

SF-320

General-purpose Compact Inverter

The Available Solution

NEW

100V class 1-phase : 0.1~0.75kW
200V class 1-phase : 0.2~2.2kW
200V class 3-phase : 0.1~2.2kW



The SF-320 series, designed for the **global** market adds new, more **powerful** vector control to standard V/f control.

SF-320 α

NEW!!



Easy-To-Use, Powerful Inverter

Powerful drive

A new vector control mode is added to the default V/f control mode to insure proper starting of a gearmotor in difficult applications. [Starting torque of AF motor :175 to 200% of motor full-load torque]

Global standards

The standard unit complies with international requirements (UL, CSA, CE marking)
The I-O control logic can also switch between sinking and sourcing.

Easy to Operate and Easy to Setup

Local operator control is provided by the frequency potentiometer and the drive Run and Stop keys.
Wizard functions simplify parameter setting.

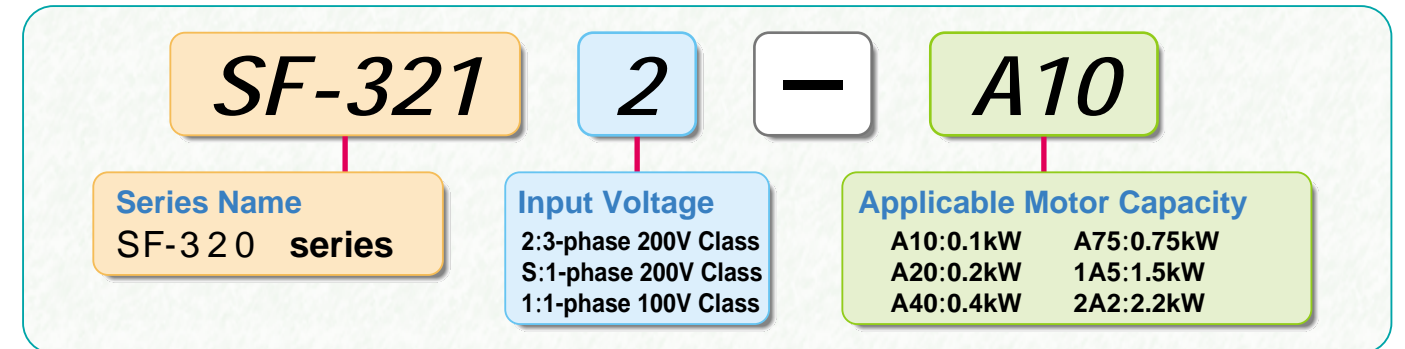
Easy Wire and Install

Panel wiring is simplified because of the location of input power and load terminals in a contactor type (top and bottom) arrangement .
Self-lifting screw terminals make wiring the drive an easy task.

Lineup

Voltage Class		Applicable Motor Capacity (kW)					
Ratings input voltage	Ratings output voltage	0.1	0.2	0.4	0.75	1.5	2.2
3-phase 200V	3-phase 200V	[Redacted]					
1-phase 200V	3-phase 200V	[Redacted]					
1-phase 100V	3-phase 200V	[Redacted]					

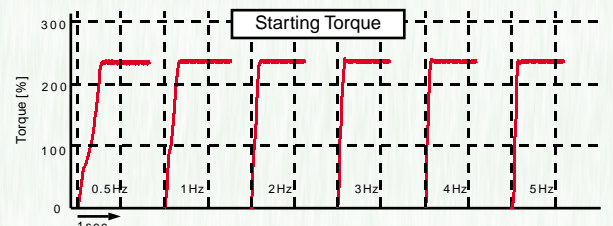
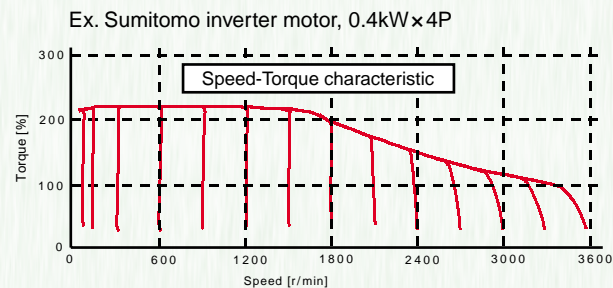
Model type



Powerful drive!!

Powerful drive by a new vector control mode

• A new vector control mode is added to the default V/f control mode to insure proper starting of a gearmotor in difficult applications.



Global standards

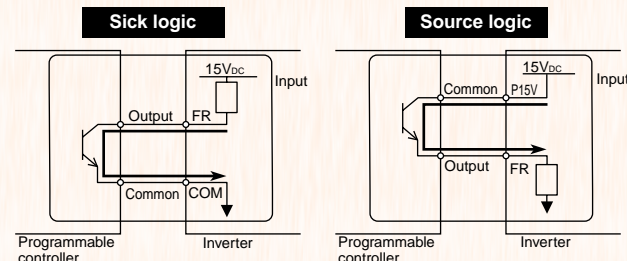
Global standard unit

• The standard unit complies with international requirements (UL, CSA, CE marking)



• SF-320 corresponds to various input power sources.
3-phase 200V to 240V - 50/60Hz
1-phase 200V to 240V - 50/60Hz
1-phase 100V to 115V - 50/60Hz

• The I-O control logic can also switch between sinking and sourcing.
SF-320 easily corresponds to the logic of the world



Easy to Operate/Easy to Setup

Easy setting by wizard function

• Easy call of necessary parameter according to usage and setting
Basic setting wizard Preset speed operation wizard
Analog signal operation wizard Motor A/B switching operation wizard

Easy adjustment by history function

• Display latest 5 changed parameters as a group. Parameters can be edited within a group, too.

Easy adjustment by user parameter group function

• This function prior displays, and can set the parameter changed from the default setting.

Options

- Remoto operator
- Remote operator with copy function
- Communication converter unit (RS485/RS232C)
- Compliant with EMC Foot-mounted type noise filter

Easy Wire and Install !

The main circuit terminal is arranged at the top and bottom. (As well a contactor)

Wiring and the installation with the control box are easy

Self-lifting screw terminals

These make wiring the drive an easy task



Standard specifications

Item		Specification						
Input voltage		3-phase 200V/1-phase 200V/1-phase 100V						
Applicable motor (kW)		0.1	0.2	0.4	0.75	1.5	2.2	
Rating	Input voltage class	Type	SF321 –					
	3-phase 200V	SF3212 –	A10	A20	A40	A75	1A5	2A2
	1-phase 200V	SF321S –	–	A20	A40	A75	1A5	2A2
	1-phase 100V	SF3211 –	A10	A20	A40	A75	–	–
	Capacity (kVA)	(Note 1)	0.3	0.7	1.0	1.6	2.9	3.9
	Rated output current (A) (Note 2)	3-phase 200V	0.7	1.6	2.4	4.0	7.5	10
		1-phase 200V	–	1.6	2.4	4.0	7.5	10
		1-phase 100V	0.7	1.6	2.4	4.0	–	–
Rated output voltage (Note 3)	3-phase 200V	3-phase 200V to 240V						
	1-phase 200V	3-phase 200V to 230V						
Overload current rating		60 seconds at 150%, (50%-reduction value)						
Power supply	Voltage-frequency	3-phase 200V	3-phase 200V to 240V - 50/60Hz					
		1-phase 200V	1-phase 200V to 240V - 50/60Hz					
		1-phase 100V	1-phase 100V to 115V - 50/60Hz					
Allowable fluctuation		Voltage +10%, -15% (Note 4), frequency \pm 5%						
Protective method		IP20 Enclosed type (JEM 1030)						
Cooling method	3-phase 200V	Self-cooling				Forced air-cooled		
		1-phase 200V	Self-cooling				Forced air-cooled	
			1-phase 100V	Self-cooling		Forced air-cooled		–
Color		Munsell 5Y8/0.5						
Charge lamp		LED indicating the charge status of the capacitor in the main circuit						

Note)1. Capacity is calculated at 220V for the 200V models.

Note)2. Indicates rated output current setting when the PWM carrier frequency (parameter F300) is 4kHz or less. If the PWM carrier frequency setting is fixed above 4 kHz, the rated current needs to be reduced. If the PWM carrier frequency is set above 4 kHz, it could fall automatically if an over-current flaws during acceleration or for any other reason, depending on the amount of current that flows. The default setting of the PWM carrier frequency is 4kHz.

Note)3. Maximum output voltage is the same as the input voltage.

Note)4. \pm 10% when the inverter is used continuously (load of 100%).

Common specifications

Item		Specification
Principal control functions	Control system	Sinusoidal PWM control
	Related output voltage	Adjustable within a range of 100 to 120% of the corrected supply voltage (200V) (Unadjustable to any voltage higher than the input voltage).
	Output frequency range	0.5 to 200Hz, default setting: 0.5 to 60Hz, maximum frequency: 30 to 200Hz.
	Minimum setting steps of frequency	0.1Hz: operation panel setting, 0.2Hz: analog input (when the max. frequency is 100Hz).
	Frequency accuracy	Digital setting: within \pm 0.5% of the max. frequency (-10 to +50) Analog setting: within \pm 1.0% of the max. frequency (25 \pm 10)
	Voltage/frequency characteristics	V/f constant, slip frequency correction, base frequency, base frequency voltage and torque boost amount adjustable
Frequency setting signal	Potentiometer on the front panel, external frequency potentiometer (connectable to a potentiometer with a rated impedance of 3-10k), VRF/DFH terminal (input impedance: 42k (voltage: 0-10Vdc) or 250 (current: 4-20mA)). The characteristic can be set arbitrarily by two-point setting.	
Operation specifications	Start-up frequency/ frequency jump	Adjustable within a range of 0.5 to 10Hz / Up to 1 frequency can be adjusted together with their widths.
	PWM carrier frequency (Note 1)	Selectable from among 2, 4, 8, 12 and 16kHz (Standard default setting: 4kHz), Selectable between fixed mode and auto-reduction mode
	Acceleration/deceleration time	0.1 to 3000 seconds, switchable between acceleration/deceleration time 1 and 2.
	Retry operation	Number of times of retry selectable (Max. 10 times). If the protection function is activated, the retry function restarts on completion of a check of the main circuit
	Electric control	Charging of capacitor (Deceleration time can be shortened by activating Forced Shortened Deceleration mode.
	Braking resistor control and drive circuit	–
	Dynamic braking	Braking start-up frequency: 0 to maximum frequency, braking rate: 0 to 100%, braking time: 0 to 20 seconds.
	Input terminal functions (selectable)	Selectable from among 57 functions, such as forward/reverse run input signal, jog run input signal, standby signal, preset-speed operation input signal, and reset input signal (Also, selectable between sink/source)
Output terminal functions (selectable)	Selectable from among 14 functions, such as frequency lower limit output signal, frequency upper limit output signal, low-speed detection output signal, and specified speed attainment output signal. Open collector and relay output possible	
Failure detection signal	1c-contact output: 250Vac-1A- cos ϕ = 0.4	
Output for frequency meter/ output for ammeter	PWM output: (1mA dc full-scale DC ammeter or 7.5Vdc full-scale DC ammeter/Rectifier-type AC voltmeter, 225% current Max. 1mA dc, 7.5Vdc full-scale)	
Protective function	Protective function	Stall prevention, current limitation, over-current, output short circuit, over-voltage, over-voltage limitation, undervoltage, ground fault, power supply phase failure, output phase failure, overload protection by electronic thermal function, armature over-load at start-up, load-side over-torque at start, overheating prevention, detection of analog signal break.
	Protection against momentary power	Auto-restart/non-stop control after momentary power failure.
	Electronic thermal characteristics	Switching between standard motor/constant-torque VF motor, overload trip, overload stall selection.
Display function	4-digit 7-segments LED	Frequency : inverter output frequency. Alarm : Stall alarm " C ", overvoltage alarm " P ", overload alarm " L ", overheat alarm " H ". Status : Inverter status (frequency, cause of activation of protective function, input/output voltage, output current, etc.) and parameter settings. Free-unit display : Arbitrary unit (e.g. rotating speed) corresponding to output frequency.
	Indicator	Lamps indicating the inverter status by lighting or blinking, such as RUN lamp and PRG lamp.
Environ-ments	Use environments	Indoor, altitude: 1000m (Max.), not exposed to direct sunlight, corrosive gas, explosive gas or vibration (less than 5.9m/s ²) (10 to 55Hz).
	Ambient temperature	-10 to 50 C (Note)1,2
	Storage temperature	-20 to +65 C
	Relative humidity	20 to 93% (free from condensation and vapor).

Note)1. Above 40 C: Remove the protective seal from the top of SF-320 .

Note)2. When installing inverters side by side (without allowing space between them), detach the label on the top surface of each inverter and use them where the ambient temperature is below 40 C.

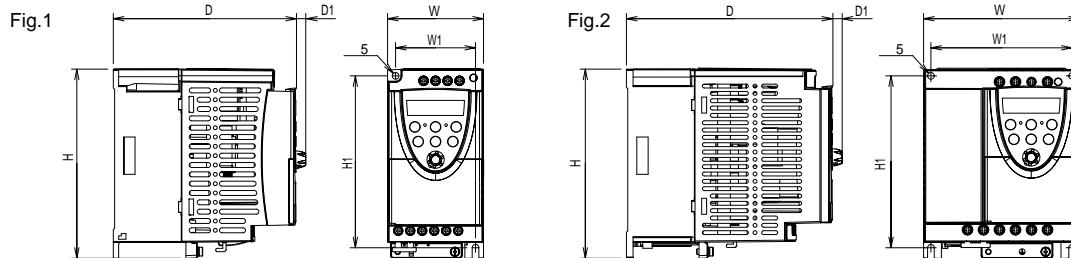
Main circuit terminals

Terminal symbol	Terminal function
	Grounding terminal for connecting inverter case. 2 grounding terminals.
R/L, S/L2, T/L3	100V class : 1-phase 100V to 115V - 50/60Hz 200V class : 1-phase 200V to 240V - 50/60Hz, 3-phase 200V-240V - 50/60Hz *1-phase series have R/L1 and S/L2 terminal.
U/T1, V/T2, W/T3	Connect to a (3-phase induction) motor
N(-)	This is a negative potential terminal in the internal DC main circuit.
P1, P(+)	Terminals for connecting a DC reactor (DCL: optional external device).Shorted when shipped from the factory. Before installing DCL remove the short bar.1-phase 100V models cannot be used with DC reactors.

Control circuit terminals (sink logic (common: CC))

Terminal symbol	Input/output	Function	Specifications	
FR	Input	Multifunction programmable contact input	Dry contact input 15Vdc - 5mA or less *Sink/source selectable by changing a parameter	
RR	Input			Shorting across FR-COM causes forward rotation; open causes slowdown and stop.(If ST is always ON)
DFL	Input			Rrotation; open causes slowdown and stop. (If ST is always ON) * Shorting across RR-COM/FR-COM causes reverse rotation.
DFM	Input			Shorting across DFL-COM causes preset speed operation.
COM	Common to input/output	Control circuit & equipotential terminal.	-	
+V	Output	Power output for analog input setting.	5Vdc(permissible load current: 10mAdc)	
VRF/DFH	Input	Multifunction programmable analog input.Standard default setting: Analog input 0-10Vdc and frequency 0-60Hz. * Possible to use as analog input (4 (0)-20mAdc) or contact input (programmable contact input) by changing a parameter.	10Vdc : (internal impedance: 42kW) 4-20mA : (internal impedance: 250kW)	
FRQ/DRV	Output	Multifunction programmable analog output. Standard default setting: Analog output frequency. Meters connectable to FRQ/DRV : 1mAdc full-scale ammeter or 7.5Vdc (10Vdc) full-scale voltmeter (PWM output). Possible to switch to programmable open collector output by changing a parameter.	1mA full-scale DC ammeter or 7.5Vdc (10Vdc) full-scale DC voltmeter Open collector output:24Vdc-50mA	
P15V	Output	15Vdc power output.	15Vdc— 100mA	
FA FB FC	Output	Multifunction programmable relay contact output. Contact ratings: 250Vac - 2A (cosf=1), 30Vdc - 1A, 250Vac - 1A (cosf=0.4). Standard default setting: Monitoring of status of inverter & protection function. Activation of the protection function causes circuit FA-FC to close and circuit FB-FC to open	250Vac-2A(cosf=1): at resistance load 30Vdc-1A 250Vac-1A (cosf=0.4)	

External dimensions/weights



Input voltage class	Applicable motor(kW)	Inverter	Dimensions(mm)					Drawing	Weights (kg)		
			W	H	D	W1	H1			D1	
3-phase 200V	0.1	SF3212-A10	72	142	100	60	131	8.5	Fig.1	1.0	
	0.2	SF3212-A20			124					1.0	
	0.4	SF3212-A40			134					1.0	
	0.75	SF3212-A75	117		155	106				Fig.2	1.5
	1.5	SF3212-1A5			155	106					1.5
	2.2	SF3212-2A2			155	106					1.5
1-phase 200V	0.2	SF321S-A20	72	142	100	60	131	8.5	Fig.1	1.0	
	0.4	SF321S-A40			124					1.0	
	0.75	SF321S-A75			134					1.0	
	1.5	SF321S-1A5	117		155	106				Fig.2	1.5
	2.2	SF321S-2A2			155	106					1.5
	2.2	SF321S-2A2			155	106					1.5
1-phase 100V	0.1	SF3211-A10	72	142	100	60	131	8.5	Fig.1	1.0	
	0.2	SF3211-A20			124					1.0	
	0.4	SF3211-A40	117		134	106				Fig.2	1.0
	0.75	SF3211-A75			134	106					1.5

Note) Spacing requirements: Allow 5cm or more on either side and 10cm or more above and below the inverter.

Options (The options other than the following are the same as the SF320 series.)

- Frequency setting unit : VR-01;3k ; 2W(VR01)
- % speed meter : DCF-12N[1mA F.S.]0-100%(X525AA014)
- Remote operator
- Remote operator with copy function
- Communication converter unit (RS485/RS232C)(Coming soon)
- Compliant with EMC Foot-mounted type noise filter (Coming soon)

Parameter Table

Basic parameters

Title	Function	Adjustment range	Default setting																															
AUH	History function	Display latest 5 changed parameters as a group. * Parameters can be edited within a group.	—																															
AUF	Wizard function	0 : - 1 : Basic setting wizard 2 : Preset speed operation wizard 3 : Analog signal operation wizard 4 : Motor A/B switching operation wizard 5 : Torque up wizard 1	0																															
C Od (CMOd)	Command mode selection	0 : Terminal block 1 : Operation panel*	1																															
F Od (FMOd)	Frequency setting mode selection	0 : Terminal block 1 : Operation panel 2 : Internal potentiometer 3 : Serial communication 4 : Terminal block/internal potentiometer switching	2																															
F SL (FMSL)	FRQ/DRV terminal functions selection	-1 : Open collector output 0 : Output frequency 1 : Output current 2 : Set frequency 3 : For adjustment (current fixed at 100%) 4 : For adjustment (current fixed at 50%) 5 : For adjustment (output of max. frequency) 6 : For adjustment (display of gain)	0																															
F (FM)	Meter adjustment	—	—																															
tyP	Standard setting mode selection	0 : - 1 : Set at 50Hz 2 : Set at 60Hz 3 : Default setting 4 : Trip clear5: Cumulative operation time clear	0																															
Fr	Forward/reverse selection (Operation panel)	0 : Forward run 1 : Reverse run	—																															
ACC	Acceleration time	0.1—3000 (S)	10.0																															
dEC	Deceleration time	0.1—3000 (S)	10.0																															
FH	Maximum frequency	30.0—200 (Hz)	80.0																															
UL	Upper limit frequency	0.5—FH (Hz)	80.0																															
LL	Lower limit frequency	0.0—UL (Hz)	0.0																															
vL	Base frequency	25—200 (Hz)	60.0																															
Pt	V/F control mode selection	0 (1, 2): V/f 3: Sensorless vector control	0																															
vb	Torque boost	0.0—30.0 (%)	1																															
tHr	Motor thermal protection level	30—100 (%)	100																															
OL (OLM)	Electronic thermal protection characteristic 2	<table border="1"> <thead> <tr> <th>Setting</th> <th></th> <th>Overload protection</th> <th>Overload stall</th> </tr> </thead> <tbody> <tr> <td>0</td> <td rowspan="3">Setting</td> <td></td> <td>x</td> </tr> <tr> <td>1</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>x</td> <td>x</td> </tr> <tr> <td>3</td> <td></td> <td>x</td> <td></td> </tr> <tr> <td>4</td> <td rowspan="4">Setting</td> <td></td> <td>x</td> </tr> <tr> <td>5</td> <td></td> <td></td> </tr> <tr> <td>6</td> <td>x</td> <td>x</td> </tr> <tr> <td>7</td> <td>x</td> <td></td> </tr> </tbody> </table>	Setting		Overload protection	Overload stall	0	Setting		x	1			2	x	x	3		x		4	Setting		x	5			6	x	x	7	x		0
Setting		Overload protection	Overload stall																															
0	Setting		x																															
1																																		
2		x	x																															
3		x																																
4	Setting		x																															
5																																		
6		x	x																															
7		x																																
Sr1	Preset speed operation frequencies 1	LL—UL	0.5																															
Sr2	Preset speed operation frequencies 2	LL—UL	10.0																															
Sr3	Preset speed operation frequencies 3	LL—UL	15.0																															
Sr4	Preset speed operation frequencies 4	LL—UL	20.0																															
Sr5	Preset speed operation frequencies 5	LL—UL	30.0																															
Sr6	Preset speed operation frequencies 6	LL—UL	40.0																															
Sr7	Preset speed operation frequencies 7	LL—UL	50.0																															
F---	Extended parameter	—	—																															
Gr.U	Search for changed settings	—	—																															

1 : Parameter values vary depending on the capacity

2 : Applicable, x : Inapplicable

Extended parameters

Input parameters

Title	Function	Adjustment range	Default setting
F100	Low speed signal output frequency	0.6—FH(Hz)	0.6
F101	Speed-reach setting frequency	0.0—FH(Hz)	0.0
F109	Analog input/logic input function selection (VRF/DFH terminal)	0: Voltage signal input (0-5 or 10V) 1: Current signal input (0-20mA) 2: Contact input	0
F110	Always active function selection	0—57(ST)	1
F111	Input terminal selection1(FR)	0—57(FR)	2
F112	Input terminal selection2(RR)	0—57(RR)	3
F113	Input terminal selection3(DFL)	0—57(DFL)	6
F114	Input terminal selection4(DFM)	0—57(DFM)	7
F115	Input terminal selection5(VRF/DFH) 3	5—17(DFH)	8
F127	Sink/Source selection	0: Sink 100: Source 1-99,101-200: Disabled	0
F130	Output terminal selection 1 (FRQ/DRV) 4	5—13(LOW)	4
F132	Output terminal selection 3(FL)	0—13(FL)	10
F170	Base frequency B	25—200(Hz)	60
F171	Base frequency voltage B	50—500(V)	200
F172	Torque boost B	0.0—30.0(%)	1
F173	Motor thermal protection level B	30—100(%)	100

3 This function is enabled if F109 is set at 2 (logic input).

4 This function is enabled if FMSL (open collector output) is set at 1.

Frequency parameters

Title	Function	Adjustment range	Default setting
F201	VRF/DFH reference point 1 setting	0—100(%)	0
F202	VRF/DFH point 1 frequency	0—200(Hz)	0.0
F203	VRF/DFH reference point 2 setting	0—100(%)	100
F204	VRF/DFH point 2 frequency	0—200(Hz)	60.0
F240	Starting frequency setting	0.5—10.0(Hz)	0.5
F241	Operation starting frequency	0.0—FH(Hz)	0.0
F242	Operation starting frequency hysteresis	0.0—FH(Hz)	0.0
F250	DC braking starting frequency	0.0(OFF), 0.1—FH(Hz)	0.0
F251	DC braking current	0.0, 1—100(%)	50
F252	DC braking time	0.0(OFF), 0.1—20.0(S)	1.0
F270	Jump frequency 1	LL—UL(Hz)	0.0
F271	Jumping width	0.0—30.0(Hz)	0.0
F287	Preset speed operation frequencies 8	LL—UL(Hz)	60.0
F288	Preset speed operation frequencies 9	LL—UL(Hz)	0.0
F289	Preset speed operation frequencies 10	LL—UL(Hz)	0.0
F290	Preset speed operation frequencies 11	LL—UL(Hz)	0.0
F291	Preset speed operation frequencies 12	LL—UL(Hz)	0.0
F292	Preset speed operation frequencies 13	LL—UL(Hz)	0.0
F293	Preset speed operation frequencies 14	LL—UL(Hz)	0.0
F294	Preset speed operation frequencies 15	LL—UL(Hz)	0.0

Operation mode parameters

Title	Function	Adjustment range	Default setting
F300	PWM carrier frequency	0: 2kHz 1: 2kHz (Random mode) 2: 4kHz 3: 4kHz (Random mode) 4: 8kHz(auto-reduction mode) 5: 12kHz (auto-reduction mode) 6: 16kHz (auto-reduction mode)	3
F301	Auto-restart control selection	0: Disabled 1: At auto-restart after momentary stop 2: When turning ST-COM on or off 3: At auto-restart after momentary stop or when turning ST-COM on or off	0
F302	Regenerative power ride-through control	0: Disabled, 1: Enabled 2: Deceleration stop	0
F303	Retry selection (Number of times)	0 : (OFF), 1—10	0
F305	Over voltage limit operation	0: Disabled, 1: Enabled, 2: Enabled (forced shortened deceleration)	0
F360	PI control	0: Disabled, 1: Enabled	0
F362	Proportional (P) gain	0.01—100.0	0.30
F363	Integral (I) gain	0.01—100.0	0.20

Parameter Table

Extended parameters

Torque boost parameters

Title	Function	Adjustment range	Default setting
F401	Slip frequency gain	0–150 (Hz)	1
F409	Base frequency voltage	50–500 (V)	200
F415	Motor rated current	0.1–50.0 (A)	1
F416	Motor no-load current	30–80 (A)	1
F417	Motor rated speed	100–12000 (r/min)	1
F418	Speed control gain	0–100	40
F419	Speed control stable coefficient	0–100	20

Acceleration/deceleration time parameters

Title	Function	Adjustment range	Default setting
F500	Acceleration time 2	0.1–3000 (S)	10.0
F501	Deceleration time 2	0.1–3000 (S)	10.0
F505	Acceleration/deceleration 1 and 2 switching frequency	0.0–UL (Hz)	0.0

Protection parameters

Title	Function	Adjustment range	Default setting
F601	Stall prevention level	30–199 (%) 200 (disabled)	150
F602	Inverter trip retention selection	0: Not retained, 1: Retained	0
F603	External input trip stop mode selection	0: Coast stop 1: Slowdown stop 2: Emergency DC braking	0
F605	Output phase failure detection mode selection	0: Disabled 1: Selected (Output open-phase is checked when operation is started for the first time after power is turned on.) 2: Selected (Output open-phase is checked each time operation is started.)	0
F607	Motor 150%-overload time limit	10–800 (S)	60
F608	Inverter trip retention selection	0: Disabled, 1: Enabled	1
F616	Over-torque alarm level	0–200 (%)	150
F618	Over-torque detection time	0.0–10.0 (S)	0.5
F627	Under voltage trip selection	0: Disabled 1: Enabled (64% or less: Trip, FL relay activated) 2: Disabled (50% or less: Trip, FL relay not activated)	0
F633	Analog input disconnection detection	0 (Disabled), 1 - 100%	0.0

Operation panel parameters

Title	Function	Adjustment range	Default setting
F700	Prohibition of change parameter settings	0: Permitted (C Od, F Od cannot be changed during operation.) 1: Prohibited 2: Permitted (C Od, F Od also can be changed during operation.) 3: Prohibited (except for panel frequency setting.) 4: 0+panel emergency stop prohibited 5: 1+panel emergency stop prohibited 6: 2+panel emergency stop prohibited 7: 3+panel emergency stop prohibited	0
F701	Unit selection	0: 0%, Hz (no change) 1: % to A/V 2: Free unit selection enabled (F702) 3: % to A/V, Free unit selection enabled (F702)	1
F702	Frequency units selection	0.01–200.0	1.00
F710	Selection of monitor display selection	0: Operation frequency (Hz/free unit) 1: Frequency command (Hz/free unit) 2: Output current (%/A)	0

Communication parameters

Title	Function	Adjustment range	Default setting
F800	Communication baud rate	0 : 1200bps 1 : 2400bps 2 : 4800bps 3 : 9600bps 4 : 19200bps	3
F801	Parity	0: NON (non-parity) 1: EVEN (even parity) 2: ODD (odd parity)	1
F802	Inverter number	0–99	0
F803	Communication error trip time	0(Disabled), 1–100 (S)	0
F880	Free notes	0–65535	0

Table of input terminal functions

Function No.	Code	Function	Action
0	–	No function is assigned	No action
1	ST	Standby terminal	ON : Standby, OFF : Free run
2	FR	Forward-run command	ON : Forward run, OFF : Deceleration stop
3	RR	Reverse-run command	ON : Reverse run OFF : Deceleration stop (priority to reverse run)
4	JOG	Jog run command	ON : Jog run, OFF : Canceled
5	AD2	Acceleration/deceleration 2 pattern selection	ON : Acceleration/deceleration 2 OFF : Acceleration/deceleration 1
6	DFL	Preset speed command 1	Selection of preset speeds (up to 15 speeds) using 4 bits: DFL to DFHH
7	DFM	Preset speed command 2	
8	DFH	Preset speed command 3	
9	DFHH	Preset speed command 4	
10	RST	Reset command	ON to OFF : Trip reset
11	ES	Trip stop command from external input device	ON : E Trip stop
12	PNL/TB	Terminal board switching	ON : Forced switching from operation panel/Internal potentiometer to terminal board control
13	DB	DC braking command	ON : DC braking
14	PI	Prohibition of PI control	ON : PI control prohibited, PI: PI control permitted
15	PWENE	Permission of parameter editing	ON : Edition of parameters permitted, OFF : Edition of parameter prohibited (if F700 is so set)
16	ST+RST	Combination of ST and RST commands	ON : Simultaneous input of ST and RST commands
17	ST+RNL/TB	Combination of ST and PNL/TB commands	ON : Simultaneous input of ST and PNL/TB commands
18	FR+JOG	Combination of FR and JOG commands	ON : Simultaneous input of FR and JOG commands
19	RR+JOG	Combination of RR and JOG commands	ON : Simultaneous input of RR and JOG commands
20	FR+AD2	Combination of FR and AD2 commands	ON : Simultaneous input of FR and AD2 commands
21	RR+AD2	Combination of RR and AD2 commands	ON : Simultaneous input of RR and AD2 commands
22	FR+DFL	Combination of FR and DFL commands	ON : Simultaneous input of FR and DFL commands
23	RR+DFL	Combination of RR and DFL commands	ON : Simultaneous input of RR and DFL commands
24	FR+DFM	Combination of FR and DFM commands	ON : Simultaneous input of FR and DFM commands
25	RR+DFM	Combination of RR and DFM commands	ON : Simultaneous input of RR and DFM commands
26	FR+DFH	Combination of FR and DFH commands	ON : Simultaneous input of FR and DFH commands
27	RR+DFH	Combination of RR and DFH commands	ON : Simultaneous input of RR and DFH commands
28	FR+DFHH	Combination of FR and DFHH commands	ON : Simultaneous input of FR and DFHH commands
29	RR+DFHH	Combination of RR and DFHH commands	ON : Simultaneous input of RR and DFHH commands
30	FR+DFL+AD2	Combination of FR, DFL and AD2 commands	ON : Simultaneous input of FR, DFL and AD2 commands
31	RR+DFL+AD2	Combination of RR, DFL and AD2 commands	ON : Simultaneous input of RR, DFL and AD2 commands
32	FR+DFM+AD2	Combination of FR, DFM and AD2 commands	ON : Simultaneous input of FR, DFM and AD2 commands
33	RR+DFM+AD2	Combination of RR, DFM and AD2 commands	ON : Simultaneous input of RR, DFM and AD2 commands
34	FR+DFH+AD2	Combination of FR, DFH and AD2 commands	ON : Simultaneous input of FR, DFH and AD2 commands
35	RR+DFH+AD2	Combination of RR, DFH and AD2 commands	ON : Simultaneous input of RR, DFH and AD2 commands
36	FR+DFHH+AD2	Combination of FR, DFHH and AD2 commands	ON : Simultaneous input of FR, DFHH and AD2 commands
37	RR+DFHH+AD2	Combination of RR, DFHH and AD2 commands	ON : Simultaneous input of RR, DFHH and AD2 commands
38	FCHG	Frequency command forced switching	Enabled if F Od : 4(selectable between terminal board and operation panel/Internal potentiometer) ON : V1 terminal OFF : Internal potentiometer
39	THRB	B thermal switching	ON : B thermal (Pt:0 F170 F172 F173) OFF : A thermal (Pt:setting, vL yb jHr)
40	MCHG	B motor switching	ON : B motor (PT:0 F170 F172 F173 F500 F501) OFF : A motor (Pt : Setting yL yb jHr ACC dEC)
54	MBS	Standby (inversion)	ON : Free run, OFF : Standby
55	RSTN	Reset signal (inversion)	OFF to ON : Trip reset
56	FR+ST	Combination of FR and ST commands	ON : Simultaneous input of FR and ST commands
57	RR+ST	Combination of RR and ST commands	ON : Simultaneous input of RR and ST commands

Table of output terminal functions

Function No.	Code	Function	Action
0	LL	Lower limit frequency (Hz)	ON : Output frequency equal to or higher than LL setting OFF : Output frequency lower than LL setting
1	LLN	Inversion of lower limit frequency	Inverse output of LL
2	UL	Upper limit frequency (Hz)	ON : Output frequency equal to or higher than UL setting OFF : Output frequency lower than UL setting
3	ULN	Inversion of upper limit frequency	Inverse output of UL
4	LOW	Low-speed detection signal	ON : Output frequency equal to or higher than F100 setting OFF : Output frequency lower than F100 setting
5	LOWN	Inversion of low-speed detection signal	Inverse output of LOW
6	UPF	Designated frequency reach signal (completion of acceleration/deceleration)	ON : Output frequency within command frequency ±2.5Hz OFF : Output frequency exceeding command frequency ±2.5Hz
7	UPFN	Inversion of designated frequency reach signal (inversion of completion of acceleration/deceleration)	Inverse output of RCH
8	UPF2	Set frequency reach signal	ON : Output frequency within F101 setting ±2.5Hz OFF : Output frequency exceeding F101 setting ±2.5Hz
9	UPF2N	Inversion of set frequency reach signal	Inverse output of RCHF
10	FL	Failure FL (trip output)	ON : If inverter trips
11	FLN	Inversion of failure FL (inversion of trip output)	Inverse output of FL
12	OT	Over-torque detection	ON : Torque current is held above the torque set with F616 for a period of time longer than that set with F618.
13	OTN	Inversion of over-torque detection	Inverse output of OT

To inverter users:

The inverter described in this operation manual is used for variable-speed operation of 3-phase induction motors for general industry use.



CAUTION

The inverter described in this manual is not designed and manufactured for use in equipment or a system equipment, used under the following conditions that will directly lead to death or injury : atomic energy control, aerospace equipment, traffic medical instrument and all kinds of safety devices. When our products are applied to the above equipment or system, be sure to consult us.

Our products are manufactured under stringent quality control. However, install a safety device on the equipment side in order to prevent serious accidents or loss when our products are applied to equipment that may cause serious accidents or loss due to failure or malfunction.

Do not use the inverter for any load other than 3-phase induction motors.

When an explosion-proof motor is selected, pay attention to the installation environment, because the inverter is not of an explosion-proof type

Carefully read the "Operation Manual" before use for correct operation.
Read the manual carefully also for long-term storage.

Electrical work is necessary for installation of the inverter. Leave the electric work to specialists.

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Specifications, dimensions and other items in the catalog are subject to change without notice.

D1501E-1.0 2002.12 Printed in Japan