Global Leader

N700 Series INVERTER

HYUNDAI N-Series Industrial Inverter

➢ N700 Series Inverter Function Explanation

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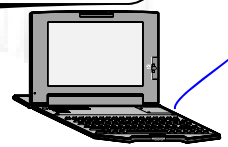
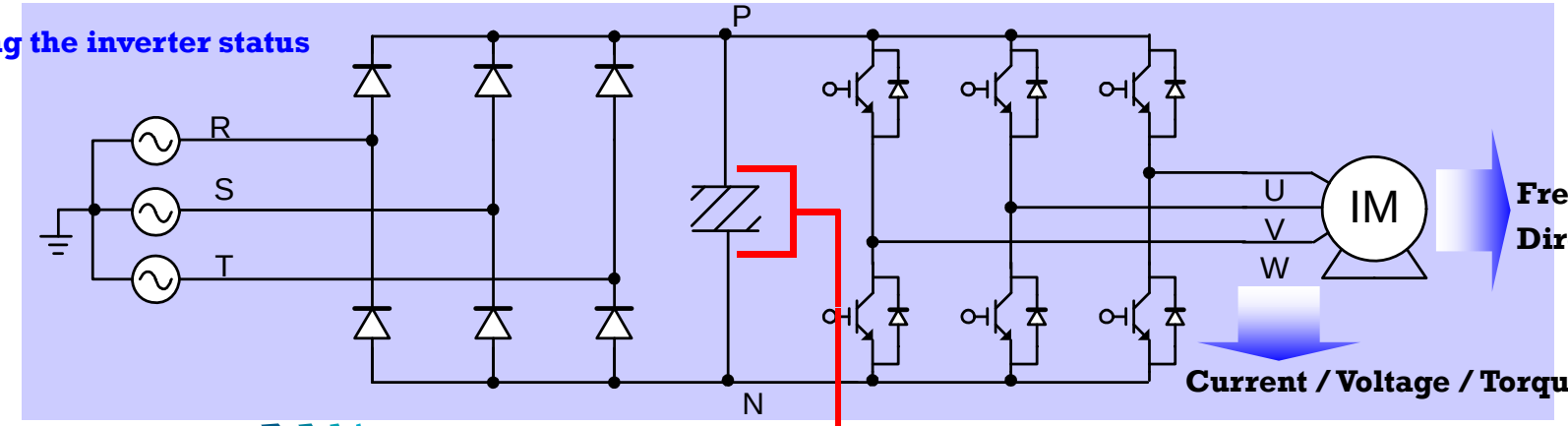


1 d- parameter group

➢ d-group is for display mode group.

Code	Function Name	Description	Note
d001	Output Frequency Monitor	0 ~ 99.99, 100.0~400.0[Hz]	
d002	Motor Rotation Direction Monitor	F : Forward R : Reverse o : Stop	
d003	Output Current Monitor	0.0 ~ 999.9 [A]	
d004	Output Voltage Monitor	0.0 ~ 999.9 [V]	
d005	DC Link Voltage Monitor	0.0 ~ 999.9 [V]	
d006	Motor Input Power Monitor	0.0 ~ 999.9 [Kw]	
d007	Output Torque Monitor	-300 ~ 300 [%]	only SLV,V2,0Hz-V2 mode

Checking the inverter status



Code	Function Name	Description	Note
d008	Motor Rotating Speed	0 ~ 9999 [rpm]	
d009	PID feedback Monitor	0.00 ~ 100.0	PID F/B X C026 [%]

✓ d008 : Motor Rotating Speed

$$N = \frac{120 \times f}{P}$$

where, N : Motor speed [rpm]
f : Inverter output frequency [Hz] = d001
P : Motor Pole = F016

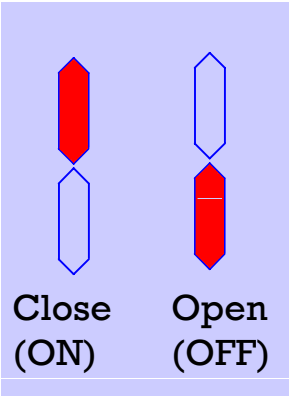
✓ d009 : PID Feedback Monitor

In case PID control ON mode (C022 = 1),
d009 displays PID feedback value with PID scale.

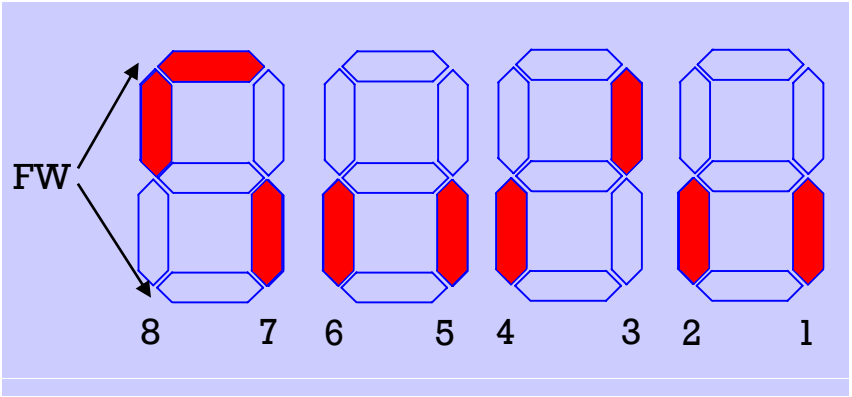
▪ PID F/D Monitor (d009) = PID F/B X PID scale (C026)

Code	Function Name	Description	Note
d010	Intelligent Input Terminal Monitor		
d011	Intelligent Output Terminal Monitor		

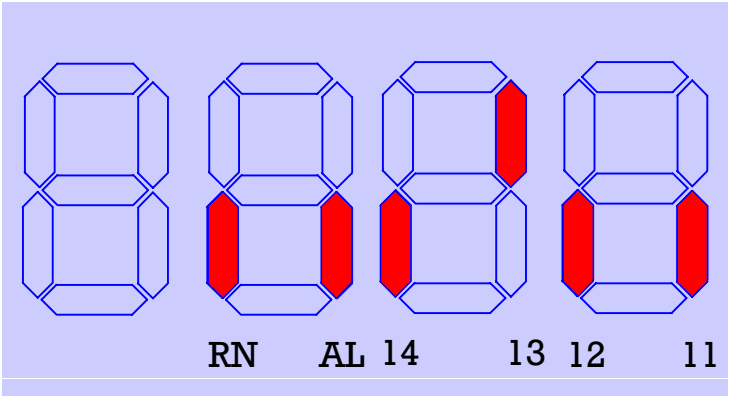
terminal status



Intelligent input terminal (FW, 1~8)



Intelligent output terminal (RN,AL, 11~14)



Code	Function Name	Description	Note
d012	Frequency Conversion Monitor	0 ~ 99.99, 100.0~400.0	D001 X b009

Code	Function Name	Description	Note
d013	Run time monitor (Hour)	0 ~ 9999. / 1000~6553 [Hr]	
d014	Run time monitor (Minute)	0~59 [Min]	
d015	Inverter Power ON time monitor (Hour)	0 ~ 9999. / 1000~6553 [Hr]	
d016	Inverter Power ON time monitor (Minute)	0~59 [Min]	

✓ d013, d014 : Run Time Monitor

✓ d015, d016 : Inverter Power On Time Monitor

▪ d013 (d015) : running time (power on time) in Hour
in case over 10,000Hours, the last point is not displayed
that is to say, **1000. : 1,000 Hours**
1000 : 10,000 Hours

▪ d014 (d016) : running time (power on time) in minute

▪ Ex.) d013 = 100. / d014 = 20 : running time is 100Hours 20Min.
d013 = 2000 / d014 = 55 : running time is 20,000Hours 55Min.
d015 = 2500 / d016 = 35 : power on time is 25,000Hours 35Min.

Code	Function Name	Description	Note
d017	IGBT temperature monitor	0 ~ 9999 [℃]	
d018	Trip count	Number of trips	
d019	Trip monitor 1	Current trip	display trip code, frequency, current, DC link voltage at trip occurring
d020 ~ d024	Trip monitor 2 ~ 6	previous trips	

✓ trip display procedure ;

trip occur → (▪ moving the parameter to d019 automatically ▪ trip counting up (d018)) → d019 value is moved to d020

→ d020 value is moved to d021 → … → d024 value is erased

✓ trip codes (d018~d024) can be cleared using b014 & initializing

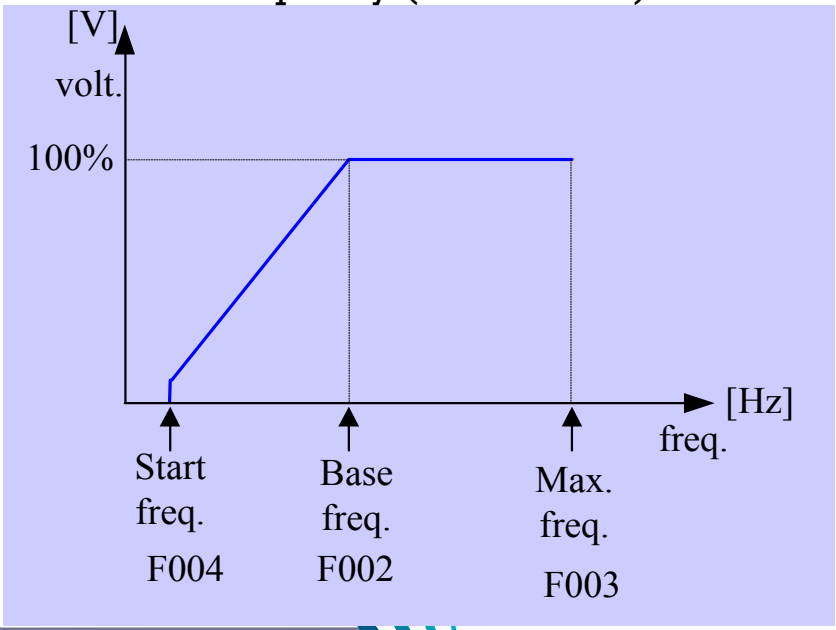
2 F- parameter group

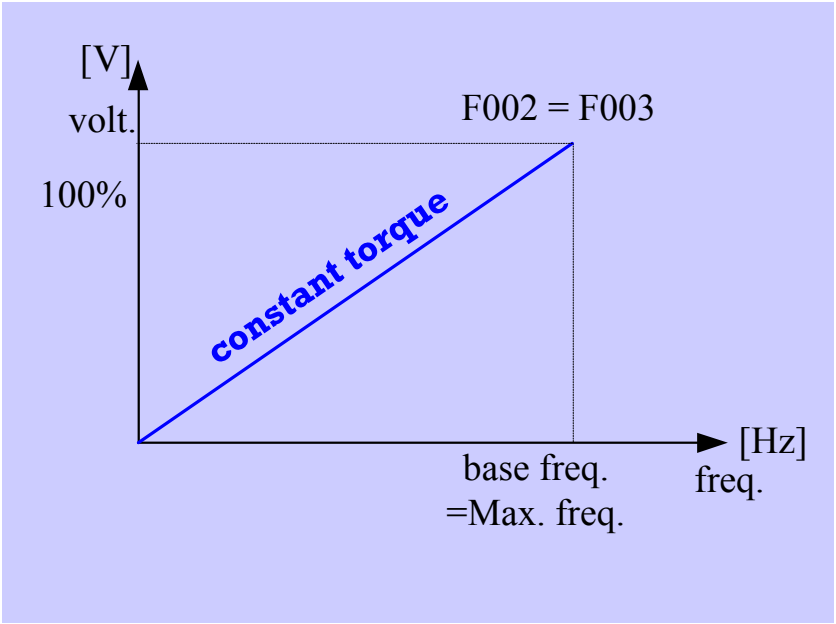
➢ F-group is for basic function setting group.

Code	Function Name	min.	Max.	Default	Description
F001	Output frequency setting	0.00	400.0	0.00	
F002	Base frequency setting	30.00	400.0	60.00	
F003	Maximum frequency setting	30.00	400.0	60.00	
F004	start frequency setting	0.10	10.0	0.50	

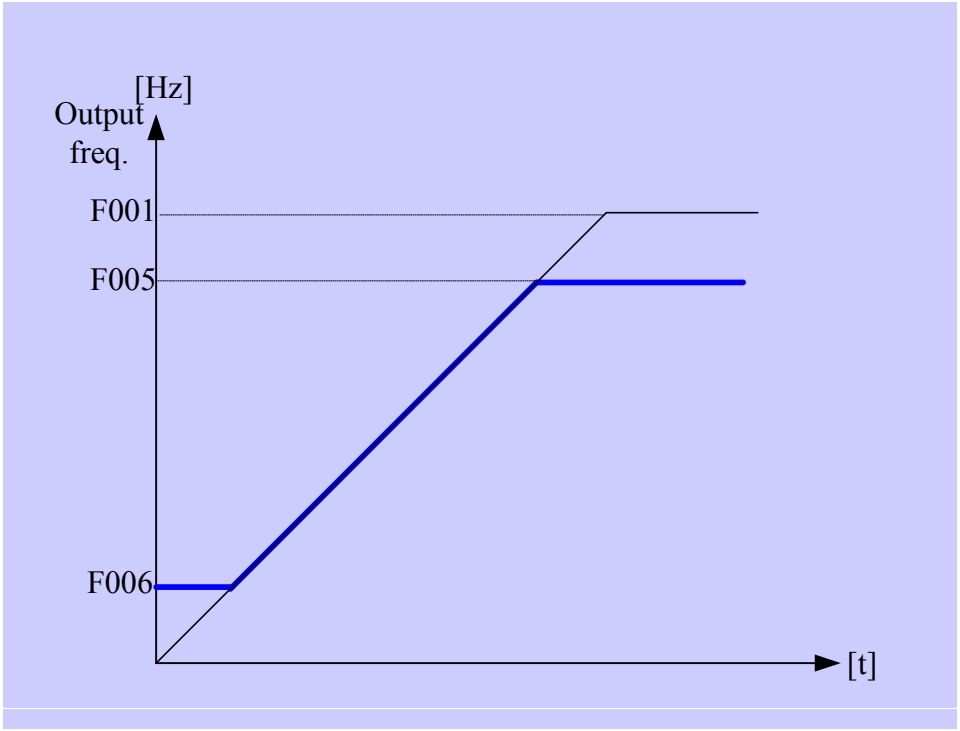
✓ Output frequency means target frequency.

✓ Base frequency is nominal frequency of the motor. The base frequency must less than or equal to the maximum frequency. (F002 ≤ F003)



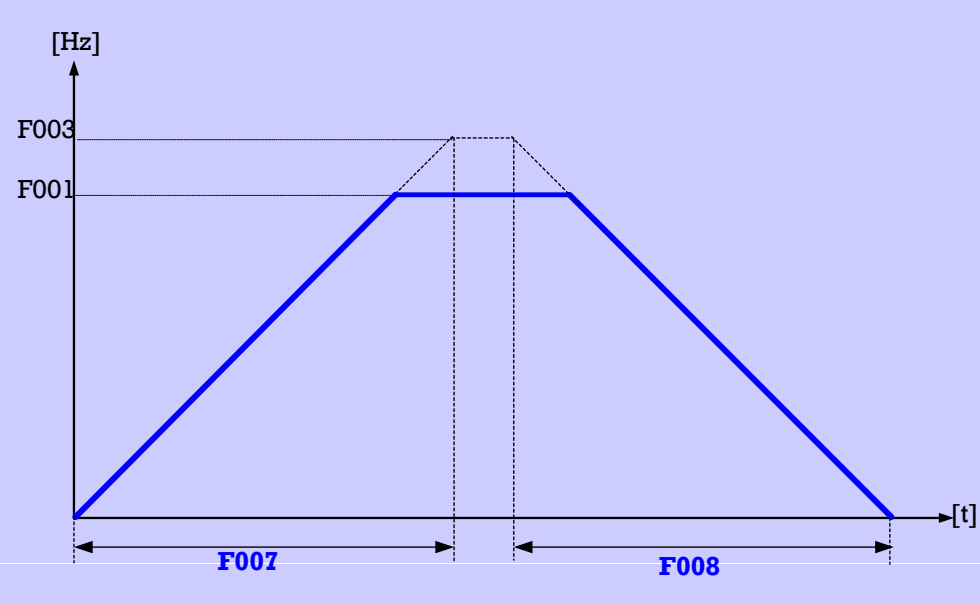


Code	Function Name	min.	Max.	Default	Description
F005	Frequency upper limit	0.00	400.0	0.00	
F006	Frequency lower limit	0.00	400.0	0.00	

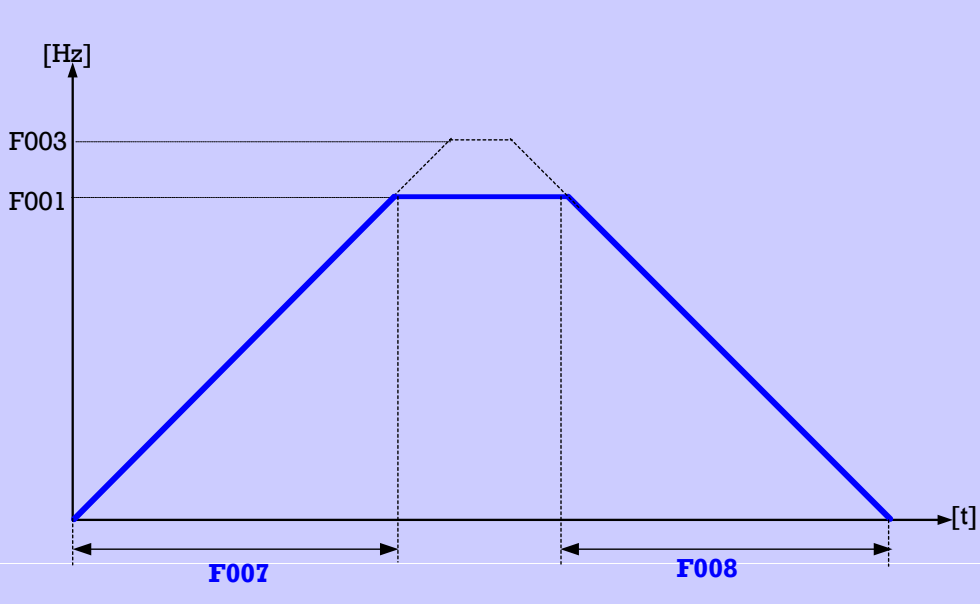


Code	Function Name	min.	Max.	Default	Description
F007	Accelerating time setting	0.1	3600	30.0 [sec]	
F008	Decelerating time setting	0.1	3600	30.0 [sec]	
A086	Accelerating/Decelerating time reference selection	0	1	0	0:Max. Freq.(F003) 1:command Freq.(F001)

▪ A086 = 0 ; Time reference is Max. Freq.(F003)

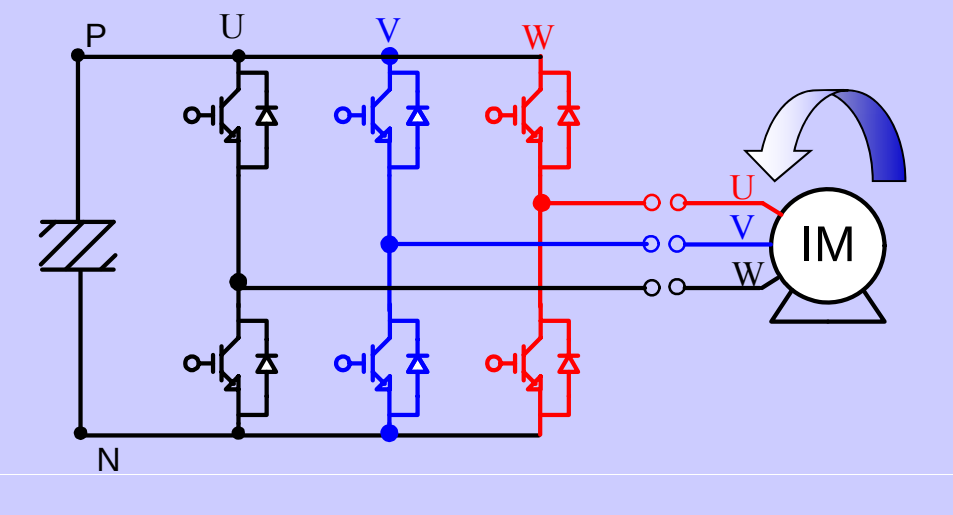


▪ A086 = 1 ; Time reference is command Freq.(F001)

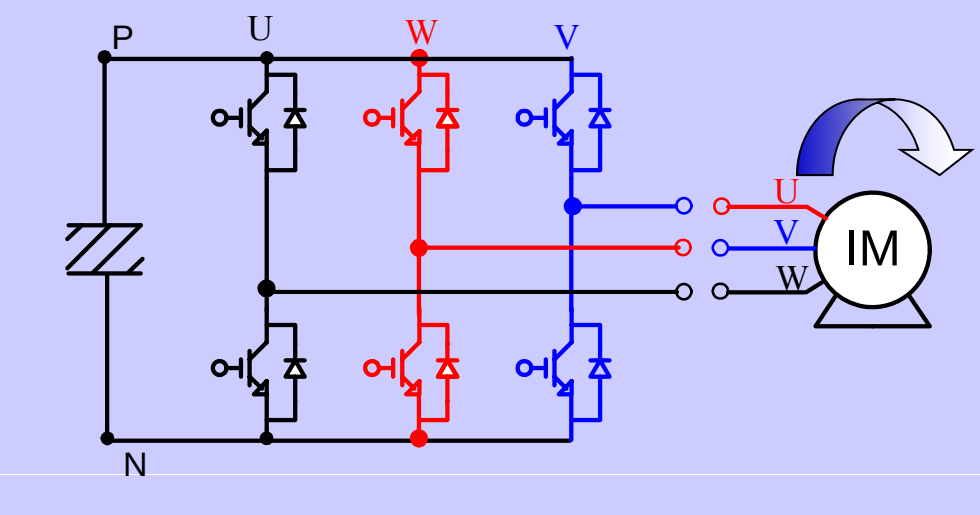


Code	Function Name	min.	Max.	Default	Description
F009	Motor rotating direction	0	1	0	0:Forward 1:Reverse

▪ F009 = 0 ; Forward running command

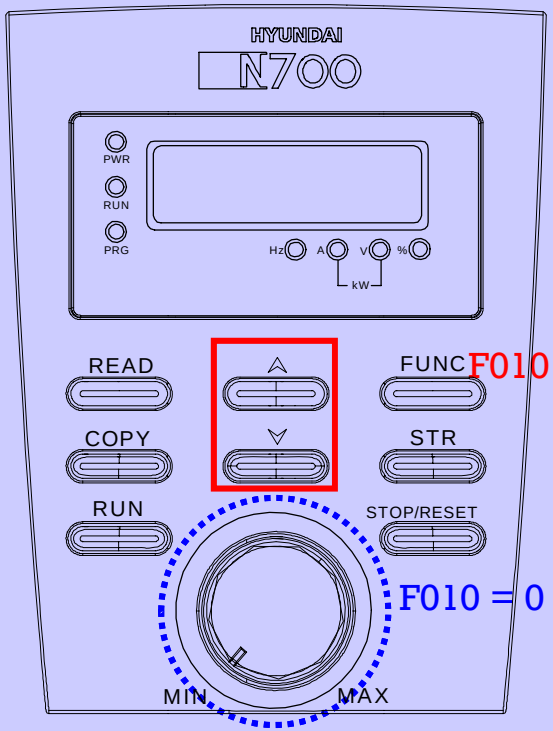


▪ F009 = 1 ; Reverse running command



Code	Function Name	min.	Max.	Default	Description
F010	Frequency setting selection	0	5	0	0:operator volume 1:control terminal 2:OPE keypad 3:communication 4:OPT1 5:OPT2

▪ F010 = 0 & 2



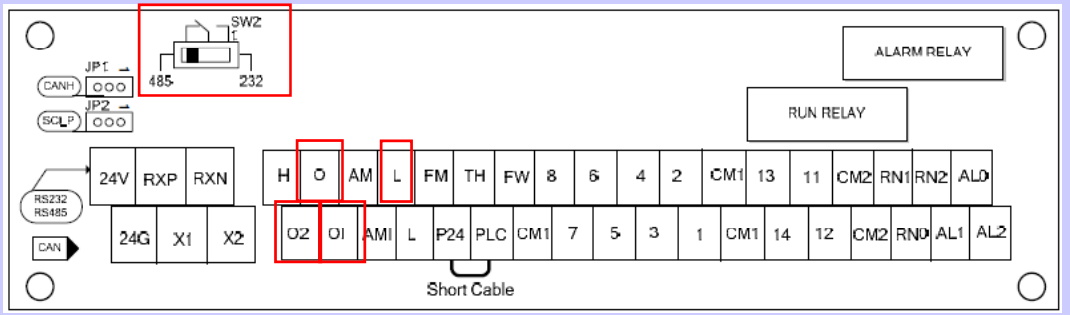
F010 = 2 : keypad

F010 = 0 : volume

▪ F010 = 1

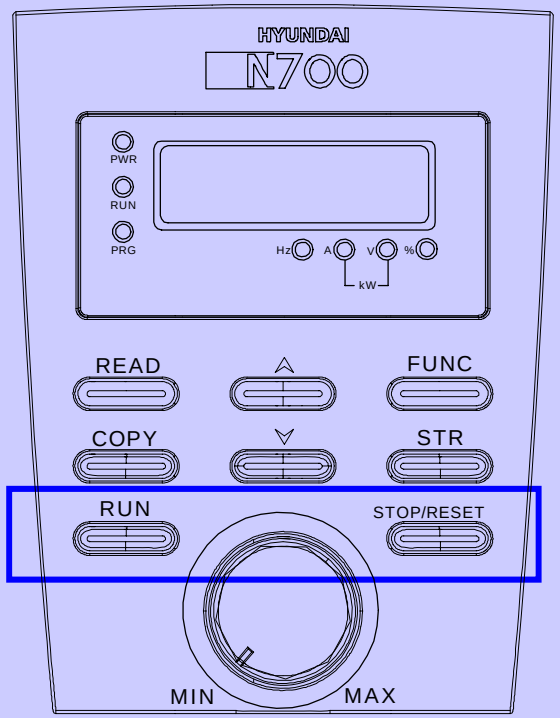
O-L, O2-L terminal : analog voltage
OI-L terminal : analog current

▪ F010 = 3 ; communication (RS232 / RS485)



Code	Function Name	min.	Max.	Default	Description
F011	RUN command setting selection	1	5	2	1:control terminal 2:OPE 3:communication 4:OPT1 5:OPT2

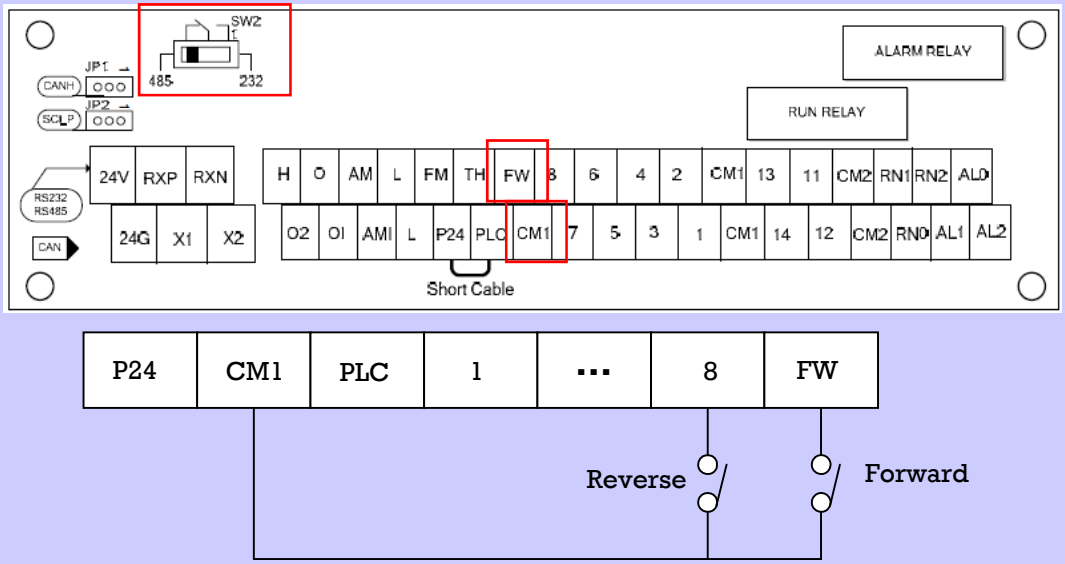
▪ F011 = 2



▪ F011 = 1

FW-CM1 or RV-CM1(intelligent input terminal)

▪ F011 = 3 ; communication (RS232 / RS485)

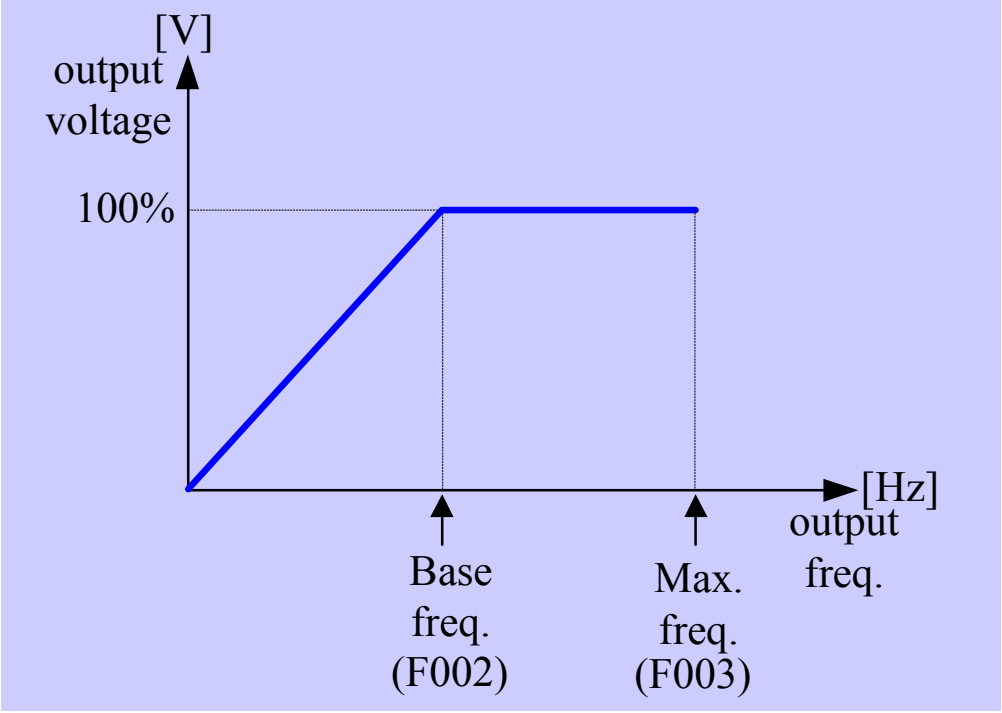


Code	Function Name	min.	Max.	Default	Description
F012	Motor control method	0	7	0	0:VC 1:VP1 2:VP2 3:Free V/F 4:SLV-I 5:SLV-D 6:V2 7:0Hz-V2

▪ F012 = 0 ;VC

✓ Constant torque characteristic

✓output voltage proportion to output freq.

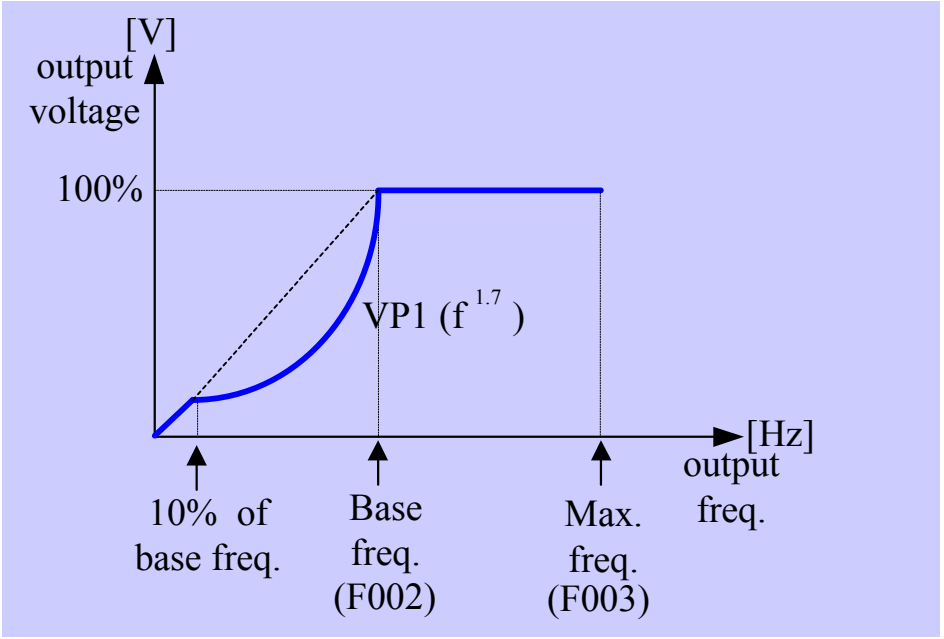


▪ F012 = 1 ;VP1

✓ Reduced torque characteristic / VP1.7 power

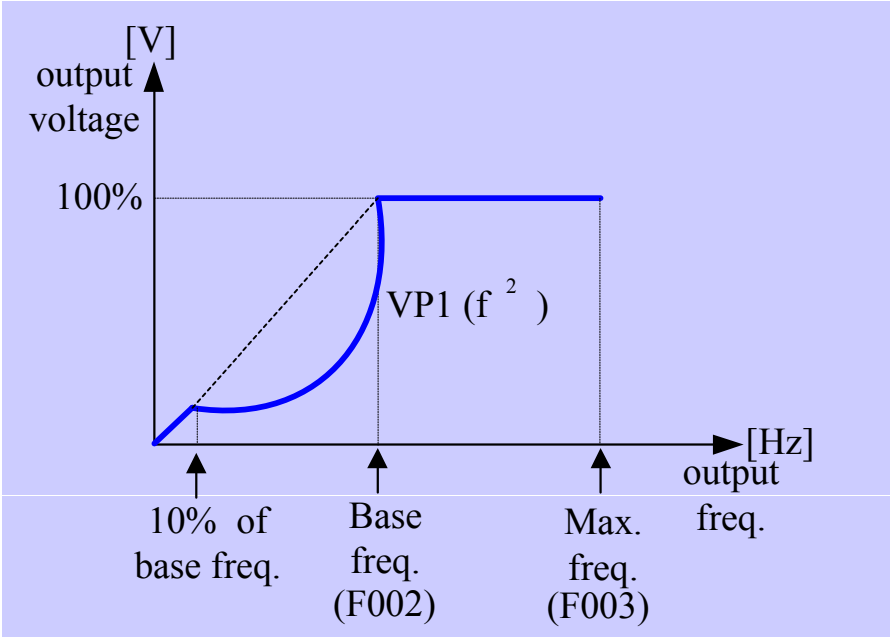
✓ VP1 is suitable to small starting torque

✓ At low speed, improve efficiency, low noise & low vibration because of lower output voltage



Code	Function Name	min.	Max.	Default	Description
F012	Motor control method	0	7	0	0:VC 1:VP1 2:VP2 3:Free V/F 4:SLV-I 5:SLV-D 6:V2 7:0Hz-V2

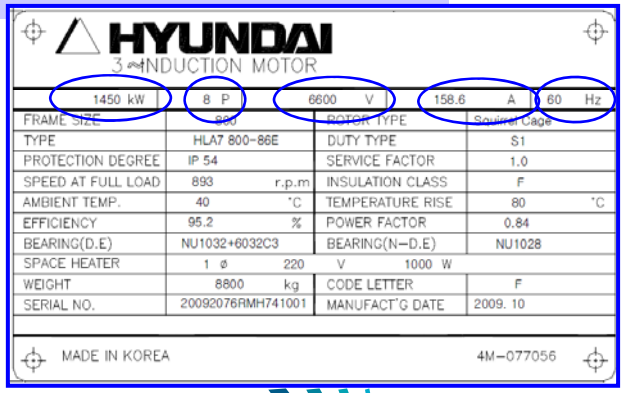
- F012 = 2 ; VP2
  - ✓ Reduced torque characteristic / VP2 power
  - ✓ VP1 is suitable to not require large starting torque (Fan & Pump application)
  - ✓ At low speed, improve efficiency, low noise & low vibration because of lower output voltage



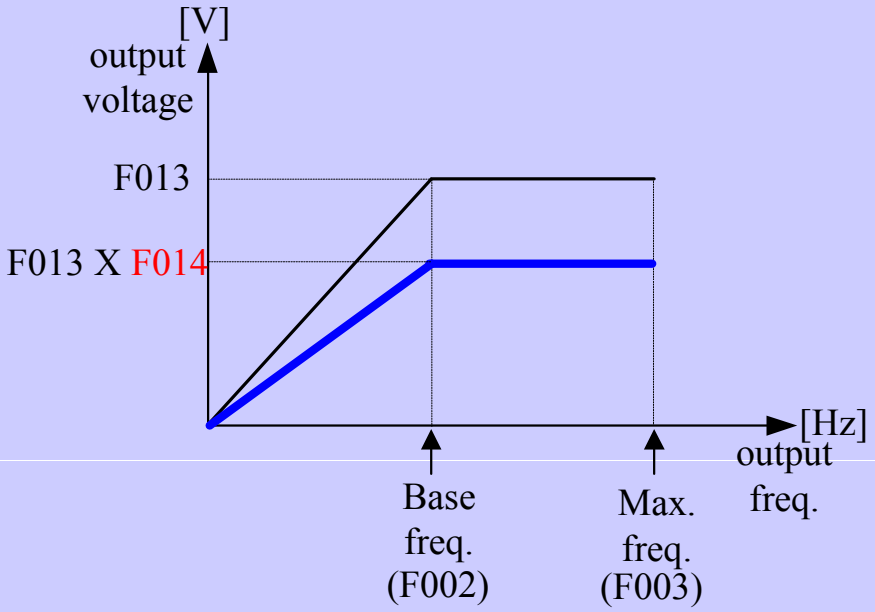
Code	Function Name	min.	Max.	Default	Description
F013	Motor voltage setting	200 / 380	240 / 480	220 / 440	200V class : 200/215/220/230/240 400V class : 380/400/415/440/460/480
F014	Output voltage gain	20[%]	100[%]	100	
F015	Motor capacity setting	1.5[kW]	160[kW]	-	1.5/2.2/3.7/5.5/7.5/11/15/18.5/22/30/37/45/55/75/90/110/132/160
F016	Motor pole setting	2	12	4	
F017	Motor rating current setting	0.0[A]	999.9[A]	-	

- F013 : motor rating voltage setting
- F015 : motor capacity setting
- F016 : motor pole setting
- F017 : motor rating current setting

✓ check the motor name plate



- F013 & F014

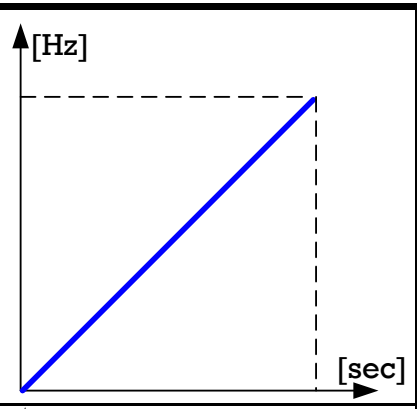
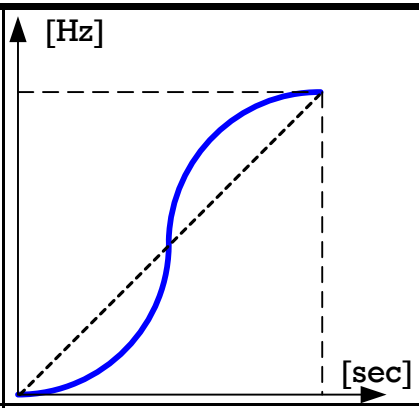
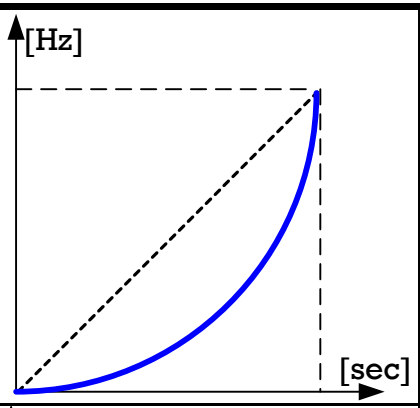
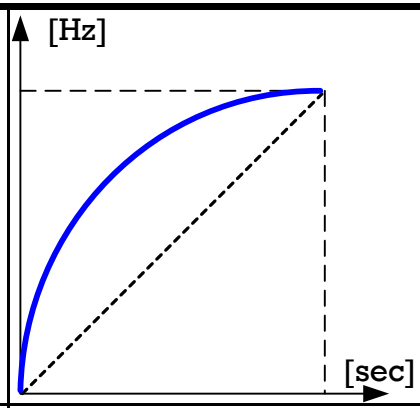
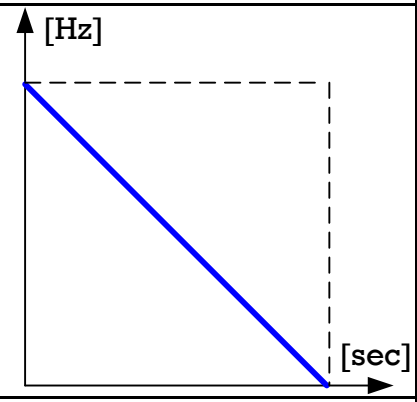
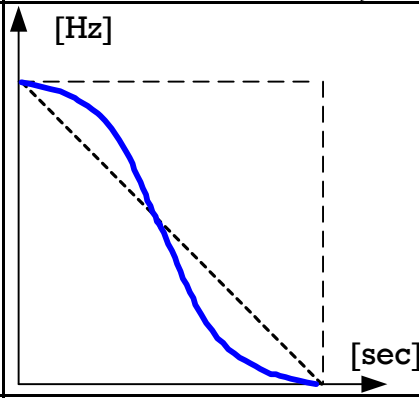
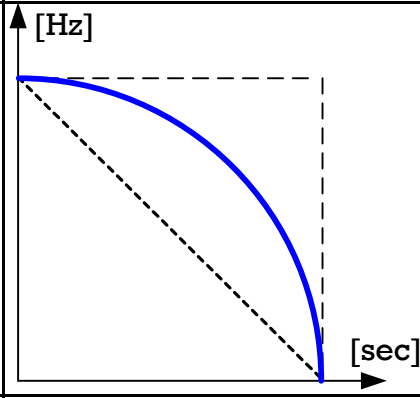
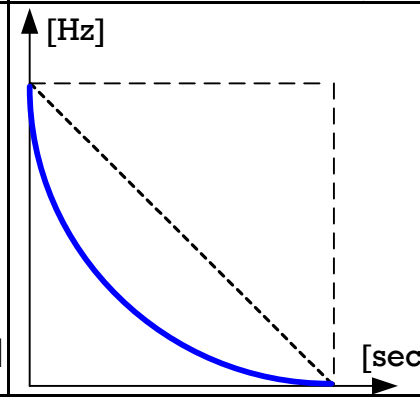


Code	Function Name	min.	Max.	Default	Description
F018	Speed / Torque mode selection	0	1	0	0:speed control mode 1:torque control mode
F019	SLV control method selection	0	1	0	0:normal operation mode 1:0Hz operation mode

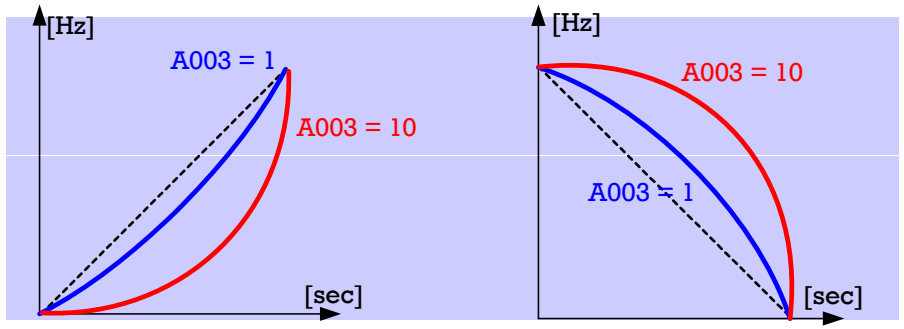
3 A- parameter group

➢ A-group is for operation characteristic setting group.

Code	Function Name	min.	Max.	Default	Description
A001	Acceleration pattern setting	0	3	0	0:linear 1:S-curve 2:U-curve 3:Reverse U-curve
A002	Deceleration pattern setting	0	3	0	
A003	Acceleration curvature setting	1	10	8	Set the swelling degree
A004	Deceleration curvature setting	1	10	8	

setting	0 (linear)	1(S-curve)	2(U-curve)	3(RU-curve)
A001				
A002				
Application	Linear accelerate & decelerate	Suitable to conveyor, lift application for prevent falling	Suitable to tension control application for prevent material cutting	

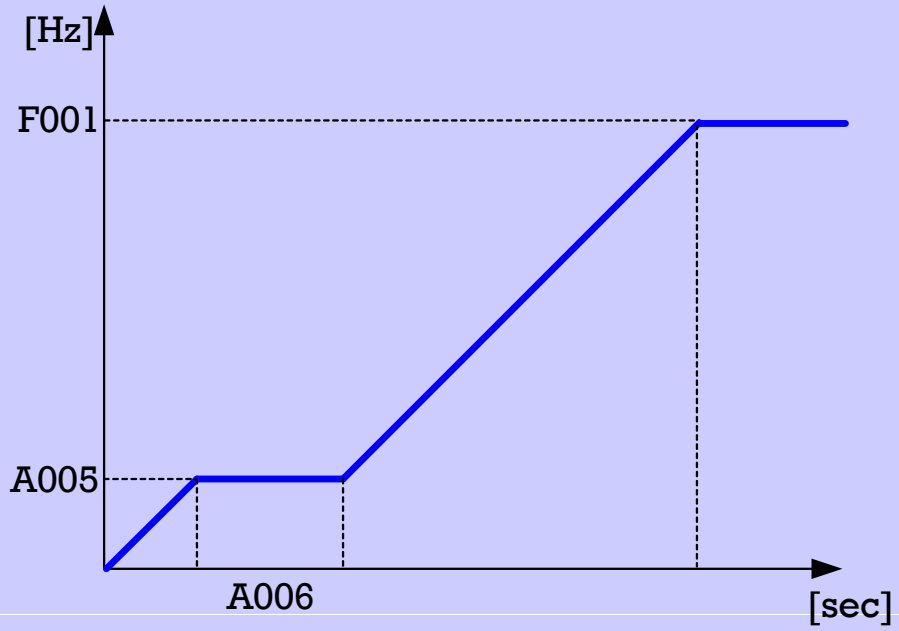
A003 : Acceleration curvature setting
A004 : Deceleration curvature setting



✓ Acceleration stop function

Code	Function Name	min.	Max.	Default	Description
A005	Acceleration stop frequency	0.00	F003	0.00	
A006	Acceleration stop time	0.00	60.00	0.00	Unit:second

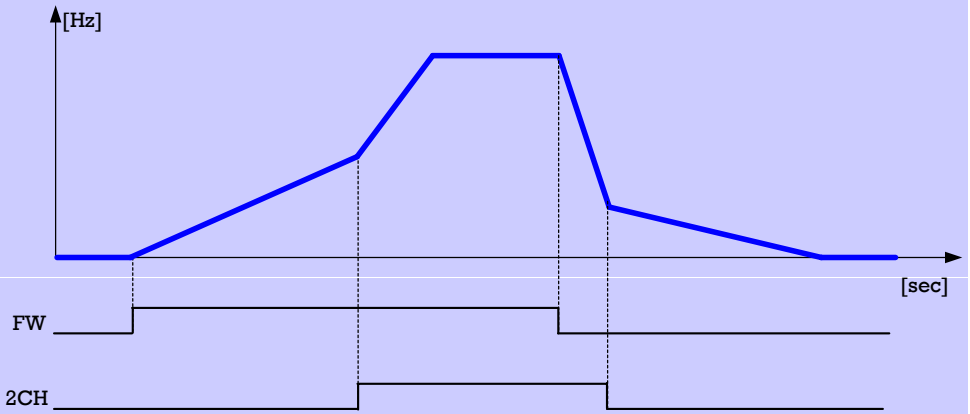
✓ The acceleration stop function can be used to minimize the occurring of over-current trips when acceleration high inertial load.



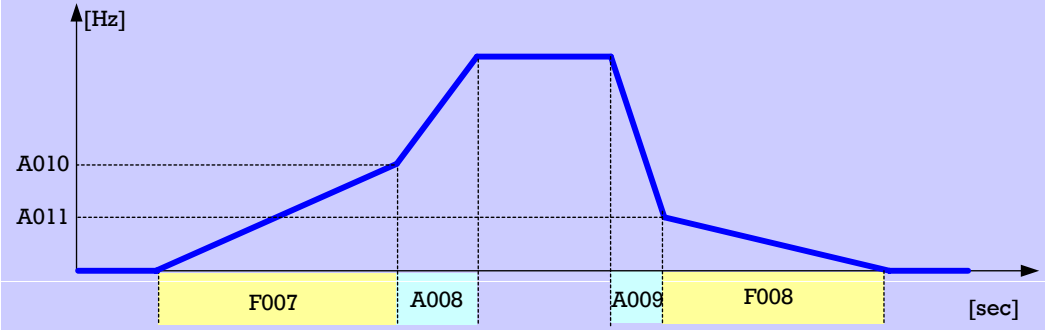
✓ 2-stage Acceleration/Deceleration time setting function

Code	Function Name	min.	Max.	Default	Description
A007	2-stage Acc./Dec. time selection method	0	1	0	0:using intelligent input terminal 1:using parameters(A008~A011)
A008	2nd Acc. time setting	0.1	3600	30[sec]	
A009	2nd Dcc. time setting	0.1	3600	30[sec]	
A010	2nd Acc. time swithover frequency	0.00	F003	0.00	
A011	2nd Dcc. time swithover frequency	0.00	F003	0.00	

A007 = 0



A007 = 1

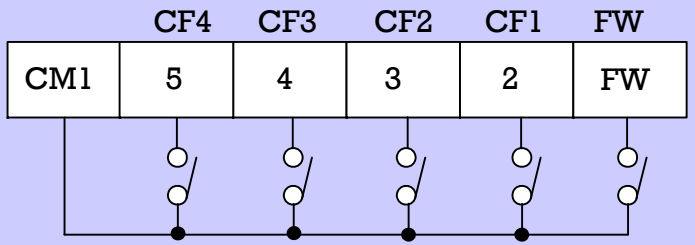


✓ **3-stage Acceleration/Deceleration time setting is possible using parameter A012~A016**

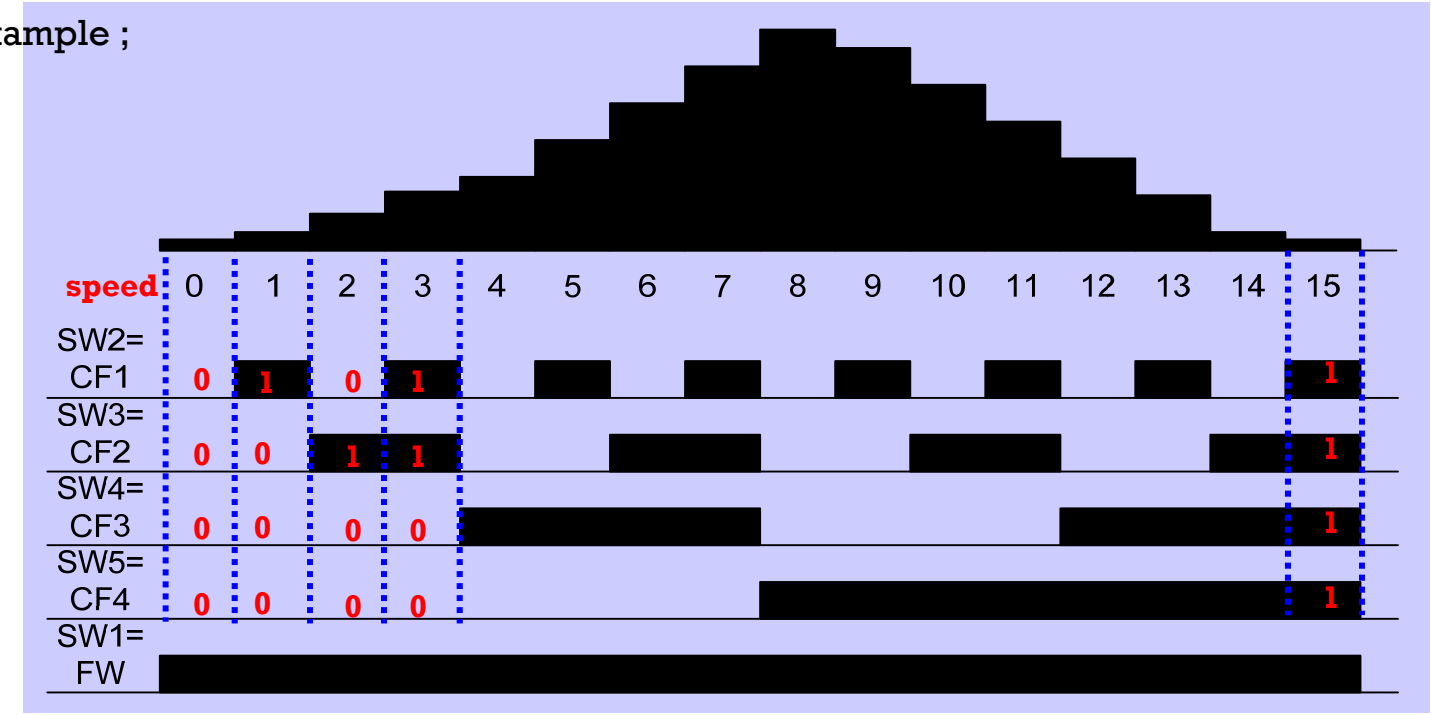
✓ Multi-speed function

Code	Function Name	min.	Max.	Default	Description
A027	Multi speed 0	0.00	F003	0.00	Same with F001
A028	Multi speed 1	0.00	F003	0.00	
A029	Multi speed 2	0.00	F003	0.00	
A030 ~ A042	Multi speed 3 ~ Multi speed 15	0.00	F003	0.00	

✓ connection example for multi-speed operation ;



✓ multi-speed operation example ;



• 0:OFF
1:ON

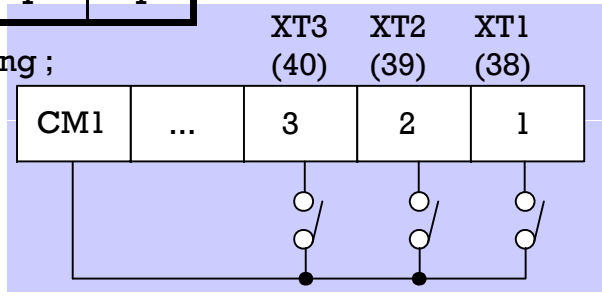
multi-speed	Intelligent input					setting Value (Hz)	para-meter
	SW5	SW4	SW3	SW2	SW1		
	CF4	CF3	CF2	CF1	FW		
0-speed	0	0	0	0	1	2	A027
1-speed	0	0	0	1	1	5	A028
2-speed	0	0	1	0	1	10	A029
3-speed	0	0	1	1	1	15	A030
4-speed	0	1	0	0	1	20	A031
5-speed	0	1	0	1	1	30	A032
6-speed	0	1	1	0	1	40	A033
7-speed	0	1	1	1	1	50	A034

multi-speed	Intelligent input					setting Value (Hz)	para-meter
	SW5	SW4	SW3	SW2	SW1		
	CF4	CF3	CF2	CF1	FW		
8-speed	1	0	0	0	1	60	A035
9-speed	1	0	0	1	1	55	A036
10-speed	1	0	1	0	1	45	A037
11-speed	1	0	1	1	1	35	A038
12-speed	1	1	0	0	1	25	A039
13-speed	1	1	0	1	1	15	A040
14-speed	1	1	1	0	1	5	A041
15-speed	1	1	1	1	1	2	A042

✓ Multi stage Acc./Dec. time setting function

Code	Function Name	min.	Max.	Default	control terminal XT3	XT2	XT1
A043	1st acceleration time	0.1	3600	30[sec]	0	0	1
A044	1st deceleration time	0.1	3600	30[sec]	0	0	1
A045	2nd acceleration time	0.1	3600	30[sec]	0	1	0
A046	2nd acceleration time	0.1	3600	30[sec]	0	1	0
A047	3rd deceleration time	0.1	3600	30[sec]	0	1	1
A048	3rd acceleration time	0.1	3600	30[sec]	0	1	1
A049	4th acceleration time	0.1	3600	30[sec]	1	0	0
A050	4th deceleration time	0.1	3600	30[sec]	1	0	0
A051	5th acceleration time	0.1	3600	30[sec]	1	0	1
A052	5th acceleration time	0.1	3600	30[sec]	1	0	1
A053	6th deceleration time	0.1	3600	30[sec]	1	1	0
A054	6th acceleration time	0.1	3600	30[sec]	1	1	0
A055	7th deceleration time	0.1	3600	30[sec]	1	1	1
A056	7th deceleration time	0.1	3600	30[sec]	1	1	1

✓ connection example for multi time setting ;



✓ free V/F setting

Code	Function Name	min.	Max.	Default	Description
A059	free V/F frequency 1	0.00	F003	0.00	
A060	free V/F voltage 1	0.0	999.9	0.0	
A061	free V/F frequency 2	A059	F003	0.00	
A062	free V/F voltage 2	0.0	999.9	0.0	
A063	free V/F frequency 3	A061	F003	0.00	
A064	free V/F voltage 3	0.0	999.9	0.0	
A065	free V/F frequency 4	A063	F003	0.00	
A066	free V/F voltage 4	0.0	999.9	0.0	
A067	free V/F frequency 5	A065	F003	0.00	
A068	free V/F voltage 5	0.0	999.9	0.0	
A069	free V/F frequency 6	A067	F003	0.00	
A070	free V/F voltage 6	0.0	999.9	0.0	
A071	free V/F frequency 7	A069	F003	0.00	
A072	free V/F voltage 7	0.0	999.9	0.0	

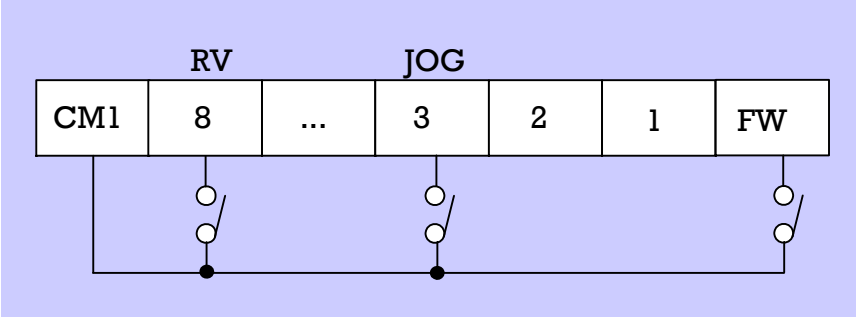
✓ Free V/F function is 7 point of V/F setting function.

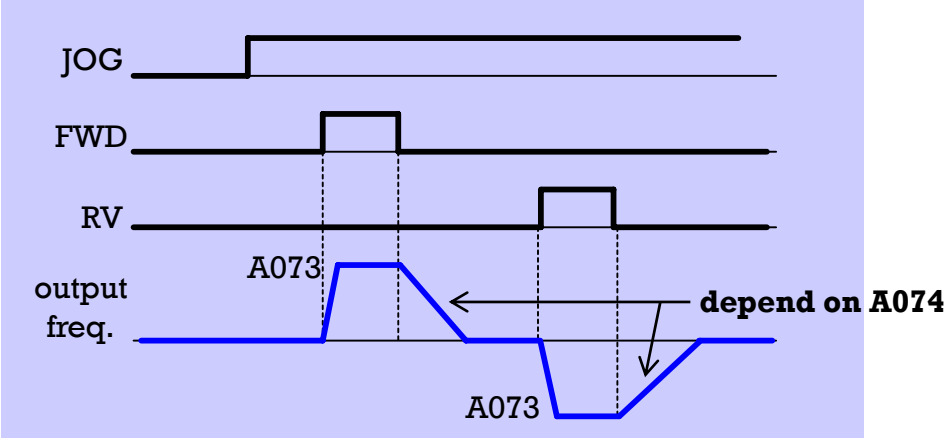
✓ the higher number of setting frequency point should be higher than lower setting value.
That is to say, A059 ≤ A061 ≤ A063 ≤ A065 ≤ A067 ≤ A069 ≤ A071

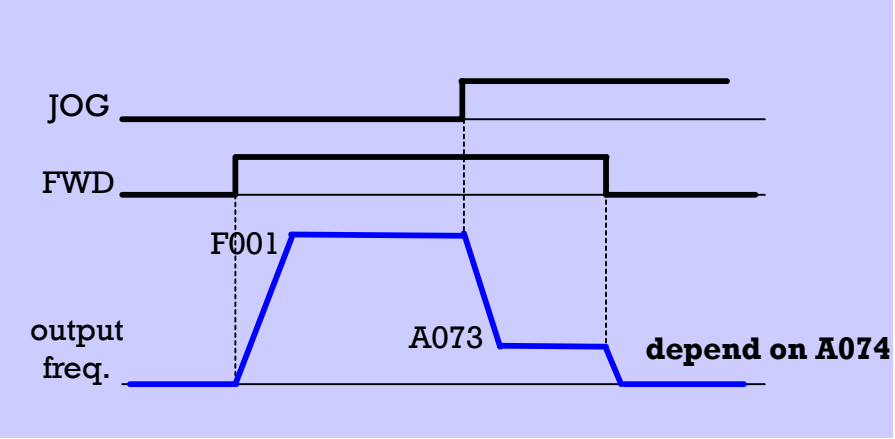
✓ jogging operation

Code	Function Name	min.	Max.	Default	Description
A073	jogging frequency	0.00	10.00	0.00	
A074	jogging stop mode	0	2	0	0:Free Run Stop 1:decelation stop 2:DC braking

✓ jogging operation example (I003 = 6(JG)) ;



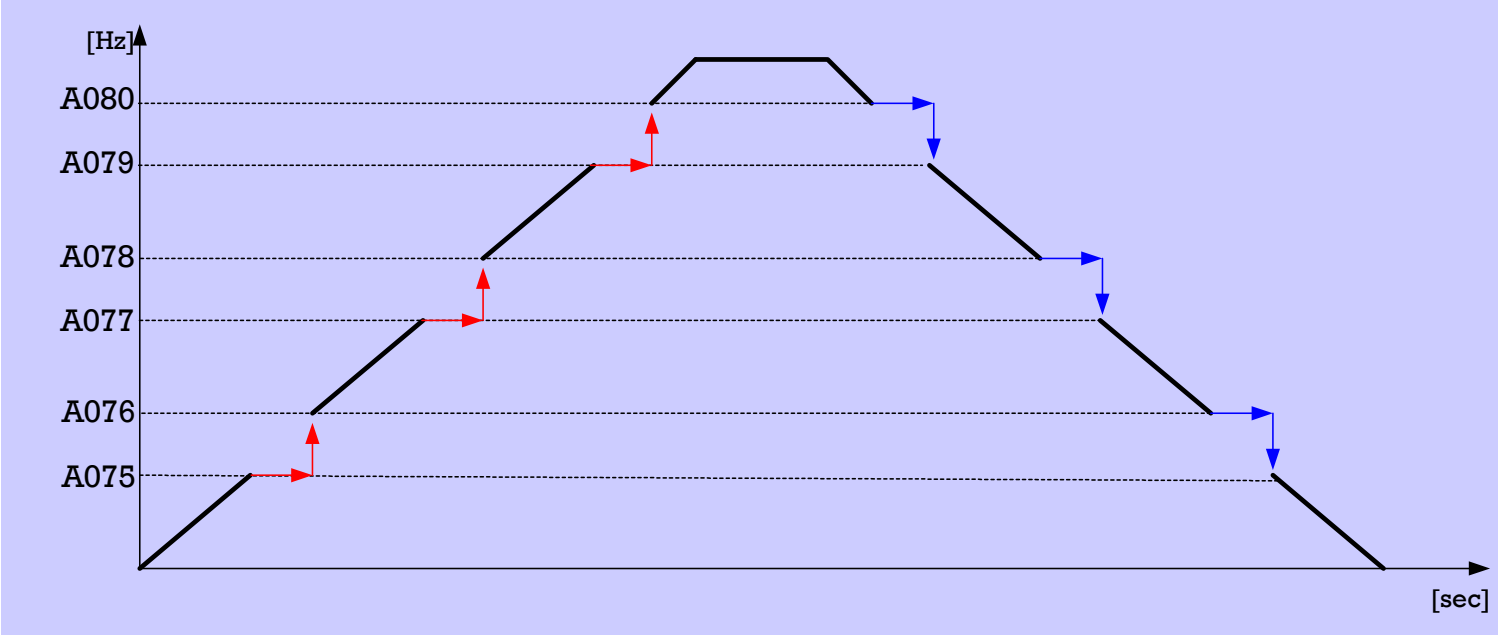




✓ jump frequency setting

Code	Function Name	min.	Max.	Default	Description
A075	jump frequency 1 lower limit	0.00	F003	0.00	
A076	jump frequency 1 upper limit	0.00	F003	0.00	
A077	jump frequency 2 lower limit	0.00	F003	0.00	
A078	jump frequency 2 upper limit	0.00	F003	0.00	
A079	jump frequency 3 lower limit	0.00	F003	0.00	
A080	jump frequency 3 upper limit	0.00	F003	0.00	

✓ jump frequency operation example ;

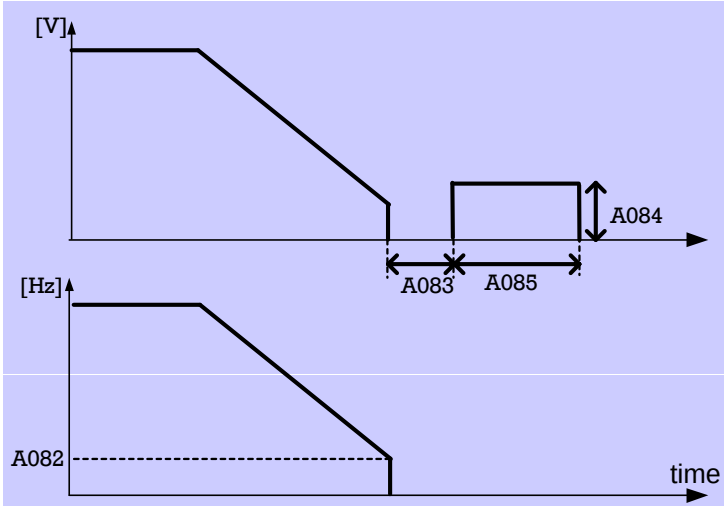


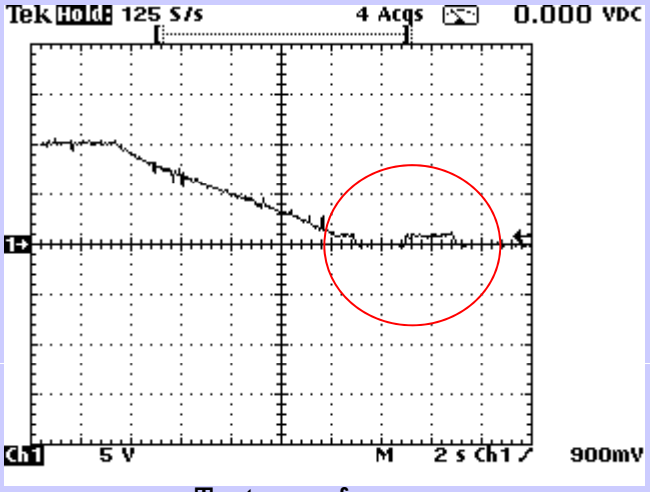
✓ avoid mechanical resonance

✓ lower limit ≤ upper limit

✓ DC braking

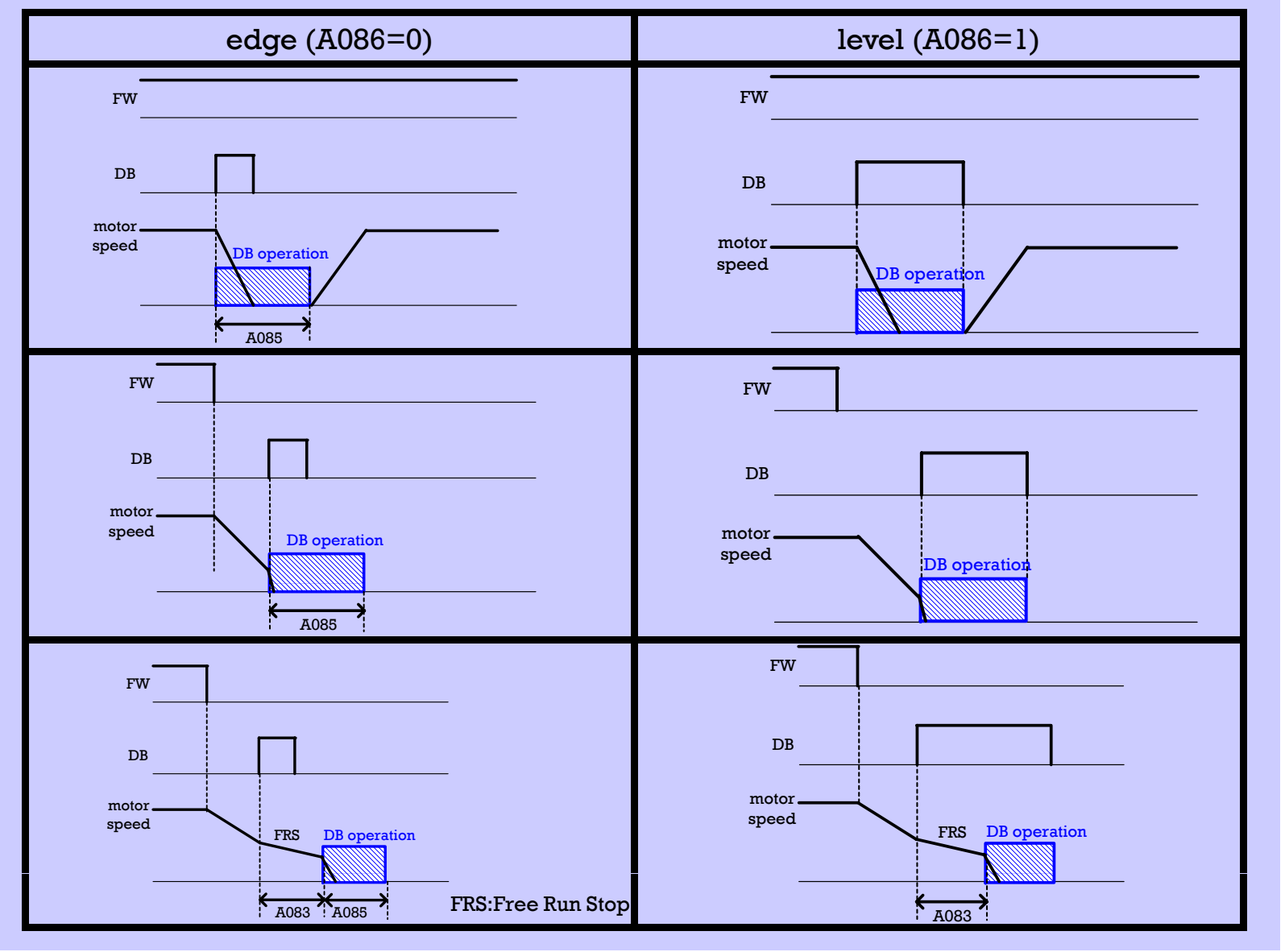
Code	Function Name	min.	Max.	Default	Description
A081	DC braking selection	0	1	0	0:external DC braking 1:internal DC braking
A082	DC braking frequency	0	F003	0.5	unit : [Hz]
A083	DC braking delay time	0.0	5.0	0.0	unit : [sec.]
A084	DC braking force setting	0	100	0	unit : [%]
A085	DC braking time setting	0	60	0	unit : [sec.]
A086	DC braking signal selection	0	1	0	0:edge 1:level
A087	starting DC braking force setting	0	100	0	unit : [%]
A086	starting DC braking time setting	0	60	0	unit : [sec.]



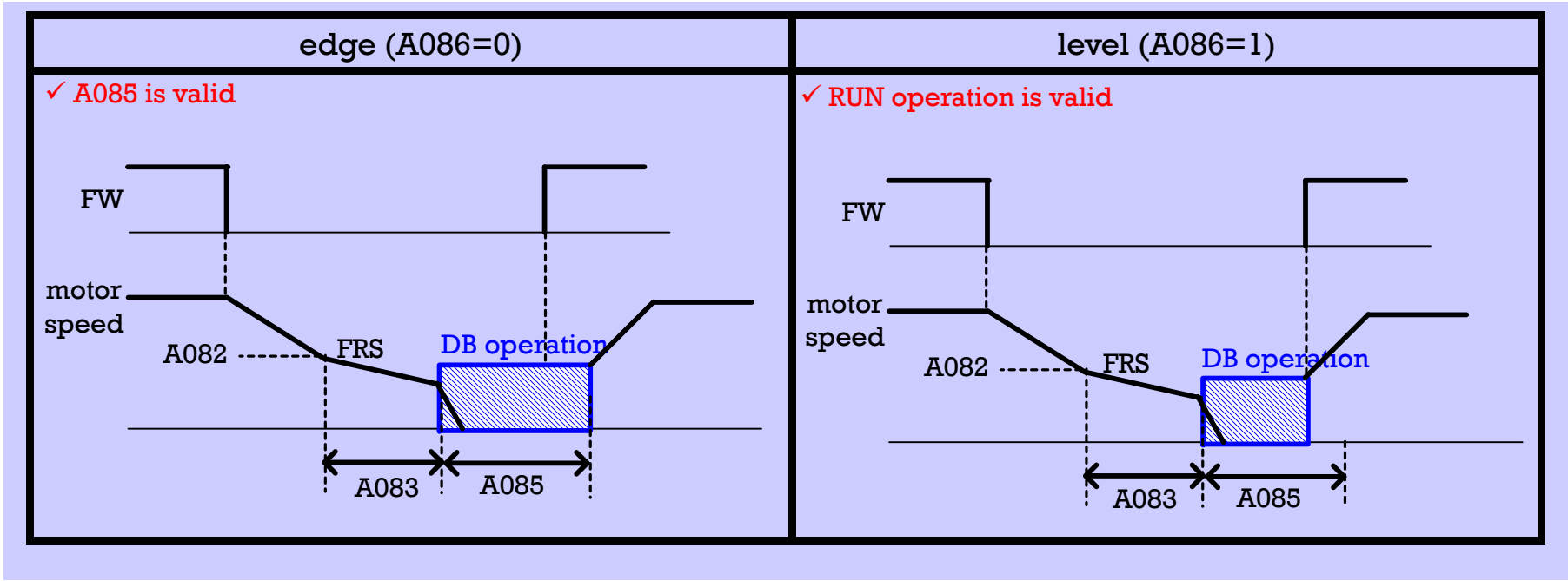


Test waveform

✓ DC braking operation (1) – external DC braking (A081 = 0)



✓ DC braking (2) – internal DC braking (A081 = 1)



✓ speed controller adjustment function

Code	Function Name	min.	Max.	Default	Description
A090	speed controller gain setting	1	300	120	
A091	speed controller constant setting	1	120	60	
A092	speed controller P-gain setting	0	1000	100	unit : [%]
A093	speed controller I-gain setting	0	1000	100	unit : [%]

✓ This function is valid only in case F012 setting value is higher than 5.

✓ A090/A092 : if the frequency cannot reach target frequency within acce./decel. time → higher A090/A092

if the vibration is occurred → smaller A090 / A092

✓ A091/A093 : if the over-voltage is occurred or the speed is overshoot → higher A091 / A093

if very small deceleration time is necessary → smaller A091/A093

✓ load adjustment function

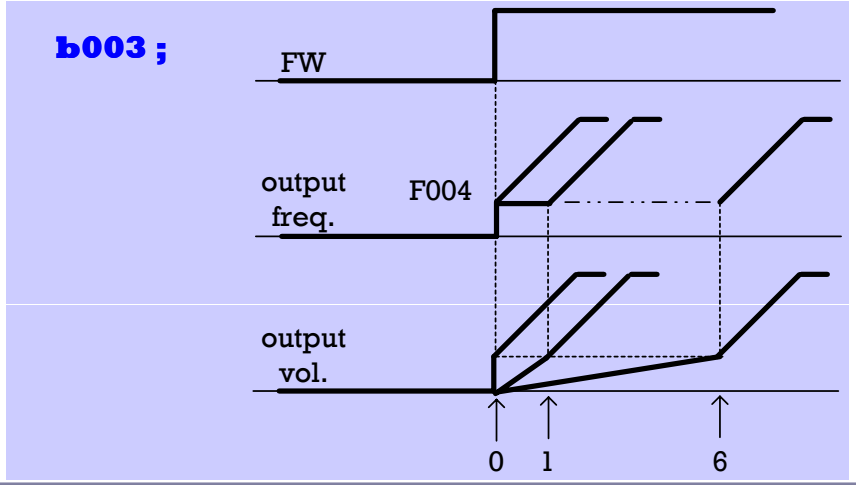
Code	Function Name	min.	Max.	Defaul t	Description
A094	load adjustment setting	0	5	0	0:normal load 1:lift application 2:washing machine application 3:press machine application 4/5:reserved

✓ This function is valid only in case F012 setting value is higher than 5.

4 b- parameter group

➢ b-group is for operation condition setting group.

Code	Function Name	min.	Max.	Default	Description
b001	motor rotating direction restriction	0	2	0	0:forward/reverse are valid 1:only forward is valid 2:only reverse is valid
b003	reducing voltage at motor starting	0	6	0	
b004	retry time restriction	0	1	0	0:maximum 16 at under-voltage maximum 3 at over-voltage and over-current 1:unrestrict
b005	stop key effective selection	0	1	0	0:stop key is always vaild 1:stop key is not valid in case of terminal ON/OFF mode

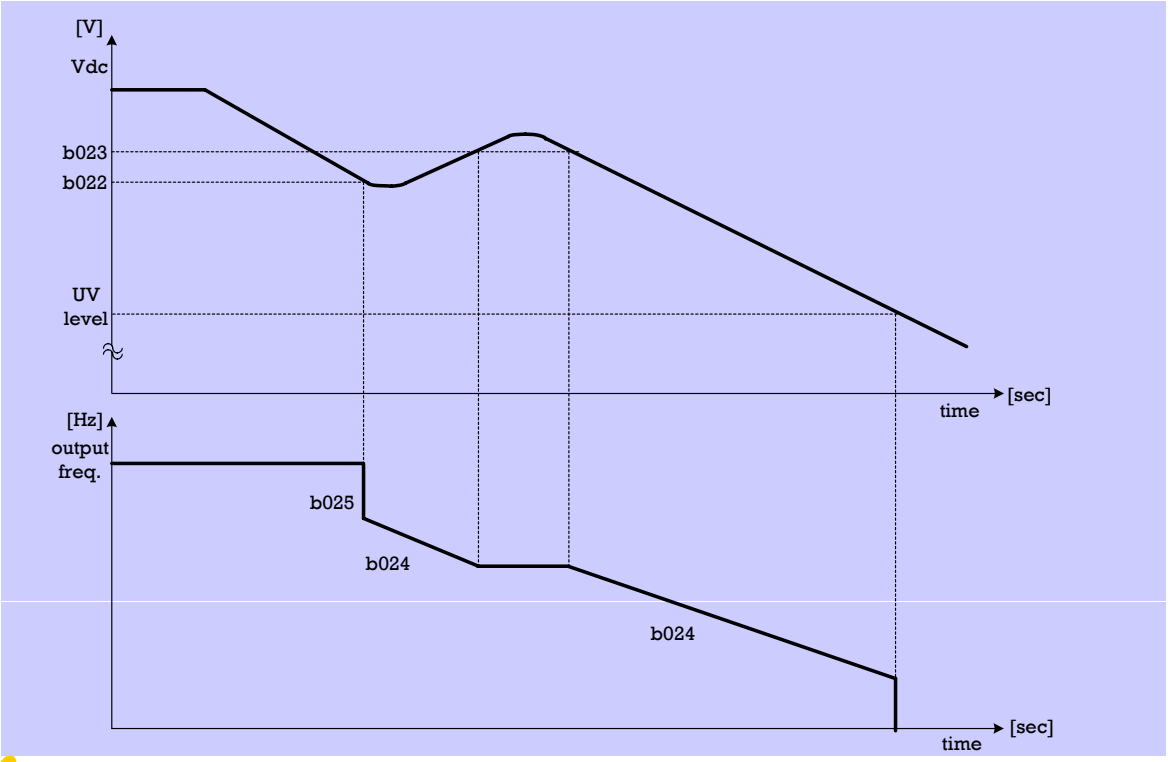


Code	Function Name	min.	Max.	Default	Description
b006	stop mode selection	0	2	0	0:deceleration stop (ramp stop) 1:Free Run Stop (FRS) 2:DC braking (A081~A086 setting is necessary)
b007	restart selection during FRS	0	2	0	0:0Hz restart 1:f-match restart 2:always speed detect -. Whenever RUN is commanded, speed search is operating. -.This function is only available when the inverter is restarted over 3 seconds from stopping.
b008	AVR (Automatic Voltage Regulation) function	0	2	0	0:always AVR ON 1:always AVR OFF 2:AVR on only except during deceleration

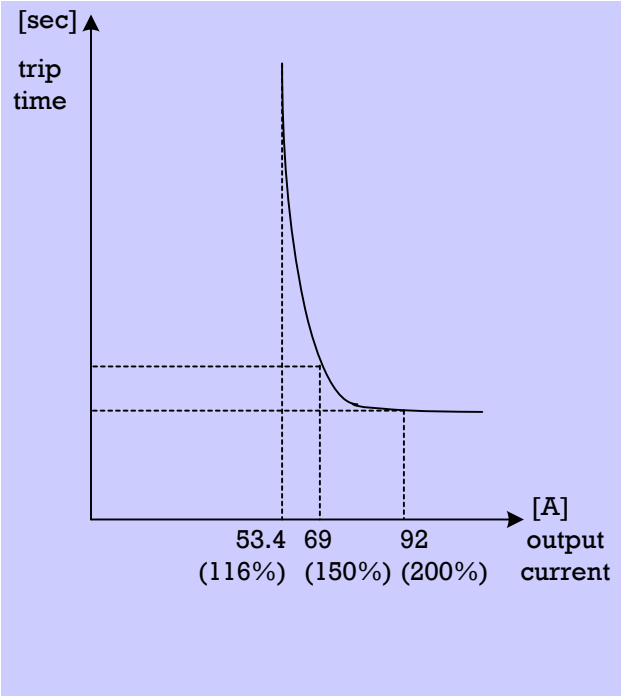
Code	Function Name	min.	Max.	Default	Description
b009	frequency conversion factor	0.1	99.9	1	FM terminal output = output frequency X b009
b010	carrier frequency (switching frequency) setting	0.5	10.0	5.0	-. Higher carrier freq. → motor audible noise is reduced, but RFI noise & leakage current might be increased.
		0.5	5.0	5.0	
		0.5	5.0	3.0	
		0.5	5.0	2.0	
b011	cooling FAN operating selection	0	1	0	0:always operating 1:operating only at RUN
b013	ground fault selection function	0	1	0	0:not check ground fault 1:check the ground fault when power is ON
b014	initialization selection	0	2	0	0:clear trip history 1:initialize parameter 2:trip history + initialize parameter
b015	Country code for initialization	0	2	0	0:local 1:EC 2:USA

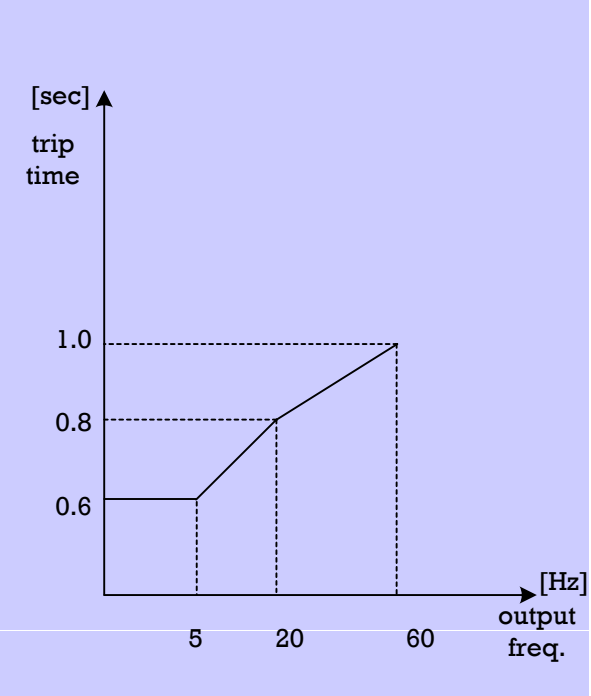
Code	Function Name	min.	Max.	Default	Description
b016	Retry selection	0	3	0	0:trip 1:restart from 0Hz 2:frequency matching restart 3:frequency matching and ramp stop. Trip occur at 0Hz.
b017	Allowable time for under-voltage failure	0.3	1.0	1.0 [sec]	Instantaneous power failure time is shorter than setting time → restart Instantaneous power failure time is longer than setting time → trip
b018	Retry waiting time	0.3	100	1.0	delay time for restarting
b019	instantaneous power failure / under-voltage trip during stopping	0	3	0	0:invalid - NO trip & alarm 1:vaild - trip & alarm occur 2:invalid during stopping - NO trip & alarm during stopping 3:
b020	Frequency lower limit for F-match	0.00	400.0	0.00	

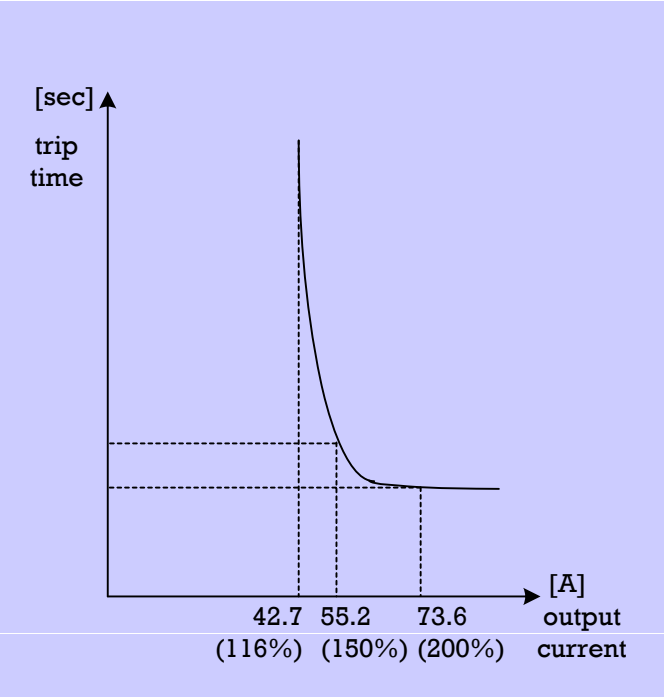
Code	Function Name	min.	Max.	Default	Description
b021	Non-stop selection at instantaneous power failure	0	1	0	0:not-stop function invalid 1:not-stop function valid
b022	non-stop function starting voltage	0.0	999.9	0.0[V]	
b023	non-stop instantaneous power failure LAD stop level	0.0	999.9	0.0[V]	
b024	deceleration time at non-stop function	0.01	3600	1.0 [sec]	
b025	starting width at non-stop function	0.01	10.00	0.00[Hz]	



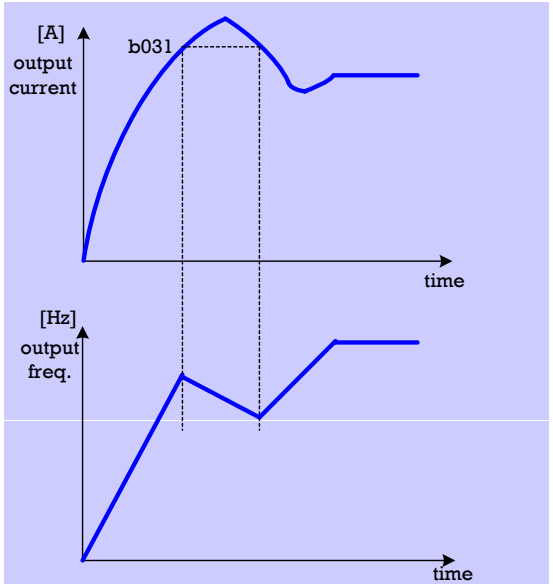
Code	Function Name	min.	Max.	Default	Description
b026	phase open trip selection	0	1	0	0:invalid - phase open alarm not occur 1:valid - phase open alarm occur
b027	electronic thermal level setting	0.0	999.9	Irate	
b028	electronic thermal characteristic selection	0	1	0	0:reduced torque characteristic 1:constant torque characteristic
b029	electronic thermal warning level setting	0	100	80[%]	using intelligent output terminal (THM(13) signal)

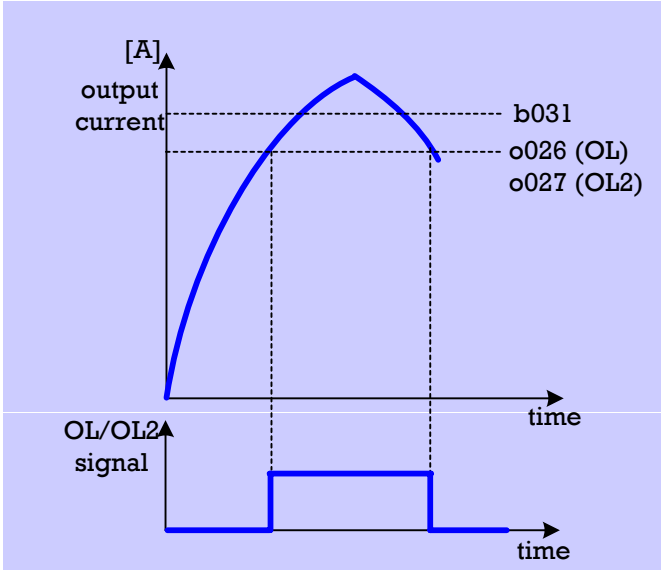






Code	Function Name	min.	Max.	Default	Description
b030	Overload restriction selection	0	3	1	0:invalid 1:valid at acceleration & constant speed 2:valid at constant speed 3:valid at acceleration & constant speed (speed increase at regenerating)
b031	Overload restriction level setting	0.5	2.0	1.5	Level range : (0.5~2.0) X (rating current)
b032	Overload restriction constant	0.0	30.0	3.0	Deceleration time at overload restriction
b033	Overload warning signal output in advance	0	1	0	0:Valid acc./dec./constant speed 1:valid only constant speed
o026	overload warning signal 1	0.0	2.0	1.0	OL signal output
o027	overload warning signal 2	0.0	2.0	1.0	OL2 signal output





✓ External Thermistor

Code	Function Name	min.	Max.	Default	Description
b034	Thermistor selection	0	2	0	0:invalid 1:PTC(Positive Temperature Coefficient) 2:NTC(Negative Temperature Coefficient)
b035	Thermistor error level	0	9999	3000[Ω]	Level range : (0.5~2.0) X (rating current)
b036	Thermistor gain setting	0.0	999.9	105.0	Gain adjustment for thermistor error

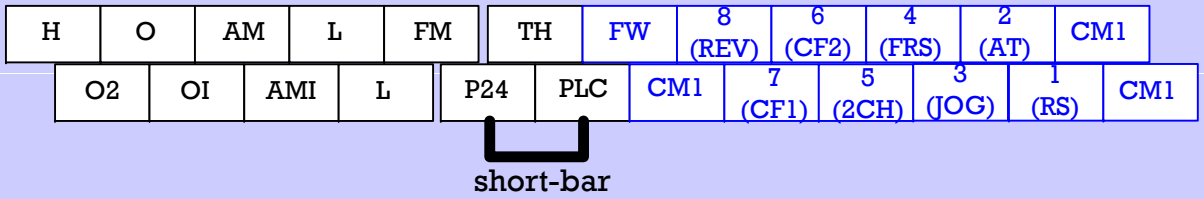
5 I- parameter group

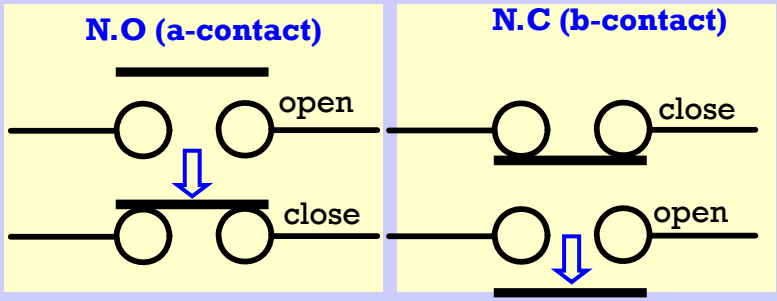
✓ I-group is for intelligent input terminal setting group

Code	Function Name	min.	Max.	Default	Default Function
I001	Intelligent input 1 setting	1	40	17	17: Reset function [RS]
I002	Intelligent input 2 setting	1	40	16	16: analog vol./current [AT] selection
I003	Intelligent input 3 setting	1	40	6	6: Jogging operation [JOG]
I004	Intelligent input 4 setting	1	40	11	11: Free Run Stop [FRS]
I005	Intelligent input 5 setting	1	40	9	9: 2-stage acc./dec. [2CH] function
I006	Intelligent input 6 setting	1	40	3	3: multi-speed 2 [CF2] signal
I007	Intelligent input 7 setting	1	40	2	2: multi-speed 1[CF1] signal
I008	Intelligent input 8 setting	1	40	1	1: reverse running [REV]

Code	Function Name	min.	Max.	Default	Description
I009 ~ I016	Intelligent input terminal 1~8 contact selection	0	1	0	1:Normally Open [N.O] / a-contact 2:Normally Close [N.C] / b-contact
I017	FW terminal contact selection	0	1	0	1:Normally Open [N.O] / a-contact 2:Normally Close [N.C] / b-contact

control terminal





✓ intelligent input terminal function (I)

code	setting	Function		Description
I001 ~ I008	1	REV	Reverse RUN command	
	2	CF1	Multi-Speed 1	Multi-speed function
	3	CF2	Multi-Speed 2	
	4	CF3	Multi-Speed 3	
	5	CF4	Multi-Speed 4	
	6	JOG	Jogging operation	
	7	DB	External DC braking	
	8	SET2	2nd motor control mode	2nd motor control mode
	9	2CH	2-stage acc./dec. time	
	10	3CH	3-stage acc./dec. time	
	11	FRS	Free Run Stop	
	12	EXT	External Trip	External trip (E12) function
	13	USP	Unintended Start Protection	
	15	SFT	Software Lock	
	16	AT	Analog voltage/current selection	
	17	RESET	Reset	

✓ intelligent input terminal function (II)

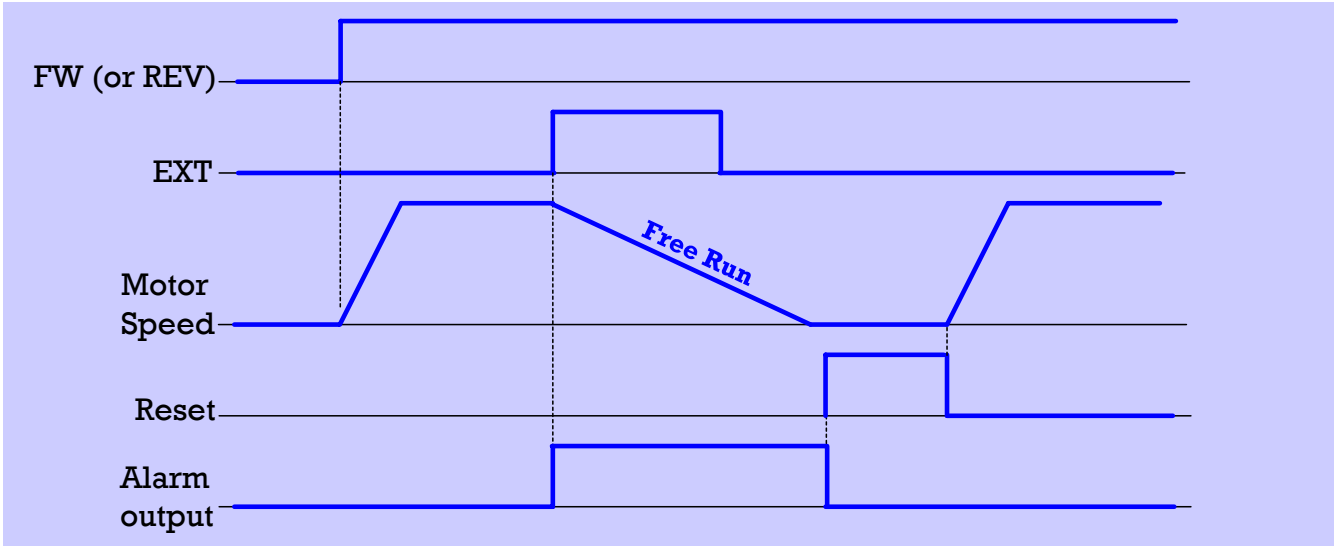
code	setting	Function		Description
I001 ~ I008	18	STA	3 wire start	3 wire input function
	19	STP	3 wire stop	
	20	F/R	3 wire running direction	
	21	PID	PID operation	PID control function
	22	PIDC	PID integrating reset	
	24	UP	Remote control UP function	Remote control UP/DOWN function
	25	DOWN	Remote control DOWN function	
	26	UDC	Remote control data clear	
	27	OPE	Force operation start	
	29	TL	Torque restrict selection	
	30	TRQ1	Torque limit 1	
	31	TRQ2	Torque limit 2	
	33	BOK	Brake confirm	

✓ intelligent input terminal function (III)

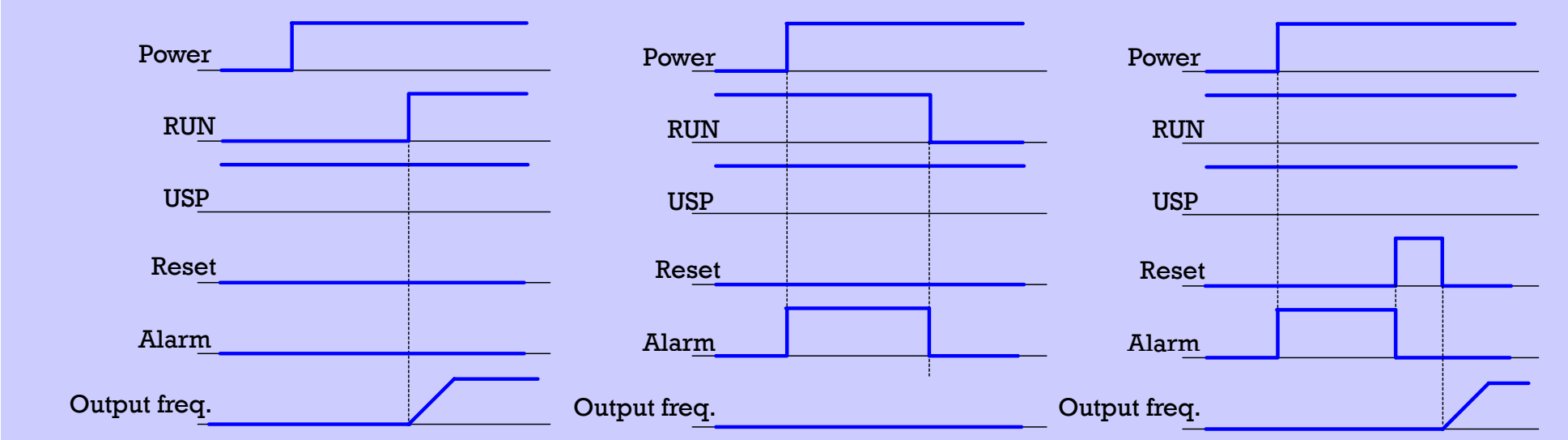
code	setting	Function		Description
I001 ~ I008	34	ORT	Orientation	
	35	LAC	LAD cancel	
	36	PCLR	Position Deviation Clear	
	37	STAT	Pulse train input permission	
	38	XT1	Multi-step acc./dec. time 1	
	39	XT2	Multi-step acc./dec. time 2	
	40	XT3	Multi-step acc./dec. time 3	

✓ intelligent input terminal function (IV)

- EXT : External Trip Function



- USP : Unintended Start Protection



✓ intelligent input terminal function (V)

▪ SFT (Software Lock) : for prevent parameter setting by mistake

Code	Function Name	min.	Max.	Default	Description
I047	Software Lock	0	5	0	0:All parameter except I047 are locked when SFT is ON 1: All parameter except I047,F001 are locked when SFT is ON 2: All parameter except I047,F001 & U-group are locked when SFT is ON 3: All parameter except I047 are locked 4: All parameter except I047,F001 are locked 5: All parameter except I047,F001 & U-group are locked

▪ AT (Analog signal Transition)

Code	Function Name	min.	Max.	Default	Description
I049	AT terminal selection	0	1	0	0:O/OI transition by AT terminal 1:O/O2 transition by AT terminal

• There are 3 terminals for analog signal : O - L : 0~ 10Vdc analog voltage terminal
O2-L : -10~+10Vdc analog voltage terminal
OI-L : DC4~20mA analog current terminal

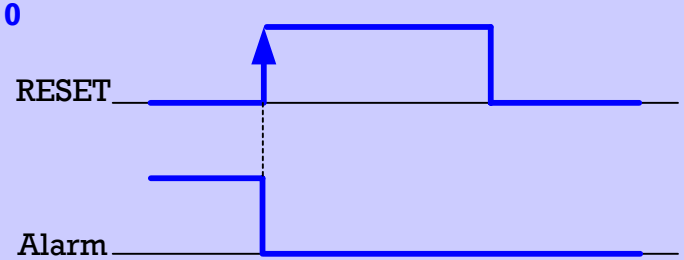
I049	AT signal	validity
0	OFF	O - L
	ON	OI - L
1	OFF	O - L
	ON	O2 - L

✓ intelligent input terminal function (VI)

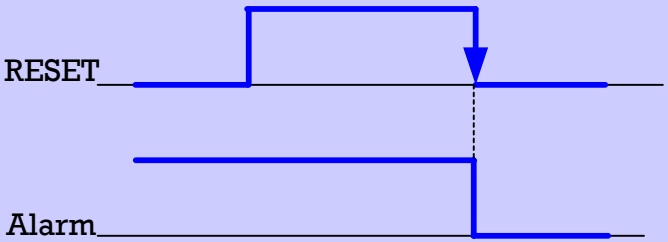
▪ RS (RESET)

Code	Function Name	min.	Max.	Default	Description
I050	Reset selection	0	2	0	0:trip reset at rising edge / No output at normal status 1:trip reset at falling edge / No output at normal status 2:trip reset at rising edge / not valid at normal status
I051	Restart selection after reset clear	0	1	0	0: 0Hz Restart 1: frequency matching restart

I050 = 0

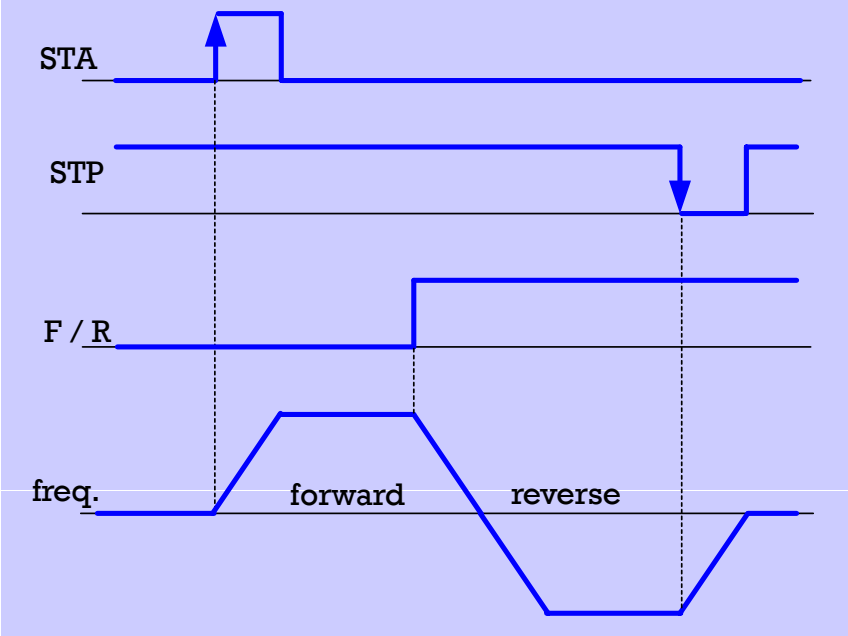


I050 = 1

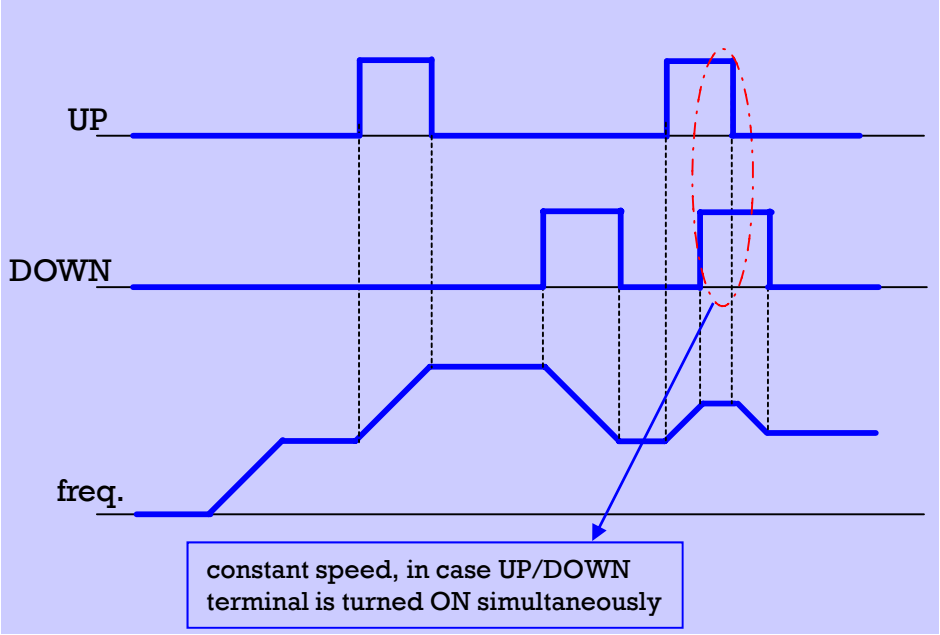


✓ intelligent input terminal function (VII)

▪ 3-wire input function (STA,STP, F/R)



▪ UP/DOWN function (STA,STP, F/R)



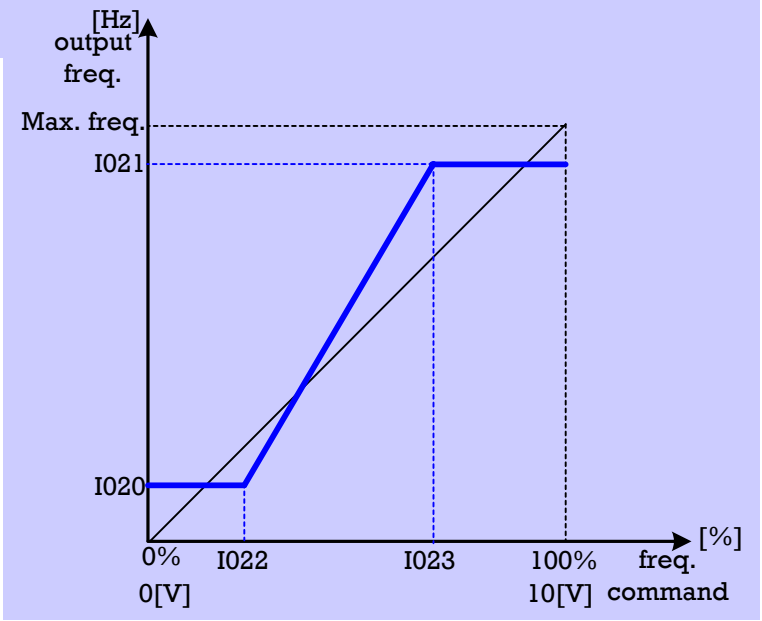
▪ OPE : Compulsion ON switching

- OPE ON : operator is valid for RUN & Frequency command (F010/F011 setting value are not valid)
- OPE OFF : F010 / F011 valid

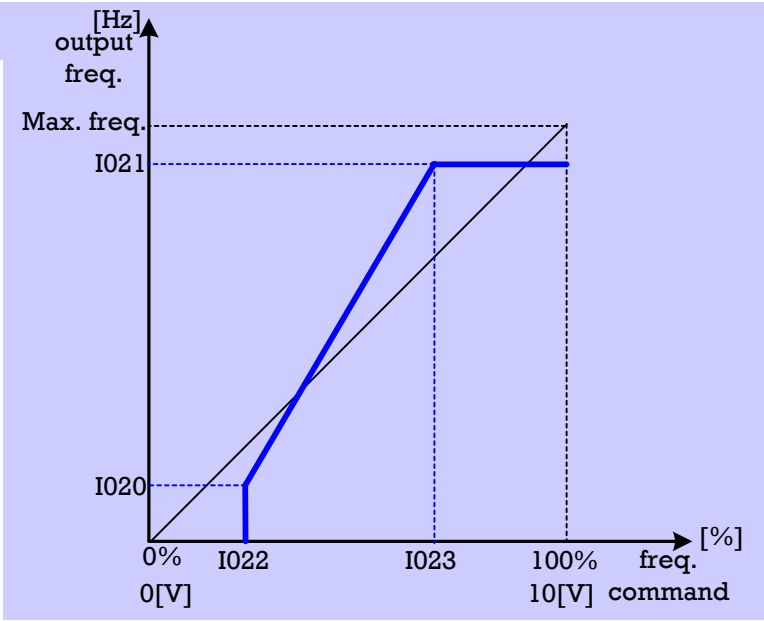
✓ analog voltage / current signal

Code	Function Name	min.	Max.	Default	Description
I018	O terminal span calibration	0	9999	-	
I019	O terminal zero calibration	0	9999	-	
I020	O start frequency	0	400	0.00[Hz]	
I021	O end frequency	0	400	0.00[Hz]	
I022	O start voltage	0	100	0[%]	
I023	O end voltage	0	100	100[%]	
I024	O start selection	0	1	1	0:external signal(I022) start 1:0[Hz] start

I024 = 0



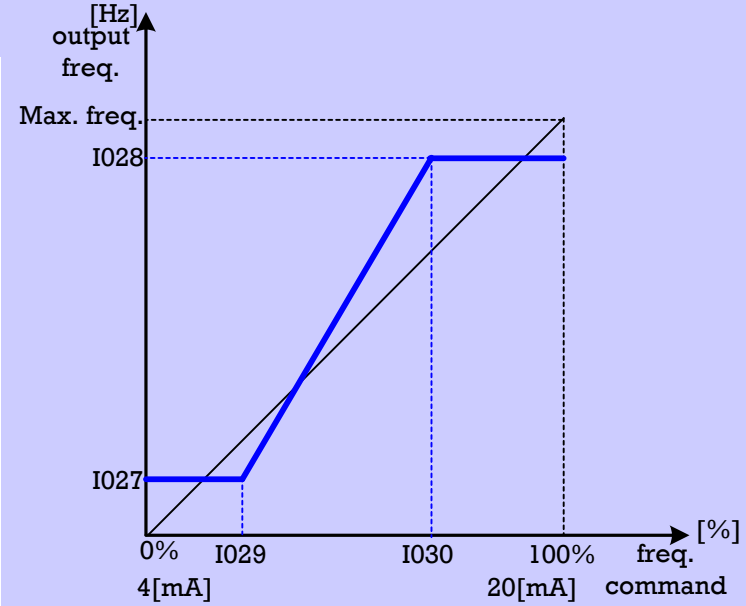
I024 = 1



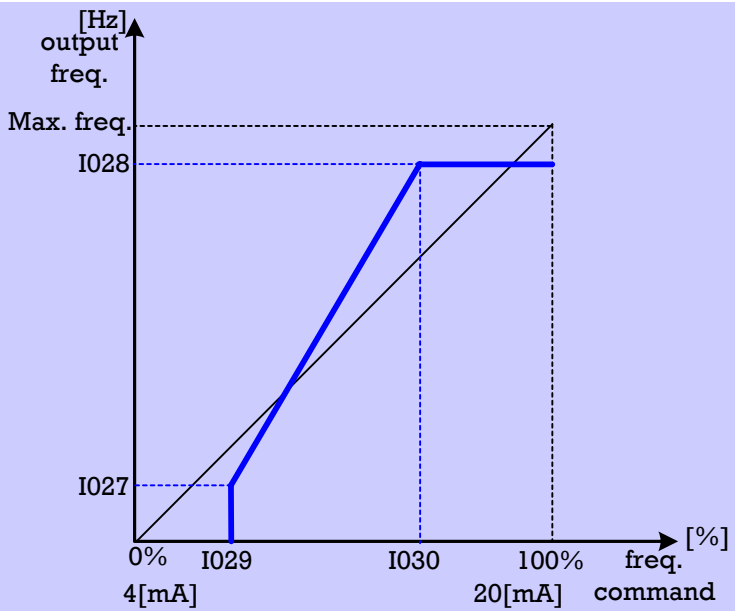
✓ analog voltage / current signal

Code	Function Name	min.	Max.	Default	Description
I025	OI terminal span calibration	0	9999	-	
I026	OI terminal zero calibration	0	9999	-	
I027	OI start frequency	0	400	0.00[Hz]	
I028	OI end frequency	0	400	0.00[Hz]	
I029	OI start voltage	0	100	0[%]	
I030	OI end voltage	0	100	100[%]	
I031	OI start selection	0	1	1	0:external signal(I022) start 1:0[Hz] start

I031 = 0

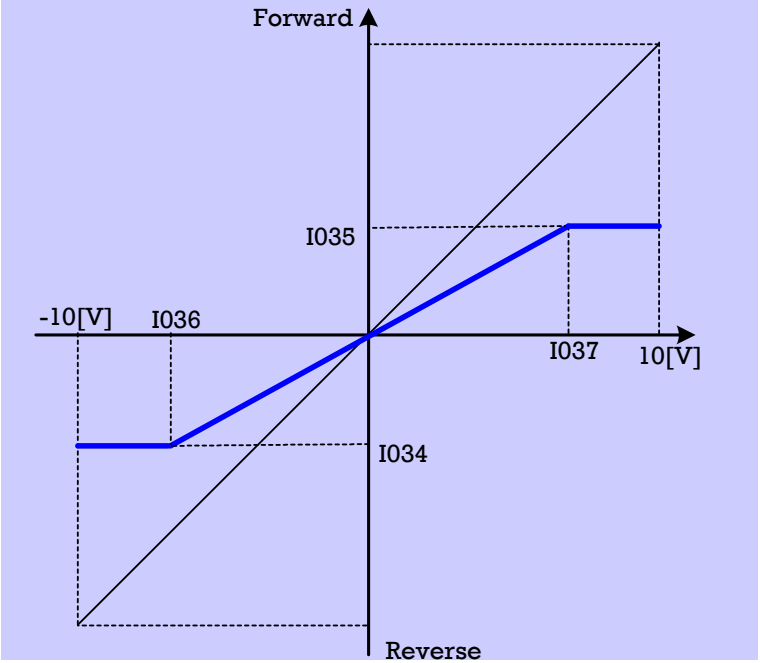


I031 = 1



✓ analog voltage / current signal

Code	Function Name	min.	Max.	Default	Description
I032	O2 terminal span calibration	0	9999	-	
I033	O2 terminal zero calibration	0	9999	-	
I034	O2 start frequency	0	400	0.00[Hz]	
I035	O2 end frequency	0	400	0.00[Hz]	
I036	O2 start voltage	-100	100	0[%]	
I037	O2 end voltage	-100	100	100[%]	
I038	O2 start selection	0	2	0	0:singleness 1:Assistance/irreversible 2:Assistance



6 o- parameter group

➢ o-group is for output terminal function

Code	Function Name	min.	Max.	Default	Default Function
o001	Intelligent output 11 setting	0	23	1	1: Frequency Arrival signal [FA1]
o002	Intelligent output 12 setting	0	23	0	0: Run signal [RUN]
o003	Intelligent output 13 setting	0	23	3	3: Over Load signal [OL]
oI004	Intelligent output 14 setting	0	23	7	7: Over Torque signal [OTQ]

Code	Function Name	min.	Max.	Default	Description
o005 ~ o008	Intelligent output terminal 11~14 contact selection	0	1	0	1:Normally Open [N.O] / a-contact 2:Normally Close [N.C] / b-contact

✓ intelligent output terminal function (I)

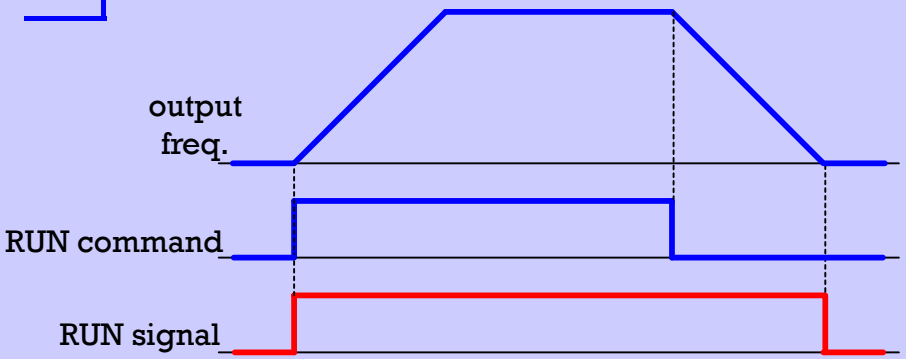
code	setting	Function		Description
o001 ~ o004	0	RUN	RUN signal	
	1	FA1	constant speed arrival signal	
	2	FA2	setting frequency arrival signal	arrival at o018 / o019 setting frequency
	3	OL	overload notice signal	
	4	OD	output deviation for PID control	
	5	ALM	alarm signal	
	6	FA3	arrival signal only setting frequency	
	7	OTQ	over torque signal	
	8	IP	instantaneous power failure signal	
	9	UV	under voltage warning signal	
	10	TRQ	torque limit signal	
	11	RNT	RUN time over signal	
	12	ONT	ON time over signal	
	13	THM	thermal warning signal	
	14	BRK	brake open signal	
	15	BER	brake error signal	

✓ intelligent output terminal function (II)

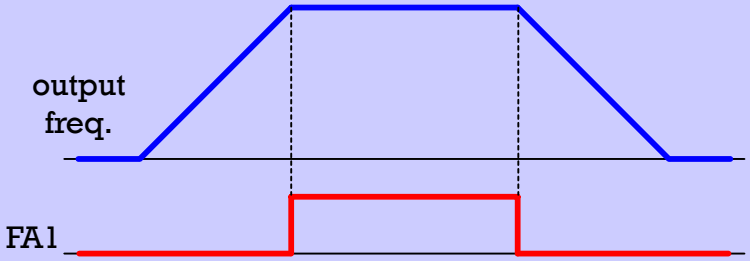
code	setting	Function		Description
o001 ~ o004	16	ZS	zero speed detect signal	
	17	DSE	speed deviation excessive	
	18	POK	positioning completion	
	19	FA4	arrival signal for set frequency 2 over	
	20	FA5	arrival signal for set frequency 2	
	21	OL2	overload advance notice signal 2	
	22	IPALM	instantaneous power failure alarm signal	
	23	UVALM	under voltage alarm signal	

✓ intelligent output terminal function (III)

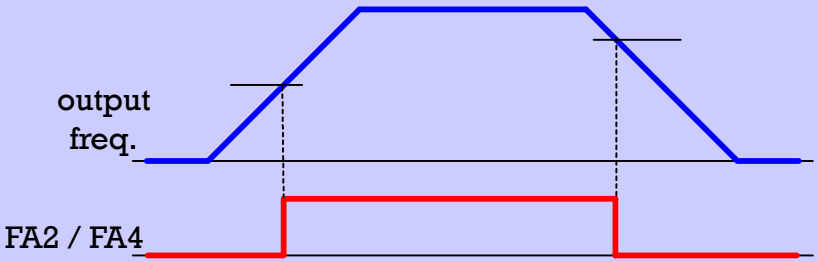
RUN



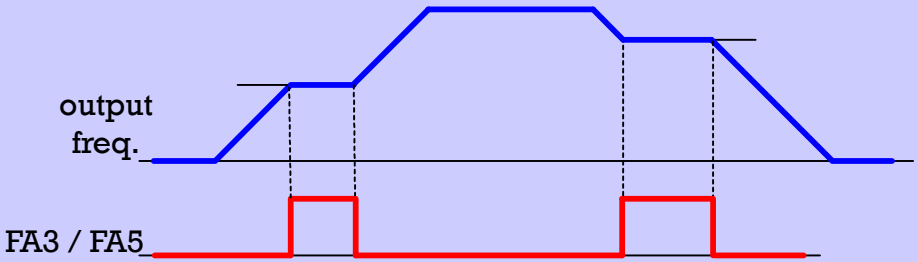
FA1



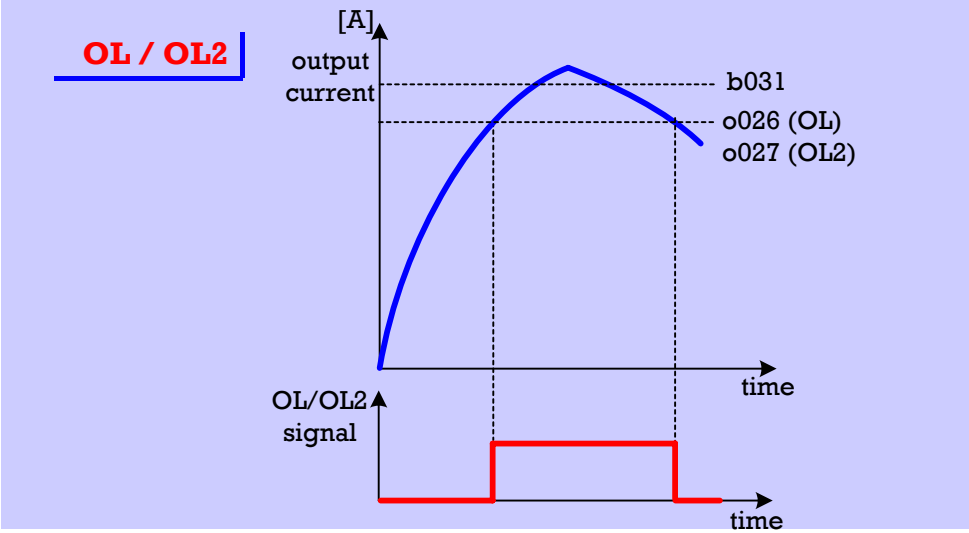
FA2 / FA4



FA3 / FA5



✓ intelligent output terminal function (IV)



▪ OD (Maximum PID Deviation Level)

Code	Function Name	min.	Max.	Default	Description
o029	PID deviation level setting	0	100	3[%]	PID control error range setting between target value and feedback value

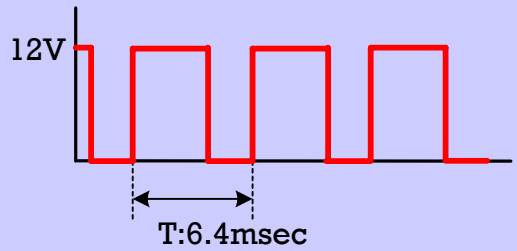
✓ Monitoring output terminal (FM, AM, AMI)

1) FM terminal

- FM terminal output is PWM (Pulse Width Modulation) waveform.
- the maximum value of FM is 12V.
- FM terminal is used to run a moving coil type indicator.

code	Function Name	min.	Max.	set	Description	Full scale range
o009	FM output terminal signal selection	0	7	0	Fo:output frequency	0~max. frequency [Hz]
				1	Io:output current	0~200 [%]
				2	To:output torque	0~200 [%]
				3	Fo.D:Digital output frequency	0~max. frequency [Hz]
				4	Vo:output voltage	0~100 [%]
				5	Pin:input power	0~200 [%]
				6	Load:the rate of thermal load	0~100 [%]
				7	Flad:LAD frequency	0~max. frequency [Hz]

FM terminal (PWM output)



✓ Monitoring output terminal (FM, AM, AMI)

2) AM / AMI terminals

- AM terminal output is 0~10Vdc.
- AMI terminal output is 4~20mA.

code	Function Name	min.	Max.	set	Description	Full scale range
o012	AM output terminal signal selection	0	6	0	Fo:output frequency	0~max. frequency [Hz]
				1	Io:output current	0~200 [%]
				2	To:output torque	0~200 [%]
				3	Vo:output voltage	0~100 [%]
				4	Pin:input power	0~200 [%]
				5	Load:the rate of thermal load	0~100 [%]
				6	Flad:LAD frequency	0~max. frequency [Hz]
o015	AMI output terminal signal selection	0	6	0	Fo:output frequency	0~max. frequency [Hz]
				1	Io:output current	0~200 [%]
				2	To:output torque	0~200 [%]
				3	Vo:output voltage	0~100 [%]
				4	Pin:input power	0~200 [%]
				5	Load:the rate of thermal load	0~100 [%]
				6	Flad:LAD frequency	0~max. frequency [Hz]

7 c- parameter group

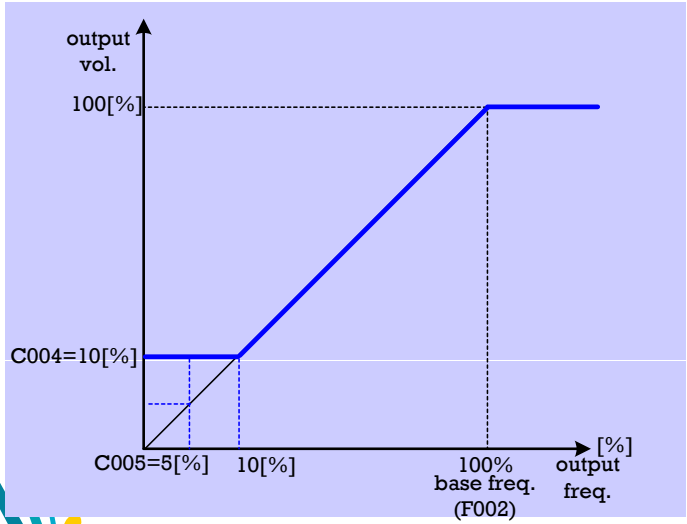
➢ C-group is for advanced control function.

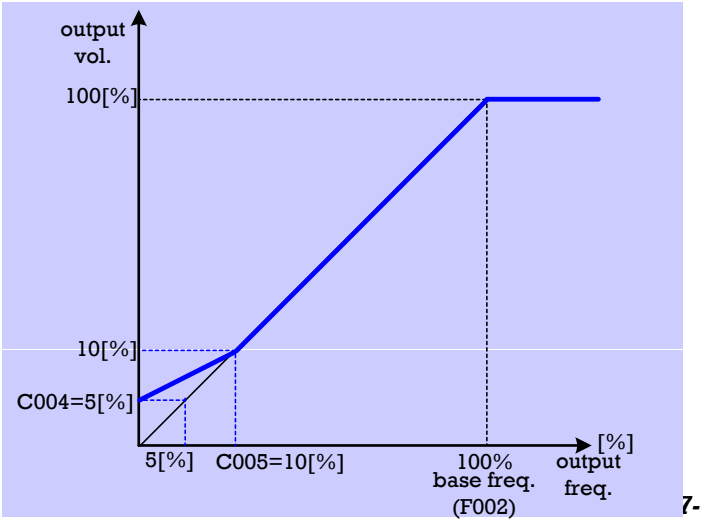
▪ V/F stability adjust function

Code	Function Name	min.	Max.	Default	Description
C002	V/F stability adjust	0	300	100[%]	In case motor hunting occurs, adjust C002.

▪ Torque boost function

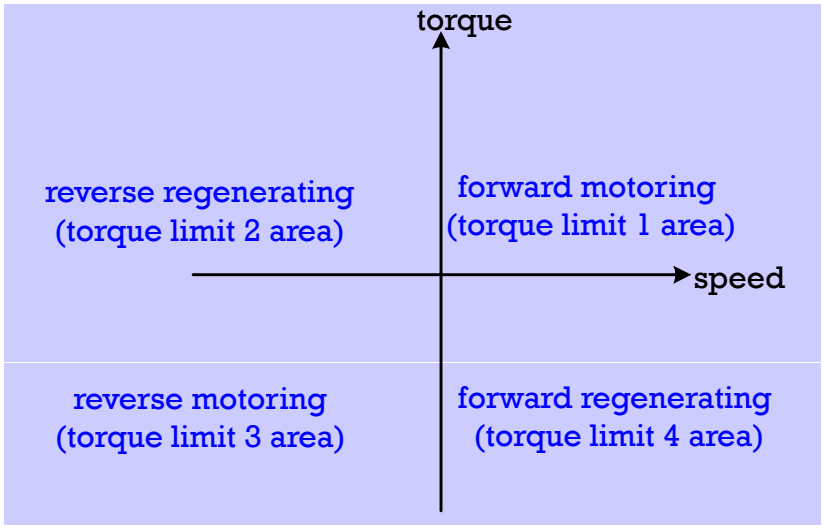
Code	Function Name	min.	Max.	Default	Default Function
C003	torque boost selection	0	1	0	0:manual torque boost 1:automatic torque boost
C004	manual torque boost voltage	0.0	20.0	1.0[%]	manual torque boost voltage setting
C005	manual torque boost freq.	0.0	50.0	5.0[%]	manual torque boost frequency setting





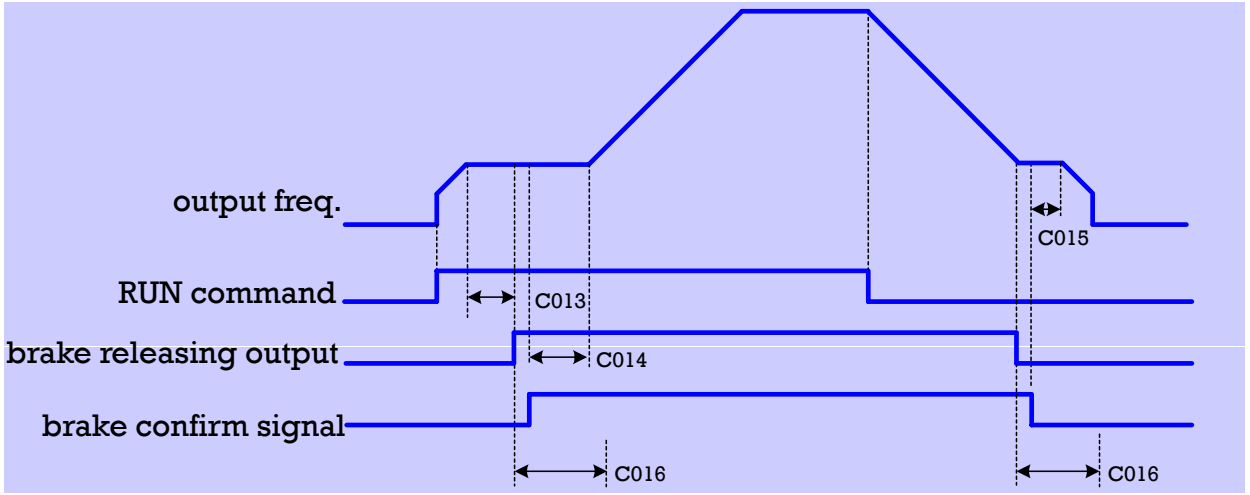
▪ Torque limit function

Code	Function Name	min.	Max.	Default	Default Function
C006	torque limit selection	0	4	0	0:individual setting 1:terminal 2:analog input 3:OPT1 4:OPT2
C007	torque limit 1	0	200	200[%]	forward motoring
C008	torque limit 2	0	200	200[%]	reverse regenerating
C009	torque limit 3	0	200	200[%]	reverse motoring
C010	torque limit 4	0	200	200[%]	forward regenerating
C011	torque LAD stop selection	0	1	0	0:invalid 1:valid



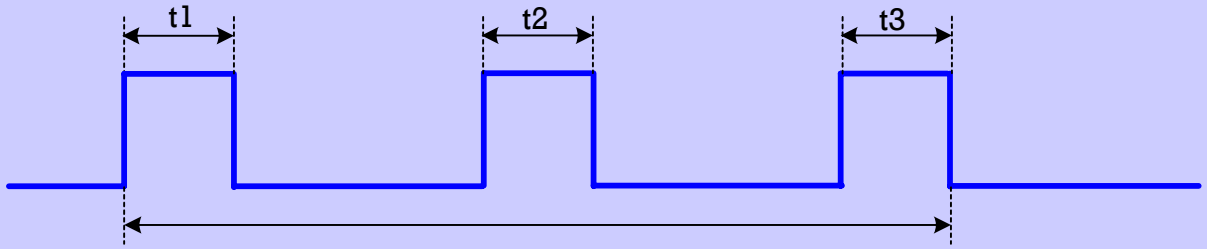
▪ External Brake function

Code	Function Name	min.	Max.	Default	Default Function
C012	brake control function selection	0	1	0	0:invalid 1:validind
C013	waiting time for braking releasing confirmation	0.00	5.00	0.00	set the time when output current arrives at releasing current after releasing freq. arrival
C014	waiting time for acceleration	0.00	5.00	0.00	set the mechanical delay time to release braking from releasing signal outputting
C015	waiting time for stop	0.00	5.00	0.00	set the mechanical delay time to stop braking from releasing signal off
C016	waiting time for stop signal confirmation	0.00	5.00	0.00	set longer time to input releasing stop signal which brakes outputs from releasing signal
C017	releasing freq.	0.00	40.00	0.00	set frequency to output braking releasing signal
C018	releasing current	0.0	2.0	1.0	set output current to permit braking releasing



▪ Dynamic Braking function

Code	Function Name	min.	Max.	Default	Default Function
C019	BRD operating selection	0	2	0	0:invalid 1: operate except deceleration 2: always BRD operate
C020	BRD ON level	-	-	-	200V class ; 330 ~ 380V 400V class ; 660 ~ 760V
C021	BRD ratio	0.0	100.0	0.0[%]	



$$\text{BRD ratio} = \frac{(t1 + t2 + t3)}{100\text{sec}} \times 100$$

▪ PID control function

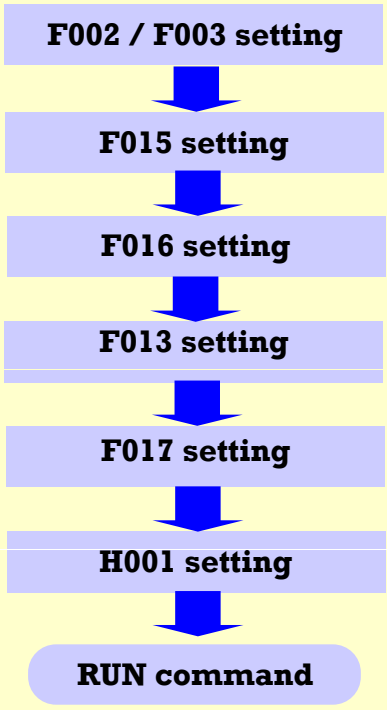
Code	Function Name	min.	Max.	Default	Default Function
C022	PID control selection	0	2	0	0:invalid 1:valid increase frequency at (target >feedback) 2:valid decrease frequency at (target > feedback)
C023	PID controller P-gain setting	0.0	5.0	2.0	
C024	PID controller I-gain setting	0	3600	1[sec]	
C025	PID controller D-gain setting	0.0	100.0	0.0[sec]	
C026	feedback value gain setting	0.00	99.99	1.00	
C027	feedback source selection	0	1	0	0:feedback source is analog current (4~20mA) 1:feedback source is analog voltage (0~10V)
C029	deviation level setting	0.0	100.0	3.0[%]	

8 H- parameter group

- H-group is for setting the motor parameter

Code	Function Name	min.	Max.	Default	Default Function
H001	auto-tuning selection	0	3	0	0:invalid 1:valid (Not rotate mode) 2:valid (motor rotating)
H002	motor parameter selection	0	2	0	0:factory setting parameter (HYUNDAI motor) 1:auto-tuning parameter 2:On-Line auto-tuning ON

setting for auto-tuning



Code	Function Name	Description
H003	Factory setting value for motor parameter (HYUNDAI standard motor parameter)	stator resistor (R1) setting
H004		rotor resistor (R2) setting
H005		leakage inductance (LI) setting
H006		no load (Io) current setting
H007		inertia moment (J) setting
H008		motor inductance (L) setting
H009	Auto-tuning data for motor parameter	stator resistor (R1) setting
H010		rotor resistor (R2) setting
H011		leakage inductance (LI) setting
H012		no load (Io) current setting
H013		inertia moment (J) setting
H014		motor inductance (L) setting