

## Basic functions

Each “setup item” that determines the control characteristics of the inverter is called a “parameter.”  
For example, to change the acceleration time, you choose the acceleration time parameter (titled “ $\mathcal{R}\mathcal{L}\mathcal{L}$ ”).

### Quick mode (EASY)

To enter the Quick mode, press the EASY key on the panel. In this mode, you can set eight of the basic parameters.

### Standard mode

In this mode, you can set all parameters.  
For details of parameters, refer to the Instruction Manual.



Title	Function
$\mathcal{R}\mathcal{U}\mathcal{Y}$	Parameter setting macro function
$\mathcal{P}\mathcal{L}$	V/f control mode selection
$\mathcal{F}\mathcal{H}$	Maximum frequency
$\mathcal{R}\mathcal{L}\mathcal{L}$	Acceleration time 1
$\mathcal{d}\mathcal{E}\mathcal{L}$	Deceleration time 1
$\mathcal{L}\mathcal{H}\mathcal{r}$	Motor overload protection level 1
$\mathcal{F}\mathcal{A}$	FM terminal meter adjustment
$\mathcal{P}\mathcal{S}\mathcal{E}\mathcal{L}$	Parameter display selection

## Basic parameters

Title	Function	Adjustment Range	Default																															
$\mathcal{F}\mathcal{C}$	Frequency of operation panel	$\mathcal{L}\mathcal{L}$ - $\mathcal{U}\mathcal{L}$ Hz	0																															
$\mathcal{R}\mathcal{U}\mathcal{H}$	History function		-																															
$\mathcal{R}\mathcal{U}\mathcal{1}$	Automatic acceleration/deceleration	0:Deselect 1:Automatic setting 2:Automatic setting (during acceleration only)	0																															
$\mathcal{R}\mathcal{U}\mathcal{2}$	Automatic torque boost	0:Deselect 1:Automatic torque boost + auto-tuning 1 2: Sensorless vector control 1+ auto-tuning 1	0																															
$\mathcal{R}\mathcal{U}\mathcal{4}$	Automatic function setting	0:Disabled 1:Frequency setting by means of voltage 2:Frequency setting by means of current 3:Voltage/current switching from external terminal 4:Frequency setting on operation panel and operation by means of terminals 5: Frequency setting and operation on operation panel	0																															
$\mathcal{C}\mathcal{M}\mathcal{D}$	Command mode selection	0:Terminal input enabled 1:Operation panel input enabled (including LED/LCD option input) 2:Operation panel RS485 (2-wire) communication input 3:Internal RS485 (4-wire) communication input 4:Communication option input	0																															
$\mathcal{F}\mathcal{M}\mathcal{D}$	Frequency setting mode selection 1	1:V/f (voltage/current input) 2:RR/S4 (potentiometer/voltage input) 3:RX (voltage input) 4:Operation panel input enabled (including LED/LCD option input) 5:Operation panel RS485 (2-wire) communication input 6:Internal RS485 (4-wire) communication input 7:Communication option input 8:Optional AI1 (differential current input) 9:Optional AI2 (voltage/current input) 10:UP/DOWN frequency 11:RP pulse input 12:High-speed pulse input 13:Binary/BCD input	2																															
$\mathcal{P}\mathcal{L}$	V/f control mode selection	0:Constant torque characteristics 1:Voltage decrease curve 2:Automatic torque boost 3:Sensorless vector control 1 (speed) 4:Sensorless vector control 2 (speed/torque) 5:V/f 5-point setting 6:PM control 7:PG feedback vector control 1 (speed) 8:Sensorless vector control 2 (speed/torque)	0																															
$\mathcal{u}\mathcal{b}$	Manual torque boost 1	0.0-30.0%	Depends on the capacity																															
$\mathcal{u}\mathcal{L}$	Base frequency 1	25.0-500.0Hz	WN1:60, WP1:50.0																															
$\mathcal{u}\mathcal{L}\mathcal{u}$	Base frequency voltage 1	200V class:50-330V 400V class:50-660V	Depends on the capacity																															
$\mathcal{F}\mathcal{H}$	Maximum frequency	30.0-500.0Hz	80.0																															
$\mathcal{U}\mathcal{L}$	Upper limit frequency	0.0- $\mathcal{F}\mathcal{H}$ Hz	WN1:60.0, WP1:50.0																															
$\mathcal{L}\mathcal{L}$	Lower limit frequency	0.0- $\mathcal{U}\mathcal{L}$ Hz	0.0																															
$\mathcal{R}\mathcal{L}\mathcal{L}$	Acceleration time 1	0.1-6000 sec.	Depends on the capacity																															
$\mathcal{d}\mathcal{E}\mathcal{L}$	Deceleration time 1	0.1-6000 sec.	Depends on the capacity																															
$\mathcal{R}\mathcal{U}\mathcal{F}\mathcal{2}$	RR/S4 input point 2 frequency	0.0- $\mathcal{F}\mathcal{H}$ Hz	WN1:60.0, WP1:50.0																															
$\mathcal{R}\mathcal{U}\mathcal{V}\mathcal{2}$	V/f input point 2 frequency	0.0- $\mathcal{F}\mathcal{H}$ Hz	WN1:60.0, WP1:50.0																															
$\mathcal{S}\mathcal{r}\mathcal{1}$	Preset speed operation frequency 1	$\mathcal{L}\mathcal{L}$ - $\mathcal{U}\mathcal{L}$ Hz	0.0																															
$\mathcal{S}\mathcal{r}\mathcal{2}$	Preset speed operation frequency 2	$\mathcal{L}\mathcal{L}$ - $\mathcal{U}\mathcal{L}$ Hz	0.0																															
$\mathcal{S}\mathcal{r}\mathcal{3}$	Preset speed operation frequency 3	$\mathcal{L}\mathcal{L}$ - $\mathcal{U}\mathcal{L}$ Hz	0.0																															
$\mathcal{S}\mathcal{r}\mathcal{4}$	Preset speed operation frequency 4	$\mathcal{L}\mathcal{L}$ - $\mathcal{U}\mathcal{L}$ Hz	0.0																															
$\mathcal{S}\mathcal{r}\mathcal{5}$	Preset speed operation frequency 5	$\mathcal{L}\mathcal{L}$ - $\mathcal{U}\mathcal{L}$ Hz	0.0																															
$\mathcal{S}\mathcal{r}\mathcal{6}$	Preset speed operation frequency 6	$\mathcal{L}\mathcal{L}$ - $\mathcal{U}\mathcal{L}$ Hz	0.0																															
$\mathcal{S}\mathcal{r}\mathcal{7}$	Preset speed operation frequency 7	$\mathcal{L}\mathcal{L}$ - $\mathcal{U}\mathcal{L}$ Hz	0.0																															
$\mathcal{F}\mathcal{r}$	Forward run/reverse run selection (operation panel operation)	0:Forward run 1:Forward run 2:Forward run (Forward/reverse switchable on operation panel) 3:Reverse run (Forward/reverse switchable on operation panel)	0																															
$\mathcal{L}\mathcal{H}\mathcal{r}$	Motor overload protection level 1	10-100%	100																															
$\mathcal{O}\mathcal{L}\mathcal{P}$	Motor overload protection characteristic selection	<table border="1"> <thead> <tr> <th>Setting</th> <th>Motor type</th> <th>Overload protection</th> <th>OL stall</th> </tr> </thead> <tbody> <tr> <td>0</td> <td rowspan="3">Standard Motor</td> <td><input type="radio"/> (protect)</td> <td><input checked="" type="checkbox"/> (not stall)</td> </tr> <tr> <td>1</td> <td><input type="radio"/> (protect)</td> <td><input type="checkbox"/> (stall)</td> </tr> <tr> <td>2</td> <td><input checked="" type="checkbox"/> (not protect)</td> <td><input checked="" type="checkbox"/> (not stall)</td> </tr> <tr> <td>3</td> <td rowspan="4">VF Motor</td> <td><input checked="" type="checkbox"/> (not protect)</td> <td><input type="checkbox"/> (stall)</td> </tr> <tr> <td>4</td> <td><input type="radio"/> (protect)</td> <td><input checked="" type="checkbox"/> (not stall)</td> </tr> <tr> <td>5</td> <td><input type="radio"/> (protect)</td> <td><input type="checkbox"/> (stall)</td> </tr> <tr> <td>6</td> <td><input checked="" type="checkbox"/> (not protect)</td> <td><input checked="" type="checkbox"/> (not stall)</td> </tr> <tr> <td>7</td> <td></td> <td><input checked="" type="checkbox"/> (not protect)</td> <td><input type="checkbox"/> (stall)</td> </tr> </tbody> </table>	Setting	Motor type	Overload protection	OL stall	0	Standard Motor	<input type="radio"/> (protect)	<input checked="" type="checkbox"/> (not stall)	1	<input type="radio"/> (protect)	<input type="checkbox"/> (stall)	2	<input checked="" type="checkbox"/> (not protect)	<input checked="" type="checkbox"/> (not stall)	3	VF Motor	<input checked="" type="checkbox"/> (not protect)	<input type="checkbox"/> (stall)	4	<input type="radio"/> (protect)	<input checked="" type="checkbox"/> (not stall)	5	<input type="radio"/> (protect)	<input type="checkbox"/> (stall)	6	<input checked="" type="checkbox"/> (not protect)	<input checked="" type="checkbox"/> (not stall)	7		<input checked="" type="checkbox"/> (not protect)	<input type="checkbox"/> (stall)	0
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$\mathcal{d}\mathcal{S}\mathcal{P}\mathcal{U}$	Current/voltage unit selection	0:%, 1:A (ampere)/V (volt)	0																															
$\mathcal{F}\mathcal{A}\mathcal{S}\mathcal{L}$	FM terminal meter selection	0-64 (0:Output frequency, 1:Frequency command value, 2:Output current, 3:Input voltage, 4:Output voltage, etc.)	0																															
$\mathcal{F}\mathcal{A}$	FM terminal meter adjustment	-	-																															
$\mathcal{R}\mathcal{U}\mathcal{S}\mathcal{L}$	AM terminal meter selection	0-64 (0:Output frequency, 1:Frequency command value, 2:Output current, 3:Input voltage, 4:Output voltage, etc.)	2																															
$\mathcal{R}\mathcal{U}$	AM terminal meter adjustment	-	-																															
$\mathcal{C}\mathcal{F}$	PWM carrier frequency	1.0-16.0kHz (large capacity model 2.5-8.0kHz)	Depends on the capacity																															
$\mathcal{U}\mathcal{U}\mathcal{S}$	Auto-restart control selection	0:Deselect 1:At auto-restart 2:ST ON/OFF switching 3:1+2 4:Starting	0																															
$\mathcal{U}\mathcal{U}\mathcal{C}$	Regenerative power ride-through control	0:Deselect 1:Power ride-through 2:Deceleration stop during power failure 3:Synchronized deceleration/acceleration (synchronized acceleration/deceleration signal) 4:Synchronized deceleration/acceleration (synchronized acceleration/deceleration signal+power failure)	0																															
$\mathcal{P}\mathcal{b}$	Dynamic braking selection	0:Deselect 1>Select (braking resistance overload detect) 2>Select (braking resistance overload not detect)	0																															
$\mathcal{P}\mathcal{b}\mathcal{r}$	Dynamic braking resistance	0.5-1000 $\Omega$	Depends on the capacity																															
$\mathcal{P}\mathcal{b}\mathcal{C}\mathcal{P}$	Allowable continuous braking resistance	0.01-600.0kW	Depends on the capacity																															
$\mathcal{L}\mathcal{Y}\mathcal{P}$	Factory default setting	0: 1:50 Hz default setting 2:60 Hz default setting 3:Factory default setting 4:Trip cleared 5:Cumulative operation time cleared 6:Type information initialized 7:User-defined parameter recorded 8:Item 7 above reset 9:Cumulative fan operation time cleared 10:Acceleration/deceleration time setting 0.01 sec.-600.0 sec. 11:Acceleration/deceleration time setting 0.1 sec.-6000sec.	0																															
$\mathcal{P}\mathcal{S}\mathcal{E}\mathcal{L}$	Parameter display selection	0:Standard setting mode at time of activation of motor 1:Quick mode at time of activation of motor 2:Quick mode only	0																															
$\mathcal{F}\mathcal{1}$ - $\mathcal{F}\mathcal{9}$	Extended parameters	Set parameters in more detail.	-																															
$\mathcal{E}\mathcal{D}$	Automatic edit function	-	-																															

## Extended parameters

About 500 extended parameters are available. For details on extended parameters, please visit our web site (<http://www.inverter.co.jp/>).

## Standard specifications

### Standard specifications (200 V class - 0.4 to 45 kW, 400 V class -0.75 to 75 kW model)

#### 200 V class

Item	Specification														
Applicable Motor (kW)	0.4	0.75	1.5	2.2	3.7/4.0	5.5	7.5	11	15	18.5	22	30	37	45	
Rating	Type	VFAS1-													
	Form	2004PL	2007PL	2015PL	2022PL	2037PL	2055PL	2075PL	2110PM	2150PM	2185PM	2220PM	2300PM	2370PM	2450PM
	Output Capacity (kVA) Note 1)	1.1	1.8	3.0	4.2	6.7	10	13	21	25	29	34	46	55	67
	Output Current (A) Note 2)	3.0	4.8	8.0	11	17.5	27.5	33	54	66	75	88	120	144	176
		(3.0)	(4.5)	(8.0)	(10.5)	(16.6)	(25.0)	(33)	(49)	(64)	(66)	(75)	(88)	(120)	(140)
Output Voltage	3-phase, 200 to 240 V (The maximum output voltage is the same as the input voltage.)														
Overload Current Rating	150%-1 minute														
Electric Braking	Dynamic Braking Circuit	Built-in													
	Dynamic Braking Resistor	Compatible with external options													
Power Supply	Voltage/frequency	3-phase, 200 to 240 V - 50/60 Hz													
	Allowable Fluctuation	Voltage +10% - 15% Note 3) Frequency $\pm$ 5%													
Protective method	IP20 enclosed type (JEM1030)										IP00 open type (JEM1030) Note 4)				
Cooling method	Forced air cooling														
Cooling fan noise (dBA)	43	43	43	55	55	56	58	60	60	60	60	64	64	64	
Color	RAL7016														
Built-in Filter	EMI noise filter Note 5)							Basic noise filter Note 6)							
DC Reactor	External option							Built-in							

#### 400 V class

Item	Specification														
Applicable Motor (kW)	0.75	1.5	2.2	3.7/4.0	5.5	7.5	11	15	18.5	22	30	37	45	55	75
Rating	Type	VFAS1-													
	Form	4007PL	4015PL	4022PL	4037PL	4055PL	4075PL	4110PL	4150PL	4185PL	4220PL	4300PL	4370PL	4450PL	4750PL
	Output Capacity (kVA) Note 1)	1.8	3.1	4.4	8.0	11	13	21	25	31	37	50	60	72	88
	Output Current (A) Note 2)	2.3	4.1	5.8	10.5	14.3	17.6	27.7	33	41	48	66	79	94	116
		(2.3)	(4.0)	(4.6)	(8.6)	(13)	(17)	(25)	(32)	(37)	(38)	(53)	(60)	(75)	(93)
Output Voltage	3-phase, 380 to 480 V (The maximum output voltage is the same as the input voltage.)														
Overload Current Rating	150%-1 minute														
Electric Braking	Dynamic Braking Circuit	Built-in													
	Dynamic Braking Resistor	Compatible with external options													
Power Supply	Voltage/frequency	3-phase, 380 to 480 V - 50/60 Hz													
	Allowable Fluctuation	Voltage +10% - 15% Note 3) Frequency $\pm$ 5%													
Protective method	IP20 enclosed type (JEM1030)										IP00 open type (JEM1030) Note 4)				
Cooling method	Forced air cooling														
Cooling fan noise (dBA)	43	43	43	55	56	56	58	60	60	60	64	64	64	64	
Color	RAL7016														
Built-in Filter	EMI noise filter Note 5)														
DC Reactor	External option							Built-in							

Note 1) Capacity is calculated at 220V for the 200V models and at 440V for the 400V models.

Note 2) Rated output current when the PWM carrier frequency (parameter  $\mathcal{C}\mathcal{F}$ ) is 4kHz or less.

The values between parentheses refer to rated output currents when set to 12kHz.

Note 3)  $\pm$ 10% when the inverter is used continuously (load of 100%)

Note 4) Inverters, 18.5kW or greater, do not have wiring port covers. They have large openings, but there is no space to bend the external cables inside the unit. If they are fitted external to the cabinet, please use an optional wiring port cover.

Note 5) Complies with the European EMC Directive

IEC/EN61800-3, 1st environment, category C2 or IEC/EN61800-3, 2nd environment, category C3

Note 6) Not complies with the European EMC Directive

Core and capacities with external filter (optional) : Complies with the European EMC Directive.

# Standard specifications

## Standard specifications (200 V class -55 to 75 kW, 400 V class -90 to 500 kW model)

### 200 V class

Item		Specification	
Applicable Motor (kW)		55	75
Rating	Type	VFAS1-	
	Form	2550P	2750P
	Output Capacity (kVA) Note 1)	84	109
	Output Current (A) Note 2)	221	285
	Output Voltage	3-phase, 200 to 240 V (The maximum output voltage is the same as the input voltage.)	
	Overload Current Rating	150%–1 minute	
Electric Braking	Dynamic Braking Circuit	Built-in	
	Dynamic Braking Resistor	Compatible with external options	
	Power Supply		
Voltage/frequency	3-phase, 200 to 240 V – 50/60 Hz		3-phase, 200 to 220 V – 50 Hz 3-phase, 200 to 240 V – 60 Hz
	Allowable Fluctuation	Voltage +10% – 15% Note 3) Frequency ±5%	
Protective method	IP00 open type (JEM1030) Note 4)		
Cooling method	Forced air cooling		
Cooling fan noise (dBA)	61		72
Color	RAL7016		
Built-in Filter	External filter (optional)		
DC Reactor	Attached DC reactor Note 5)		

### 400 V class

Item		Specification									
Applicable Motor (kW)		90	110	132	160	200	220	280	355	400	500
Rating	Type	VFAS1-									
	Form	4900PC	4110KPC	4132KPC	4160KPC	4200KPC	4220KPC	4280KPC	4355KPC	4400KPC	4500KPC
	Output Capacity (kVA) Note 1)	136	164	197	239	295	325	419	511	578	717
	Output Current (A) Note 2)	179	215	259	314	387	427	550	671	759	941
	Output Voltage	3-phase, 380 to 480 V (The maximum output voltage is the same as the input voltage.)									
	Overload Current Rating	150%–1 minute									
Electric Braking	Dynamic Braking Circuit	Built-in					Compatible with external options				
	Dynamic Braking Resistor	Compatible with external options									
	Power Supply										
Voltage/frequency	Note 6)	3-phase, 380 to 440 V – 50 Hz					3-phase, 380 to 480 V – 60 Hz				
	Allowable Fluctuation	Voltage +10% – 15% Note 3) Frequency ±5%									
Protective method	IP00 open type (JEM1030) Note 4)										
Cooling method	Forced air cooling										
Cooling fan noise (dBA)	61	72	73	73	76	76	76	76	76	76	78
Color	RAL7016										
Built-in Filter	EMI noise filter Note 7)										
DC Reactor	Attached DC reactor Note 5)										

Note 1) Capacity is calculated at 220V for the 200V models and at 440V for the 400V models.

Note 2) Indicates the value when the PWM carrier frequency (parameter  $f_c$ ) is 2.5 kHz or less.

When low noise (PWM carrier frequency 8 kHz) is required at 18.5 kW or more, use an inverter of capacity one rank higher than the motor capacity.

Note 3) ±10% when the inverter is used continuously (load of 100%)

Note 4) Inverters, 18.5kW or greater, do not have wiring port covers. They have large openings, but there is no space to bend the external cables inside the unit. If they are fitted external to the cabinet, please use an optional wiring port cover.

Note 5) For 200V-55kW, 400V-90kW or larger model, be sure to install DC reactor.

However, this is unnecessary for DC input specifications.

Note 6) Three-phase 380–480V-50/60Hz for 4900PC

Note 7) Complies with the European EMC Directive IEC/EN61800-3, 2nd environment, category C3

## Common Specifications

Item	Specification	
Control system	Sinusoidal PWM control	
Output voltage adjustment	Main circuit voltage feedback control. (Switchable between automatic adjustment/fix/control off)	
Output frequency range	Setting between 0.01 to 500Hz. Default max. frequency is set to 0.01 to 60Hz. Maximum frequency adjustment (30 to 500Hz)	
Minimum setting steps of frequency	0.01Hz: operation panel input (60Hz base), 0.02Hz: analog input (60Hz base, 11 bit/0 to 10Vdc)	
Frequency accuracy	Within ±0.2% (25°C±10°C): analog input ±0.01% (25°C±10°C): digital input	
Voltage/frequency characteristics	V/f constant, square reduction torque control, automatic torque boost, vector calculation control, base frequency adjustment 1, 2, 3, and 4 (25 to 500Hz), V/F 5-point arbitrary setting, torque boost adjustment (0 to 30%), start frequency adjustment (0 to 10Hz), stop frequency adjustment (0 to 30Hz)	
Frequency setting signal	3kΩ potentiometer (possible to connect to 1 to 10kΩ-rated potentiometer) 0 to 10Vdc (input impedance Zin: 30kΩ) 0 to ±10Vdc (Zin: 22kΩ) 4 to 20mAdc (Zin:24kΩ)	
Terminal board base frequency	The characteristic can be set arbitrarily by two-point setting. Compliant with 6 types of input; analog input (RR, V/II, RX, RX2), pulse input and binary/BCD input (*RX2, binary/BCD input: optional)	
Frequency jump	3 places. Setting of jump frequency and width.	
Upper and lower limit frequencies	Upper limit frequency: 0 to max. frequency, lower limit frequency: 0 to upper limit frequency	
PWM carrier frequency	200V-45kW or less, 400V-75kW or less : adjustable between 1.0 to 16kHz 200V-55kW or more, 400V-90kW or more : adjustable between 2.5 to 8kHz	
PID control	Adjustment of proportional gain, integral time, differential time and delay filter	
Torque control	Voltage command input specification: DC 0 to ±10V	
Acceleration/deceleration time	0.01 to 6000 sec. Selectable from among acceleration/deceleration. times 1, 2, 3 and 4. Automatic acceleration/deceleration function. S-pattern acceleration/deceleration 1 and 2 pattern adjustable.	
DC braking	Adjustment of braking start frequency (0 to 120Hz), braking (0 to 100%) and braking time (0 to 10 sec.). With emergency stop braking function and motor shaft fix control function.	
Forward run/reverse run Note 1)	With F-CC closed to forward run, with R-CC closed to reverse run, with both closed to stop. With ST-CC opened to coast stop. Emergency stop by panel operation or terminal board.	
Jog run Note 1)	Jog mode, if selected, allows jog operation from the operation panel Jog run operation by terminal board is possible by setting the parameters.	
Preset speed operation Note 1)	By changing the combination of open/close between S1, S2, S3, RR/S4-CC, set frequency + 15-speed operation. Selectable between acceleration/deceleration time, torque limit and V/f by set frequency.	
Retry	Capable of restarting after a check of the main circuit elements in case the protective function is activated. Max. 10 times selectable arbitrarily. Waiting time adjustment (0 to 10 sec.)	
Soft stall	Automatic load reduction control at overloading. (Default: OFF)	
Cooling fan ON/OFF	The cooling fan will be stopped automatically to assure long life when unnecessary.	
Operation panel key operation ON/OFF control	Key prohibition selectable between Stop key only, Mode key only, etc. All key operations can be prohibited.	
Regenerative power ride-through control	Possible to keep the motor running using its regenerative energy in case of a momentary power failure. (Default: OFF)	
Auto-restart operation	Possible to restart the motor in coasting in accordance with its speed and direction. (Default: OFF)	
Simplified pattern operation	Possible to select each 8 patterns in 2 groups from 15-speed operation frequency. Max. 16 types of operation possible. Terminal board operation/repeat operation possible.	
Commercial inverter switching	Possible to switch operation by commercial power source or inverter	
Light-load high-speed operation	Increases the operating efficiency of the machine by increasing the rotational speed of the motor when it is operated under light load.	
Drooping function	When two or more inverters are used to operate a single load, this function prevents load from concentrating on one inverter due to unbalance.	
Override function	External input signal adjustment is possible to the operation frequency command value.	
Protective function	Stall prevention, current limit, overcurrent, overvoltage, short circuit on the load side, ground fault on the load side (Note 5), undervoltage, momentary power failure (15ms or more), non-stop control at momentary power failure, overload protection, arm overload at starting, overcurrent on the load side at starting, overcurrent and overload at dynamic braking resistance, fin overheat, emergency stop	
Electronic thermal characteristic	Switchable between standard motor/constant torque VF motor, adjustment of overload protection and stall prevention level.	
Reset	Reset by 1a contact closed (or 1b contact opened), or by operation panel. Or power source OFF/ON. This function is also used to save and clear trip records.	
Display functions	Alarms	Stall prevention during operation, overload limit, overload, undervoltage on power source side, DC circuit undervoltage, setting error, in retry, upper limit, lower limit.
	Causes of failures	Overcurrent, overvoltage, fin overheat, short circuit on the load side, ground fault on the load side, inverter overload, arm overcurrent at starting, overcurrent on the load side at starting, EEPROM error, RAM error, ROM error, transmission error, (dynamic braking resistor overcurrent/overload), (emergency stop), (undervoltage), (low current), (overtorque), (motor overload), (output phase failure) The items in the parentheses are selectable.
	Monitoring function	Operation frequency, operation frequency command, forward run/reverse run, output current, DC voltage, output voltage, compensated frequency, terminal board input/output information, CPU version, control EEPROM version, past trip history, cumulative operation time, speed feedback, torque, torque command, torque current, exiting current, PID feedback value, motor overload factor, inverter overload factor, PBR overload factor, PVBR load factor, input power, output power, peak output current, peak DC voltage, Motor counter pseudo PG, position pulse, RR input, V/II input, RX input, RX2 input, FM output, AM output, meter adjustment fix output, flash memory version, main circuit EEPROM version, types of connection option, previous default setting, previous automatic control (AU2)
	Free unit display	Display of optional units other than output frequency (motor speed, line speed, etc), current ampere/% switch, voltage volt/% switch
Automatic edit function	Searches automatically parameters that are different from the standard default setting parameters. Easy to find changed parameters.	
User default setting	User parameter settings can be saved as default settings. Allows to reset the parameters to the user-defined parameter settings.	
LED	Charge display	Displays main circuit capacitor charging.
Input/output terminal input function	Possible to select positive logic or negative logic with programmable input/output terminal function menu. Note 1) Note 2) (Default setting: positive logic)	
Sink/source switching	Possible to switch between minus common (CC) and plus common (P24) for control terminal. (Default setting: minus common (CC))	
Output signal	Failure detection signal	1c contact output (250Vac-2A-cosφ=1, 250Vac-1A-cosφ=0.4, 30Vdc-1A)
	Low speed/speed reach signal output Note 2)	Open collector output (24Vdc, max. 50mA, output impedance: 33Ω)
	Upper/lower limit frequency signal output Note 2)	Open collector output (24Vdc, max. 50mA, output impedance: 33Ω)
	Output for frequency meter/output for ammeter Note 3)	Analog output. 1mAdc full-scale DC ammeter or 7.5Vdc-1mA voltmeter
Pulse train frequency output	Open collector output (24Vdc, max. 50mA)	
Communication function	RS-485 standard 2-channel equipped (connector: modular 8P)CC-Link, DeviceNet and PROFIBUS-DP are optional.	
Environments	Operating environments	Indoor use. Altitude: 3000m or less (current reduction necessary if 1000m or more.) Place not exposed to direct sunlight and free of corrosive and explosive gases.
	Ambient temperature	-10 to +60°C (Remove the upper cover if 40°C or more, max. 60°C) Note 4)
	Storage temperature	-25 to +70°C
	Relative humidity	20 to 93% (free from condensation)
Vibration	5.9m/s <sup>2</sup> (0.6G) or less (10 to 55Hz) (Compliant with JIS C80068-2-6)	

Note 1) 16 contact input terminals (of which 8 are options) are programmable contact input terminals, and they make it possible to arbitrarily select from 136 types of signals.

Note 2) Programmable ON/OFF output terminals make it possible to arbitrarily select from 150 types of signals.

Note 3) Programmable analog output terminals make it possible to arbitrarily select from 55 types of signals.

Note 4) When using inverters where the ambient temperature will rise above 50°C, remove the upper cover and operate each inverter at a current lower than the rated one.

Note 5) This function protects inverters from overcurrent due to output circuit ground fault.