

HYUNDAI ELEVATOR CO., LTD.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	------------------------------	---------------------------------------

HIVD900 MANUAL

HYUNDAI ELEVATOR CO., LTD.

R&D CENTER

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	------------------------------	---------------------------------------

Important Safety Information

The HIVD900 inverter is designed for passenger and goods lifts. The manufacturer shall not be liable for damage resulted from use in application of which this drive is not intended ; the user alone shall bear the risk in such cases.

The HIVD900 inverter must be operated in closed space.

It is forbidden to operate this unit in explosive environment.

General Safety Instruction

This manual must be accessible at all times to those concerned with the operation and maintenance of the drive unit.

Only suitable qualified personnel is allowed to install, start-up for the first time, repair and service this unit.

Approved rules of safety at work and expertise must be observed in addition to those contained in the operating instructions and the accident prevention regulations applying in the user country and at the site. Non-observance of any such rules and regulations may result in serious injury, damage to property and the loss of accident insurance entitlement. Serious danger may be created by unauthorized removal of housings, dismantling, faulty repairs of conversions and modifications.

Connecting the Electrical System

The HIVD900 Inverter may only be operated in closed space and on condition that the appropriate safety measure are observed.

All electrical work must be carried out with the equipment disconnected and by suitably qualified personnel (qualified electricians or persons suitably instructed in electrical work).

Before driving on the motor for the first time, make sure that an efficient emergency CUT-OUT unit is in easy reach.

Rotating parts present a risk of injury and make sure during first start up that other people are at a safe distance away from the motor or parts of machinery driven by it.

During first start up the motor may behave in an unexpected manner, for example due to wrong parameter. Danger may be caused by rotation in an unintended direction, excessive speed or jerky motion. Such fault may cause damage to the driven parts of machinery.

Service and maintenance work may only be carried out by suitably qualified personnel.

Before maintenance work, power and control voltage connections must be disconnected.

You endanger your life by touching energized parting the controller, the main and output terminal, filter, motor connection terminal.

Before opening up the housing of the HIVD900 Inverter, disconnect the main connection at all phase and wait for at least twenty minute to allow the intermediate D.C circuit to discharge itself.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
---	------------------------------	---

< INDEX >

1. DESCRIPTION OF TERMINAL FUNCTIONS..... 1

 1.1 INPUT TERMINALS.....1

 1.1.1 900G, 900GS(Induction Motor)1

 1.1.2 900SS, 900GT(Synchronous Motor)2

 1.2 OUTPUT TERMINALS.....3

 1.2.1 900G, 900GS(Induction Motor)3

 1.2.2 900SS, 900GT(Synchronous Motor)4

2. HHT(Hand Handle Terminal) OPERATION..... 5

 2.1 HHT PANEL FUNCTION.....5

 2.2 HHT MENU5

 2.3 INITIAL LCD DISPLAY6

 2.4 MODE SELECTION7

 2.5 DATA SETTING IN PROGRAM MODE.....7

 2.6 DATA INITIALIZATION8

 2.7 DATA AUTO-LOAD9

 2.8 CHANGED DATA ALARM.....10

3. PARAMETER.....11

 3.1 MONITOR.....11

 3.1.1 BASIC.....11

 3.1.2 I/O12

 3.1.3 ERROR12

 3.1.4 I/O12

 3.2 PROGRAM.....13

 3.2.1 CONTROL13

 3.2.1.1 STVF 1 & 213

 3.2.1.2 STVF 3 & 5, FI 4.....14

 3.2.2 INTERFACE15

 3.2.2.1 STVF 1 & 215

 3.2.2.2 STVF 3 & 5, FI 4.....16

 3.2.3 MOTOR and FACTORY.....17

 3.2.3.1 Induction Motor17

 3.2.3.2 Synchronous Motor18

4. DESCRIPTION OF PARAMETER19

 4.1 MONITOR19

 4.1.1 BASIC19

 4.1.1.1.HYUNDAI ELEVATOR19

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

4.1.1.2 SPEED FBK	19
4.1.1.3 SPEED REF	19
4.1.1.4 CURRENT	19
4.1.1.5 VOLTAGE	19
4.1.1.6 DC LINK VOLT	19
4.1.1.7 MOTOR TEMP	19
4.1.1.8 FLOOR	19
4.1.1.9 CALL	20
4.1.1.10 MODE	20
4.1.1.11 INITIAL	20
4.1.1.12 Min.Dec.Length	20
4.1.1.13 Lng.Dec.Length	20
4.1.1.14 TORQUE BIAS	20
4.1.1.15 Real Length	20
4.1.1.16 DPRAM	20
4.1.2 I/O	21
4.1.3 ERROR	22
4.1.3.1 ERROR LIST	22
4.1.3.2 TROUBLESHOOTING FLOW CHART	23
4.1.4 FLOOR DATA	31
4.2 PROGRAM	31
4.2.1 CONTROL	31
4.2.1.1 EL SPEED	31
4.2.1.2 MAX RPM	31
4.2.1.3 LONG RUN RPM	31
4.2.1.4 INSPECT RPM	31
4.2.1.5 CREEP RPM	31
4.2.1.6 RELEVEL RPM	31
4.2.1.7 DECEL POINT2	31
4.2.1.8 S-CRUE TIME	31
4.2.1.9 DYNAMIC PRE T	32
4.2.1.10 TORQUE BIAS SELECTION	32
4.2.1.11 TORQUE BIAS LEVEL1, LEVEL2 SETTING	32
4.2.1.12 ANALOG TORQUE BIAS SETTING	35
4.2.1.13 DIGITAL INTERFACE SETTING(DIG. TQ BIAS)	36
4.2.1.14 MIN LENGTH	36
4.2.1.15 MODE	36
4.2.1.16 CALL FLOOR	36
4.2.1.17 MAX FLOOR	36
4.2.1.18 RUN OPEN LEN.	37
4.2.1.19 FWD DIRECTION	37

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

4.2.1.20 DPRAM TQ USE.....	37
4.2.1.21 15MM OFFSET.	37
4.2.1.22 DECEL MODE.	37
4.2.2 INTERFACE.....	38
4.2.2.1 ZERO SPEED LEVEL.....	38
4.2.2.2 SPEED DISAGREEMENT LEVEL.	38
4.2.2.3 TQ ANS LEVEL.....	38
4.2.2.4 ANALOG OUTPUT 1~4 SELECTION.	38
4.2.2.5 ANALOG OUTPUT 1~4 RANGE SETTING.....	38
4.2.3 MOTOR.....	39
4.2.3.1 INVERTER SELECTION.....	39
4.2.3.2 MOTOR SELECTION.....	39
4.2.3.3 ENCODER PULSE SETTING.	39
4.2.3.4 MOTOR THERMAL SENSOR SELECTION (INDUCTION MOTOR).	39
4.2.3.5 MOTOR U ANGLE SETTING (SYNCHRONOUS MOTOR).....	39
5. DESCRIPTION OF FUNCTION.....	41
5.1 STVF 1 & 2.....	41
5.1.1 SHORT RUN.....	42
5.1.2 LONG RUN.....	42
5.1.3 INSPECTION OPERATION.....	43
5.1.4 INITIAL OPERATION.....	43
5.1.5 THE OPERATION IS CHANGED FROM ACCELERATION TO DECELERATION.....	44
5.1.6 EMERGENCY STOP.....	44
5.1.7 FWD OR REV IS OFF WHEN ELEVATOR.....	45
5.2 STVF 3 & 5.....	45
5.2.1 SPEED PATTERN.....	45
APPENDIX A. SYSTEM BLOCK DIAGRAM.....	47
A-1. Induction Motor.....	47
A-2. Synchronous Motor.....	48
APPENDIX B. MOTOR PARAMETER.....	49
B-1. Induction Motor.....	49
B-2. Synchronous Motor.....	50
APPENDIX C. PROGRAM DOWNLOAD METHOD.....	51
APPENDIX D. INVERTER BOARD TYPE.....	57

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

1. DESCRIPTION OF TERMINAL FUNCTIONS

1.1 INPUT TERMINALS

1.1.1 900G, 900GS(Induction Motor)

ITEM	LABEL	NAME	DESCRIPTION		REMARK
			STVF 1&2	STVF 3&5, FI 4	
Control Input Contact	CM	Input Common	Common terminal of contact input terminals		CN12
	UP	Up operation	ON : Up, OFF : Stop		
	DN	Down operation	ON : Down, OFF : Stop		
	RST	ALARM RESET	External input of Reset signal		
	SP1	Spare1 input	Spare1 input		
	LD	PLDL sensor input	Elevator going down is forced to stop if this signal is input		
	INIC	Initial operation	This signal is ON when the elevator operates initial mode		
	HOU	Upper vane sensor	Input signal of upper vane sensor		
	HOD	Lower vane sensor	Input signal of lower vane sensor		
	ITH	Inverter thermal sensor	Input signal of inverter thermal sensor		
	LU(X1)	Selective input 1	Multi-purpose control input selection - Multi-speed selection, - DI Torque input, - Torque Bias switch -Pre-Excitement signal, - Speed limit switch	PLUL sensor input	
	MU(X2)	Selective input 2		Door zone sensor input	
	HU(X3)	Selective input 3		PLUH sensor input	
	HD(X4)	Selective input 4		PLDH sensor input	
	MD(X5)	Selective input 5		Spare1 input	
AT(X6)	Selective input 6	Auto operation signal			
Thermistor Input	THI	Motor Thermistor Input Terminal	Terminals for motor thermistor		TB1
	THC				
Encoder input	PGM	Encoder Common	Ground common terminal of PGP, PA, PB		TB2
	PGP	Encoder source	Output (+15Vdc)		
	PA	Encoder A phase	Detection of the motor speed, Detection Terminal of the rotation direction		
	PB	Encoder B phase			

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

1.1.2 900SS, 900GT(Synchronous Motor)

ITEM	LABEL	NAME	DESCRIPTION		REMARK
			STVF 1&2	STVF 3&5, FI 4	
Control Input Contact	CM	Input Common	Common terminal of contact input terminals		CN12
	UP	Up operation	ON : Up, OFF : Stop		
	DN	Down operation	ON : Up, OFF : Stop		
	RST	ALARM RESET	External input of Reset signal		
	SP1	Spare1 input	Spare1 input		
	LD	PLDL sensor input	Elevator going down is forced to stop if this signal is input		
	INIC	Initial operation	This signal is ON when the elevator operates initial mode		
	HOU	Upper vane sensor	Input signal of upper vane sensor		
	HOD	Lower vane sensor	Input signal of lower vane sensor		
	ITH	Inverter thermal sensor	Input signal of inverter thermal sensor		
	LU(X1)	Selective input 1	Multi-purpose control input selection - Multi-speed selection, - DI Torque input, - Torque Bias switch - Pre-Excitement signal, - Speed limit switch	PLUL sensor input	
	MU(X2)	Selective input 2		Door zone sensor input	
	HU(X3)	Selective input 3		PLUH sensor input	
	HD(X4)	Selective input 4		PLDH sensor input	
	MD(X5)	Selective input 5		Spare1 input	
	AT(X6)	Selective input 6		Auto operation signal	
Encoder Input	PGM	Encoder Common	Encoder Common of PGP, AP, BP etc..		CN15
	PGP	Encoder Source	Source (+5Vdc)		
	AP	Encoder A Phase	Detection of motor speed and direction		
	BP	Encoder B Phase			
	UP	Encoder U Phase	Detection of motor mechanical angle		
	VP	Encoder V Phase			
	WP	Encoder W Phase			
Load Detectio n	LD1	Load Sensor Input	Input terminal of sensor signal to compensate load		TB1
	LD2	Load Sensor Common			

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

1.2 OUTPUT TERMINALS**1.2.1 900G, 900GS(Induction Motor)**

ITEM	LABEL	NAME	DESCRIPTION		
			STVF 1&2	STVF 3&5, FI 4	
Control Output Contact	CME	Transistor Output Common	Common terminal for Y1, Y2, and Y3		
	Y1	Open collector output 1	Zero Speed	Run	Allowable Load : 27Vdc 20mA (MAX)
	Y2	Open collector output 2	Speed Agree	Zero Speed	
	Y3	Open collector output 3	Run	Torque Answer	
	30B	INV. Error Output	▶ 30B-30C OPEN : Fault ▶ 30B-30C CLOSE : Normal		Contact Capacity : 220Vac 500mA
	30C	INV. Error Common			
Analog Output (Option Bd)	GND	Analog Common	Inverter inspection or test using Optional Board		
	AO1	Analog output 1			
	AO2	Analog output 2			
	AO3	Analog output 3			
	AO4	Analog output 4			

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

1.2.2 900SS, 900GT(Synchronous Motor)

ITEM	LABEL	NAME	DESCRIPTION		
			STVF 1&2		STVF 3&5, FI 4
Control Output Contact	CME	Transistor Output Common	Common terminal for Y1, Y2, and Y3		
	Y1	Open collector output 1	Zero Speed	Run	Allowable Load : 27Vdc 20mA (MAX)
	Y2	Open collector output 2	Speed Agree	Zero Speed	
	Y3	Open collector output 3	Run	Torque Answer	
	30B	INV. Error Output	▶ 30B-30C OPEN : Fault ▶ 30B-30C CLOSE : Normal		Contact Capacity : 220Vac 500mA
	30C	INV. Error Common			
	CM	Input Common	Common for EA and EB		Allowable Load: 27Vdc, 15mA max. Max. Frequency: 100kHz
	EA	Extend encoder output A phase	Terminal of extend encoder output A phase		
	EB	Extend encoder output B phase	Terminal of extend encoder output B phase		
Analog Output (Option Bd)	GND	Analog Common	Inverter inspection or test using Optional Board		
	AO1	Analog output 1			
	AO2	Analog output 2			
	AO3	Analog output 3			
	AO4	Analog output 4			

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	-------------------------------------	---------------------------------------

2. HHT(Hand Handle Terminal) OPERATION

2.1 HHT PANEL FUNCTION

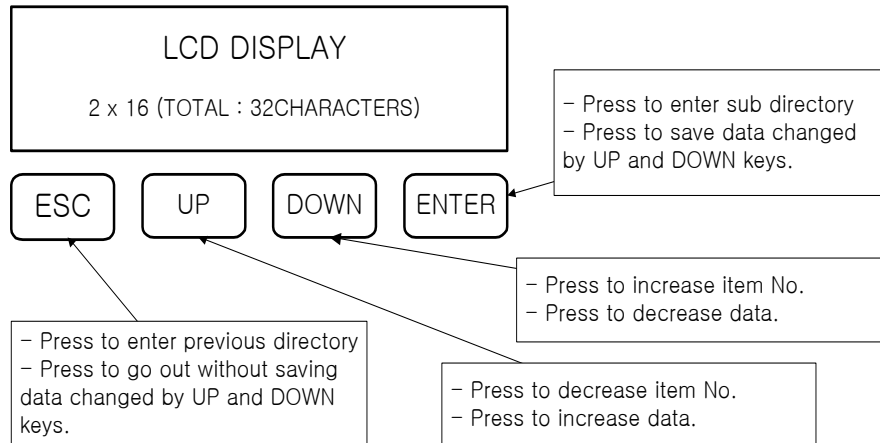


Figure 2.1 HHT panel

2.2 HHT MENU

HIVD900 HHT Menu shown in Figure 2.2 is tree structure based. Root directory has monitor and program modes. Monitor mode has basic, I/O, error and floor data modes. Program mode has control, interface, motor, and factory modes. Each mode in monitor and program has its own menu according to the character.

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

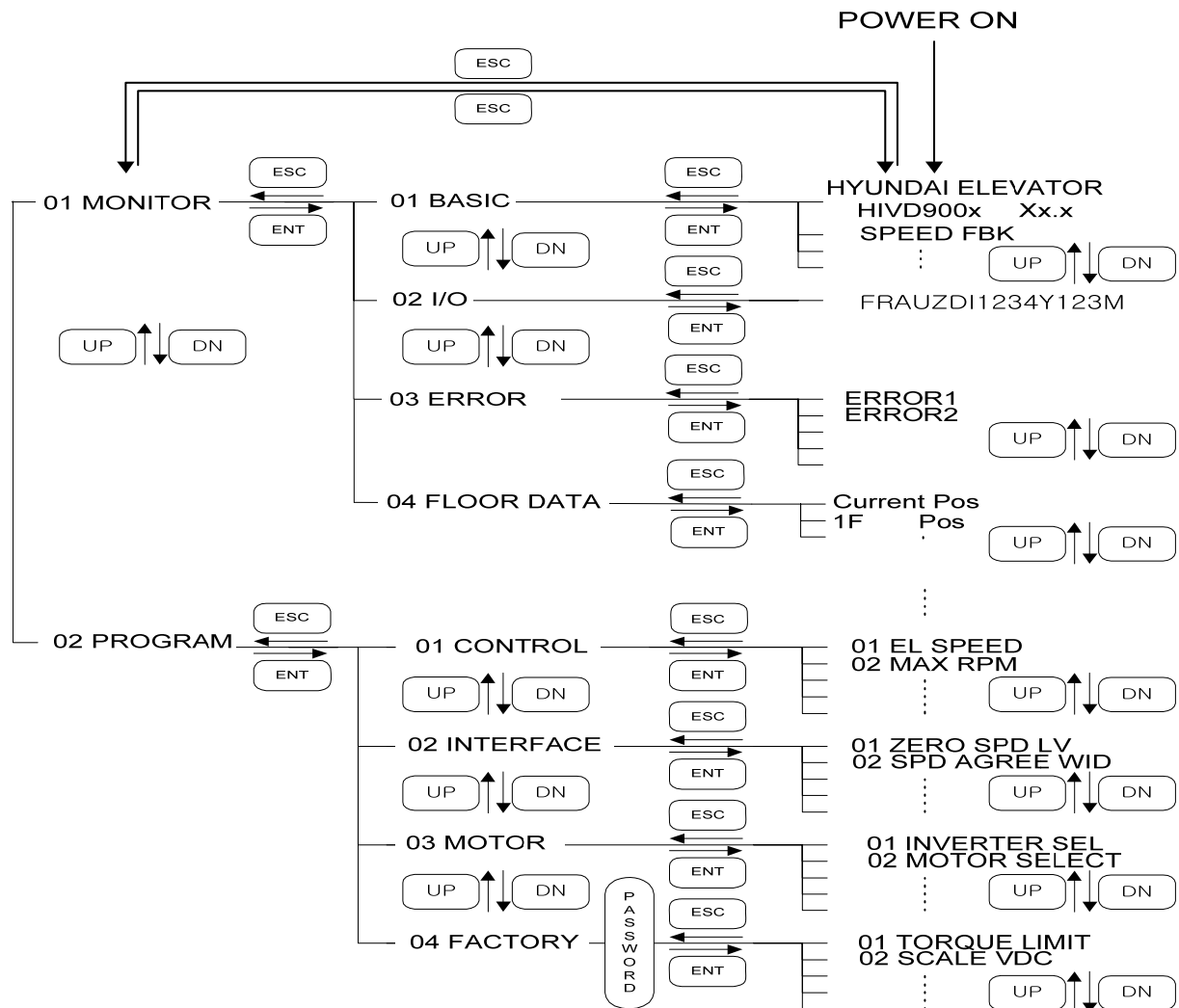


Figure 2.2 HHT menu tree structure

2.3 INITIAL LCD DISPLAY

When control power is on and any fault doesn't happen, LCD displays speed feedback like Figure 2.3 Initial LCD Display.

H	Y	U	N	D	A	I		E	L	E	V	A	T	O	R
H	I	V	D	9	0	0	x		X	x	.	x			

Figure 2.3 LCD initial display

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

2.4 MODE SELECTION

Cursor in LCD display indicates a present mode. When you enter a sub menu, press ENTER key as shown in Figure 2.4.

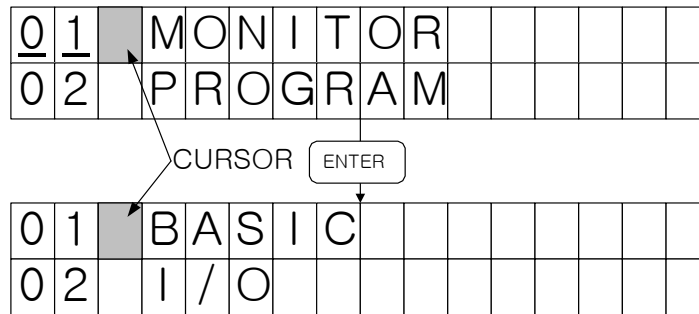


Figure 2.4 Moving to a selected sub menu

When you come out to a previously selected menu, press ESC key as shown in Figure 2.5.



Figure 2.5 Moving to a previously selected menu

The menu in same directory can be selected by pressing UP or DOWN key.

2.5 DATA SETTING IN PROGRAM MODE

After selecting a menu of program mode with UP and DOWN keys, press ENTER key to enter a data setting mode, change data as you need, and press ENTER key to save. Or press ESC key in order to escape without saving.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	------------------------------	---------------------------------------

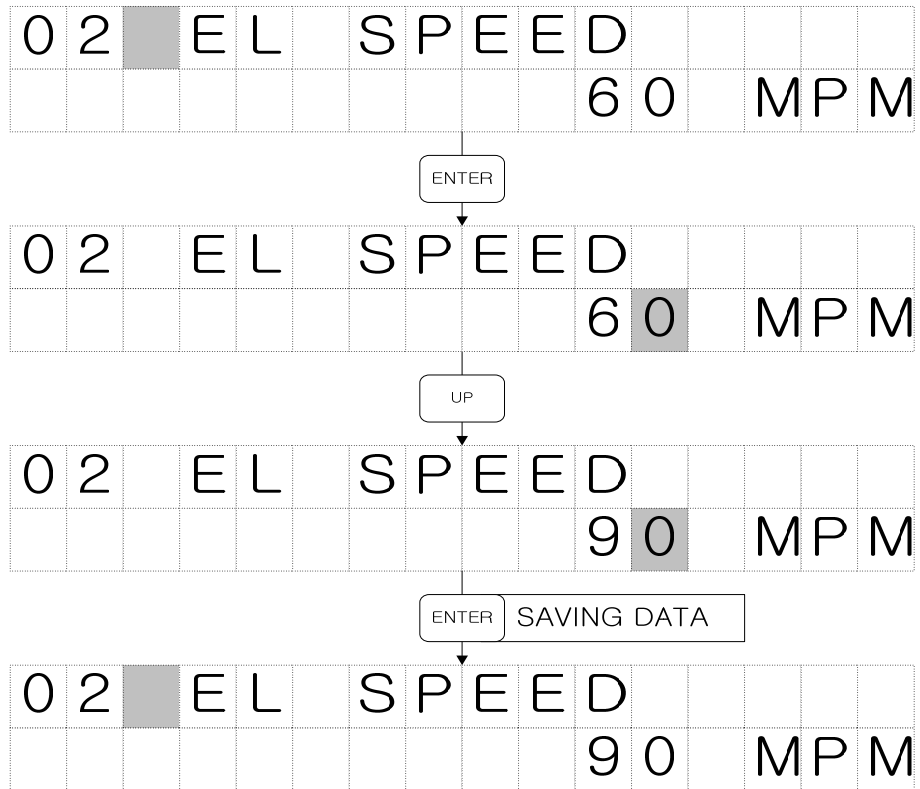


Figure 2.6 Data setting in program menu

2.6 DATA INITIALIZATION

2.6.1 The data initialization

When all of the data initialization need, select PROGRAM/FACTORY/INIT EEPROM and set ON as shown in Figure 2.7. And then all of the data in HHT are re-installed as default data.

2.6.2 Error initialization

When the error initialization need, select PROGRAM/FACTORY/ERROR ERASE and set '1'. And then the all of the error messages in MONITOR/ERROR are erased.

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

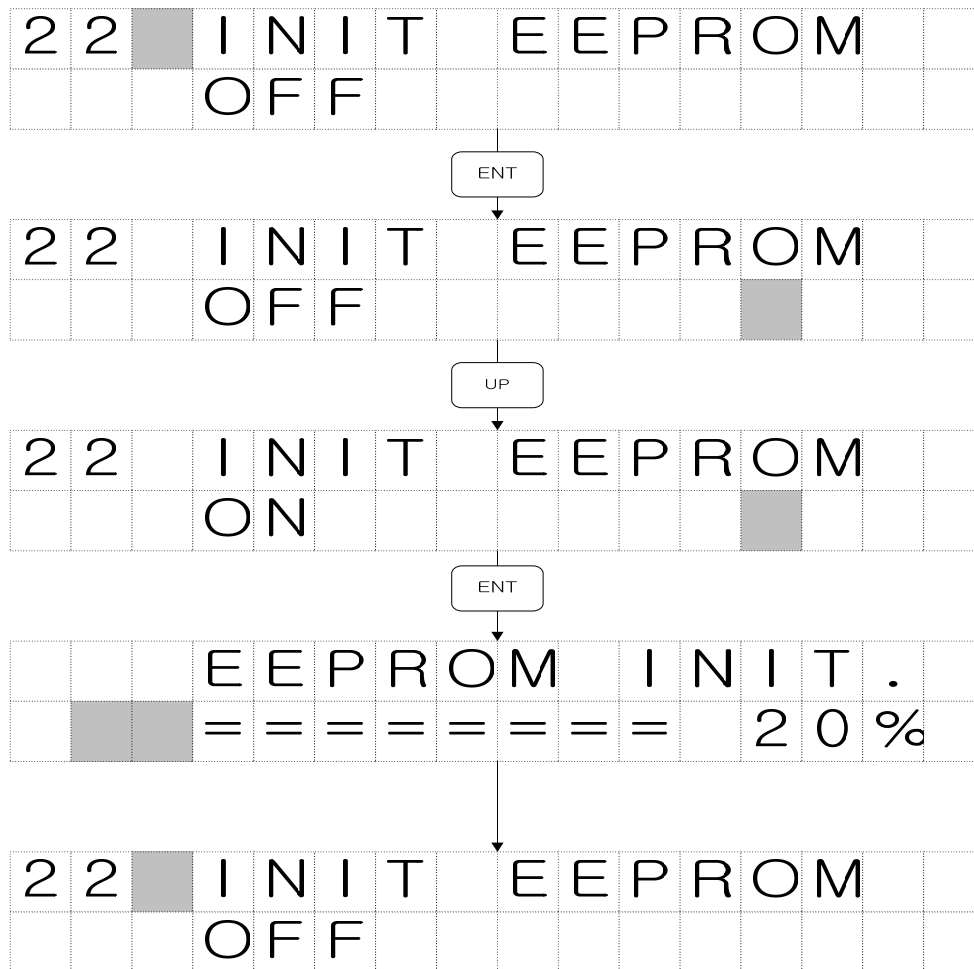


Figure 2.7 Initialize all of the data

2.7 DATA AUTO-LOAD

→ AUTO-LOAD1

The SCALE IS and O.C LEVEL in PROGRAM/04.FACTORY are set automatically by selecting the inverter capacity in PROGRAM/03.MOTOR/01.INVERTER SEL mode.

→ AUTO-LOAD2

All the data in PROGRAM/02.MOTOR and EL SPEED, MAX RPM, LONGRUN RPM, INSPECT RPM, CREEP RPM, RELEVEL RPM, DECEL POINT2 in PRPROGRAM/01.CONTROL are set as standard value automatically by selecting motor in PROGRAM /03_MOTOR/02_MOTOR_SELECT. Also the O.S LEVEL in PROGRAM/FACTORY is set as default value automatically by selecting motor in PROGRAM/03.MOTOR/02.MOTOR SELECT.

※ When you try to change the value of the 'Control' and 'Interface', you must change that of the '02 MOTOR SELECT' in advance and then the others are to be changed. ※

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

2.8 CHANGED DATA ALARM

When the data of PROGRAM mode is changed from standard value, the LCD display “*” in the 3rd column of the first line.

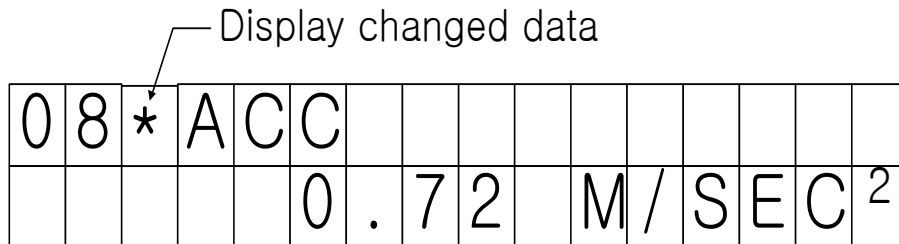


Figure 2.8 Changed data display

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

3. PARAMETER

3.1 MONITOR

3.1.1 BASIC

ITEM	FUNCTION NAME	DATA RANGE	UNIT	DETAILS (Chap. 4)
01 BASIC	01 HYUNDAI ELEVATOR	Program version		4.1.1.1
	02 SPEED FBK	0.0 ~ 2400	RPM	4.1.1.2
	03 SPEED REF	0.0 ~ 2400	RPM	4.1.1.3
	04 CURRENT	-500 ~ 500	A	4.1.1.4
	05 VOLTAGE	-500 ~ 500	V	4.1.1.5
	06 DC LINK VOLT	0.0 ~ 1000	Vdc	4.1.1.6
	07 MOTOR TEMP	-200 ~ 200	℃	4.1.1.7
	08 FLOOR	-100 ~ 100	F	4.1.1.8
	09 CALL	-100 ~ 100	F	4.1.1.9
	10 MODE	-100 ~ 100		4.1.1.10
	11 INITIAL	-100 ~ 100		4.1.1.11
	12 Min.Dec.Length	0.0 ~ 10000	mm	4.1.1.12
	13 Lng Dec.Length	0.0 ~ 10000	mm	4.1.1.13
	14 DPRAM INPUT 1	-100 ~ 100		4.1.1.16
	15 DPRAM INPUT 2	-100 ~ 100		4.1.1.16
	16 DPRAM INPUT EI	-100 ~ 100		4.1.1.16
	17 DPRAM OUTPUT 1	-100 ~ 100		4.1.1.16
	18 DPRAM OUTPUT 2	-100 ~ 100		4.1.1.16
	19 TORQUE BIAS	-100 ~ 100	V	4.1.1.14
	20 Real Length	0.0 ~ 100000	mm	4.1.1.15

※ STVF 1 and 2 System has the menu up to the seventh.

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

3.1.2 I/O

ITEM	ST 1&2		ST 3&5		REMARK
	BIT NAME	INPUT	BIT NAME	INPUT	
02 I/O	F	UP	F	UP	
	R	DOWN	R	DOWN	
	E	AUTO(EXT)	A	AUTO	
	S	RESET	U	HOU	
	X	-	Z	DZ	
	1	X1	D	HOD	
	2	X2	I	INIC	
	3	X3	1	PLUL Switch	
	4	X4	2	PLDL Switch	
	5	X5	3	PLUH Switch	
	6	X6	4	PLDH Switch	
	Y	-	Y	-	
	1	Zero Speed	1	Run	
	2	Speed Agree	2	Zero Speed	
	3	Run	3	Speed Agree	
	M	30B	M	30B	

※ If the bit signal is input, it is set up '1' below the bit name.

3.1.3 ERROR

※ When the fault occurs in the inverter, the fault is displayed orderly. (cf. Section 4.1.3)

3.1.4 FLOOR DATA (STVF 3 & 5 System)

※ The position data of each floor is displayed.

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

3.2 PROGRAM

3.2.1 CONTROL

3.2.1.1 STVF 1 & 2

ITEM	FUNCTION NAME	DATA RANGE	INIT. VALUE	UNIT	DETAILS (Chap. 4)
01 CONTROL	01 EL SPEED	30 ~ 300	90	MPM	4.2.1.1
	02 MAX RPM	0 ~ 2400	1457	RPM	4.2.1.2
	03 LONG RUN RPM	0 ~ 2400	1457	RPM	4.2.1.3
	04 SHORT RUM RPM	0 ~ 2400	945	RPM	
	05 INSPECT RPM	0 ~ 2400	291	RPM	4.2.1.4
	06 CREEP RPM	0 ~ 2400	40	RPM	4.2.1.5
	07 RELEVEL RPM	0 ~ 2400	40	RPM	4.2.1.6
	08 ACC	0.05 ~ 20.0	0.70	M/S	
	09 DEC1	0.05 ~ 20.0	0.70	M/S	
	10 DEC2	0.05 ~ 20.0	0.1	M/S	
	11 EMCY DEC	0.05 ~ 20.0	0.75	M/S	
	12 S ACC START	0.0 ~ 50.0	27	%	
	13 S ACC ARRIVE	0.0 ~ 50.0	21	%	
	14 S DEC START	0.0 ~ 50.0	21	%	
	15 S DEC ARRIVE	0.0 ~ 50.0	27	%	
	16 DYNAMIC PRE T	0.0 ~ 20000.0	0		4.2.1.9
	17 TQ BIAS SELEC	0 ~ TQSELECTNUM-1	NO USE		4.2.1.10
	18 TQ BIAS LV 1F	-200.0 ~ 200.0	0.0	%	4.2.1.11
	19 TQ BIAS LV 2F	-200.0 ~ 200.0	50.0	%	4.2.1.11
	20 TQ BIAS LV 1R	-200.0 ~ 200.0	-50.0	%	4.2.1.11
	21 TQ BIAS LV 2R	-200.0 ~ 200.0	0.0	%	4.2.1.11
	22 TQ BIAS GAIN	-100.0 ~ 100.0	1.000		4.2.1.12
	23 TQBIAS OFFSET	-100.0 ~ 100.0	0.000		4.2.1.12
	24 TQ SETTING START	0.0 ~ 1.0	0		Synchronous Motor
	24 DECEL MODE	0 ~ DELCELMODENUM-1	PATTERN DECEL		Induction Motor

※ The initial value of the control data is standard data of the 15KW induction motor.

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

3.2.1.2 STVF 3 & 5, FI 4

ITEM	FUNCTION NAME	DATA RANGE	INIT. VALUE	UNIT	DETAILS (Chap. 4)
01 CONTROL	01 EL SPEED	30 ~ 300	90	MPM	4.2.1.1
	02 MAX RPM	0 ~ 2400	1457	RPM	4.2.1.2
	03 LONG RUN RPM	0 ~ 2400	1457	RPM	4.2.1.3
	04 INSPECT RPM	0 ~ 2400	291	RPM	4.2.1.4
	05 CREEP RPM	0 ~ 2400	40	RPM	4.2.1.5
	06 RELEVEL RPM	0 ~ 2400	40	RPM	4.2.1.6
	07 DECEL POINT2	0.00 ~ 3.00	1.5	M	4.2.1.7
	08 S-CURVE TIME	0.0 ~ 2.0	1.0	Sec	4.2.1.8
	09 DYNAMIC PRE T	0.0 ~ 20000.0	0		4.2.1.9
	10 TQ BIAS SELEC	0 ~ TQSELECTNUM-1	NO USE		4.2.1.10
	11 TQ BIAS LV 1F	-200.0 ~ 200.0	0	%	4.2.1.11
	12 TQ BIAS LV 2F	-200.0 ~ 200.0	50	%	4.2.1.11
	13 TQ BIAS LV 1R	-200.0 ~ 200.0	-50	%	4.2.1.11
	14 TQ BIAS LV 2R	-200.0 ~ 200.0	0	%	4.2.1.11
	15 TQ BIAS GAIN	-100.0 ~ 100.0	1.000		4.2.1.12
	16 TQBIAS OFFSET	-100.0 ~ 100.0	37.84		4.2.1.12
	17 MIN LENGTH	-100.0 ~ 100.0	35	MM	4.2.1.14
	18 MODE	0 ~ 99	0		4.2.1.15
	19 CALL FLOOR	0 ~ 64.0	0	FL	4.2.1.16
	20 MAX FLOOR	0 ~ 60.0	8	FL	4.2.1.17
	21 RUN POEN LEN.	100.0 ~ 200.0	100		4.2.1.18
	22 FWD DIRECTION	0 ~ UPDNSELECTNUM-1	UP		4.2.1.19
	23 DPRAM TQ USE	0 ~ 1.0	0		4.2.1.20
	24 15MM OFFSET	-15.0 ~ 15.0	0.0		4.2.1.21
	25 TqSetting_Start	0.0 ~ 1.0	0		
	26 DECEL MODE	0 ~ DELCELMODENUM-1	PATTERN DECEL		4.2.1.22

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

3.2.2 INTERFACE**3.2.2.1 STVF 1 & 2**

ITEM	FUNCTION NAME	DATA RANGE	INIT. VALUE		UNIT	DETAILS (Chap. 4)
			IM	SynM		
02_INTERFACE	01 SPEED LIMIT	0.0 ~ 2400	1500	250	RPM	
	02 ZERO SPD LVL	0.0 ~ 100.0	5	3	RPM	4.2.2.1
	03 SPD AGREE WID	0.0 ~ 100.0	30	30	%	4.2.2.2
	04 AO1 SELECT	0 ~ AOSELECTNUM-1	SPEED REF			4.2.2.4
	05 AO2 SELECT	0 ~ AOSELECTNUM-1	SPEED FBK			4.2.2.4
	06 AO3 SELECT	0 ~ AOSELECTNUM-1	TORQUE REF			4.2.2.4
	07 AO4 SELECT	0 ~ AOSELECTNUM-1	TORQUE FBK			4.2.2.4
	08 AO1 CENTER	-2,500 ~ 2,500	0	0		4.2.2.5
	09 AO1 RANGE	-2,500 ~ 2,500	2000	200		4.2.2.5
	10 AO2 CENTER	-2,500 ~ 2,500	0	0		4.2.2.5
	11 AO2 RANGE	-2,500 ~ 2,500	2000	200		4.2.2.5
	12 AO3 CENTER	-2,500 ~ 2,500	0	0		4.2.2.5
	13 AO3 RANGE	-2,500 ~ 2,500	50	100		4.2.2.5
	14 AO4 CENTER	-2,500 ~ 2,500	0	0		4.2.2.5
	15 AO4 RANGE	-2,500 ~ 2,500	50	100		4.2.2.5

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

3.2.2.2 STVF 3 & 5, FI 4

구분	FUNCTION NAME	DATA RANGE	INIT. VALUE		UNIT	DETAILS (Chap. 4)
			IM	SynM		
02_INTERFACE	01 ZERO SPD LVL	0.0 ~ 100.0	5	3	RPM	4.2.2.1
	02 SPD AGREE WID	0.0 ~ 100.0	30	30	%	4.2.2.2
	03 TQ ANS LEVEL	0 ~ 100	50	50	%	4.2.2.3
	04 AO1 SELECT	0 ~ AOSELECTNUM-1	SPEED REF			4.2.2.4
	05 AO2 SELECT	0 ~ AOSELECTNUM-1	SPEED FBK			4.2.2.4
	06 AO3 SELECT	0 ~ AOSELECTNUM-1	TORQUE REF			4.2.2.4
	07 AO4 SELECT	0 ~ AOSELECTNUM-1	TORQUE FBK			4.2.2.4
	08 AO1 CENTER	-2,500 ~ 2,500	0	0		4.2.2.5
	09 AO1 RANGE	-2,500 ~ 2,500	2000	200		4.2.2.5
	10 AO2 CENTER	-2,500 ~ 2,500	0	0		4.2.2.5
	11 AO2 RANGE	-2,500 ~ 2,500	2000	200		4.2.2.5
	12 AO3 CENTER	-2,500 ~ 2,500	0	0		4.2.2.5
	13 AO3 RANGE	-2,500 ~ 2,500	50	20		4.2.2.5
	14 AO4 CENTER	-2,500 ~ 2,500	0	0		4.2.2.5
	15 AO4 RANGE	-2,500 ~ 2,500	50	20		4.2.2.5

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

3.2.3 MOTOR and FACTORY**3.2.3.1 Induction Motor**

ITEM	FUNCTION NAME	DATA RANGE	INIT. VALUE	UNIT	DETAILS (Chap. 4)
03 MOTOR	01 INVERTER SEL	5.5 ~ OTHER INVERTER	15	KW	4.2.3.1
	02 MOTOR SELECT	3.7 ~ OTHER MOTOR	15	KW	4.2.3.2
	03 THERM SELECT	ON / OFF	ON	-	4.2.3.4
	04 AUTO TUNE	0 ~ 99	0	-	
	05 MOTOR CAPACIT	0.1 ~ 300.0	15.0	KW	
	06 RATING V	80.0 ~ 480.0	360	Vrms	
	07 RATING A	0.1 ~ 999.0	35.0	A	
	08 MOTOR POLES	2 ~ 100	4	POLES	
	09 PG_PULSE	2 ~ 20000	1024	PPR	4.2.3.3
	10 WRPM BASE	0 ~ 2400	1500	RPM	
	11 WRPM MAX	0 ~ 2400	2000	RPM	
	12 FLUXDRE RATE	0.00 ~ 2.00	0.70	A	
	13 IQSE RATE	0.0 ~ 500.0	43.00	A	
	14 IDSE RATE	0.0 ~ 500.0	20.60	A	
	15 JM	0.0 ~ 1000.000	2.00	Kgm	
	16 MOTOR LM	0.0 ~ 500.000		mH	
	17 MOTOR LS	0.0 ~ 500.000		mH	
	18 MOTOR LR	0.0 ~ 500.000		mH	
	19 MOTOR RS	0.0 ~ 200.000		Ω	
	20 MOTOR RR	0.0 ~ 200.000		Ω	
04 FACTORY	FACTORY DATA are protected by password to prevent main data change.				

※ All motor data are set automatically by selecting motor in PROGRAM /03_MOTOR /02_MOTOR_SELECT.

※ The table is standard data of the 15KW induction motor.

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

3.2.3.2 Synchronous Motor

ITEM	FUNCTION NAME	DATA RANGE	INIT. VALUE	UNIT	DETAILS (Chap. 4)
03 MOTOR	01 INVERTER SEL	5.5 ~ OTHER INVERTER	7.5	KW	4.2.3.1
	02 MOTOR SELECT	GL/2.5TA ~ OTHER MOTOR	GL3.5TA/GM5TA	KW	4.2.3.2
	03 MOTOR CAPACIT	0.1 ~ 300.0	7.5	KW	
	04 RATING V	80.0 ~ 480.0	312	Vrms	
	05 RATING A	0.1 ~ 999.0	17.8	A	
	06 MOTOR POLES	2 ~ 24	24	POLES	
	07 PG_PULSE	2 ~ 20000	10000	PPR	4.2.3.3
	08 WRPM BASE	0 ~ 2400	96	RPM	
	09 IQSE RATE	0.0 ~ 200.0	25.2	A	
	10 JM	0.0 ~ 500.00	30	Kgm	
	11 KNOW ANGLE	0.0 ~ 1.0	1		4.2.3.5
	12 U ANGLE	-3.14 ~ 3.14	0.0		4.2.3.5
	13 ANGLE METHOD	0.0 ~ 1.0	0		
	14 SEARCH TIME	50.0 ~ 50000.0	3000	mS	
	15 MOTOR LS	0.0 ~ 500.000	32.5	mH	
	16 MOTOR RS	0.0 ~ 200.000	1.15	Ω	
	17 EMF CONSTANT	0.0 ~ 4.00	1.72		
04 FACTORY	FACTORY DATA are protected by password to prevent main data change.				

※ All motor data are set automatically by selecting motor in the PROGRAM /03_MOTOR /02_MOTOR_SELECT.

※ The table is standard data of the GL3.5TA/GM5TA motor.

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

4. DESCRIPTION OF PARAMETER

4.1 MONITOR

4.1.1 BASIC

4.1.1.1 HYUNDAI ELEVATOR

- Displays program information, version number.

ELEVATOR SYSTEM		DISPLAY	ELEVATOR SYSTEM		DISPLAY
Induction Motor (Geared)	STVF 1&2	HIVD900G Mx.x	Synchronous Motor (Gearless)	STVF 1&2	HIVD900SS Mx.x
	STVF 3&5, FI 4	HIVD900G Dx.x		STVF 3&5, FI 4	HIVD900SS Dx.x

cf) x : program version

4.1.1.2 SPEED FBK

- The actual speed of the motor is indicated.

4.1.1.3 SPEED REF

- The speed reference of the motor is indicated.

4.1.1.4 CURRENT

- The actual electric current which flows into the motor is indicated.

4.1.1.5 VOLTAGE

- The terminal voltage of the motor is indicated.

4.1.1.6 DC LINK VOLT

- The DC Link voltage of the inverter is indicated.

cf) If the inverter version is up, the DC Link value in the HHT can't be equal to the actual DC Link value. In this case, adjust the FACTORY/02.SCALE VDC so that the difference comes in the within $\pm 10[V]$ (Actual DC Link voltage is able to be known by measuring the P-N of the SMPS SCN2 by using the MULTIMETER).

ITEM	SCALE Vdc	HTT Display	Actual DC Link
Before change	0.350	550[Vdc]	530[V]
After change	0.345	535[Vdc]	530[V]

4.1.1.7 MOTOR TEMP

- The actual temperature of the motor is indicated.

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	-------------------------------------	---------------------------------------

4.1.1.8 FLOOR

- The current floor of the CAR is indicated.

4.1.1.9 CALL

- The current CALL which is registered is indicated.

4.1.1.10 MODE

- The current operation mode of the elevator is indicated.

0 : Automatic operation, 1 : Initial operation, 2 : Inspect operation, 3 : PLO operation,

4 : RELEVEL operation, 5 : Fire operation(60m/m), 6 : Operation below 60[m/m], 99 : STOP

4.1.1.11 INITIAL

- It is indicated as '1' if the initialization of the elevator was completed in the normality.

4.1.1.12 Min.Dec.Length

- The SHORT RUN deceleration length of the elevator is indicated.

4.1.1.13 Lng.Dec.Length

- The LONG RUN deceleration length of the elevator is indicated.

4.1.1.14 TORQUE BIAS

- The measurement value of the load sensor is indicated.

4.1.1.15 Real Length

- Actual position information of the elevator is indicated.

4.1.1.16 DPRAM

- The basic data or important signals for driving an elevator share information with DPRAM.

BIT HHT display	7	6	5	4	3	2	1	0
DPRAM INPUT 1	×	×	×	hispf	flook	×	fireflag	×
DPRAM INPUT 2	×	×	eldflag	inchflag	ploflag	mdrflag	stflag	×
DPRAM INPUT EI	×	×	×	×	×	bkswitch	zerospd	lowspd
DPRAM OUTPUT 1	×	×	afterinit	decelon2	decelon1	ptnout	×	angle detect
DPRAM OUTPUT 2	×	×	×	plodir	×	watchcp	maxfloord n	maxflooru p

※ x : unused bit.

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

※ DPRAM INPUT ※

DATA NAME	FUNCTION	OPERATION		REMARK
		RUN	STOP	
hisplf	High speed operation	1	0	
flook	Initial operation completion	1	0	
fireflag	Fire operation	1	0	
eldflag	ELD operation	1	0	
inchflag	RELEVEL operation	1	0	
plodflag	PLO operation	1	0	
mdrflag	Inspection operation	1	0	
stflag	Deceleration/Stop of Inspection operation	1	0	
bkswitch	break confirmation	1	0	
zerospd	zero speed (stop mode)	1	0	
lowspd	low speed operation	1	0	

※ DPRAM 출력 ※

DATA NAME	FUNCTION	OPERATION		REMARK
		RUN	STOP	
afterinit	initial operation confirmation	1	0	
decelon2	Deceleration2	1	0	
decelon1	Deceleration1	1	0	
ptnout	Speed pattern presence confirmation	1	0	
angledetect	Motor U-angle measurement operation	1	0	Syn. Motor
plodir	PLO operation direction	1(up)	0(down)	
watchcp	watchdog count of CP	1	0	
maxfloordn	max floor up confirmation	1	0	
maxfloorup	max floor down confirmation	1	0	

4.1.2 I/O

- The explanation about each bit refers 3.1.2 paragraphs.

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

4.1.3 ERROR**4.1.3.1 ERROR LIST**

ERROR	KEYPAD DISPLAY	CONTENTS
OVER CURRENT	OC FAULT	Inverter output current is over limited FACTORY / OC LEVEL
OVER SPEED	OVER SPEED	Feedback speed is over limited speed level. Check PROGRAM/FACTORY/OS LEVEL.
OVER VOLTAGE	OV FAULT	DC link voltage is over the over voltage level. Over voltage level : 780 Vdc
UNDER VOLTAGE	UV FAULT	DC link voltage is below the under voltage level. Under voltage level : 410 Vdc
INVERTER OVER LOAD	INV OV LOAD	Inverter is overloaded. (10 second at torque 250%)
ENCODER BREAK	PG BREAK	Input of encoder A phase or another phase does not come in.
IPM FAULT	IGBT FAULT	Over current at U+, U-, V+, V-, W+, W-, BR IPM
INVERTER OVER HEAT	INV OV HEAT	Inverter is overheated
MEMORY FAULT	EEPROM ERR	The data is not stored properly in the NV-ROM.
VERSION ERROR	VERSION_ERR	Version of EEPROM is not same with EPROM's.
BREAK SWITCH FAULT	BK SW FLT	the BK switch signal are not inputted during 1.5[sec] after giving FWD.
SPEED DISAGREE	SPD DISAGR	It occurs if the difference between Speed REF and FBK exceed the settings of the speed disagreement
DLA FAULT	DLA ERR	It occurs if HOU or HOD, DZ breaks down.
DOUBLE DIRECTION ERROR	DOUBLE DIR	FWD and REV are inputted at the same time.
MOTOR OVER HEAT	MOTOR OV HEAT	Motor is overheated
MOTOR THERMAL BREAK	MTR TH BK	The motor thermal sensor was breakdown or not connected

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

4.1.3.2 TROUBLESHOOTING FLOW CHART

※ OVER CURRENT OCCURRENCE (OC FAULT) ※

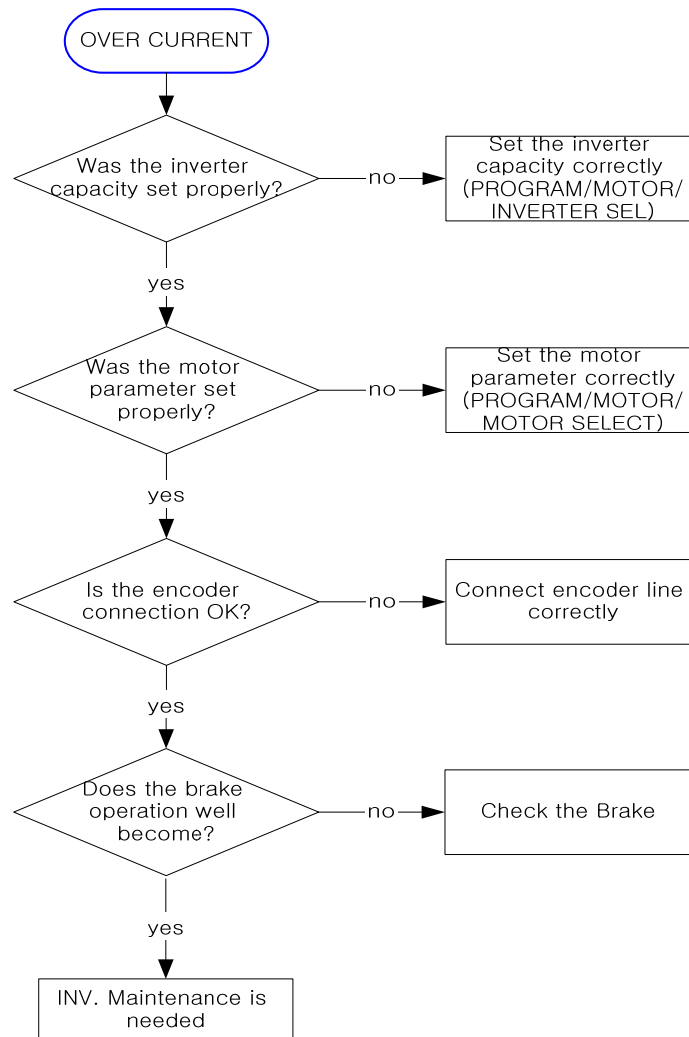


Figure 4.1 Over Current

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

※ OVER SPEED OCCURRENCE (OVER SPEED) ※

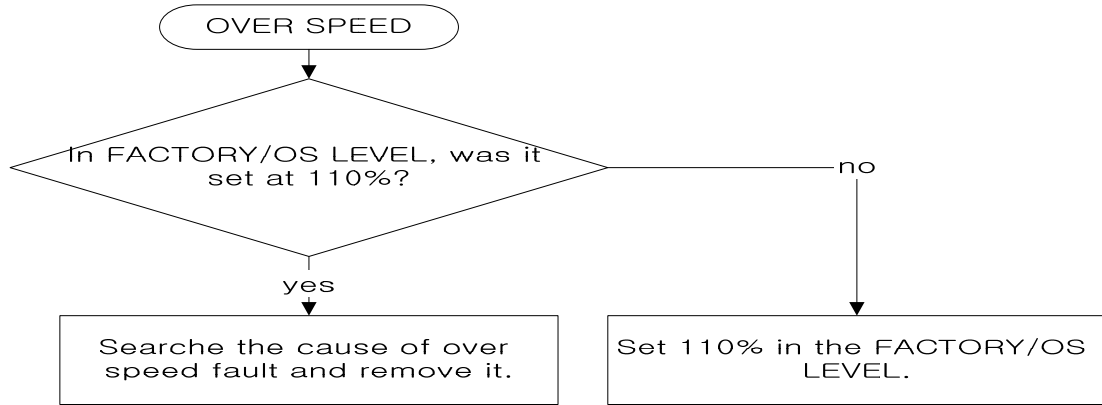


Figure 4.2 Over Speed

※ OVER VOLTAGE OCCURRENCE (OV FAULT) ※

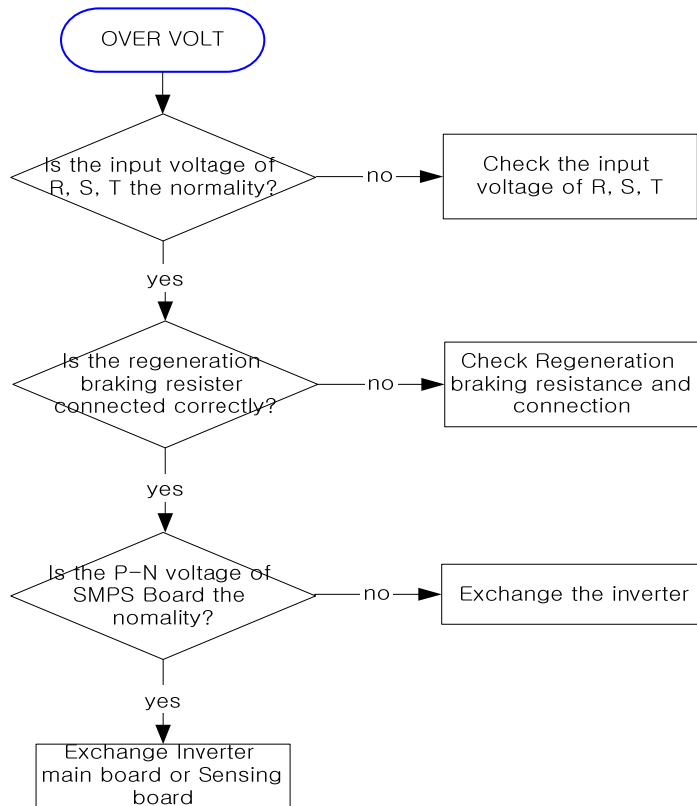


Figure 4.3 Over Voltage

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	-------------------------------------	---------------------------------------

※ UNDER VOLTAGE OCCURRENCE (UV FAULT) ※

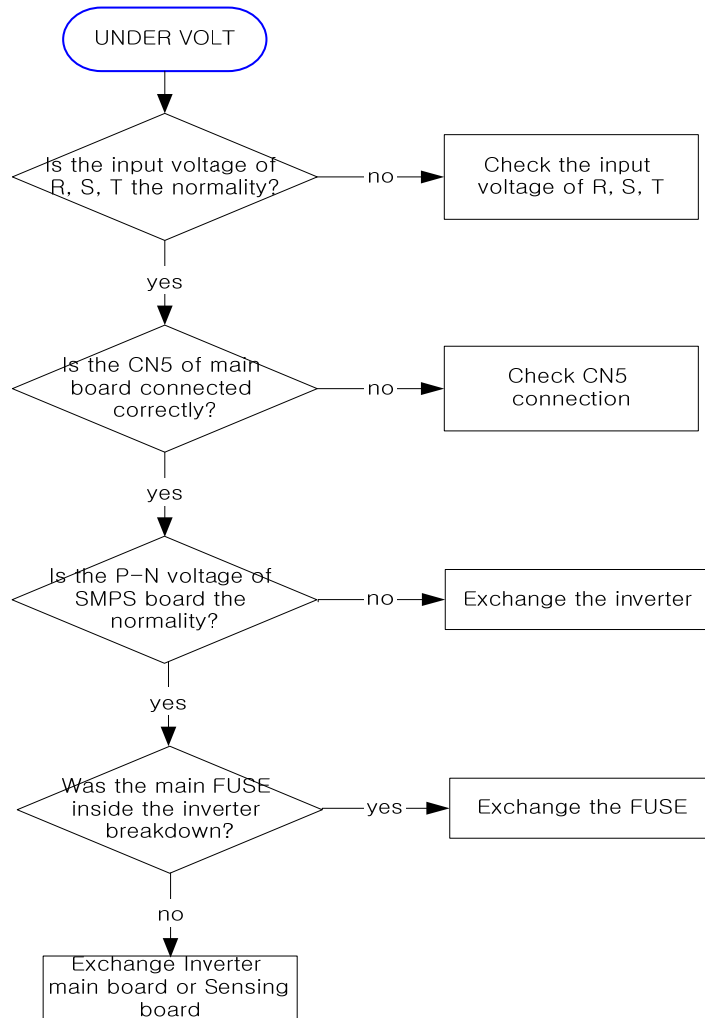


Figure 4.4 Under Voltage

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	-------------------------------------	---------------------------------------

※ INVERTER OVER LOAD OCCURRENCE (INV OV LOAD) ※

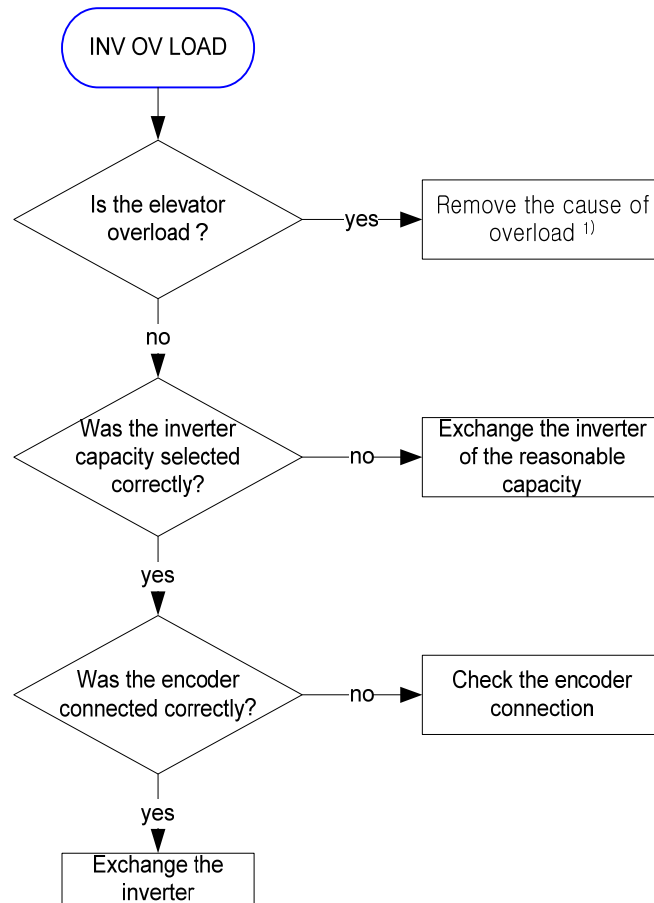


Figure 4.5 Inverter Over Load

‡¹⁾ General overload cause ‡

- The brake is not opened or reached to the motor.
- The counter weight against the seater is more loaded.
- The encoder is not attached correctly.
- The motor is not selected correctly in HHT.
- The U angle is not entered correctly in synchronous motor.
- The Car gets jammed into the rail.

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	-------------------------------------	---------------------------------------

※ **ENCODER FAULT OCCURRENCE (PG BREAK)** ※

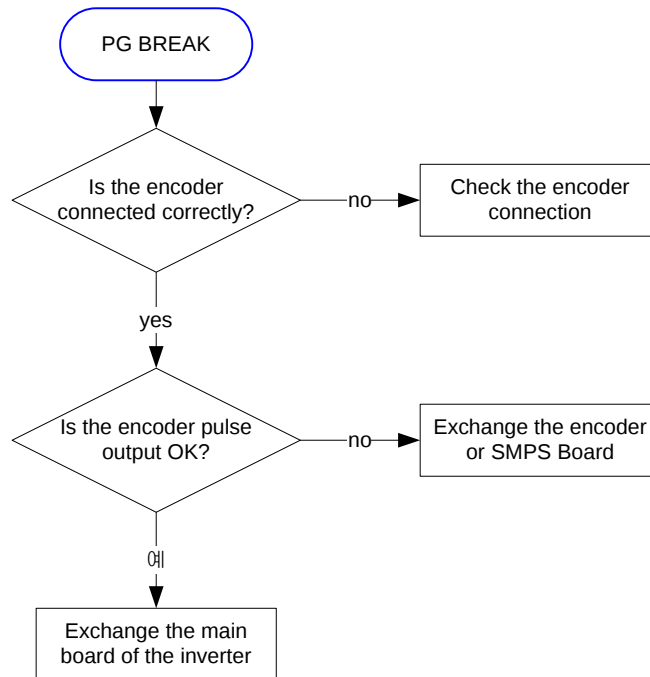


Figure 4.6 Encoder Fault

※ **EEPROM FAULT OCCURRENCE (EEPROM ERR)** ※

- Exchange the main board of the inverter.

※ **IGBT FAULT OCCURRENCE** ※

- Check the terminals of IPM and the gate board or exchange the inverter.

※ **DOUBLE DIRECTION FAULT OCCURRENCE (DOUBLE DIR)** ※

- Check the inverter main board , inverter I/O cable or CP board.

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

※ VERSION ERR OCCURRENCE ※

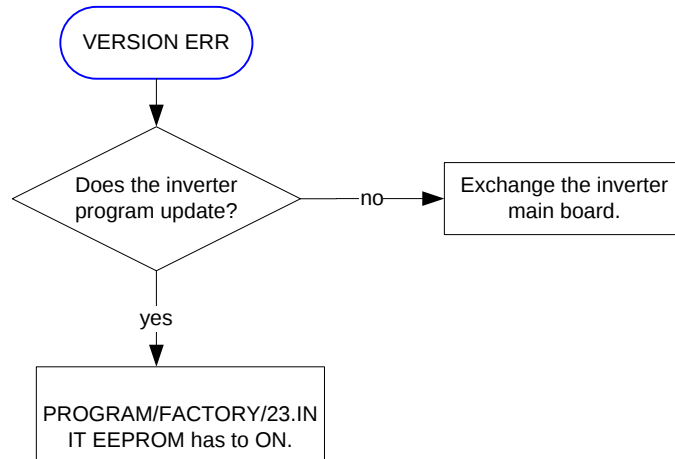


Figure 4.7 Version Error

※ BRAKE SWITCH FAULT OCCURRENCE (BK SW FLT) ※

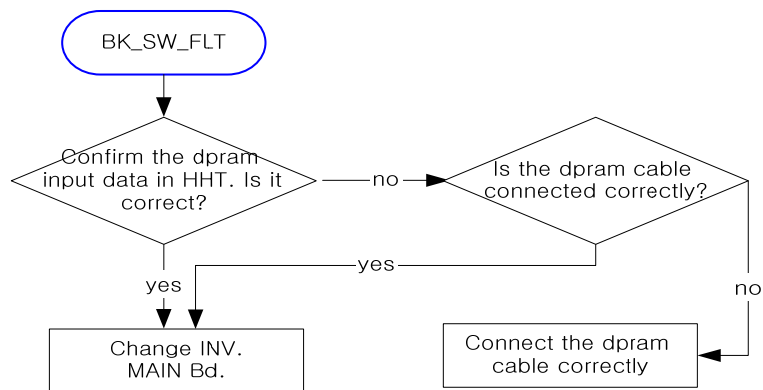


Figure 4.8 Brake switch fault

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

※ SPEED DISAGREE OCCURRENCE (SPD DISAGR) ※

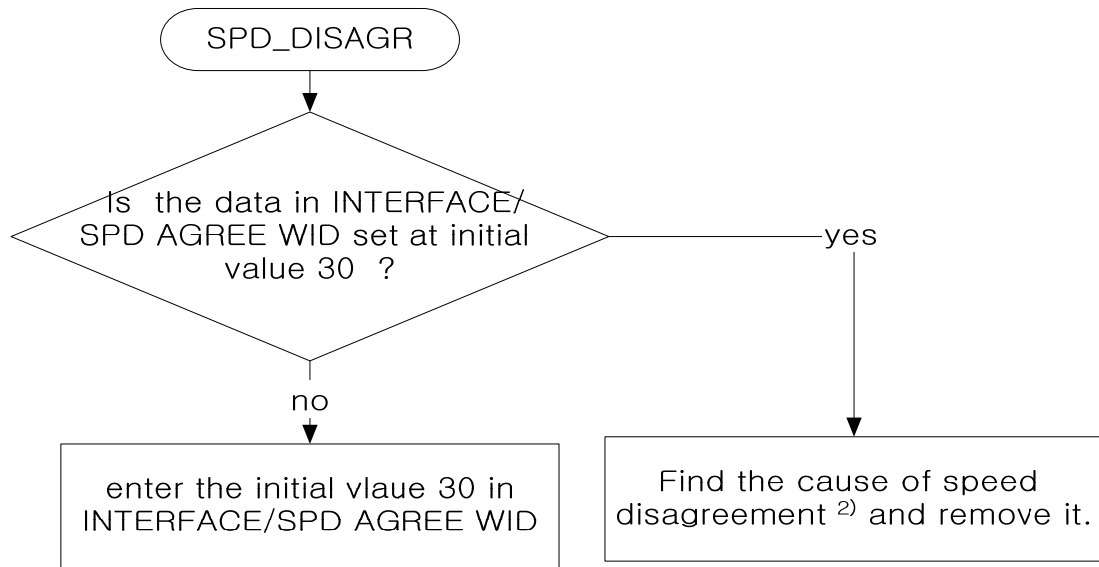


Figure 4.9 Speed disagreement

‡²⁾ General speed disagreement cause ‡

- The brake is not opened or reached to the motor.
- The encoder breaks down.
- The encoder is not attached correctly.
- The motor is not selected correctly in HHT.
- The U angle is not entered correctly in synchronous motor.
- U, V, W phase connection between the motor and the inverter was not connected correctly .
- The inverter main board is broken.

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	------------------------------	---------------------------------------

※ DLA FAULT OCCURRENCE (DLA ERR) ※

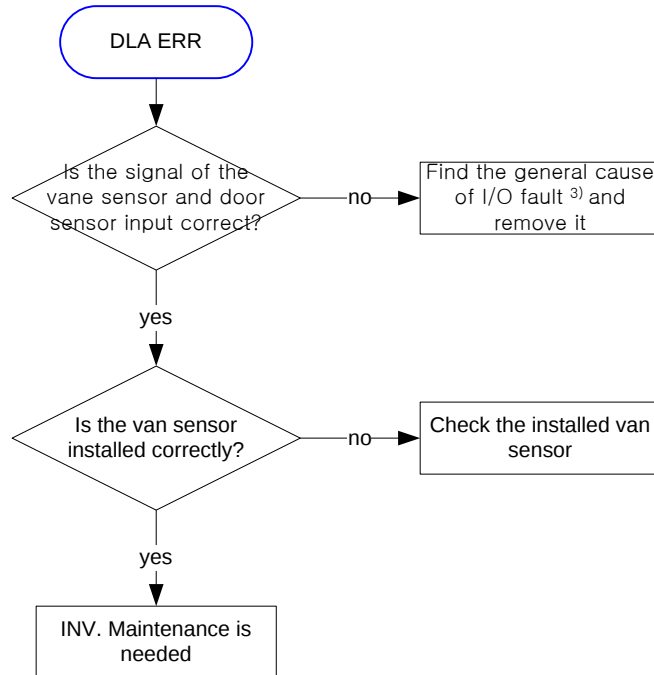


Figure 4.10 DLA Fault

‡³⁾ General I/O fault cause ‡

- I/O cable between the inverter and the CP is broken.
- The van sensor or door sensor breaks down.
- CP board, cable related to the van or door sensor is broken.

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
4.1.4 FLOOR DATA - The floor information value about each floor is displayed. 4.2 PROGRAM 4.2.1 CONTROL 4.2.1.1 EL SPEED - Elevator rated speed is input.[MPM] 4.2.1.2 MAX RPM - The maximum rotation speed of the motor is input.[RPM] 4.2.1.3 LONG RUN RPM - The rotation speed of the motor for LongRun mode is input.[RPM] 4.2.1.4 INSPECT RPM - The rotation speed of the motor for the elevator Inspection is input.[RPM] 4.2.1.5 CREEP RPM - The rotation speed of the motor for CREEP mode is input.[RPM] 4.2.1.6 RELEVEL RPM - The rotation speed of the motor for RELEVEL mode is input.[RPM] 4.2.1.7 DECEL POINT2 - The DECEL POINT2 is to set a voice message broadcasting point when the elevator is landing at the stop floor. The initial value is 1.5M. 4.2.1.8 S-CURVE TIME - When the elevator accelerates as the pattern of Long Run and INSPECT, the s-curve acceleration pattern is used for smooth riding feeling. As the figure 4.11, there are two s-curve patterns in each period A and B. S_ACC_START is for the period A and S_ACC_ARRIVE is for the period B.		
REV.		

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

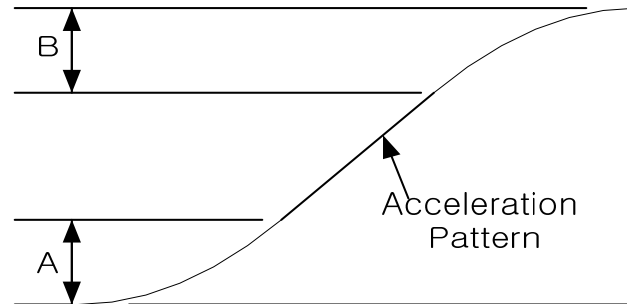


Figure 4.11 Acceleration Pattern

4.2.1.9 DYNAMIC PRE T

- When decelerating or accelerating, DYNAMIC PRE T assists the transient state of the electric motor torque.

4.2.1.10 TORQUE BIAS SELECTION

- The unbalance of the weight between the CAR and the C.W.(Counter Weight) causes shock in a CAR. In order to eliminate shock, the torque bias from motor has to be agreed to the torque by unbalancing. There are three torque bias methods, ① LV 1 2, ② ANAL. TQ BIAS, ③ DIG. TQ BIAS, in HIVD900. These are selected by setting CONTROL/TQ BIAS SELEC.
- In order to set the torque bias, the user must set the control data of HHT for the following elevator system as the below table

ELEVATOR SYSTEM		TQ BIAS SELEC	DPRAM TQ USE
IM (Geared)	STVF 1&2	LV 1 2	'0' (X4, X5 I/O)
	STVF 3&5, FI 4	LV 1 2	'1' (DPRAM)
SynM (Gearless)	STVF 1&2	ANAL. TQ BIAS	'0' (TB1)
	STVF 3&5, FI 4	ANAL. TQ BIAS	'1'(DPRAM) or '0'(TB1)

4.2.1.11 TORQUE BIAS LEVEL, LEVEL2 SETTING

- TORQUE BIAS LV 1 2 is applied in the induction motor. Using the load switches(30%, 70%) located under the CAR, the load of the CAR is detected. And the torque bias minimizes the starting shock according to the digital signal from the load switches.

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	-------------------------------------	---------------------------------------

▷ **STVF 1&2 SYSTEM SETTING** ◁

1. Set as following in the HHT

CONTROL --- 10. TQ BIAS SELEC : LV1 2

CONTROL --- 23. DPRAM_TQ_USE : 0

The state of the load switch(30%, 70%) is input with the I/O(X4, X5) of the inverter in STVF 1&2 system.(Check the MONITOR/2.I/O(4th bit,5th bit) of HHT)

2. Enter the data in the next item to set torque bias.

CONTROL --- 18. TQ BIAS LV 1F

--- 19. TQ BIAS LV 2F

--- 20. TQ BIAS LV 1R

--- 21. TQ BIAS LV 2R

LOAD STATE		NO LOAD	BALANCE	FULL LOAD
X4 (30% Load switch)		0	1	x(Don't care)
X5 (70% Load switch)		0	0	1
The value of torque bias	FWD(UP)	LV 1F (18)	-	LV 2F (19)
	REV(DOWN)	LV 1R (20)	-	LV 2R (21)

3. Setting method

① In the no load

- Adjust in 15% load.
- Enter the reasonable value in 20. TQ BAIS LV 1R for the elevator going down.
- Enter the reasonable value in 18. TQ BIAS LV 1F for the elevator going up.

② In the balance

- The torque bias value is not applied.

③ In the full load

- Adjust in 85% load.
- Enter the reasonable value in 21. TQ BAIS LV 2R for the elevator going down.
- Enter the reasonable value in 19. TQ BIAS LV 2F for the elevator going up.

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	-------------------------------------	---------------------------------------

▷ STVF 3&5 SYSTEM SETTING ◁

1. Set as following in HHT

CONTROL --- 10. TQ BIAS SELEC : LV1 2

CONTROL --- 23. DPRAM_TQ_USE : 1

The state of the load switch(30%, 70%) is input with the DPRAM in STVF 3&5 system.(Check the address of 016C(30%) and 016D(70%) in M33 board of CP)

2. Enter the data in the next item to set torque bias.

CONTROL --- 11. TQ BIAS LV 1F

--- 12. TQ BIAS LV 2F

--- 13. TQ BIAS LV 1R

--- 14. TQ BIAS LV 2R

LOAD STATE		NO LOAD	BALANCE	FULL LOAD
016C (30% Load switch)		1	0	x(Don't care)
016D (70% Load switch)		0	0	1
The value of torque bias	FWD(UP)	LV 1F (11)	-	LV 2F (12)
	REV(DOWN)	LV 1R (13)	-	LV 2R (14)

3. Setting method

① In the no load

- Adjust in 15% load.
- Enter the reasonable value in 20. TQ BAIS LV 1R for the elevator going down.
- Enter the reasonable value in 18. TQ BIAS LV 1F for the elevator going up.

② In the balance

- The torque bias value is not applied.

③ In the full load

- Adjust in 85% load.
- Enter the reasonable value in 21. TQ BAIS LV 2R for the elevator going down.
- Enter the reasonable value in 19. TQ BIAS LV 2F for the elevator going up.

4.2.1.12 ANALOG TORQUE BIAS SETTING

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
- ANAL.TQ BIAS applies to synchronous motor and reads the load state by using the load sensor which is located at the bottom of CAR, and then sets in proportion to the load state. ▷ STVF 3&5 SYSTEM SETTING ◁ - Analog torque bias inputs in M33 board. ① Check the setting condition. - The car is located in the middle floor. - Inspection mode in machine room, door zone OK, door OPEN. - LS board communication is OK (It is OK, if the 1st bit of the address 0D83 is 0. It is error, if 2). - Select CONTROL/10.TQ_BIAS_SELEC at ANAL TQ BAIS . - Examine whether CONTROL/15.TQ_BAIS_GAIN is 1.000 or not, it must be 1. - Select CONTROL/23.DPRAM_TQ_USE at 1. ② In order to start the setting, the DIP1 in the M33 board must be placed on the data writing mode, and enter 01 in the address 01B0 . ③ In order to set the no load, the CAR has to be no-load, and enter 01 in the address 01B1. After 10 seconds, the DIP1 in the M33 board is placed on the data reading mode and examine the data of the address E1B2. It is the normality if 20. ④ In order to set the 50% load, the CAR and CWT has to be balanced, enter 01 in the address 01B2 and then wait 5 minutes. Also examine the data of the address E1B2 after waiting more than 10 seconds. It is the normality, if 52(±1). ⑤ Read the MONITOR /TORQUE BIAS value in HHT of the inverter. Enter this value in CONTROL/16. TQBIAS OFFSET as it is. ⑥ Check if the MONITOR /TORQUE BIAS is 0. If not 0, add it to the CONTROL/16. TQBIAS OFFSET. If not yet 0, add it to the CONTROL/16. TQBIAS OFFSET repeatedly until the MONITOR /TORQUE BIAS is 0.		
REV.		

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	-------------------------------------	---------------------------------------

⑦ Wait 5 minutes until the rubber is demobilized, if the TQBIAS OFFSET setting is completed,.

⑧ Adjust the CONTROL/15. TQ BIAS GAIN at the no load

⑨ The confirmation of load data in M33 board is as follows.

(no load = 20, 50% load = 52, 100% load = 84, 110% load = 8E, 120% load ~ = 98)

4.2.1.13 DIGITAL INTERFACE SETTING(DIG. TQ BIAS)

: The current HIVD900 system does not use this method.

4.2.1.14 MIN LENGTH

- Adjust the offset of deceleration length.

4.2.1.15 MODE

- The current mode of the elevator operation is indicated.

0 : Automatic operation, 1 : Initial operation, 2 : Inspect operation, 3 : PLO operation,

4 : RELEVEL operation, 5 : Fire operation(60m/m), 6 : Operation below 60[m/m], 99 : STOP

4.2.1.16 CALL FLOOR

- The CALL FLOOR is service floor.

4.2.1.17 MAX FLOOR

- The MAX FLOOR is the total floors which the elevator serves.

The automatic operation of the elevator does not run, if data set is inaccurate.

4.2.1.18 RUN OPEN LEN.

- It is setting value of car door opening point before landing service floor.

4.2.1.19 FWD DIRECTION

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
- This data sets the direction of motor driving. UP : Fwd direction is up. DOWN : Fwd direction is down. 4.2.1.20 DPRAM TQ USE - Select whether the current system uses DPRAM or not. 0 : DPRAM is not used, 1 : DPRAM is used. The default is 0. 4.2.1.21 15MM OFFSET - 15mm offset is the offset of vane sensor. It adjusts landing level after the vane sensor signal input(HOU, HOD) 4.2.1.22 DECEL MODE - Select whether the elevator goes the pattern deceleration or free run when FWD or REV is switched off. Default : Synchronous Motor -> Free Run, Induction Motor -> Pattern Decel. 4.2.2 INTERFACE 4.2.2.1 ZERO SPEED LEVEL - The output (zero speed) is switched off when the elevator speed is under setting speed(ZERO SPEED LEVEL). Otherwise the output is switched on.		
REV.		

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

4.2.2.2 SPEED DISAGREEMENT LEVEL

- SPEED DISAGREEMENT LEVEL is the criterion data which the speed disagreement fault is occurred when the elevator speed has the difference between the actual speed and reference speed.

4.2.2.3 TQ ANS LEVEL

- This data decides a basis point of the torque response.

4.2.2.4 ANALOG OUTPUT 1~4 SELECTION

- This data is to select the analog output parameter in PROGRAM\ INTERFACE \ AO1 SELECT ~ AO4 SELECT.

4.2.2.5 ANALOG OUTPUT 1~4 RANGE SETTING

- PROGRAM \ INTERFACE \ AO1_CENTER, AO1_RANGE, AO2_CENTER, AO2_RANGE, AO3_CENTER, AO3_RANGE, AO4_CENTER, AO4_RANGE are indicated the +\— range of the analog output to do with AO1~AO4.

4.2.3 MOTOR**4.2.3.1 INVETER SELECTION**

- This data in MOTOR\01.INVERTER SEL selects the current inverter capacity.

The SCALE IS and O.C LEVEL in PROGRAM/04.FACTORY are set automatically by selecting the inverter capacity in PROGRAM/03.MOTOR/01.INVERTER SEL mode during this period.

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	-------------------------------------	---------------------------------------

4.2.3.2 MOTOR SELECTION

- This data in MOTOR\02.MOTOR SELECT selects the current motor name.

All the data in PROGRAM/02.MOTOR and EL SPEED, MAX RPM, LONGRUN RPM, INSPECTRPM, CREEP RPM, RELEVEL RPM, DECEL POINT2 in PRPGRAM/01.CONTROL are set as standard value automatically by selecting motor in PROGRAM / 03_MOTOR/ 01 MOTOR SELECT during this period. Also O.S LEVEL in PROGRAM/FACTORY is set as default value automatically by selecting motor in PROGRAM/03.MOTOR/01.MOTOR SELECT

※ When you try to change the value of the 'Control' and 'Interface', you must change that of the '02 MOTOR SELECT' in advance and then the others are to be changed. ※

4.2.3.3 ENCODER PULSE SETTING

- The encoder pulse to feedback the speed is input.
(Induction Motor : 1024 [ppr], Synchronous Motor : 10000 or 8192 [ppr])

4.2.3.4 MOTOR THERMAL SENSOR SELECTION(INDUCTION MOTOR)

- This data is to select, if the inverter uses the input signal of motor thermal sensor.

4.2.3.4 MOTOR U ANGLE SETTING(SYNCHRONOUS MOTOR)

- The permanent magnetic synchronous motor using in the MRL and GT does not run, if U angle does not set. Also the U angle parameter of the permanent magnetic synchronous motor is MOTOR\15.U ANGLE.
- The motor U angle is written on the inner of the motor terminal after the motor is manufactured in the factory. Check if MOTOR\14.KNOW ANGLE is 1, and then enter the U angle in MOTOR\15.U ANGLE.< Be careful of +, - >
- It has to be as following method when the motor or encoder exchanged or the U angle resets.

The inverter U, V, W and motor U, V, W must be connected correctly(Check it before running the motor) ※

① READY

- Separate the rope from the machine.
- The elevator must be able to operate Inspection mode.
- Short the Y2, Y3 and CME.(STVF 1&2 system)
- Enter 0 in MOTOR/14. KNOW ANGLE.

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	-------------------------------------	---------------------------------------

② DATA SETTING

- Run the motor more than 1 revolution to **FWD direction**.
- Enter 1 in MOTOR/14.KNOW ANGLE and check whether MOTOR/15.U ANGLE is input automatically or not.
(Examine if the inner value of the motor terminal matches to this MOTOR/15.U ANGLE.)
- Check the MONITOR/BASIC/CURRENT when the motor run. If the MONITOR/BASIC /CURRENT exceeds the MOTOR/7 RATING A, execute the MOTOR U ANGLE SETTING again. And record MOTOR/15 U ANGLE to be used for the later user.

③ Check the following situation if the motor does not run

- Check the connection between the motor and inverter.
- Check the encoder signal (Ap, Bp, Up, Vp, Wp).
- Check if the Brake operates normally.

5. DESCRIPTION OF FUNCTION

5.1 STVF 1 & 2

Long run, short run, creep and inspection speeds are needed in standard elevator application. Those

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	-------------------------------------	---------------------------------------

speeds can be selected by combination of Speed①, ②and ④.

- Data range : 0 ~ 2400 rpm
- Each speed can be programmed in PROGRAM/CONTROL mode.

Speed④	Speed②	Speed①	Speed	S-curve acceleration	S-curve Deceleration
○	○	○	Stop	-	-
○	○	●	Zero speed	-	-
○	●	○	Initial operation (= Inspection speed)	Yes	None
○	●	●	Creep operation	Yes	Yes
●	○	○	Inspection operation	Yes	None
●	○	●	Short run	Yes	Yes
●	●	○	Relevel	Yes	Yes
●	●	●	Long Run	Yes	Yes

●: On(Close), ○: Off(Open)

5.1.1 SHORT RUN

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	------------------------------	---------------------------------------

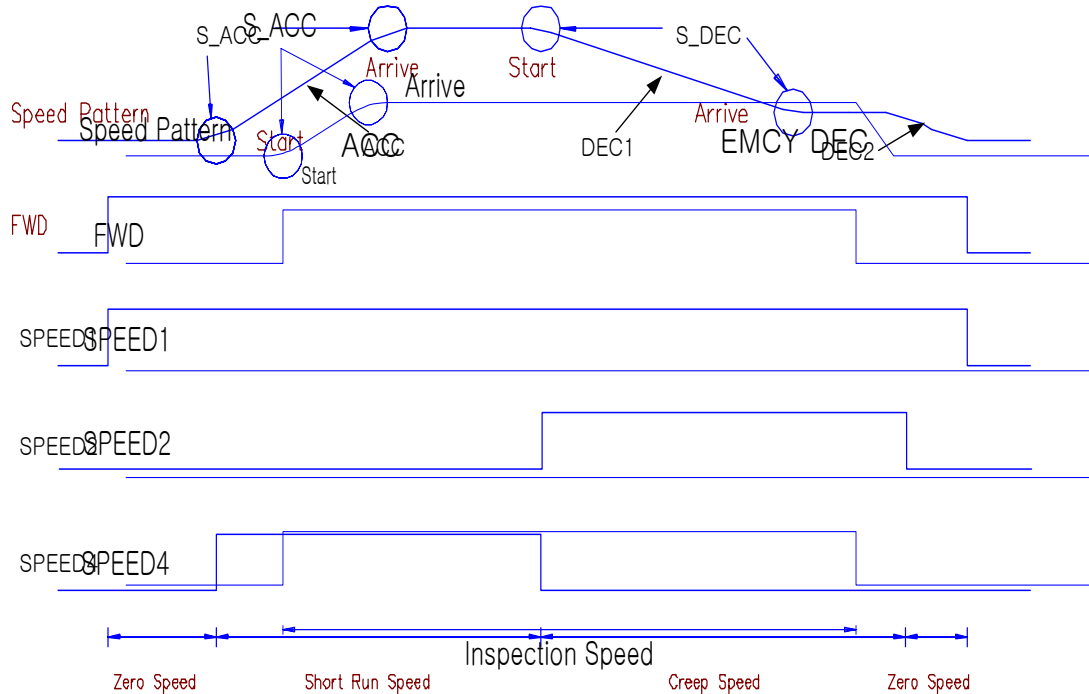


Figure 5.1 Short Run

5.1.2 LONG RUN

5.1.3 INSPECTION OPERATION

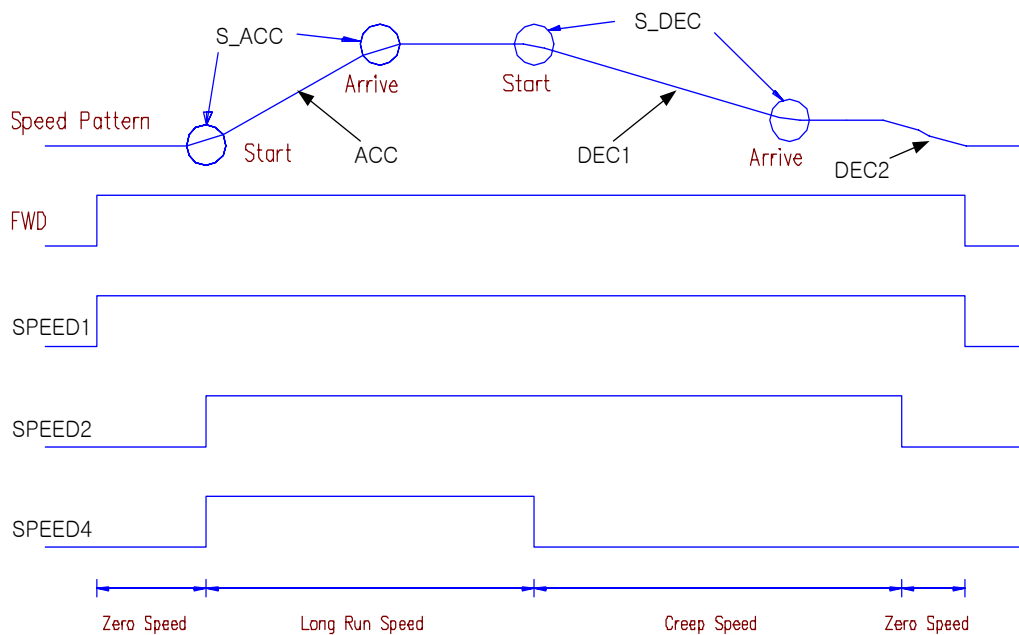


Figure 5.2 Long Run

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	------------------------------	---------------------------------------

5.1.4 INITIAL OPERATION

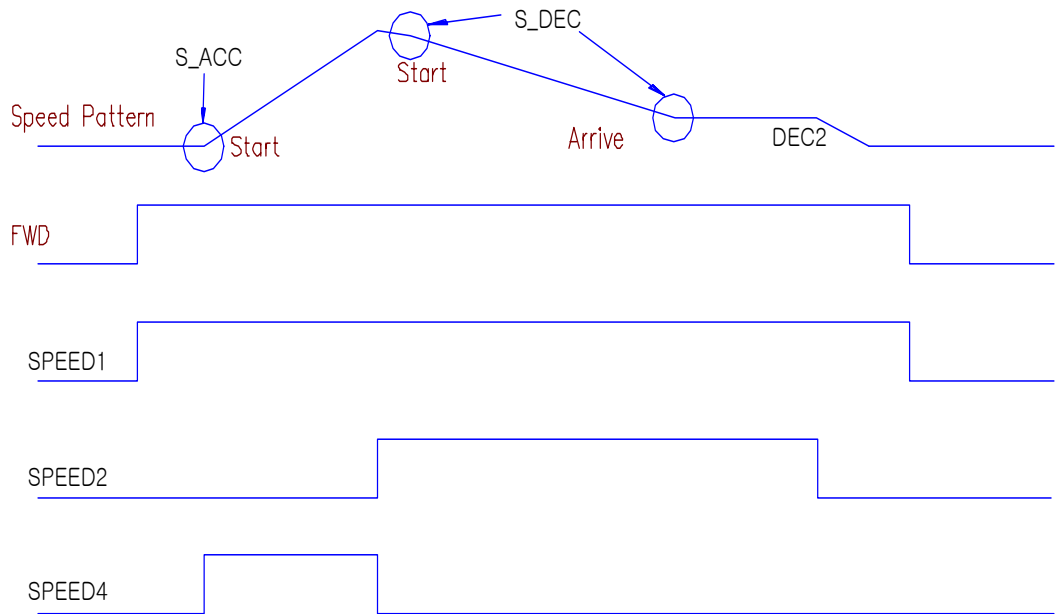


Figure 5.5 Speed changing from acceleration to deceleration

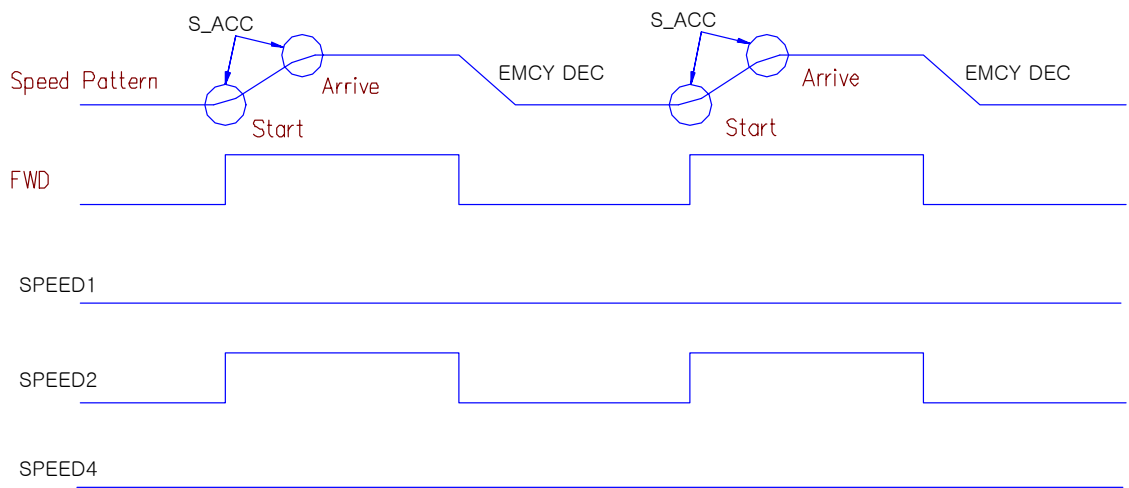


Figure 5.4 Initial operation

5.1.5 THE OPERATION IS CHANGED FROM ACCELERATION TO DECELERATION

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	------------------------------	---------------------------------------

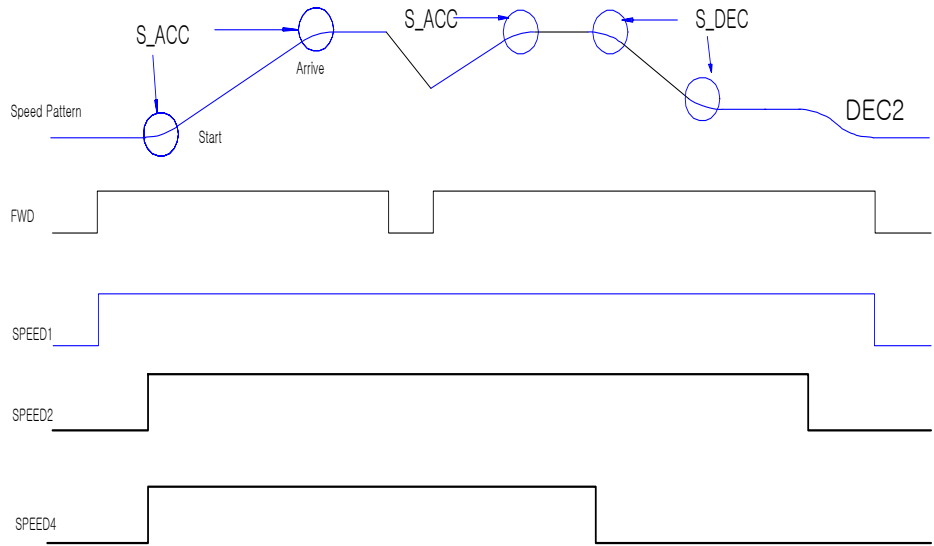


Figure 5.7 FWD or REV is off when elevator runs

5.1.6 EMERGENCY STOP

5.1.7 FWD OR REV IS OFF WHEN ELEVATOR RUNS

5.2 STVF 3 & 5

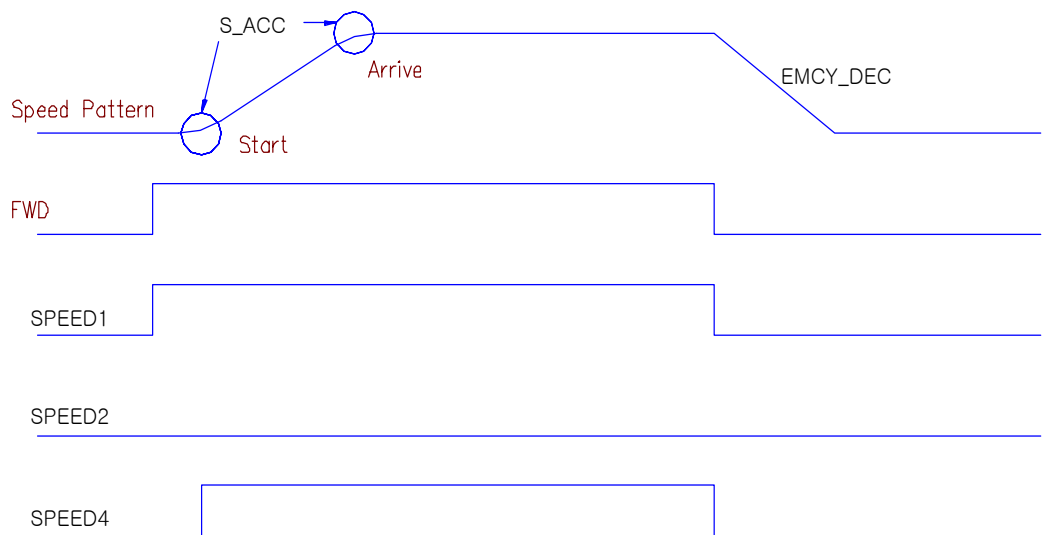


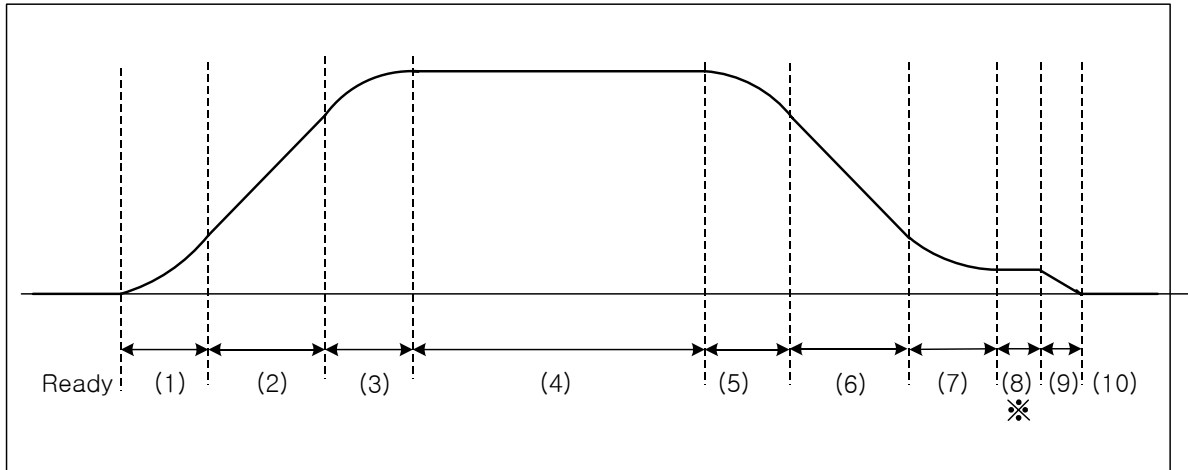
Figure 5.6 Emergency stop

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

5.2.1 SPEED PATTERN

The basic velocity pattern for the elevator operation can be divided into eleven modes and differently applied to velocity pattern according to the drive variety



※ Eighth mode(creep pattern) can't be used unless the user purposely tunes a specific value of the inverter.

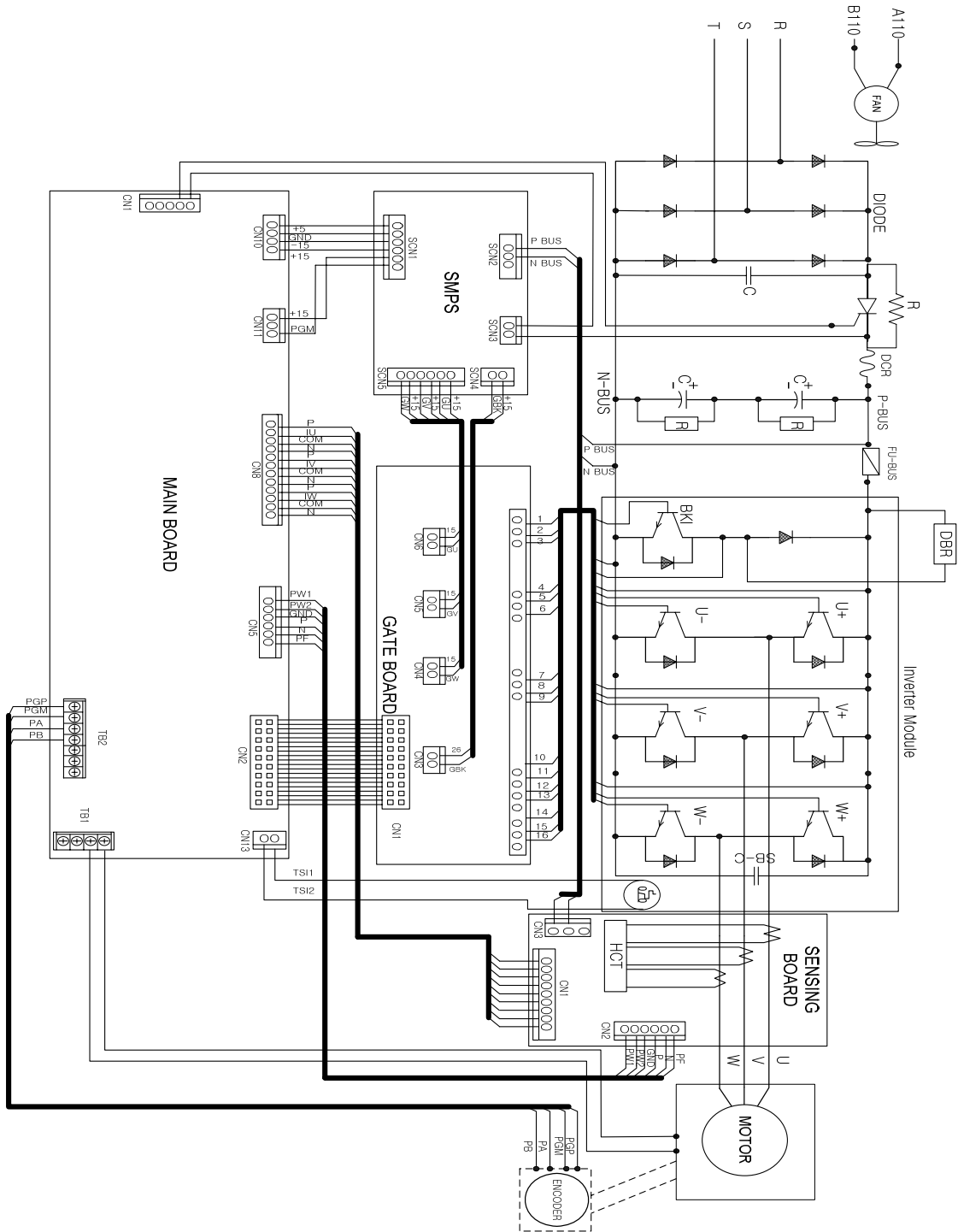
The velocity patterns according to the drive variety are listed in the following Table

Pattern Operation mode	HHT 표기	REA DY	1	2	3	4	5	6	7	8	9	10
AUTO	0	○	○	○	○	○	○	○	○		○	○
INITIAL	1	○	○		○	○	○	○	○	○	○	○
INSPECT	2	○	○	○	○	○		○				○
PLO	3	○	○		○	○	○		○	○	○	○
RELEVEL	4	○		○		○		○				○
FIRE	5	○	○	○	○	○	○	○	○		○	○
LOWSPD	6	○	○	○	○	○	○	○	○		○	○
ELD	7	○	○		○	○	○		○	○	○	○

REV.

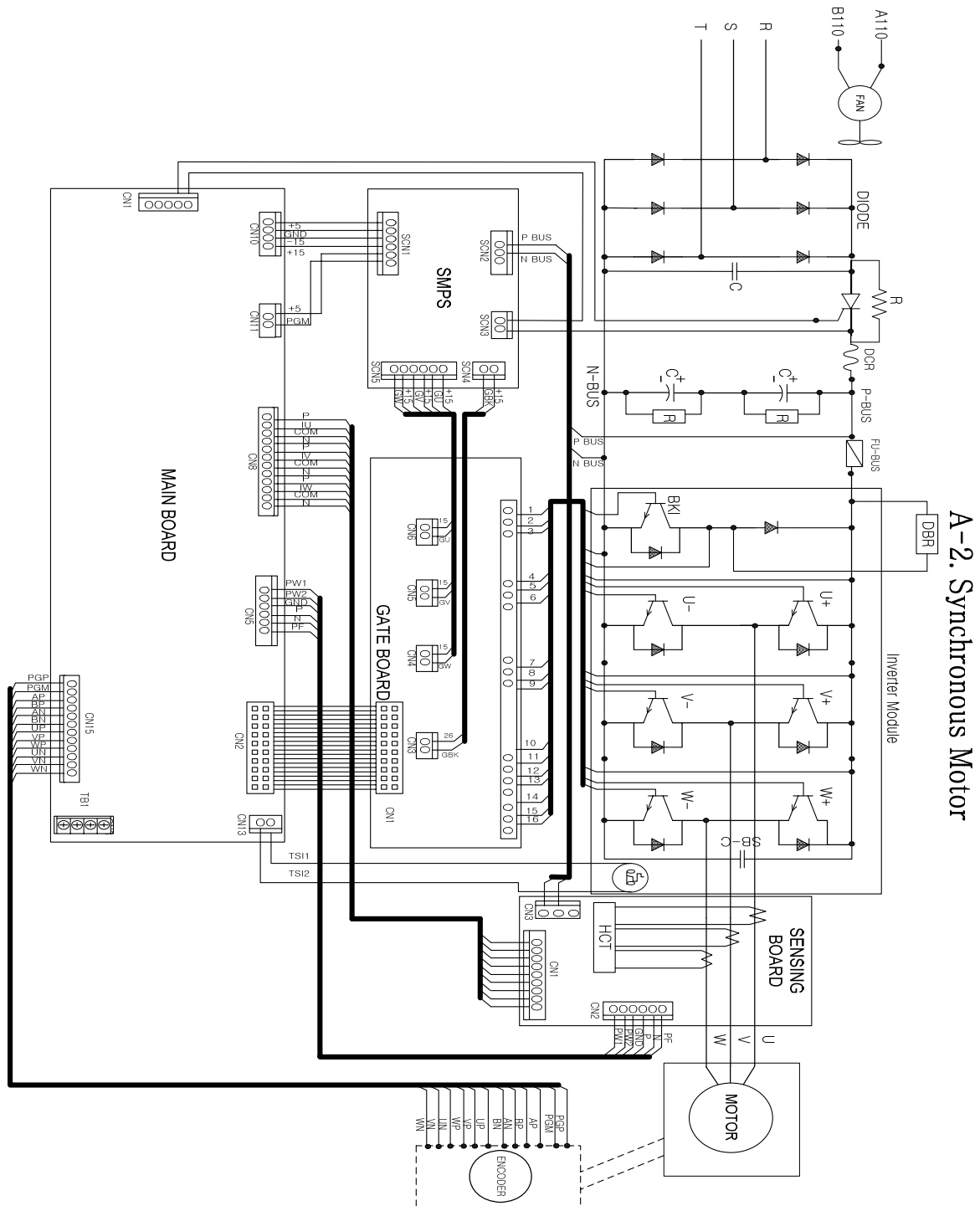
REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	------------------------------	---------------------------------------

APPENDIX A. SYSTEM BLOCK DIAGRAM
A-1. Induction Motor



REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		



REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

APPENDIX B. MOTOR PARAMETER

B-1 Induction Motor

		5.5kW	7.5kW	11kW	15kW	18.5kW	22kW	30kW
03	THERM SELECT	ON	ON	ON	ON	ON	ON	ON
04	AUTO TUNE	0	0	0	0	0	0	0
05	MOTOR CAPACIT [kW]	5.5	7.5	11	15	18.5	22	30
06	RATING V [Vrms]	360	360	360	360	360	360	360
07	RATING A [Arms]	14.5	18.5	25.6	35	43	51	64
08	MOTOR POLES [P]	4	4	4	4	4	4	4
09	PG PULSE [PPR]	1024	1024	1024	1024	1024	1024	1024
10	WRPM BASE [RPM]	1500	1500	1500	1500	1500	1500	1500
11	WRPM MAX [RPM]	2000	2000	2000	2000	2000	2000	2000
12	FLUXDRE RATE [A]	0.88	0.87	0.7	0.7	0.75	0.77	0.75
13	IQSE RATE [A]	16.2	22.7	32.8	43.0	56.9	63.22	77.0
14	IDSE RATE [A]	12.6	12.89	15.6	20.6	21.19	22.19	38.56
15	JM [kgm]	0.4	0.5	2.00	2.00	2.00	2.00	2.00
16	MOTOR LM [mH]	70.028	67.482	55.704	40.425	36.606	35.014	22.282
17	MOTOR LS [mH]	72.521	69.347	57.150	41.717	37.402	35.768	22.836
18	MOTOR LR [mH]	74.198	70.490	57.958	42.340	37.905	36.045	23.087
19	MOTOR RS [Ω]	0.725	0.476	0.278	0.216	0.146	0.13	0.0651
20	MOTOR RR [Ω]	0.557	0.409	0.217	0.161	.13	0.087	0.0617

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

B-2 Synchronous Motor

	3.MOTOR CAPACIT [kW]	4.RTING V [Vrms]	5.RATING A [Arms]	6.MOTOR POLES [P]	7.PG PULSE [ppr]	8.WRPM BASE [rpm]	9.IQSE RATE [A]	10.JM [kgm]	13.ANGLE METHOD	14.SEARCH TIME [ms]	15.MOTOR LS [mH]	16.MOTOR RS [Ω]	17.EMF CONSTANT
GL/M2.5TA	4.5	235	12.8	24	10000	95.5	18.1	20	0	3000	46.650	2.033	1.44
GF17A	3.7	227	10.8	32	10000	95.5	15.3	20	0	3000	40.3	1.055	1.39
GL2.5TA5	3.7	235.9	10	24	10000	95.5	14.1	20	0	3000	42.8	2.072	1.38
GS20A	4.6	295	12.8	24	10000	95.5	18.1	20	0	3000	36.2	1.818	1.38
GS25A	6.2	275	18.5	24	10000	95.5	26.2	20	0	3000	25.4	1.184	1.41
GF25A	6.2	221	16.5	32	10000	95.5	23.3	20	0	3000	23.3	0.494	1.41
GT25A	6.2	320	16	32	10000	95.5	22.6	20	0	3000	29.9	0.859	1.55
GF35A	7.1	242	19.5	32	10000	95.5	25	30	0	3000	25.3	0.271	1.31
GS35A	7.1	253	18.5	24	10000	95.5	26.2	30	0	3000	27.2	1.271	1.41
GT35A	7.1	318	16	32	10000	95.5	22.6	30	0	3000	27.1	0.728	1.61
GL3.5TA/GM5TA	7.5	312	17.8	24	10000	95.5	25.2	45	0	3000	32.5	1.15	1.72
GL3.5TA5	7.5	250.6	17.8	24	10000	95.5	24.7	30	0	3000	25.8	0.985	1.53
GF17B	6.5	193.5	21.5	32	10000	167	25	30	0	3000	10.1	0.264	0.7
GL2.5TB5	6.5	250.6	21.2	24	10000	167	25	30	0	3000	18.0	0.959	0.9
GL/M2.5TB	8	271	22.3	24	10000	167	31.5	30	0	3000	15.53	0.667	0.83
GF25B	10.8	232	26.6	32	10000	167	37.6	40	0	3000	8.72	0.187	0.87
GT25B	10.8	317	24	32	10000	167	33.9	40	0	3000	10.9	0.301	0.94
GS180L	11	248.2	27.5	24	8192	209	38.9	40	0	3000	8.12	0.524	1.1
GS35B	12.4	315	31	24	10000	167	43.8	40	0	3000	10.4	0.475	0.86
GT35B	14.1	305	32	32	10000	191	45.24	50	0	3000	6.7	0.182	0.8
GF35B	15	235	35.8	32	10000	191	50.6	50	0	3000	5.88	0.12	0.77
GL3.5TB/GM5TB	15	295	35.5	24	10000	191	50.2	50	0	3000	8.11	0.288	0.86
GL3.5TB5	15	238.4	35.8	24	10000	191	50.6	50	0	3000	6.55	0.242	1.06

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

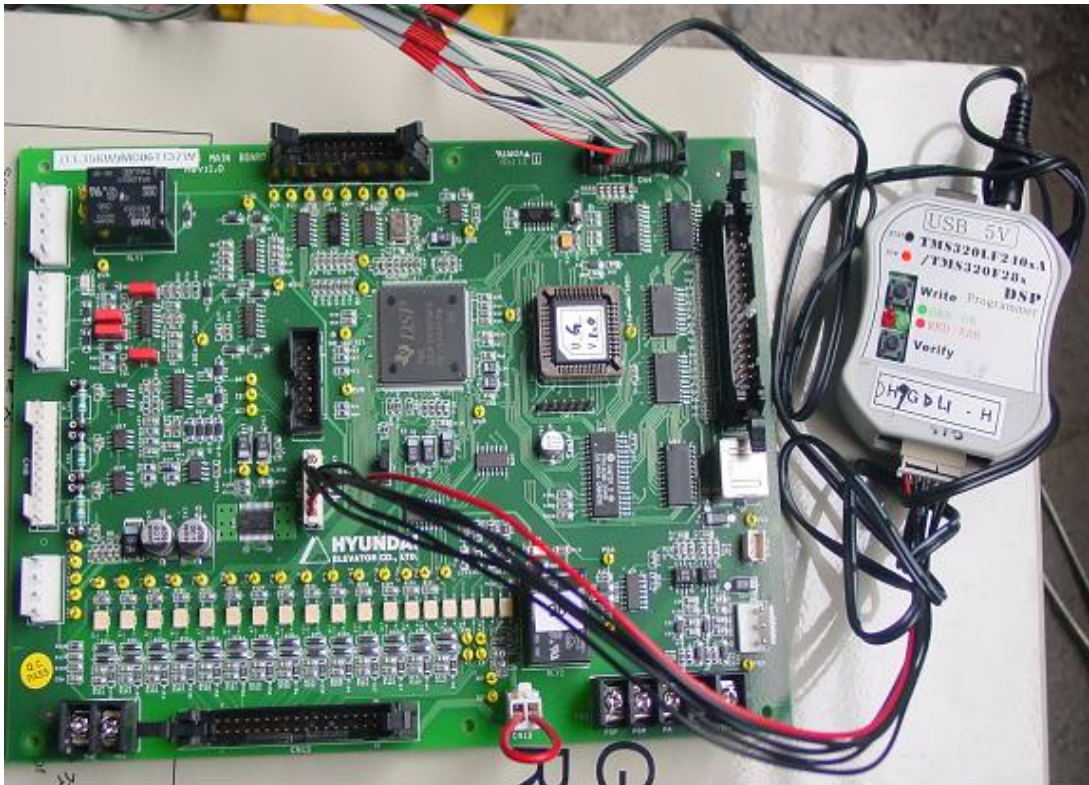
APPENDIX C. PROGRAM DOWNLOAD METHOD

1. If the AC source is not input to the inverter, the user is able to download the inverter program by using download tool with 110~220[Vac] adapter. But the adapter is not necessary, if the AC source is input to the inverter. **Download with download tool after pulling out the CN5, CN2 jack of the main board for the IPM Protection.**

2. Download procedure

Check record data of the table1 on the page No.56 by using HHT.

- ① Connect the DSP output jack to the CN9 of the main board as Figure C.1.



<Figure C.1> CN9 Connection

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

② Jump the JP1 jumper pin to the pin number 2 and 3 of the main board.



<Figure C.2> CN9 Connection

③ Push the write button of DSP just one time(download start).



- STAT LED(Green) is ON.

<Figure C.3> WRITE

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

④ State during the download



- STAT LED(Green) is ON.
- Green LED is ON : It indicates the normal state.
- Red LED is ON : It indicates the error state.

<Figure C.4> STAT

⑤ State when the downloading is finished.



- Green LED is ON : It indicates the normal state

<Figure C.5> completion

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

⑥ Push the verify button



- STAT(Green) LED is ON

<Figure C.6> verify

⑦ State when the verification is finished



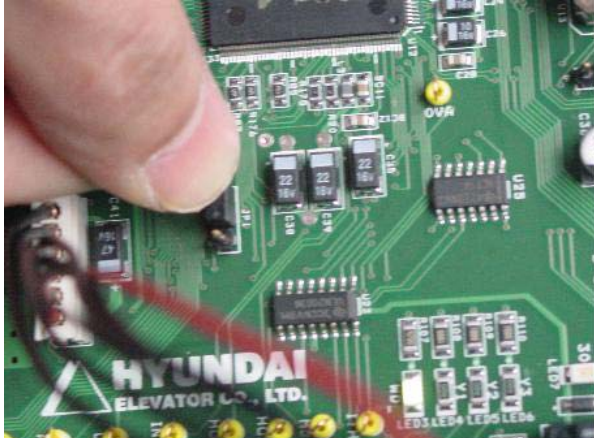
- Pull out the DSP device.

<Figure C.7> Completion of the verification

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

- ⑧ Jump the JP1 jumper pin to the pin number 1 and 2 of the main board.



<Figure C.7> JP1 Connection

- ⑨ Push the reset button of the main board.
- ⑩ The version error can be occurred if the current and previous program version is not same.
- Record the current data shown table1.
 - Execute the INIT EEPROM in the PROGRAM/FACTORY
 - Password1 >> 2, Password>> 3
 - INIT EEPROM : ON
 - Push the reset button of the main board after finishing the INIT EEPROM.
 - Check the changed data by using HHT and then change it to the record data.
(cf. Table 1 record data)
- ⑪ Check the program version.

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	-------------------------------------	---------------------------------------

TABLE1. RECORD DATA

MACHINE TYPE	RECORD DATA
INDUCTION MOTOR	● PROGRAM/MOTOR 1. INVERTER SEL, 2. MOTOR SELECT 10. WRPM BASE, 15. JM ● PROGRAM/CONTROL 1. EL SPEED, 2. MAX RPM 3. LONGRUN RPM, 10. TQ BIAS SELEC 11. TQ BIAS LV 1F, 12. TQ BIAS LV 2F 13. TQ BIAS LV 1R, 14. TQ BIAS LV 2R 17. MIN LENGTH, 20. MAX FLOOR 22. FWD DIRECTION, 23.DPRAM TQ USE ● PROGRAM/FACTORY 2. SCALE VDC
SYNCHRONOUS MOTOR	● PROGRAM/MOTOR 3. INVERTER SEL, 2. MOTOR SELECT 11. KNOW ANGLE, 12. U ANGLE 15. JM ● PROGRAM/CONTROL 1. EL SPEED, 2. MAX RPM 3. LONGRUN RPM, 10. TQ BIAS SELEC 15. TQ BIAS GAIN, 16. TQ BIAS OFFSET 17. MIN LENGTH, 20. MAX FLOOR 22. FWD DIRECTION, 23.DPRAM TQ USE ● PROGRAM/FACTORY 4. SCALE VDC

※ Table 1 is the data to check basically, in addition to check all of the data indicating ‘*’ in the 3rd column of the first line of the HHT.

APPENDIX D. INVERTER BOARD TYPE

REV.

REV. ()	TITLE	FILE NAME : HIVD900
REV. ()	HIVD 900 MANUAL	DOCUMENT NO. :
2006.3.28 REV. (1.0)		

1. Main board

HIVD900 main board is classed as the induction motor type and the synchronous motor type, and the current sensing resistor(R77, R93, R103) vary according to the inverter capacity.

INV. System	Capacity	Current Sensing Resistor (R77, R93, R103)	Remark
900G (Induction Motor)	5.5 Kw	30	
	7.5/30 Kw	15	
	11/15 Kw	24	
900SS/GT (Synchronous Motor)	5.5 Kw	30	
	7.5/30 Kw	15	
	11/15 Kw	24	

2. SMPS Board

HIVD900 SMPS board is classed as the induction motor type and the synchronous motor type, and 900G 30kw type is equal to 700G 30kw type.

INV. System	Capacity	Model Name	Remark
900G (Induction Motor)	5.5/7.5/11/15 Kw	H9G15IF	SCN1 (7Pin)
	30 Kw	NHM70-400	700G type
900SS/GT (Synchronous Motor)	5.5/7.5/11/15 Kw	H9G15SF	SCN1 (6Pin)

3. SENSING Board

HIVD900 SENSING board is classed as 5.5/7.5kw type and 11/15kw type, and it is not used in 900G 30kw type.

INV. Capacity	CT Capacity	Remark
5.5/7.5 Kw	50A(CT1,2,3)	
11/15 Kw	100A(CT1,2,3)	

4. Gate Board

REV.

REV. () REV. () 2006.3.28 REV. (1.0)	TITLE HIVD 900 MANUAL	FILE NAME : HIVD900 DOCUMENT NO. :
--	------------------------------	---------------------------------------

HIVD900 Gate board is classed as the induction motor type and the synchronous motor type, and classified according to the inverter capacity.

INV. System	INV. Capacity	Model Name	Remark
900G (Induction Motor)	5.5/7.5 Kw	H9G FS GATE Bd	CN1(with lock)
	11/15 Kw	H9G FM GATE Bd	
	30 Kw	HELCO GATE Bd	700G 30Kw type
900SS/GT (Synchronous Motor)	5.5/7.5 Kw	H9G FS GATE Bd	CN1(without lock)
	11/15 Kw	H9G FM GATE Bd	

REV.