■ Common specification

Item		Specification
Control specification	Control system	Sinusoidal PWM control
	Output voltage adjustment	Adjustable within the range of 50 - 330 V (240 V class) and 50 - 660 V (480 V class) by correcting the supply voltage
	Output frequency range	Setting between 0.01 - 590 Hz. Default frequency is set to 0.01-50/60 Hz. Maximum frequency adjustment (30 to 590Hz)
	Minimum setting steps of frequency	0.01 Hz: operation panel input (60 Hz base), 0.03 Hz: analog input (60 Hz base, 11 bit/0 - 10 Vdc)
	Frequency accuracy	Analog input: ±0.2% of the maximum output frequency (at 25±10°C) Digital input: ±0.01%±0.022 Hz of the output frequency
	Voltage/frequency characteristics	V/f constant, variable torque, automatic torque boost, vector control, base frequency adjustment 1, 2, 3, and 4 (15 - 590 Hz), V/f 5-point arbitrary setting, torque boost adjustment (0 - 30%), start frequency adjustment (0 - 10 Hz), stop frequency adjustment (0 - 30 Hz)
	Frequency setting signal	3 kΩ potentiometer (possible to connect to 1 - 10 kΩ-rated potentiometer) 0 - 10Vdc (input impedance Zin: 31.5 kΩ) -10 to +10 Vdc (Zin: 31.5 kΩ) 4 - 20 mAdc (Zin: 250 Ω)
	Terminal block frequency command	The characteristic can be set arbitrarily by two-point setting. Compliant with 7 types of input; analog input (RR, RX, II, AI4, AI5), and pulse input (S4, S5)
	Frequency jump	Three frequency can be set. 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	Frame size A1 to A4: adjustable between 1.0 - 16 kHz Frame size A5 to A8: adjustable between 2.5 - 8 kHz
	PID control	Adjustment of proportional gain, integral time, differential time and delay filter. Multi PID and external PID control.
	Torque control	Voltage command input specification: -10 - +10 Vdc
	Real time clock	Current time (Year, month, date, hour, minute), Timezone, Daylight saving time, 4 working days and 20 holidays can be set by parameters.
Operation specifications	Acceleration/deceleration time	0.01 - 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 - <FH>Hz), braking (0 - 100%) and braking time (0 - 25.5 sec.). With emergency off braking function and motor shaft fix control function.
	Forward run/reverse run *1	Forward run with ON of the terminal [F], Reverse run with ON of the terminal [R] (Default setting). Coast stop with OFF of the terminal assigned Stad-by function. Emergency off by panel operation or terminal.
	Jog run *1	Jog run, if selected, allows jog operation from the operation panel Jog run operation by terminal block is possible by setting the parameters.
	Preset speed operation *1	By changing the combination of the terminals [S1], [S2], [S3], [S4], [S5] set frequency + 31-speed operation. Selectable between acceleration/deceleration time, torque limit and V/f by set frequency.
	Retry	Capable of restarting after a check of the power circuit elements in case the protective function is activated. Max. 10 times selectable arbitrarily. Waiting time adjustment (0 - 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 lock selectable between STOP key only, MODE key only, etc. All key operations can be locked.
	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 operation/repeat operation possible.
	Commercial inverter switching	Possible to switch operation by commercial power supply 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.
	Droop 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	Protective function	Stall prevention, current limit, overcurrent, overvoltage, short circuit on the load side, ground fault on the load side *5, undervoltage, momentary power failure (15 ms 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 braking resistor, overheat, emergency off
	Electronic thermal characteristic	Switchable between standard motor/constant torque 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 supply OFF/ON. This function is also used to save and clear trip records.

(Continued overleaf)

(Continued)

Item			Specification
Display function	Screen of LCD	Alarms	Stall prevention during run, overload limit, overload, undervoltage on power supply side, DC circuit undervoltage, setting error, in retry, upper limit, lower limit.
		Causes of failures	Overcurrent, overvoltage, 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, cooling fan fault, CPU fault, EEPROM fault, RAM fault, ROM fault, communication error, (braking resistor overcurrent/overload), (emergency off), (undervoltage), (undercurrent), (overtorque), (motor overload), (input phase failure), (output phase failure) The items in the parentheses are selectable.
		Monitoring function	Output frequency, frequency command, forward run/reverse run, output current, DC voltage, output voltage, compensated frequency, terminal input/output information, CPU version, past trip history, cumulative operation time, feedback frequency, torque, torque command, torque current, exiting current, PID feedback value, motor overload factor, inverter overload factor, PBR overload factor, PBR load factor, input power, output power, peak output current, peak DC voltage, RR input, II input, RX input, AI4 input, AI5 input, FM output, AM output, expansion I/O card option CPU version, integral input power, integral output power, communication option reception counter, communication option abnormal counter.
		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 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 power circuit capacitor charging.
Input/output terminal logic function			Possible to select positive logic or negative logic with programmable input/output terminal function menu. 2 or 3 function can be assigned for some terminals. *1 *2 (Default setting: positive logic)
Sink/source switching			Possible to switch between minus common (CC) and plus common (P24) for digital input terminal. (Default setting: external power supply)
output signal	Failure detection signal		1c contact output (250 Vac-2 A-(cosΦ=1), 30Vac-2A(Resistive), 250Vac-1A-(cosΦ=0.4), 30Vdc-1A(L/R=7ms))
	Relay output		2×1a contact output (250 Vac-2 A-(cosΦ=1), 30Vac-2A(Resistive), 250Vac-1A-(cosΦ=0.4), 30Vdc-1A(L/R=7ms))
	Low speed/speed reach signal output *2		Digital output (24 Vdc, max. 50 mA)
	Output for frequency meter/ Output for ammeter *3		Analog output for meter: 1 mA dc full-scale dc ammeter 0 - 20 mA (4 - 20 mA) output: DC ammeter (allowable load resistance: 500 Ω or less) 0 - 10 V output: DC voltmeter (allowable load resistance: 1 kΩ or more)
	Pulse train frequency output		Pulse train output (Up to 30 kpps, duty 50%)
Communication function			Standard equipment: Ethernet (dual port with switch, IEEE802.3/IEEE802.3u : Fast Ethernet, 10/100Mbps: Auto negotiation), RS485 (2-channel) Optional: PROFINET, DeviceNet, PROFIBUS-DP
Environments	Use environments		Indoor use. Place not exposed to direct sunlight and free of corrosive and explosive gases.
	Ambient temperature		-15 to 60°C *4 Frame size A1 to A5: Current reduction, remove the top cover when above 50°C Frame size A6: Current reduction when above 50°C Frame size A7 and A8: Current reduction when above 50°C(HD), above 45°C(ND)
	Storage temperature		-25 to +70°C (Temperature applicable for a short term.)
	Relative humidity		5 to 95% (free from condensation)
	Altitude		4800m or less for TN/TT system (Frame size A1 to A6) 3800m or less for IT system (Frame size A1 to A6) 3000m or less for TN/TT/IT system (Frame size A7 and A8) 2000m or less for corner-earthed system (All frame size) (current reduction necessary if above 1000 m for all frame size)
	Vibration		5.9 m/s^2{0.6G} or less (10 - 55 Hz) *6

*1: 14 digital input terminals (of which 6 are options) are programmable digital input terminals, and they make it possible to arbitrarily select from 178 types of signals.

*2: Programmable digital/pulse train output terminal make it possible to arbitrarily select from 256 types of signals.

*3: Programmable analog output terminals make it possible to arbitrarily select from 54 types of signals.

*4: -10 to 60°C for frame size A7 and A8.
Remove operation panel of the inverter when above 50°C.
For detail of current reduction, see "Instruction manual for load reduction" (E6582116)

*5: This function protects inverters from overcurrent due to output circuit ground fault.

*6: 2.9m/s^2 {0.3G} or less (10-55Hz) for frame size A6 to A8.