

HITACHI INVERTER

**HITACHI**  
Inspire the Next

**SH1** s

**Be a next standard!**



**SH1**



ACC

S series , setting the new global standard



Corresponds to variety of applications.





# essible



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Textile



Engineering



Fan

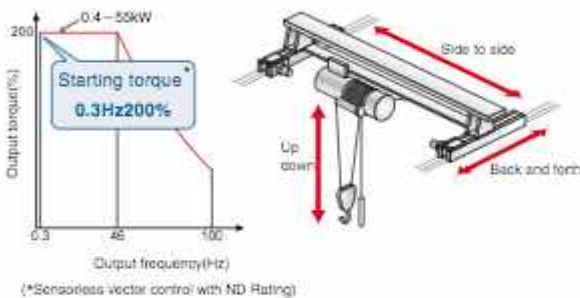


Pump

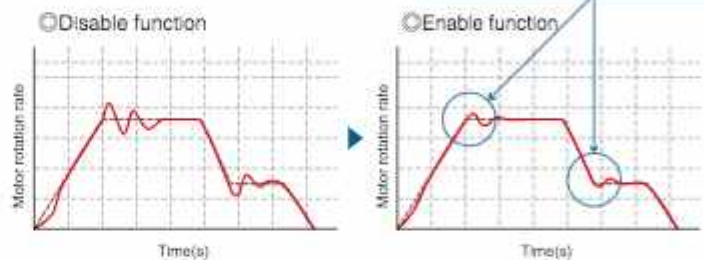
# A High Performance drive for the most demanding of applications

"Smooth operation" in critical and demanding applications, such as vertical lift New version UP

High starting torque at low speed range while in control of heavy loads. (ND rating).  
 [Sensor less vector control(SLV)]  
 [OHZ sensor less vector control]



Decreasing overshoot and undershoot contributes to smooth and stabilized operation with reduced load shock.  
 [Gain mapping Function]



Cog-less motor operation for crane, lift, transport, etc.  
 Trip-less operation for better productivity.

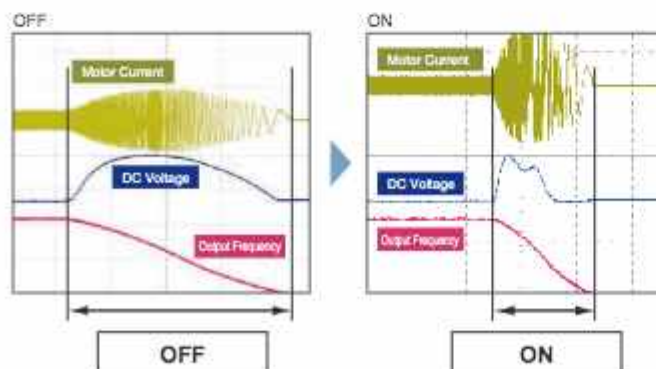


## Reduce trips on acceleration and deceleration

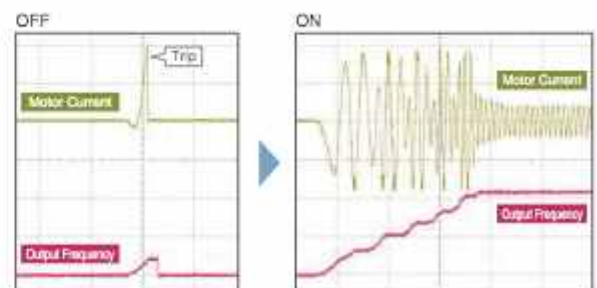
version UP

Automatic speed adjustment manages ideal acceleration / deceleration speed to reduce the trip possibility from over current, over voltage, and impact load.

Over magnetize function



Over-current suppress function



\*Turn off this function for lifting equipment.

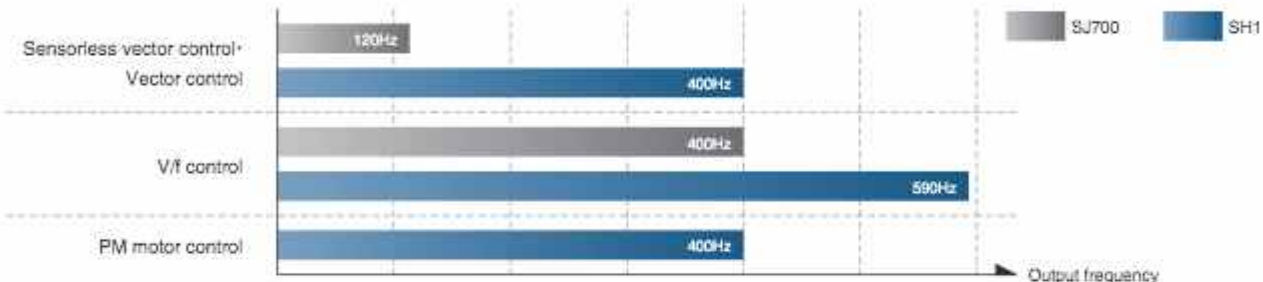
\*Image of the output frequency and output current.



-  Improvement or added item.
-  EzSQ application case, refer to P17-18 for details.
-  PM motor specific function.

## "High speed rotation" for non-traditional applications

590Hz at the maximum operation is available for precise metal processing. For PM motor, also up to 400Hz. (actual output frequency depends on motor)



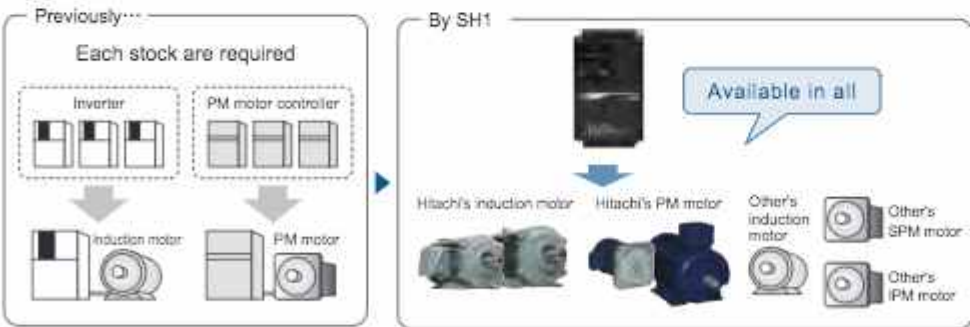
### For metal tooling

High speed rotation contributes the high quality of metal processing.



## Save on spare control costs

Our multi-mode inverter can control both your induction motor, or permanent magnet AC motor. All while offering programmable current limit to protect from demagnetization of the PM motor.



### Optimize performance. [Auto-tuning function]

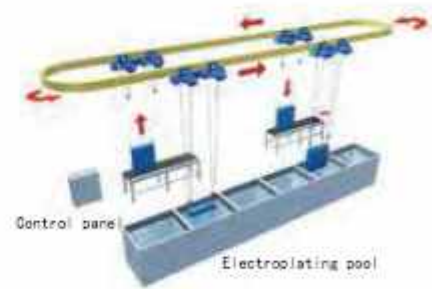
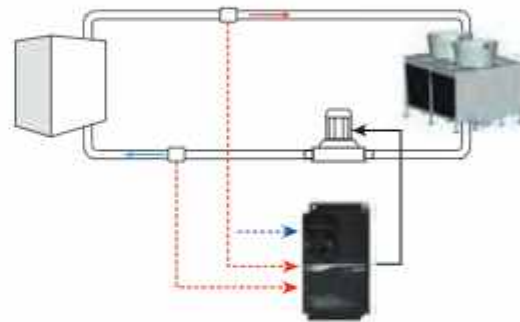
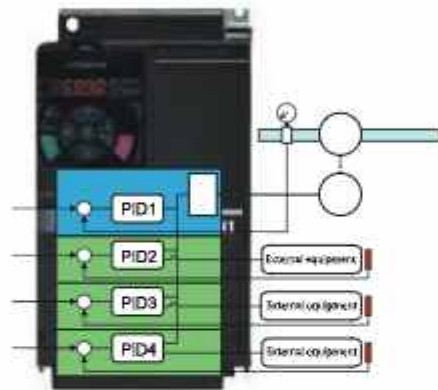
Complicated tuning procedures are avoided through the use of our auto-tuning function to optimize motor performance.

### For long time operation (fan, pumps)

Significant energy savings can be obtained in comparison to an induction motor, even in 24 hours 365 days operation.



## Complicated PID process control



# Accessibility

# 2

# Easy access to all the functionality

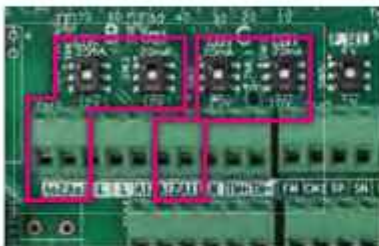
Various convenient features.

## Control circuit terminal designed for easy wiring

New Feature

0/10V and 4 to 20mA inputs and as well as output are easily selected via DIP switch.

- 2 analog inputs (3 inputs in total).
- 2 analog outputs.



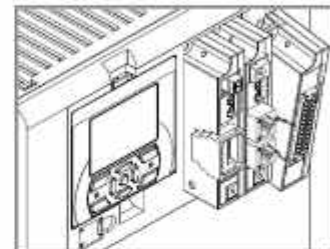
Modbus communication is standard. 2 communication terminals provided for Modbus communication as standard.

Daisy chain wiring of RS-485 is easy.



Easy customize with "Slot-in" option cassette

3 option slots

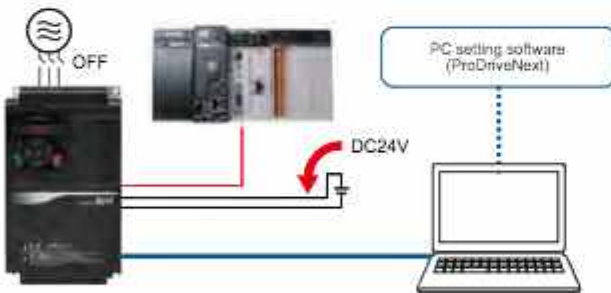


## Programming ease through the use of 24 VDC to power up inverter CPU memory

New Feature

Normal power supply (R0, T0) to CPU. Also possible to utilize an external 24VDC control power supply.

Parameter setting is also possible with the main power is turned off. Thus saving time and effort.



## Easy customize by PC configuration software

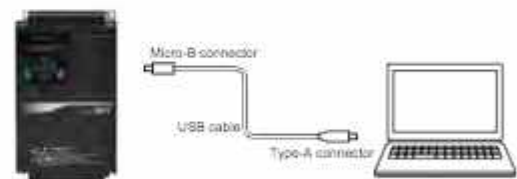
version UP

PC setting software.

Using the PC configuration software (ProDriveNext), parameter setting, monitor, and diagnosis can be easily achieved.

Easy customization to your own inverter.

Specific behavior can be easily programmed into the inverter by BASIC like program.

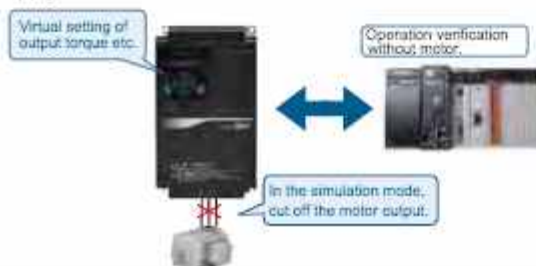


## Control Simulation Logic operation without direct motor output

New Feature

The simulation mode makes it easier to verify connection with the system control equipment.

In the simulation mode, only the motor output is shut off while all inverter functions are enabled. The simulation mode can also be active by using an external 24VDC power supply.



## Quick diagnose during failure

New Feature

The SH1 automatically stores internal data in retentive memory.

Users can upload the data to a PC for review and diagnosis of issue.

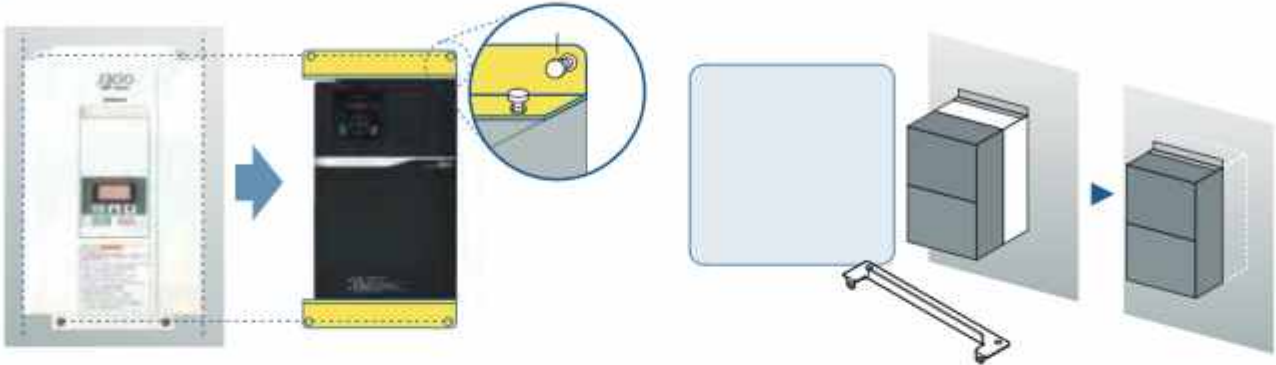




# Easy access to all the functionality

## Direct field replacement, when needed

Panel mounting portion is supplied as separate part. (SH1-00175-H )  
Even if its body size is different, it is possible to correspond in flexible ways.



Monitor lifetime prediction functions.



EMC directive: EN 61800-3:2004/  
A1:2012 LVD: EN 61800-5-1:2007



## EzSQ

### EzSQ (programming function for customization)

version  
UP

Line	ラベル	コメント	パラメータ1	パラメータ2	パラメータ3	パラメータ4	パラメータ5
7		case	1				
8		call	RUN_FW				
9		case	2				
10		call	RUN_RV				
11		case	3				
12		call	WAIT_RUN				
13		case else					
14		call	STOP				
15		end select					
16		goto	LOOP				
17							
18		sub	STOP				
19		UBW=	%v	and	3		
20		if	UBW	<	2	then	LBLO
21		FW=	1				
22		timer set	TD(0)	U(00)			
23		U(01)=			1		
24	LBLO	end sub					
25							

The program is easy to create with available condition branches and timer settings.

Hitachi's EzSQ makes it possible to achieve a level of control that cannot be realized by a general purpose inverter. Providing a unique solution and added value through cost savings and improved performance.

Simultaneous execution task in SH1 extended to 5tasks/2ms

The program is created on a PC setting software (ProDriveNext).  
It is easy to programming because similar BASIC!



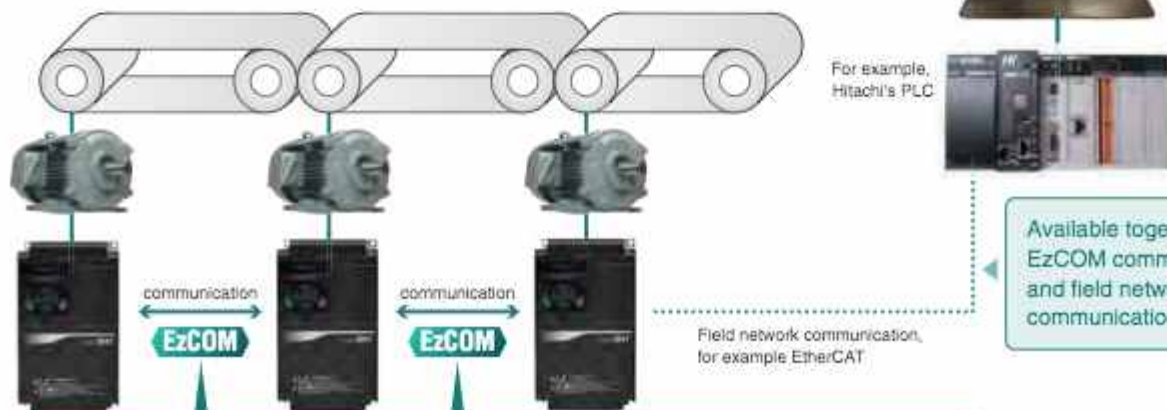
## EzCOM

### Inverter-to-Inverter communication

version  
UP

**SH1 makes it possible to have Inverter-to-Inverter communication without a PLC or PC. [EzCOM function]**

It is easy to build a small coarsely synchronized system using multiple Inverters. Since SH1 can use both of EzCOM and external communication option cassette, you can create a system that does not require complicated control components. (The maximum number of EzCOM units is 8 Inverters)



By simple wiring and easy parameter settings, the synchronous operation can be achieved without the host controller (Resulting in cost and wiring savings).

Available together, EzCOM communication and field network communication options.



## IoT applied



Communicator Option
Option
Option
Option
Option
Option
Option
Option
Other



Other Option
Encoder feedback option
Safety Function feedback Pt1
Other

RS-485 communication terminal

Modbus-RTU, The maximum baud rate is 115.2kbps.

## Intuitive, easy-to-use LED operator is standard



### Operation Panel



digital operator



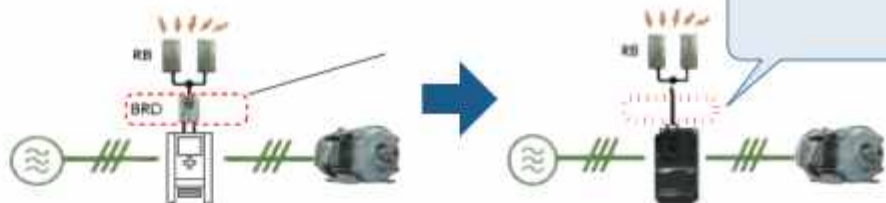
digital operator(with volume)

\*operation



LCD operator

\*operation





# PC setting Software

# Hitachi's ProDriveNext Software

Easy configuration, such as start/stop and fault diagnosis.

## ProDriveNext(PC setting software)

ProDriveNext supports various functions.

Easy Setup & Easy data management.  
Parameter comparison is also enhanced.



Easy connection via USB

Ethernet is also available (optional)



### Monitor Function.

All display parameters can be monitored.



Monitor display format can be uniquely customized by selecting the required items, and can be displayed in a tabular or graphical format.

Monitor item select dialog

Device Name: SH1

No.	Data ID	Data Name
2	dA-01	Output frequency monitor
3	dA-02	Output current monitor
3	dA-03	Rotation direction monitor
4	dA-04	Frequency reference monitor(After calcula.
6	dA-06	Output frequency scale conversion monitor
6	dA-10	Observer speed monitor (at OLV)
7	dA-15	Torque reference monitor(After calculation)
8	dA-16	Torque limit monitor
9	dA-17	Output Torque monitor
10	dA-18	Output Voltage monitor
11	dA-20	Pulse counter monitor
12	dA-30	Input power monitor
13	dA-32	Accumulation input power monitor

Optional Items

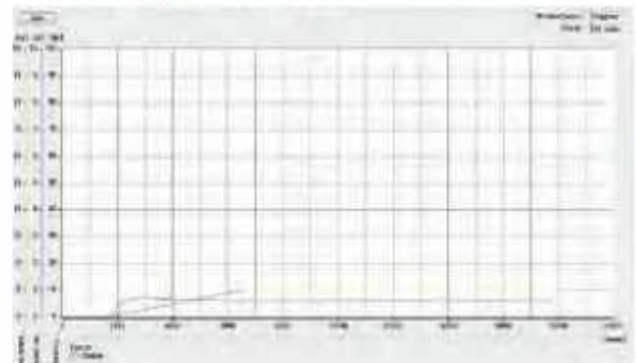
- Monitor
- CODE-A
- CODE-b
- CODE-C
- CODE-H
- CODE-d
- CODE-U
- Trip

Select Cancel

Circle 200 mm

Device Name	Data ID	Data Name	Priority value	Unit
d11	dA-01	Output frequency monitor	10	Hz
d11	dA-02	Output current monitor	120	A
d11	dA-03	Rotation direction monitor	FForward RUN	
d11	dA-04	Frequency reference monitor(After calcula.	10	Hz
d11	dA-06	Output frequency scale conversion moni.	10	Hz
d11	dA-17	Output Torque monitor	0	N
d11	dA-18	Output Voltage monitor	40	V
d11	dA-20	Input power monitor	0	W
d11	dA-30	Output power monitor	0	W
d11	dA-32	DC-bus voltage monitor	2200	Vdc
d11	dA-42	Electronic thermal load rating monitor (.	0	N
d11	FA-01	Max Speed reference monitor	10	Hz
d11	FA-05	Torque reference monitor	0	N
d11	FA-10	Torque limit monitor	0	N

[Table type monitor]



[Graph type monitor]

## Parameter Setting.

Changes made by keyboard input.

Changed parameters highlighted "PINK" which indicates that it needs to be download to the device.

Data ID	Data Name	Setting value	Current value	Unit	Default value	Range
AA101	Main speed input source select.	01 (Getting by para.)	01 (Getting by para.)		01 (Getting by para.)	
AA102	Sub frequency input source select.	00 (Disabled)	00 (Disabled)		00 (Disabled)	
AA103	Sub speed setting, 1st motor	0.00	0.00	Hz	0.00	0.00 ~ 100.00
AA105	Calculation symbol selection for	00 (Disabled)	00 (Disabled)		00 (Disabled)	
AA106	Add frequency setting, 1st motor	0.00	0.00	Hz	0.00	-100.00 ~ 100.00
AA111	Non-command input source select.	02 (RUN key on fan)	02 (RUN key on fan)		02 (RUN key on fan)	
AA112	Reverse direction of keypad, 1.	00 (Forward)	00 (Forward)		00 (Forward)	
AA113	STOP key enable at RUN command.	01 (Enabled)	01 (Enabled)		01 (Enabled)	
AA114	Reverse direction selection, 1st motor	00 (Disabled)	00 (Disabled)		00 (Disabled)	
AA115	STOP mode selection, 1st motor	00 (Deceleration stop)	00 (Deceleration stop)		00 (Deceleration stop)	
AA201	Main speed input source select.	01 (Getting by para.)	01 (Getting by para.)		01 (Getting by para.)	
AA202	Sub speed input source select.	00 (Disabled)	00 (Disabled)		00 (Disabled)	
AA204	Sub speed setting, 2nd motor	0.00	0.00	Hz	0.00	0.00 ~ 100.00
AA205	Calculation symbol selection for	00 (Disabled)	00 (Disabled)		00 (Disabled)	
AA206	Add frequency setting, 2nd motor	0.00	0.00	Hz	0.00	-100.00 ~ 100.00
AA211	Non-command input source select.	02 (RUN key on fan)	02 (RUN key on fan)		02 (RUN key on fan)	

[Parameter setting display]

## Extensive parameter comparison function.

Parameter management is supported by comparison functions below.

- [Setting value] - [Current value],
- [Setting value] - [Default value]
- [Setting value] - [File value]

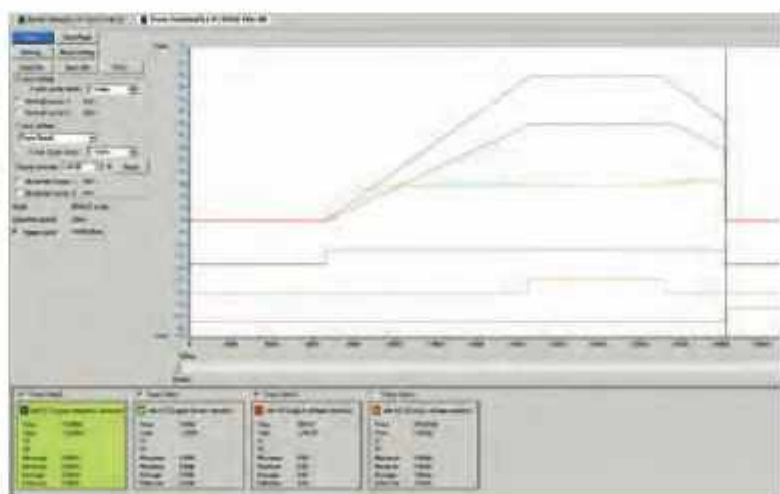
Data ID	Data Name	Setting value	Current value	Default value
FA101	Main speed reference select	00.00	0.00	0.00
FA111	Deceleration time mode	00.00	0.00	0.00
AA114	Non-command input source selection, 1st motor	00 (None) [P0/PNS]	00 (None)	02 (RUN key on keypad)
AA107	Control mode selection, 1st motor	00 (Servoless vector control)	00 (None)	00 (V/F control / Constant)
AP01	Target reference input source selection	02 (Setting by Terminal IN2)	02 (Setting by Terminal)	01 (Setting by command)
AP11	Target data input source selection	00 (Setting by Terminal IN2)	00 (None)	00 (Disabled)
AT10	DC braking selection, 1st motor	01 (Enabled)	01 (Enabled)	00 (Disabled)
AA10	Control method for 2 motor selection, 1st motor	01 (Vector control)	01 (Vector control)	01 (Vector control)

## Data Trace function support an failure diagnosis.

By frequency reached, alarm or other signal trigger, the internal data of inverter is stored in real-time in the internal memory\*.

Operation adjustment and failure analysis becomes more quickly.

(\*This memory data is cleared at power shutdown.)



Hitachi's EzSQ makes it possible to achieve a level of control that cannot be realized by a general purpose inverter. Providing a unique solution and added value through cost savings and improved performance. Simultaneous execution task in SH1 extended to 5tasks/2ms. (SJ700 is 1task/2ms.)



# Application Note

# High Performance Applications

Hitachi inverters are used in a wide variety of industries because

## Crane, Lift, Automatic warehouse

**EzSQ**

- Provides smooth drive control even for heavy weights.

Provide stable drive control even for the heavy weights (such as winding of the cranes) by high start-up torque (0.3Hz, 200%).

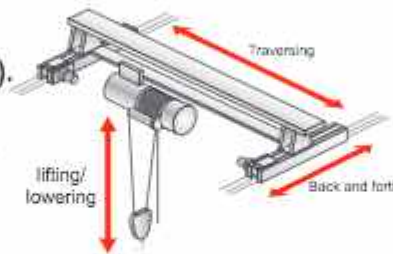
\*Note Hitachi Induction motor 4P (ND load/Sensor-less vector control)

- Reduce the shock such as swing load by multi setting speed response gain.

Gain mapping function provides a vibration reduction and stable operation. It will be also effective in the tact time reduction.

- Space-saving and cost-down by the EzSQ(programming function).

By using EzSQ, it is possible to reduce components by eliminating the host controller for the drive, thus saving-space and cost.



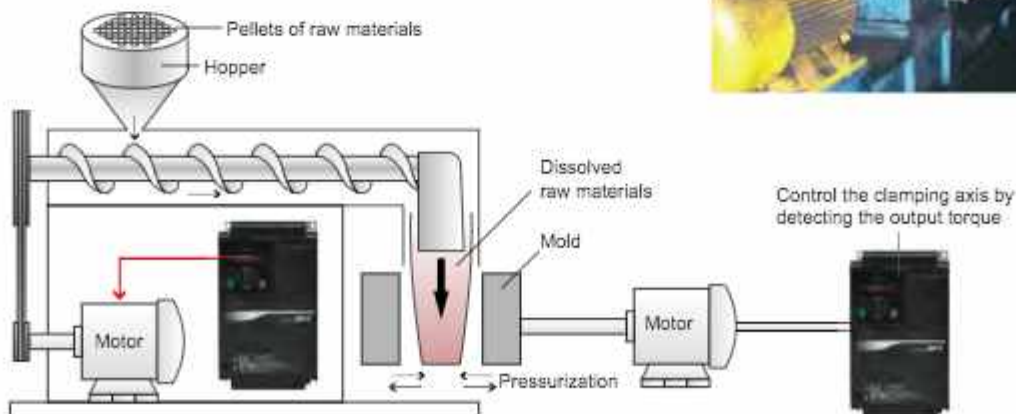
### Recommended function

- Sensorless vector control
- Gain mapping function
- EzSQ(programming function)

## Injection molding machine

- Torque control can be applied to the injection molding machine.

"Overload warning signal" and "Over torque signal" can apply the operation timing of the injection and mold clamping axis.



### Recommended function

- Torque control
- Torque limit function
- Overload signal
- Over torque signal
- Overload restriction function



# of its high efficiency and high quality.

## Winder

### Utilizing Gain Control.

When you allow the speed response gain to be variable by the output frequency band, the drive is more stable.

This is suitable for winder and re-winder applications.

### In Winding machine applications highly precise rotation is required.

For closed-Loop application optional feedback board is required.



### Recommended function

- Vector control (feedback option board required)
- Gain mapping function
- Torque control

## Grinder



### Miniaturization by utilizing a PM motor.

Hitachi supports PM motor control.

### Further support to high-quality machining applications.

Maximum output frequency is 590Hz (induction motor) and 400Hz (PM motor).

### EzSQ expands the possibility for a wide variety of simpler applications.

By utilizing the EzSQ program operation functionality, The drive logic (EzSQ) can be developed and edited to optimize the motor operation based on conditional or logical programming to enhance and increase production.

In addition, the programming functionality can reduce cost, function, and panel space as well as some of the logic allocated to the controller and peripheral devices.

e. g. Depend on application desired operation, the logic program (EzSQ) can control many of the of operational parameters, such as frequency, overload level, overload signals and others.

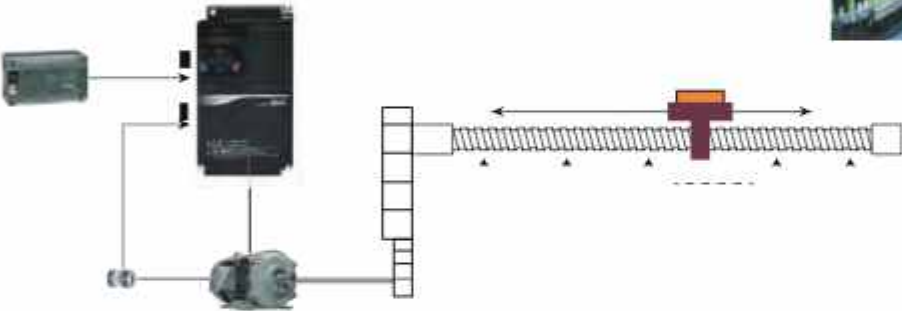


### Recommended function

- PM motor drive
- EzSQ(programming function)

# Application Note

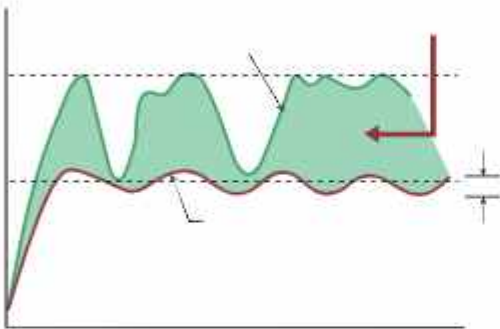
EzSQ program achieves auto-positioning operation.



EzSQ(programming function)



more useful features of each application!

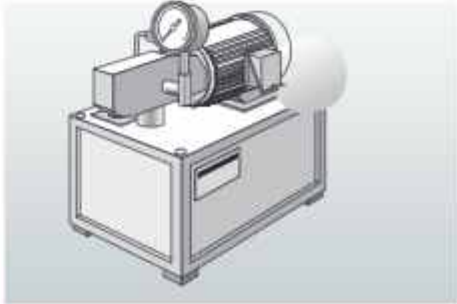
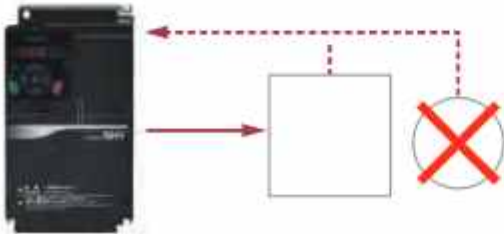


OSP-11~160kW



PM motor      Modbus      PID

rotational speed during standby, the SJ-P1 will optimize energy consumption. In addition, EzSQ can utilize signals from external sources such as a pressure sensor

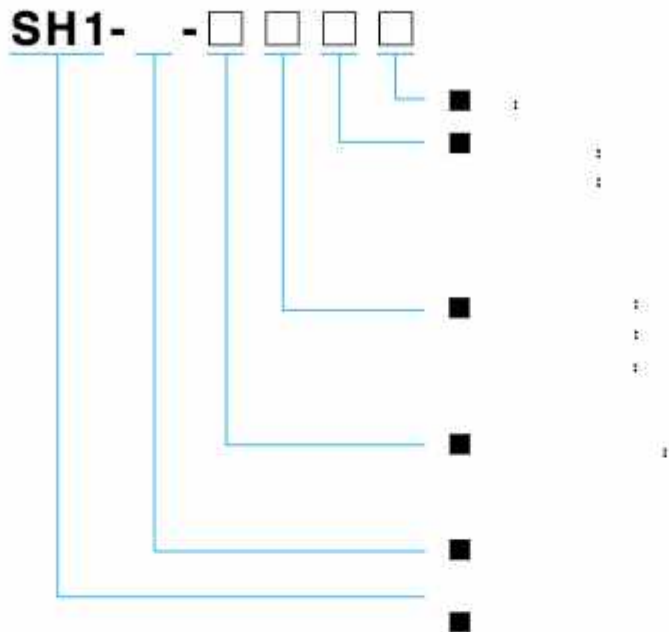


of the cumulative power!

EzSQ(programming function)



# Model configuration



Motor capacity (KW) 3-phase AC380V,4P	VLD mode				LD mode				ND mode			
	SH1-	-H	CF	Rated current	SH1-	-H	CF	Rated current	SH1-	-H	CF	rated current
0.75										00041		2.5A
1.5	00041			4.1A	00041			3.1A		00054		4.0A
2.2	00054			5.4A	00054			4.8A		00083		5.5A
3.7	00083			8.3A	00083			6.7A		00126		9.2A
5.5	00126			12.6A	00126			11.1A		00175		14.8A
7.5	00175			17.5A	00175			16.0A		00250		19.0A
11	00250			25.0A	00250			22.0A		00310		25.0A
15	00310			31.0A	00310			29.0A		00400		32.0A
18.5	00400			40.0A	00400			37.0A		00470		39.0A
22	00470			47.0A	00470			43.0A		00620		48.0A
30	00620			62.0A	00620			57.0A		00770		61.0A
37	00770			77.0A	00770			70.0A		00930		75.0A
45	00930			93.0A	00930			85.0A		01160		91.0A
55	01160			116.0A	01160			105.0A		01470		112.0A
75	01470			147.0A	01470			135.0A		01760		150.0A
90	01760			176.0A	01760			160.0A		02130		180.0A
110	02130			213.0A	02130			195.0A		02520		217.0A
132	02520			252.0A	02520			230.0A		03160		260.0A
160	03160			316.0A	03160			290.0A				
Overload current rating	110% 60s / 120% 3s				120% 60s / 150% 3s				150% 60s / 200% 3s			
Applications	Air blower, water pump, air conditioner and other applications which need light load.				Air blower, water pump, air conditioner, conveyor, textile machinery and other applications which need normal load.				lifting machinery, rolling machinery, compressor, punch, metal working, textile machinery, construction machinery and woodworking machinery which need heavy load.			





# Common specifications

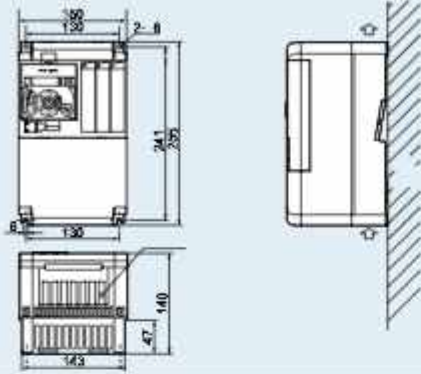
Items		General Specifications	
PWM system		Sine-wave PWM system	
Output frequency range (*1)		0.00 to 590.00Hz	
Frequency accuracy		For the highest frequency, digital $\pm 0.01\%$ , analogue $\pm 0.2\%$ (25 $\pm 10^\circ\text{C}$ )	
Frequency resolution		Digital: 0.01Hz, Analogue: Max. frequency / 4000 (Ai1 terminal / Ai2 terminal: 12 bit / 0 to +10V or 0 to -20 mA, Ai3 terminal: 12 bit / -10 to +10V)	
Control system (*2)		IM	V/f control (constant torque / reduced torque / free), Automatic boost control, V/f control with encoder (constant torque / reduced torque / free), Automatic boost control with encoder, Cascade type sensorless vector control, 0Hz sensorless vector control, Cascade type vector control with encoder (position and torque).
		SM/PM	Methods of synchronous startup for vectorless smart control / Methods of IVMS startup for vectorless smart control
Speed fluctuation (*3)		$\pm 0.5\%$ (sensorless vector control)	
Acceleration/deceleration time		0.00 to 3500.00s (Linear, S-curve, U-curve, Inverted-U-curve, EL-S-curve)	
Display		Output frequency, Output current, output torque, trip history, input/output terminal function, input/output power (*4), PN voltage, etc.	
Start functions		DC braking after the start, matching frequency after the start, active frequency matching start, Low-voltage start, retry restart.	
Stop functions		After free run stop, deceleration stop, DC braking or external DC braking operation (Braking force, time, adjustment of operation speed)	
Stall prevention function		Overload limit function, overcurrent suppression, overvoltage suppression function	
Protection functions (*5)		Overcurrent error, overload error, brake resistor overload, overvoltage error, memory error, undervoltage error, current detector error, CPU error, external trip error, USP error, ground error, supply overvoltage error, power loss error, temperature detector error, Cooling-fan rotation speed decrease, temperature error, phase input error, IGBT error, phase output error, thermistor error, brake error, low-speed range overload error, inverter overload, RS485 communication error, RTC error, etc.	
Other functions		V/f free setting (7 points), upper and lower frequency limit, frequency jump, curve acceleration and deceleration, manual torque boost, energy-saving operation, analogue output adjustment, minimum speed, carrier frequency adjustment, motor electronic thermal function (free is possible), inverter thermal function, external start-and-stop (speed and rate), frequency input selection, trip retry, restart stop, various signal output, initialization setting, PID control, auto-decel at shut-off, brake control function, commercial switching function, auto-tuning (on/offline) etc.	
Frequency setting	Panel	up, down, left and right keys to the set parameter.	
	External signal (*6)	Ai1 / Ai2 terminal (Current and Voltage is able to switched.)	0 to 10Vdc (input impedance: 10k $\Omega$ ) / 0 to 20mA (input impedance: 100 $\Omega$ )
Forward / reverse Start / stop	External signal (*6)	Ai3 terminal	-10 to +10Vdc (input impedance: 10k $\Omega$ )
	External port	Multi-speed terminal	16 multi-speed (With the use of the intelligent input terminal)
Intelligent input terminals	External port	Pulse train input	Maximum 32 kHz x 2
	External port	RS485 serial communication (Protocol: Modbus-RTU, Maximum: 115.2kbps)	
Input	Panel	By RUN / Stop key (With the set parameter, forward / reverse can be switched)	
	External port	Forward (FW) / Reverse (RV) / 3-wire input allowed (STA, STP, FR) (When input terminal functions are assigned)	
Intelligent input terminals	External port	RS485 serial communication (Protocol: Modbus-RTU, Maximum: 115.2kbps)	
	External port	11 terminals (A or B terminal accept a pulse train)	
Backup supply terminal	External port	FW (Forward rotation) / RV (Reverse rotation), CF1 to 4 (Multi-speed 1 to 4), SF1 to 7 (Multi-speed bit 1 to 7), ADD (Trigger for frequency addition), SCHG (Command change), STA (3-wire start) / STP (3-wire stop) / FR (Forward / reverse by 3-wire), AHD (Analogue command holding), FUP (Remote control up) / FDN (Remote control down), UDC (Remote data clearance), F-OP (Forcible operation), SET (2nd-motor), RS (Reset), JG (Jogging), DB (External DC braking), 2CH (2-stage acc / decel), FRS (Free-run stop), EXT (External trip), USP (Unattended start protection), CS (Commercial power supply switching), SFT (Software lock), BOK (Braking confirmation), OLR (Overload restriction selection), KHC (Accumulated input power clear), OKHC (Accumulated input, PID (PID1 disable), PIDC (PID1 integration reset), PID2 (PID2 disable), PIDC2 (PID2 integration reset), SVC1 to 4 (PID1 multistage target value 1 to 4), PFO (PID gain change), PID1 (PID output change), SLP (SLEEP trigger) / WAKE (WAKE trigger), TL (Enable torque limit), TRQ1/2 (Torque limit 1/2), PPI (PPI switching), CAS (Control gain switching), FOC (Forcing), ATH (Enable torque command input), TBS (Enable torque bias), LAC (Acceleration / Deceleration cancellation), MI1 to 11 (General-purpose input 1 to 11), PCC (Pulse counter clearance), ECOM (EzCOM activation), PRG (EzSQ programme start), HLD (Acc / decel stop), REN (Motion enable signal), DISP (Display lock), PLA (Pulse train input A), PLB (Pulse train input B), DTR (Data trace start), DISP (Display lock), SON (servo on), ORT (orientation), PCLR (Clearance of position deviation), STAT (pulse train position command input enable), PUP (Position bias (ADD)), PDN (Position bias (SUB)), CP1 to 4 (Multistage position settings selection 1 to 4), ORL (Limit signal of Homing function), ORG (Start signal of Homing function), FOT (Forward Over Travel), ROT (Reverse Over Travel), SPD (speed / position switching), PSET (Position data presetting).	
	External port	P+ / P-: DC24V input (input allowable voltage: 24V $\pm 10\%$ )	
Thermistor input terminal	External port	1 terminal (PTC / NTC resistor allowed)	
Intelligent output terminals	External port	Transistor output terminal 5, 1c contact relay 1 point	
	External port	RUN (While in run), FA1 to 5 (Reached frequency signal), IRDY (Inverter ready), FWR (Forward rotation), RVR (Reverse rotation), FREF (panel frequency reference), REF (panel motion operation), SETM (2nd-motor selected), AL (Alarm signal), MJA (Major failure signal), OTQ (Over-torque), IP (Power loss), UV (Undervoltage), TRQ (Torque limited), IPS (Decel. Power loss), RNT (RUN time exceeded), ONT (ON time exceeded), THM (Motor electronic thermal warning), THC (Electronic thermal warning), WAC (Capacitor life warning), WAF (Cooling-fan life warning), FR (Operation signal), OHF (heat sink overheat warning), LOC / LOC2 (Low-current indication signal), OL / OL2 (Overload warning signal 1/2), BRK (Brake release), BER (Brake error), ZS (0Hz detection signal), OD / OD2 (Output deviation for PID control), FBV / FBV2 (PID feedback comparison), NDC (Communication disconnection), Ai1Dc / Ai2Dc / Ai3Dc (Analogue Ai1 / Ai2 / Ai3 disconnection), WCAi1 / WCAi2 / WCAi3 (Window comparator Ai1 / Ai2 / Ai3), LOG1 to 7 (logical operation result 1 to 7), MO1 to 7 (General-output 1 to 7), OVS (Over-Voltage power supply), PCMP (Pulse counter compare output), WFT (Trace function waiting for trigger), TRA (Trace function data logging), PDD (Position deviation over), POK (Positioning completed), etc.	
Output terminal monitor (*7)	External port	The data of the monitor can be selected by the parameter of the output.	
EMC filter activation (*8)	External port	EMC filter can be activated (method to switch varies)	
PC external access	External port	USB Micro-B	
Environment	Ambient temperature (*9)	-10 to 50°C (ND), -10 to 45°C (LD), -10 to 40°C (VLD)	
	Storage temperature (*10)	-20 to 65°C	
Vibration tolerance (*11)	Level of humidity	20 to 90%RH (No condensation allowed)	
	Vibration tolerance (*11)	SH1-00041-H to SH1-00620H	5.9m/s <sup>2</sup> (0.6G), 10 to 55Hz
Installation Place (*12)	External port	More than SH1-00770-H	
Components life span (*13)	External port	A maximum altitude of 1000 m, without gases or dust.	
Conformity standards	External port	Main circuit smoothing capacitors is 10 years. / Cooling-fan is 10 years.	
Optional slots	External port	CE marking (EN 61800-3:2004/A1:2012, EN 61800-5-1:2007)	
Option	Input / output	3 ports	
	Option	Analog I/O (available soon)	
Other optional components	Communication	Ethernet (Modbus TCP), EtherCAT, PROFIBUS-DP, PROFINET (available soon)	
	Feedback	Line driver input (RS422)	
Other optional components	External port	Braking resistor, AC reactor, noise filter, operator cable, harmonics suppression unit, noise filter, LCR filter, analog panel, regenerative braking unit, PC software ProdriveNext, Screw type terminal block (P1-TM2)	

\*1: To operate the motor beyond 50/60Hz, please consult with the motor manufacturer about the maximum allowable rotation speed. \*2: If the setting of the motor constant is not appropriate, there is a case when the starting torque is not sufficient or unstable. \*3: Speed fluctuation will vary depending on your system and the motor of the use environment. Please contact us for more information. \*4: Both input power and the output power are reference (not actual) value. Not suitable for calculations for such as the actual efficiency. \*5: IGBT error [E030] also occurs by IGBT damage not only by short-circuit protection. Depending on the operating status of the inverter, Overcurrent error [E001] occurs instead of the IGBT error [E030]. \*6: The frequency command is the maximum frequency at 9.8V for input voltage 0 to 10Vdc, or at 19.8 mA for input current 4 to 20 mA. Characteristic change is adjusted by using external start-end function. \*7: The analogue voltage and analogue current monitor are estimated outputs of the analogue meter connection. Maximum output value might deviate slightly from 10V or 20 mA by variation of the analogue output circuit. If you want to change the characteristics, adjust the Aa1 and Aa2 adjustment functions. There is monitor data that cannot be part of the output. \*8: When the EMC filter is enabled, please connect to the power supply with neutral grounding. Otherwise, it may increase leakage current. \*9: Derating is set in accordance to carrier frequency. \*10: Storage temperature is the temperature during transport. \*11: In accordance with the test methods of JIS C 80068-2-6: 2010 (IEC 60068-2-6:2007). \*12: In case of utilization at an altitude of 1000 m or more, take into account that the atmospheric pressure is reduced by 1% for every 100 m up. Please apply a derating of a 1% from the rated current every 100 m. Conduct and evaluation and contact us if you plan on using it above 2500 m. \*13: The ambient temperature is 40 °C (annual average). Without corrosive gas, flammable gas, oil mist and dust. The above design life is a calculated value, not a guaranteed value. Output current at the calculation is 80% of the rated current of the inverter.



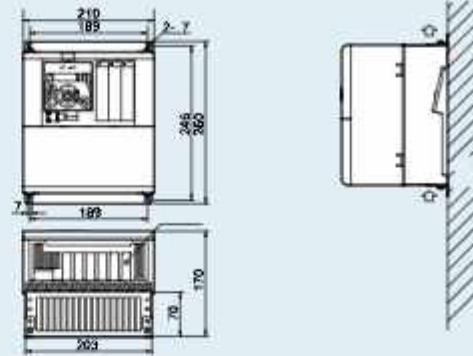
## D

•SH1-00041~00126HFCF

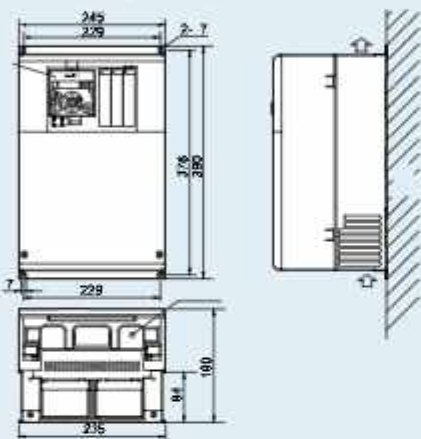


•SH1-00175~00310HFCF

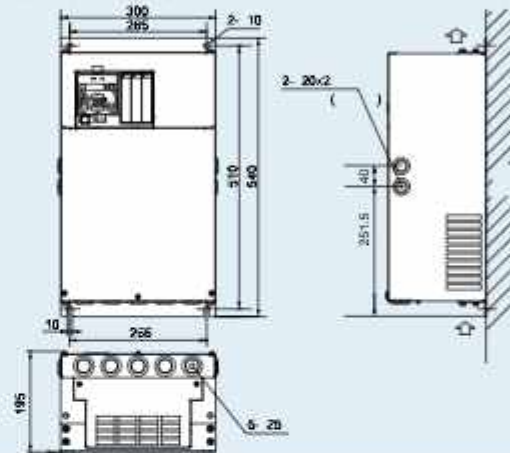
UNIT mm



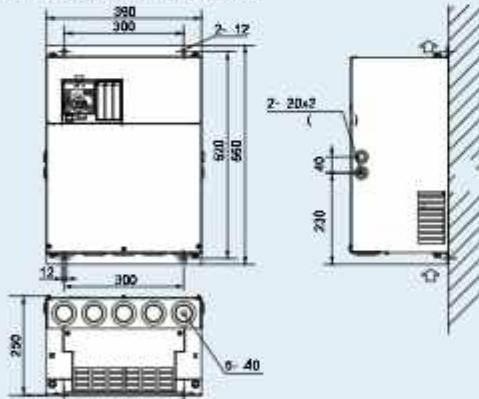
•SH1-00400~00620HFCF



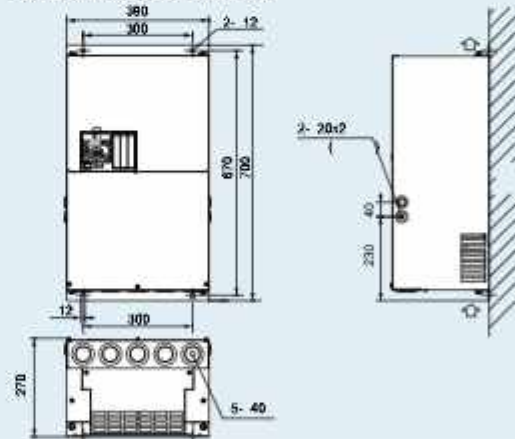
•SH1-00770HFCF



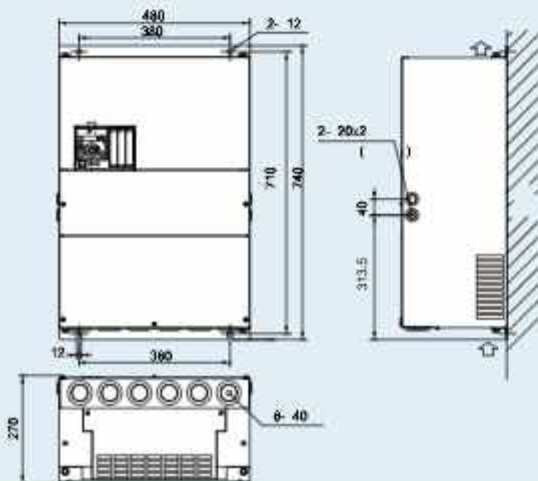
•SH1-00930~01470HFCF



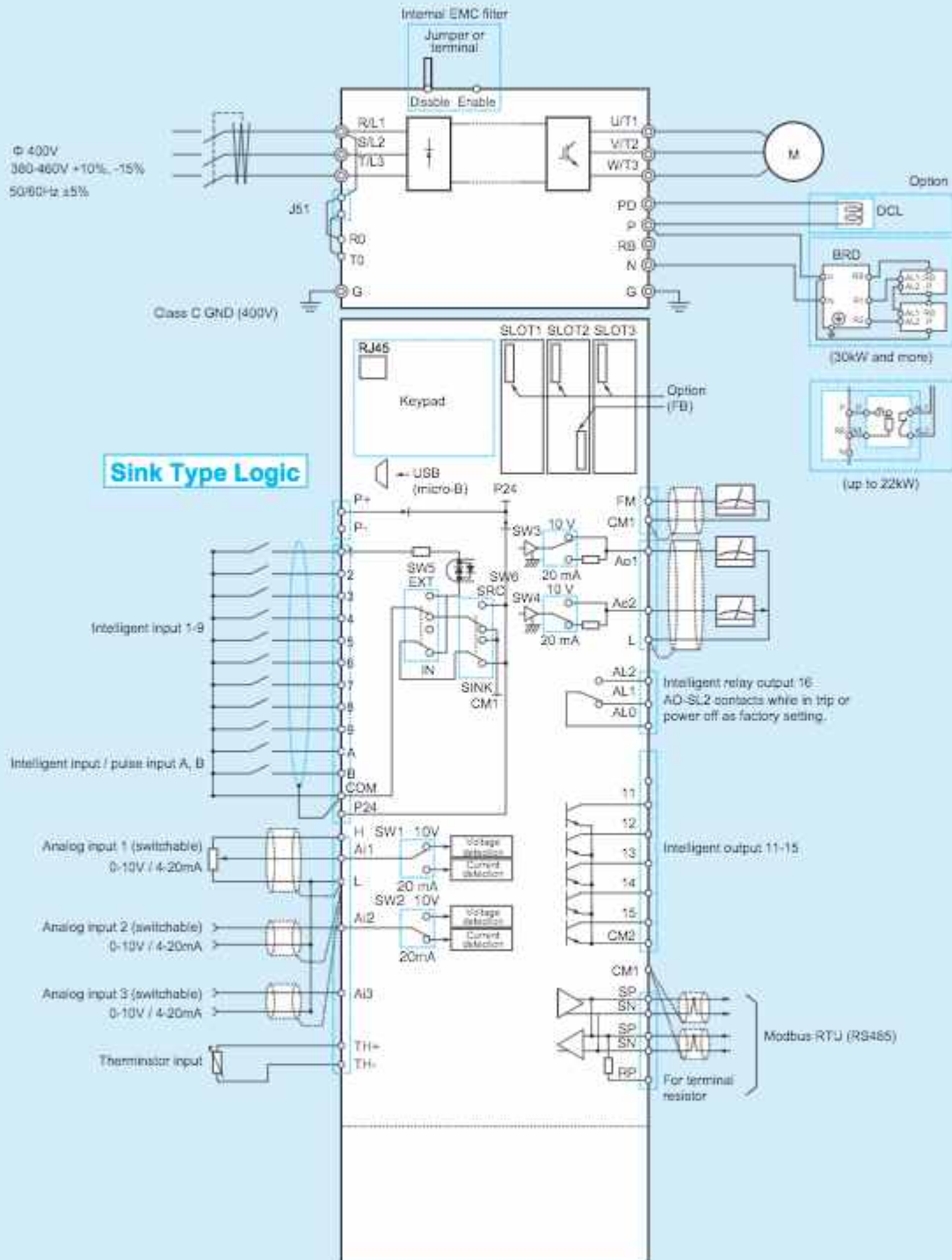
•SH1-01760~02130HFCF



•SH1-02520~03160HFCF



# Connecting Diagram



Note1: Common to each terminal varies.

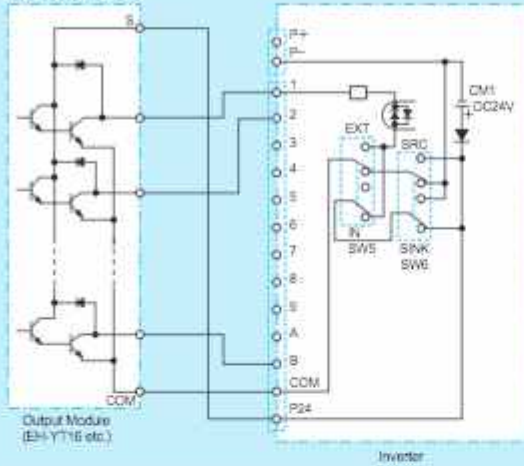
Note2: Disconnect J51 when to supply R0-T0 separately. UV error is issued when main supply is off while in operation.

## Connecting to PLC

### • Connection with Input Terminals

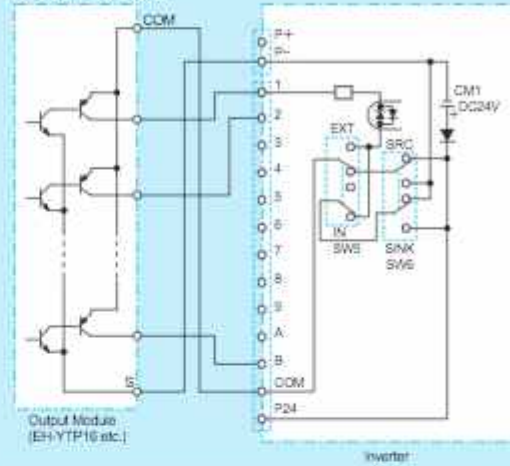
#### 1. Using Internal Power Supply of The Inverter

(1) Sink type logic



- When using internal power supply of the inverter, the SW5 to "IN".
- When connecting sink type module, the SW6 to "SINK".

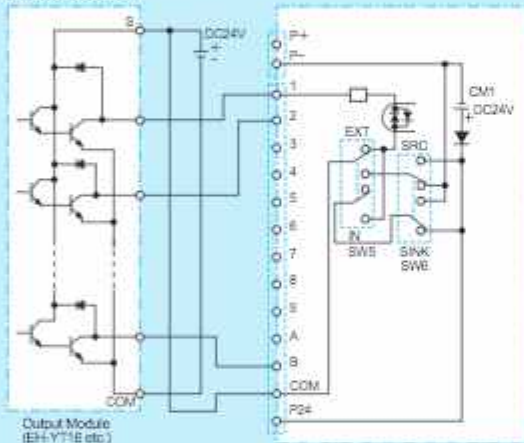
(2) Source type logic



- When using internal power supply of the inverter, the SW5 to "IN".
- When connecting source type module, the SW6 to "SRC".

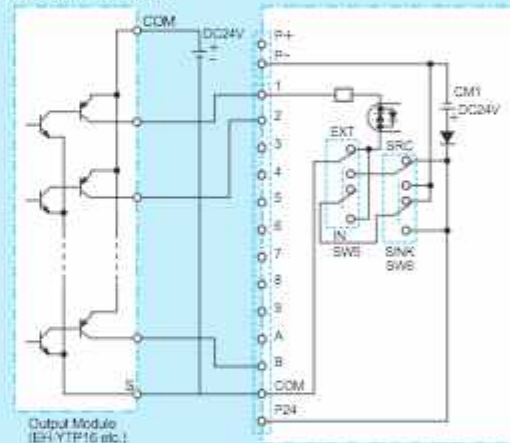
#### 2.Using External Power Supply

(1) Sink type logic



- When using external power supply, the SW5 to "EXT".
- When connecting sink type module, the SW6 to "SINK".

(2) Source type logic

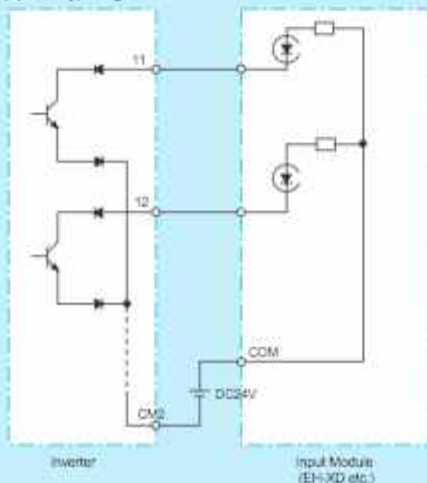


- When using external power supply, the SW5 to "EXT".
- When connecting source type module, the SW6 to "SRC".

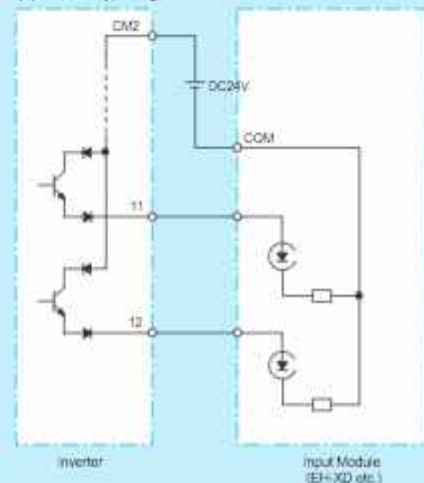
(Note: Be sure to turn on the inverter after turning on the PLC and its external power sources to prevent the parameters in the inverter from being modified.)

### • Connection with Output Terminals

(1) Sink type logic



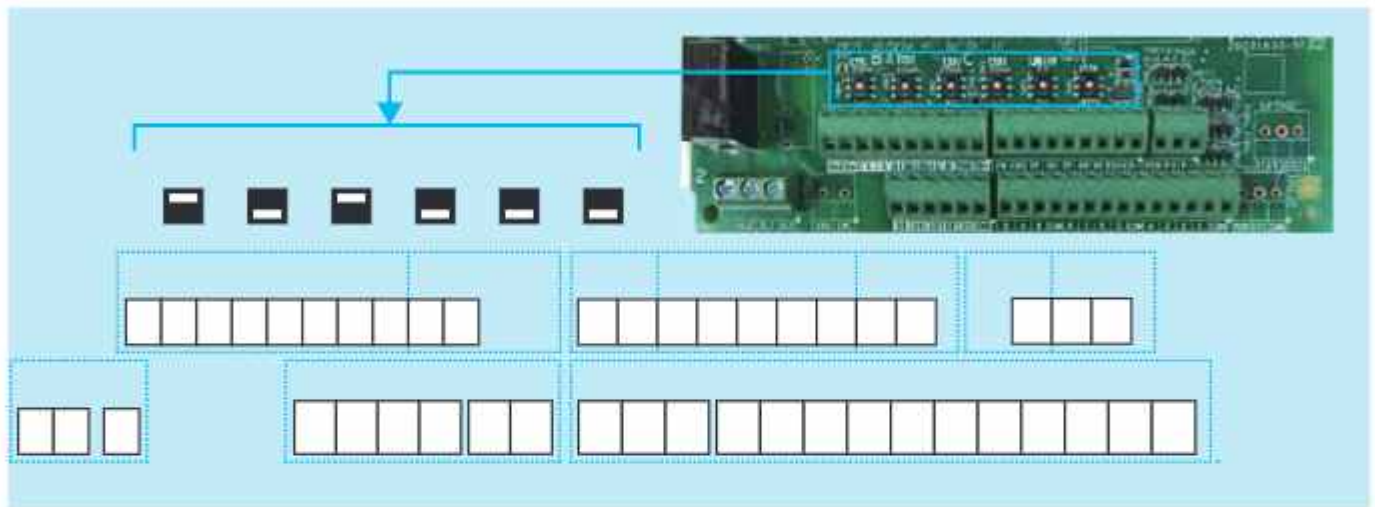
(2) Source type logic





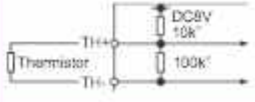
(1)


(2)Control Circuit Terminals




Applicable motor capacity	Model			DCL	Input ACL	Output DCL	EMC filter		
3-phase 400V class	00041								
	00054	00041	00041						
	00083	00054	00054						
	00126	00083	00083						
	00175	00126	00126						
	00250	00175	00175						
	00310	00250	00250						
	00400	00310	00310						
	00470	00400	00400						
	00620	00470	00470						
	00770	00620	00620						
	00930	00770	00770						
	01160	00930	00930						
	01470	01160	01160						
	01760	01470	01470						
	02130	01760	01760						
	02520	02130	02130						
03160	02520	02520							
	03160	03160							

## Terminal Description

		Symbol	Terminal name	Description	Electric characteristics		
Voltage/current switchable analog input/output terminal	Power supply	L	COM for analog power supply	COM terminals for analog input terminals (Ai1,Ai2,Ai3) and analog output terminals (Ao1,Ao2). Two L terminals are available.	-		
		H	Speed setting power supply	DC10V power supply. Used for voltage input with analog input terminals (Ai1,Ai2,Ai3) using a variable resistor.	Max. allowable input current 20mA		
	Analog input	Ai1	Analog input terminal 1 (Voltage/current selector SW1)	Either Ai1 or Ai2 can be used by switching the selector switch to DC0 to 10V voltage input or 0 to 20mA current input. Used as speed input and feedback input.	For voltage input: • Input impedance Approx. 10kΩ • Allowable input voltage DC-0.3V to 12V For current input: • Input impedance Approx. 100Ω • Max. allowable input current 24mA		
		Ai2	Analog input terminal 2 (Voltage/current selector SW2)				
		Ai3	Analog input terminal 3	DC-10 to 10V voltage input is available. Used as speed input and feedback input.	Voltage input only: • Input impedance Approx. 10kΩ • Allowable voltage input DC-12V to 12V		
	Analog output	Ao1	Analog output terminal 1 (Voltage/current selector SW3)	Either Ao1 or Ao2 can be used as an output for inverter monitoring data by switching the selector switch to DC0 to 10V voltage output or 0 to 20mA current output.	For voltage output: • Max. allowable output current 2mA • Output voltage accuracy ±10%(Ambient temperature: 25±10 degrees C) For current input: • Allowable load impedance 250Ω or less • Output current accuracy ±20%(Ambient temperature: 25±10 degrees C)		
Ao2		Analog output terminal 2 (Voltage/current selector SW4)					
24V power supply	Power input	P24	24V output power source terminal	This terminal supplies DC24V power for contact signals.	Max. output 100mA		
		P+	Terminal for external 24V input (24V)	Input external DC24V power supply to the inverter. Inputting 24V power supply can change parameter settings and perform optional communication operations without control power supply.	Allowable input voltage DC24V±10% Max. allowable current 1A		
		P-	Terminal for external 24V input (0V)				
Intelligent input terminal	Digital input	Contact point	9 8 7 6 5 4 3 2 1	Input terminal	Terminal functions are selectable according to the parameter settings for each terminal. Switching SW6 to SRC or SINK allows you to select SINK or Source logic.	Voltage between each input and COM terminals • ON voltage Min.DC18V • OFF voltage Max.DC3V • Max. allowable voltage DC27V • Load current 5.6mA(at DC27V)	
			Pulse				A
		B		Pulse input-B			
		Common	COM	Input (common)	This is a common terminal for digital input terminals (1,2,3,4,5,6,7,8,9,A and B). Three COM terminals are available.		
Intelligent output terminals	Digital output	Open collector	15 14 13 12 11	Output terminal	Terminal functions are selectable according to the parameter settings for each terminal.This is available for both SINK and Source logics.	Open collector output Between each terminal and CM2 • Voltage drop when turned on:4V or less • Max. allowable voltage 27V • Max. allowable current 50mA	
			CM2				Output (common)
		Relay	AL0 AL1 AL2	1c relay terminal	Relays for C contact output	Maximum contact capacity AL1/AL0: • AC250V, 2A(resistance) • AC250V, 0.2A(inductive load) AL2/AL0: • AC250V, 1A(resistance) • AC250V, 0.2A(inductive load) Minimum contact capacity (common) • AC100V, 10mA • DC5V, 100mA	
FM output terminal	FM output	Monitor output	FM	Digital monitor (voltage)	Digital monitor output is selectable from PWM output with 6.4ms cycle or pulse output with a variable duty cycle of approx. 50%.	Pulse train output DC0 to 10V • Max. allowable output current 1.2mA • Maximum frequency 3.6kHz	
			CM1	COM for digital monitor	This is a common terminal for digital monitor.This is also used as 0V reference potential for P24.		
Thermistor terminal	Analog input	TH+	External thermistor input	Connect to an external thermistor to make the inverter trip if an abnormal temperature is detected. Connect the thermistor to TH+ and TH-. The impedance to detect temperature errors can be adjusted within the range 0Ω to 9.99kΩ. [Recommended thermistor properties] Allowable rated power: 100 mW or more Impedance at temperature error: 3kΩ	DC0 to 5V(input circuit) 		
		TH-	Common terminal for external thermistor input				
RS485 communication	Serial communication	SP SN RP CM1	MODBUS terminal (RS-485)	SP terminal : RS-485 differential(+) signal SN terminal : RS-485 differential(-) signal RP terminal : Connect to SP through a termination resistor CM1 terminal : Connect to the signal ground of external communication devices. There are two SP and two SN terminals, which are connected internally. The maximum baud rate is 115.2kbps.	Termination resistor (120Ω) integrated Enabled: RP-SN shorted Disabled: RP-SN opened		



# Function list

Code No.	Parameter Meaning	Selectable User Setting
0A-01	Output frequency monitor	0.00 to 590.00(Hz)<current output frequency>
0A-02	Output current monitor	0.00 to 880.00(A)
0A-03	Rotation direction monitor	F (Forward RUN) / r (Reverse RUN) / d (Zero-speed Out) / s (Stop)
0A-04	Frequency reference monitor(After calculation)	-590.00 to 590.00(Hz)<target value>
0A-06	Output frequency scale conversion monitor	0.00 to 59000.00(Hz)
0A-08	Detected speed monitor	-590.00 to 590.00(Hz)<reference feedback is required>
0A-12	Output Frequency Monitor (signed)	-590.00 to 590.00(Hz)
0A-14	Frequency upper limit monitor	0.00 to 590.00(Hz)
0A-15	Torque reference monitor(After calculation)	-1000.0 to 1000.0(%)<Torque control mode required>
0A-18	Torque limit monitor	0.0 to 500.0(%)
0A-17	Output Torque monitor	-1000.0 to 1000.0(%)
0A-18	Output Voltage monitor	0.0 to 800.0(V)
0A-20	Current position monitor	when [AA12]<0 -268435455 to +268435455(pulse) when [AA12]<0 -1073741823 to +1073741823(pulse)
0A-28	Pulse train position deviation monitor	-2147483647 to +2147483647(pulse)
0A-29	Pulse count monitor	0 to 2147483647(pulse)
0A-30	Input power monitor	0.00 to 600.00(W)
0A-32	Accumulation input power monitor	0.0 to 1000000.0(kWh)
0A-34	Output power monitor	0.00 to 600.00(W)
0A-36	Accumulation output power monitor	0.0 to 1000000.0(kWh)
0A-36	Motor temperature monitor	-20.0 to 200.0(°C)
0A-40	DC-bus voltage monitor	0.0 to 1000.0(Vdc)
0A-41	BRD Load rating monitor	
0A-42	Electronic Thermal Load rating monitor (MTR)	0.00 to 100.00(%)
0A-43	Electronic Thermal Load rating monitor (CTL)	
0A-45	Safety STO monitor	00 (no) /01 (P-1A) /02 (P-2A) /03 (P-1b) /04 (P-2b) /05 (P-1C) /06 (P-2C) /07 (STO)
0A-46	Safety option hardware monitor	Refer to guidebook for option
0A-47	Safety option monitor	
0A-50	Control terminal status	00 (Standard) /02 (P1-TM2) /10 (Not connect)
0A-51	Input terminal monitor	 0A,21,0N AA7AA3,1,0FF
0A-54	Output terminal monitor	 1,14,0B AC,16,0,10,11,0FF
0A-60	Analog input/output status monitor	 A0,A0,A0,0A,0A A0,A0,A0,A0
0A-61	Analog input [A1] monitor	0.00 to 100.00(%)
0A-62	Analog input [A2] monitor	
0A-63	Analog input [A3] monitor	-100.00 to 100.00(%)
0A-64	Extension Analog input [A4] monitor	0.0 to 100.00(%)
0A-65	Extension Analog input [A5] monitor	
0A-66	Extension Analog input [A6] monitor	-100.00 to 100.00(%)
0A-70	Pulse train input monitor (internal)	-100.00 to 100.00(%)
0A-71	Pulse train input monitor (Option)	-100.00 to 100.00(%)
0A-81	Option slot-1 status	00 (no) /01 (P1-EN) /02 (P1-ECT) /03 (P1-PN) /06 (P1-PB) /08 (P1-CD) /18 (P1-AG)
0A-82	Option slot-2 status	<0A-82 only>33 (P1-FB)
0A-83	Option slot-3 status	<0A-83 only>48 (P1-FS)
0B-01	Program download monitor	00 (Program is not installed) /01 (Program is installed)
0B-02	Program No. monitor	0000 to 9999
0B-03	Program counter (Task-1)	
0B-04	Program counter (Task-2)	
0B-05	Program counter (Task-3)	1 to 1024
0B-06	Program counter (Task-4)	
0B-07	Program counter (Task-5)	
0B-08	User monitor-0	
0B-10	User monitor-1	
0B-12	User monitor-2	-2147483647 to +2147483647
0B-14	User monitor-3	
0B-16	User monitor-4	
0B-18	Analog output monitor YA0	
0B-19	Analog output monitor YA1	
0B-20	Analog output monitor YA2	0 to 10000
0B-21	Analog output monitor YA3	
0B-22	Analog output monitor YA4	
0B-23	Analog output monitor YA5	
0B-30	PID1 Feedback value 1 monitor	
0B-32	PID1 Feedback value 2 monitor	0.00 to 100.00(%)<adjustable with [AH-04][AH-05][AH-06]>
0B-34	PID1 Feedback value 3 monitor	
0B-36	PID2 Feedback value monitor	0.00 to 100.00(%)<adjustable with [AJ-04][AJ-05][AJ-06]>
0B-38	PID3 Feedback value monitor	0.00 to 100.00(%)<adjustable with [AJ-24][AJ-25][AJ-26]>
0B-40	PID4 Feedback value monitor	0.00 to 100.00(%)<adjustable with [AJ-44][AJ-45][AJ-46]>
0B-42	PID1 target value monitor	0.00 to 100.00(%)<adjustable with [AH-04][AH-05][AH-06]>
0B-44	PID1 feedback value monitor	
0B-50	PID1 Output monitor	
0B-51	PID1 Deviation monitor	
0B-52	PID1 Deviation 1 monitor	-100.00 to +100.00(%)
0B-53	PID1 Deviation 2 monitor	
0B-54	PID1 Deviation 3 monitor	

Code No.	Parameter Meaning	Selectable User Setting
0B-55	PID2 Output monitor	
0B-56	PID2 Deviation monitor	
0B-57	PID3 Output monitor	
0B-58	PID3 Deviation monitor	-100.00 to +100.00(%)
0B-59	PID4 Output monitor	
0B-60	PID4 Deviation monitor	
0B-61	Current PID P-Gain monitor	0.0 to 100.0
0B-62	Current PID I-Gain monitor	0.0 to 3600.0(s)
0B-63	Current PID D-Gain monitor	0.00 to 100.00(s)
0B-64	PD FeedForward monitor	00 (VLD) /01 (LD) /02 (ND)
0C-01	Inverter Load type status	
0C-02	Rated current monitor	0.0 to 655.0(A)
0C-07	Main speed input source monitor	
0C-08	Sub speed input source monitor	Displayed on operator panel. Refer to user's guide for detail.
0C-10	RUN command input source monitor	
0C-15	Cooling fan temperature monitor	-20.0 to 200.0(°C)
0C-16	Life assessment monitor	 ON: ON/Frequent OFF: 1. Capacitor on board failure, 2. Fan failure
	Accumulation Start number monitor	
	Accumulation Power-on number monitor	1 to 65535(times)
	Accumulated time monitor in RUN status monitor	
	Accumulation power-on time monitor	0 to 1000000(hour)
	Accumulation cooling fan running time monitor	
	Icon2 LIM monitor	00 - /01(DC suppress) /02 (DL restriction) /03 (OV suppress) /04 (TRQ Limt) /05 (Freq Limt) /06 (Min Freq)
	Icon2 ALT monitor	00 (-) /01(Over Load) /02 (Thermal/Motor) /03 (Thermal/CTR) /04 (Over Heat/MTR)
	Icon2 RETRY detail monitor	00 - / 01 (waiting to retry) /02 (waiting to restart)
	Icon2 NRDV detail monitor	00 (-) /01(Trip) /02 (Power failure) /03 (Reset) /04 (STO) /05 (Wait) /06 (Warning) /07 (Sequence Error) /08 (Free-run) /09 (Interrupted)
	IMSM monitor	00 (M) /01 (SM)
	Firmware Ver. Monitor	00.00 to 99.255
	Firmware Gr. Monitor	00(Standard)
	Warning monitor	Refer to user's guide

0  
2

Code No.	Parameter Meaning	Selectable User Setting
	Main Speed reference monitor	0.00 to 590.00(Hz)
	Sub Speed reference monitor	-590.00 to 590.00(Hz) when configured with parameter, 0.00 to 590.00(Hz)
	Accumulation time monitor	0.00 to 3600.00(s)
	Deceleration time monitor	
	Torque reference monitor	-500.0 to 500.0(%)
	Torque limit monitor	-500.0 to 500.0(%)
	Position reference monitor	when [AA12]<0 -268435455 to +268435455(pulse) when [AA12]<0 -1073741823 to +1073741823(pulse)
	PID1 Set Value 1 monitor	
	PID1 Set Value 2 monitor	0.00 to 100.00(%)<adjustable with [AH-04][AH-05][AH-06]>
	PID1 Set Value 3 monitor	
	PID2 Set Value monitor	0.00 to 100.00(%)<adjustable with [AJ-04][AJ-05][AJ-06]>
	PID3 Set Value monitor	0.00 to 100.00(%)<adjustable with [AJ-24][AJ-25][AJ-26]>
	PID4 Set Value monitor	0.00 to 100.00(%)<adjustable with [AJ-44][AJ-45][AJ-46]>

1



## Parameter mode Lis

### Parameter naming (Nomenclature)

\*By default the motor 1 is enabled in the case that 08:[SET] is not assigned in the intelligent Input terminals [CA-01] to [CA-11].

# AA 1 01

- Internal number in the group
- -: Common for 1st and 2nd motor
  - 1: 1st motor enabled if function [SET] is OFF
  - 2: 2nd motor enabled if function [SET] is ON
- Parameter group

### Parameter mode (A code)

Code No.	Parameter Meaning	Selectable User Setting	Initial value
AA101	Main speed input source selection, 1st-motor	01 (Setting by Terminal (A1)) /02 (Setting by Terminal (A2)) /03 (Setting by Terminal (A3)) /04 (Setting by Terminal (A4)) /05 (Setting by Terminal (A5)) /06 (Setting by Terminal (A6)) /07 (Setting by parameter) /08 (Setting by RS485) /09 (Option-1) /10 (Option-2) /11 (Option-3) /12 (Pulse train input/internal) /13 (Pulse train input/Option) /14 (Setting by EzSQ) /15 (PID function) /16 (Volume on keypad)	07(*FF) /01(*FER, *FUF)
AA102	Sub frequency input source selection, 1st-motor	00 (Disable) /01 (Setting by Terminal (A1)) /02 (Setting by Terminal (A2)) /03 (Setting by Terminal (A3)) /04 (Setting by Terminal (A4)) /05 (Setting by Terminal (A5)) /06 (Setting by Terminal (A6)) /07 (Setting by parameter) /08 (Setting by RS485) /09 (Option-1) /10 (Option-2) /11 (Option-3) /12 (Pulse train input/internal) /13 (Pulse train input/Option) /14 (Setting by EzSQ) /15 (PID function) /16 (Volume on keypad)	00
AA104	Sub speed setting, 1st-motor	0.00 to 590.00(Hz)	0.00
AA105	Calculation symbol selection for Speed reference, 1st-motor	00 (Disable) /01 (Addition(ADD)) /02 (Subtraction(SUB)) /03 (Multiplication(MUL))	00
AA106	Add frequency setting, 1st-motor	-590.00 to +590.00(Hz)	0.00
AA111	Run-command input source selection, 1st-motor	00 (Terminal (FW)(RV)) /01 (3-wire) /02 (RUN key on keypad) /03 (Setting by RS485) /04 (Option-1) /05 (Option-2) /06 (Option-3)	00(*FF) /06(*FER, *FUF)
AA112	RUN-key of keypad Rotation Direction, 1st-motor	00 (Forward) /01 (Reverse)	00
AA113	STOP-key enable at RUN-command from terminal, 1st-motor	00 (Disable) /01 (Enable) /02 (Enable at only trip reset)	01
AA114	RUN-direction restriction, 1st-motor	00 (Disable) /01 (Enable only Forward rotation) /02 (Enable only Reverse rotation)	00
AA115	STOP mode selection, 1st-motor	00 (Deceleration until stop) /01 (Free-run stop)	00
AA121	Control mode selection, 1st-motor	M control /00 (VF control (Constant torque)) /01 (VF control (Reduced torque)) /02 (VF control (Free-M)) /03 (Constant torque with Automatic torque boost) /04 (VF control with encoder (Constant torque)) /05 (VF control with encoder (Reduced torque)) /06 (VF control with encoder (Free-M)) /07 (VF control with PG (Constant torque with Automatic torque boost)) /08 (Sensorless vector control) /09 (0Hz Sensorless vector control) /10 (Vector control with encoder) SMRM control /11 (Synchronous start up for smart sensorless vector control) /12 (VVS start up for smart sensorless vector control)	00
AA123	Vector control mode selection, 1st-motor	00 (Speed/Torque control mode) /01 (Pulse train position control) /02 (Position control) /03 (High-resolution position control)	00
AA201	Main speed input source selection, 2nd-motor	same to AA101	07(*FF) /01(*FER, *FUF)
AA202	Sub speed input source selection, 2nd-motor	same to AA102	00
AA204	Sub speed setting, 2nd-motor	same to AA104	0.00
AA205	Calculation symbol selection for Speed reference, 2nd-motor	same to AA105	00
AA206	Add frequency setting, 2nd-motor	same to AA106	0.00
AA211	Run-command input source selection, 2nd-motor	same to AA111	02(*FF) /00(*FER, *FUF)
AA214	RUN-direction restriction, 1st-motor	same to AA114	00
AA215	STOP mode selection, 1st-motor	same to AA115	00
AA221	Control mode selection, 2nd-motor	same as AA121	00
AA223	Vector control mode selection, 2nd-motor	same to AA123	00
Ab-01	Frequency conversion gain	0.01 to 100.00	1.00
Ab-03	Multipspeed operation selection	00 (Binary (16-speeds)) /01 (Bit (8-speeds))	00
Ab10	Multipspeed-0 setting, 1st-motor		
Ab11 to Ab25	Multipspeed-1 to Multipspeed-15 setting	0.00 to 590.00(Hz)	0.00
Ab20	Multipspeed-0 setting, 2nd-motor		

Code No.	Parameter Meaning	Selectable User Setting	Initial value
AC-01	Acceleratory/Deceleration time input selection	00 (Setting by parameter) /01 (Setting from Option-1) /02 (Setting from Option-2) /03 (Setting from Option-3) /04 (Setting by programming function)	00
AC-02	Acceleratory/Deceleration direction	00 (Common setting) /01 (Multi-stage Acceleration/Deceleration)	00
AC-03	Acceleration curve selection	00 (Linear Acceleration) /01 (S-curve Acceleration) /02 (U-curve Acceleration) /03 (Reverse U-curve Acceleration) /04 (Elevator S-curve Acceleration)	00
AC-04	Deceleration curve selection		
AC-05	Acceleration curve constant setting	1 to 10	3
AC-06	Deceleration curve constant setting		
AC-08	EL-S-curve ratio @start of acceleration		
AC-09	EL-S-curve ratio @end of acceleration		
AC-10	EL-S-curve ratio @start of deceleration	0 to 100	25
AC-11	EL-S-curve ratio @end of deceleration		
AC115	Select method to switch to Accel2/Decel2 Profile, 1st-motor	00 (Switching by [2CH] terminal) /01 (Switching by setting) /02 (Switching only when rotation is reversed)	00
AC116	Accept to Accel2 Frequency transition point, 1st-motor	0.00 to 590.00(Hz)	0.00
AC117	Decel1 to Decel2 Frequency transition point, 1st-motor		
AC120	Acceleration time setting 1, 1st-motor		30.00
AC122	Deceleration time setting 1, 1st-motor		
AC124	Acceleration time setting 2, 1st-motor	0.00 to 3600.00(s)	
AC126	Deceleration time setting 2, 1st-motor		15.00
AC30, 34, 38, 42, 46, 50, 54, 58, 62, 66, 70, 74, 78, 82, 86	Acceleration time setting for Multipspeed-1 to Multipspeed-15		
AC32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88	Deceleration time setting for Multipspeed-1 to Multipspeed-15		
AC215	Select method to switch to Accel2/Decel2 Profile, 2nd-motor	same to AC115	00
AC216	Accept to Accel2 Frequency transition point, 2nd-motor	same to AC116	0.00
AC217	Decel1 to Decel2 Frequency transition point, 2nd-motor	same to AC117	
AC220	Acceleration time setting 1, 2nd-motor	same to AC120	30.00
AC222	Deceleration time setting 1, 2nd-motor	same to AC122	
AC224	Acceleration time setting 2, 2nd-motor	same to AC124	
AC226	Deceleration time setting 2, 2nd-motor	same to AC126	15.00
Ad-01	Torque reference input source selection	01 (Setting by Terminal (A1)) /02 (Setting by Terminal (A2)) /03 (Setting by Terminal (A3)) /04 (Setting by Terminal (A4)) /05 (Setting by Terminal (A5)) /06 (Setting by Terminal (A6)) /07 (Setting by parameter) /08 (Setting by RS485) /09 (Option-1) /10 (Option-2) /11 (Option-3) /12 (Pulse train input/internal) /13 (Pulse train input/Option) /14 (Setting by EzSQ) /15 (PID function)	07
Ad-02	Torque reference value setting	-500.0 to 500.0(%)	0.0
Ad-03	Polarity selection for torque reference	00 (As indication by the sign) /01 (Depending on the operation direction)	00
Ad-04	Switching time of Speed control to Torque control	0 to 1000(ms)	100
Ad-11	Torque bias input source selection	00 (Disable) /01 (Setting by Terminal (A1)) /02 (Setting by Terminal (A2)) /03 (Setting by Terminal (A3)) /04 (Setting by Terminal (A4)) /05 (Setting by Terminal (A5)) /06 (Setting by Terminal (A6)) /07 (Setting by parameter) /08 (Setting by RS485) /09 (Option-1) /10 (Option-2) /11 (Option-3) /12 (Pulse train input/internal) /13 (Pulse train input/Option) /14 (Setting by EzSQ) /15 (PID function)	00
Ad-12	Torque bias value setting	-500.0 to 500.0(%)	0.0
Ad-13	Polarity selection for torque bias	00 (As indication by the sign) /01 (Depending on the operation direction)	00
Ad-14	Terminal (TBS) active	00 (Disable) /01 (Enable)	00
Ad-40	Input selection for speed limit at torque control	01 (Setting by Terminal (A1)) /02 (Setting by Terminal (A2)) /03 (Setting by Terminal (A3)) /04 (Setting by Terminal (A4)) /05 (Setting by Terminal (A5)) /06 (Setting by Terminal (A6)) /07 (Setting by parameter) /08 (Setting by RS485) /09 (Option-1) /10 (Option-2) /11 (Option-3) /12 (Pulse train input/internal) /13 (Pulse train input/Option)	07
Ad-41	Speed limit at torque control (at Forward rotation)		
Ad-42	Speed limit at torque control (at Reverse rotation)	0.00 to 590.00(Hz)	0.00



Code No.	Parameter Meaning	Selectable User Setting	Initial value
AE-01	Electronic gear setting point selection	00 (Feedback side) /01 (Reference side)	00
AE-02	Electronic gear ratio numerator	1 to 10000	1
AE-03	Electronic gear ratio denominator	1 to 10000	1
AE-04	Positioning complete large setting	0 to 10000(Pulse)	5
AE-05	Positioning complete delay time setting	0.00 to 10.00(s)	0.00
AE-06	Position feed forward gain setting	0 to 655.35	0.00
AE-07	Position loop gain setting	0.00 to 100.00	0.50
AE-08	Position bias setting	-2048 to 2048(Pulse)	0
AE-10	Stop position selection of Home search function	00 (Setting by parameter) /01 (Option-1) /02 (Option-2) /03 (Option-3)	00
AE-11	Stop position of Home search function	0 to 4095	0
AE-12	Speed reference of Home search function	0.00 to 120.00(Hz)	0.00
AE-13	Direction of Home search function	00 (forward) /01 (Reverse)	00
AE-20 to AE-50	Position reference [0] to [15] setting	When [AA12]=#10 or [AA13]=#03 -268435455 to +268435455 (pulse) When [AA12]=#10 and [AA13]=#03 -1073741823 to +1073741823 (pulse)	0
AE-52	Position control range setting(forward)	When [AA12]=#10 or [AA13]=#03 0 to +268435455 (pulse) When [AA12]=#10 and [AA13]=#03 0 to +1073741823 (pulse)	268435455
AE-54	Position control range setting(reverse)	When [AA12]=#10 or [AA13]=#03 -268435455 to 0 (pulse) When [AA12]=#10 and [AA13]=#03 -1073741823 to 0 (pulse)	-268435455
AE-56	Position control mode selection	00 (Enabling Position control range) /01 (Disabling Position control range)	00
AE-60	Teach-in function target selection	00 to 15(X00 to X15)	00
AE-61	Current position saving at power-off	00(disabled) /01(enabled)	00
AE-62	Preset position data	when [AA12]=#03, -268435455 to +268435455 (pulse) when [AA12]=#03, -1073741823 to +1073741823 (pulse)	0
AE-64	Deceleration stop distance calculation Gain	00.00 to 200.00(%)	100.00
AE-66	Deceleration stop distance calculation Bias	0.00 to 655.35(%)	0.00
AE-68	Speed Limit in APR control	0.00 to 100.00(%)	1.00
AE-67	APR start speed	0.00 to 100.00(%)	0.20
AE-70	Homing function selection	00 (Low speed homing) /01 (High speed homing 1) /01 (High speed homing 2)	00
AE-71	Direction of Homing function	00(Forward) /01(Reverse)	00
AE-72	Low speed of homing function	0.00 to 10.00(Hz)	0.00
AE-73	High Speed of homing function	0.00 to 990.00(Hz)	0.00
AF101	DC braking selection, 1st-motor	00 (Disable) /01 (Enable) /02 (Enable (Activate only by a speed reference))	00
AF102	Braking type selection, 1st-motor	00 (DC braking) /01 (Speed servo lock) /02 (Position servo lock)	00
AF103	DC braking frequency, 1st-motor	0.00 to 990.00(Hz)	0.50
AF104	DC braking delay time, 1st-motor	0.00 to 5.00(s)	0.00
AF106	DC braking force setting, 1st-motor	0 to 100(%)	30
AF106	DC braking active time at stop, 1st-motor	0.00 to 60.00(s)	0.00
AF107	DC braking operation method selection, 1st-motor	00(Edge) /01(Level)	01
AF108	DC braking force at start, 1st-motor	0 to 100(%)	30
AF109	DC braking active time at start, 1st-motor	0.00 to 60.00(s)	0.00
AF120	Contactors Control Enable, 1st-motor	00 (Disable) /01 (Enable(Power side)) /02 (Enable(Motor side))	00
AF121	Run delay time, 1st-motor	0.00 to 2.00(s)	0.20
AF122	Contactors off delay time, 1st-motor	0.00 to 2.00(s)	0.10
AF123	Contactors answer back check time, 1st-motor	0.00 to 5.00(s)	0.10
AF130	Brake Control Enable, 1st-motor	00 (Disable) /01 (Brake control 1 enable) /02 (Brake control 1 enable (FWD/REV separate setting)) /03 (Brake control 2 enable)	00
AF131	Brake Wait Time for Release, 1st-motor (Forward side)		
AF132	Brake Wait Time for Accel., 1st-motor (Forward side)		
AF133	Brake Wait Time for Stopping, 1st-motor (Forward side)	0.00 to 5.00(s)	0.00
AF134	Brake Wait Time for Confirmation, 1st-motor (Forward side)		
AF130	Brake Release Frequency Setting, 1st-motor (Forward side)	0.00 to 990.00(Hz)	0.00

Code No.	Parameter Meaning	Selectable User Setting	Initial value
AF136	Brake Release Current Setting, 1st-motor (Forward side)	INV rated current x(0.00 to 2.00)	1.00 x Inverter rated current
AF107	Braking Frequency, 1st-motor (Forward side)	0.00 to 990.00(Hz)	0.00
AF138	Brake Wait Time for Release, 1st-motor (Reverse side)		
AF139	Brake Wait Time for Accel., 1st-motor (Reverse side)		
AF140	Brake Wait Time for Stopping, 1st-motor (Reverse side)	0.00 to 5.00(s)	0.00
AF141	Brake Wait Time for Confirmation, 1st-motor (Reverse side)		
AF142	Brake Release Frequency Setting, 1st-motor (Reverse side)	0.00 to 990.00(Hz)	0.00
AF143	Brake Release Current Setting, 1st-motor (Reverse side)	INV rated current x(0.00 to 2.00)	1.00 x Inverter rated current
AF144	Braking Frequency, 1st-motor (Reverse side)	0.00 to 990.00(Hz)	0.00
AF100	Brake open delay time, 1st-motor	0.00 to 2.00(s)	0.20
AF151	Brake close delay time, 1st-motor	0.00 to 3.00(s)	0.10
AF152	Brake answer back check time, 1st-motor	0.00 to 5.00(s)	0.10
AF153	Servo lock/ DC injection time at start, 1st-motor	0.00 to 10.00(s)	0.60
AF154	Servo lock/ DC injection time at stop, 1st-motor		
AF201	DC braking selection, 2nd-motor	same to AF101	00
AF202	Braking type selection, 2nd-motor	same to AF102	00
AF203	DC braking frequency, 2nd-motor	same to AF103	0.50
AF204	DC braking delay time, 2nd-motor	same to AF104	0.00
AF205	DC braking force setting, 2nd-motor	same to AF106	30
AF206	DC braking active time at stop, 2nd-motor	same to AF106	0.00
AF207	DC braking operation method selection, 2nd-motor	same to AF107	01
AF208	DC braking force at start, 2nd-motor	same to AF108	30
AF209	DC braking active time at start, 2nd-motor	same to AF108	0.00
AF220	Contactors Control Enable, 2nd-motor	same to AF120	00
AF221	Run delay time, 2nd-motor	same to AF121	0.20
AF222	Contactors off delay time, 2nd-motor	same to AF122	0.10
AF223	Contactors answer back check time, 2nd-motor	same to AF123	0.10
AF230	Brake Control Enable, 2nd-motor	same to AF130	00
AF231	Brake Wait Time for Release, 2nd-motor (Forward side)	same to AF131	
AF232	Brake Wait Time for Accel., 2nd-motor (Forward side)	same to AF132	
AF233	Brake Wait Time for Stopping, 2nd-motor (Forward side)	same to AF133	0.00
AF234	Brake Wait Time for Confirmation, 2nd-motor (Forward side)	same to AF134	
AF235	Brake Release Frequency Setting, 2nd-motor (Forward side)	same to AF135	0.00
AF236	Brake Release Current Setting, 2nd-motor (Forward side)	same to AF136	1.00 x Inverter rated current
AF237	Braking Frequency, 2nd-motor (Forward side)	same to AF137	0.00
AF238	Brake Wait Time for Release, 2nd-motor (Reverse side)	same to AF138	
AF239	Brake Wait Time for Accel., 2nd-motor (Reverse side)	same to AF139	
AF240	Brake Wait Time for Stopping, 2nd-motor (Reverse side)	same to AF140	0.00
AF241	Brake Wait Time for Confirmation, 2nd-motor (Reverse side)	same to AF141	
AF242	Brake Release Frequency Setting, 2nd-motor (Reverse side)	same to AF142	0.00
AF243	Brake Release Current Setting, 2nd-motor (Reverse side)	same to AF143	1.00 x Inverter rated current
AF244	Braking Frequency, 2nd-motor (Reverse side)	same to AF144	0.00



Code No.	Parameter Meaning	Selectable User Setting	Initial value
AF250	Brake open delay time, 2nd-motor	same to AF150	0.20
AF251	Brake close delay time, 2nd-motor	same to AF151	0.10
AF252	Brake gripper back check time, 2nd-motor	same to AF152	0.00
AF253	Servo lock DC injection time at start, 2nd-motor	same to AF153	0.00
AF254	Servo lock DC injection time at stop, 2nd-motor	same to AF154	0.00
AG101	Jump frequency 1, 1st-motor	0.00 to 590.00(Hz)	0.00
AG102	Jump frequency width 1, 1st-motor	0.00 to 10.00(Hz)	0.00
AG103	Jump frequency 2, 1st-motor	0.00 to 590.00(Hz)	0.00
AG104	Jump frequency width 2, 1st-motor	0.00 to 10.00(Hz)	0.00
AG105	Jump frequency 3, 1st-motor	0.00 to 590.00(Hz)	0.00
AG106	Jump frequency width 3, 1st-motor	0.00 to 10.00(Hz)	0.00
AG110	Acceleration stop frequency setting, 1st-motor	0.00 to 590.00(Hz)	0.00
AG111	Acceleration stop time setting, 1st-motor	0.00 to 60.00(s)	0.0
AG112	Deceleration stop frequency setting, 1st-motor	0.00 to 590.00(Hz)	0.00
AG113	Deceleration stop time setting, 1st-motor	0.00 to 60.00(s)	0.0
AG20	Jogging frequency	0.00 to 10.00(Hz)	0.00
AG21	Jogging stop mode selection	00 (Free run at Jogging stop (Disable at run)) 01 (Deceleration stop at Jogging stop (Disable at run)) 02 (Dynamic brake at Jogging stop (Disable at run)) 03 (Free run at Jogging stop (Enable at run)) 04 (Deceleration stop at Jogging stop (Enable at run)) 05 (Dynamic brake at Jogging stop (Enable at run))	00
AG201	Jump frequency 1, 2nd-motor	same to AG101	0.00
AG202	Jump frequency width 1, 2nd-motor	same to AG102	0.00
AG203	Jump frequency 2, 2nd-motor	same to AG103	0.00
AG204	Jump frequency width 2, 2nd-motor	same to AG104	0.00
AG205	Jump frequency 3, 2nd-motor	same to AG105	0.00
AG206	Jump frequency width 3, 2nd-motor	same to AG106	0.00
AG210	Acceleration stop frequency setting, 2nd-motor	same to AG110	0.00
AG211	Acceleration stop time setting, 2nd-motor	same to AG111	0.0
AG212	Deceleration stop frequency setting, 2nd-motor	same to AG112	0.00
AG213	Deceleration stop time setting, 2nd-motor	same to AG113	0.0
AH-01	PID1 enable	00 (Disable) / 01 (Enable) / 02 (Enable (with reverse output))	00
AH-02	PID1 deviation inverse	00 (Disable) / 01 (Enable)	00
AH-03	Unit selection for PID1	refer to the table for unit	01
AH-04	PID1 scale adjustment (at 0%)	-10000 to 10000	0
AH-05	PID1 scale adjustment (at 100%)	10000	10000
AH-06	PID1 scale adjustment (point position)	0 to 4	2
AH-07	Input source selection of Set-point for PID1	00 (Not use) / 01 (Setting by Terminal [A1]) 02 (Setting by Terminal [A2]) / 03 (Setting by Terminal [A3]) 04 (Setting by Terminal [A4]) / 05 (Setting by Terminal [A5]) 06 (Setting by Terminal [A6]) / 07 (Setting by parameter) 08 (Setting by RS485) / 09 (Option-1) / 10 (Option-2) 11 (Option-3) / 12 (Pulse train input(internal)) 13 (Pulse train input(Option))	07
AH-10	Set-point 1 setting for PID1	0.00 to 100.00(%) Display range can be changed with [AH-04], [AH-05], [AH-06]	0.00
AH-12 to AH-40	PID1 Multi-stage set-point 1 to 15 setting		
AH-42	Input source selection of Set-point 2 for PID1	00 (Not use) / 01 (Setting by Terminal [A1]) 02 (Setting by Terminal [A2]) / 03 (Setting by Terminal [A3]) 04 (Setting by Terminal [A4]) / 05 (Setting by Terminal [A5]) 06 (Setting by Terminal [A6]) / 07 (Setting by parameter) 08 (Setting by RS485) / 09 (Option-1) / 10 (Option-2) 11 (Option-3) / 12 (Pulse train input(internal)) 13 (Pulse train input(Option))	00
AH-44	Set-point 2 setting for PID1	0.00 to 100.00(%) Display range can be changed with [AH-04], [AH-05], [AH-06]	0.00
AH-46	Input source selection of Set-point 3 for PID1	00 (Not use) / 01 (Setting by Terminal [A1]) 02 (Setting by Terminal [A2]) / 03 (Setting by Terminal [A3]) 04 (Setting by Terminal [A4]) / 05 (Setting by Terminal [A5]) 06 (Setting by Terminal [A6]) / 07 (Setting by parameter) 08 (Setting by RS485) / 09 (Option-1) / 10 (Option-2) 11 (Option-3) / 12 (Pulse train input(internal)) 13 (Pulse train input(Option))	00
AH-48	Set-point 3 setting for PID1	0.00 to 100.00(%) Display range can be changed with [AH-04], [AH-05], [AH-06]	0.00
AH-50	Calculation symbol selection of Set-point 1 for PID1	01 (Addition) / 02 (Subtraction) / 03 (Multiplication) / 04 (Division) 05 (Minimum deviation) / 06 (Maximum deviation)	01

Code No.	Parameter Meaning	Selectable User Setting	Initial value
AH-51	Input source selection of Process data 1 for PID1	00 (Disable) / 01 (Setting by Terminal [A1]) 02 (Setting by Terminal [A2]) / 03 (Setting by Terminal [A3]) 04 (Setting by Terminal [A4]) / 05 (Setting by Terminal [A5]) 06 (Setting by Terminal [A6]) / 07 (Setting by parameter) 08 (Setting by RS485) / 09 (Option-1) / 10 (Option-2) 11 (Option-3) / 12 (Pulse train input(internal)) 13 (Pulse train input(Option))	01
AH-52	Input source selection of Process data 2 for PID1	00 (Disable) / 01 (Setting by Terminal [A1]) 02 (Setting by Terminal [A2]) / 03 (Setting by Terminal [A3]) 04 (Setting by Terminal [A4]) / 05 (Setting by Terminal [A5]) 06 (Setting by Terminal [A6]) / 07 (Setting by parameter) 08 (Setting by RS485) / 09 (Option-1) / 10 (Option-2) 11 (Option-3) / 12 (Pulse train input(internal)) 13 (Pulse train input(Option))	00
AH-53	Input source selection of Process data 3 for PID1	00 (Disable) / 01 (Setting by Terminal [A1]) 02 (Setting by Terminal [A2]) / 03 (Setting by Terminal [A3]) 04 (Setting by Terminal [A4]) / 05 (Setting by Terminal [A5]) 06 (Setting by Terminal [A6]) / 07 (Setting by parameter) 08 (Setting by RS485) / 09 (Option-1) / 10 (Option-2) 11 (Option-3) / 12 (Pulse train input(internal)) 13 (Pulse train input(Option))	00
AH-54	Calculation symbol selection of Process data for PID1	01 (Addition) / 02 (Subtraction) / 03 (Multiplication) / 04 (Division) 05 (Square root of FB1) / 06 (Square root of FB2) 07 (Square root of (FB1-FB2)) / 08 (Average of PV-1 to PV-3) 09 (Minimum data of PV-1 to PV-3) 10 (Maximum data of PV-1 to PV-3)	01
AH-60	PID1 gain change method selection	00 (Using gain-1 only) / 01 (Changed by Terminal[PRO])	00
AH-61	PID1 proportional gain 1	0.0 to 100.0	1.0
AH-62	PID1 integral time constant 1	0.0 to 3600.0(s)	1.0
AH-63	PID1 derivative gain 1	0.00 to 100.00(s)	0.00
AH-64	PID1 proportional gain 2	0.0 to 100.0	0.0
AH-65	PID1 integral time constant 2	0.0 to 3600.0(s)	0.0
AH-66	PID1 derivative gain 2	0.00 to 100.00(s)	0.00
AH-67	PID1 gain change time	0 to 10000(ms)	100
AH-70	FD feed-forward selection	00 (Disable) / 01 (Setting by Terminal [A1]) 02 (Setting by Terminal [A2]) / 03 (Setting by Terminal [A3]) 04 (Setting by Terminal [A4]) / 05 (Setting by Terminal [A5]) 06 (Setting by Terminal [A6])	00
AH-71	PID1 output variable	0.00 - 3.00	0.00
AH-72	PID1 Deviation over level	0.00 to 100.00(%)	3.00
AH-73	PID1 Feedback compare signal turn-off level	100.00	100.00
AH-74	PID1 Feedback compare signal turn-on level	0.00 to 100.00(%)	0.00
AH-75	PID soft start function enable	00 (Disable) / 01 (Enable)	00
AH-76	PID soft start target level	0.00 to 100.00(%)	100.00
AH-78	Acceleration time setting for PID soft start function	0.00 to 3600.00(s)	30.00
AH-80	PID soft start time	0.00 to 100.00(s)	0.00
AH-81	PID soft start error detection enable	00 (Disable) / 01 (Enable(Error output)) 02 (Enable(Warning output))	00
AH-82	PID soft start error detection level	0.00 to 100.00(s)	0.00
AH-85	PID sleep trigger selection	00 (Disable) / 01 (Low output) / 02 (Terminal [SLEP] input)	00
AH-86	PID sleep start level	0.00 to 100.00(Hz)	0.00
AH-87	PID sleep active time	0.0 to 100.0(s)	0.00
AH-88	Setpoint boost before PID sleep enable	00 (Disable) / 01 (Enable)	00
AH-89	Setpoint boost time	0.00 to 100.00(s)	0.00
AH-90	Setpoint boost value	0.00 to 100.00(s)	0.00
AH-91	Minimum RUN time before PID sleep	0.00 to 100.00(s)	0.00
AH-92	Minimum active time of PID sleep	0.00 to 100.00(s)	0.00
AH-93	PID sleep trigger selection	01 (Deviation value) / 02 (Low feedback) / 03 (Terminal [WAKE] input)	01
AH-94	PID wake start level	0.00 to 100.00(Hz)	0.00
AH-95	PID wake start time	0.00 to 100.00(s)	0.00
AH-96	PID wake start deviation value	0.00 to 100.00(%)	0.00
AJ-01	PID2 enable	00 (Disable) / 01 (Enable) / 02 (Enable (with reverse output))	00
AJ-02	PID2 deviation inverse	00 (Disable) / 01 (Enable)	00
AJ-03	PID2 unit selection	refer to the separated list for unit	01
AJ-04	PID2 scale adjustment (at 0%)	-10000 to 10000	0
AJ-05	PID2 scale adjustment (100%)	10000	10000
AJ-06	PID2 scale adjustment (point position)	0 to 4	2
AJ-07	Input source selection of Set-point for PID2	00 (Not use) / 01 (Setting by Terminal [A1]) 02 (Setting by Terminal [A2]) / 03 (Setting by Terminal [A3]) 04 (Setting by Terminal [A4]) / 05 (Setting by Terminal [A5]) 06 (Setting by Terminal [A6]) / 07 (Setting by parameter) 08 (Setting by RS485) / 09 (Option-1) / 10 (Option-2) 11 (Option-3) / 12 (Pulse train input(internal)) 13 (Pulse train input(Option)) / 15 (PID function)	07
AJ-10	Set-point setting for PID2	0.00 to 100.00(%) Display range can be changed with [AJ-04], [AJ-05], [AJ-06]	0.00
AJ-12	Input source selection of Process data for PID2	00 (Not use) / 01 (Setting by Terminal [A1]) 02 (Setting by Terminal [A2]) / 03 (Setting by Terminal [A3]) 04 (Setting by Terminal [A4]) / 05 (Setting by Terminal [A5]) 06 (Setting by Terminal [A6]) / 07 (Setting by parameter) 08 (Setting by RS485) / 09 (Option-1) / 10 (Option-2) 11 (Option-3) / 12 (Pulse train input(internal)) 13 (Pulse train input(Option))	00
AJ-13	PID2 proportional gain	0.0 to 100.0	1.0
AJ-14	PID2 integral time constant	0.0 to 3600.0(s)	1.0
AJ-15	PID2 derivative gain	0.00 to 100.00(s)	0.00
AJ-16	PID2 output variable	0.00 - 3.00	0.00
AJ-17	PID2 Deviation over level	0.00 to 100.00(%)	3.00
AJ-18	PID2 Feedback compare signal turn-off level	100.00	100.00
AJ-19	PID2 Feedback compare signal turn-on level	0.00 to 100.00(%)	0.00
AJ-21	PID3 enable	00 (Disable) / 01 (Enable) / 02 (Enable (with reverse output))	00
AJ-22	PID3 deviation inverse	00 (Disable) / 01 (Enable)	00
AJ-23	PID3 unit selection	refer to the separated list for unit	01
AJ-24	PID3 scale adjustment (at 0%)	-10000 to 10000	0



Code No.	Parameter Meaning	Selectable User Setting	Initial value
AJ-25	PID3 scale adjustment (at 100%)	-10000 to 10000	10000
AJ-26	PID3 scale adjustment (point position)	0 to 4	2
AJ-27	Input source selection of set-point for PID3	00 (Not use) /01 (Setting by Terminal (A1)) /02 (Setting by Terminal (A2)) /03 (Setting by Terminal (A3)) /04 (Setting by Terminal (A4)) /05 (Setting by Terminal (A5)) /06 (Setting by Terminal (A6)) /07 (Setting by parameter) /08 (Setting by RS485) /09 (Option-1) /10 (Option-2) /11 (Option-3) /12 (Pulse train input/Internal) /13 (Pulse train input/Option)	07
AJ-30	Set-point setting for PID3	0.00 to 100.00(%) Display range can be changed with [AJ-25] [AJ-26] [AJ-26]	0.00
AJ-32	Input source selection of Process data for PID3	00 (Not use) /01 (Setting by Terminal (A1)) /02 (Setting by Terminal (A2)) /03 (Setting by Terminal (A3)) /04 (Setting by Terminal (A4)) /05 (Setting by Terminal (A5)) /06 (Setting by Terminal (A6)) /07 (Setting by parameter) /08 (Setting by RS485) /09 (Option-1) /10 (Option-2) /11 (Option-3) /12 (Pulse train input/Internal) /13 (Pulse train input/Option)	01
AJ-33	PID3 proportional gain	0.0 to 100.0	1.0
AJ-34	PID3 integral time constant	0.0 to 3600.0(s)	1.0
AJ-35	PID3 derivative gain	0.00 to 100.00(%)	0.00
AJ-36	PID3 output variable		0.00
AJ-37	PID3 Deviation over level		3.00
AJ-38	PID3 Feedback compare signal turn-off level	0.00 to 100.00(%)	100.00
AJ-39	PID3 Feedback compare signal turn-on level		0.00
AJ-41	PID4 enable	00 (Disable) /01 (Enable) /02 (Enable (with reverse output))	00
AJ-42	PID4 deviation inverse	00 (Disable) /01 (Enable)	00
AJ-43	PID4 unit selection	refer to the separated list for unit	
AJ-44	PID4 scale adjustment (at 0%)		0
AJ-45	PID4 scale adjustment (at 100%)	-10000 to 10000	10000
AJ-46	PID4 scale adjustment (point position)	0 to 4	2
AJ-47	Input source selection of set-point for PID4	00 (Not use) /01 (Setting by Terminal (A1)) /02 (Setting by Terminal (A2)) /03 (Setting by Terminal (A3)) /04 (Setting by Terminal (A4)) /05 (Setting by Terminal (A5)) /06 (Setting by Terminal (A6)) /07 (Setting by parameter) /08 (Setting by RS485) /09 (Option-1) /10 (Option-2) /11 (Option-3) /12 (Pulse train input/Internal) /13 (Pulse train input/Option)	07
AJ-50	Set-point setting for PID4	0.00 to 100.00(%) Display range can be changed with [AJ-44] [AJ-45] [AJ-46]	0.00
AJ-52	Input source selection of Process data for PID4	00 (Not use) /01 (Setting by Terminal (A1)) /02 (Setting by Terminal (A2)) /03 (Setting by Terminal (A3)) /04 (Setting by Terminal (A4)) /05 (Setting by Terminal (A5)) /06 (Setting by Terminal (A6)) /07 (Setting by parameter) /08 (Setting by RS485) /09 (Option-1) /10 (Option-2) /11 (Option-3) /12 (Pulse train input/Internal) /13 (Pulse train input/Option)	01
AJ-53	PID4 proportional gain	0.0 to 100.0	1.0
AJ-54	PID4 integral time constant	0.0 to 3600.0(s)	1.0
AJ-55	PID4 derivative gain	0.00 to 100.00(%)	0.00
AJ-56	PID4 output variable		0.00
AJ-57	PID4 Deviation over level		3.00
AJ-58	PID4 Feedback compare signal turn-off level	0.00 to 100.00(%)	100.00
AJ-59	PID4 Feedback compare signal turn-on level		0.00

### Parameter mode (B code)

Code No.	Parameter Meaning	Selectable User Setting	Initial value
BA101	Frequency limit selection, 1st-motor	00 (Disable) /01 (Setting by Terminal (A1)) /02 (Setting by Terminal (A2)) /03 (Setting by Terminal (A3)) /04 (Setting by Terminal (A4)) /05 (Setting by Terminal (A5)) /06 (Setting by Terminal (A6)) /07 (Setting by parameter) /08 (Setting by RS485) /09 (Option-1) /10 (Option-2) /11 (Option-3) /12 (Pulse train input/Internal) /13 (Pulse train input/Option)	00
BA102	Upper Frequency limit, 1st-motor	0.00 to 990.00(Hz)	0.00
BA103	Lower Frequency limit, 1st-motor	0.00 to 990.00(Hz)	0.00
BA110	Torque limit selection, 1st-motor	00 (Disable) /01 (Setting by Terminal (A1)) /02 (Setting by Terminal (A2)) /03 (Setting by Terminal (A3)) /04 (Setting by Terminal (A4)) /05 (Setting by Terminal (A5)) /06 (Setting by Terminal (A6)) /07 (Setting by parameter) /08 (Setting by RS485) /09 (Option-1) /10 (Option-2) /11 (Option-3)	07
BA111	Torque limit parameter mode selection, 1st-motor	00 (Quadrant-specific setting) /01 (Switching by terminal (TRQ))	00
BA112	Torque limit 1 (Forward driving), 1st-motor		
BA113	Torque limit 2 (Reverse regenerative), 1st-motor		
BA114	Torque limit 3 (Reverse driving), 1st-motor	0.0 to 500.0(%)	150.0
BA115	Torque limit 4 (Forward regenerative), 1st-motor		
BA116	Torque limit LADSTOP selection, 1st-motor	00 (Disable) /01 (Enable)	00
BA120	Over current suppress enable, 1st-motor	00 (Disable) /01 (Enable)	01
BA121	Over current suppress Level, 1st-motor	INV rated current * (0.00 to 2.00)	1.80 * Inverter rated current (A)

Code No.	Parameter Meaning	Selectable User Setting	Initial value
BA122	Overload restriction 1 mode selection, 1st-motor	00 (Disable) /01 (Enable during accel. and constant speed) /02 (Enable during constant speed) /03 (Enable during accel. and constant speed (Accel. during regeneration))	01
BA123	Overload restriction 1 active level, 1st-motor	INV rated current * (0.00 to 2.00)	1.50 * Inverter rated current (A)
BA124	Overload restriction 1 active level, 1st-motor	11 (Option-3)	1.00
BA126	Overload restriction 2 mode selection, 1st-motor	00 (Disable) /01 (Enable during accel. and constant speed) /02 (Enable during constant speed) /03 (Enable during accel. and constant speed (Accel. during regeneration))	01
BA127	Overload restriction 2 active level, 1st-motor	INV rated current * (0.00 to 2.00)	1.50 * Inverter rated current (A)
BA128	Overload restriction 2 active level, 1st-motor	0.10 to 3600.00(%)	1.00
BA130	Deceleration-stop at power failure	00 (Disable) /01 (Deceleration stop) /02 (Deceleration-stop at power failure (with resume)) /03 (Deceleration-stop at power failure (without resume))	00
BA131	Decel.-stop at power failure starting voltage	(200V class) 0.0 to 410.0(Vdc)	(200V class) 200.0
BA132	Decel.-stop at power failure control target level	(400V class) 0.0 to 820.0(Vdc)	(400V class) 360.0
BA134	Decel.-stop at power failure control target level	0.01 to 3600.00(s)	1.00
BA136	Decel.-stop at power failure freq. with at deceleration start	0.00 to 10.00(Hz)	0.00
BA137	Decel.-stop at power failure DC-bus voltage constant control P-gain	0.00 to 1.00	0.20
BA138	Decel.-stop at power failure DC-bus voltage constant control I-gain	0.00 to 150.00(s)	1.00
BA140	Over-voltage suppression enable, 1st-motor	00 (Disable) /01 (DC bus constant control (deceleration stop)) /02 (Enable acceleration) /03 (Enable acceleration (at constant speed and deceleration))	00
BA141	Over-voltage suppression active level, 1st-motor	(200V class) 330.0 to 400.0(Vdc)	(200V class) 360.0
BA142	Over-voltage suppression active level, 1st-motor	(400V class) 660.0 to 800.0(Vdc)	(400V class) 760.0
BA144	DC bus constant control proportional gain, 1st-motor	0.00 to 5.00	0.20
BA145	DC bus constant control integral gain, 1st-motor	0.00 to 150.00(s)	1.00
BA146	Over magnetization function selection, 1st-motor	00 (Disable), 01 (Always enable) /02 (At deceleration only) /03 (Operation at setting level) /04 (Operation at setting level at deceleration only)	02
BA147	Over magnetization output filter time constant, 1st-motor	0.00 to 1.00(s)	0.30
BA148	Over magnetization voltage gain, 1st-motor	50 to 400(%)	100
BA149	Over magnetization level setting, 1st-motor	(200V class) 330.0 to 400.0(Vdc)	(200V class) 360.0
BA150	Dynamic brake usage rate	(400V class) 560.0 to 800.0(Vdc)	(400V class) 720.0
BA151	Dynamic brake selection	00 (Disable) /01 (Enable (Disabling at stop)) /02 (Enable (Enabling at stop))	00
BA152	Dynamic brake active level	(200V class) 330.0 to 400.0(V)	(200V class) 360.0
BA153	Dynamic brake resistor value	(400V class) 560.0 to 800.0(V)	(400V class) 720.0
BA153	Dynamic brake resistor value	minimum resistance to 600(Ω)	Minimum resistance. (It depends on inverter models.)
BA170	Cooling FAN control method selection	00 (Usually active) /01 (Active during driving) /02 (Temperature monitor)	00
BA171	Cooling fan accumulation running time monitor clearance selection	00 (Disable) /01 (Clear)	00
BA201	Frequency limit selection, 2nd-motor	same as BA101	00
BA202	Upper frequency limit, 2nd-motor	same as BA102	0.00
BA203	Lower frequency limit, 2nd-motor	same as BA103	0.00
BA210	Torque limit selection, 2nd-motor	same as BA110	07
BA211	Torque limit parameter mode selection, 2nd-motor	same as BA111	00
BA212	Torque limit 1 (Forward driving), 2nd-motor	same as BA112	
BA213	Torque limit 2 (Reverse regenerative), 2nd-motor	same as BA113	
BA214	Torque limit 3 (Reverse driving), 2nd-motor	same as BA114	150.0(%)
BA215	Torque limit 4 (Forward regenerative), 2nd-motor	same as BA115	
BA216	Torque limit LADSTOP selection, 2nd-motor	same as BA116	00
BA220	Over current suppress enable, 2nd-motor	same as BA120	01
BA221	Over current suppress Level, 2nd-motor	same as BA121	1.80 * Inverter rated current (A)
BA222	Overload restriction 1 mode selection, 2nd-motor	same as BA122	01
BA223	Overload restriction 1 active level, 2nd-motor	same as BA123	1.50 * Inverter rated current (A)





## Parameter mode (C code)

Code No.	Parameter Meaning	Selectable User Setting	Initial value
CA-01	Input terminal [1] function		02B
CA-02	Input terminal [2] function		01B
CA-03	Input terminal [3] function		02B
CA-04	Input terminal [4] function		032
CA-05	Input terminal [5] function		031
CA-06	Input terminal [6] function	refer to "Input terminal functions list"	003
CA-07	Input terminal [7] function		004
CA-08	Input terminal [8] function		002
CA-09	Input terminal [9] function		001
CA-10	Input terminal [A] function		003
CA-11	Input terminal [B] function		004
CA-21 to CA-31	Input terminal [1] to [9], [A], [B] active state	00 (Normal open) / 01 (Normal close)	00
CA-41 to CA-51	Input terminal [1] to [9], [A], [B] response time	0 to 400 (ms)	2
CA-55	Multistage input determination time	0 to 2000 (ms)	0
CA-60	FURIFDN overwrite target selection	00 (Speed Reference) / 01 (PD1 Setpoint)	00
CA-61	FURIFDN data save enable	00 (Not save) / 01 (Save)	00
CA-62	FURIFDN UDC selection	00 (Hz) / 01 (save data)	00
CA-64	Acceleration time setting for FURIFDN function	0.00 to 3600.00 (s)	30.00
CA-66	Deceleration time setting for FURIFDN function		
CA-70	Speed command selection when [F-OP] active	01 (Setting by Terminal [A1]) / 02 (Setting by Terminal [A2]) / 03 (Setting by Terminal [A2]) / 04 (Setting by Terminal [A4]) / 05 (Setting by Terminal [A5]) / 06 (Setting by Terminal [A6]) / 07 (Setting by parameter) / 08 (Setting by RS485) / 09 (Option-1) / 10 (Option-2) / 11 (Option-3) / 12 (Pulse train input terminal) / 13 (Pulse train input (Option)) / 14 (Setting by ExSQ) / 15 (PID function) / 16 (Volume on keypad)	01
CA-71	RUN command source selection at [F-OP] is active	00 (Terminal [PW] / RV) / 01 (3-wire) / 02 (RUN key on keypad) / 03 (Setting by RS485) / 04 (Option-1) / 05 (Option-2) / 06 (Option-3)	00
CA-72	Reset mode selection	00 (Trip release at turn-on) / 01 (Trip release at turn-off) / 02 (Effective only in trip ON condition) / 03 (Effective only in trip OFF condition)	00
CA-81	Encoder constant setting	32 to 65535 (P/s)	1024
CA-82	Encoder position selection	00 (Phase-A Load) / 01 (Phase-B Lead)	00
CA-83	Motor gear ratio Numerator	1 to 16000	1
CA-84	Motor gear ratio Denominator	1 to 16000	1
CA-90	Pulse train detection object selection	00 (Classic) / 01 (reference) / 02 (Speed feedback) / 03 (Pulse count)	00
CA-91	Mode selection of pulse train input	00 (0° shift pulse train) / 01 (Forward/Reverse pulse train and direction signal) / 02 (Forward pulse train and Reverse pulse train)	00
CA-92	Pulse train frequency Scale	0.05 to 32.0 (kHz)	25.00
CA-93	Pulse train frequency Filter time constant	0.01 to 2.00 (s)	0.10
CA-94	Pulse train frequency Bias value	-100.0 to 100.0 (%)	0.0
CA-95	Pulse train frequency High Limit	0.0 to 100.0 (%)	100.0
CA-96	Pulse train frequency detection low level		0.0
CA-97	Comparing match output ON-level for Pulse count		0
CA-98	Comparing match output OFF-level for Pulse count	0 to 65535	0
CA-99	Comparing match output Maximum value for Pulse count		65535
Cb-01	Filter time constant of Terminal [A1]	1 to 500 (ms)	16
Cb-02	Start value of Terminal [A1]	0.00 to 100.00 (%)	0.00
Cb-03	End value of Terminal [A1]	0.00 to 100.00 (%)	100.00
Cb-04	Start rate of Terminal [A1]	0.0 to [Cb-06] (%)	0.0
Cb-05	End rate of Terminal [A1]	[Cb-05] to 100.0 (%)	100.0
Cb-07	Start point selection of Terminal [A1]	00 (Start value) / 01 (0%)	01
Cb-11	Filter time constant of Terminal [A2]	1 to 500 (ms)	16
Cb-13	Start value of Terminal [A2]	0.00 to 100.00 (%)	0.00
Cb-14	End value of Terminal [A2]	0.00 to 100.00 (%)	100.00
Cb-15	Start rate of Terminal [A2]	0.0 to [Cb-16] (%)	20.0
Cb-16	End rate of Terminal [A2]	[Cb-15] to 100.0 (%)	100.0
Cb-17	Start point selection of Terminal [A2]	00 (Start value) / 01 (0%)	01
Cb-21	Filter time constant of Terminal [A3]	1 to 500 (ms)	16
Cb-22	Terminal [A3] selection	00 (angle) / 01 (added to A1/A2 - forward and reverse) / 02 (added to A1/A2 - forward only)	00
Cb-23	Start value of Terminal [A3]	-100.00 to 100.00 (%)	-100.00
Cb-24	End value of Terminal [A3]	0.00 to 100.00 (%)	100.00
Cb-25	Start rate of Terminal [A3]	-100.0 to [Cb-26]	-100.0
Cb-26	End rate of Terminal [A3]	[Cb-25] to 100.0	100.0
Cb-30	[A1] Voltage/Current zero-bias adjustment	-100.00 to 100.00 (%)	0.00
Cb-31	[A1] Voltage/Current gain adjustment	0.00 to 200.00 (%)	100.00
Cb-32	[A2] Voltage/Current zero-bias adjustment	-100.00 to 100.00 (%)	0.00

Code No.	Parameter Meaning	Selectable User Setting	Initial value	
Cb-33	[A2] Voltage/Current gain adjustment	0.00 to 200.00 (%)	100.00	
Cb-34	[A3] Voltage -10V bias adjustment	-100.00 to 100.00 (%)	0.00	
Cb-36	[A3] Voltage gain adjustment	0.00 to 200.00 (%)	100.00	
Cb-40	Thermistor type selection	00 (Dsabini) / 01 (PTC) / 02 (NTC)	00	
Cb-41	Thermistor gain adjustment	0.0 to 1000.0	100.0	
Cb-51	Filter time constant of Volume on QOP	1 to 500 (ms)	100	
Cb-53	Start value of Volume on QOP		0.00	
Cb-54	End value of Volume on QOP	0.00 to 100.00 (%)	100.00	
Cb-55	Start rate of Volume on QOP	0.0 to [Cb-56] (%)	0.0	
Cb-56	End rate of Volume on QOP	[Cb-55] to 100.0 (%)	100.0	
Cb-57	Start point selection of Volume on QOP	00 ([Cb-53] / 01 (0%))	01	
CC-01	Output terminal [11] function		001	
CC-02	Output terminal [12] function		002	
CC-03	Output terminal [13] function		003	
CC-04	Output terminal [14] function	refer to "output terminal functions list"	007	
CC-05	Output terminal [15] function		006	
CC-06 a to e	Relay output terminal [16] function		040	
CC-07	Relay output terminal [AL] function		017	
CC-11 to 15	Output terminal [11] to [16] active state		00 (Normal open) / 01 (Normal close)	00
CC-17	Relay output terminal [AL] active state			01
CC-20	Output terminal [11] on-delay time			
CC-21	Output terminal [11] off-delay time			
CC-22	Output terminal [12] on-delay time			
CC-23	Output terminal [12] off-delay time			
CC-24	Output terminal [13] on-delay time			
CC-25	Output terminal [13] off-delay time			
CC-26	Output terminal [14] on-delay time	0.00 to 100.00 (s)	0.00	
CC-27	Output terminal [14] off-delay time			
CC-28	Output terminal [15] on-delay time			
CC-29	Output terminal [15] off-delay time			
CC-30 a to e	Output relay [16] on-delay time			
CC-31 a to e	Relay output terminal [16] off-delay time			
CC-32	Relay output terminal [AL] on-delay time			
CC-33	Relay output terminal [AL] off-delay time			
CC-40	Logical calculation target 1 selection of LOG1	< output terminal functions list >	000	
CC-41	Logical calculation target 2 selection of LOG1	062 : LOG1 to 068 : LOG7 cannot be selected	000	
CC-42	Logical calculation symbol selection of LOG1	00 (AND) / 01 (OR) / 02 (XOR)	00	
CC-43	Logical calculation target 1 selection of LOG2	< output terminal functions list >	000	
CC-44	Logical calculation target 2 selection of LOG2	062 : LOG1 to 068 : LOG7 cannot be selected	000	
CC-45	Logical calculation symbol selection of LOG2	00 (AND) / 01 (OR) / 02 (XOR)	00	
CC-46	Logical calculation target 1 selection of LOG3	< output terminal functions list >	000	
CC-47	Logical calculation target 2 selection of LOG3	062 : LOG1 to 068 : LOG7 cannot be selected	000	
CC-48	Logical calculation symbol selection of LOG3	00 (AND) / 01 (OR) / 02 (XOR)	00	
CC-49	Logical calculation target 1 selection of LOG4	< output terminal functions list >	000	
CC-50	Logical calculation target 2 selection of LOG4	062 : LOG1 to 068 : LOG7 cannot be selected	000	
CC-51	Logical calculation symbol selection of LOG4	00 (AND) / 01 (OR) / 02 (XOR)	00	
CC-52	Logical calculation target 1 selection of LOG5	< output terminal functions list >	000	
CC-53	Logical calculation target 2 selection of LOG5	062 : LOG1 to 068 : LOG7 cannot be selected	000	
CC-54	Logical calculation symbol selection of LOG5	00 (AND) / 01 (OR) / 02 (XOR)	00	
CC-55	Logical calculation target 1 selection of LOG6	< output terminal functions list >	000	
		062 : LOG1 to 068 : LOG7 cannot be selected	000	

00: This parameter is not for S11 series



Code No.	Parameter Meaning	Selectable User Setting	Initial value
CC-56	Logical calculation target 2 selection of LOG6	< output terminal functions list > 062 : LOG1 to 068 : LOG7 cannot be selected	000
CC-57	Logical calculation symbol selection of LOG6	00 (AND) /01 (OR) /02 (XOR)	00
CC-58	Logical calculation target 1 selection of LOG7	< output terminal functions list > 062 : LOG1 to 068 : LOG7 cannot be selected	000
CC-59	Logical calculation target 2 selection of LOG7	< output terminal functions list > 062 : LOG1 to 068 : LOG7 cannot be selected	000
CC-60	Logical calculation symbol selection of LOG7	00 (AND) /01 (OR) /02 (XOR)	00
CC-01	[FM] monitor output wave form selection	00 (PWM output (Duty)) /01 (Frequency output)	00
CC-02	[FM] monitor output base frequency (at PWM output)	0 to 3500(Hz)	2880
CC-03	[FM] monitor output selection		{0A-01}
CC-04	[Ao1] monitor output selection	Monitor code to be selected.	{0A-01}
CC-05	[Ao2] monitor output selection		{0A-01}
CC-10	Analog monitor adjust mode enable	00 (Disable) /01 (Enable)	00
CC-11	Filter time constant of [FM] monitor	1 to 500(ms)	100
CC-12	[FM] Data type selection	00 (Absolute data) /01 (Signed data)	00
CC-13	[FM] monitor bias adjustment	-100.0 to 100.0(%)	0.0
CC-14	[FM] monitor gain adjustment	-1000.0 to 1000.0(%)	100.0
CC-15	Output level setting at [FM] monitor adjust mode	-100.0 to 100.0(%)	100.0
CC-21	Filter time constant of [Ao1] monitor	1 to 500(ms)	100
CC-22	[Ao1] Data type selection	00 (Absolute data) /01 (Signed data)	00
CC-23	[Ao1] monitor bias adjustment	-100.0 to 100.0(%)	0.0
CC-24	[Ao1] monitor gain adjustment	-1000.0 to 1000.0(%)	100.0
CC-25	Output level setting at [Ao1] monitor adjust mode	-100.0 to 100.0(%)	100.0
CC-31	Filter time constant of [Ao2] monitor	1 to 500(ms)	100
CC-32	[Ao2] Data type selection	00 (Absolute data) /01 (Signed data)	00
CC-33	[Ao2] monitor bias adjustment	-100.0 to 100.0(%)	0.0
CC-34	[Ao2] monitor gain adjustment	-1000.0 to 1000.0(%)	100.0
CC-35	Output level setting at [Ao2] monitor adjust mode	-100.0 to 100.0(%)	100.0
CE101	Low current signal output mode selection, 1st motor	00 (During Accel./Decel. and constant speed) /01 (During constant speed only)	01
CE102	Low current detection level 1, 1st motor	INV rated current ×(0.00 to 2.00)	1.00 × inverter rated current
CE103	Low current detection level 2, 1st motor	INV rated current ×(0.00 to 2.00)	1.00 × inverter rated current
CE105	Over load signal output mode selection, 1st motor	00 (During Accel./Decel. and constant speed) /01 (During constant speed only)	01
CE106	Over load detection level 1, 1st motor	INV rated current ×(0.00 to 2.00)	1.00 × inverter rated current
CE107	Over load detection level 2, 1st motor	INV rated current ×(0.00 to 2.00)	1.00 × inverter rated current
CE-10	Arrival frequency setting during acceleration 1		0.00
CE-11	Arrival frequency setting during deceleration 1	0.50 to 60.00(Hz)	0.00
CE-12	Arrival frequency setting during acceleration 2		0.00
CE-13	Arrival frequency setting during deceleration 2		0.00
CE120	Over torque level (Forward driving), 1st motor		100.0
CE121	Over torque level (Reverse regenerative), 1st motor	0.0 to 500.0(%)	100.0
CE122	Over torque level (Reverse driving), 1st motor		100.0
CE123	Over torque level (Forward regenerative), 1st motor		100.0
CE-30	Electronic thermal warning level (MTR)	0.00 to 100.00(%)	60.00
CE-31	Electronic thermal warning level (CTL)		60.00
CE-33	Zero speed detection level	0.00 to 100.00(Hz)	0.50
CE-34	Cooling FAN over-heat warning level	0 to 200(°C)	120
CE-36	Accum. RUN(RNTY) Accum. Power-on(OHT) time setting	0 to 100000(hour)	0
CE-40	Window comparator for [A1] higher level	0 to 100(%)	100
CE-41	Window comparator for [A1] lower level	0 to 100(%)	0
CE-42	Window comparator for [A1] hysteresis width	0 to 10(%)	0
CE-43	Window comparator for [A2] higher level	0 to 100(%)	100
CE-44	Window comparator for [A2] lower level	0 to 100(%)	0

Code No.	Parameter Meaning	Selectable User Setting	Initial value
CE-45	Window comparator for [A2] hysteresis width	0 to 10(%)	0
CE-46	Window comparator for [A3] higher level	0 to 100(%)	100
CE-47	Window comparator for [A3] lower level	-100 to 100(%)	-100
CE-48	Window comparator for [A3] hysteresis width	0 to 10(%)	0
CE-50	Operation level at [A1] disconnection	0 to 100(%)	0
CE-51	Operation level selection at [A1] disconnection	00 (Disable) /01 (Enable) (at WC* active) /02 (Enable) (at WC* de-active)	00
CE-52	Operation level at [A2] disconnection	0 to 100(%)	0
CE-53	Operation level selection at [A2] disconnection	00 (Disable) /01 (Enable) (at WC* active) /02 (Enable) (at WC* de-active)	00
CE-54	Operation level at [A3] disconnection	-100 to 100(%)	0
CE-55	Operation level selection at [A3] disconnection	00 (Disable) /01 (Enable) (at WC* active) /02 (Enable) (at WC* de-active)	00
CE201	Low current signal output mode selection, 2nd-motor	Same as CE101	01
CE202	Low current detection level 1, 2nd-motor	Same as CE102	1.00 × inverter rated current
CE203	Low current detection level 2, 2nd-motor	Same as CE103	1.00 × inverter rated current
CE205	Over load signal output mode selection, 2nd-motor	Same as CE105	01
CE206	Over load detection level 1, 2nd-motor	Same as CE106	1.00 × inverter rated current
CE207	Over load detection level 2, 2nd-motor	Same as CE107	1.00 × inverter rated current
CE220	Over torque level (Forward driving), 2nd-motor	Same as CE120	100.0
CE221	Over torque level (Reverse regenerative), 2nd-motor	Same as CE121	100.0
CE222	Over torque level (Reverse driving), 2nd-motor	Same as CE122	100.0
CE223	Over torque level (Forward regenerative), 2nd-motor	Same as CE123	100.0
CF-01	RS485 communication baud rate selection	03 (2400bps) /04 (4800bps) /05 (9600bps) /06 (19.2kbps) /07 (35.4kbps) /08 (57.6kbps) /09 (115.2kbps) /10 (115.2kbps)	05
CF-02	RS485 communication Node allocation	1 to 247	1
CF-03	RS485 communication parity selection	00 (No parity) /01 (Even parity) /02 (Odd parity)	00
CF-04	RS485 communication stop-bit selection	01 (1bit) /02 (2bit)	01
CF-05	RS485 communication error selection	00 (Error) /01 (Error output after Deceleration stop) /02 (Ignore) /03 (Free-run stop) /04 (Deceleration stop)	02
CF-06	RS485 communication timeout setting	0.00 to 100.00(s)	0.00
CF-07	RS485 communication wait time setting	0 to 1000(ms)	2
CF-08	RS485 communication mode selection	01 (Modbus-RTU) /02 (Communication between inverters (ExCOM)) /03 (Communication between inverters (ExCOM Administrator))	01
CF-11	RS485 registor data selection	00 (A.V) /01(%)	00
CF-20	ExCOM Start node No.	01 to 99	01
CF-21	ExCOM End node No.	01 to 99	01
CF-22	ExCOM Start method selection	00 (Terminal (E.COM)) /01 (Always comm.)	00
CF-23	ExCOM data size	01 to 05	05
CF-24	ExCOM destination address 1	1 to 247	1
CF-25	ExCOM destination register 1	0000 to FFFF	0000
CF-27	ExCOM destination address 2	1 to 247	2
CF-28	ExCOM destination register 2	0000 to FFFF	0000
CF-29	ExCOM source register 2	0000 to FFFF	0000
CF-30	ExCOM destination address 3	1 to 247	3
CF-31	ExCOM destination register 3	0000 to FFFF	0000
CF-32	ExCOM source register 3	0000 to FFFF	0000
CF-33	ExCOM destination address 4	1 to 247	4
CF-34	ExCOM destination register 4	0000 to FFFF	0000
CF-35	ExCOM source register 4	0000 to FFFF	0000
CF-36	ExCOM destination address 5	1 to 247	5
CF-37	ExCOM destination register 5	0000 to FFFF	0000
CF-38	ExCOM source register 5	0000 to FFFF	0000
CF-50	USB communication Node allocation	1 to 247	1



### Parameter mode (H code)

Code No.	Parameter Meaning	Selectable User Setting	Initial value
HA-01	Auto-tuning selection	00 (Disable) /01 (Not rotation) /02 (Rotation) /03 (VMS)	00
HA-02	RUN command selection at Auto-tuning	00 (Force "RUN" key) /01 (Setting by AA111AA211)	00
HA-03	Online auto-tuning selection	00 (Disable) /01 (Enable)	00
HA110	Stabilization constant, 1st motor	0 to 1000(%)	100
HA115	Speed response, 1st motor		100
HA120	ASR gain switching mode selection, 1st motor	00 (Switching by Terminal (CAS)) /01 (Switching by parameter)	00
HA121	ASR gain switching time setting, 1st motor	0 to 10000(ms)	100
HA122	ASR gain mapping intermediate speed 1, 1st motor	0.00 to 500.00(Hz)	0.00
HA123	ASR gain mapping intermediate speed 2, 1st motor		
HA124	ASR gain mapping Maximum speed, 1st motor		
HA125	ASR gain mapping P-gain 1, 1st motor		
HA126	ASR gain mapping I-gain 1, 1st motor		
HA127	ASR gain mapping P-gain 1 at P-control, 1st motor		
HA128	ASR gain mapping P-gain 2, 1st motor		
HA129	ASR gain mapping I-gain 2, 1st motor		
HA130	ASR gain mapping P-gain 2 at P-control, 1st motor		
HA131	ASR gain mapping P-gain 3, 1st motor		
HA132	ASR gain mapping I-gain 3, 1st motor		
HA133	ASR gain mapping P-gain 4, 1st motor		
HA134	ASR gain mapping I-gain 4, 1st motor		
HA210	Stabilization constant, 2nd motor		
HA215	Speed response, 2nd motor	same as HA115	100
HA220	ASR gain switching mode selection, 2nd motor	same as HA120	00
HA221	ASR gain switching time setting, 2nd motor	same as HA121	100
HA222	ASR gain mapping intermediate speed 1, 2nd motor	same as HA122	0.00
HA223	ASR gain mapping intermediate speed 2, 2nd motor	same as HA123	
HA224	ASR gain mapping Maximum speed, 2nd motor	same as HA124	
HA225	ASR gain mapping P-gain 1, 2nd motor	same as HA125	
HA226	ASR gain mapping I-gain 1, 2nd motor	same as HA126	
HA227	ASR gain mapping P-gain 1 at P-control, 2nd motor	same as HA127	
HA228	ASR gain mapping P-gain 2, 2nd motor	same as HA128	
HA229	ASR gain mapping I-gain 2, 2nd motor	same as HA129	
HA230	ASR gain mapping P-gain 2 at P-control, 2nd motor	same as HA130	
HA231	ASR gain mapping P-gain 3, 2nd motor	same as HA131	
HA232	ASR gain mapping I-gain 3, 2nd motor	same as HA132	
HA233	ASR gain mapping P-gain 4, 2nd motor	same as HA133	
HA234	ASR gain mapping I-gain 4, 2nd motor	same as HA134	
Hb102	Async Motor capacity setting, 1st motor	0.01 to 160.00(kW)	
Hb103	Async Motor poles setting, 1st motor	2 to 48(Pole)	4
Hb104	Async Motor Base frequency setting, 1st motor	10.00 to 500.00(Hz)	60.00(*FF, *FUF) 50.00(*FEF)
Hb105	Async Motor Maximum frequency setting, 1st motor	10.00 to 500.00(Hz)	(200V class) : 200(*FF) (230V class) : 230(*FEF, *FUF) (400V class) : 400(*FF, *FEF) (480V class) : 480(*FUF)
Hb106	Async Motor rated voltage, 1st motor	1 to 1000(V)	

Code No.	Parameter Meaning	Selectable User Setting	Initial value
Hb108	Async Motor rated current, 1st motor	0.01 to 10000.00(A)	
Hb110	Async Motor constant R1, 1st motor	0.000001 to 1000.000000(D)	
Hb112	Async Motor constant R2, 1st motor	0.000001 to 1000.000000(D)	∞
Hb114	Async Motor constant L, 1st motor	0.000001 to 1000.000000(mH)	
Hb116	Async Motor constant Ia, 1st motor	0.01 to 1000.00(A)	
Hb118	Async Motor constant J, 1st motor	0.00001 to 10000.000000(gm <sup>2</sup> )	
Hb130	Minimum frequency adjustment, 1st motor	0.00 to 10.00(Hz)	0.50
Hb131	Reduced voltage start time setting, 1st motor	0 to 2000(ms)	36
Hb140	Manual torque boost operational mode selection, 1st motor	00 (Disable) /01 (Enabled) /02 (Only forward) /03 (Only reverse)	01
Hb141	Manual torque boost value, 1st motor	0.0 to 20.0(%)	0.0
Hb142	Manual torque boost Peak speed, 1st motor	0.0 to 50.0(%)	0.0
Hb146	Eco drive enable, 1st motor	00 (Disable) /01 (Enable)	00
Hb146	Eco drive response adjustment, 1st motor	0 to 100(%)	50.0
Hb150	Free-V/F frequency 1 setting, 1st motor	0.00 to [Hb152](Hz)	0.00
Hb151	Free-V/F Voltage 1 setting, 1st motor	0.0 to 1000.0(V)	0.0
Hb152	Free-V/F frequency 2 setting, 1st motor	[Hb150] to [Hb154](Hz)	0.00
Hb153	Free-V/F Voltage 2 setting, 1st motor	0.0 to 1000.0(V)	0.0
Hb154	Free-V/F frequency 3 setting, 1st motor	[Hb152] to [Hb156](Hz)	0.00
Hb155	Free-V/F Voltage 3 setting, 1st motor	0.0 to 1000.0(V)	0.0
Hb156	Free-V/F frequency 4 setting, 1st motor	[Hb154] to [Hb158](Hz)	0.00
Hb157	Free-V/F Voltage 4 setting, 1st motor	0.0 to 1000.0(V)	0.0
Hb158	Free-V/F frequency 5 setting, 1st motor	[Hb156] to [Hb160](Hz)	0.00
Hb159	Free-V/F Voltage 5 setting, 1st motor	0.0 to 1000.0(V)	0.0
Hb160	Free-V/F frequency 6 setting, 1st motor	[Hb158] to [Hb162](Hz)	0.00
Hb161	Free-V/F Voltage 6 setting, 1st motor	0.0 to 1000.0(V)	0.0
Hb162	Free-V/F frequency 7 setting, 1st motor	[Hb160] to [Hb164](Hz)	0.00
Hb163	Free-V/F Voltage 7 setting, 1st motor	0.0 to 1000.0(V)	0.0
Hb170	Sfp Compensation P-gain with encoder, 1st motor	0 to 1000(%)	100
Hb171	Sfp Compensation I-gain with encoder, 1st motor	0 to 1000(%)	100
Hb180	Output voltage gain, 1st motor	0 to 255(%)	100
Hb202	Async Motor capacity setting, 2nd motor	Same as Hb102	∞
Hb203	Async Motor poles setting, 2nd motor	Same as Hb103	4
Hb204	Async Motor Base frequency setting, 2nd motor	Same as Hb104	(60.00(*FF, *FUF) 50.00(*FEF)
Hb205	Async Motor Maximum frequency setting, 2nd motor	Same as Hb105	(200V class) : 200(*FF) (230V class) : 230(*FEF, *FUF) (400V class) : 400(*FF, *FEF) (480V class) : 480(*FUF)
Hb206	Async Motor rated voltage, 2nd motor	Same as Hb106	
Hb208	Async Motor rated current, 2nd motor	Same as Hb108	
Hb210	Async Motor constant R1, 2nd motor	Same as Hb110	
Hb212	Async Motor constant R2, 2nd motor	Same as Hb112	∞
Hb214	Async Motor constant L, 2nd motor	Same as Hb114	
Hb216	Async Motor constant Ia, 2nd motor	Same as Hb116	
Hb218	Async Motor constant J, 2nd motor	Same as Hb118	
Hb230	Minimum frequency adjustment, 2nd motor	Same as Hb130	0.50
Hb231	Reduced voltage start time setting, 2nd motor	Same as Hb131	36
Hb240	Manual torque boost operational mode selection, 2nd motor	Same as Hb140	01
Hb241	Manual torque boost value, 2nd motor	Same as Hb141	0.0

\*6) Values depending on inverter models and settings of duty rating.

Code No.	Parameter Meaning	Selectable User Setting	Initial value
Hd242	Manual torque boost Peak speed, 2nd-motor	Same as Hd142	0.0
Hd245	Eco drive enable, 2nd-motor	Same as Hd145	00
Hd246	Eco drive response adjustment, 2nd-motor	Same as Hd146	50.0
Hd250	Free-V/f frequency 1 setting, 2nd-motor	Same as Hd150	0
Hd251	Free-V/f Voltage 1 setting, 2nd-motor	Same as Hd151	0.0
Hd252	Free-V/f frequency 2 setting, 2nd-motor	Same as Hd152	0.00
Hd253	Free-V/f Voltage 2 setting, 2nd-motor	Same as Hd153	0.0
Hd254	Free-V/f frequency 3 setting, 2nd-motor	Same as Hd154	0.00
Hd255	Free-V/f Voltage 3 setting, 2nd-motor	Same as Hd155	0.0
Hd256	Free-V/f frequency 4 setting, 2nd-motor	Same as Hd156	0.00
Hd257	Free-V/f Voltage 4 setting, 2nd-motor	Same as Hd157	0.0
Hd258	Free-V/f frequency 5 setting, 2nd-motor	Same as Hd158	0.00
Hd259	Free-V/f Voltage 5 setting, 2nd-motor	Same as Hd159	0.0
Hd260	Free-V/f frequency 6 setting, 2nd-motor	Same as Hd160	0.00
Hd261	Free-V/f Voltage 6 setting, 2nd-motor	Same as Hd161	0.0
Hd262	Free-V/f frequency 7 setting, 2nd-motor	Same as Hd162	0.00
Hd263	Free-V/f Voltage 7 setting, 2nd-motor	Same as Hd163	0.0
Hd270	Slip Compensation P-gain with encoder, 2nd-motor	Same as Hd170	100
Hd271	Slip Compensation I-gain with encoder, 2nd-motor	Same as Hd171	100
Hd280	Output voltage gain, 2nd-motor	Same as Hd180	100
Hd101	Automatic torque boost voltage compensation gain, 1st-motor	0 to 255(%)	100
Hd102	Automatic torque boost slip compensation gain, 1st-motor	0 to 255(%)	100
Hd110	Zero speed area limit, 1st-motor	0 to 100(%)	80
Hd111	Boost value at start, 1st-motor (M-SLV/M-CLV)	0 to 50(%)	0
Hd112	Boost value at start, 1st-motor (M-0Hz-SLV)	0 to 50(%)	10
Hd113	Secondary resistance correction, 1st-motor	00 (Disable) /01 (Enable)	00
Hd114	Reverse direction run protection selection, 1st-motor	00 (Disable) /01 (Enable)	00
Hd120	Torque current reference filter time constant, 1st-motor	0 to 100(ms)	2
Hd121	Speed feedforward compensation gain, 1st-motor	0 to 1000(%)	0
Hd201	Automatic torque boost voltage compensation gain, 2nd-motor	same as Hd101	100
Hd202	Automatic torque boost slip compensation gain, 2nd-motor	same as Hd102	100
Hd210	Zero speed area limit, 2nd-motor	same as Hd110	80
Hd211	Boost value at start, 2nd-motor (M-SLV/M-CLV)	same as Hd111	0
Hd212	Boost value at start, 2nd-motor (M-0Hz-SLV)	same as Hd112	10
Hd213	Secondary resistance correction, 2nd-motor	same as Hd113	00
Hd214	Counter direction run protection selection, 2nd-motor	same as Hd114	00
Hd220	Torque current reference filter time constant, 2nd-motor	same as Hd120	2
Hd221	Speed feedforward compensation gain, 2nd-motor	same as Hd121	0
Hd103	Sync.Motor capacity setting, 1st-motor	0.01 to 160.00(kW)	we)
Hd103	Sync.Motor Poles setting, 1st-motor	2 to 48(Pole)	
Hd104	Sync.Base frequency setting, 1st-motor	10.00 to 590.00(Hz)	
Hd105	Sync.Maximum frequency setting, 1st-motor		
Hd106	Sync.Motor rated voltage, 1st-motor	1 to 1000(V)	
Hd108	Sync.Motor rated current, 1st-motor	0.01 to 10000.00(A)	

Code No.	Parameter Meaning	Selectable User Setting	Initial value	
Hd110	Sync.Motor constant R, 1st-motor	0.000001 to 1000.000000(I)	we)	
Hd112	Sync.Motor constant Ld, 1st-motor	0.000001 to 1000.000000(Hz)		
Hd114	Sync.Motor constant Lq, 1st-motor			
Hd116	Sync.Motor constant Kt, 1st-motor	0.1 to 100000.0 (mVs/rad)		
Hd118	Sync.Motor constant J, 1st-motor	0.00001 to 10000.00000(kgm <sup>2</sup> )		
Hd130	Minimum Frequency for Sync.M, 1st-motor	0 to 50(%)		8
Hd131	No-Load current for Sync.M, 1st-motor	0 to 100(%)		10
Hd132	Starting Method for Sync.M, 1st-motor	00 (Synchronous) /01 (Initial position estimate)		00
Hd133	MPF 0V wait number for Sync.M, 1st-motor	0 to 255	10	
Hd134	MPF detect wait number for Sync.M, 1st-motor		10	
Hd135	MPF detect number for Sync.M, 1st-motor		30	
Hd136	MPF voltage gain for Sync.M, 1st-motor	0 to 200(%)	100	
Hd137	MPF Mg-pole position offset, 1st-motor	0 to 359(°)	0	
Hd41	Carrier frequency at IVMS	0.5 to 16.00kHz	2.0	
Hd42	Filter gain of current detection at IVMS	0 to 1000	100	
Hd43	Open phase voltage detection gain,	00, 01, 02, 03	00	
Hd44	Open phase switching threshold compensation	00 (Disable) /01 (Enable)	01	
Hd45	R-Gain for speed control, SM(PMM)-IVMS	0 to 1000	100	
Hd46	I-Gain for speed control, SM(PMM)-IVMS	0 to 10000		
Hd47	Wait time for open phase switching, SM(PMM)-IVMS	0 to 1000	15	
Hd48	Limitation of decision about the drive direction, SM(PMM)-IVMS	00 (Disable) /01 (Enable)	01	
Hd49	Open phase voltage detection timing adjustment, SM(PMM)-IVMS	0 to 1000	10	
Hd50	Minimum pulse width adjustment, SM(PMM)-IVMS		100	
Hd51	IVMS threshold current limit	0 to 255	100	
Hd52	IVMS threshold gain			
Hd58	IVMS carrier frequency switching start/finish point	0 to 50(%)	5	
Hd202	Sync.Motor capacity setting, 2nd-motor	same as Hd102	we)	
Hd203	Sync.Motor poles setting, 2nd-motor	same as Hd103		
Hd204	Sync.Base frequency setting, 2nd-motor	same as Hd104		
Hd205	Sync.Maximum frequency setting, 2nd-motor	same as Hd105		
Hd206	Sync.Motor rated voltage, 2nd-motor	same as Hd106		
Hd208	Sync.Motor rated current, 2nd-motor	same as Hd108		
Hd210	Sync.Motor constant R, 2nd-motor	same as Hd110		
Hd212	Sync.Motor constant Ld, 2nd-motor	same as Hd112		
Hd214	Sync.Motor constant Lq, 2nd-motor	same as Hd114		
Hd216	Sync.Motor constant Kt, 2nd-motor	same as Hd116		
Hd218	Sync.Motor constant J, 2nd-motor	same as Hd118		
Hd230	Minimum Frequency for Sync.M, 2nd-motor	same as Hd130	8	
Hd231	No-Load current for Sync.M, 2nd-motor	same as Hd131	10	
Hd232	Starting Method for Sync.M, 2nd-motor	same as Hd132	00	
Hd233	MPF 0V wait number for Sync.M, 2nd-motor	same as Hd133	10	
Hd234	MPF detect wait number for Sync.M, 2nd-motor	same as Hd134	10	
Hd235	MPF detect number for Sync.M, 2nd-motor	same as Hd135	30	
Hd236	MPF voltage gain for Sync.M, 2nd-motor	same as Hd136	100	
Hd237	MPF Mg-pole position offset, 2nd-motor	same as Hd137	0	

\*6) Varies depending on inverter model/s and settings of duty rating.



## Parameter mode (O code)

Code No.	Parameter Meaning	Selectable User Setting	Initial value
oA-10	Operation mode on option card error (SLOT-1)	00 (Error) /01 (Ignore error (keep running))	00
oA-11	Communication Watch Dog Timer (SLOT-1)	0.00 to 100.00(s)	1.00
oA-12	Action selection at communication error (SLOT-1)	00 (Error) /01 (Trip after Deceleration stop) /02 (Ignore) /03 (Free run stop) /04 (Deceleration stop)	01
oA-13	Run command selection at start up (SLOT-1)	00 (run command disabled) /01 (run command enabled)	00
oA-20	Operation mode on option card error (SLOT-2)	00 (Error) /01 (Ignore error (keep running))	00
oA-21	Communication Watch Dog Timer (SLOT-2)	0.00 to 100.00(s)	1.00
oA-22	Action selection at communication error (SLOT-2)	00 (Error) /01 (Trip after Deceleration stop) /02 (Ignore) /03 (Free run stop) /04 (Deceleration stop)	01
oA-23	Run command selection at start up (SLOT-2)	00 (run command disabled) /01 (run command enabled)	00
oA-30	Operation mode on option card error (SLOT-3)	00 (Error) /01 (Ignore error (keep running))	00
oA-31	Communication Watch Dog Timer (SLOT-3)	0.00 to 100.00(s)	1.00
oA-32	Action selection at communication error (SLOT-3)	00 (Error) /01 (Trip after Deceleration stop) /02 (Ignore) /03 (Free run stop) /04 (Deceleration stop)	01
oA-33	Run command selection at start up (SLOT-3)	00 (run command disabled) /01 (run command enabled)	00
oB-01	Encoder constant setting	32 to 65535(Pk)	1024
oB-02	Encoder position selection	00 (Phase-A Lead) /01 (Phase-B Lead)	00
oB-03	Motor gear ratio Numerator	1 to 10000	1
oB-04	Motor gear ratio Denominator	1 to 10000	1
oB-10	Pulse train operation object selection (option)	00 (reference) /01 (Pulse train position reference)	00
oB-11	Mode selection of pulse train input (option)	00 (90° shift pulse train) /01 (Forward/Reverse pulse train and direction signal) /02 (Forward pulse train and Reverse pulse train)	01
oB-12	Pulse train frequency scale (option)	0.05 to 200.00(Hz)	25.00
oB-13	Pulse train frequency filter time constant (option)	0.01 to 2.00(s)	0.10
oB-14	Pulse train frequency Bias value (option)	-100.0 to 100.0(%)	0.0
oB-15	Pulse train frequency High Limit (option)		100.0
oB-16	Pulse train frequency detection low level (option)	0.0 to 100.0(%)	0.0
oC-01 w7	Safety option input display selection	00 (Warning/with display) /01 (Warning/without display)	00
oC-10 w7	Safety option input display selection		30.00
oC-12 w7	SS1-A deceleration time setting	0.00 to 3600.00(s)	30.00
oC-14 w7	SLS-A Speed upper limit(Forward)	0.00 to 990.00(Hz)	0.00
oC-15 w7	SLS-A Speed upper limit(Reverse)		0.00
oC-16 w7	SLS-A Speed upper limit(Reverse)	0.00 to 3600.00(s)	30.00
oC-18 w7	SD1-A limited direction	00 (limit) /01 (invert)	00
oC-20 w7	SD1-A limited direction		30.00
oC-22 w7	SS1-B deceleration time setting	0.00 to 3600.00(s)	30.00
oC-24 w7	SLS-B Speed upper limit(Forward)	0.00 to 990.00(Hz)	0.00
oC-25 w7	SLS-B Speed upper limit(Reverse)		0.00
oC-26 w7	SLS-B Speed upper limit(Reverse)	0.00 to 3600.00(s)	30.00
oC-28 w7	SD1-B limited direction	00 (limit) /01 (invert)	00
oE-01	Filter time constant of Terminal [A4]	1 to 500(ms)	10
oE-03	Start value of Terminal [A4]	0.00 to 100.00(%)	0.00
oE-04	End value of Terminal [A4]	0.00 to 100.00(%)	100.00
oE-05	Start rate of Terminal [A4]	0.0 to [oE-06] (%)	0.0
oE-06	End rate of Terminal [A4]	[oE-05] to 100.0(%)	100.0
oE-07	Start point selection of Terminal [A4]	00 (Start value[oE-03]) /01 (0%)	01
oE-11	Filter time constant of Terminal [A5]	1 to 500(ms)	10
oE-13	Start value of Terminal [A5]	0.00 to 100.00(%)	0.00
oE-14	End value of Terminal [A5]	0.00 to 100.00(%)	100.00
oE-15	Start rate of Terminal [A5]	0.0 to [oE-16] (%)	0.0
oE-16	End rate of Terminal [A5]	[oE-15] to 100.0(%)	100.0
oE-17	Start point selection of Terminal [A5]	00 (Start value[oE-03]) /01 (0%)	01
oE-21	Filter time constant of Terminal [A6]	1 to 500(ms)	10
oE-23	Start value of Terminal [A6]	-100.00 to 100.00(%)	-100.00
oE-24	End value of Terminal [A6]	-100.00 to 100.00(%)	100.00
oE-25	Start rate of Terminal [A6]	-100.0 to [oE-26] (%)	-100.0
oE-26	End rate of Terminal [A6]	[oE-25] to 100.0(%)	100.0

Code No.	Parameter Meaning	Selectable User Setting	Initial value
oE-28	[A4] Voltage/Current zero-bias adjustment	-100.00 to 100.00(%)	0.00
oE-29	[A4] Voltage/Current gain adjustment	0.00 to 200.00(%)	100.00
oE-30	[A5] Voltage/Current zero-bias adjustment	-100.00 to 100.00(%)	0.00
oE-31	[A5] Voltage/Current gain adjustment	0.00 to 200.00(%)	100.00
oE-32	[A6] Voltage zero-bias adjustment	-100.00 to 100.00(%)	0.00
oE-33	[A6] Voltage gain adjustment	0.00 to 200.00(%)	100.00
oE-35	Window comparator for [A4] higher level	0 to 100(%)	100
oE-36	Window comparator for [A4] lower level		0
oE-37	Window comparator for [A4] hysteresis width	0 to 10(%)	0
oE-38	Window comparator for [A5] higher level		100
oE-39	Window comparator for [A5] lower level	0 to 100(%)	0
oE-40	Window comparator for [A5] hysteresis width	0 to 10(%)	0
oE-41	Window comparator for [A6] higher level	-100 to 100(%)	100
oE-42	Window comparator for [A6] lower level		-100
oE-43	Window comparator for [A6] hysteresis width	0 to 10(%)	0
oE-44	Operation level at [A4] disconnection	0 to 100(%)	0
oE-45	Operation level selection at [A4] disconnection	00 (Disable) /01 (Enable: At WC* is active) /02 (Enable: At WC* is not active)	00
oE-46	Operation level at [A5] disconnection	0 to 100(%)	0
oE-47	Operation level selection at [A5] disconnection	00 (Disable) /01 (Enable: At WC* is active) /02 (Enable: At WC* is not active)	00
oE-48	Operation level at [A6] disconnection	-100 to 100(%)	0
oE-49	Operation level selection at [A6] disconnection	00 (Disable) /01 (Enable: At WC* is active) /02 (Enable: At WC* is not active)	00
oE-50	[A03] monitor output selection		oA-01
oE-51	[A04] monitor output selection	Monitor Code to be specified	oA-01
oE-52	[A05] monitor output selection		oA-01
oE-56	Filter time constant of [A03] monitor	1 to 500(ms)	100
oE-57	[A03] Data type selection	00 (Absolute data) /01 (Signed data)	00
oE-58	[A03] monitor bias adjustment	-100.0 to 100.0(%)	0.0
oE-59	[A03] monitor gain adjustment	-1000.0 to 1000.0(%)	100.0
oE-60	Output level setting at [A03] monitor adjust mode	-100.0 to 100.0(%)	100.0
oE-61	Filter time constant of [A04] monitor	1 to 500(ms)	100
oE-62	[A04] Data type selection	00 (Absolute data) /01 (Signed data)	00
oE-63	[A04] monitor bias adjustment	-100.0 to 100.0(%)	0.0
oE-64	[A04] monitor gain adjustment	-1000.0 to 1000.0(%)	100.0
oE-65	Output level setting at [A04] monitor adjust mode	-100.0 to 100.0(%)	100.0
oE-66	Filter time constant of [A05] monitor	1 to 500(ms)	100
oE-67	[A05] Data type selection	00 (Absolute data) /01 (Signed data)	00
oE-68	[A05] monitor bias adjustment	-100.0 to 100.0(%)	0.0
oE-69	[A05] monitor gain adjustment	-1000.0 to 1000.0(%)	100.0
oE-70	Output level setting at [A05] monitor adjust mode	-100.0 to 100.0(%)	100.0
oH-01	P-Address selection	00 (Gr-1) /01 (Gr-2)	00
oH-02	Communication speed (port-1)	00 (Auto Negotiation) /01 (100M Full-duplex) /02 (103M Half-duplex) /03 (10M Full-duplex) /04 (10M Half-duplex)	00
oH-03	Communication speed (port-2)		00
oH-04	Ethernet communication timeout	1 to 65535(> 10ms)	3000
oH-05	Modbus TCP Port No. (Pv4)	502, 1024 to 65535	502
oH-06	Modbus TCP Port No. (Pv6)	502, 1024 to 65535	502
oH-20	Profibus Node address	0 to 125	0
oH-21	Profibus clear mode selection	00 (Clear) /01 (Keep last value)	00
oH-22	Profibus Map selection	00 (PPD) /01 (Conversional) /02 (FlexibleMode)	00
oH-23	Setting enable from Profibus master	00 (Enable) /01 (Disable)	00
oH-24	Setpoint telegram/ Actual value telegram Gr Selection	00 (Gr-A) /01 (Gr-B) /02 (Gr-C)	00
oH-30	P-Address selection	00 (Gr-1) /01 (Gr-2)	00

Code No.	Parameter Meaning	Selectable User Setting	Initial value	
eH-31	Communication speed (port-1)	00 (Auto Negotiation) /01 (100M/Full-duplex) /02 (100M/Half-duplex) /03 (10M/Full-duplex) /04 (10M/Half-duplex)		
eH-32	Communication speed (port-2)			
eH-33	Ethernet communication timeout	1 to 65535(×10ms)	3000	
eH-34	Setpoint telegram/ Actual value telegram Gr. Selection	00 (Gr.A) /01 (Gr.B) /02 (Gr.C)		
eJ-01 to eJ-10	Flexible command registration setting register 1 to 10, Gr.A	0000 to FFFF		
eJ-11 to eJ-20	Flexible command registration Reading register 1 to 10, Gr.A			
eJ-21 to eJ-30	Flexible command registration setting register 1 to 10, Gr.B			
eJ-31 to eJ-40	Flexible command registration Reading register 1 to 10, Gr.B			
eJ-41 to eJ-50	Flexible command registration setting register 1 to 10, Gr.C			
eJ-51 to eJ-60	Flexible command registration Reading register 1 to 10, Gr.C			
eL-01	IPv4 IP address (1), Gr.1		0 to 255	192
eL-02	IPv4 IP address (2), Gr.1			168
eL-03	IPv4 IP address (3), Gr.1			Z
eL-04	IPv4 IP address (4), Gr.1			Z
eL-05	IPv4 Sub-net mask (1), Gr.1		255	
	IPv4 Sub-net mask (2), Gr.1		255	
	IPv4 Sub-net mask (3), Gr.1		255	
eL-08	IPv4 Sub-net mask (4), Gr.1			
eL-09	IPv4 Default gateway (1), Gr.1		192	
	IPv4 Default gateway (2), Gr.1		168	
	IPv4 Default gateway (3), Gr.1			
eL-12	IPv4 Default gateway (4), Gr.1			
eL-20 to eL-27	IPv6 IP address (1) to (8), Gr.1	0000 to FFFF		
eL-28	IPv6 Prefix of Sub-net, Gr.1	0 to 127	64	
eL-29 to eL-35	IPv6 Default gateway (1) to (5), Gr.1	0000 to FFFF		
eL-40	IPv4 IP address (1), Gr.2	0 to 255	192	
eL-41	IPv4 IP address (2), Gr.2		168	
eL-42	IPv4 IP address (3), Gr.2			
eL-43	IPv4 IP address (4), Gr.2		Z	
eL-44	IPv4 Sub-net mask (1), Gr.2		255	
eL-45	IPv4 Sub-net mask (2), Gr.2		255	
eL-46	IPv4 Sub-net mask (3), Gr.2		255	
eL-47	IPv4 Sub-net mask (4), Gr.2		255	
eL-48	IPv4 Default gateway (1), Gr.2		192	
eL-49	IPv4 Default gateway (2), Gr.2		168	
eL-50	IPv4 Default gateway (3), Gr.2			
eL-51	IPv4 Default gateway (4), Gr.2			
eL-60 to eL-67	IPv6 IP address (1) to (8), Gr.2	0000 to FFFF		
eL-68	IPv6 Prefix of Sub-net, Gr.2	0 to 127	64	
eL-69 to eL-75	IPv6 Default gateway (1) to (5), Gr.2	0000 to FFFF		

Code No.	Parameter Meaning	Selectable User Setting	Initial value
PA-01	Mode selection for Emergency-force drive	00 (Disable) /01 (Enable)	
PA-02	Frequency reference setting of Emergency-force drive	0.00 to 590.00(Hz)	0.00
PA-03	Direction command of Emergency-force drive	00 (Forward Rotation) /01 (Reverse Rotation)	
PA-04	Commercial power supply bypass function selection	00 (Disable) /01 (Enable)	
PA-05	Delay time of Bypass function	0.0 to 1000.0(s)	0.0
PA-20	Simulator mode enable	00 (Disable) /01 (Enable)	
PA-21	Error code selection for Alarm lead	000 to 255	
PA-22	Output current monitor optional output enable	00 (Disable) /01 (Setting by Keypad) /02 (Setting by Terminal[A1]) /03 (Setting by Terminal[A2]) /04 (Setting by Terminal[A3]) /05 (Setting by Terminal[A4]) /06 (Setting by Terminal[A5]) /07 (Setting by Terminal[A6])	
PA-23	Output current monitor optional output value setting	INV rated current ×(0.00 to 3.00)	0.0
PA-24	DC-bus voltage monitor optional output enable	00 (Disable) /01 (Setting by Keypad) /02 (Setting by Terminal[A1]) /03 (Setting by Terminal[A2]) /04 (Setting by Terminal[A3]) /05 (Setting by Terminal[A4]) /06 (Setting by Terminal[A5]) /07 (Setting by Terminal[A6])	
PA-25	DC-bus voltage monitor optional value output	(200V class) 0.0 to 450.0Vdc (400V class) 0.0 to 900.0Vdc	(200V class) 270.0 (400V class) 540.0
PA-26	Output voltage monitor optional output enable	00 (Disable) /01 (Setting by Keypad) /02 (Setting by Terminal[A1]) /03 (Setting by Terminal[A2]) /04 (Setting by Terminal[A3]) /05 (Setting by Terminal[A4]) /06 (Setting by Terminal[A5]) /07 (Setting by Terminal[A6])	
PA-27	Output voltage monitor optional output value setting	(200V class) 0.0 to 300.0V (400V class) 0.0 to 600.0V	0.0
PA-28	Output torque monitor optional output enable	00 (Disable) /01 (Setting by Keypad) /02 (Setting by Terminal[A1]) /03 (Setting by Terminal[A2]) /04 (Setting by Terminal[A3]) /05 (Setting by Terminal[A4]) /06 (Setting by Terminal[A5]) /07 (Setting by Terminal[A6])	
PA-29	Output torque monitor optional output value setting	-500.0 to 500.0(%)	0.0
PA-30	Start with frequency matching optional Setting enable	00 (Disable) /01 (Setting by Keypad) /02 (Setting by Terminal[A1]) /03 (Setting by Terminal[A2]) /04 (Setting by Terminal[A3]) /05 (Setting by Terminal[A4]) /06 (Setting by Terminal[A5]) /07 (Setting by Terminal[A6])	
PA-31	Start with frequency matching optional value setting	0.00 to 590.00(Hz)	0.00



## Parameter mode (U code)

Code No.	Parameter Meaning	Selectable User Setting	Initial value
UA-01	Password for Display	0000 to FFFF	0000
UA-02	Password for SoftLock	0000 to FFFF	0000
UA-10	Display restriction selection	00 (Full display) /01 (Function-specific display) /02 (User setting display) /03 (Data comparison display) /04 (Monitor only)	00
UA-12	Accumulation input power monitor clear	00 (Disable) /01 (Clear)	00
UA-13	Display gain for Accumulation input power monitor	1 to 1000	1
UA-14	Accumulation output power monitor clear	00 (Disable) /01 (Clear)	00
UA-15	Display gain for Accumulation output power monitor	1 to 1000	1
UA-16	Soft Lock selection	00 (Terminal (SFT)) /01 (Always effective)	00
UA-17	Soft Lock target selection	00 (All the data change is impossible) /01 (Data change is impossible except setting Speed)	00
UA-18	Data R/W selection	00 (Enabling R/W by operator) /01 (Disabling R/W by operator)	00
UA-19	Low battery warning enable	00 (Disable) /01 (Warning) /02 (Error)	00
UA-20	Action selection at keypad disconnection	00 (Error) /01 (Error output after Deceleration stop) /02 (Ignore) /03 (Free run stop) /04 (Generation stop)	02
UA-21	2nd-motor parameter display selection	00 (Hidden) /01 (Display)	01
UA-22	Option parameter display selection	00 (Hidden) /01 (Display)	01
UA-30	User parameter auto setting function enable	00 (Disable) /01 (Enable)	00
UA-31 to UA-62	User parameter 1 to 32 selection	hold UA-01 to UF-32 (except UA-31 to UA-62)	no
UA-60	QCP indication off waiting time	0 to 90(min)	0
UA-61	Initial Display selection	(to be selected from d, F parameters)	dA-01
UA-62	Auto-return to initial display enable		00
UA-63	Setting enable at Monitor display	00 (Disable) /01 (Enable)	00
UA-64	Multiplex change on the frequency reference monitor display		00
Ub-01	Initialize Mode selection	00 (Disable) /01 (Error history clear) /02 (Data initialize) /03 (Error history clear & Data initialize) /04 (Error history clear & Data initialize & EzSQ clear) /05 (the parameter related to the terminal is excluded) /06 (The parameter related to the comm. is excluded) /07 (The parameter related to the terminal and comm. is excluded) /08 (EzSQ only) /09 (Trace Data only)	00
Ub-02	Initialize Data selection	00 (MODE0) /01 (MODE1) /02 (MODE2) /03 (MODE3)	00(YF)/01(FEP) /02(FUF)
Ub-03	Load type selection	00 (VLD) /01 (LD) /02 (ND)	02
Ub-08	Initialize Enable	00 (Disable) /01 (Initialize start)	00
UC-01	Debug mode enable	(Please don't change.)	00
Ud-01	Trace function enable	00 (Disable) /01 (Enable)	00
Ud-02	Trace start	00 (Stop) /01 (Start)	00
Ud-03	Trace data number setting		1
Ud-04	Trace signal number setting	0 to 8	1
Ud-10 to Ud-17	Trace data 0 to 7 selection	(to be selected from d, F parameters)	dA-01
Ud-20	Trace signal 0 Input/Output selection	00 (Input : [Ud-21]) /01 (Output : [Ud-22])	00
Ud-21	Trace signal 0 Input Terminal selection	same as [CA-01]	001
Ud-22	Trace signal 0 Output Terminal selection	same as [CC-01]	001
Ud-23	Trace signal 1 Input/Output selection	00 (Input : [Ud-24]) /01 (Output : [Ud-25])	00
Ud-24	Trace signal 1 Input Terminal selection	same as [CA-01]	001
Ud-25	Trace signal 1 Output Terminal selection	same as [CC-01]	001
Ud-26	Trace signal 2 Input/Output selection	00 (Input : [Ud-27]) /01 (Output : [Ud-28])	00
Ud-27	Trace signal 2 Input Terminal selection	same as [CA-01]	001
Ud-28	Trace signal 2 Output Terminal selection	same as [CC-01]	001
Ud-29	Trace signal 3 Input/Output selection	00 (Input : [Ud-30]) /01 (Output : [Ud-31])	00
Ud-30	Trace signal 3 Input Terminal selection	same as [CA-01]	001
Ud-31	Trace signal 3 Output Terminal selection	same as [CC-01]	001
Ud-32	Trace signal 4 Input/Output selection	00 (Input : [Ud-33]) /01 (Output : [Ud-34])	00
Ud-33	Trace signal 4 Input Terminal selection	same as [CA-01]	001
Ud-34	Trace signal 4 Output Terminal selection	same as [CC-01]	001
Ud-35	Trace signal 5 Input/Output selection	00 (Input : [Ud-36]) /01 (Output : [Ud-37])	00
Ud-36	Trace signal 5 Input Terminal selection	same as [CA-01]	001
Ud-37	Trace signal 5 Output Terminal selection	same as [CC-01]	001

Code No.	Parameter Meaning	Selectable User Setting	Initial value
Ud-38	Trace signal 6 Input/Output selection	00 (Input : [Ud-39]) /01 (Output : [Ud-40])	00
Ud-39	Trace signal 6 Input Terminal selection	same as [CA-01]	001
Ud-40	Trace signal 6 Output Terminal selection	same as [CC-01]	001
Ud-41	Trace signal 7 Input/Output selection	00 (Input : [Ud-42]) /01 (Output : [Ud-43])	00
Ud-42	Trace signal 7 Input Terminal selection	same as [CA-01]	001
Ud-43	Trace signal 7 Output Terminal selection	same as [CC-01]	001
Ud-50	Trace trigger 1 selection	00 (Trip) /01 (Trace data 0) /02 (Trace data 1) /03 (Trace data 2) /04 (Trace data 3) /05 (Trace data 4) /06 (Trace data 5) /07 (Trace data 6) /08 (Trace data 7) /09 (Trace signal 0) /10 (Trace signal 1) /11 (Trace signal 2) /12 (Trace signal 3) /13 (Trace signal 4) /14 (Trace signal 5) /15 (Trace signal 6) /16 (Trace signal 7)	00
Ud-51	Trigger 1 action selection at trace data trigger	00 (Action at exceeded trigger level) /02 (Action at fall trigger level)	00
Ud-52	Trigger 1 level setting at trace data trigger	0 to 100(%)	0
Ud-53	Trigger 1 action selection at trace signal trigger	00 (Action by signal on) /01 (Action by signal off)	00
Ud-54	Trace trigger 2 selection	00 (Trip) /01 (Trace data 0) /02 (Trace data 1) /03 (Trace data 2) /04 (Trace data 3) /05 (Trace data 4) /06 (Trace data 5) /07 (Trace data 6) /08 (Trace data 7) /09 (Trace signal 0) /10 (Trace signal 1) /11 (Trace signal 2) /12 (Trace signal 3) /13 (Trace signal 4) /14 (Trace signal 5) /15 (Trace signal 6) /16 (Trace signal 7)	00
Ud-55	Trigger 2 action selection at trace data trigger	00 (Action at exceeded trigger 2 level) /02 (Action at fall trigger 2 level)	00
Ud-56	Trigger 2 level setting at trace data trigger	0 to 100(%)	0
Ud-57	Trigger 2 action selection at trace signal trigger	00 (Action by signal on) /01 (Action by signal off)	00
Ud-58	Trigger condition selection	00 (At trace trigger 1 formation) /01 (At trace trigger 2 formation) /02 (At OR condition formation of Trigger-1 and Trigger-2) /03 (At AND condition formation of Trigger-1 and Trigger-2)	00
Ud-59	Trigger point setting	0 to 100(%)	0
Ud-60	Sampling time selection	01 (0.2ms) /02 (0.5ms) /03 (1ms) /04 (2ms) /05 (5ms) /06 (10ms) /07 (50ms) /08 (100ms) /09 (500ms) /10 (1000ms)	03
UE-01	EzSQ operation cycle	00 (1ms) /01 (2ms - same as S2700L700)	00
UE-02	EzSQ function enable	00 (Disable) /01 (Terminal (PRG)) /02 (Always active)	00
UE-10 to UE-73	EzSQ User parameter U(0) to U(5)		0
UF-02 to UF-32	EzSQ User parameter UL(0) to U(18)	-2147483647 to 2147483647	0

## [Unit table]

Number	Unit
00	non
01	%
02	A
03	Hz
04	V
05	kW
06	W
07	hr
08	s
09	kHz
10	ohm
11	mA
12	ms
13	P
14	kgm <sup>2</sup>
15	pls
16	mH
17	Vdc
18	°C
19	kWh
20	mF
21	mVs/rad
22	Nm
23	min <sup>-1</sup>
24	m/s
25	m/min
26	m/h
27	ft/s
28	ft/min
29	ft/h
30	m

Number	Unit
31	cm
32	°F
33	l/s
34	l/min
35	l/h
36	m <sup>3</sup> /s
37	m <sup>3</sup> /min
38	m <sup>3</sup> /h
39	kg/s
40	kg/min
41	kg/h
42	t/min
43	t/h
44	gal/s
45	gal/min
46	gal/h
47	ft <sup>3</sup> /s
48	ft <sup>3</sup> /min
49	ft <sup>3</sup> /h
50	lb/s
51	lb/min
52	lb/h
53	mbar
54	bar
55	Pa
56	kPa
57	PSI
58	mm

## Input terminal function list

Function code	Symbol	Function name
0	no	Not use
1	FW	Forward rotation
2	RV	Reverse rotation
3 to 6	CF1 to 4	Multi speed selection 1 to 4
7 to 13	SF1 to 7	Multi speed B6-1 to 7
14	ADD	Trigger for frequency addition(Az10S)
15	SCHG	Speed reference change
16	STA	3-wire Start
17	STP	3-wire Stop
18	FR	Forward Over Travel
19	AHD	analog command holding
20	FUP	Remote control Speed-UP function
21	FDN	Remote control Speed-DOWN function
22	UDC	Remote control data clearing
23	F-OP	Force operation
24	SET	2nd-motor control
28	RS	Reset
29	JG	Jogging
30	DB	External Dynamic brake
31	ZCH	2-step Acceleration/Deceleration
32	FRS	Free run stop
33	EXT	External fault
34	USP	unattended start protection
35	DS	Commercial Supply change
36	SFT	Soft Lock
37	SBK	Answer back from Brake
38	OLR	Overload restriction selection
39	KHC	Accumulation input power clearance
40	OKHC	Accumulation output power clearance
41	PD	Disable PID1
42	PDC	PID1 integration reset
43	PD2	Disable PID2
44	PDC2	PID2 integration reset
45	PD3	Disable PID3
46	PDC3	PID3 integration reset
47	PD4	Disable PID4
48	PDC4	PID4 integration reset
51 to 54	SV01 to 4	Multi set-point selection 1 to 4
55	PRC	PD gain change
56	PD1	PD output switching 1
57	PD2	PD output switching 2
58	SLEEP	SLEEP condition activation
59	WAKE	WAKE condition activation
60	TL	Torque limit enable
61	TRQ1	Torque limit selection bit 1
62	TRQ2	Torque limit selection bit 2
63	PP1	PIPI control mode selection
64	CAS	Control gain change
65	SON	Servo-on
66	FOC	Forcing
67	ATR	Permission of torque control
68	TBS	Torque Bias enable
69	ORT	Orientation
71	LAC	Acceleration/Deceleration cancellation
72	PCLR	Position deviation clear
73	STAT	pulse train position command input enable
74	PUP	Position bias (ADD)
75	PDN	Position bias (SUB)
76 to 79	OP1 to 4	Multistage position settings selection 1 to 4
80	ORL	Limit signal of Homing function
81	OR0	Start signal of Homing function
82	FOT	Forward Over Travel
83	ROT	Reverse Over Travel
84	SPD	speed / position switching
85	PSET	Position data presetting
88 to 96	MI1 to 11	General-purpose Input 1 to 11
97	PCC	Pulse counter clearing
98	ECCM	ExCCM activation
99	PRG	Program RUN
100	HLD	Acceleration/Deceleration disable
101	REN	RUN enable
102	DISP	Display lock
103	FLA	Pulse count A
104	FLB	Pulse count B
105	EMF	Emergency-Force Drive activation
107	CDK	Contact check signal
106	DTR	Data trace start
106	PLZ	Pulse train input Z
110	TCT	Teach-in signal

## Intelligent output terminal function list

Function code	Symbol	Function name
0	no	Not use
1	RUN	Running
2	FA1	Constant-speed reached
3	FA2	Set speed overreached
4	FA3	Set frequency reached
5	FA4	Set speed overreached 2
6	FA5	Set speed reached
7	RDY	Inverter ready
8	FWR	Forward rotation
9	RVR	Reverse rotation
10	FREF	Speed reference = Keypad is selected
11	REF	Run command = Keypad is selected
12	SETM	2nd control is selected
16	OPD	Option output
17	AL	Alarm
18	MAJ	Major failure
19	OTQ	Over-torque
20	IF	Instantaneous power failure
21	UV	Undervoltage
22	TRQ	Torque limited
23	IPB	IF-Alon stop function is active
24	RNT	Accumulated operation time over
25	CNT	Accumulated power-on time over
26	THM	Electronic thermal alarm signal(MTR)
27	THC	Electronic thermal alarm signal(CTL)
29	WAC	Capacitor life warning
30	WAF	Cooling-fan speed drop
31	FR	Starting contact signal
32	DHF	Heat sink overheat warning
33	LOC	Low-current indication signal
34	LOC2	Low-current indication signal 2
35	OL	Overload notice advance signal (1)
36	OL2	Overload notice advance signal (2)
37	BRK	Brake release
38	BER	Brake error
39	CON	Contact control
40	ZS	0Hz detection signal
41	DSE	Excessive speed deviation
42	PDD	Position deviation over
43	POK	Positioning completed
44	FCMP	Pulse count compare match output
45	OD	Deviation over for PID control
46	FBV	PID1 feedback comparison
47	DD2	OD Deviation over for PID2 control
48	FBV2	PID2 feedback comparison
49	NDc	Communication line disconnection
50	A1Dc	Analog [A1] disconnection detection
51	A2Dc	Analog [A2] disconnection detection
52	A3Dc	Analog [A3] disconnection detection
53	A4Dc	Analog [A4] disconnection detection
54	A5Dc	Analog [A5] disconnection detection
55	A6Dc	Analog [A6] disconnection detection
56 to 61	WGAI1 to 6	Window comparator AI1 to 6
62 to 68	LOG1 to 7	Logical operation result 1 to 7
69 to 75	MO1 to 7	General-purpose output 1 to 7
76	EMFC	Bypass mode indicator
77	EMSP	Speed deviation over
78	WFT	Trace function waiting for trigger
79	TRA	Trace function data logging
80	LBK	Low-battery of keypad
81	OVS	Over-voltage power Supply
84 to 87	ACO to 3	Alarm code bit 0 to 3
88	DD3	Deviation over for PID control
89	FBV3	PID3 feedback comparison
91	DD4	Deviation over for PID4 control
92	FBV4	PID4 feedback comparison
93	SSE	PID-soft start error

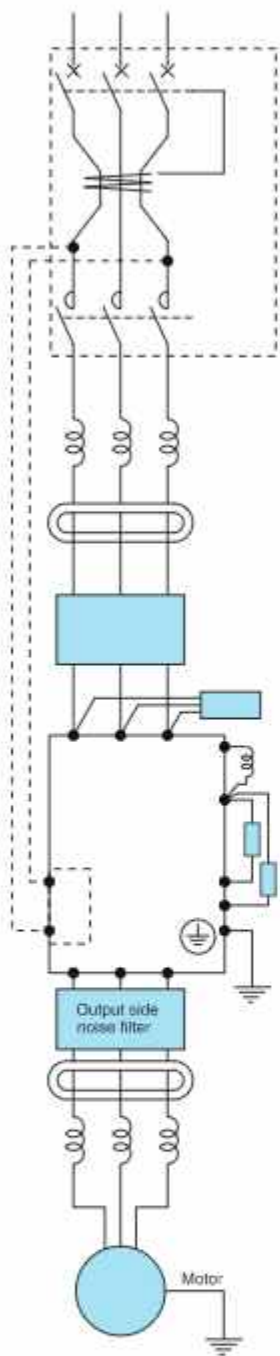


## Error events

Code	Details	Corrective actions	Related parameter
E001	• By the load and the operating conditions, overcurrent has occurred	• If the acceleration is fast, increase the acceleration time	[AC120]
		• Use the overcurrent suppression function	[bA120]
		• Use the overload restriction function	[bA122]
		• Use the overcurrent retry function	[bb-22]
		• In order to stabilize the control, adjust the constant	[HA-01]
E005 E039	• By the load and the operating conditions, current has increased.	• If the acceleration is fast, increase the acceleration time	[AC120]
		• Use the overload restriction function	[bA122]
		• If the motor sound is abnormal, in order to stabilize the control, adjust the constant	[HA-01]
E006	• Braking resistor use is limited.	• If the deceleration is fast, increase the deceleration time	[AC122]
		• Reselection of the braking resistor is necessary	[bA-60]
E007	• Internal voltage has increased • Insufficient capacity of the inverter	• If the deceleration is fast, increase the deceleration time	[AC122]
		• Use the overvoltage suppression functions	[bA140][bA146]
		• Use the overvoltage retry function	[bb-23]
		• Use a braking option	-
E008 E011	• Main CPU abnormality	• Carry out counter measures for the inverter noise	-
		• Consecutive errors may cause a failure	-
E009	• Main circuit supply has drop	• To disable the undervoltage error, change setting	[bb-27]
		• Use the undervoltage retry function	[bb-21]
E010	• Current detector abnormality	• Carry out counter measures for the inverter noise	-
		• Consecutive errors may cause a failure, replacement of the components is necessary	-
E012	• [EXT] input terminal is ON	• Check the signal status of the input terminal	[dA-51]
E013	• [USP] input terminal is ON if at the start-up, the RUN command was issued right at the start up	• Check if there are no operations by communication or programme	-
		• Make sure that an operation command is not introduced at the time of turning ON the inverter	[dA-51]
E014	• Ground fault detected at main circuit voltage turning-on	• Check for ground fault of the motor, wiring, etc.	-
E015	• Continued state of incoming high power	• Review the power circumstances, such as the power supply capacity	[dA-40]
E016	• Instantaneous power failure, control supply has dropped	• If you wish to avoid the tripping, use the power loss retry function.	[bb-20]
E019	• Abnormality in temperature detector circuit	• Carry out counter measures for the inverter noise	-
		• Consecutive errors may cause a failure	-
E020	• Because of cooling-fan life span, internal temperature has raised	• Change of the cooling-fan is necessary	-







Motor Output (kW/HP)	Model	Rating	Power line cable AWG(mm <sup>2</sup> ) R,S,T,U,V,W,P,Q,N	Grounding cable AWG(mm <sup>2</sup> )	External braking resistor between P and RB AWG(mm <sup>2</sup> )	Power line cable Terminal screw size	Crimp terminal	Tightening torque N·m	Fuse (UL rated Class J or T)	
									Voltage(V)	Current(A)
0.75(1)	** 4-00041-H	ND,LD,VLD	14(2.1)	14(2.1)	14(2.1)	M4	2-4/2-4	1.4	500	15
1.5(2)	** 4-00054-H	ND,LD,VLD	14(2.1)	14(2.1)	14(2.1)	M4	2-4/2-4	1.4	500	20
2.2(3)	** 4-00053-H	ND,LD,VLD	14(2.1)	14(2.1)	14(2.1)	M4	2-4/2-4	1.4	500	30
3.7(5)	** 4-00126-H	ND,LD	14(2.1)	14(2.1)	14(2.1)	M4	2-4/2-4	1.4	500	30
		VLD	12(3.3)	12(3.3)	12(3.3)		5.5-4/5.5-4			
5.5(7.5)	** 4-00175-H	ND,LD	12(3.3)	12(3.3)	12(3.3)	M5	5.5-5/5.5-5	3.0	500	75
		VLD	10(5.3)	10(5.3)	10(5.3)		5.5-5/5.5-5			
7.5(10)	** 4-00256-H	ND,LD	10(5.3)	10(5.3)	10(5.3)	M5	5-5/5-5	3.0	500	75
		VLD	8(8.4)	8(8.4)	8(8.4)		8-8/8-8			
11(15)	** 4-00310-H	ND,LD,VLD	8(8.4)	8(8.4)	8(8.4)	M5	8-8/8-8	4.0	500	75
15(20)	** 4-00400-H	ND,LD,VLD	8(8.4)	8(8.4)	8(8.4)	M6	8-8/8-8	4.0	500	100
		LD	4(21.2)	4(21.2)	4(21.2)		22-8/8-8			
18.5(25)	** 4-00470-H	ND	8(8.4)	8(8.4)	8(8.4)	M6	8-8/8-8	4.0	500	100
		LD,VLD	6(13.3)	6(13.3)	6(13.3)		14-6/8-8			
22(30)	** 4-00620-H	ND	6(13.3)	6(13.3)	6(13.3)	M6	14-6/8-8	4.0	500	100
		LD,VLD	4(21.2)	4(21.2)	4(21.2)		22-8/8-8			
30(40)	** 4-00770-H	ND	3(26.7)	3(26.7)	-	M6	38-8/14-8	6.0	500	200
		LD	2(33.8)	2(33.8)	2(33.8)		50-8/14-8			
37(50)	** 4-00930-H	ND,LD,VLD	1(42.4)	6(13.3)	-	M8	60-8/14-8	15.0	500	200
		ND	1(42.4)	1(42.4)	1(42.4)		60-8/14-8			
45(60)	** 4-01160-H	LD,VLD	1(53.5)	6(13.3)	-	M8	70-8/14-8	6.0 to 10.0	500	200
		ND	1(53.5)	1(53.5)	1(53.5)		70-8/14-8			
55(75)	** 4-01470-H	LD	2(57.4)	4(21.2)	-	M8	70-8/22-8	6.0 to 10.0	500	250
		VLD	1(53.5)	1(53.5)	1(53.5)		60-8/22-8			
75	** 4-01760-H	ND,LD,VLD	1(53.5)	4(21.2)	-	M10	90-10	6.0 to 10.0	500	300
90	** 4-02130-H	ND,LD	1(53.5)	3(26.7)	-	M10	90-10	6.0 to 10.0	500	400
		VLD	2(57.4)	2(57.4)	2(57.4)		70-10			
110	** 4-02520-H	ND,LD	2(57.4)	1(42.4)	-	M10	70-10	19.6	500	500
		VLD	3(57.4)	3(57.4)	3(57.4)		80-10			
132	** 4-03160-H	ND	3(57.4)	1(42.4)	-	M10	80-10	19.6	500	500
		LD	4(57.4)	4(57.4)	4(57.4)		100-10			
		VLD	25(107.2)	2(127.2)	2(127.2)		150-10			

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# Option cassette

Three option cassettes can be installed in SH1. Please extend according to machine and system specifications.

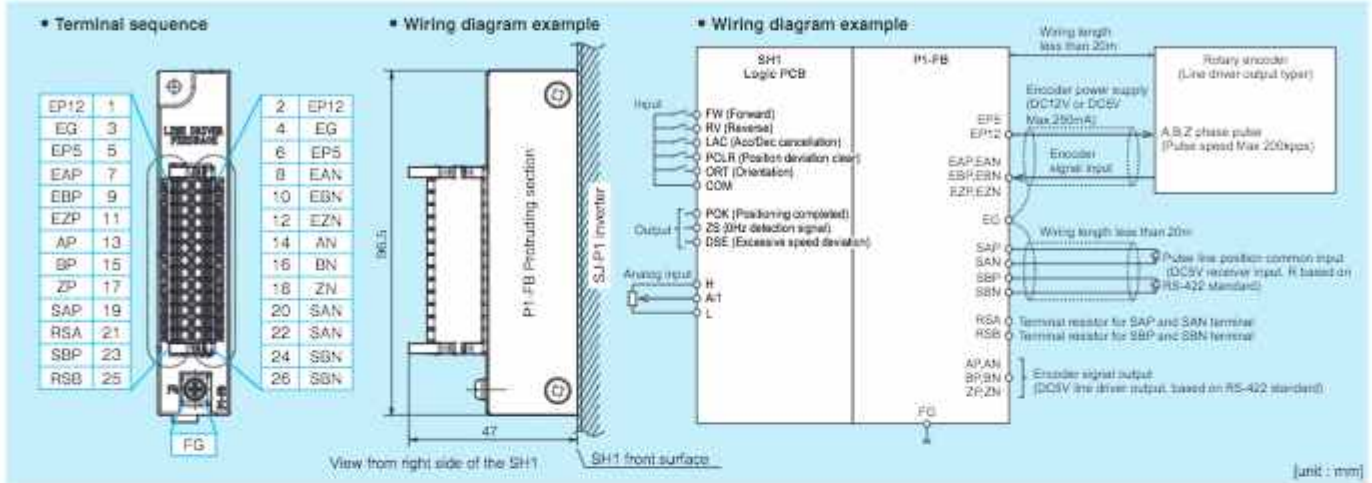
## Encoder feedback option [P1-FB]

P1-FB successfully detects the rotation speed of the motor equipped with an encoder and feedbacks to the inverter. Thus, it contributes to suppressing the speed variation and helps to operate with high accuracy.

In addition, such function can be realized such as position command, synchronous operation and orientation function.

[Application example]

High precision operation of main motor for Winding machine, Wire drawing machine, Transport machine, Extruder and more.



## Field network communication option [P1-ECT, P1-EN, P1-PB]

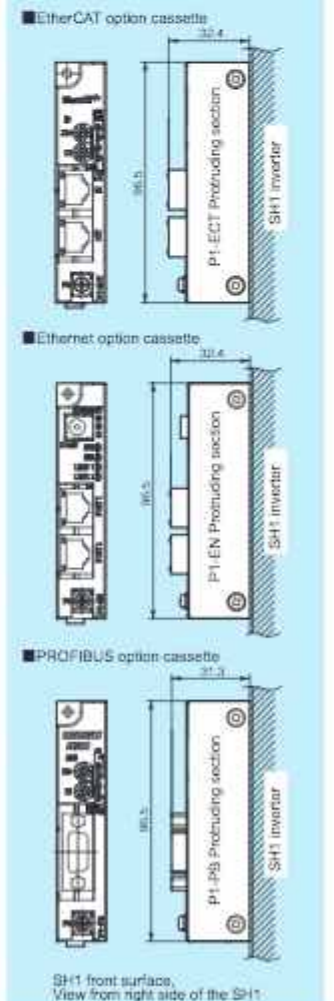
With the field network option, the inverter can be operated, status monitor, parameter management etc from the host controller.

Since these are cassette type mounted on the front of the inverter, installation, wiring, station number setting and status check

of various indicators are very easy.

Item	Specification	
EtherCAT OPTION 	Communication protocol	EtherCAT CiA402 Drive profile
	Physical layer	100BASE-TX (IEEE802.3)
	Connector	RJ45 (IN / OUT)
	Communication distance	Distance between nodes/between devices : 100[m]max
	Station address*1	1 to 99 : Set by the address setting switch, 1 to 65535 : Set by configuration (The station address setting depends on the addressing mode used by the EtherCAT master.)
	Distributed clock	Free run mode (asynchronous)
	Process data	PDO free mapping
	Mailbox (CoE)	Emergency messages, SDO requests, SDO responses, Abort SDO
	CiA402 drive profile	Velocity mode
	Applicable cable	100BX-TX support (category 5e or higher) STP(Shield twist pair) cable (Straight or Crossed)
Ethernet (Modbus-TCP) OPTION	Applicable standards	IEEE802.3
	Communication protocol	TCP/IP (Available for IPv4 and IPv6)
	Communication protocol (application layer)	Modbus TCP
	Physical layer	10BASE-T,100BASE-TX (IEEE802.3)
	Connector	RJ45 (PORT1/PORT2)
	Communication distance	Distance between nodes/between devices : 100[m]max
	Communication method (transmission speed)	Fixed transmission speed : 10Mbps Full/Half-duplex or 100Mbps Full/Half-duplex Auto detection transmission speed : Auto negotiation
	Auto MDI-X	According to selection of communication method (transmission speed). Selecting the auto negotiation: the function Auto MDI-X is enable. Selecting others: the function Auto MDI-X is disable.
	Port number	502 (it can be configured by the inverter parameter setting)
	Maximum number of sessions	4 (Do not connect our PC setup software(ProDriveNext) multiple at the same time)
PROFIBUS OPTION 	External power supply	DC24V±10%, Current consumption: 1A to 1.5A (Current consumption fluctuates with inverter and/or other options operating and so on.)
	Dielectric strength	AC500V (Between insulation circuit)
	Applicable cable	100BX-TX support (category 5e or higher) STP(Shield twist pair) cable (Straight or Crossed)
	Communication protocol	PROFIBUS DPV0 PROFIBUS DPV1
Common environment specification	Connector, Cable	D-sub 9 pin, PROFIBUS DP cable (EN 50170 part 6-2 as "Cable Type A")
	Node address	0 to 99 : set by rotary switches 1 to 126 : set by parameters (In case of rotary switch setting is in 0)
	Profile	PROFIdrive
	Ambient operating temperature, Ambient operating humidity, Storage temperature	-10 to 50°C, 20 to 90%RH, -20 to 65°C (No icing or condensation conditions.)
	Vibration resistance	5.9m/s <sup>2</sup> (0.6G), 10 to 55Hz
Common environment specification	Conformance to EMC and electrical safety standards	IEC/EN61800-3 Second environment, Category C3 IEC/EN61800-5-1 SELV
	Enclosure rating	IP00
	Weight	170g

### Appearance and Dimensions of protrusion at installation.



\*NOTE: When installing the optional cassette, it protrudes from the SH1 surface as shown in the figure. Please design the depth dimension of enclosure considering this protrusion, connector, wiring etc. EtherCAT® is registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany. PROFIBUS® is trade names of the non-profit organization PROFIBUS Nutzerorganisation e.V.(PNO).



# MEMO

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## MEMO

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