Elevator

Installation Manual For Electrical Parts

HYUNDAI ELEVATOR

REVISION

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0		First Edition	2013.08.24		
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Safety Information

IMPORTANT! READ SAFETY NOTE AND THIS PAGE CAREFULLY before installation

- When it comes to Installation and Commissioning, Person passing through training course and having a certification provided by Hyundai Elevator co., LTD. is qualified to make a procedure.
- **Wear** safety devices
- **Check and remove** unnecessary projected parts
- **Check** the safety shelter plate installation at the floor side door part for the operation of the car
- No one but the **approved personnel** is authorized to have access to elevator equipment and devices

NOTICE

- **Clean up and arrange** the control board and elevator controller connecting wires. Stranded wires must be twisted before works to prevent **SHORT CIRCUIT** that may occur when sticking out from the terminal block.
- **Check if all controllers, field terminals and cable connectors** are properly arranged and tightened or not
- **Check the location of Pin No.1** to prevent **COMPONENTS DAMAGE**, In case of connecting a flat cable connector. (The location of Pin No.1 is traceable by using the arrow mark of the connector or the red line of the cable).

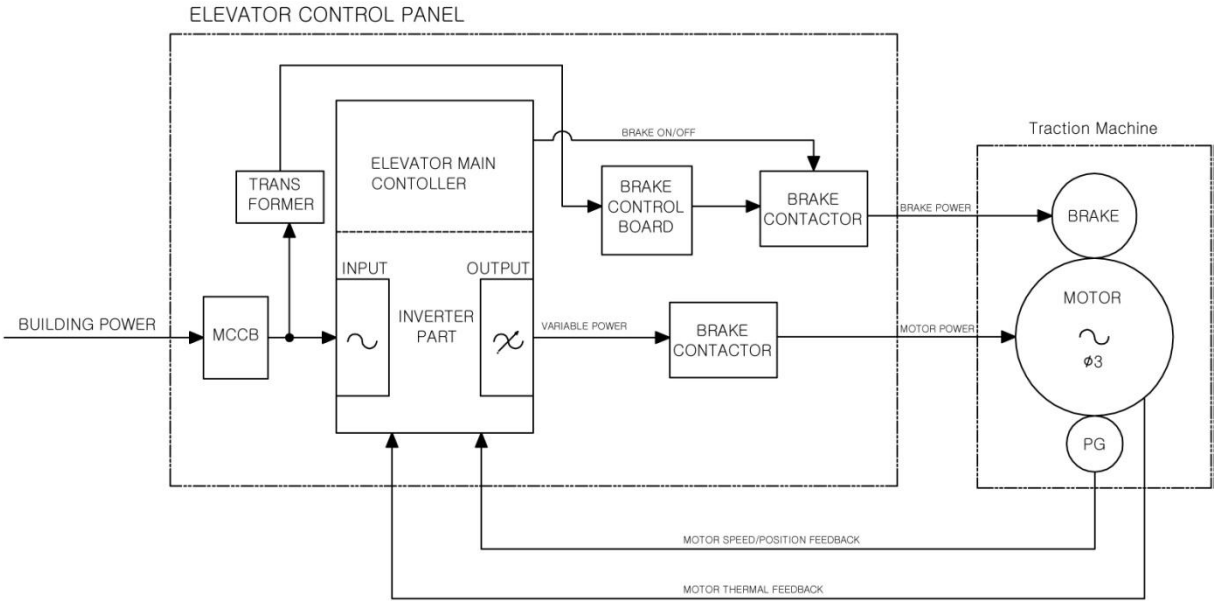
1. Introduction of WBVF System

WBVF system combines elevator control and motor drive control into One-Board, and applied 32bit ARM CORE for the MAIN Board for fast data processing performance. It has RTOS (Real Time Operation System) for real time control processing ability. It is based on high performance MCU processing speed to achieve the optimal comfort such as MULTI-PATTERN, direct landing, etc. It is designed to use HHT exclusive for WBVF for Elevator condition checking and data setting.

Category	Specification	Remark
Model	Passenger, Passenger /Freight	
Speed	30m/min ~ 150m/min	
Floors	30 floors (Max. 62 floors)	
Applied motor	Induction / Synchronizer (Geared, Gearless)	
Inverter	General type / Regenerative type	
Group Control	4 Cars (Max. 8 Cars)	

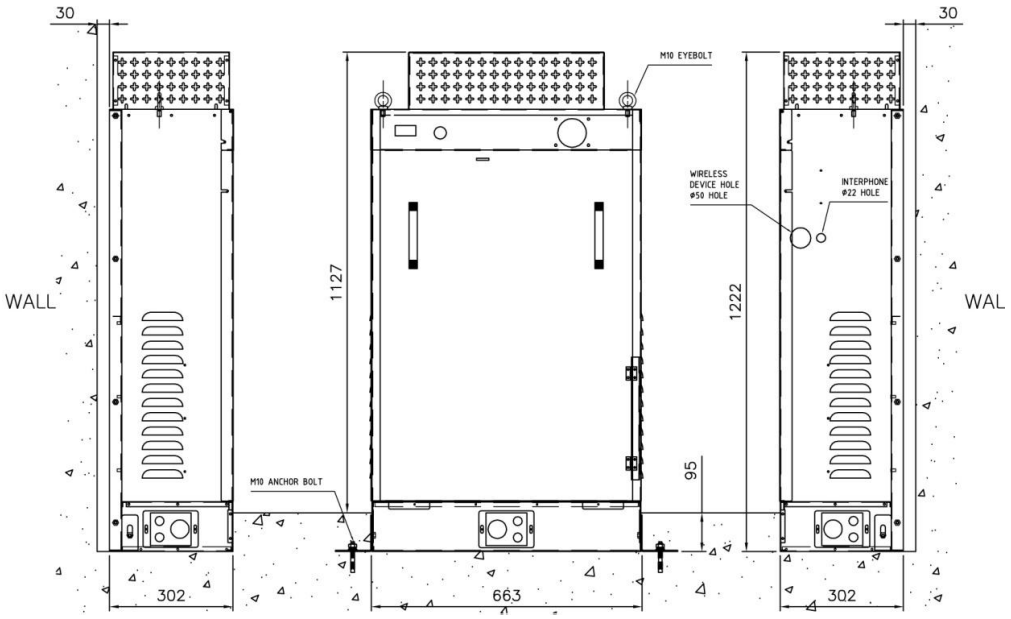
[Table 1.1 WBVF Applied Specification]

1.1 WBVF Motor Control Block Diagram

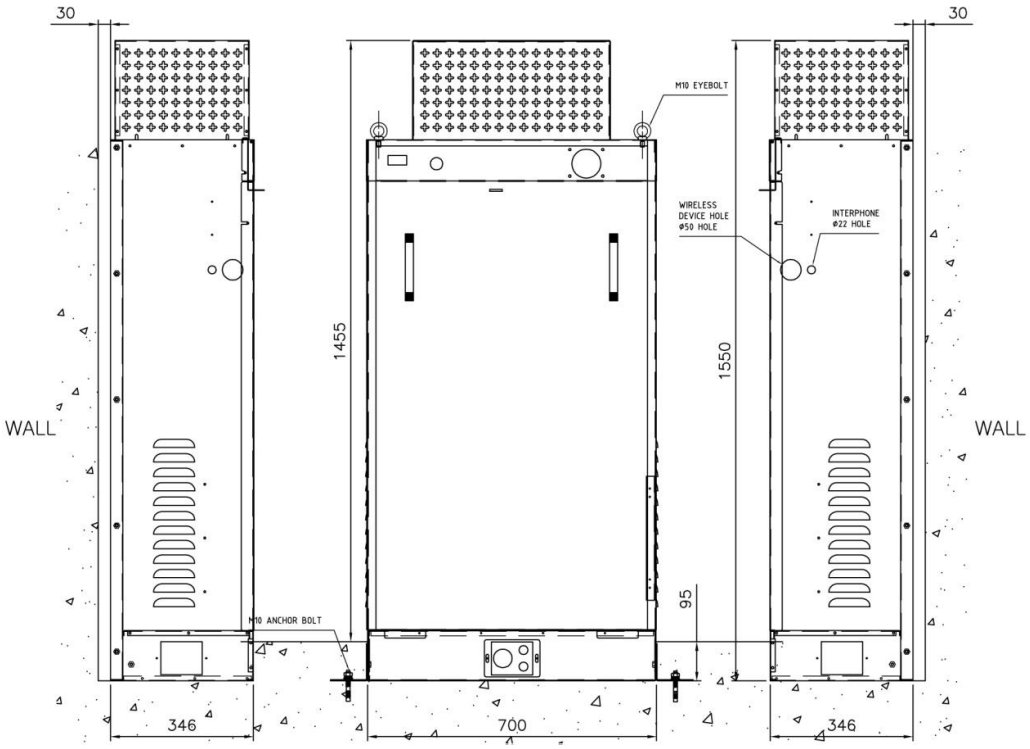


[Figure 1.1 Motor Control Block Diagram]

1.2 WBVF Standard Controller Layout

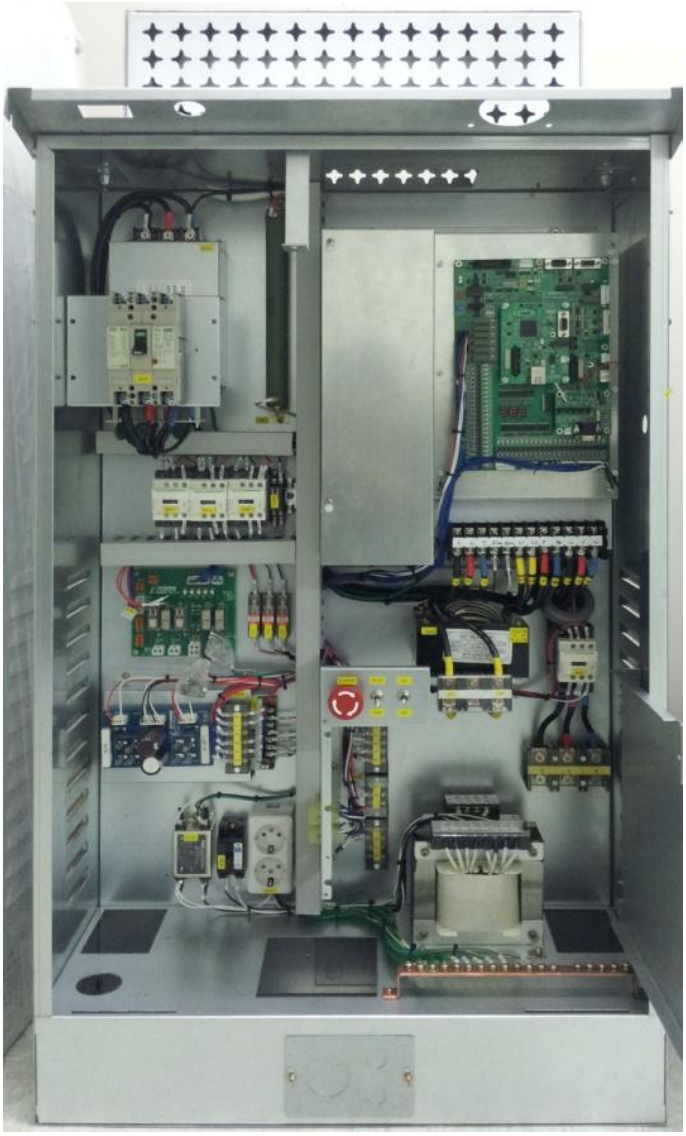


<Control Panel 15kw Installation layout>



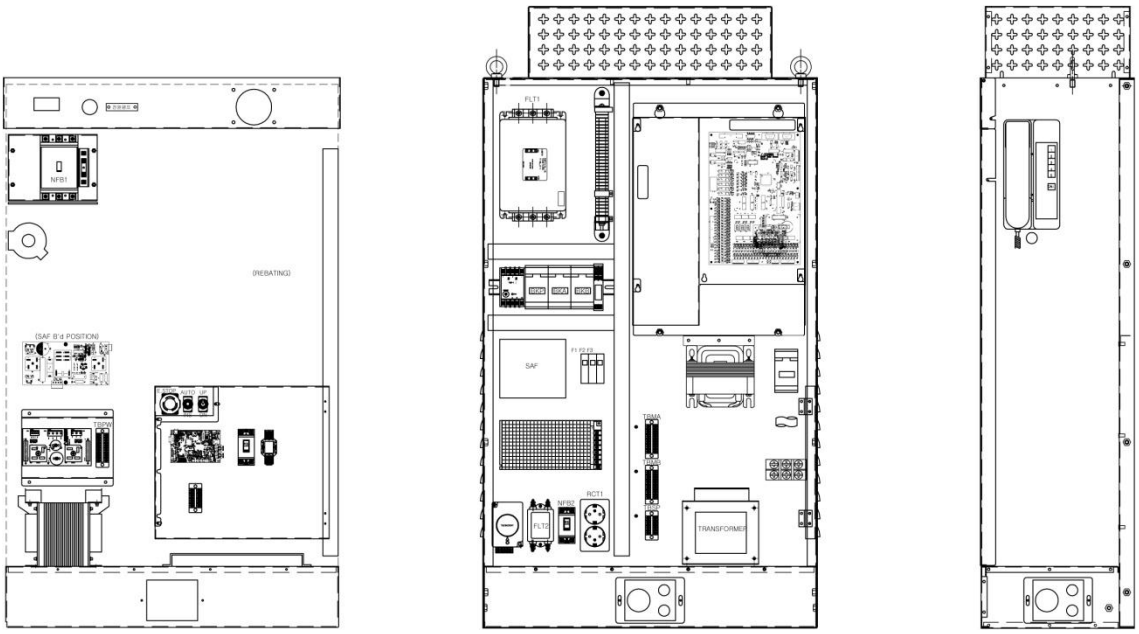
<Control Panel 30kw Installation Layout>

[Figure 1.2 Controller Layout]

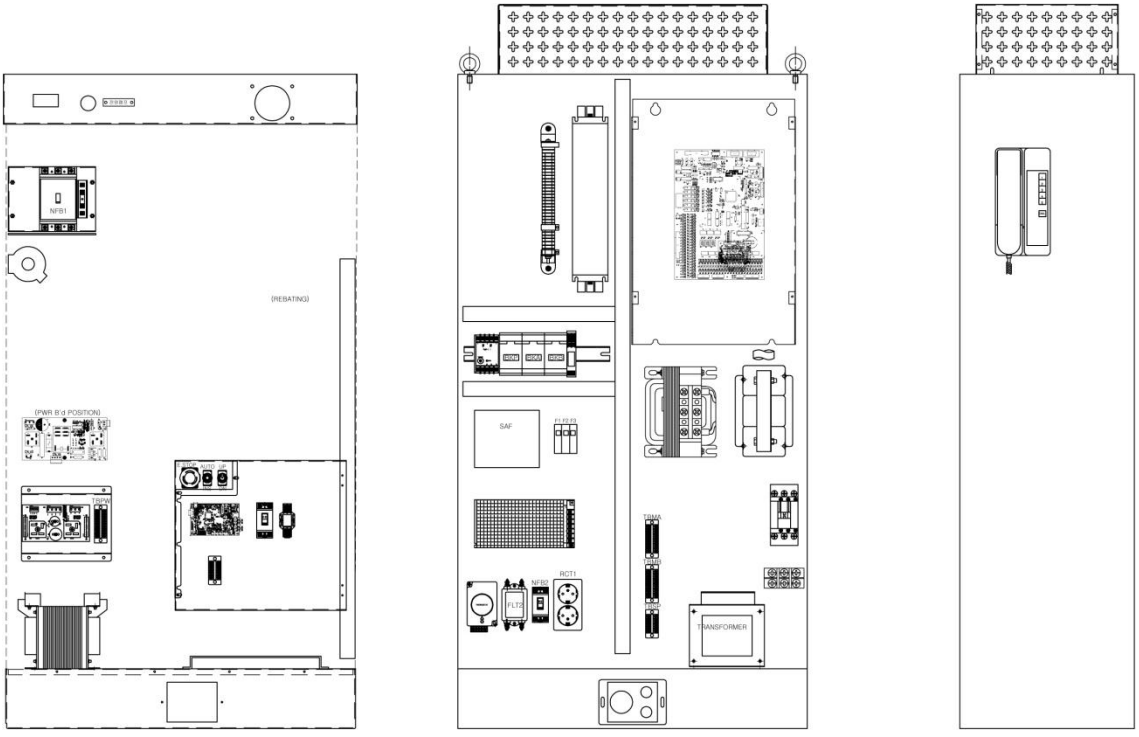


<Control Panel 15kw>

[Figure 1.3 Picture of Control Panel 15kW]



<Control Panel 15kw Layout>



<Control Panel 30kw Layout>

[Figure 1.4 Control Panel Parts Layout 15kW/30kW]

2. Preparations for Installation

IMPORTANT! READ SAFETY NOTE AND THIS PAGE CAREFULLY before installation

2.1 Machine Room Environment

- Machine room should have sufficient space for the work.
- Machine room should have lights for the work.

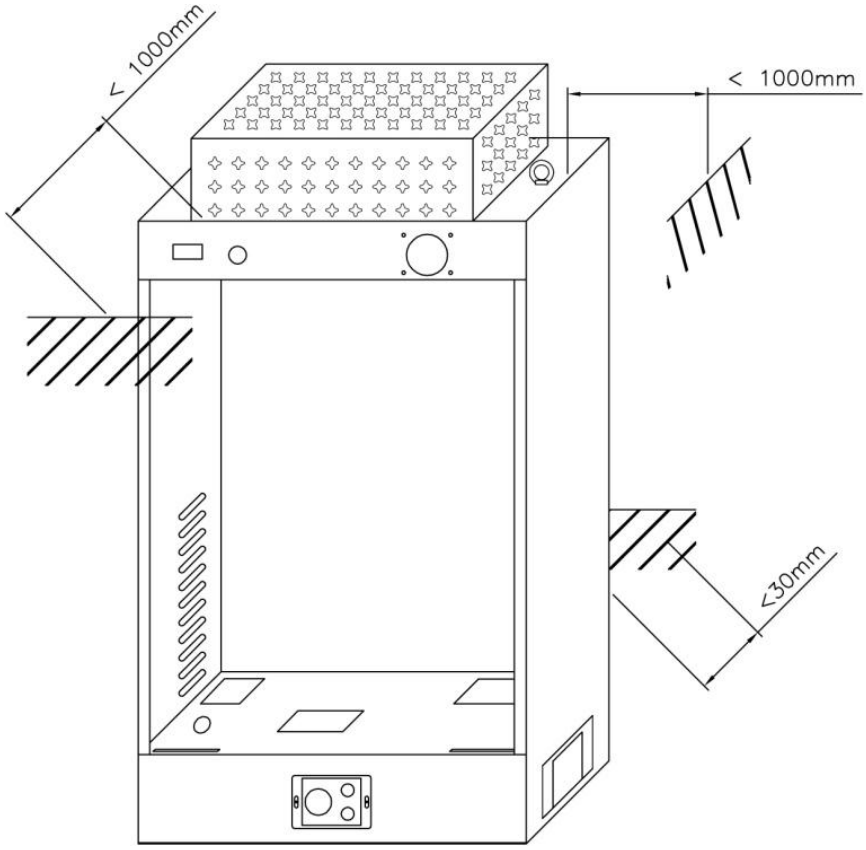
NOTICE

Adequate temperature for the machine room is 0℃~40℃. (For other conditions, install heater / air conditioner.) If it is not an adequate temperature, it may affect the lifetime of the parts.

- The location of the machine room should be altitude 3,658m or less.
- The humidity of the machine room should be 95% or less.

2.2 Location of the Control Panel

- Do not install the control panel where there is a vibration.
- Do not install the control panel where there is a dangerous material.
- Control panel should have the gap of minimum of 1m from obstacles or walls to secure minimum space for installation adjustment work. **[Figure 2.1]**
- Install the control panel apart from windows so that it is not affected by temperature, wind direction, or water.
- Install the control panel where there is little influence of RF (Radio Frequency).



[Figure 2.1 Exterior of CP in Machine Room]

2.3 Precautions for Installation

- CAR communication and hall communication are designed as CAN communication method, so you must thoroughly perform the grounding work in all required parts to prevent malfunction.
- All connections have harnesses, so make sure to check the connector number during the insertion of the connectors and insert correctly in the designated positions to prevent malfunction and parts damage by contact defect, wrong insertion, etc.

<During the Installation Using WOS Engineering Method>

- Connect the jumper cable for installation
- Connect Remote controller JIG for installation
- Make sure to test E-STOP, UP/DOWN switch operation of the JIG before the work.
- Make sure to remove the JIG, When the installation work is not performed

The JIG for existing STVF5, STVF7, or other installation work cannot be used.

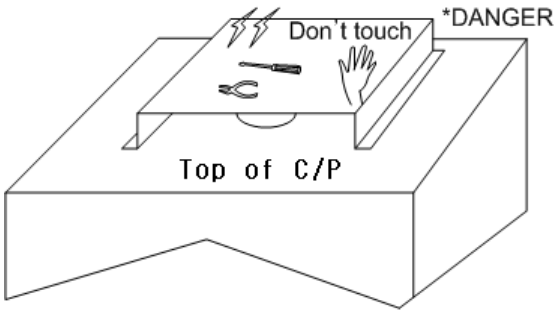
⚠WARNING

Do not touch the resistor box at the top of Control Panel to avoid electric shock by work tools, etc.as in **[Figure 2.2]**, Danger to injury!

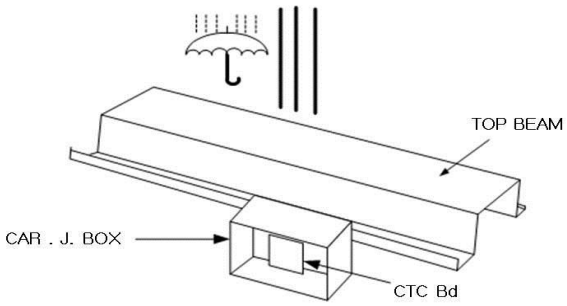
NOTICE

Check a CAR junction box carefully embedded CTC board and CTX boards to avoid board damage by water leakage. **[Figure 2.3]**

- Use the fixing bracket at the bottom of Control Panel when you want to fix and adjust the height of Control Panel.



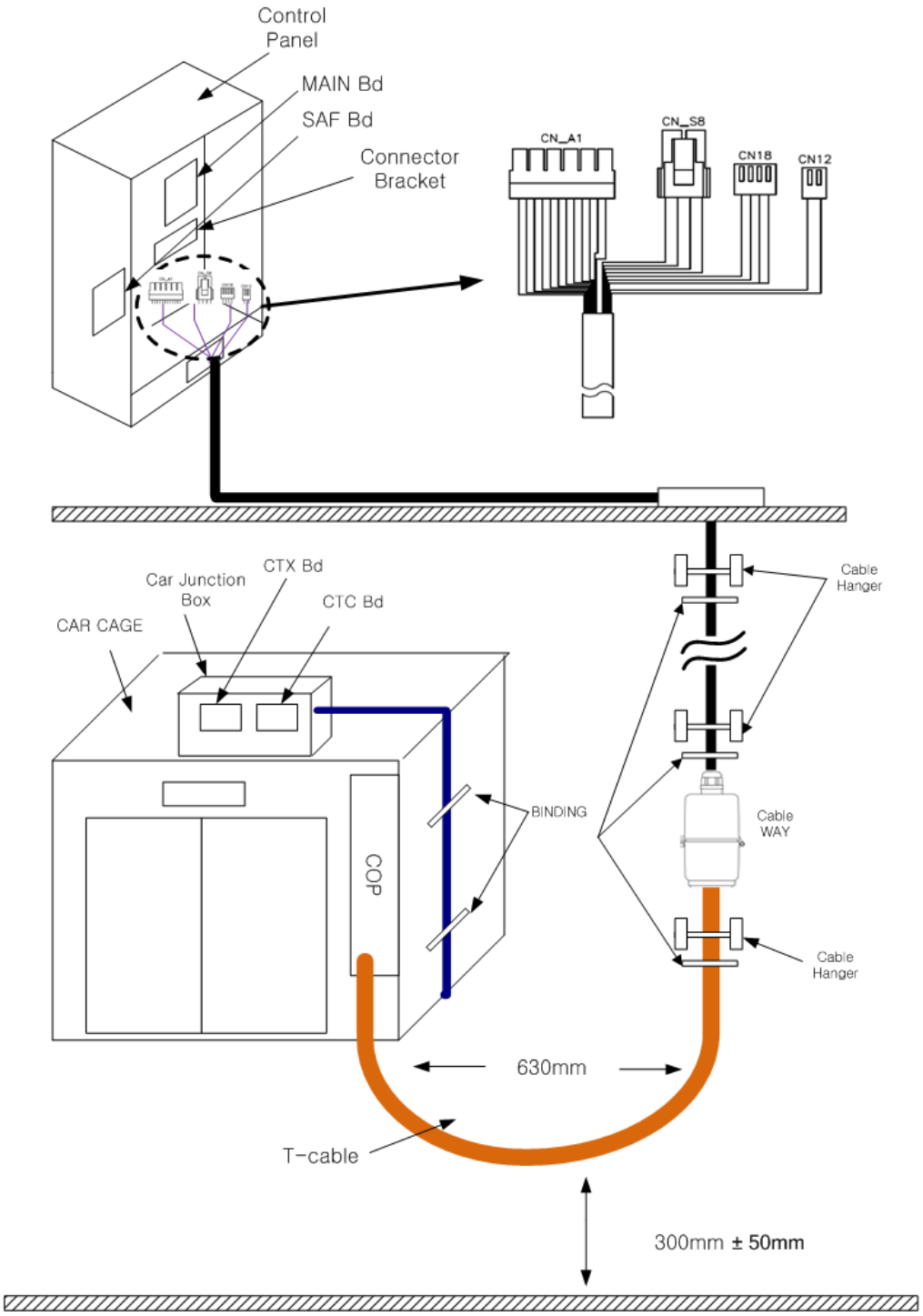
[Figure 2.2]



[Figure 2.3]

NOTICE

- During the low speed operation for installation, **Do not insert CAN communication line** into MAIN Board. CN11 and CN12 in order to prevent CAN parts damage
- If you need to connect CAN communication line connectors CN11 and CN12, insert the connector after turning the power OFF in order to prevent CAN parts damage)
- **Make sure to wire** the inverter input power lines(R, S, and T), output power lines (U, V, W), damping resistance power lines (P, BK) and signal lines with long enough intervals.



Voice speaker and 3-way S/W should be connected from the top of CAR to the bottom of COP.

2.4 Check List before Installation

READ "Safety Note" in this manual carefully in advance Check List.

First of all , the low speed operation should be completed since the work is performed according to WOS engineering method. Therefore,

Check the following list before installation!

- Check 3 phase power applying status and the usage of NFB with appropriate capacity/Building.
- Install the locking device for the machine room to control the access of outsiders.
- Prevent water leakage from window or ventilation window of the machine room.

1) Check List for Machine Room

- **Check the Hoist / Traction Machine**
  - ✓ Check problem with oil (check the type of geared oil and whether the amount is changed)
  - ✓ Check if the project specification and the CAR number matches.

- **Brake**
  - ✓ Check the manual operation status of the brake part.
  - ✓ Check the spring adjustment value according to the capacity.
  - ✓ Check the status of foreign object and adjustment of the brake drum.

- **Control Panel Installation**
  - ✓ Check the space for work at the front side.
  - ✓ Check the vertical and horizontal level and fixing parts of Control Panel.
  - ✓ Select the location considering the installation of the cable duct.

- **Governor**
  - ✓ Check if the specification matches the governor installation status and speed.
  - ✓ During the work using WOS engineering method, make sure to install the governor.

2) Check list of Hoist way

- **Counter weight: CWT**
  - ✓ Acquire adequate amount of counter weights to prevent slipping.
  - ✓ Check amount of counter weights are excessive/insufficient or not

- **Hoist way**
  - ✓ Check if there is an obstacle interfering with CAR frame and Counter weight frame.
  - ✓ Check the tightness and mounting status of each bolt.
  - ✓ Install the safety shelter plate at the floor door part to prevent safety accidents and product damage.

3) Preparations for pit

- **Buffer**
  - ✓ Check if the safety buffer is correctly installed and adequate amount of oil is inserted into oil buffer.
- **Check Projected Parts**
  - ✓ For safety, check and remove unnecessary projected parts.

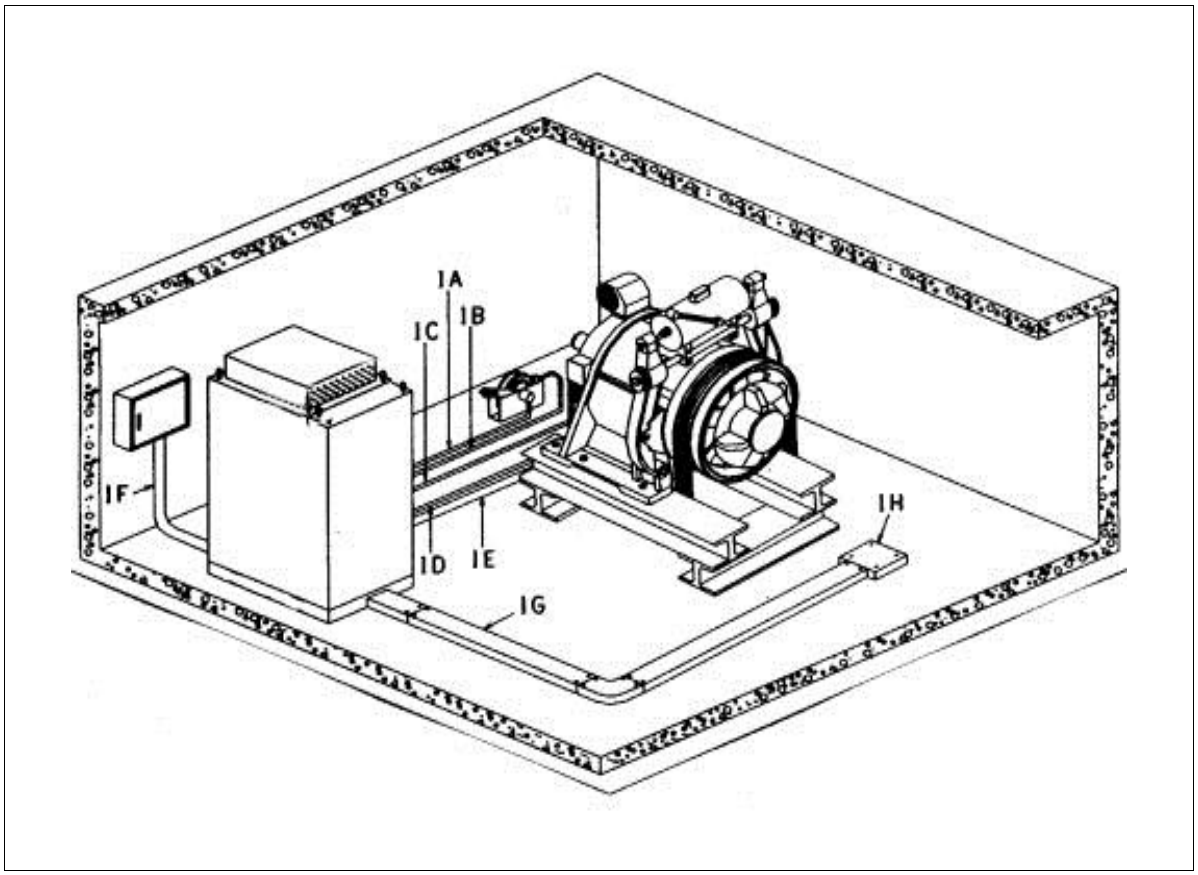
4) Control Panel Inspection

- ✓ Check if Control Panel is placed and fixed for the worker to perform adequately, The front part should have the gap of 1m or more with other obstacles)
- ✓ Unwrap the cover of Control Panel and check if the mounting of each part is correct.
- ✓ Check the status of the inserted connectors. (check wrong insertion, contact defect)
- ✓ Check if the connector of the power part is sufficiently tightened.
- ✓ Check if main power, motor capacity, NFB, inverter and reactor, brake resistance (WB200G/GT, WB210GT inverter have no reactor and brake resistance), etc. are mounted according to the specification.
- ✓ The height of Control Panel can be adjusted with a separate bracket at the bottom, so use it if necessary.

3. Low Speed Test Drive

3.1 Introductions of Machine Room Connection

All wirings should use pipes, and especially have thorough end part finishing works for the pipes.



[Figure 3.1 Machine Room Connections and Pipes (Independent Machine Room)]

#1A ; Conduit and flex conduit for governor encoder.
(When governor encoder connection flexible and pipe, governor encoder are applied)
#1B ; Conduit and flex conduit for governor switch.
(Governor switch connection flexible and pipe)
#1C ; Conduit and flex conduit for machine encoder.
(Motor encoder connection flexible and pipe)
#1D ; Conduit and flex conduit for machine brake & blower motor.
(Traction Machine brake and motor FAN connection flexible and pipe)
#1E ; Conduit and flex conduit for machine motor.
(Motor power line connection flexible and pipe)
#1F ; Conduit for disconnect switch box.
(Main power supply pipe)
#1G ; Machine room duct. (Machine room cable duct)
#1H ; Machine room duct stay box. (Machine room cable STAY box)

3.2 Process of Low Speed Test Drive

3.2.1 Line Connection

1) Power Line Connection

- Connect from U, V, and W connectors, which are inverter output parts, to the motor in the order, and use the ring connector in the motor connector part for sufficient tightening.
- The lines generating noise such as power line and brake, motor thermal SW, etc. should be separated from the signal lines and have pipes and wiring work.)

Be careful not to connect R, S, T power line to inverter U, V, W connectors, or line going to the motor to power input R, S, T connectors!

2) Encoder connection

- Connect correctly the cable coming from encoder to inverter connector.
- If encoder connection is reversed, it may damage the encoder, so be careful.
- Connect shield line directly to inverter PGM connector or shield connector.

3) Motor Thermal Wiring (TH1, THC) :

- Distinguishing Induction Motor from Synchronous Motor.
- Wire the thermal or the thermistor on the motor terminal block correctly according to the electrical diagram.

4) Brake connection

- Refer to the electric diagram to connect brake coil and contact point, etc.
- Connect brake connections.
- Be careful not to reverse B3, B4 and BSP, BSC, BOP lines
- (B3(TBMA-5), B4(TBMA-6) & BSP, BSC, BOP (TBMA-2, TBMA-3, TBMA-4))
- Check if there is a problem in the brake open checking micro switch and brake voltage adjustment volume resistance (R1 in VCON Board) setting.

5) Governor (GOV) connection

- Make sure the governor is clean and connect the case grounding line so that there is no malfunction of the contact point by dust, etc. after completing the governor connection.
- Rotate governor axis to check if there is any interference in the rotation.

6) Grounding work

If the work is performed near the equipment with conductivity, electric shock due to negligence may cause injury or death, so thorough grounding work must be done, and precise grounding work must be done to prevent malfunction of the machine.

Specification for three - phase grounding wire:

When Power less than 15KW, Grouding wire using 10SQ.

When Power greater than 15KW, Grouding wire using 16SQ.

7) Connect from building power connector box to control panel main power(R, S, T, and E).

3.2.2 Low Speed Test Drive

During the installation work, for low speed operation, a separate installation remote controller JIG is used, and installation remote controller JIG is composed of Control Panel side remote controller JIG, CAR side remote controller JIG, and installation remote controller. (Purchased and equipped by the installation company)

REFER TO DRAWING NO. HE000525 INSTALL REMOTE.

1) Jumper Connector Work

Use the jumper connector enclosed in CONTROL PANEL such as safety circuit, door circuit, hoist way limit switch, safety switch, etc. to have jumper work on the SAF board to prepare for the low speed operation.

REFER TO DRAWING NO. 20400532 INSTALL CABLE.

2) How to Test Low Speed Drive

Low speed operation using T-Cable and hoist way pit cable installation remote controller JIG.

① Set the automatic/manual switch in the control panel to manual position.

② Insert UP/DOWN button contact point into the control panel CN-A1connector as a low speed operation method using installation remote controller.

③ Connect remote controller E-STOP contact point into the enclosed jumper connector CN_R.

NOTICE

- During the installation low speed operation, do not insert CAN communication line into MAIN Board CM10 and CM11 in order to prevent CAN parts damage
- Insert the connector after turning the power OFF in order to prevent CAN parts damage, If CAN communication line connector CM10 and CM11 connections are required.

3.2.3 Check List for Low Speed Test Drive

- Check if the status of all connections and jumper cables and mechanical status are correct.
- Place the AUTO/INS switch in the control panel toward downside (INS) to make it a manual mode.
- Press E.STOP switch in the control panel to make cut off safety line.
- In normal condition, check and turn ON the power of the main power connector box.
  - ✓ Check if there is a missing part in the jumper worked parts.
  - ✓ Check if installation remote controller JIGs are correctly connected to installation remote controller, T-cable, and SAF Board.
  - ✓ Check if the remote controller connection works are done.
  - ✓ After supplying the power, take special caution for the electric shock.
- Turn ON MAIN NFB located at the top left side of Control Panel.
- Check if proper voltages are on each AC power and DC110V, DC24V.
- Check if GS, DS, SA relays are energized in SAF board.
- Connect HHT to the Main board to activate “installation manual operation mode”.
  [2]SYSTEM MENU → 1.FACTORY & FIELD → 2.FIELD MODE SET-UP menu
  Select “MANUAL DRIVE"
- Set the data with HHT according to "Appendix B: Inverter Initial Start-Up Manual [For more information, refer to WBVF motor drive unit [Inverter] Manual]".
- Press UP/DOWN button of the remote controller to check if the rotation direction of the main part matches the UP direction, and if it is reverse, connect one pair among U, V, W reversely to match the direction.
- Check the operation of the brake, and perform electric and mechanical adjustment on the brake. **(Appendix A: VCON board adjustment manual)**
- Perform UP/DOWN operation at the top of CAR with the remote controller at the top of CAR.

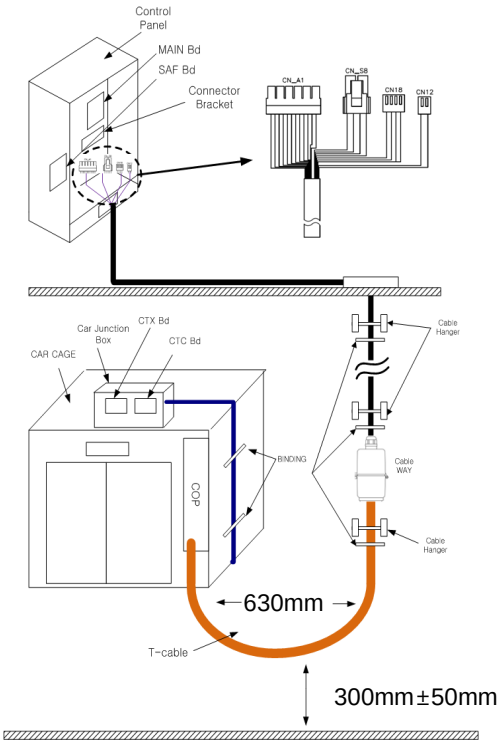
⚠WARNING

- When working with equipment, Report and Repeat based on the car (e.x. Car up, Car down repeatedly says)

4. Hoist Way Cable Harness

4.1 How to Connect Traveling Cable (T-Cable)

- Due to the characteristics of this system, T-Cable does not go through the middle junction box (Hatch Junction BOX) in principle. Therefore, use T-Cable hanger to hoist way between the middle and the highest.
- Take out one side of the T-Cable from the machine room through the machine room duct hall, and bring it to inside Control Panel along the machine room duct. At this time, the length from Control Panel duct hall to the end of the cable should be 2m or more.
- Use the steel reinforcement of Ø10 or more mounted in the machine room duct to bind the cable, and firmly fix the cable to have no problem.
- Install the cable hanger within 500mm from the highest part of the hoist way **[Figure 4.1]**, and fix this T-Cable.
- As lowering the T-Cable to the bottom part, install the cable hanger at OH+TR/2+500mm, and bind the cable once again at this position.

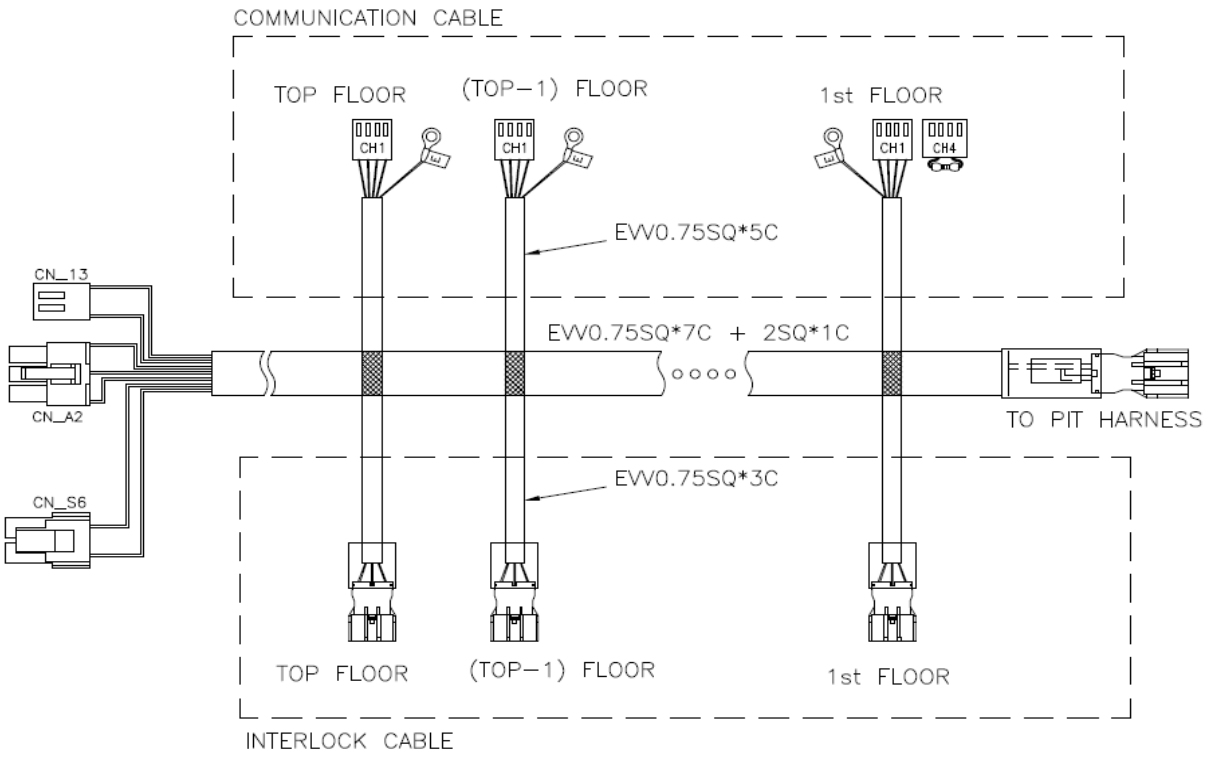


[Figure 4.1 Traveling Cable (T-Cable) Connection]

- While CAR is located at the lowest floor level, have the pit curvature margin of about 300mm±50 between the lowest part of the T-Cable from the pit floor and fix it to the cable hanger at the bottom of the CAR. At this time, the distance between the cable coming down and the cable going up should be at least 630mm.
- Connect T-CABLE from the bottom of the CAR to harness inside OPB in the CAR, and firmly fix it with the bracket in OPB.

4.2 Components of Hoist Way Cable Harness

1) Communication & Interlock Harness



- Communication cable: sends the communication for hall indicator signal and button signal and DC24V power to the hall indicator board.
- Interlock cable: It is the structure to directly connect from each floor interlock to already installed connectors.
- Main line : Use 0.75SQ x 7core + 2SQ x 1core EVV cable.
  Branching line : ① Communication cable branching to each floor: 0.75SQ x 7core EVV cable.
  ② Interlock cable branching to each floor: 0.75SQ x 3core EVV cable.

2) Pit harness cable

It is composed of pit switch signal, pit working light, and consent signal, and harness for bottom part end switch cable and interlock connection part, etc.

3) Final limit switch harness

Top part switch is directly connected to Control Panel, and the bottom switch is taken out from the pit harness.

4) T-cable

30 core is used as a standard, and thoroughly perform grounding work at COP.

5) When the HPI is applied:

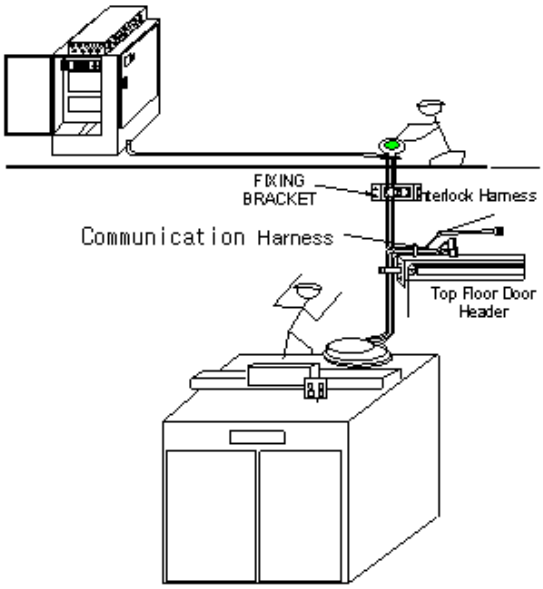
Connect HPI to hall call button in the call button box.

4.3 How to Connect Hoist Way Cable Harness

- **Preparation and Verification Work**
  - ✓ Check the number of floors or CAR marking to see if the cable harness specification precisely matches the site.
  - ✓ Check if there are sufficient cable ties to fix the harness in each floor hanger case.
  - ✓ Check if a bracket is prepared to fix on the wall of the highest part of the hoist way, and anchor or hill tee for fixing should be prepared.
  - ✓ Prepare other basic tools, etc. (Knife, nipper, driver, tape measure, long nose, etc.)

When hoist way is narrow, Use the harness fixing bracket to fixing harness cable.

① Arrange the prepared cable harness to prevent tangling, put them on the top of the CAR, and transport them to the highest floor.
② Check the locations of the indicators and buttons
③ Fix the bracket at the highest part of the harness location using hill tee and anchor. This should be precisely installed at the location where cable goes down straight to the bottom.
④ Mark at 1m from the machine room floor as the bracket location.
⑤ Take out the starting part of the cable to the machine room through the hole of the cable duct.
⑥ Place the white part of the cable to be at position in article 3.
⑦ Insert all of the upper part into the duct hole through the bracket.
⑧ In the machine room, take out the cable came from the hoist way **[Figure 4.2]** to Control Panel through the duct, check if the length is sufficient, and have the worker at the hoist way to completely fix the cable using the fixing bracket.
⑨ Fix the communication line and interlock line at one fixing bracket.
⑩ At this time, also fix the top part Final limit switch cable to the fixing bracket, and connect to the connector taken out from the switch.



[Figure 4.2 Communication, Interlock Harness Cable]

⑪ Pull down the cable by lowering the CAR to the location where the work at the highest floor hanger case part is easy.

⑫ Use the cable tie to firmly tie the cable harness to the hanger case. At this time, place the cable branching point at the top of the hanger case.

⑬ Fix the remaining cable at the top of the hanger case if the cable is long.

⑭ Connect the connector of interlock cable and the connector taken out from the highest floor interlock together at the branching point.

⑮ Check if the internal pin is projected straight up during the connector connection,
If it is bent, or if there is a curved part, be careful for the case of no connection due to the bending.

⑯ HIP and HPI have different indicator button cable connections.

NOTICE

[For HIP]

- The hall button is included inside HIP, so connect the button cable to CH2 of HIP board inside HIP itself, and connect the communication line to CH1 connector.
- The grounding connector included in the communication line should be locked by the bottom part HIP fixing bolt.
- HPI has a separate hall button, and has the material prepared for the cable (CH2 connector) from HPI to the hall button to be taken out from HPI itself, so insert this according to the connector of the UP/DN call button through the hall button box.
- Connect the communication line to CH1 connector. Lock the grounding connector with the grounding bolt inside HPI box.
- Connect CN_13 and CN_A2 connectors to CH1 connector of the highest floor HIP(HPI), and connect the end resistor to the lowest floor HIP(HPI) CH4 connector. (Installed in factory)
- When end-resistor is not installed or installed not properly, cause a CAN communication failure.

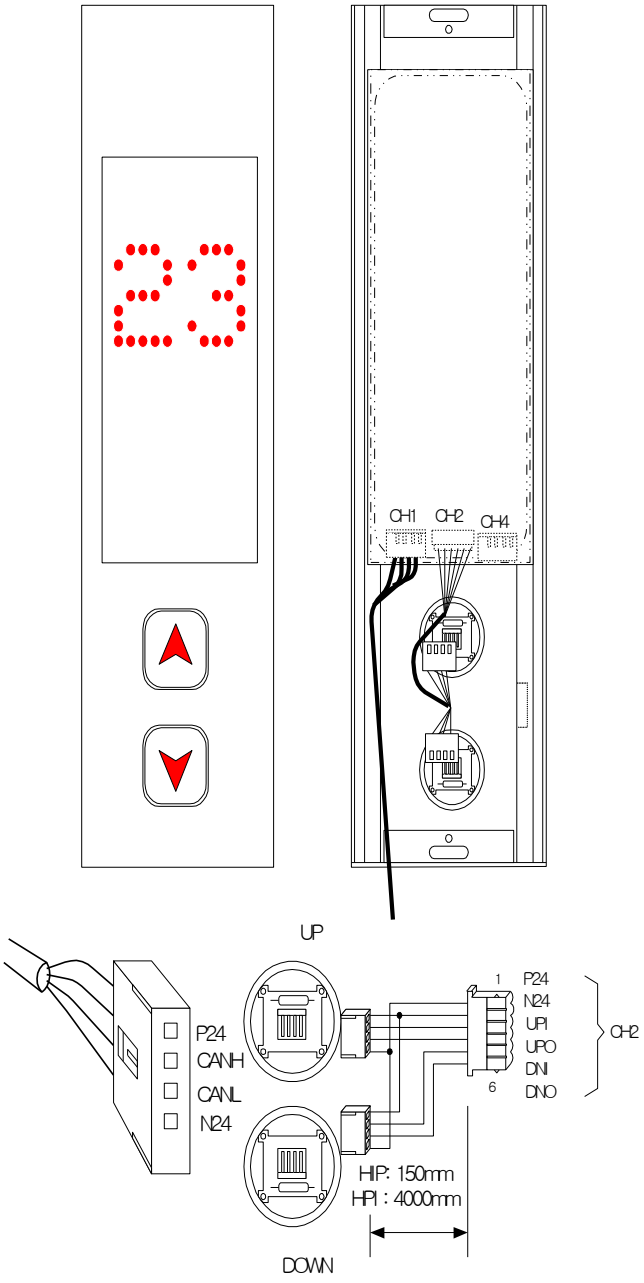
⑰ When the connection between the communication line and the interlock harness cable or the button cable is completed, arrange the cable to prevent interference with door panel operation or CAR operation, operate CAR down to the next floor and stop CAR at the location for easy working, and repeat the above ⑦~⑨works.

⑱ For the lowest floor, perform the following works.

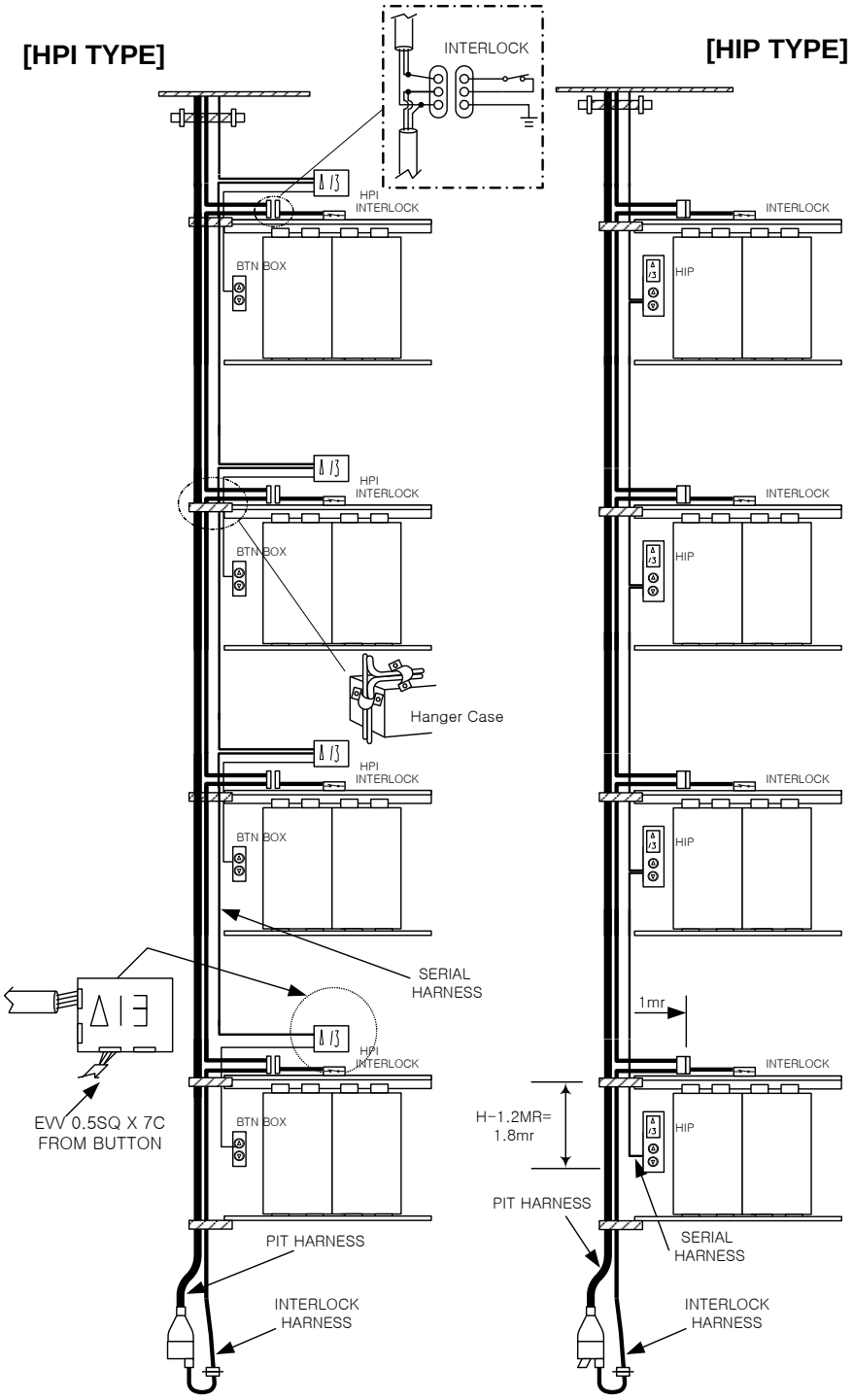
- **Interlock connection at the lowest floor**
  Connect the 2 pin connector that came through the lowest floor interlock to the interlock connector taken out from the pit harness.
- **Communication line connection at the lowest floor**
  For the lowest floor, insert the communication line came down from the lowest floor+1 to HIP or CH1 of HPI board, and insert the end connector into CH4.
- If temporary monitoring panel is installed :
  Remove CH4 end resistor, and connect CAN-repeater to CH4.
  (End resistor is included inside CAN-repeater, so no separate end resistor is necessary)

⑲ Work at the pit

- ✓ Connect bottom part Final limit switch connector.
- ✓ Connect the connector to be connected to the pit switch box.



[Figure 4.3 Communication Cable and Button Connection (HIP)]



[Figure 4.4 Hoist Way Harness Connection Diagram]

5. Inside/Outside CAR

WBVF system has combined door controller and CAR top BOX.
CAR peripherals should be installed as follows.

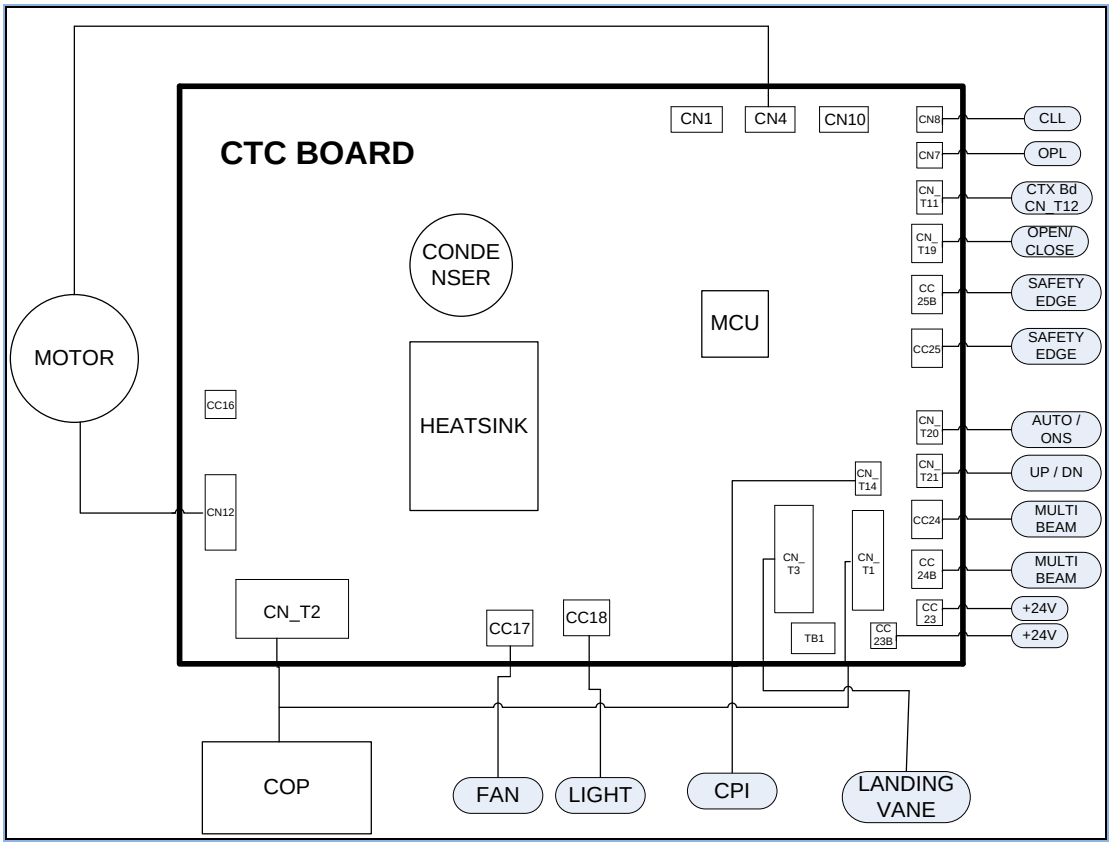
5.1 How to Install CAR Junction Box

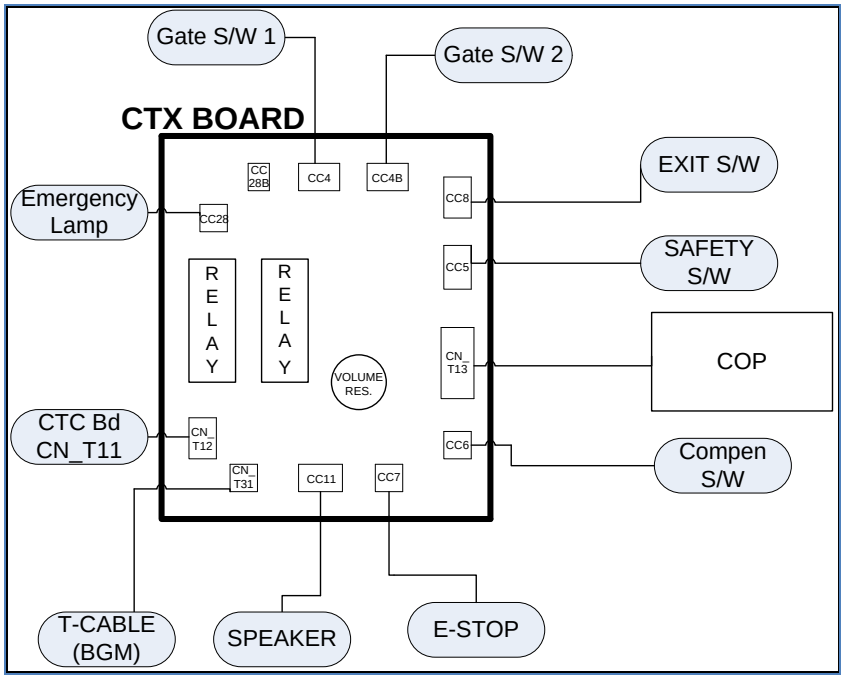
① Install the CAR junction box at the top of the CAR as in **[Figure 5.1]**. Install the CAR junction box for the worker at the hall side to be able to work manual/automatic, Light switch, E-STOP switches within 1m. (Install the CAR J.BOX in the direction where the front part of the switches can be seen.)
② CTX board is embedded in the CAR junction box, so you have to be careful not to damage the boards by water leakage. **[Figure 2.3]**
③ Connect CAR junction box and door motor and door encoder.
④ Perform the door adjustment by referring to a separate WBVF Door controller Manual.
⑤ Installation of the CAR junction box and connection of the peripheral devices
The following installation work should be performed after turning OFF the main power of Control Panel.
CAR junction box contains the circuit boards, extra fuse, installation jumpers, etc. at ship-out, so work with caution not to lose parts and not to damage the enclosed items during the installation.
After completing the installation of the CAR junction box, connect the peripheral devices of the CAR with CTC board and CTX board.

No.	Name	Description	No.	Name	Description
1	CTC	Car Top Controller	9		
2	CTX	Car Top Extension	10		
3	CJB	Car Junction Box	11		
4	CPI	Car Positioned	12		
5	COP	Car Operating Panel	13		
6	M.COP	Main COP	14		
7	S.COP	Sub COP	15	CAN	Controller Area Network
8	D.COP	Disable COP			

[Table 5.1 CAR Junction Box Board terms]

<Main Connection Diagram of the CAR Junction Box>





[Figure 5.1 Connection Diagram near CAR Junction Box]

Devices	Connectors	Remark
Safety switch	CC5	
Emergency exit switch	CC8	
Compen chain switch	CC6	Jumper if not applied
Gate switch 1	CC4	
Gate switch 2	CC4B	Jumper if not applied
Safety edge X 1	CC25	
Safety edge X 2	CC25B	Jumper if not applied
Safety lay power	CC23, CC23B	
Safety lay X 1	CC24	Jumper if not applied
Safety lay X 2	CC24B	Jumper if not applied
Multi beam	CC24B	Jumper if multi beam is applied
	CC24	For multi beam
	CC16	Multi-beam adapter
Landing sensor	CN_T3	
Ventilation fan	CC17	
Fluorescent light	CC18	
CAN communication	CN_T9	
COP	CN_T1	
CAN communication(for CPI)	CN_T14	
Door inverter power	CN_T2	
Close limit S/W	CN8	
Open limit S/W	CN7	
UVW	CN12	
Encoder	CN4	
Speaker	CN_T31	
Speaker volume adjustment signal	CC11	
Emergency light power output	CC28	
Emergency light power input	CC28B	
Input Signal to Protect to be Jammed Finger	CN_T10	

[Table 5.2 CAR Junction Box Connection Parts]

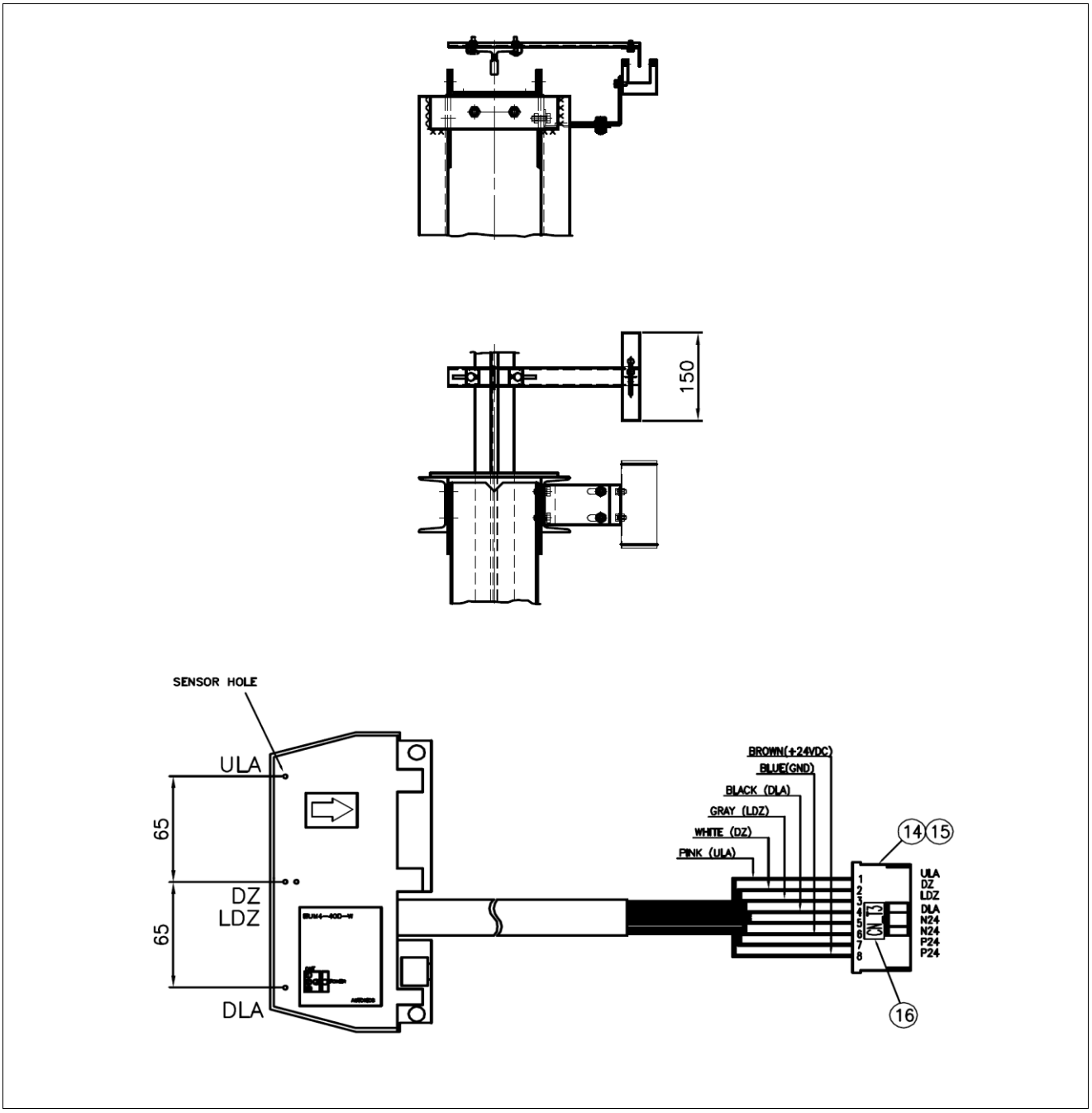
5.2 How to Install Landing Device (Landing Control Device)

1) Landing device installation

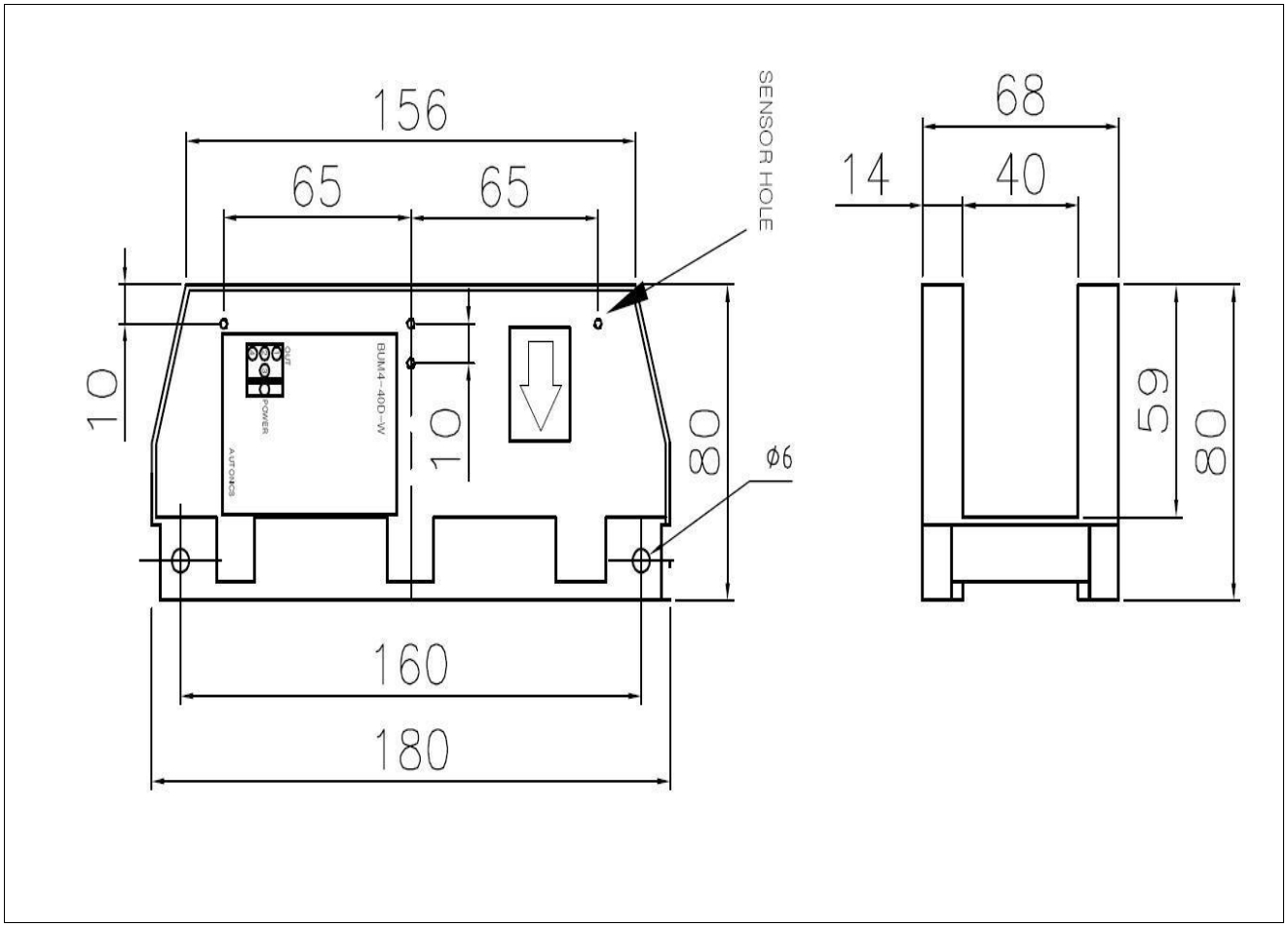
Install the landing device main unit at certain location at the top of the CAR using the bracket.
At this time, considering the installation locations of the governor rope, Final limit switch, T-cable, etc., the landing device location should be decided to have no interference. **[Figure 5.2]**

2) Landing vane installation

① At the top of the CAR, install the landing vane to the rail on the part where the landing device main unit is located.
② Adjust the landing vane to pass the center part of the landing device sensor.
③ Place the CAR on any floor so that the car level hatch floor level to perfectly match
④ Install the landing vane to be at the center of the sensor of the landing device.
⑤ Install the landing vane with the same method in all the floors
⑥ Check if there is any interference and if the gap between the sensor part and the landing vane is uniform by operating the CAR through all the floors.



[Figure 5.2 Landing Control Device ASS'Y Mounting Diagram]

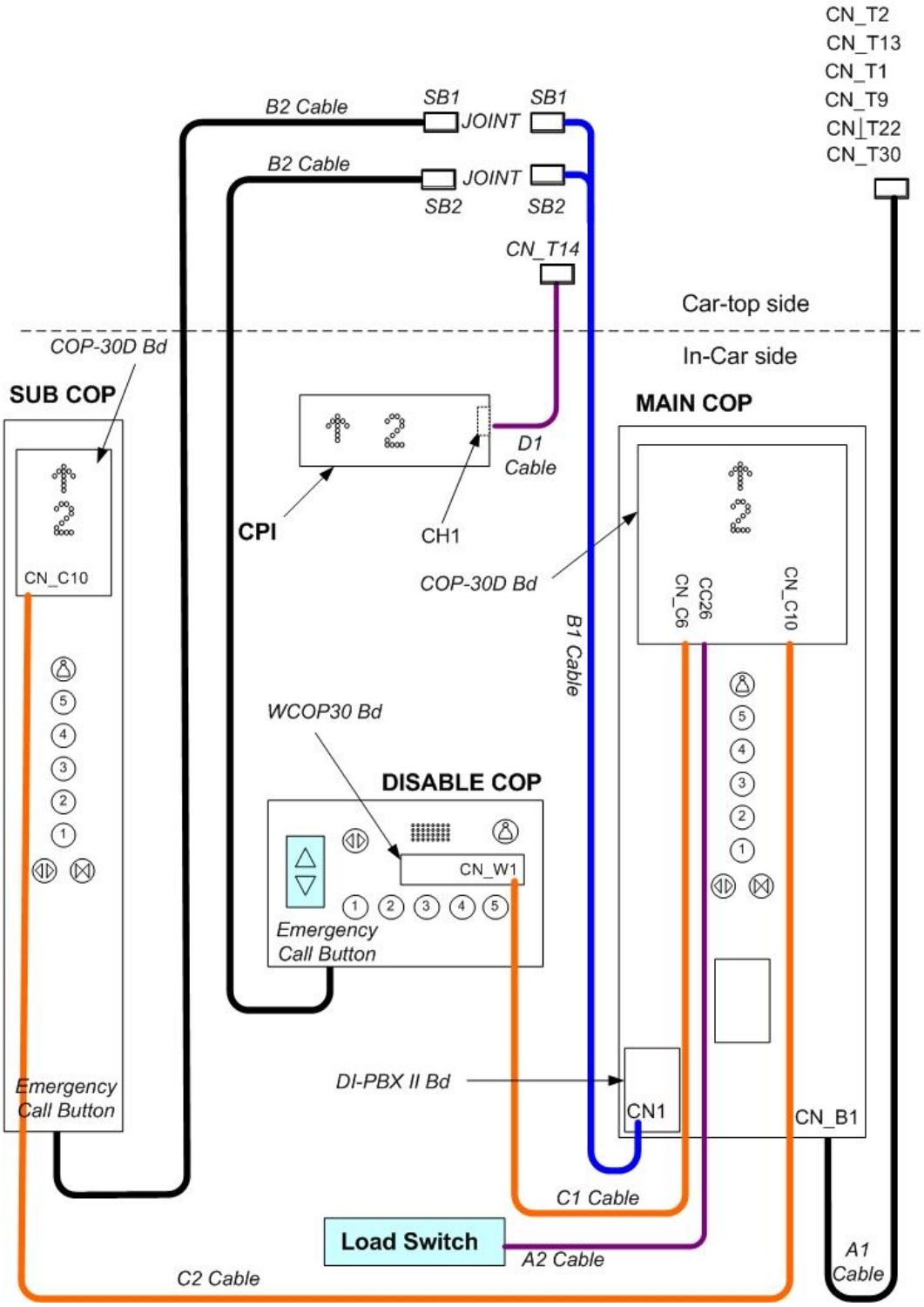


[Figure 5.3 Landing Sensor]

5.3 How to Install OPB

5.3.1 OPB Connection Information

1) Top Part of the CAR and OPB Main Connection Diagram



2) Applied Boards and Buttons

Board Type	Specification	Remark
COP-30D Board	COP Control Board	COP control board
CPI	Car Position IND(CAN type)	Same as the circuit board for Hall communication
OPB button	300Ω	Not compatible with Hall button

3) Main COP Installation and Connection

In the main COP includes 『C1 cable』, 『C2 cable』, 『A1 cable』, 『A2 cable』and 『CN_B1』. After installing the main COP, connect the connectors of each cable to SUB COP-30D, WCOP30, CTC Bd, and CTX Bd.

Cable Name	Starting Point		Destination	
SUB COP CAN communication cable (C2)	MAIN COP-30D Board	CN_C10	SUB COP-30D Board	CN_C10
DISABLE COP CAN communication cable (C1)	MAIN COP-30D Board	CN_C6	WCOP30 Board	CN_W1
LOAD SWITCH (A2)	MAIN COP-30D Board	CC26	LOAD SWITCH	
COP-CJB cable (A1)	COP Panel	CN_B1	CTC Board, CTX Board	CN_T2, CN_T13, CN_T1,CN_T9, CN_T22, CN_T30

4) Handicappedped COP Installation and Connection

In the Handicappedped COP, 『B2 cable』 and 『C1 cable』 are taken out.
Connect 『B2 cable』 to main COP COP-30D board.
Connect 『C1 cable』 to SB2 connector taken out from C1 of the main COP DI-PBX II board.

Cable Name	Starting Point		Destination	
DISABLE COP CAN communication cable (C1)	WCOP30 Board	CN_W1	MAIN COP-30D Board	CN_C6
Emergency call button cable (B2)	Emergency call button		CAR TOP	SB2

5) Sub COP Connection

In sub COP, 『CAN communication cable: C2』 and 『Emergency call button cable: B2』 are taken out.
Connect『C2 cable』 to the main COP COP-30D board.
Connect『B2 cable』to SB2 connector taken out from CN1 of COP DI-PBX II board.

Cable Name	Starting Point		Destination	
CAN communication cable (C2)	SUB COP-30D Board	CN_C10	MAIN COP-30D Board	CN_C10
Emergency call button cable (B2)	Emergency call button		CAR TOP	SB2

5.3.2 Cautions during the Connections between CAN Communication Boards

1) End jumper

For smooth CAN communication, end resistor should be attached to the first and end part of CAN bus. Therefore, there is a jumper (end jumper) in CTC board (CAR Top Control Board) to be able to turn ON/OFF the end resistor.

If the end jumper is incorrectly set, CAN communication error may occur.

2) ID setting

COP Classification	COP-30D board SW1 NO.1
Main	OFF
Sub (Penetration type Rear)	ON

COP Classification	WCOP30 board SW1
Expansion of the number of floors for Main COP 31 floors or more	2 ON
Handicapped COP	ALL OFF

*** After changing ID setting, the power of the board should be turned OFF ->ON for recognition.**

NOTICE

<During the cabling between Handicapped COP, SUB COP, and main COP>

- Connect 『CAN communication cable』"C1" taken out from the Handicapped COP and『CAN communication cable』"C2" taken out from SUB COP to the main COP.

Wire the cable through bottom of the CAR, **NOT THROUGH TOP OF THE CAR**

Reference 1) COP Combination Inside the CAR (30 floors or less)

	COP B'd Combination (Under 30 Floors)			
Number	Precondition (MAIN COP) [SIG. INPUT : CN_C1]	Selection 1 (SUB COP)	Selection 2 (WCOP1)	Selection 3 (WCOP2)
Combination 1 (MAIN + Disabled 1)	MAIN (=MAIN COP) (GOOD : COP-30D B'd)		WCOP1 (=Disabled COP 1) (GOOD : WCOP30 B'd)	
Connection	CN_C6 (→ WCOP1 CN_W1)		CN_W1 (→ MAIN CN_C6)	
SW1	SW1.ALL OFF		SW1.ALL OFF	
Combination 2 (MAIN + SUB + Disabled 1)	MAIN (=MAIN COP) (GOOD : COP-30D B'd)	SUB (=SUB COP) (GOOD : COP-30D B'd)	WCOP1 (=Disabled COP 1) (GOOD : WCOP30 B'd)	
Connection	CN_C10 (→ SUB CN_C10) CN_C6 (→ WCOP1 CN_W1)	CN_C10 (→ MAIN CN_C10)	CN_W1 (→ MAIN CN_C6)	
SW1	SW1.ALL OFF	SW1.1 ON	SW1.ALL OFF	
Combination 3 (MAIN + SUB)	MAIN (=MAIN COP) (GOOD : COP-30D B'd)	SUB (=SUB COP) (GOOD : COP-30D B'd)		
Connection	CN_C10 (→ SUB CN_C10)	CN_C10 (→ MAIN CN_C10)		
SW1	SW1.ALL OFF	SW1.1 ON		
COMBINATION 4 (MAIN + Disabled 1 + Disabled 2)	MAIN (=MAIN COP) (GOOD : COP-30D B'd)		WCOP1 (=Disabled COP 1) (GOOD : WCOP30 B'd)	WCOP2 (=Disabled COP 2) (GOOD : WCOP30 B'd)
Connection	CN_C6 (→ WCOP1 CN_W1) CN_C7 (→ WCOP2 CN_W1)		CN_W1 (→ MAIN CN_C6)	CN_W1 (→ MAIN CN_C7)
SW1	SW1.ALL OFF		SW1.ALL OFF	**SW1.1 ON**

Reference 2) COP Combination Inside the CAR (62 floors or less)

	COP B'd Combination (Uuder 62)					
Number	Precondition (MAIN COP) [SIG. INPUT : CN_C1]	Precondition (WCOP1)	Selection 1 (SUB COP)	Selection 1 (WCOP2)	Selection 2 (WCOP3)	Selection 3 (WCOP4)
Combination 1 (MAIN + Disabled 1)	MAIN (=MAIN COP) (GOOD : COP-30D B'd)	WCOP1 (=Ext COP 1) (GOOD : WCOP62 B'd)			WCOP3 (=Disabled COP 1) (GOOD : WCOP62 B'd)	
Connection	CN_C8 (→ WCOP1 CN_W1) CN_C6 (→ WCOP3 CN_W1)	CN_W1 (→ MAIN CN_C8)			CN_W1 (→ MAIN CN_C6)	
SW1	SW1.2 ON	SW1.2 ON			SW1.ALL OFF	
Combination 2 (MAIN + SUB + DISABLED1)	MAIN (=MAIN COP) (GOOD : COP-30D B'd)	WCOP1 (=Ext COP 1) (GOOD : WCOP62 B'd)	SUB (=SUB COP) (GOOD : COP-30D B'd)	WCOP2 (=Ext COP 2) (GOOD : WCOP62 B'd)	WCOP3 (=Disabled COP 1) (GOOD : WCOP62 B'd)	
Connection	CN_C8 (→ WCOP1 CN_W1) CN_C10 (→ SUB CN_C10) CN_C6 (→ WCOP3 CN_W1)	CN_W1 (→ MAIN CN_C8)	CN_C8 (→ WCOP2 CN_W1) CN_C10 (→ MAIN CN_C10)	CN_W1 (→ SUB CN_C8)	CN_W1 (→ MAIN CN_C6)	
SW1	SW1.2 ON	SW1.2 ON)	SW1.2 ON	SW1.1 + SW1.2 ON	SW1.ALL OFF	
Combination 3 (MAIN + SUB)	MAIN (=MAIN COP) (GOOD : COP-30D B'd)	WCOP1 (=Ext COP 1) (GOOD : WCOP62 B'd)	SUB (=SUB COP) (GOOD : COP-30D B'd)	WCOP2 (=Ext COP 2) (GOOD : WCOP62 B'd)		
Connection	CN_C8 (→ WCOP1 CN_W1) CN_C10 (→ SUB CN_C10)	CN_W1 (→ MAIN CN_C8)	CN_C8 (→ WCOP2 CN_W1) CN_C10 (→ MAIN CN_C10)	CN_W1 (→ SUB CN_C8)		
SW1	SW1.2 ON	SW1.2 ON	SW1.2 ON	SW1.1 + SW1.2 ON		
Combination 4 (MAIN + DISABLED1 + DISABLED2)	MAIN (=MAIN COP) (GOOD : COP-30D B'd)	WCOP1 (=Ext COP 1) (GOOD : WCOP62 B'd)			WCOP3 (=Disabled COP 1) (GOOD : WCOP62 B'd)	WCOP4 (=Disabled COP 2) (GOOD : WCOP62 B'd)
Connection	CN_C8 (→ WCOP1 CN_W1) CN_C6 (→ WCOP3 CN_W1) CN_C7 (→ WCOP4 CN_W1)	CN_W1 (→ MAIN CN_C8)			CN_W1 (→ MAIN CN_C6)	CN_W1 (→ MAIN CN_C7)
SW1	SW1.2 ON	SW1.2 ON			SW1.ALL OFF	SW1.1 ON

5.4 How to Set Hall Indicator Device

1) CPI Installation and Connection

After attaching CPI box to the CAR, precisely connect the sticking out CPI cable to CTC Board CN_T12 connector.

For CPI with DIP switches, turn all DIP switches to OFF or ON state to use it only for indication.

Cable Name	Starting Point		Destination Point	
CPI cable (D1)	CPI	CH1	CTC	CN_T12

5.5 Other Matters for Setting

5.5.1 Voice Synthesis Device Speaker Volume Adjustment

Use COP-30D board VR1.

5.5.2 Cautions during the Replacement of COP-30D Board

When you replace COP-30D board, perform by the following order.

① Turn OFF CONTROL PANEL main power blocker NFB1 to turn off the CAR DC24V power, and perform the work.

NOTICE

Do not take out or install a board while the power is supplied, it may cause damage

② CAR buttons are inserted in sequence from the lowest floor CU1, and the cable colors are different for each floor, so distinguish by this characteristic when the connector is taken out and inserted again.

③ Insert Door Open button to CU64 (DOB) and Door Close button to CU63 (DCB).

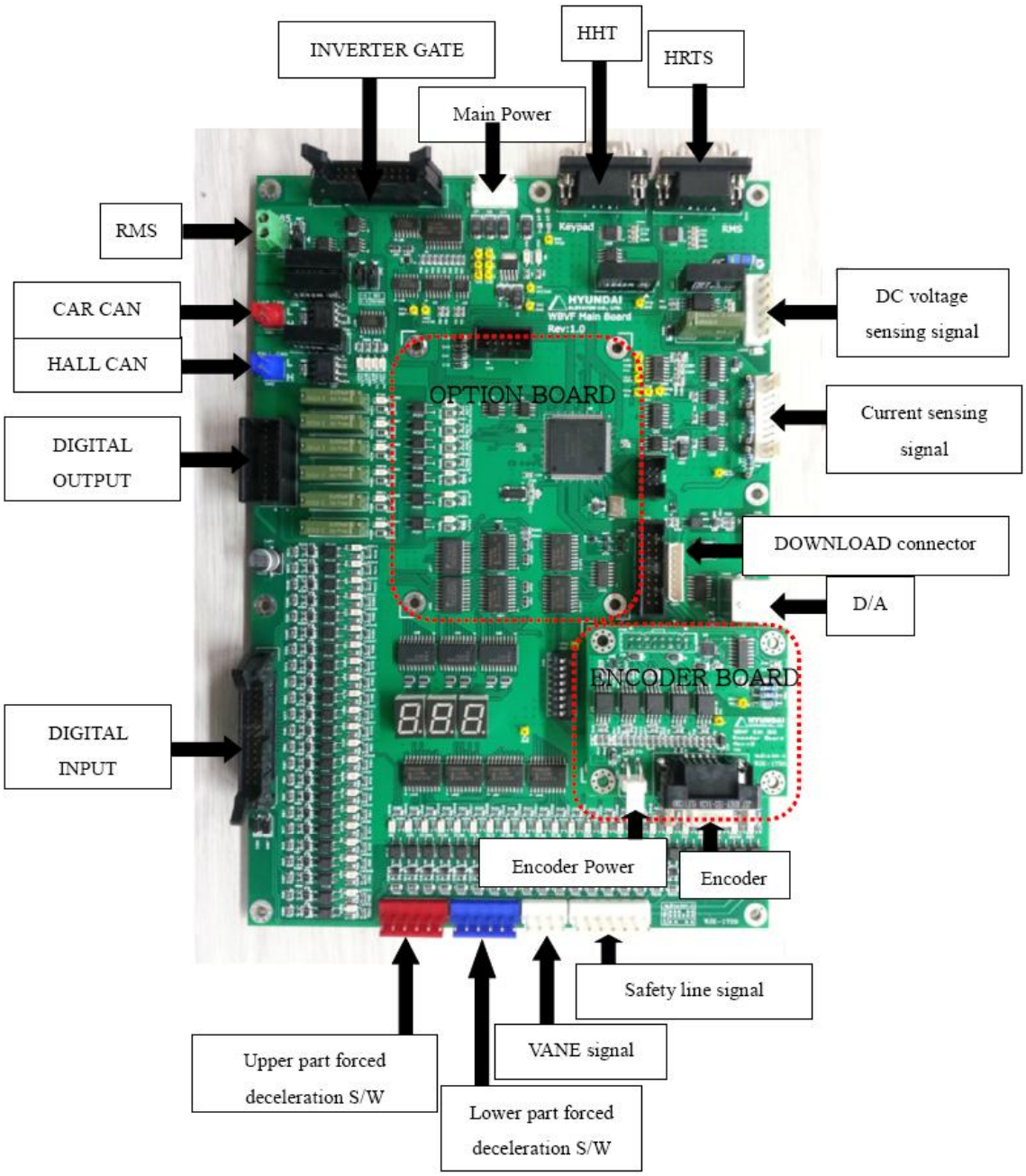
④ When you replace COP-30D board, match the jumper pin settings with the previous COP-30D board.

6. Machine Room Harness

6.1 MCPU Connection

6.1.1 Board Composition

Main board can be divided to CPU part, Memory part, Analog part, Digital part, Communication part, and Display part. Refer to the main board structure in the below **[Figure 6.1]** for the names or each part, and refer to **6.1.2 Connector Name** for the names or the connectors. Before supplying the power to the main board, make sure to check the connector connections.



[Figure 6.1 Main Board]

6.1.2 Connector Name

CN	Item	Remark
CN1	MAIN POWER	Main board power
CN2	JTAG	JTAG connector
CN3	SCI	Control board monitoring
CN4	EzPort	Control board Download connector
CN5	OPTION BOARD	OPTION BOARD connector
CN6	GATE	GATE SIGNAL input/output
CN7	ENCODER	ENCODER BOARD connector
CN8	LOAD INPUT	LOAD input (not used)
CN9	INVERTER CURRENT SENSING	Inverter current sensing
CN10	INPUT DC-LINK SENSING	DC LINK voltage sensing
CN11	CAN1	CAR CAN communication
CN12	CAN2	HALL CAN communication
CN13	D/A Converter	D/A output
CN14	RS232	HRTS
CN15	RS-485	RS 485 communication(monitoring panel)
CN16	KEYPAD	Key-Pad(HHT) connector
CN17	INPUT	Up Slowdown switch
CN18	INPUT	Down Slowdown switch
CN19	INPUT	Landing Vane sensor
CN20	INPUT	Safety line monitoring
CN21	INPUT	Control input signal
CN22	OUTPUT	Control output signal

6.1.3 Main Board Power Specification

CN	PIN	Item	Remark
CN1	1	VCC(+5V)	Main board power
	2	GND	
	3	-15V	
	4	+15V	

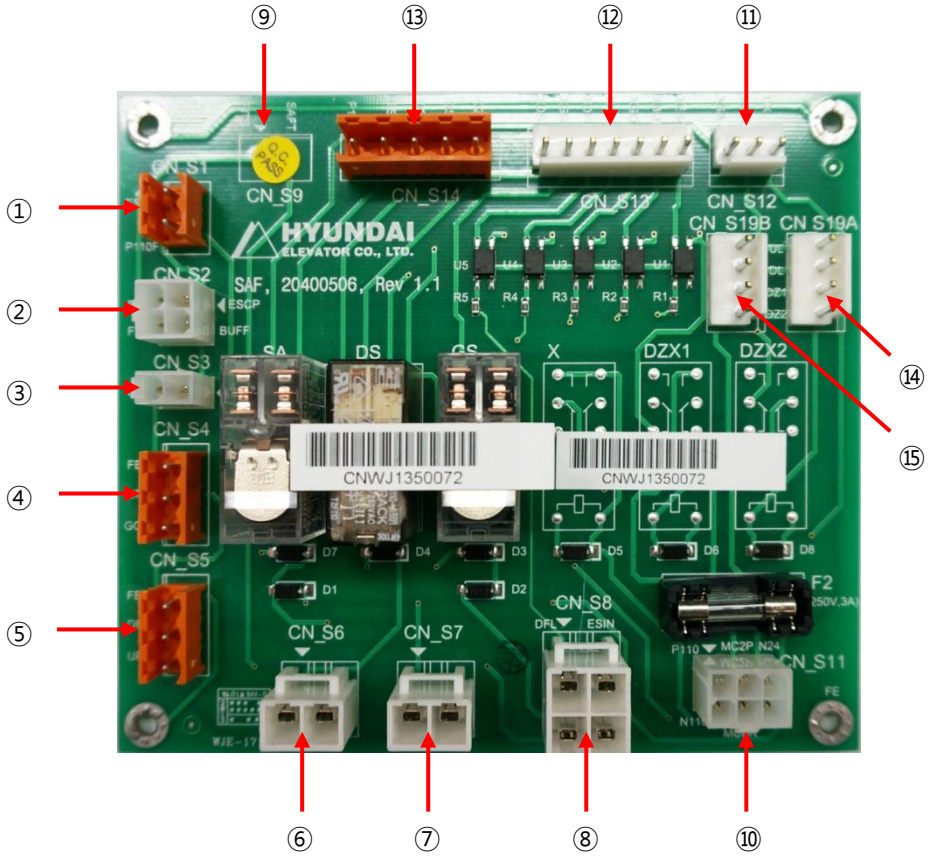
6.1.4 Check Points after Supplying the Power

LED	Item	Remark
LED1	VCC(+5V) checking signal	ON
LED2	Watch Dog checking signal	Blinking
LED3	DC Link input checking signal	ON
LED4,LED5	CAR CAN blinking signal	Blinking
LED6,LED7	HALL CAN blinking signal	Blinking

In normal operation, LED1 and LED3are ON, and LED2, LED4, LED5, LED6, and LED7 are blinking.

6.2 SAF Board Connection

6.2.1 SAF Board Composition



[Figure 6.2 SAF Board]

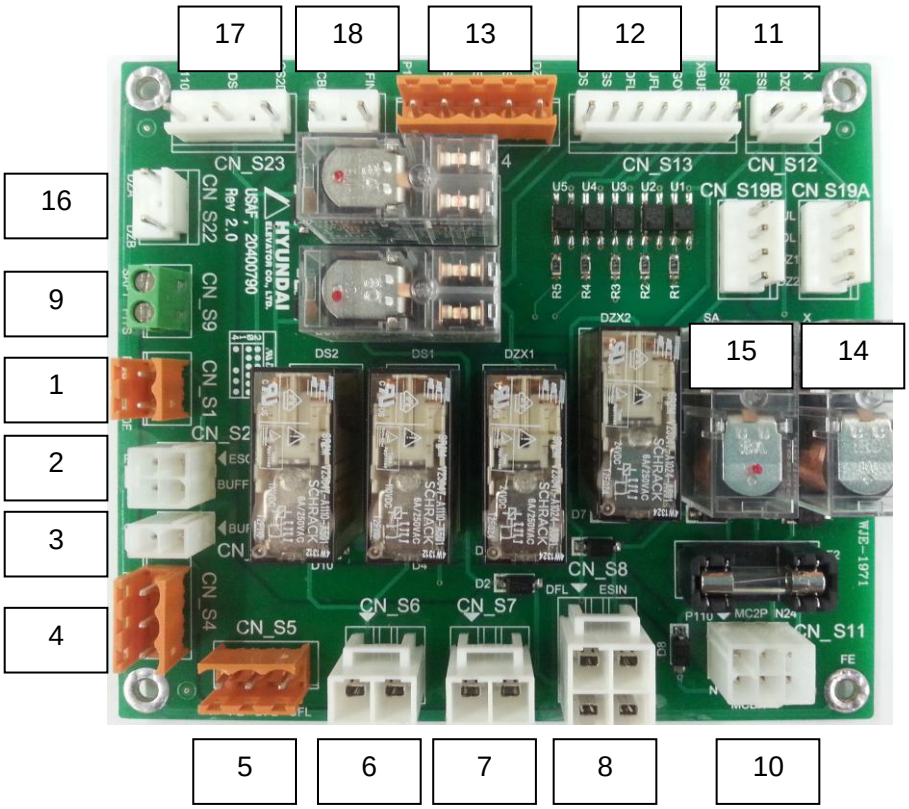
6.2.2 Connector Names

CN	Item	Description	Remark
CN_S1	Control panel emergency stop		Figure 6.2①
CN_S2	Pit safety line	Site connection (pit cable)	Figure 6.2②
CN_S3	Governor (for terminal block connection)	*Note 1.	Figure 6.2③
CN_S4	Up final limit	Site connection (hoist way cable)	Figure 6.2④
CN_S5	Down final limit	Site connection (hoist way cable)	Figure 6.2⑤
CN_S6	Landing door	Site connection (interlock)	Figure 6.2⑥
CN_S7	Landing door	Site connection (interlock)	Figure 6.2⑦
CN_S8	CAR safety line	Site connection (T.CABLE)	Figure 6.2⑧
CN_S9	For electrical emergency operation jumper		Figure 6.2⑨
CN_S11	For SAF board power		Figure 6.2⑩
CN_S12	For safety relay fuse inspection		Figure 6.2⑪
CN_S13	For safety line monitoring		Figure 6.2⑫
CN_S14	MRL external input/output signal connection		Figure 6.2⑬
CN_S19A	Landing van signal	Site connection (T.CABLE)	Figure 6.2⑭
CN_S19B	Landing van signal	Main Board connection	Figure 6.2⑮

Governor site connection is performed at TBMB-1 and TBMB-2 terminal block.

6.3 USAF Board Connection

6.3.1 USAF Board Composition



[Figure 6.3 USAF Board]

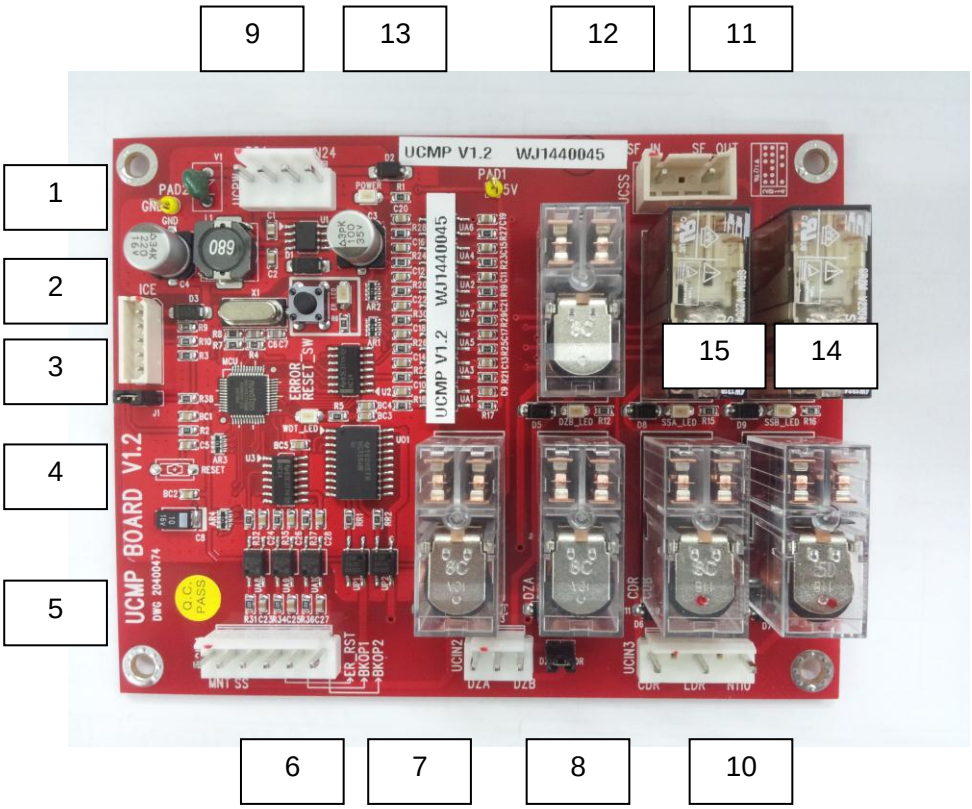
6.3.2 Connector Names

CN	Item	Description	Remark
CN_S1	Control panel emergency stop		Figure 6.3①
CN_S2	Pit safety line	Site connection (pit cable)	Figure 6.3②
CN_S3	Governor (for terminal block connection)	*Note 1.	Figure 6.3③
CN_S4	Top part final limit	Site connection (hoist way cable)	Figure 6.3④
CN_S5	Bottom part final limit	Site connection (hoist way cable)	Figure 6.3⑤
CN_S6	Landing door	Site connection (interlock)	Figure 6.3⑥
CN_S7	Landing door	Site connection (interlock)	Figure 6.3⑦
CN_S8	CAR safety line	Site connection (T.CABLE)	Figure 6.3⑧
CN_S9	For electrical emergency operation jumper		Figure 6.3⑨
CN_S11	For SAF board power		Figure 6.3⑩
CN_S12	For safety relay fuse inspection		Figure 6.3⑪
CN_S13	For safety line monitoring		Figure 6.3⑫
CN_S14	MRL external input/output signal connection		Figure 6.3⑬
CN_S19A	Landing van signal	Site connection (T.CABLE)	Figure 6.3⑭
CN_S19B	Landing van signal	Main B'd connection	Figure 6.3⑮
CN_S22	For Door zone sensor signal	UCMP B’d connection	Figure 6.3⑯
CN_S23	For car door & landing door s/w signal	UCMP B’d connection	Figure 6.3⑰
CN_S24	UCMP safety line	UCMP B’d connection	Figure 6.3⑱

Governor site connection is performed at TBMB-1 and TBMB-2 terminal block.

6.4 UCMP Board Connection

6.4.1 UCMP Board Composition



[Figure 6.4 UCMP Board]

6.4.2 Connector Names

CN	Item	Description	Remark
UCPW	UCMP Board power	DC 24V	Figure 6.4①
ICE	Program downloading connector		Figure 6.4②
UCIN1	MNT, SS, RST Signal	MNT : Monitoring Relay SS : SSA, SSB Status ER_RST : Clear error	Figure 6.4③
UCIN2	For Door zone sensor signal		Figure 6.4④
UCIN3	Door switch signal	Car door, landing door	Figure 6.4⑤
UCSS	For safety line		Figure 6.4⑥
MNT	Monitoring relay		Figure 6.4⑦
DZA	Door zone signal relay 1	/w DZA LED	Figure 6.4⑧
DZB	Door zone signal relay 2	/w DZB LED	Figure 6.4⑨
CDR	Car door signal relay	/W CDR LED	Figure 6.4⑩
LDR	Landing door signal relay	/W LDR LED	Figure 6.4⑪
SSA	Safety relay 1		Figure 6.4⑫
SSB	Safety relay 2		Figure 6.4⑬
ER_RESET S/W	Clear UCM error	/w ER_LED	Figure 6.4⑭
WDT LED	WATCH DOG LED		Figure 6.4⑮

Governor site connection is performed at TBMB-1 and TBMB-2 terminal block.

7. High Speed Test Drive

7.1 Check List before High Speed Drive

When all connections and connecting works are completed, inspection work for high speed operation should be carried out.

7.1.1 Balance Work

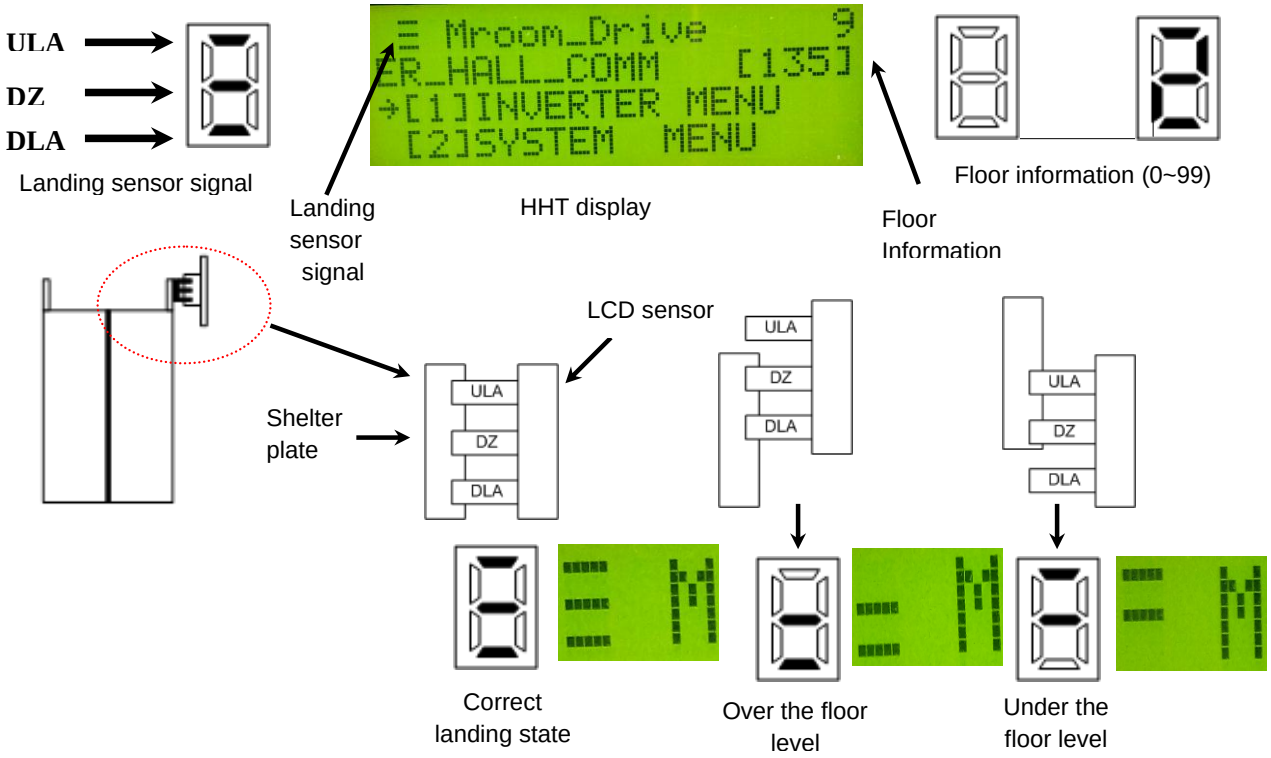
Adjust the counter weight to be exactly at 50% balanced state. When it is 50% balance load in car, inverter load current become similar during UP/DOWN operation the inverter load current becomes uniform. The inverter load current is MONITOR → BASIC → INV CURRENT of HHT menu.

7.1.2 Door Operator work

Refer to the **Door Controller Manual** to adjust the door.

7.1.3 Landing Control Operation Verification

Use the main board landing sensor operation indicator 7-segment or HHT display to check the status of the landing signal inputs.



[Figure 7.1 Landing Sensor Information Display]

7.1.4 Final Limit Switch Operation Verification

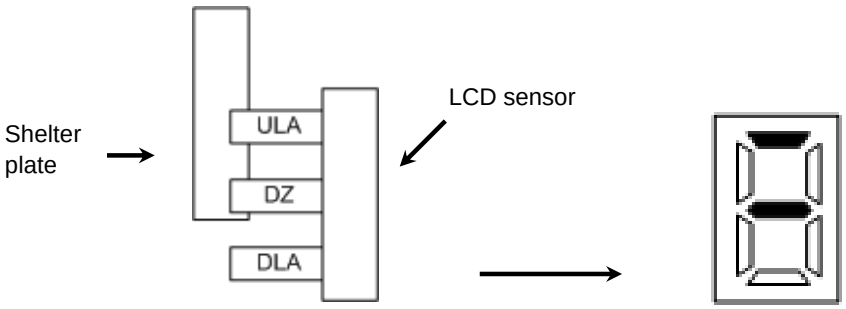
Check the switch location and operation is correct

7.2 How to Set the Initial Operation

- The example of the description is based on the total 32 floors.
- Insert HHT to the main board “CN16" connector.

① Set the AUTO/INS switches at On Car(Car Junction Box) and In Ca to “AUTO” position. But set AUTO/MCS switch at Control Panel to “MCS” position.

② Using the machine room manual UP and DOWN switches, stop the CAR at the location when DLA signal is turned OFF starting from the lowest floor.



Main board 7-segment display

③ Use HHT menu to select the installation automatic operation mode.
From the following HHT initial menu, select [2] SYSTEM MENU.

From FIELD MODE SET-UP menu, select “AUTO DRIVE".

④ Use the main board HHT menu to input the site’s maximum number of floors data (MAX FLOOR).
In the following HHT initial menu, select [1] INVERTER MENU.

Select 02 PROGRAM → 01 CONTROL → 26 MAX FLOOR menu, and input the site’s maximum number of floors.

⑤ Select 02 PROGRAM → 01 CONTROL → 34 INIT START menu, input "1" input, and when you press ENT key, HHT operation mode is changed to “Initial_Drve".

⑥ When you operate the control panel ONU switch (manual operation UP switch), initial operation starts.
When the initial operation starts, even if ONU switch is reset, the operation continues.

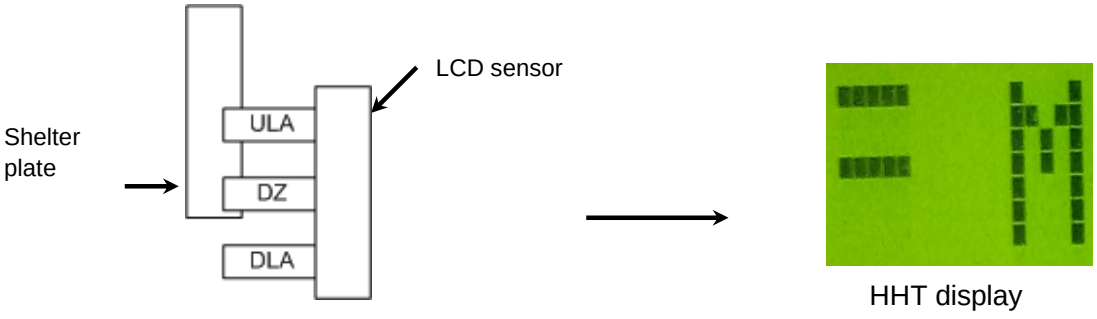
- When the initial operation starts, the floor number information and the landing sensor input status of each floor are displayed on the main board 7-segment.
- If the highest floor checking signal (PLUL) is inputted, after the deceleration and correct landing in the highest floor landing zone, it completes the initial operation. If the highest floor checking signal (PLUL) is not inputted, deceleration is not done, and it causes elevator accident. Therefore, for the initial operation, make sure to check the highest floor checking signal (PLUL) location and the existence of the input.
- After completing the initial operation, if there is an error in the highest floor information, the number of the landing VANEs, etc., the initial operation error “ER_INITIAL" occurs.

7.2.1 How to Set the Initial Operation for EN81-20 Project

- The example of the description is based on the total 32 floors.
- Insert HHT to the main board “CN16" connector.

① Set the NOR/INSP. switches at On Car(Car Junction Box) ,In Car ,Pit Reset Box and Pit Inspection Box to “NOR” position. But set NOR/EEO switch at Control Panel to “EEO” position. The HHT will show “ER_SAFETY” operate RUN switch the safety line will be connected. Before operating the UP /DOWN switch press RUN switch first, after finishing UP/DOWN operation release UP/DOWN switch first release RUN switch till the traction machine stopped.

② Using the machine room manual RUN, UP and DOWN switches, stop the CAR at the location when DLA signal is turned OFF starting from the lowest floor.



③ Use HHT menu to select the installation automatic operation mode.
From the following HHT initial menu, select [2] SYSTEM MENU.

From FIELD MODE SET-UP menu, select “AUTO DRIVE".

④ Use the main board HHT menu to input the site’s maximum number of floors data (MAX FLOOR).
In the following HHT initial menu, select [1] INVERTER MENU.

Select 02 PROGRAM → 01 CONTROL → 26 MAX FLOOR menu, and input the site’s maximum number of floors.

⑤ Select 02 PROGRAM → 01 CONTROL → 34 INIT START menu, input "1" input, and when you press ENT key, HHT operation mode is changed to “Initial_Drve". RUN button should be pressed.

⑥ When you operate the control panel RUN ONU switch (press RUN button then press UP button), initial operation starts.
When the initial operation starts, keep operating RUN switch till the initial operation finished.

- When the initial operation starts, the floor number information and the landing sensor input status of each floor are displayed on the HHT.
- If the highest floor checking signal (PLUL) is inputted, after the deceleration and correct landing in the highest floor landing zone, it completes the initial operation. If the highest floor checking signal (PLUL) is not inputted, deceleration is not done, and it causes elevator accident. Therefore, for the initial operation, make sure to check the highest floor checking signal (PLUL) location and the existence of the input.
- After completing the initial operation, if there is an error in the highest floor information, the number of the landing VANEs, etc., the initial operation error “ER_INITIAL" occurs.

7.3 How to Test High Speed Drive

- Refer to the inverter manual to check the inverter data again.
- If the initial operation is successfully completed, HHT menu MONITOR → BASIC → INITIAL becomes "OK", and check if it is a safe operation condition again.
- Set the machine room AUTO/MCS switch at 'AUTO'. (From then on, automatic operation is possible.)
- Check normal operation by hall call, HIP (HPI), and operation status of the door.
- Get in the CAR and check normal operation of the door, and check the operation status of call input/output and indicator operations.
- When you carry out the test mode operation, follow the below HHT setting method.

In [2] SYSTEM MENU → [1] SYSTEM TEST menu, select "test mode".

Menu Category	Function Description
1. SIMPLE MODE	Automatic operation test (Activated by the machine room manual call, and the door maintains the closed state.)
2. DETAIL MODE	Automatic operation test (Operation time, operation floors, and individual door status setting)

1) Simple Mode

Use UP or DN key to select 1 or 0, and press ENT key.

Setting: 1 → ENT **Reset: 0 → ENT**

<Simple Mode Operation>

- **Operation mode :** automatic operation
  (Reset when it is converted to manual operation, and when it changes from manual → automatic, it returns to the test mode.)
- **DOOR status :** maintains CLOSED
  (If SIMPLE MODE is set when the door is open, it automatically CLOSES.)
- **Call recognition :** Only CAR calls are recognized. (Hall calls are ignored.) → Manual CAR call registration using HHT is possible.
- **DISPLAY :** "Under Inspection" is displayed on the CAR and hall side display device (HIP/HPI).

2) Detail Mode

Use UP or DN key to select 1 or 0, and press ENT key.

Setting: 1 → ENT **Reset: 0 → ENT**

〈Detail Mode Detail Setting Category>

Menu Category	Function Description
1. TEST PERIOD	TEST operation time setting
2. DOOR CTRL	Door activation condition setting
3. TEST FLOOR	TEST operation section (floors) setting

Menu Category	Function Description
ALL	24 hours all day test (Unless test mode is reset, it is maintained)
SPECIFIC	When it becomes the set time every day, it is converted to the test mode. Ex) 1. If you have start time (18:00) and end time (20:00) → Automatic test operation is carried out for 2 hours every day from 6PM ~ 8PM 2. If you have start time (20:00) and end time (08:00) → Automatic test operation is carried out for 12 hours every day from 8PM ~ 8AM the next day 3. If the start time and the end time are the same (start time-20:00, end time-20:00) → It is converted to the test mode for 24 hours all day long as the same as ALL.

Menu Category	Function Description
AUTO	With automatic door operation.
CLOSE	DOOR maintains CLOSED state (OPEN button action is invalid.)

Menu Category	Function Description
ALL	All floors test
SPECIFIC	Repeated operation in certain section (2 floors)

7.3.1 How to Register Manual Call using HHT

[2]SYSTEM MENU → [3] DATA SET UP → 6. CALL DATA → 1. MANUAL CALL

<Manual Call Detail Setting Category>

Menu Category	Function Description
1. CALL CALL	CAR call registration
2. UP HALL CALL	UP hall call registration
3. DN HALL CALL	DN hall call registration

Ex) When you select CAR CALL menu, it is displayed on HHT screen as follows.
How to register CALL: Select floor to register (Using UP/DN key) → ENT

7.3.2 How to Set Display Code for Each Floor using HHT

[2]SYSTEM MENU → [3] DATA SET UP → 4. FLOOR DATA → 2. FLOOR DISPLAY

<Display Data>

WBVF model does not use a separate DISPLAY CODE, and direct input is used for DISPLAY DATA to be displayed at each floor, and you can input up to 3 characters.

Ex) If underground floor 1 is to be displayed as "B1"

	Display Data
Previous Method	16 (hex)
WBVF	B1

← Floor information

← Contents of floor display

<Floor Display Detail Setting Category>

Menu Category	Function Description
1) VIEW & CHANGE	Each FLOOR CODE setting check and change
2) INIT FLOOR CODE	All FLOOR CODE initial

1) How to Use VIEW & CHANGE Menu

Alphabet lowercase letter x means no display.
1xx : among the 3 positions that can be displayed, only “1” at the first position is displayed. That is, it means floor “1”.

2) How to Input DISPLAY DATA

① Select floor to register (Using UP/DN key) → ENT
② Use UP/DN key to select numbers (0~9), alphabet (A~Z) and special characters (+, -, *) → ENT
③ You select space “ ”, it does not display anything.

3) How to Use INIT FLOOR CODE Menu

If you select INIT FLOOR CODE menu, it is automatically initialized based on the MAX FLOOR information and the underground floor information currently set in the system.

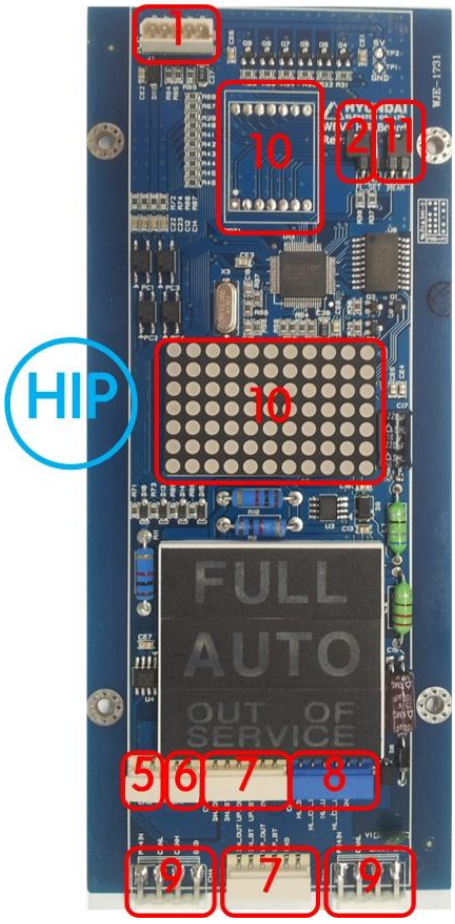
Ex) Max Floor : 32nd floor, Basement Floor : 5th floor
1st ~ 5th floor: B5 ~ B1,
6th ~ 32nd floors: automatically set to display as 1st ~ 27th floor.

7.4 How to Set Load for Load Cell

① **7.1 Balance Work** part must be completed before the load cell load setting, and if the counter weight is properly placed, there will be no load current during the manual DOWN operation.

② Check INV current is within the rated current of the motor by HHT (MONITOR → BASIC → INV CURRENT).

③ For load cell load setting, select the inverter HHT menu PROGRAM → CONTROL → TQBIAS SELEC as “AUTO". For the detail parameters of the load setting, refer to the load setting method in WBVF O&M manual-inverter part.



[Figure 7.2 Indicator Board]

No.	Name	Contents	Remark
2	FL_SET JUMPER	JUMP during the setting of the corresponding floor.	The currently set floor is displayed at JUMP.
11	REAR JUMPER	When JUMP is reset, it operates as REAR (=handicap) HIP.	In normal times, JUMP is set.
7	Button connection part	It connects the button for the CAR call of the corresponding floor.	CH2, CH2B
9	Power / communication connection part	It connects for 24VDC and CAN communication.	CH1, CH4
8	Hall chime / Hall lantern	It is connected when hall chime / hall lantern is used.	CH5 or CH3
1	Program input	It is connected and applied during the program UPDATE.	J1
5	PARKING input part	It connects the cable at the parking floor.	CH6
6	FMR input part	It connects to the firefighter call (=FMR) switch.	CH7

7.5 How to Set Hall Indicator

7.5.1 Indicator Installation and Floor Input

① Insert the connector coming out of the hall button into CH1 or CH4 of the indicator board

② There is a FL_SET JUMP pin in the hall indicator, and during the installation, you need to input the floors according to the ID data of each floor.

Refer to Figure 7.2 for HIP / HIP MINI / HPI / CPI / floor input procedure!

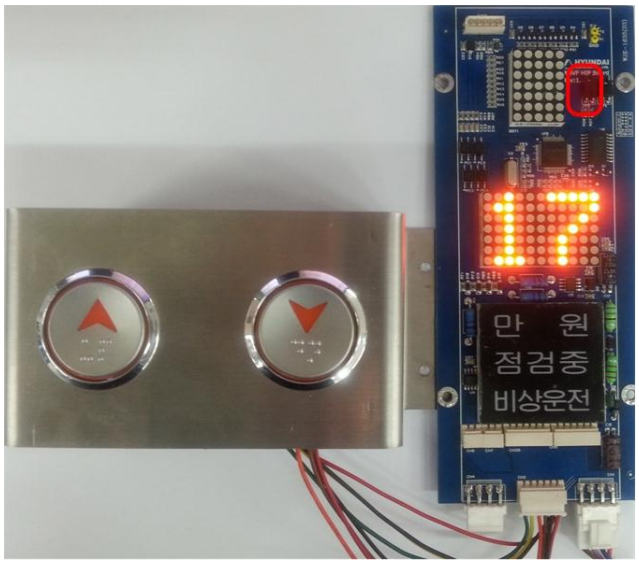
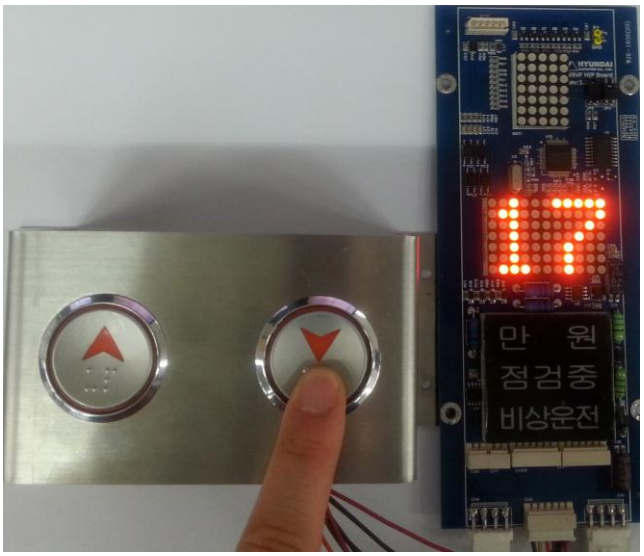
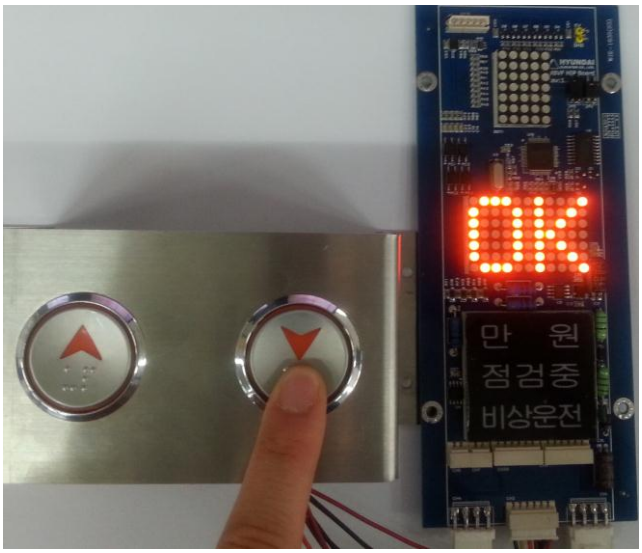
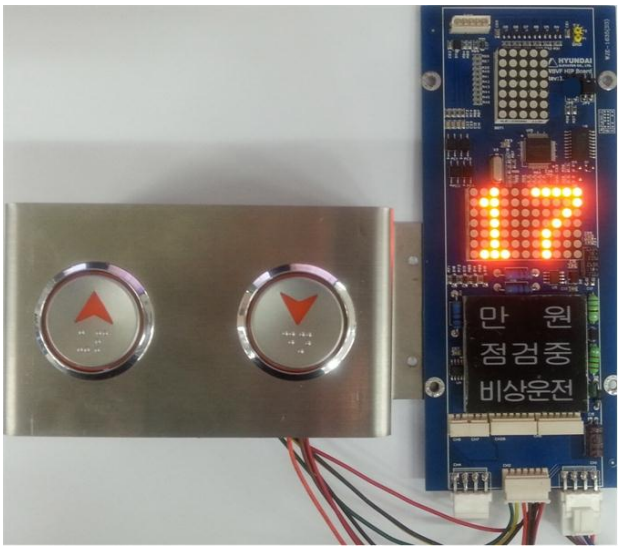
Step	Contents	Note
1	Connect 24VDC power to the CH1 or CH4 of HIP / HPI Board	
2	Connect the UP / DOWN Button to the CH2 or CH2B of board	
3	Jump the FL_SET(=JP3)	
4	Input the floors according to the ID data of each floor by seeing the DOT-MATRIX display	Setting
5	Push the UP or DOWN Button during 5 sec	
6	If you can see the alternating display 『OK』 and 『setting floor』 on the DOT-MATRIX, the floor setting is completed	Completed
7	Release FL_SET(=JP3) jumper	Release setting mode

the floor ID can be set from 1 to 96, the English display after 96 floor is special functions.

Floor ID	Set Floor ID	Note
CP	In case that by using the CAR indicator	
HP	In case of using 2 indicator on hall, one thing have to set as floor ID HP	
SV	In case that by using the supervisor indicator	When it Applies SUPERVISORY option

Refer to the following Step included in the picture for better understanding!

Example of floor input) If you want to 24th floor ID to HIP

Step 3	Step 4, 5
	
JUMP FL_SET	MAKE 17FL BY USING UP or DOWN BUTTON
Step 6	**Step 7**
	
Push the button during 5sec then check 『OK』 sign	Release FL_SET jumper

<u>This work must be carried out when JUMPER is set on FL_SET.</u>

IMPORTANT! HANDICAPPED SETTING :
Remove the jumper at REAR DIP of HIP or HPI board.

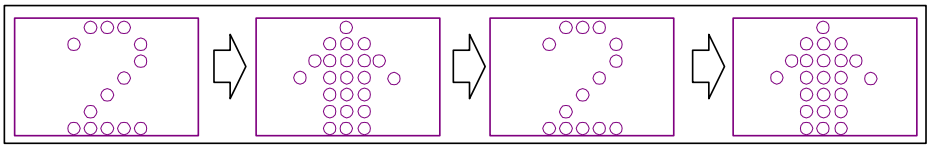
① During the connection of HIP (HPI) cable, check if there is a reversed connection, disconnection, or short-circuit of P24, N24, CH, CL, etc.
② Check if DC24V power is normal.
③ Floor input setting should not overlap with another floor.
④ During the connector connection and disconnection, work after turning the power OFF.
⑤ Manage the site thoroughly to prevent the damage of the material.

7.5.2 Hall Indicator Operation and Troubleshooting

Floor side indicator is in charge of not only the floor display and operation related lamp display, which is its original role, but also is in charge of the input/output of the button signals.
Therefore, you need to be aware of the following abnormal operations of the indicator and the causes.

<Normal Operation Status of the Indicator>

① When it is stopped: floor is displayed
② When the direction is selected, and operation is in preparation: floor and arrow are displayed in turn.



③ When it is in operation: floor display is scrolled and changed according to the operation direction.

7.5.3 Verification of other Optional Functions

Refer to the site specifications to check if the optional function is correctly working.

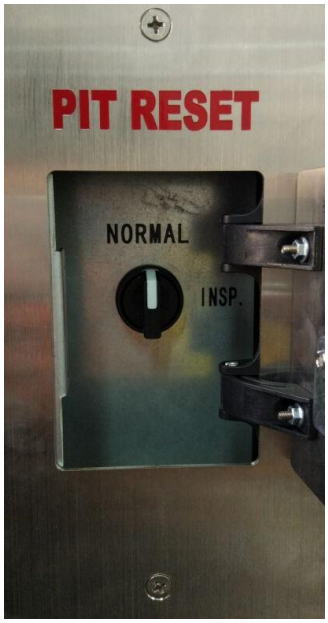
7.5.4 Finish Work

- If all the works are completed, arrange the cables inside the CAR junction box.
- Clean the inside of door sill of each floor to prevent malfunction by foreign object.
- Finish the cleaning of the inside of the hoist way and machine room.

7.6 How to operate Pit inspection

7.6.1 Enter into the pit

Before enter into the pit, open the door of the pit reset device with key and turn the switch to INSP. Position then open the door of the pit.



[Figure 7.3 PIT RESET DEVICE]

[Figure 7.4 PIT INSPECTION BOX]

After getting into the pit turn on the hoist lamps, then turn the inspection switch to INSP. Position. If any movement of the car is needed press RUN button first then press UP/SOWN button. After operation release UP/DOWN button first then release RUN button till traction machine is stopped.

7.6.2 Getting out from the pit

After finish the job in the pit, turn the inspection switch to NORMAL position ,then turn off the hoist lamps. Getting out from the pit turn the pit reset switch to NORMAL position and lock the door of pit reset device.

7.7 How to operate Door Bypass Function

In case of car door or landing door connectors malfunction, Door bypass function is needed. Change the jumper connectors “NORMAL” with “CAR DOOR BYPASS” or ”LANDING DOOR BYPASS” to bypass car door connectors or landing door connectors. When operate emergency electric operation in control panel an audible signal and a flashing light under the car will be activated during the movement.

Appendix A. VCON Board Manual

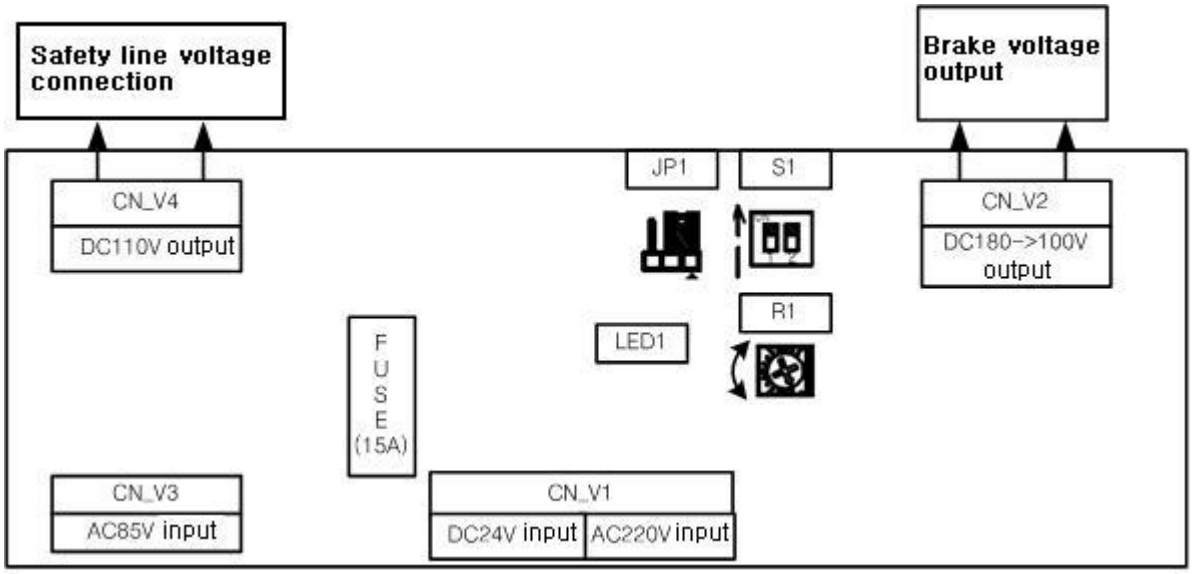
IMPORTANT! READ SAFETY INFORMATION before using a VCON Board.

⚠WARNING

- Install the circuit-braker for effective power disconnection when the board is operated for the first time
- Check the location of the circuit-braker
- Remove the parts that may cause danger during the work.
- Refer to “VCON Board Manual” carefully because VCON board may be operated in an unpredicted method during the operation. It may cause danger due to wrong voltage or wrong connection and it may cause danger.
- Voltage adjustment work must be performed by the qualified personnel.
- Make sure to check the connections before the test.

1. VCON Board Composition and Function

[Figure A.1 VCON Board Composition] shows the composition of VCON board.



[Figure A.1 VCON Board Composition]

As you see in **[Figure A.1 VCON Board Composition]**, VCON board is divided to 2 parts, DC 110V output (CN_V4) and the part for adjusting the brake operating voltage. DC 110V output uses input AC 85V, and AC220V make the brake operating voltage which is required applied brake. Brake holding operation voltage can be controlled by variable resistor (R1) in the board(holding volt : 120V ~ 60V).

Voltage status	Operation voltage boundary	Voltage Tolerance
Starting voltage	200Vdc ~ 110Vdc	±10%
Holding voltage	120Vdc ~60Vdc	

[Table A.1 Brake Operation Voltage Setting]

2. VCON Board Connection

The connector names and the connection diagram of VCON board in **[Figure A.1 VCON Board Composition]** are the same as **[Table A.2 VCON Board Connector], [Figure A.2 VCON Board Brake Voltage Connection Diagram], and [Figure A.3 VCON Board Safety Line Voltage Connection Diagram]**.

Connector Name	Pin Name	Function	Connection
CN_V1	A220B	Brake voltage board input	TR1 A220 [Vac] connection
	B220		TR1 B220 [Vac] connection
	P24	Voltage input for the operation of RE1 (power relay)	MC2 Pin no.14 connection
	DBKB		Main board DBKB connection
CN_V2	P160	Brake voltage output	BKA Pin no.1 connection
	N160		BKA Pin no.3 connection
CN_V3	A85B	Input voltage to generate DC 110V voltage	TR1 A85 [Vac] connection
	B85		TR1 B85 [Vac] connection
CN_V4	P110	DC 110V output voltage	NPR connection
	N110		SAF board CN_S11-4 connection
	N110		GND connection

[Table A.2 VCON Board Connector]

Appendix B. Inverter Initial Start-Up Manual

NOTICE

Perform the drive for initial angle setting when initially starting up the synchronous machine.

1. Synchronous Machine

Section	Item	Remark
Control	EL SPEED	Elevator Speed
	MAX RPM	Motor RPM according to Elevator Speed
	MAX FLOOR	Elevator Maximum Floors
	FWD DIRECTION	Elevator Driving Direction
Motor	INVERTER SEL	Inverter Capacity
	MOTOR SELECT	Motor Selection
	KNOW ANGLE	Status of Initial Angle Setting
	U Angle	Initial Angle
Factory	SINCOS THETA	Status of inputting SIN-COS Encoder Max/Min Value
	SIN MAX	SIN-COS Encoder SIN MAX Value
	SIN MIN	SIN-COS Encoder SIN MIN Value
	COS MAX	SIN-COS Encoder COS MAX Value
	COS MIN	SIN-COS Encoder COS MIN Value

1) SINCOS Encoder Synchronous Machine Initial Angle Setting

① 2. PROGRAM > 3. MOTOR > 10. Know Angle : **'0' Setting.**

② 2. PROGRAM > 4. FACTORY > 13. SINCOS THETA : **'OFF' Setting.**

③ Make Inspection Drive Mode and the Press Inspection UP Button until motor around 5 times.

④ 2. PROGRAM > 4. FACTORY > 14. SINMAX : Normal Value 3500~4095
2. PROGRAM > 4. FACTORY > 15. SINMIN : Normal Value 100~500
2. PROGRAM > 4. FACTORY > 16. COSMAX : Normal Value 3500~4095
2. PROGRAM > 4. FACTORY > 17. COSMIN : Normal Value 100~500
(When SINMAX, COSMAX, SINMIN, COSMIN value are not property , Pleas See' '**2) SINCOS Encoder Synchronous Machine Trouble Shooting'** and then Try again to ②, ③.

⑤ Make Inspection Drive Mode and the Press Inspection UP Button until motor around 5 times.

⑥ Change Know Angle value to 1 by HHT and then check the
2. PROGRAM > 3. MOTOR > 11. U ANGLE Value was changed

⑦ Check the CURRENT and ROTOR POS Value under 1 by HHT
1. MONITOR > 1. BASIC > CURRENT
2. MONITOR > 1. BASIC > ROTOR POS

⑧ If CURRENT or ROTOR POS Value are more then 1, Please see **'2) SINCOS Encoder Synchronous Machine Trouble Shooting**' and then Try again to ①~⑦.

⑨ Initial Angle Setting end.

2) SINCOS Encoder Synchronous Machine Trouble Shooting

① Check the U.V.W Line.
② Check the cable between Encoder and Encoder board.
③ Check the cable between Gate board and Main board (In Main board CN6).
④ 2. PROGRAM > 1. CONTROL > 13. TQBIAS SELEC : 'NO USE TQBIAS ' Check.
⑤ 2. PROGRAM > 3. MOTOR > 1. INVERTER SEL : 'INVERTER SPEC' Check
⑥ 2. PROGRAM > 3. MOTOR > 2. MOTOR SELECT : 'MOTOR SPEC' Check
⑦ 2. PROGRAM > 3. MOTOR > 7. PG PULSE : '131072' Check
⑧ 2. PROGRAM > 3. MOTOR > 12. ANGEL METHOD : 'DC ALIGN' Check.
⑨ 2. PROGRAM > 4. FACTORY > 12. ENCODER TYPE : 'SINCOS ENC' Check

3) INCREMENTAL Encoder Synchronous Machine Initial Angle Setting

① 2. PROGRAM > 3. MOTOR > 10. Know Angle : **'0' Setting**.
② 2. PROGRAM > 4. FACTORY > 13. SINCOS THETA : **'OFF' Setting**.
③ Change Know Angle value to 1 by HHT and then check the
2. PROGRAM > 3. MOTOR > 11. U ANGLE Value was changed
④ Check the CURRENT and ROTOR POS Value under 1 by HHT
1. MONITOR > 1. BASIC > CURRENT
1. MONITOR > 1. BASIC > ROTOR POS
⑤ If CURRENT or ROTOR POS Value are more then 1, Please see '**2) INCREMENTAL Encoder Synchronous Machine Trouble Shooting**' and then Try again to ①~④.
⑥ Initial Angle Setting end.

4) INCREMENTAL Encoder Synchronous Machine Trouble Shooting

① Check the U.V.W Line.
② Check the cable between Encoder and Encoder board.
③ Check the cable between Gate board and Main board (In Main board CN6).
④ 2. PROGRAM > 1. CONTROL > 13. TQBIAS SELEC : 'NO USE TQBIAS ' Check.
⑤ 2. PROGRAM > 3. MOTOR > 1. INVERTER SEL : 'INVERTER SPEC' Check
⑥ 2. PROGRAM > 3. MOTOR > 2. MOTOR SELECT : 'MOTOR SPEC' Check
⑦ 2. PROGRAM > 3. MOTOR > 7. PG PULSE : '131072' Check
⑧ 2. PROGRAM > 3. MOTOR > 12. ANGEL METHOD : 'DC ALIGN' Check.
⑨ 2. PROGRAM > 4. FACTORY > 12. ENCODER TYPE : 'INC ENC Check

2. Induction Machine

Section	Item	Remark
Control	EL SPEED	Elevator Speed
	MAX RPM	Motor RPM according to Elevator Speed
	MAX FLOOR	Elevator Maximum Floors
	FWD DIRECTION	Elevator Driving Direction
Motor	INVERTER SEL	Inverter Capacity
	MOTOR SELECT	Motor Selection

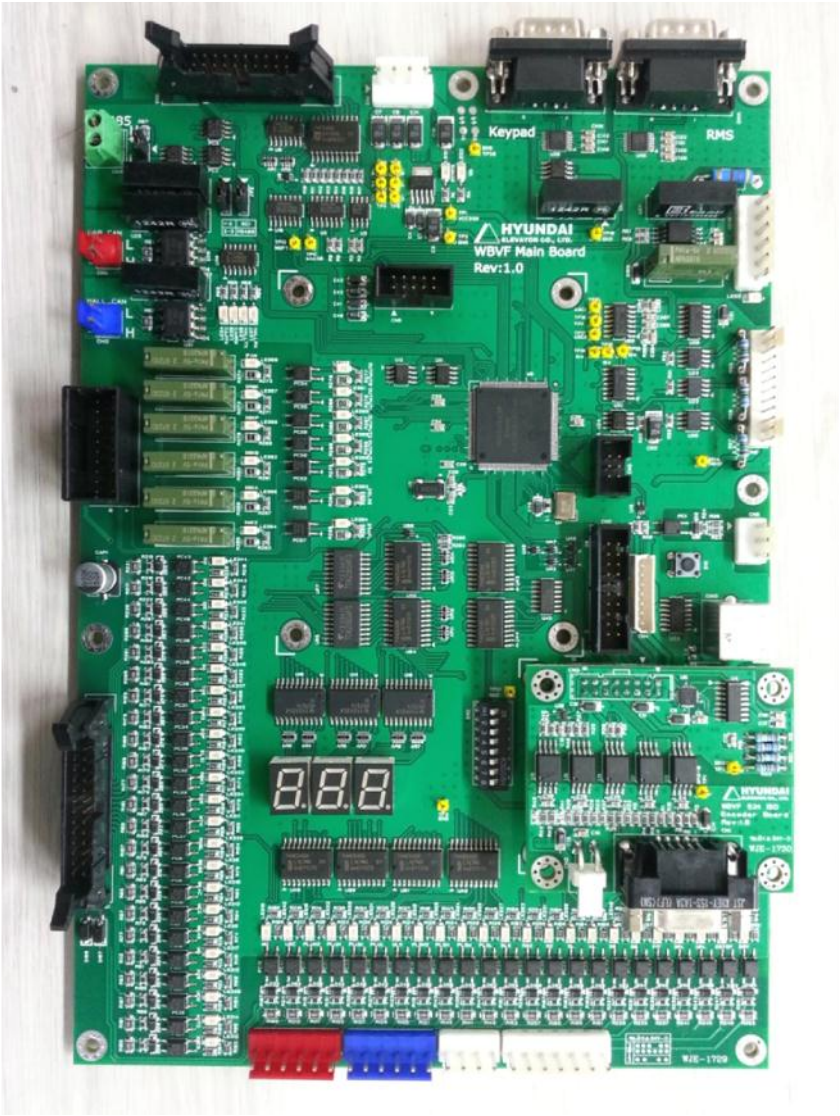
Appendix C. Description WBVF System Board

1. Control Panel PC Board

NOTICE

- Make sure to turn off Main Power when you replace PCB Board
- The board's settings are all set from the factory. Do not reset except for trouble shooting or replacement.

1.1 Main Board



[Figure C.1 Main Board]

1) Main PC Board. Power Specification

CON	Pin	Name	Remark
CN1	1	VCC(+5V)	MAIN POWER
	2	GND	
	3	-15V	
	4	+15V	

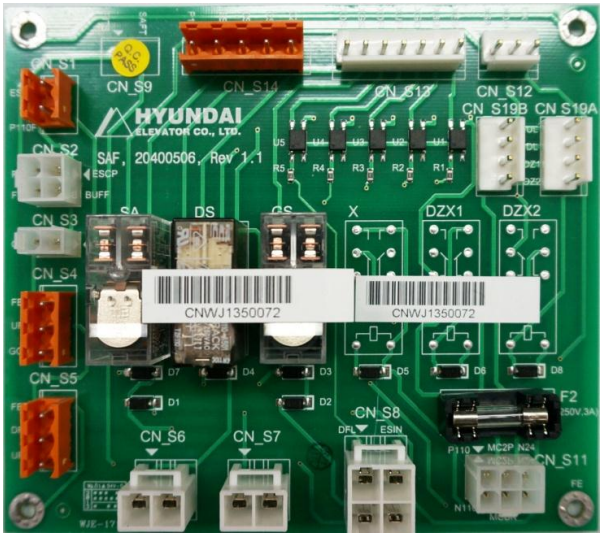
2) Check Points after Applying the Power

LED	Item	Remark
LED1(POWER)	MAIN BOARD VCC supply verification signal	ON
LED2(WDT)	DSP Watch Dog verification signal	Blinking
LED3	DC LINK input verification signal	ON
LED4, LED5	CAN1 TX1, RX1 verification signal	Blinking
LED6, LED7	CAN2 TX2, RX2 verification signal	Blinking

In normal operation, LED1 and LED3 are ON, and LED2, LED4, LED5, LED6, and LED7 are blinking.

1.2 SAF Board

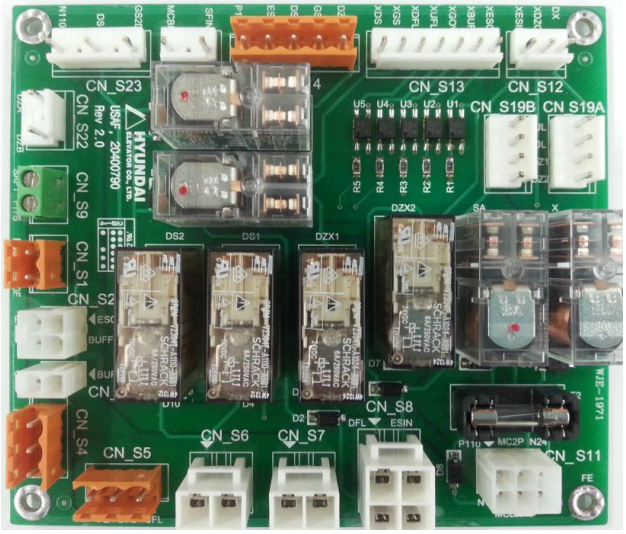
SAF Board



No.	Name	Description	Remark
1	CN_S1	Control Panel emergency stop	
2	CN_S2	Feet safety line	Site wiring(feet)
3	CN_S3	Governor (for terminal block wiring)	
4	CN_S4	Up final limit	Site wiring(hoist way)
5	CN_S5	Down final limit	Site wiring(hoist way)
6	CN_S6	Boarding floor door	Site wiring(interlock)
7	CN_S7	Boarding floor door	Site wiring(interlock)
8	CN_S8	Car safety line	Site wiring(T-CABLE)
9	CN_S9	For electrical emergency operation jumper	
10	CN_S11	For SAF board power	
11	CN_S12	For safety relay fuse inspection	
12	CN_S13	For safety line monitoring	
13	CN_S14	MRL external input/output signal connection	
14	CN_S19A	Installed vane signal	Site wiring(T-CABLE)
15	CN_S19B	Installed vane signal	

1.3 USAF Board

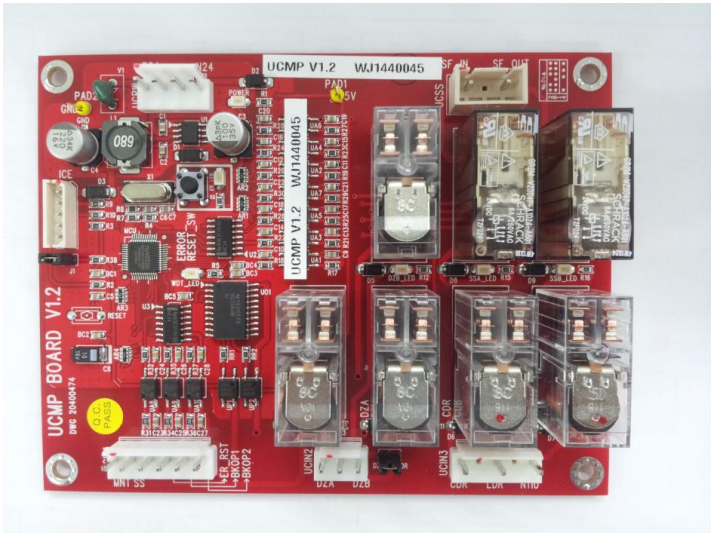
USAF Board



No.	Name	Description	Remark
1	CN_S1	Control Panel emergency stop	
2	CN_S2	Feet safety line	Site wiring(feet)
3	CN_S3	Governor (for terminal block wiring)	
4	CN_S4	Upper part final limit	Site wiring(hoist way)
5	CN_S5	Lower part final limit	Site wiring(hoist way)
6	CN_S6	Boarding floor door	Site wiring(interlock)
7	CN_S7	Boarding floor door	Site wiring(interlock)
8	CN_S8	Car safety line	Site wiring(T-CABLE)
9	CN_S9	For electrical emergency operation jumper	
10	CN_S11	For SAF board power	
11	CN_S12	For safety relay fuse inspection	
12	CN_S13	For safety line monitoring	
13	CN_S14	MRL external input/output signal connection	
14	CN_S19A	Installed vane signal	Site wiring(T-CABLE)
15	CN_S19B	Installed vane signal	
16	CN_S22	For Door zone sensor signal	UCMP B'd connection
17	CN_S23	For car door & landing door s/w signal	UCMP B'd connection
18	CN_S24	UCMP safety line	UCMP B'd connection

1.4 UCMP Board

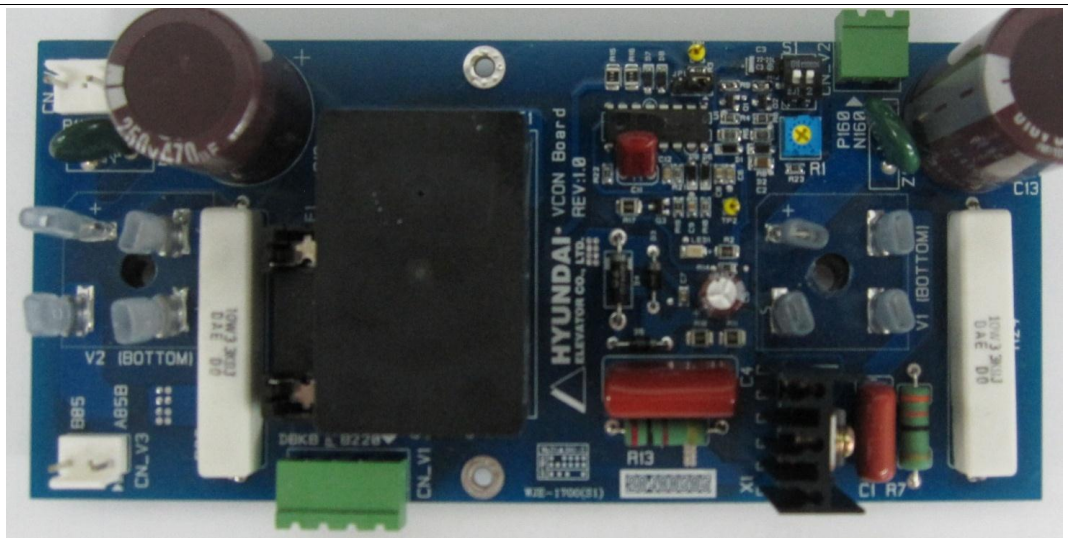
UCMP Board



No.	Name	Description	Remark
1	UCPW	UCMP Board power	DC 24V
2	ICE	Program downloading connector	
3	UCIN1	MNT, SS, RST Signal	MNT : Monitoring Relay SS : SSA, SSB Status ER_RST : Clear error
4	UCIN2	For Door zone sensor signal	
5	UCIN3	Door switch signal	Car door, landing door
6	UCSS	For safety line	
7	MNT	Monitoring relay	
8	DZA	Door zone signal relay 1	/w DZA LED
9	DZB	Door zone signal relay 2	/w DZB LED
10	CDR	Car door signal relay	/W CDR LED
11	LDR	Landing door signal relay	/W LDR LED
12	SSA	Safety relay 1	
13	SSB	Safety relay 2	
14	ER_RESET S/W	Clear UCM error	/w ER_LED
15	WDT LED	WATCH DOG LED	

1.5 VCON Board

VCON Board

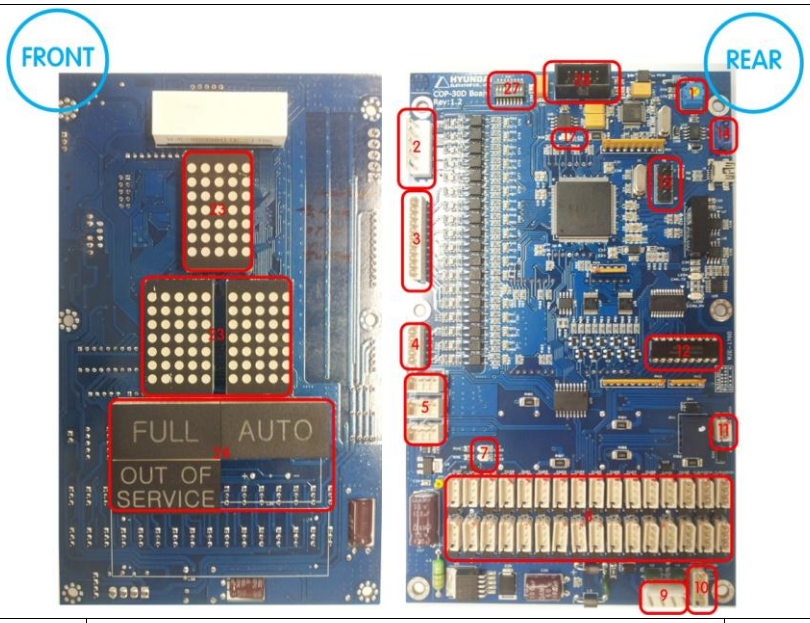


No.	Name	Description	Remark
1	CN_V1	Brake control power input	AC220V(for rectification) / DC24V(for control)
2	CN_V2	Brake output power	DC90~DC160
3	CN_V3	Safety line AC85V input	AC85V
4	CN_V4	Safety line DC110V output	DC110V
5	S1	Brake voltage fixed/variable selection	Before adjusting voltage, turn ON all the jumper switches.
6	R1	Brake voltage adjustment resistance	If it is turned clockwise, voltage increases.
7	JP1	Holding output voltage Type selection	When 1-2 jumper is made, activation / holding voltage is generated.
8	F1	Brake input part fuse	250V / 5A

2. COP Panel Board

2.1 COP-30D Board

COP Board



No.	Name	Description	Remark
1	Sound adjuster	It adjusts the size of the sound.	VR1
16	FUSE	It is destroyed when power cable is incorrectly connected.	FC1
5	COP button expansion	When it is connected to WCOP, button is expanded to 62nd floor.	CN_C6~8
14	Speaker connecting part	It is connected to the speaker for voice output.	CN_C5
23	DOT MATRIX	It displays floor and arrow.	It can be attached and detached.
12	Button drive	It drives button input and lamp output.	U10
15	Program input	It is used for program upgrade.	Need JTAG tool
11	Emergency battery connecting part	If COP power is not applied, 12VDC battery will be used.	CN_C11
30	LS Board connection	When it is connected to the LS Board	CN_C12

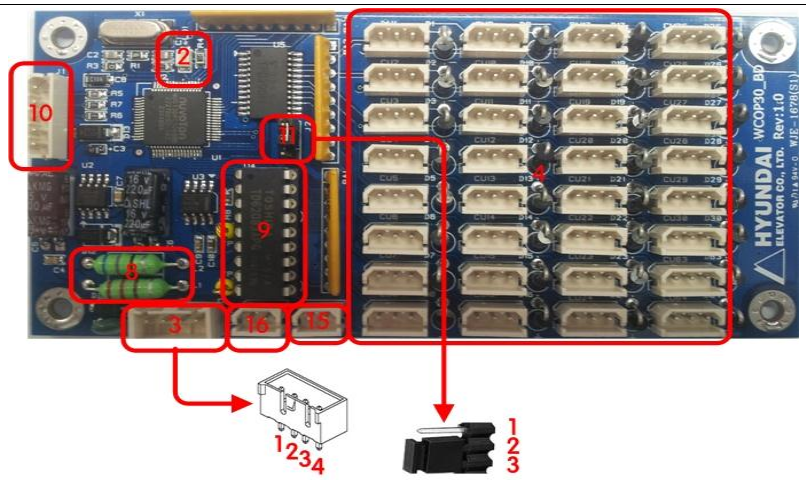
NOTICE

- Connect WCOP62 board to No.5 CN_C8 when COP hall button is expanded (when 62nd floor is
- Connect COP CLOSE / OPEN button to CU63 (DCB) and CU64 (DOB).

2.2 WCOP30 / WCOP62 Board

It is used for Handicapped button input and button expansion.

WCOP30 / WCOP62 Board



No.	Name	Description				Remark
2	COMM LED	It blinks when there is no problem on CAN COMM				LD1
3	Power / communication Connecting part	PIN No.	Contents		3	Power / communication Connecting part
		1	P24			
		2	CAN H		CAN HIGH	
		3	CAN L		CAN LOW	
		4	N24		board power	
11	Usage setting SWITCH (SW1)	Front	Rear	Description		
		ALL OFF	2,3 ON	Handicap button input 1	1~30th floor,	WCOP30
		1 ON	1,2,3 ON	Handicap button input 2	1~30th floor,	
		2 ON	4 ON	MAIN COP expansion	1~62th floor,	WCOP62
		1,2 ON	1,4 ON	SUB COP expansion	1~62th floor,	
		ALL OFF	2,3 ON	Handicap button input 1	1~62th floor,	
		1 ON	1,2,3 ON	Handicap button input 2	1~62th floor,	
		2 ON	2,4 ON	MAIN COP expansion	1~62th floor,	WCOP30D
		1,2 ON	1,2,4 ON	SUB COP expansion	1~62th floor,	
4	Button connecting part	30 buttons are connected. (WCOP30) 62 buttons are connected. (WCOP62)				The number of hall buttons is applied by the usage setting.
15	UP lantern	UP lantern output in the Car				CN_W2

16	DOWN lantern	DOWN lantern output in the Car	CN_W3
10	Program input	It is connected and used for program UPDATE.	Need NU-LINK TOOL

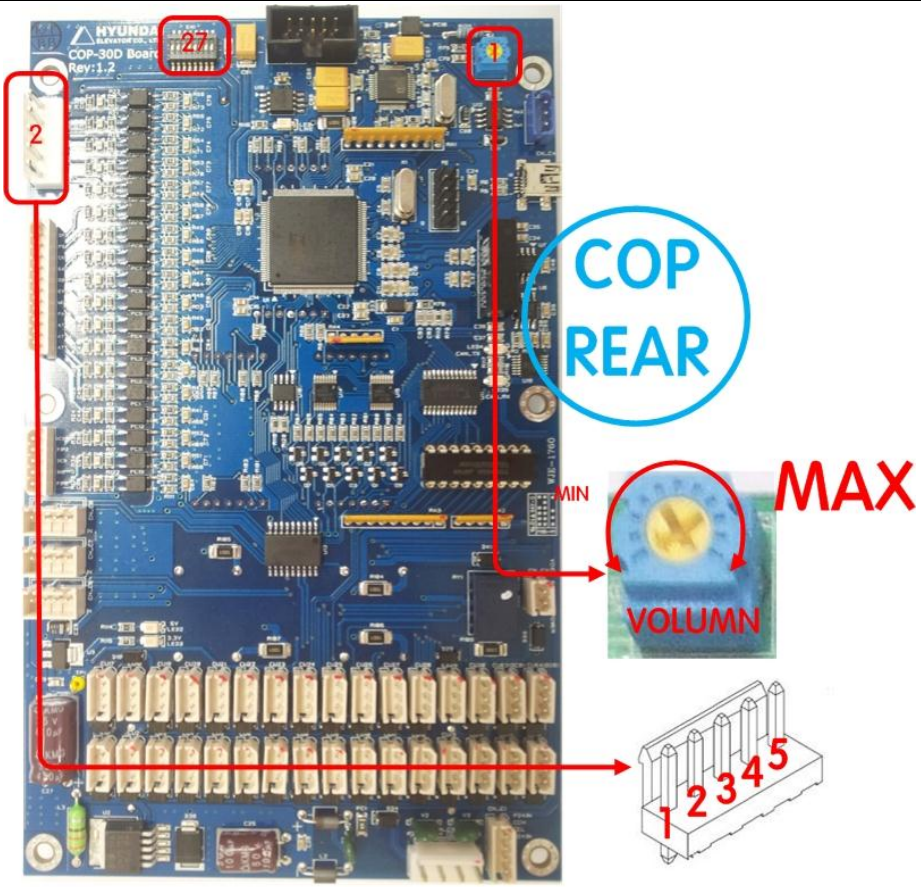
NOTICE

- Connect WCOP CLOSE / OPEN button to CU63 (DCB) and CU64 (DOB).
- After setting JUMPER(J2), you need to turn power OFF -> ON to reflect the usage.

ALL OFF	Handicap button input 1	
1	Handicap button input 2	1~30th floor, 31~62nd floor
2	MAIN COP button expansion	1~30th floor, 31~62nd floor
1, 2	SUB COP button expansion	1 ~ 30th floor

2.3 COP Load Connection and Voice Volume Adjustment

Voice and Volume Adjustment in COP Board



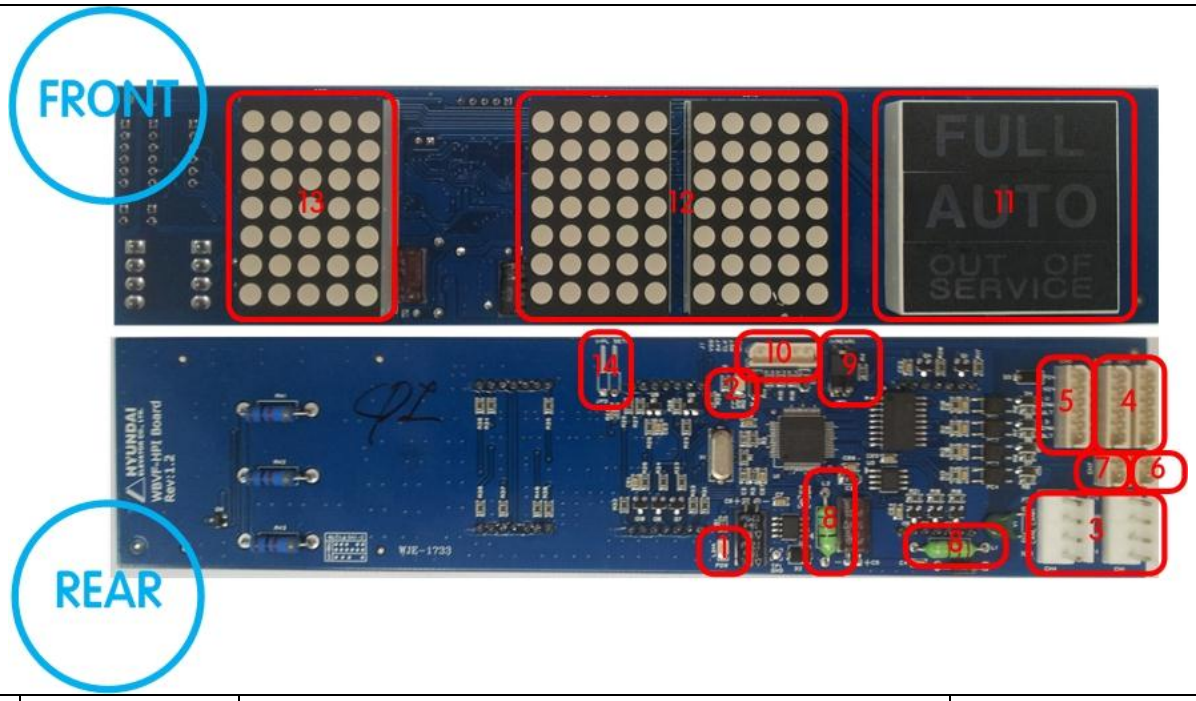
No.	Name	Description				Remark
27	DIP Switch	SW No.	ON	OFF	Note	Set the mode of COP
		1	SUB	MAIN	OPB mode select	
		2	CTS / floor expansion	Disable	Expand floors to 62nd floor	
		3	ONLY BZ,CHM	ALL VOICE-	Select whether voice is output	
		4	REAR	Disable	Penetrate COP mode	
		5	-	-	(Reserved)	
		6	V update	Disable	Voice Update mode	
		7	V night	Disable	Night Voice mode	
		8	V test	Disable	Voice Test mode	

2	Load connector	PIN No.	Contents	Remark	Connector Name: CC26 Load detection switch is on the floor of the Car.
		1	N24		
		2	load 30%	B contact switch	
		3	load 70%	A contact switch	
		4	load 100%	A contact switch	
		5	load 110%	B contact switch	
1	Voice Volume Adjustment	Turning to the right: Volume increases Turning to the left: Volume decreases			VR1

2.4 HPI / CPI Indicator

It is attached to the boarding floor (HPI) and upper part (CPI) of the Car to display elevator floor and status.

HPI / CPI Board



No.	Name	Description	Remark
1	24V POW LED	When 24VDC is applied to the board power side, it is turned ON.	It is OFF when there is a problem.
2	LIVE LED	It blinks when there is no problem with CAN COMM	It does not blink when there is a problem.
3	Power / communication connecting part	Connect for 24VDC and CAN communication.	CH1, CH4
4	Button connecting part	Connect the button for Car call of the corresponding floor.	CH2, CH2B
5	Hall chime / hall lantern	Connect when hall chime / hall lantern is used.	CH3
10	Program input	Connect and apply for program UPDATE.	J1
6	PARKING input part	Connect cable at parking floor.	CH6
7	FMR input part	Connect to firefighter call (=FMR) switch.	CH7

9	REARDIP switch	When JUMP is released, it works as REAR(=handicap) HIP.	At normal time, JUMP is connected.
11	Option LED	When the sticker is removed, you can verify LED status.	When there is a problem check LED defect.
14	Floor setting mode (FL_SET)	When there is a JUMP, it enters floor ID input mode. (After completion, release JUMP and turn power OFF -> ON)	Use Up/Down button to input floor ID.

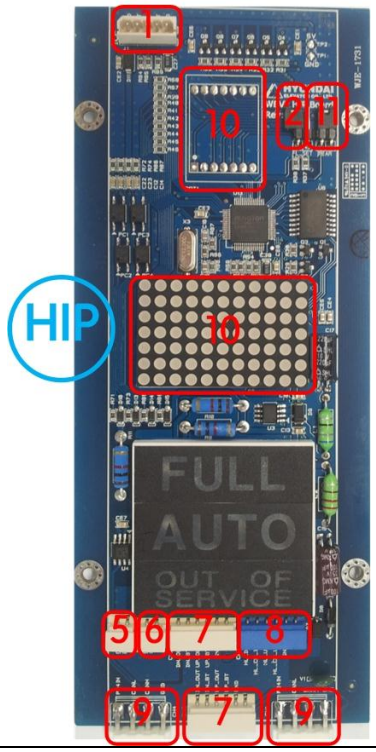
NOTICE

- Floor setting has the corresponding floor input at ship-out before delivery
- to the site. Floor ID is fixed
- For CPI, floor ID is set with『CP』, and for HPI, floor ID is set with『HP』,
- and delivered to the site.

3. Boarding Hall Indicator PC Board

3.1 HIP PC Board

Indicator Board



No.	Name	Description	Remark
2	FL_SET JUMPER	JUMP during the setting of the corresponding floor.	The currently set floor is displayed at JUMP.
11	REAR JUMPER	When JUMP is reset, it operates as REAR (=handicap) HIP.	In normal times, JUMP is set.
7	Button connection part	It connects the button for the CAR call of the corresponding floor.	CH2, CH2B
9	Power / communication connection part	It connects for 24VDC and CAN communication.	CH1, CH4
8	Hall chime / Hall lantern	It is connected when hall chime / hall lantern is used.	CH5 or CH3
1	Program input	It is connected and applied during the program UPDATE.	J1
5	PARKING input part	It connects the cable at the parking floor.	CH6
6	FMR input part	It connects to the firefighter call (=FMR) switch.	CH7

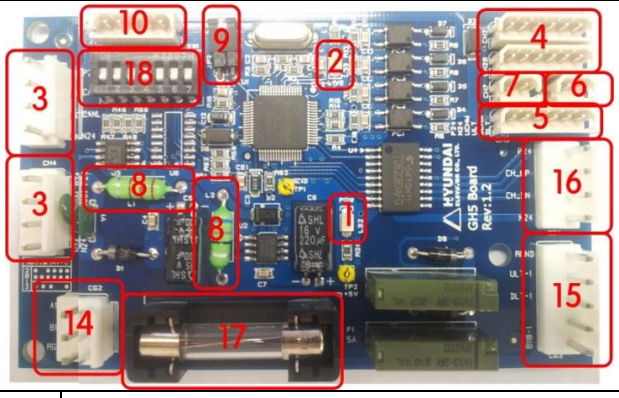
NOTICE

Floor setting has the corresponding floor input at ship-out before delivering to the site.

3.2 GH5 PC Board

Board for hall lantern and chime during the destination floor operation without a separate floor display and group operation

GH5 Board

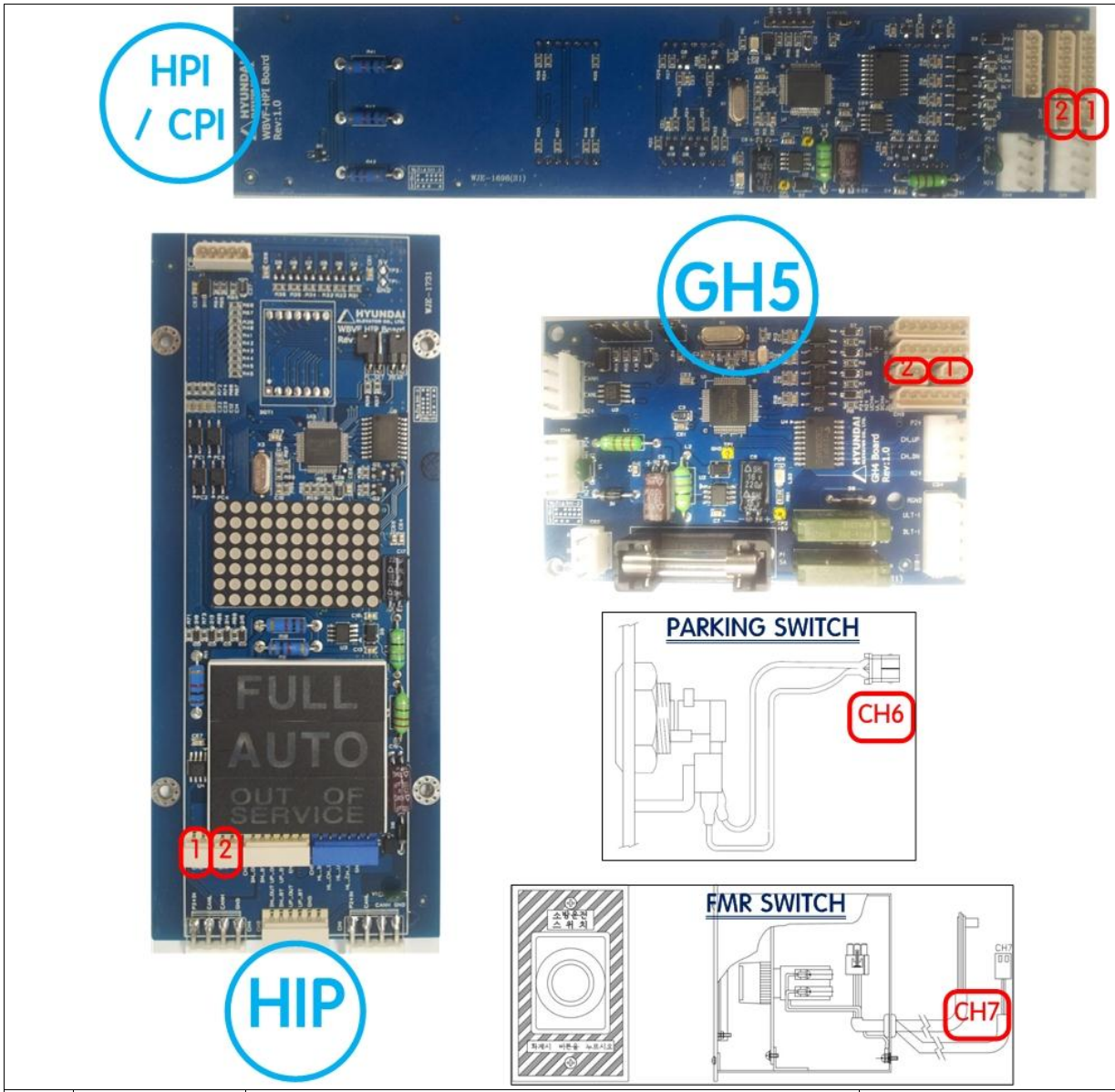


No.	Name	Description	Remark
1	24V POW LED	When 24VDC is applied to the board power side, it is turned ON.	It is OFF when there is a problem.
2	LIVE LED	It blinks when there is no problem with CAN COMM.	It does not blink when there is a problem.
3	Power / communication connecting part	Connect for 24VDC and CAN communication.	CH1, CH4
4	Button connecting part	Connect the button to call the Car at the corresponding floor.	CH2, CH2B
5	Hall chime / hall lantern	Connect when hall chime / hall lantern is used.	CH3
10	Program input	Connect and apply for program UPDATE.	Need NU-LINK TOOL
6	PARKING input part	Connect the cable at parking floor.	
7	FMR input part	Connect to firefighter call (=FMR) switch.	Connect at lobby floor
9	REAR jumper	When JUMP is released, it works as REAR (=handicap) HIP.	In normal time, JUMP is connected.
14	External 110VAC power	110VAC power for external lantern and chime	Separate 110VAC power
15	Separate 110VAC lantern connecting part	External lantern should use 110VAC.	CH3 is not connected.
16	Separate 110VAC chime connecting part	External chime should use 110VAC.	CH3 is not connected.
17	External 110VAC FUSE	It is destroyed when over-current is supplied.	Check when lantern is defective.
18	Floor setting DIP SWITCH	Input floor according to HEXA 8421 method.	ON / OFF adjustment

NOTICE

Floor setting has the corresponding floor input at ship-out before delivering to the site.

3.3 HIP/HPI/GH5 FIRE/PARKING SW Wiring



No.	Name	Description	Remark
1	CH6	PARKING SWITCH connecting part	Connect to Parking switch connector
2	CH7	FMR(=FIRE MAN RETURN) SWITCH connecting part	Connect to FMR switch connector

3.4 How to Set HIP / HPI Floor ID (For GH5, use DIP SWITCH in the board)

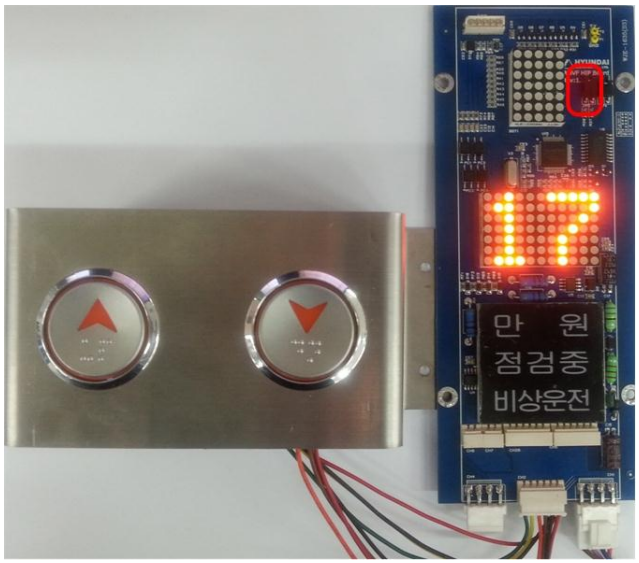
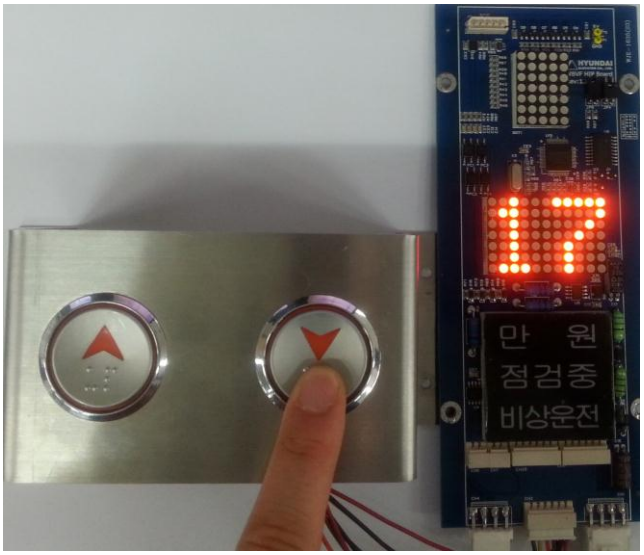
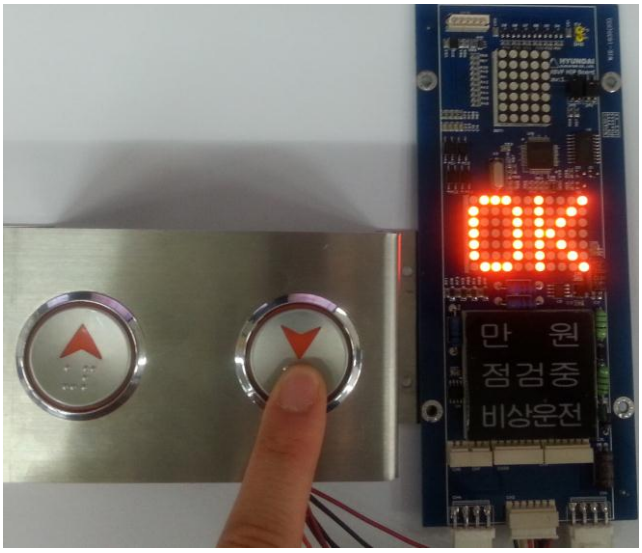
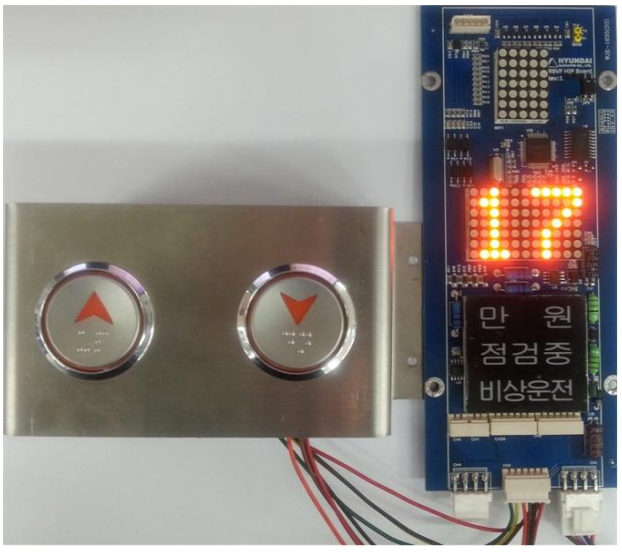
Order	Contents	Note
1	Connect 24VDC power to the CH1 or CH4 of HIP / HPI Board	
2	Connect the UP / DOWN Button to the CH2 or CH2B of board	
3	Jump the FL_SET(=JP3)	
4	Input the floors according to the ID data of each floor by seeing the DOT-MATRIX display	Setting
5	Push the UP or DOWN Button during 5 sec	
6	If you can see the alternating display 『OK』 and 『setting floor』 on the DOT-MATRIX, the floor setting is completed	Completed
7	Release FL_SET(=JP3) jumper	Release setting mode

The floor ID can be set from 1 to 96, the english display after 96 floor is special functions.

Floor ID	Set Floor ID	Note
CP	In case that by using the CAR indicator	
HP	In case of using 2 indicator on hall, one thing have to set as floor ID HP	
SV	In case that by using the supervisor indicator	When it Applies SUPERVISORY option

Refer to the following order included in the picture for better understanding!

Example of Floor input) When you want to input 『24』 floor ID to HIP

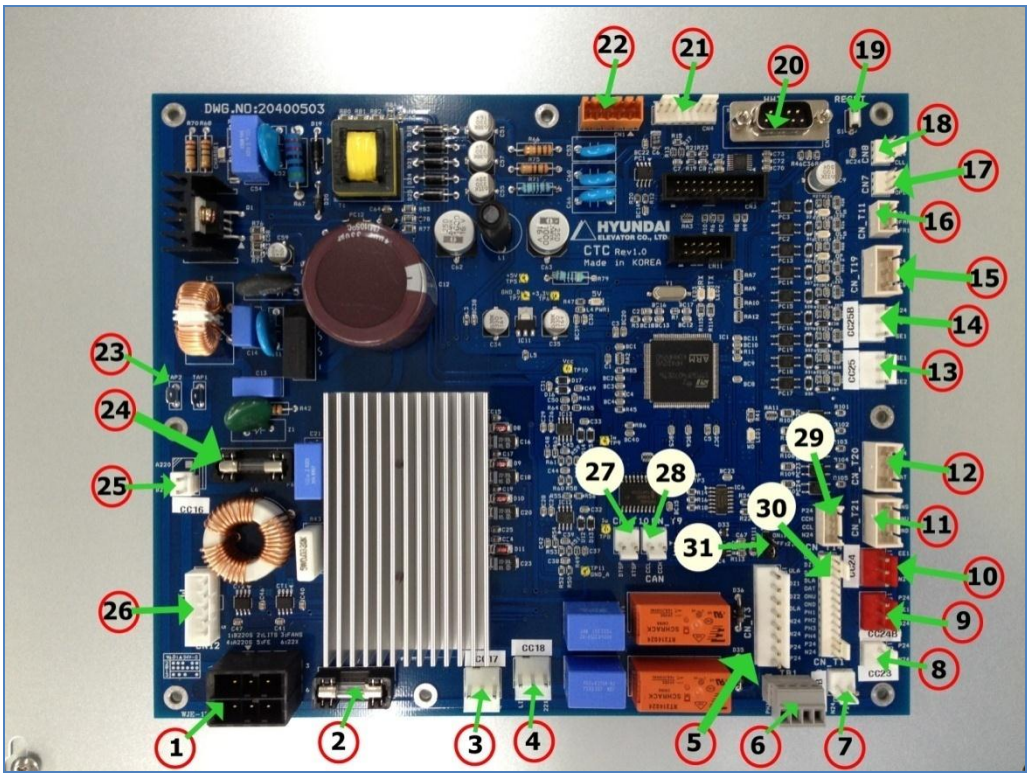
Order 3	Order 4,5
	
JUMP FL_SET	MAKE 17FL BY USING UP or DOWN BUTTON
Order 6	**Order 7**
	
Push the button during 5sec then check 『OK』 sign	Release FL_SET jumper

NOTICE

This work must be performed while JUMPER is connected to 『FL_SET』.
(Same for HPI / CPI)

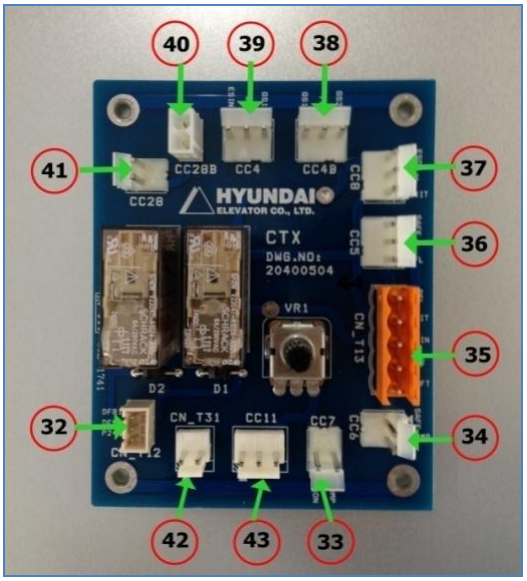
4. CAR Junction Box PC Board

4.1 CTC Board



[Figure C.1 CTC Board]

4.2 CTX Board



[Figure C.2 CTX Board]

No.	Connector Name	Pin No.	Signal Name	Name and Function	Remark
1	CN_T2	1	B220S	220V power supply(Control Panel)	
		2	LITS	LIGHT output(22X)	
		3	FANS	FAN output (22X)	
		4	A220S	220V power supply(Control Panel)	
		5	FE	GND	
		6	22Y	220V power supply(building)	
2	F7			FUSE (250V, 5A)	
3	CC17	1	22Y	220V power supply(building)	
		2	FE	GND	
		3	FAN	FAN power(22X),output	
4	CC18	1	22Y	220V power supply(building)	
		2	FE	GND	
		3	LIT	LIGHT power(22X),output	
5	CN_T3	1	ULA	ULA signal, output	
		2	DZ1	DZ1 signal, output	
		3	DZ2	DZ2 signal, output	
		4	DLA	DLA signal, output	
		5	N24	Control power (0V), input	
		6	N24	Control power (0V), input	
		7	P24	Control power (+24V), input	
		8	P24	Control power (+24V), input	
6	TB1	1	PH1	Interphone signal 1	
		2	PH2	Interphone signal 2	
		3	PH3	Interphone signal 3	
		4	PH4	Interphone signal 4	
7	CC23B	1	P24	SAFTY RAY B power(+24V), output	
		2	N24	SAFTY RAY B power(0V), output	
8	CC23	1	P24	SAFTY RAY A power(+24V), output	
		2	N24	SAFTY RAY A power(0V), output	

[Table C.1 CTC Board Connector Description (1)]

No.	Connector Name	Pin No.	Signal Name	Name and Function	Remark
9	CC24B	1	P24	SAFTY RAY B control power(+24V), output	
		2	EE1	SAFTY RAY B control signal, input	
		3	N24	SAFTY RAY B control power(0V), output	
10	CC24	1	EE1	SAFTY RAY B control signal, output	
		2	EE2	SAFTY RAY B control signal, input	
		3	N24	SAFTY RAY B control power(0V), output	
11	CN_T21	1	ONS	Manual operation signal, input	
		2	ONU	Manual UP operation signal, input	
		3	OND	Manual DN operation signal, input	
12	CN_T20	1	P24	Control power(+24V), output	
		2	ONS	Manual operation signal, input	
		3	OAT	Automatic operation signal, input	
13	CC25	1	SE1	SAFTY EDGE B control signal, input	
		2	FE	GND	
		3	SE2	SAFTY EDGE B control signal, output	
14	CC25B	1	N24	Control power(0V), output	
		2	FE	GND	
		3	SE1	SAFTY EDGE A control signal, input	
15	CN_T19	1	N24	Control power(0V), output	
		2	DOB	DOOR OPEN signal, input	
		3	DCB	DOOR CLOSE signal, input	
16	CN_T11	1	P24	Control power(+24V), output	
		2	DFMR	FMR relay control output	
		3	DFR1	FR1 relay control output	
17	CN7	1	P24	Control power(+24V), output	
		2	N24	Control power(0V), output	
		3	OPL	OPEN LIMIT signal, input	
18	CN8	1	P24	Control power(+24V), output	
		2	N24	Control power(0V), output	
		3	CLL	CLOSE LIMIT signal, input	

[Table C.2 CTC Board Connector Description (2)]

No.	Connector Name	Pin No.	Signal Name	Name and Function	Remark
19	S1			PUSH BUTTON (H/W RESET)	
20	CN10			HHT	
21	CN4	1	5V	Encoder power supply(+5V), output	
		2	GND	Encoder power supply(0V),output	
		3	AP	A phase P, input	
		4	AN	A phase N, input	
		5	BP	B phase P, input	
		6	BN	B phase N, input	
		7	-	-	
		8	-	-	
22	CN1			DAC	
23	TAP1,2		GND	GND	
24	F6			FUSE(250V,10A)	
25	CC16	1	A220	220V power supply(Control Panel), input	
		2	B220	220V power supply(Control Panel), input	
26	CN12	1	U	Inverter U phase, output	
		2	-		
		3	V	Inverter V phase, output	
		4	-		
		5	W	Inverter W phase, output	
27	CN_T10	1	XTSP	SPARE input (I/O)	
		2	DTSP	SPARE output (I/O)	
28	CN_T9	1	CCH	CAN communication, input/output	
		2	CCL	CAN communication, input/output	
29	CN_T14	1	P24	Control power +24V, output	
		2	CCH	CAN communication, input/output	
		3	CCL	CAN communication, input/output	
		4	N24	Control power 0V, output	

[Table C.3 CTC Board Connector Description (3)]

No.	Connector Name	Pin No.	Signal Name	Name and Function	Remark
30	CN_T1	1	ULA	ULA signal, input	
		2	DZ1	DZ1 signal, input	
		3	DZ2	DZ2 signal, input	
		4	DLA	DLA signal, input	
		5	OAT	Automatic operation signal, input	
		6	ONU	Manual UP operation signal, input	
		7	OND	Manual DN operation signal, input	
		8	PH1	Interphone signal, input	
		9	PH2	Interphone signal, input	
		10	PH3	Interphone signal, input	
		11	PH4	Interphone signal, input	
		12	P24	Control power(+24V), output	
		13	N24	Control power(0V), output	
31	JP1	1	ON	CAN communication end resistance is used.	
		2	COM	COMMOM connector	
		3	OFF	CAN communication end resistance is not used.	

[Table C.4 CTC Board Connector Description (4)]

No.	Connector Name	Pin No.	Signal Name	Name and Function	Remark
32	CN_T12	1	P24	Control power +24V	
		2	DFMR	FMR Relay activation output	
		3	DFR1	FR1 Relay activation output	
33	CC7	1	COMP	COMP Fan rope HOOK switch	
		2	ESON	Car upper part E-STOP switch	
34	CC6	1	SAFT	SAFTY device	
		2	COMP	COMP Fan rope HOOK switch	
35	CN_T13	1	DFL	Lower part final limit switch	
		2	EXIT	Emergency rescue door switch	
		3	ESON	Car upper part E-STOP	
		4	GS2	Car door switch 2	
		5	SAFT	SAFTY device	
36	CC5	1	SAFT	SAFTY device	
		2	FE	GND	
		3	DFL	Lower part final limit switch	
37	CC8	1	ESON	Car upper part E-STOP	
		2	GND	GND	
		3	EXIT	Emergency rescue door switch	
38	CC4B	1	GS1	Car door switch 1	
		2	FE	GND	
		3	GS2	Car door switch 2	
39	CC4	1	ESIN	E-STOP switch inside the Car	
		2	FE	GND	
		3	GS1	Car door switch 1	
41	CC28B	1	EL1	Emergency light power input(DC 12V or AC)	(LED or Incandescent lamp)
		2	EL2	Emergency light power input(GND or AC)	
41	CC28	1	EL1	Emergency light power output(DC 12V or AC)	(LED or Incandescent lamp)
		2	EL2	Emergency light power output(GND or AC)	
42	CN_T31	1	SPK1	BGM sound adjustment signal input	
		2	SPK2	BGM sound adjustment signal input	
43	CC11	1	BGM	BGM sound adjustment signal output	
		2	SPK2	BGM sound adjustment signal output	
		3	FE	GND	

[Table C.5 CTC Board Connector Description (5)]

WBVF SERIES ELEVATOR MANUAL
Apr. 2019
Revision 11

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