable torque (CT/VT) selection	Constant torque / Variable torque mode selectable (b049)	Newly added parameter b049 to switch between Constant torque mode and Variable torque mode.	In case of driving light load application, you can choose one power size smaller inverter or one frame size smaller inverter.
3		PM motor control [ordering production]	Control mode (A044)	PM motor control (06) is added to the selection in A044	PM motor control is only available in Variable torque mode. (note) The model supporting PM motor control is ordering production.
4			PM motor control parameters (H101~H134)	Parameters related to PM motor control are newly added (same as WJ200 series)	
5		Automatic return to the initial display	Automatic return to the initial display (b164)	Without operating for 10 minutes, the display returns to the initial display automatically.	
6		Data read and write	Data Read/Write selection (b166)	Selection of enabling or disabling data Read / Write from the copy unit WOP for parameter setting protection and security	
7		Inverter mode	Inverter mode monitor (d060)	Displays currently selected inverter mode, IM motor (induction motor) or PM motor mode.(IM mode or PM mode.)	
8		Phase loss protection	Phase loss output protection (b141,b142)	The inverter detects motor output phase loss	
9	Improvement function	EzSQ	Improvement	Parallel processing of 5 tasks	
10				EzSQ starting trigger terminal: changed from FW terminal to PRG terminal which can be assigned any of input terminals.	
11			Additional function	Always running mode is added to selection of starting method for EzSQ.	
12				Command to store changed data into EEPROM (eepwrt command)	
13				Command to obtain clock data from WOP (rtcset command)	
14				Part of EzSQ program variables (P129 (U29) to P131 (U31)) are automatically stored at power down (only when A017 is other than 00)	
15		WOP operator [Option]	Full compatibility with the copy unit WOP(5 line display)		
16			Real time clock function is available.		
17		RS485	Communication speed is improved.	2400/4800/9600/19.2k/38.4k/57.6k/76.8k/115.2k bps	
18			Modbus RTU	Maximum data length is expanded. 03h (Read holding register) 10h (Write in holding resisters)	4 registers (8 byte) to 16 registers (32 byte)
19				Command to write into/read from multiple holding registers is added (17h: Write/Read multiple holding registers)	Read and Write 16 registers (32 byte)
20				Broadcast communication function is added.	
21				EEPROM storing mode is added.	
22		Initializing	Initializing method	Parameter setting (b180=01) triggers initialization	Initialization method of SJ700-2 is also valid.
23			Initializing of EzSQ	Parameter b084 range is expanded.	
24			Initial value	b037=00 (Full access)	
25		Selection of initial display	Selection of initial display is expanded (all monitoring parameters, frequency command F001 (WOP monitor B)		
26	Others	Warnings	Warnings are organized.		47 warnings to 31 warnings
27		Run command in case of warnings	At occurrence of warning, the inverter does not accept Run c		

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Series Line up

SJ700

For More Precise Control

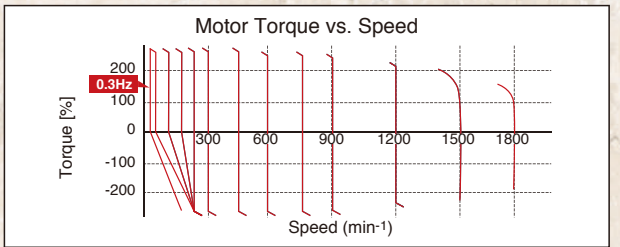
SJ700B

For General Purpose Use

High starting torque, Powerful drive and easy setting

High starting torque

Improved sensorless vector control and auto tuning produce high starting torque of 200% or more at 0.3Hz.*1
Easy setup of motor constants
Ideal for applications which need high torque, such as cranes, extruders and lifts.



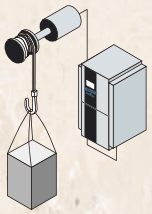
*1 Starting torque

Series	Applicable motor	Starting torque
SJ700D(CT)	0.4 to 55kW	0.3Hz/200%
	75 to 132kW	0.3Hz/180%
SJ700	185 to 400kW	0.3Hz/150%
SJ700B	11 to 75kW	0.5Hz/150%
	90 to 160kW	0.5Hz/120%

Possible with SJ700 series

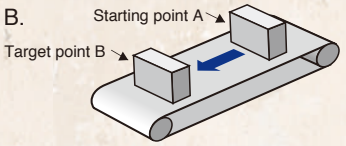
Hitachi exclusive 0Hz domain sensorless vector control *)

Develops 150% (SJ700B:120%)*2 torque at 0Hz speed reference
Ideal for cranes and other applications that require high torque upon starting.
*2 when inverter is one frame size larger than motor.



Position control function*)

The SJ700D/SJ700/SJ700B, with optional feedback board installed, together with an encoder-equipped motor can perform position control.
For many applications, suitable performance can be achieved at a lower cost than servo systems.
Based on your four motion parameters (position command, speed command, acceleration time and deceleration time), the SJ700D/SJ700/SJ700B will move an object from original position A to target position B.
After the movement, the inverter keeps hold motor position.

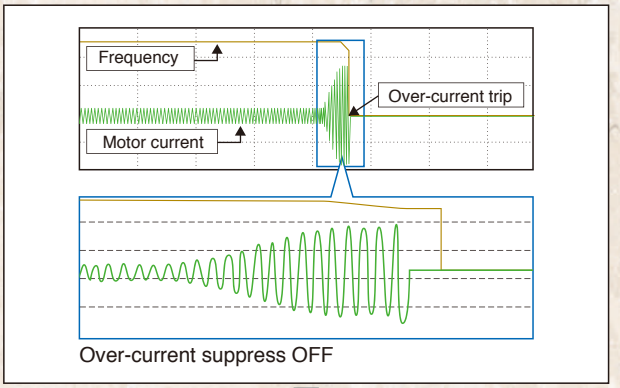


*) Derating is applied for SJ700B. Please consult technician at Hitachi or its distributor before use.

Trip avoidance function

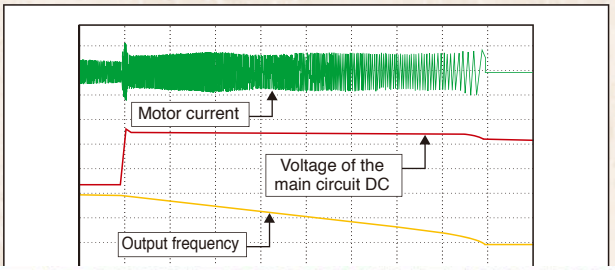
Over current & voltage suppress function

Higher internal calculation speed improves current control performance.
Over-current suppress and Over-voltage suppress functions avoid inverter trips during acceleration and deceleration.



DC bus AVR function during deceleration

The SJ700D/SJ700/SJ700B controls deceleration time so that the DC bus voltage does not exceed the over-voltage trip level, providing trip-less operation during deceleration.



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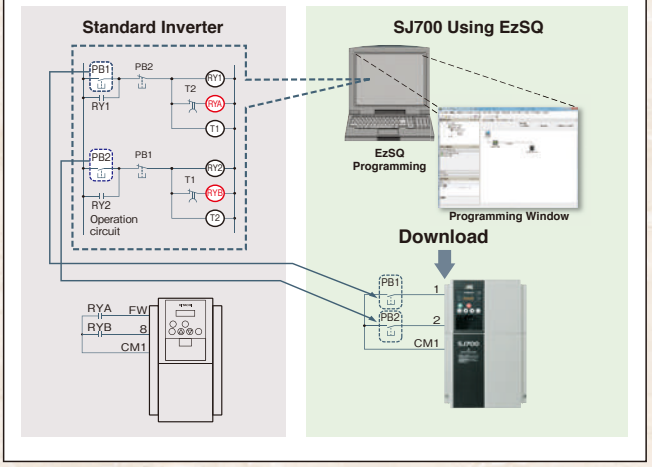
High performance, powerful functions, yet user friendly.

Programming [EzSQ: easy sequence] function

Inverter control by built-in programming functions

Custom operation is realized by downloading to an inverter a user program created with ProDriveNext, Hitachi inverter configuration software.
Tailor inverter operation to meet changing process requirements, and replace separate PLCs in some cases.
By simplifying or eliminating external hardware, signficant cost savings can be achieved.
Password function is incorporated to provide security for proprietary program data against loss or unauthorized modification.

Typical example - Replacing external relay circuit



Item			
Language Spec	Language type	BASIC Like	
	Supported Device	Windows (DOS/V)OS:WindowsVista, Windows7)	
	Memory area	1,024 steps or 6k byte (Smaller of these)Program is stored in internal of inverter.	
	Programming environment	Editor (Windows), Display (Windows)	
		Syntax check (Windows)	
		Program download/upload, All clear	
	Executable format	Interpreter 2.0ms/command (Sub routine supported. 8 nested)	
I/O function	External input	External digital contact input	Contact signal/Open collector signal input (Internal DC24V power supply available)
			Program RUN command: SJ700D:PRG terminal SJ700/SJ700B:FW terminal
			General-purpose input: Maximum of 8 point (X(00)-X (07))
		External analog input	XA (0) : 0-10V (O terminal)
			XA (1) : 4-20mA (OI terminal)
			XA (2) : 0-10V (O2 terminal)
	External output	General-purpose output terminal	Maximum of 6 point (Y (00)-Y (05))
		External analog output	YA (0) : Setup for FM terminal is possible.
			YA (1) : Setup for AM terminal is possible.
			YA (2) : Setup for AMI terminal is possible.
Reserved word	Command	Programmable flow control <Loop, Unconditional jump, conditional jump, Time control, Sub routine, Others>	
		Operation command <+,-,,*, /, substitution, mod, abs>	
		I/O control (Bit input, Word input, Bit output, Word output)	
		Timer control <on delay, off delay>	
		Inverter parameter setting	
	Variable	User	U (00)-U (31)/32 point
		Timer	UL (00)-UL (07)/8 point
		Set frequency	SET-Freq
		Acceleration time	ACCEL
		Deceleration time	DECEL
		Monitor	Output frequency, Output current, Rotation direction, PID feedback, Converted frequency, Output torque, Output voltage, Power, Cumulative RUN time, Cumulative power-on time, trip
		General-purpose input contact	X (00)-X (07)/8 point
		General-purpose output contact	Y (00)-Y (05)/6 point (1 point is relay output)
		Internal user	UB (00)-UB (07)/8 point
		Internal timer contact	TD (0)-TD (7)/8 point
		Inverter input and output	In a remote operator display code.

★ Windows® is a registered trademark of Microsoft Corporation.U.S.A and other countries.

EMC Filter & brake circuit integrated as standard

Built-in EMC filter up to 150kW*

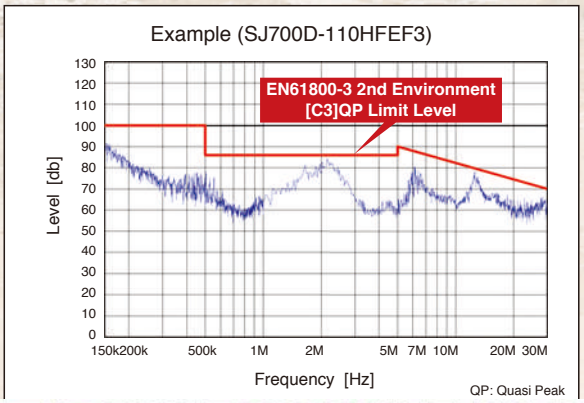
Cost and space reduction compared with external EMC filter.
Reduces electromagnetic noise.Meets EN61800-3 2nd-Environment

★ SJ700: European Version and Japanese Version does not have 150 kW
SJ700B: All models（5.5kW is without EMC Filter）

Built-in brake resistor circuit up to 22kW*

Cost and space reduction compared with external braking controller.

★ SJ700B: Up to 30kW



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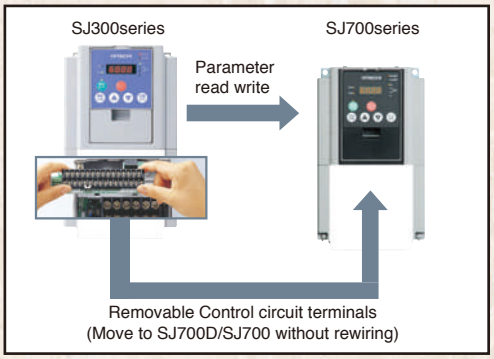
Ease of maintenance

Easy-removable construction for maintenance

Field replacement of cooling fan (s) and DC bus capacitors can be accomplished in a fraction of the time.
Using Logic terminal move to SJ700D/SJ700 without wiring change.
Read SJ300 Parameter by WOP remote operator and write them in to SJ700D/SJ700

Easy-removable
Cooling Fan

Easy-removable
DC bus Capacitors
(SJ700D/SJ700: above 15kW
SJ700B: above 18.5kW)



*1 Control circuit terminals comparison table

Series	Input terminals	Output terminals
SJ700D/SJ700	9 terminals (Intelligent 8terminals,FW)	5 terminals (Open collector outputs)
SJ700B		
SJ300		
L300P	6 terminals (Intelligent 5terminals,FW)	2 terminals (Relay outputs)

Long lifetime components & Lifetime warning function

Long lifetime components

Design lifetime 10 Years or more for DC bus capacitors & Cooling Fan.Cooling Fan ON/OFF control function for longer fan life.

*Condition for lifetime calculation -
Ambient temperature: 40 deg C (SJ700B: 30 deg C)
Ambient condition: No corrosive gas, oil mist nor dust
10 years is a design lifetime base on calculation, and not guaranteed

Lifetime warning function

Lifetime warning function helps to perform preventive maintenance before a failure occurrence.
DC bus capacitor, cooling fan, heat sink temperature and motor temperature can be monitored in order to replace components prior to failure.

Easy operation

User selection of displayed parameters

Data comparison display mode

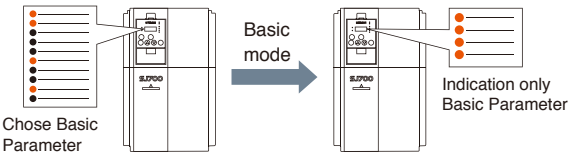
Displays only parameters changed from factory default

User-define parameter display mode

Displays only user defined parameters
(up to 12 parameters, U001 to U012)

Basic parameter display mode

Displays only pre-defined basic parameters which are used commonly



Other functions

Direct digit edit mode for quicker selection of parameter.
Returning to output frequency monitor display (d001) by holding the FUNC key for 3 seconds regardless of the current content.

Network compatibility

The Modbus-RTU communication is embedded as standard along with a dedicated terminal.
Other fieldbus communications such DeviceNet and PROFIBUS-DP are supported with optional fieldbus modules.

-DeviceNet is a trade mark of Open DeviceNet Vender Association, Inc.
-PROFIBUS-DP is a registered trade mark of PROFIBUS Nutzer Organization

Simple & Low cost wiring, ease of installation
and replacement using feildbus commuincation

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Global standards

Conformity to global standards

CE, UL, c-UL, C-Tick approvals.

Logic input & output terminal apply sink & source logic

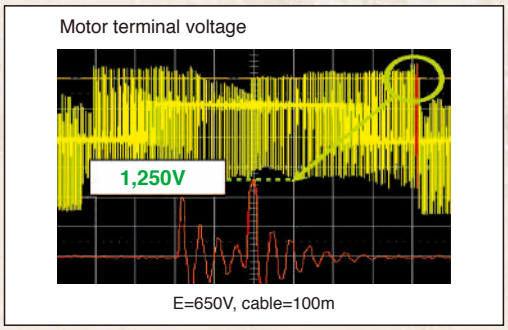
Wide Input power voltage range

Input voltage 240V for 200V class and 480V for 400V class as standard.

Environmental friendliness

Micro surge voltage suppress function

Hitachi original PWM control method limits motor terminal voltage to less than two times of inverter DC bus voltage. Lower than Hitachi motor Max. insulation voltage (1,250V)
(During regeneration, the motor terminal voltage may exceed the motor maximum insulation voltage (1,250V))



EU RoHS compliant

EU RoHS compliant (except solder in power module)

Improvement of environmental tolerance

Varnish coating of internal PC board & plating of main circuit copper bus bar are standard.

Versatile functions

Instantaneous power failure disregard function

The SJ700D/SJ700/SJ700B overrides instantaneous power failure when power fluctuation happens frequently, as long as DC bus voltage remains higher than under-voltage trip level.

Emergency stop

Shuts down the inverter by hardware, bypassing the CPU, to achieve a reliable, emergency stop function.

Intelligent input terminal and output terminal ON/OFF delay function

Helps simplify external circuits.

Active frequency matching function

Motor frequency match restart function operates effectively even without motor residual voltage.

Controlled deceleration and stop on power loss

Analog input disconnection detection function

The SJ700D/SJ700/SJ700B outputs a disconnection signal when frequency command through analog input is lost.

Acceleration/Deceleration curve functions

The curve shape (five types, such as S-curve, etc.) can be chosen according to the application requirements.

Analog command holding function (AHD)

Output frequency can be changed with UP/DOWN Function, or with an analog signal as reference value. The set frequency at power shutdown can be saved, too.

Pulse train input function

Pulse train input for Frequency reference or PID feed back signal, with SJ-FB (speed feed back card option).

Integrated input electric power monitor

Input electric power (kW) and Integrated input electric power for monitoring energy saving.

Automatic carrier frequency adjustment function

The SJ700D/SJ700/SJ700B detects motor current and automatically reduces carrier frequency according to the current.

The resolution of analog outputs (voltage, current) is improved to 10 bits.

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STANDARD SPECIFICATIONS
SJ700D/SJ700 Series

● 3-phase 200V class

Model SJ700D-			US Version	004LFUF3	007LFUF3	015LFUF3	022LFUF3	037LFUF3	055LFUF3	075LFUF3	110LFUF3	150LFUF3	185LFUF3	220LFUF3	300LFUF3	370LFUF3	450LFUF3	550LFUF3
			JP Version	004LFF3	007LFF3	015LFF3	022LFF3	037LFF3	055LFF3	075LFF3	110LFF3	150LFF3	185LFF3	220LFF3	300LFF3	370LFF3	450LFF3	550LFF3
Enclosure (*1)				IP20														
Applicable motor (4-pole, kW(HP)) (*2)			CT	0.4(1/2)	0.75(1)	1.5(2)	2.2(3)	3.7(5)	5.5(7.5)	7.5(10)	11(15)	15(20)	18.5(25)	22(30)	30(40)	37(50)	45(60)	55(75)
			VT	0.75(1)	1.1(1.5)	2.2(3)	3.0(4)	5.5(7.5)	7.5(10)	11(15)	15(20)	18.5(25)	22(30)	30(40)	37(50)	45(60)	55(75)	75(100)
Output Ratings	Rated capacity (kVA)	200V	CT	1.0	1.7	2.5	3.6	5.7	8.3	11.0	15.9	22.1	26.3	32.9	41.9	50.2	63.0	76.2
			VT	1.2	2.1	3.2	4.1	6.7	10.3	15.2	20.0	25.2	29.4	39.1	48.4	58.5	72.7	93.5
		240V	CT	1.2	2.0	3.1	4.3	6.8	9.9	13.3	19.1	26.6	31.5	39.4	50.2	60.2	75.6	91.4
			VT	1.5	2.6	3.9	4.9	8.1	12.4	18.2	24.1	30.3	35.3	46.9	58.1	70.2	87.2	112.2
	Rated output current (A)		CT	3.0	5.0	7.5	10.5	16.5	24	32	46	64	76	95	121	145	182	220
			VT	3.7	6.3	9.4	12	19.6	30	44	58	73	85	113	140	169	210	270
	Overload capacity(output current)			CT:150%,60sec., 200%,3sec. VT:120%,60sec., 150%,5sec.														
	Rated output voltage (*3)			3-phase (3-wire) 200 to 240V (corresponding to input voltage)														
Input Rating	Rated input voltage (V)			3-phase 200 to 240V+10%, -15%, 50/60Hz±5%														
	Rated input current (A)		CT	3.3	5.5	8.3	12	18	26	35	51	70	84	105	133	160	200	242
			VT	3.9	7.2	10.8	13.9	23	37	48	64	80	94	120	150	186	240	280
Braking	Dynamic braking (Short-time) (*4)			Built-in BRD circuit (optional resistor)											External dynamic braking unit (option)			
	Minimum value of resistor (Ω)			50	50	35	35	35	16	10	10	7.5	7.5	5	–			
Vibration (*5)				5.9m/s^2(0.6G), 10-55Hz											2.9m/s^2(0.3G), 10-55Hz			
EMC filter				Built-in (EN61800-3 category C3)														
Zero-phase Reactor				Built-in														
Weight [kg] (lbs.)				3.5(7.7)	3.5(7.7)	3.5(7.7)	3.5(7.7)	3.5(7.7)	6(13.2)	6(13.2)	6(13.2)	14(30.8)	14(30.8)	14(30.8)	22(48.4)	30(66)	30(66)	43(94.6)

● 3-phase 400V class

Model SJ700D-			European Version	007HFEF3	015HFEF3	022HFEF3	040HFEF3	055HFEF3	075HFEF3	110HFEF3	150HFEF3	185HFEF3	220HFEF3	300HFEF3	370HFEF3	450HFEF3	550HFEF3
			US Version	007HFUF3	015HFUF3	022HFUF3	040HFUF3	055HFUF3	075HFUF3	110HFUF3	150HFUF3	185HFUF3	220HFUF3	300HFUF3	370HFUF3	450HFUF3	550HFUF3
			JP Version	007HFF3	015HFF3	022HFF3	037HFF3	055HFF3	075HFF3	110HFF3	150HFF3	185HFF3	220HFF3	300HFF3	370HFF3	450HFF3	550HFF3
Enclosure (*1)				IP20													
Applicable motor (4-pole, kW(HP)) (*2)			CT	0.75(1)	1.5(2)	2.2(3)	4.0(5)	5.5(7.5)	7.5(10)	11(15)	15(20)	18.5(25)	22(30)	30(40)	37(50)	45(60)	55(75)
			VT	1.5(2)	2.2(3)	3.7(5)	5.5(7.5)	7.5(10)	11(15)	15(20)	18.5(25)	22(30)	30(30)	37(50)	45(60)	55(75)	75(100)
Output Ratings	Rated capacity (kVA)	400V	CT	1.7	2.6	3.6	6.2	9.7	13.1	17.3	22.1	26.3	33.2	40.1	51.9	62.3	76.2
			VT	2.1	3.3	4.6	7.6	11.0	15.2	20.0	25.6	29.7	39.4	48.4	58.8	72.7	93.5
		480V	CT	2.0	3.1	4.3	7.4	11.6	15.8	20.7	26.6	31.5	39.9	48.2	62.3	74.8	91.4
			VT	2.5	3.9	5.5	9.2	13.3	18.2	24.1	30.7	35.7	47.3	58.1	70.6	87.2	112.2
	Rated output current (A)		CT	2.5	3.8	5.3	9.0	14	19	25	32	38	48	58	75	91	112
			VT	3.1	4.8	6.7	11.1	16	22	29	37	43	57	70	85	105	135
	Overload capacity(output current)			CT:150%,60sec., 200%,3sec. VT:120%,60sec., 150%,5sec.													
	Rated output voltage (*3)			3-phase (3-wire) 380 to 480V (corresponding to input voltage)													
Input Rating	Rated input voltage (V)			3-phase 380 to 480V +10%, -15%, 50/60Hz±5%													
	Rated input current (A)		CT	2.8	4.2	5.8	9.9	17	23	30	35	42	53	64	83	100	123
			VT	4.3	5.9	8.1	13.3	20	24	32	41	47	63	77	94	116	149
Braking	Dynamic braking (Short-time) (*4)			Built-in BRD circuit (optional resistor)										External dynamic braking unit (option)			
	Minimum value of resistor (Ω)			100	100	100	70	70	35	35	24	24	20	–			
Vibration (*5)				5.9m/s^2(0.6G), 10-55Hz										2.9m/s^2(0.3G), 10-55Hz			
EMC filter				Built-in (EN61800-3 category C3)													
Zero-phase Reactor				Built-in													
Weight [kg] (lbs.)				3.5(7.7)	3.5(7.7)	3.5(7.7)	3.5(7.7)	6(13.2)	6(13.2)	6(13.2)	14(30.8)	14(30.8)	14(30.8)	22(48.4)	30(66)	30(66)	30(66)

Model SJ700D-			European Version	750HFEF3	900HFEF3	1100HFEF3	1320HFEF3
			US Version	750HFUF3	900HFUF3	1100HFUF3	1500HFUF3
			JP Version	750HFF3	900HFF3	1100HFF3	1320HFF3
Enclosure (*1)				IP00			
Applicable motor (4-pole, kW(HP)) (*2)			CT	75(100)	90(125)	110(150)	132/150(175)
			VT	90(125)	110(150)	132(175)	160(220)
Output Ratings	Rated capacity (kVA)	400V	CT	103.2	121.9	150.3	180.1
			VT	110.8	135	159.3	200.9
		480V	CT	123.8	146.3	180.4	216.1
			VT	133	162.1	191.2	241.1
	Rated output current (A)		CT	149	176	217	260
			VT	160	195	230	290
	Overload capacity(output current)			CT:150%,60sec., 200%,0.5sec. VT:120%,60sec., 150%,5sec.			
	Rated output voltage (*3)			3-phase (3-wire) 380 to 480V (corresponding to input voltage)			
Input Rating	Rated input voltage (V)			3-phase 380 to 480V +10%, -15%, 50/60Hz±5%			
	Rated input current (A)		CT	164	194	239	286
			VT	176	199	253	300
Braking	Dynamic braking (Short-time) (*4)			External dynamic braking unit (option)			
	Minimum value of resistor (Ω)			-			
Vibration (*5)				2.9m/s^2(0.3G), 10-55Hz			
EMC filter				Built-in (EN61800-3 category C3)			
Zero-phase Reactor				Built-in			
Weight [kg] (lbs.)				55(121)	55(121)	70(154)	70(154)

Model SJ700-			European Version	1850HFE2	2200HFE2	3150HFE2	4000HFE2
			US Version	1850HFU2	2200HFU2	3150HFU2	4000HFU2
			JP Version	1850HF2	2200HF2	3150HF2	4000HF2
Enclosure (*1)				IP00			
Applicable motor (4-pole, kW(HP)) (*2)			CT	185(250)	220(300)	315(400)	400(550)
			VT	-	-	-	-
Output Ratings	Rated capacity (kVA)	400V	CT	256	305	416	554
			VT	-	-	-	-
		480V	CT	308	366	499	665
			VT	-	-	-	-
	Rated output current (A)		CT	370	440	600	800
			VT	-	-	-	-
	Overload capacity(output current)			CT:150%,60sec., 180%,0.5sec.			
	Rated output voltage (*3)			3-phase (3-wire) 380 to 480V (corresponding to input voltage)			
Input Rating	Rated input voltage (V)			3-phase 380 to 480V +10%, -15%, 50/60Hz±5%			
	Rated input current (A)		CT	389	455	630	840
			VT	-	-	-	-
Braking	Dynamic braking (Short-time) (*4)			External dynamic braking unit(option)			
	Minimum value of resistor (Ω)			-			
Vibration (*5)				1.96m/s2(0.2G), 10-55Hz			
EMC filter				External Option			
Zero-phase Reactor				External Option			
Weight							

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STANDARD SPECIFICATIONS
SJ700B Series

3-phase 200V class

Model SJ700B-		US Version	110LFUF	150LFUF	185LFUF	220LFUF	300LFUF	370LFUF	450LFUF	550LFUF	750LFUF
Enclosure (*1)			IP20								
Applicable motor (4-pole, kW (HP)) (*2)			11(15)	15(20)	18.5(25)	22(30)	30(40)	37(50)	45(60)	55(75)	75(100)
Output Ratings	Rated capacity (kVA)	200V	15.2	20.0	25.2	29.4	39.1	48.4	58.5	72.7	93.5
		240V	18.2	24.1	30.3	35.3	46.9	58.1	70.2	87.2	112.2
	Rated output current (A)		44	58	73	85	113	140	169	210	270
	Overload capacity (output current)		120%,60sec								
	Rated output voltage (*3)		3-phase (3-wire) 200 to 240V (corresponding to input voltage)								
Input Rating	Rated input voltage (V)		3-phase 200 to 240V +10%, -15%, 50/60Hz±5%								
	Rated input current (A)		48	64	80	94	120	150	186	240	280
Braking	Dynamic braking (Short-time) (*4)		Built-in BRD circuit (optional resistor)					External dynamic braking unit (option)			
	Minimum value of resistor (Ω)		10	10	7.5	7.5	7.5	–			
Vibration (*5)			5.9m/s^2 (0.6G), 10-55Hz					2.9m/s^2 (0.3G), 10-55Hz			
EMC filter			Built-in (EN61800-3 category C3)								
Zero-phase Reactor			Built-in								
Weight (lbs.)			6(13.2)	6(13.2)	14(30.8)	14(30.8)	14(30.8)	22(48.4)	30(66)	30(66)	43(94.6)

3-phase 400V class

Model SJ700B-		Asia Version	055HF	075HFF	110HFF	150HFF	185HFF	220HFF	300HFF	370HFF	450HFF	550HFF	750HFF	900HFF	1100HFF	1320HFF	1600HFF
		US Version	055HFU	075HFUF	110HFUF	150HFUF	185HFUF	220HFUF	300HFUF	370HFUF	450HFUF	550HFUF	750HFUF	900HFUF	1100HFUF	1320HFUF	1600HFUF
Enclosure (*1)			IP20											IP00			
Applicable motor (4-pole, kW(HP)) (*2)			5.5(75)	7.5(10)	11(15)	15(20)	18.5(25)	22(30)	30(40)	37(50)	45(60)	55(75)	75(100)	90(125)	110(150)	132(150)	160(220)
Output Ratings	Rated capacity (kVA)	400V	9.7	11	15.2	20.0	25.6	29.7	39.4	48.4	58.8	72.7	93.5	110.8	135.1	159.3	200.9
		480V	11.6	13.3	18.2	24.1	30.7	35.7	47.3	58.1	70.6	87.2	112.2	133	162.1	191.2	241.1
	Rated output current (A)		14	16	22	29	37	43	57	70	85	105	135	160	195	230	290
	Overload capacity (output current)		120%,60sec														
	Rated output voltage (*3)		3-phase (3-wire) 380 to 480V (corresponding to input voltage)														
Input Rating	Rated input voltage (V)		3-phase 380 to 480V +10%, -15%, 50/60Hz±5%														
	Rated input current (A)		17	18	24	32	41	47	63	77	94	116	149	176	199	253	300
Braking	Dynamic braking (Short-time) (*4)		Built-in BRD circuit (optional resistor)							External dynamic braking unit (option)							
	Minimum value of resistor (Ω)		70	70	35	35	24	24	20	–							
Vibration (*5)			5.9m/s^2(0.6G), 10-55Hz							2.9m/s^2(0.3G), 10-55Hz							
EMC filter			–	Built-in (EN61800-3 category C3)													
Zero-phase Reactor			–	Built-in													
Weight (lbs.)			3.5(7.7)	6(13.2)	6(13.2)	6(13.2)	14(30.8)	14(30.8)	14(30.8)	22(48.4)	30(66)	30(66)	30(66)	55(121)	55(121)	70(154)	70(154)

*1: The protection method conforms to JIS C 0920 (IEC60529)
*2: The applicable motor refers to Hitachi standard 3-phase motor (4-pole).To use other motors, be sure to prevent the rated motor current (50Hz) from exceeding the rated output current of the inverter.
*3: The output voltage decreases as the main power supply voltage decreases except for the use of AVR function.
*4: Braking resistor is not integrated in the inverter. Please install optional braking resistor or dynamic braking unit when large braking torque is required.
*5: Conforms to the test method specified in JIS C 60068-2-6 : 2010 (IEC 60068-2-6 : 2007).
*6: To operate the motor beyond 50/60Hz, please consult with the motor manufacturer about the maximum allowable rotation speed.
*7: Storage temperature refers to the temperature in transportation.
*8: The frequency command is the maximum frequency at 9.8V for input voltage 0 to 10VDC, or at 19.8mA for input current 4 to 20mA.
If this characteristic is not satisfactory for your application,contact your Hitachi representative.

Model Name Indication

SJ700D/SJ700 series SJ700 D- 055 H F E F 3

- Series Name: SJ700D
- Applicable Motor Capacity: 004: 0.4kW (1/2HP) … 4000:400kW (500HP)
- Power Source: L : 3-phase 200V class; H : 3-phase 400V class
- F : With keypad
- U : US version; E : European version; Note : Japanese version
- F : Integrated EMC filter
- Version

SJ700B series SJ700 B- 110 H F U F

- Series Name: SJ700B
- Applicable Motor Capacity: 055: 5.5kW (7.5HP) … 1600:160kW (220HP)
- Power Source: L : 3-phase 200V class; H : 3-phase 400V class
- F : With keypad
- U : US version; Note : Asia version
- F : Integrated EMC filter

Model Configuration

● Available

			Applicable Motor kW (HP)	0.4 (1/2)	0.75 (1)	1.5 (2)	2.2 (3)	3.7 (5)	4.0 (5)	5.5 (7.5)	7.5 (7.5)	11 (15)	15 (20)	18.5 (25)	22 (30)	30 (40)	37 (50)	45 (60)	55 (75)	75 (100)	90 (125)	110 (150)	132 (175)	150 (200)	160 (220)	185 (250)	220 (300)	315 (400)	400 (550)
SJ700D	3-phase 200V	LFUF3		●	●	●	●	●		●	●	●	●	●	●	●	●	●	●									
		LFF3		●	●	●	●	●		●	●	●	●	●	●	●	●	●	●									
	3-phase 400V	HFEF3			●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●						
		HFUF3			●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●		●					
		HFF3			●	●	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●						
SJ700	3-phase 400V	HFE2																							●	●	●	●
		HFU2																							●	●	●	●
		HF2																							●	●	●	●
SJ700B	3-phase 200V	LFUF										●	●	●	●	●	●	●	●									
	3-phase 400V	HFF								●*1	●	●	●	●	●	●	●	●	●	●	●	●		●				
	3-phase 400V	HFUF								●*1	●	●	●															

*1 Available only for Asia version and US Version. without EMC Filter

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SPECIFICATIONS

● General Specifications

Items			General Specifications
Control	Control method		Line to line sine wave pulse-width modulation (PWM) control
	Output frequency range (*6)		0.1-400.0Hz(400kW:0.1-120Hz)
	Frequency accuracy		Digital: ±0.01% of the maximum frequency, Analog: ±0.2%(25±10˚C)
	Frequency resolution		Digital setting: 0.01Hz, Analog setting: (Maximum frequency)/4,000 (O terminal: 12bit 0-10V, O2 terminal: 12bit -10-+10V)
	V/f characteristics		SJ700D：IM : V/f optionally variable (30-400Hz of base frequency), V/f control (constant torque, reduced torque), sensorless vector control,0Hz ranged sensorless vector control (only CT), vector with sensor (SJ-FB card option , only CT) [ordering production] PM : sensorless vector control (only VT) SJ700/SJ700B：IM : V/f optionally variable (30-400Hz of base frequency), V/f control (constant torque, reduced torque), sensorless vector control 0Hz ranged sensorless vector control, vector with sensor (SJ-FB card option)
	Speed fluctuation		±0.5% (sensorless vector control)
	Acceleration/deceleration time		0.01-3,600sec. (Linear/curve, accel./decel. selection), Two-stage accel./decel.
	Starting Torque	SLV	SJ700/SJ700D (CT) 200%/0.3Hz, (VT) 150%/0.5Hz, 75kW to 150kW (CT) 180%/0.3Hz, (VT) 120%/0.5Hz, 185kW and over 150%/0.3Hz. SJ700B : 150%/0.5Hz, 90kW and over : 120%/0.5Hz,
		0Hz-SLV	SJ700/SJ700D (CT) (0Hz domain with motor one frame size down) 150% at around 0Hz, 75kW and over: 130% at around 0Hz. SJ700B : 120% at around 0Hz,SJ700D (VT):Disable.
		PM-SLV[ordering production]	SJ700D (0.4 to 132kW) : 50% (at 10% of motor constant speed) [ordering production] (only SJ700D (VT))
	Carrier frequency range		SJ700/SJ700D (CT) 0.5 to 15kHz, (VT) 0.5 to 12 kHz, 75kW to 150kW (CT) 0.5 to 10kHz, (VT) 0.5 to 8 kHz,185kW and over : 0.5 to 3.0kHz SJ700B : 0.5 to 12.0kHz (90kW and over : 0.5 to 8.0kHz)
	DC braking		Performs at start: under set frequency at deceleration, via an external input (braking force, time, and operating frequency).
Input signal	Frequency setting	Operator	Up and Down keys
		External signal(*8)	DC 0-10V, -10-+10V (input impedance 10kΩ), 4-20mA (input impedance 100Ω)
		External port	Setting via RS485 communication
	Forward /reverse Start /stop	Operator	Start/stop commands (forward/reverse switching by parameter setting)
		External signal	Forward-operation start/stop commands (reverse-operation start/stop possible when relevant commands are assigned to intelligent input terminals)3-wire input possible (when relevant commands are assigned to control circuit terminals)
		External port	Setting via RS485 communication
	Intelligent input terminals	Terminals	8 terminals, NO/NC switchable, sink logic/source logic switchable
		Functions	Reverse operation (RV), Multi-speed 1 setting (CF1), Multi-speed 2 setting (CF2), Multi-speed 3 setting (CF3), Multi-speed 4 setting (CF4), Jogging (JG), external DC braking (DB), 2nd motor control (SET), 2-stage acceleration/deceleration (2CH), free-run stop (FRS), external trip (EXT), unattended start protection (USP), commercial power supply switching (CS), software lock (SFT), analog input switching (AT), 3rd motor control (SET3), reset (RS), starting by 3-wire input (STA), stopping by 3-wire input (STP), forward/reverse switching by 3-wire input (F/R), PID disable (PID), PID integration reset (PIDC), control gain switching (CAS), acceleration by remote control (UP), deceleration by remote control (DWN), data clearance by remote control (UDC), forcible operation (OPE), Multi-speed bit 1 (SF1), Multi-speed bit 2 (SF2), Multi-speed bit 3 (SF3), Multi-speed bit 4 (SF4), Multi-speed bit 5 (SF5), Multi-speed bit 6 (SF6), Multi-speed bit 7 (SF7), overload restriction selection (OLR), torque limit selection (enabling/disabling) (TL), torque limit 1 (TRQ1), torque limit 2 (TRQ2), P/PI switching (PPI), braking confirmation (BOK), orientation (ORT), LAD cancellation (LAC), clearance of position deviation (PCLR), permission of 90˚shift phase (STAT), trigger for frequency addition (A145) (ADD), forcible-terminal operation (F-TM), permission of torque command input (ATR), cumulative power clearance (KHC), servo-on (SON), pre-excitation (FOC), general-purpose input 1 (MI1), general-purpose input 2 (MI2), general-purpose input 3 (MI3), general-purpose input 4 (MI4), general-purpose input 5 (MI5), general-purpose input 6 (MI6), general-purpose input 7 (MI7), general-purpose input 8 (MI8), analog command holding (AHD), Multistage position settings selection 1 (CP1), Multistage position settings selection 2 (CP2), Multistage position settings selection 3 (CP3), Zero-return limit function (ORL), Zero-return trigger function (ORG), Forward drive stop (FOT), reverse drive stop (ROT), Speed / position switching (SPD), Pulse counter (PCNT), Pulse counter clear (PCC), Emergency stop (EMR) ,EzSQ PRG-Run(PRG)(*12) ,no assignment (no)
	Thermistor input		1 terminal (PTC characteristics)
Output signal	Intelligent output terminals	Terminals	5 open-collector output terminals, NO/NC switchable, sink logic/source logic switchable 1 relay (1c-contact) output terminal: NO/NC switchable
		Functions	Running (RUN), constant-speed reached (FA1), set frequency overreached (FA2), overload notice advance signal (1) (OL), output deviation for PID control (OD), alarm signal (AL), set frequency reached (FA3), over-torque (OTQ), instantaneous power failure (IP), undervoltage (UV), torque limited (TRQ), operation time over (RNT), plug-in time over (ONT), thermal alarm signal (THM), brake release (BRK), braking error (BER), 0Hz detection signal (ZS), speed deviation maximum (DSE), positioning completed (POK), set frequency overreached 2 (FA4), set frequency reached 2 (FA5), overload notice advance signal (2) (OL2), PID feedback comparison (FBV), communication line disconnection (NDc), logical operation result 1 (LOG1), logical operation result 2 (LOG2), logical operation result 3 (LOG3), logical operation result 4 (LOG4), logical operation result 5 (LOG5), logical operation result 6 (LOG6), capacitor life warning (WAC)(*11), cooling-fan speed drop (WAF), starting contact signal (FR), heat sink overheat warning (OHF), low-current indication signal (LOC), general-purpose output 1 (M01), general-purpose output 2 (M02), general-purpose output 3 (M03), general-purpose output 4 (M04), general-purpose output 5 (M05), general-purpose output 6 (M06), inverter ready (IRDY), forward rotation (FWR), reverse rotation (RVR), major failure (MJA), window comparator O (WCO), window comparator OI (WCOI), window comparator O2 (WCO2), alarm code 0 to 3 (AC0 to AC3)
		Monitor output terminals	Analog voltage output, analog current output, pulse-string output (e.g., A-F, D-F [n-fold, pulse output only], A, T, V, P)
Monitoring on display			Output frequency, output current, output torque, frequency conversion data, trip history, input/output terminal status, electric power, and others
Other functions			Free V/f setting (7 breakpoints), frequency upper/lower limit, jump (center) frequency, acceleration/deceleration according to characteristic curve, manual torque boost level/breakpoint, energy-saving operation, analog meter adjustment, start frequency setting, carrier frequency adjustment, electronic thermal function (available also for free setting), external start/end frequency/frequency rate, analog input selection, retry after trip, restart after instantaneous power failure, output of various signals, starting with reduced voltage, overload restriction, initial-value setting, automatic deceleration at power failure, AVR function, fuzzy acceleration/deceleration, online/offline auto-tuning, high-torque multi-motor operation (*11) (sensorless vector control of two motors by one inverter)
Protective functions			Overcurrent protection, overvoltage protection, undervoltage protection, electronic thermal protection, temperature error protection, instantaneous power failure protection, phase loss input protection, braking-resistor overload protection, ground-fault current detection at power-on, USP error, external trip, emergency stop trip, CT error, communication error, option board error, and others
Environmental conditions	Ambient operating/storage temperature (*7)/ humidity		-10-50˚C (*9) / -20-65˚C / 20-90%RH (No condensation)
	Location		Altitude 1,000m or less, indoors (no corrosive gases or dust)
Options	Digital input expansion card		SJ-DG (4digits BCD, 16bits binary)
	Feedback expansion card		SJ-FB (vector control loop speed sensor)
	Network interface card		SJ-DN2 (DeviceNet (TM)) (*13), SJ-PB (T)2 (PROFIBUS) (*13)
	Others		EMI filters, input/output reactors, radio noize filters, braking resistors, braking units, LCR filter, communication cables

*1 : The protection method conforms to JIS C 0920 (IEC60529)
*2 : The applicable motor refers to Hitachi standard 3-phase motor (4-pole). To use other motors, be sure to prevent the rated motor current (50Hz) from exceeding the rated output current of the inverter.
*3 : The output voltage decreases as the main power supply voltage decreases except for the use of AVR function.
*4 : Braking resistor is not integrated in the inverter. Please install optional braking resistor or dynamic braking unit when large braking torque is required.
*5 : Conforms to the test method specified in JIS C 60068-2-6:2010 (IEC 60068-2-6:2007).
*6 : To operate the motor beyond 50/60Hz, please consult with the motor manufacturer about the maximum allowable rotation speed.
*7 : Storage temperature refers to the temperature in transportation.
*8 : The frequency command is the maximum frequency at 9.8V for input voltage 0 to 10VDC,or at 19.8mA for input current 4 to 20mA.If this characteristic is not satisfactory for your application,contact your Hitachi representative.
*9 : SJ700B series is -10 to 45°C. SJ700D (VT):-10 to 40°C.
*10 : Please be sure to connect DC reactor attached to 1850HF,2200HF,3150HF and 4000HF. (1850HF,2200HF and 3150HF of US/JP Version:The DC reactor is not attached.)
*11 : 1850HF,2200HF,3150HF and 4000HF:The function is not provided.
*12 : SJ700D-3 only.
*13 : The option cannot access new parameters in SJ700D-3.

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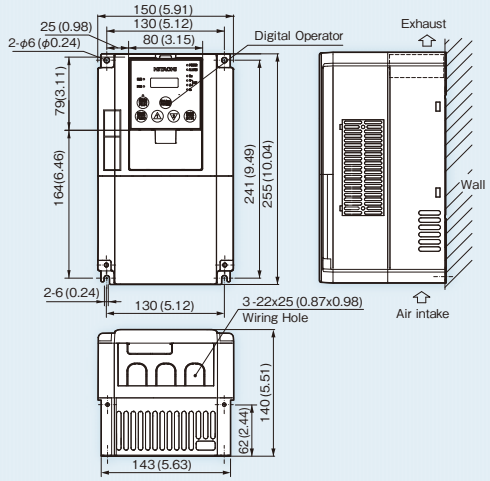
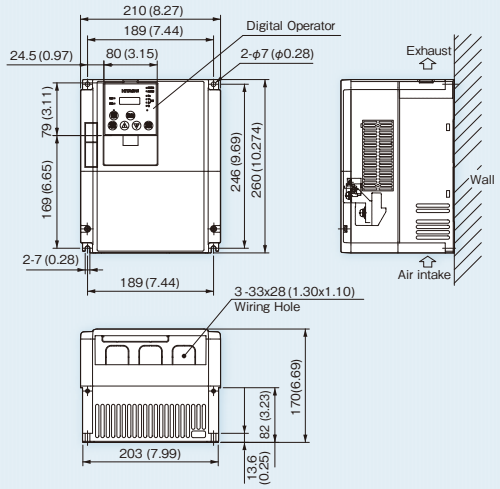
45 & 45A Jalan Bakawali 36, Taman Johor Jaya, 81100 Johor Bahru, Johor, Malaysia
Tel : 607-3511288 (4 Lines) Fax : 607-3511292 Email : sales@empowercorp.biz

DIMENSIONS

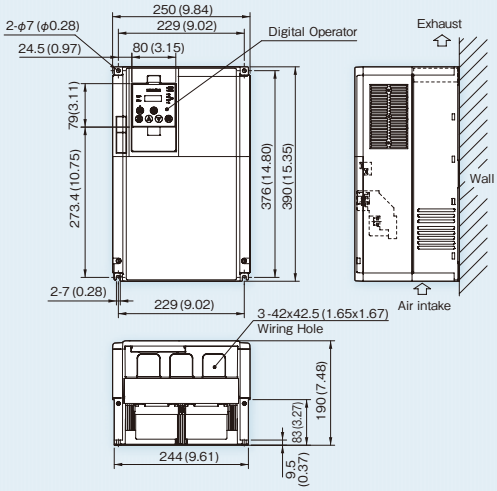
•SJ700D-004～037LFUF3,LFF3
•SJ700D-007～040HFEF3,HFUF3,007～037HFF3
•SJ700B-055HF,055HFU



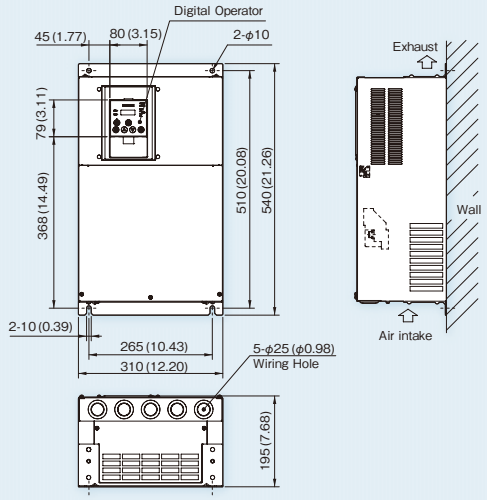
•SJ700D-055～110LFUF3,LFF3,HFEF3,HFUF3,HFF3
•SJ700B-075～150HFF,HFUF,LFUF



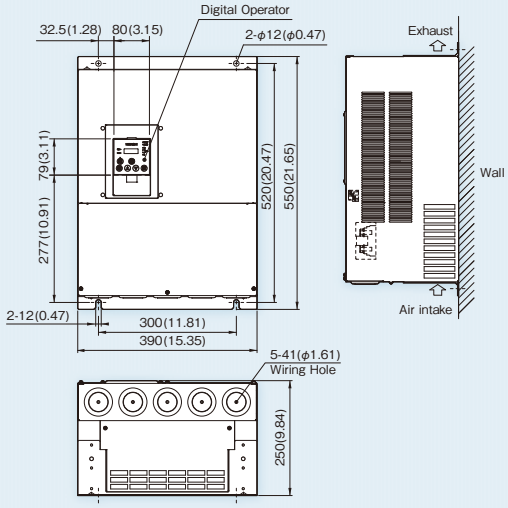
•SJ700D-150～220LFUF3,LFF3,HFEF3,HFUF3,HFF3
•SJ700B-185～300HFF,HFUF,LFUF



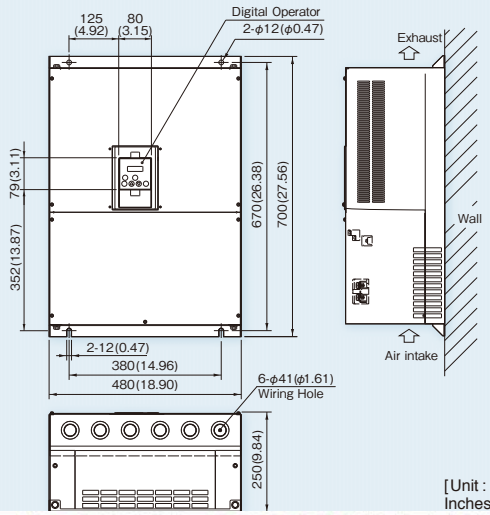
•SJ700D-300LFUF3,LFF3,HFEF3,HFUF3,HFF3
•SJ700B-370HFF,HFUF,LFUF



•SJ700D-370,450LFUF3,LFF3
•SJ700D-370～550HFEF3,HFUF3,HFF3
•SJ700B-450～750HFF,HFUF,450,550LFUF



•SJ700D-550LFUF3,LFF3
•SJ700B-750LFUF



[Unit : mm (inch)]
Inches for reference only.

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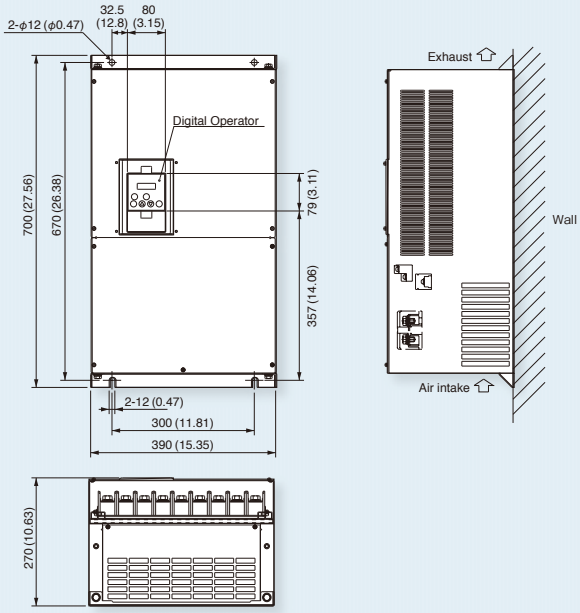
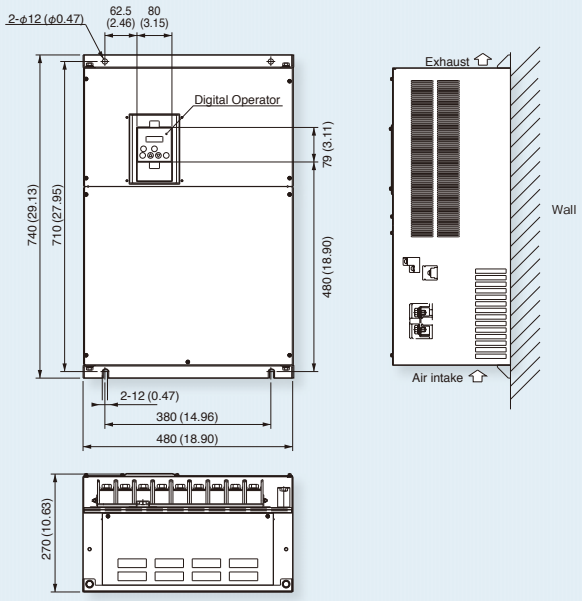
* Please refer to page 30 for detailed information about compatibility with SJ300.

DIMENSIONS

•SJ700D-750,900HFEF3,HFUF3,HFF3
•SJ700B-900,1100HFF,HFUF



•SJ700D-1100HFEF3,HFUF3,HFF3,1320HFEF3,HFF3,1500HFUF3
•SJ700B-1320,1600HFF,HFUF



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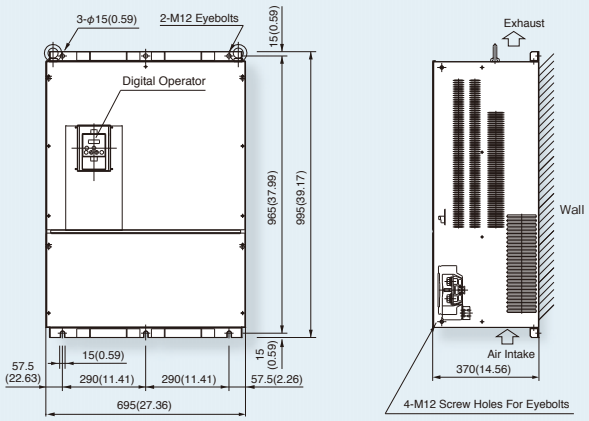
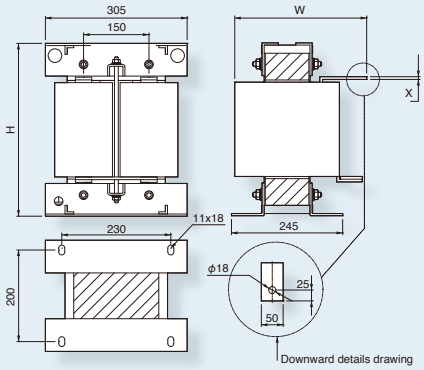
DIMENSIONS

•SJ700-1850,2200HFE2,HFU2*2,HF2*2

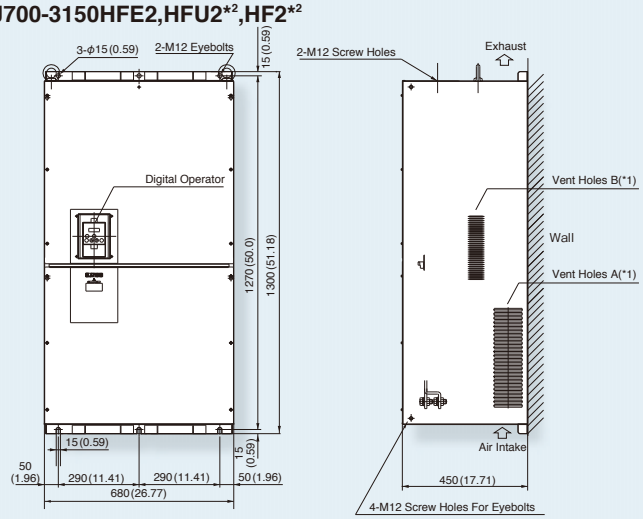


Attachment DC reactor (DCL-H-185-H-R),(DCL-H-220-H-R)

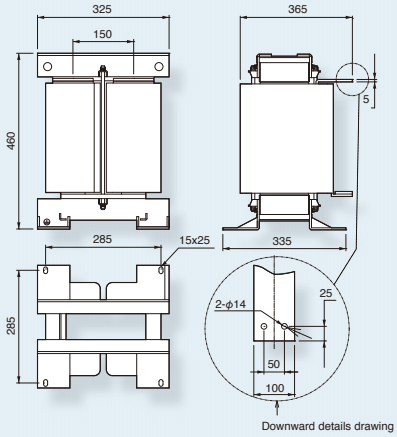


Model	H	W	X
DCL-H-185-H-R	350	305	5
DCL-H-220-H-R	395	315	6

•SJ700-3150HFE2,HFU2*2,HF2*2

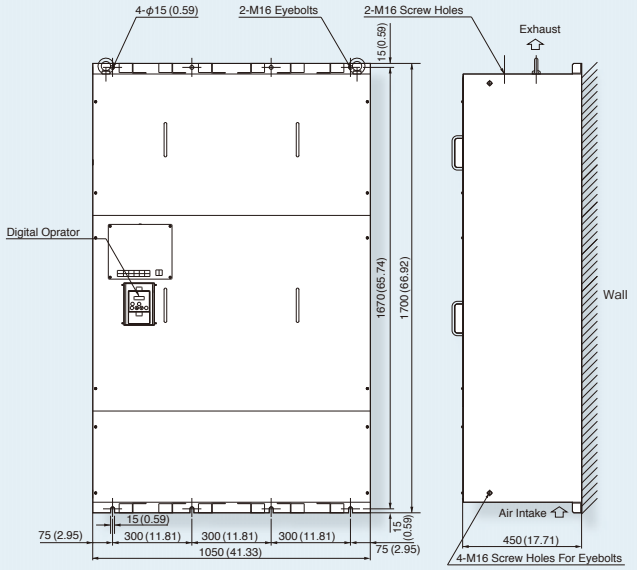


Attachment DC reactor (DCL-H-315-H-R)

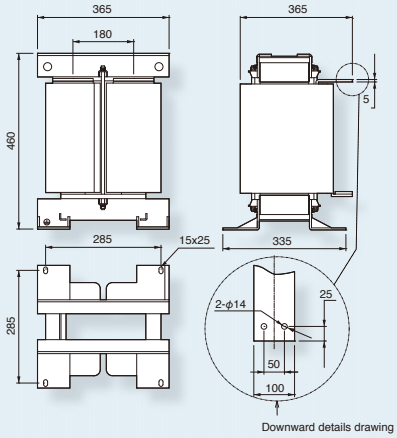


*1 Vent-Holes A are formed on both right and left side portions. Vent-Holes B are just on right side.

•SJ700-4000HFE2,HFU2,HF2



Attachment DC reactor (DCL-H-400-H-R)



[Unit : mm (inch)]
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*2 1850H,2200H and 3150H of US/JP Version:The DC resctor is not attached.

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