SJT-EPB Series Electric Brake Release Device

User Manual

Version： V2.7

Contents

Chapter 1 Introduction

This chapter introduces models, specifications, product appearance, size, and product functions of SJT series Electric Brake Release Device.

1.1 Type description

The model description of SJT series Electric Brake Release Device is shown in figure 1.1.

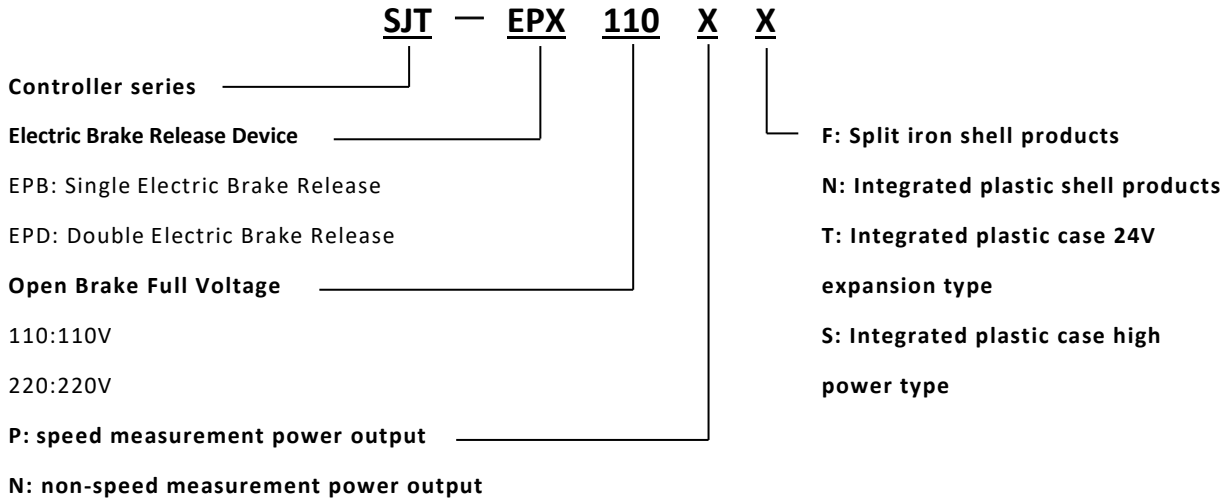


Figure 1.1 Model descripitons

NOTE:

1. N series electric brake release has cancelled the auxiliary power output function based on the P series, and the other parameters are exactly the same;
2.PT model electric brake release is based on the PN model to enhance the output power of the 24V output power supply (the power is increased to 50W), and the other parameters are the same;
3. PS model electric brake release is based on the PN model to enhance the output power of the brake power supply (the power is increased to 600W), and the other parameters are the same;
4. EPD series electric brake release is based on the EPB series model. The original single brake output is split into two independently controlled output power supplies through a relay. The other parameters are the same.

1.2 Nameplate information

Nameplate information is shown in figure 1.2 below.Name-plate describes the model, power, input, output, serial number (production number), bar code and other information about the device.Name-plate is attached to the right side of Electric Brake Release Device.

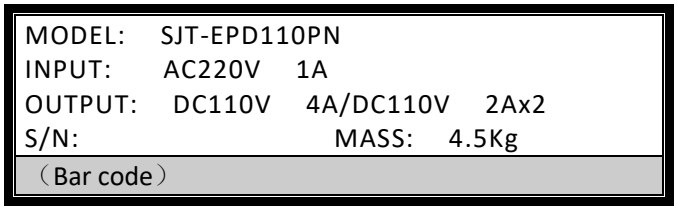


Figure 1.2 Nameplate information

1.3 Specifications

Specifications of Electric Brake Release device are in chart 1.1.

Chart1.1 Specifications

Model		SJT－EPB/D110xx	SJT－EPB/D220xx
Max Adapted break power（W）		450（PS model 600W）	450（PS model 600W）
Output	Rated Output Voltage（V）	110	220
	Rated Output Current(A)	4（PS model 5.4A）	2（PS model 2.7A）
Input	Power Grid Voltage	220V±15%	
Battery Specifications	Rated Voltage	12V	
	Rated Capacity	7AH（PS model 9AH）	
	Constant Current Charge Current	0.5A	
	Constant Current Charge Time	4h	
	Trickle Current Charge Voltage	13.8V	
Control features	Full Voltage/Open Brake Voltage	110V	220
	Half Voltage/ Holding Brake Voltage	75V	150
	Battery under voltage Protect Voltage	10V	
	Single Run Time	5min（PS model 1min）	
	Output Voltage Ripple Wave	<5%	
	Efficiency	>90%	
	DC5V	Maximum Current 300 mA	
	DC13V	Maximum Current 120 mA	
	DC5.2V	Maximum Current 100 mA	
Protection	Over Current Protection	Protect When Battery Output Current Exceed Limit	
	Under Voltage Protection	Protect When Battery Voltage is under 10 V	
	Short Circuit Protection	Protect When Short Circuit of Open-brake Output	
I/O	Door Zone Input	Automatically stop Open-Brake Output when elevator enter door zone	
	Door Lock Input	Automatically stop Open-Brake Output when door circuit is cut off.	
	Button Input	Extra Button Interface More Flexible	
Environment	Cooling Type	Natural Air Cooling	
	Protection Level	IP20	
	Environment Temperature & Humidity	Below 90%RH, non-condensing -15℃ ~ +40℃, well-ventilated	
	Vibration	Beyond 1G while under 20HZ	
	Application	In doors, altitude<1000m, without direct sunlight, dust, corrosive gases	

SJT series electric brake release device 24V output performance specifications are shown in chart 1.2

Chart1.2 24V Power output performance specification

MODEL	SJT－EPB/D110/220PT	SJT－EPB/D110/220P/PF/PN
24V supply rated output power(W)	50	5
24V short-time overload output power (W)	60	8

Note: When 24V output power supply increases, the maximum power that the brake power supply can output will be reduced by the same amount.

1.4 Exterior Dimension

1.4.1 Integrated SJT—EPB110P External Dimensions (Iron Shell)

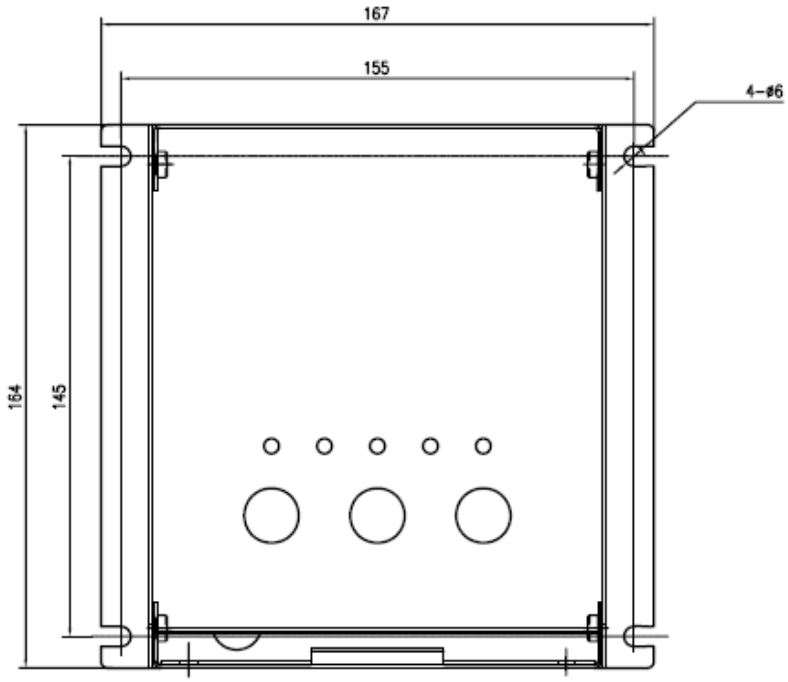


Figure1.3 EXTERIOR DIMENSION FRONT VIEW（SJT—EPB110P/N）

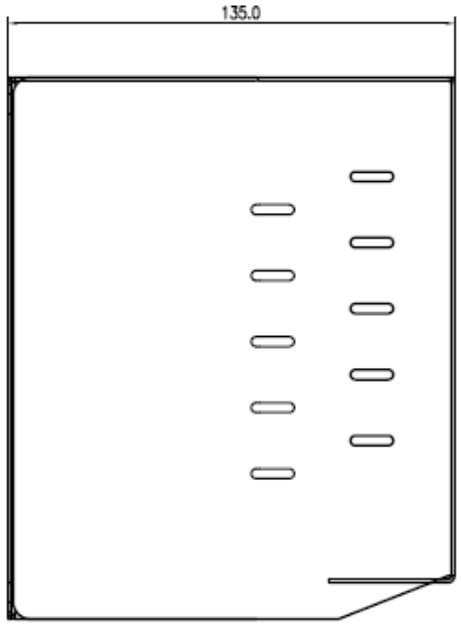


Figure 1.4 EXTERIOR DIMENSION SIDE VIEW（SJT—EPB110P/N）

1.4.2 Integrated SJT—EPB/D 110PN（PT）External Dimensions（Plastic）

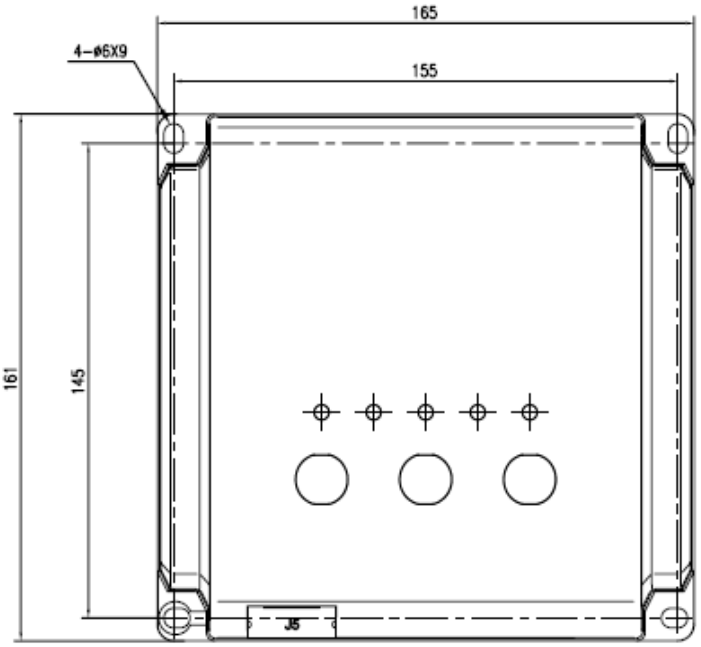


Figure 1.5 EXTERIOR DIMENSION FRONT VIEW（SJT—EPB/D 110PN/PT/PS）

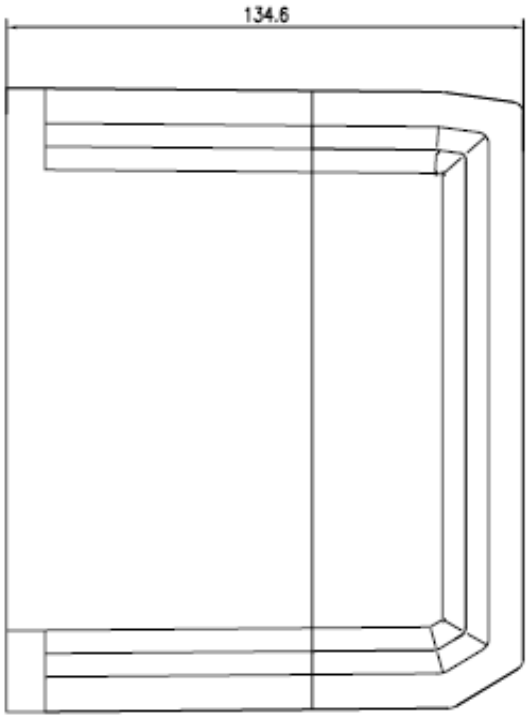


Figure 1.6 EXTERIOR DIMENSION SIDE VIEW（SJT—EPB/D 110PN/PT/PS）

1.4.3 Split SJT－EPB/D 110PF External Dimensions

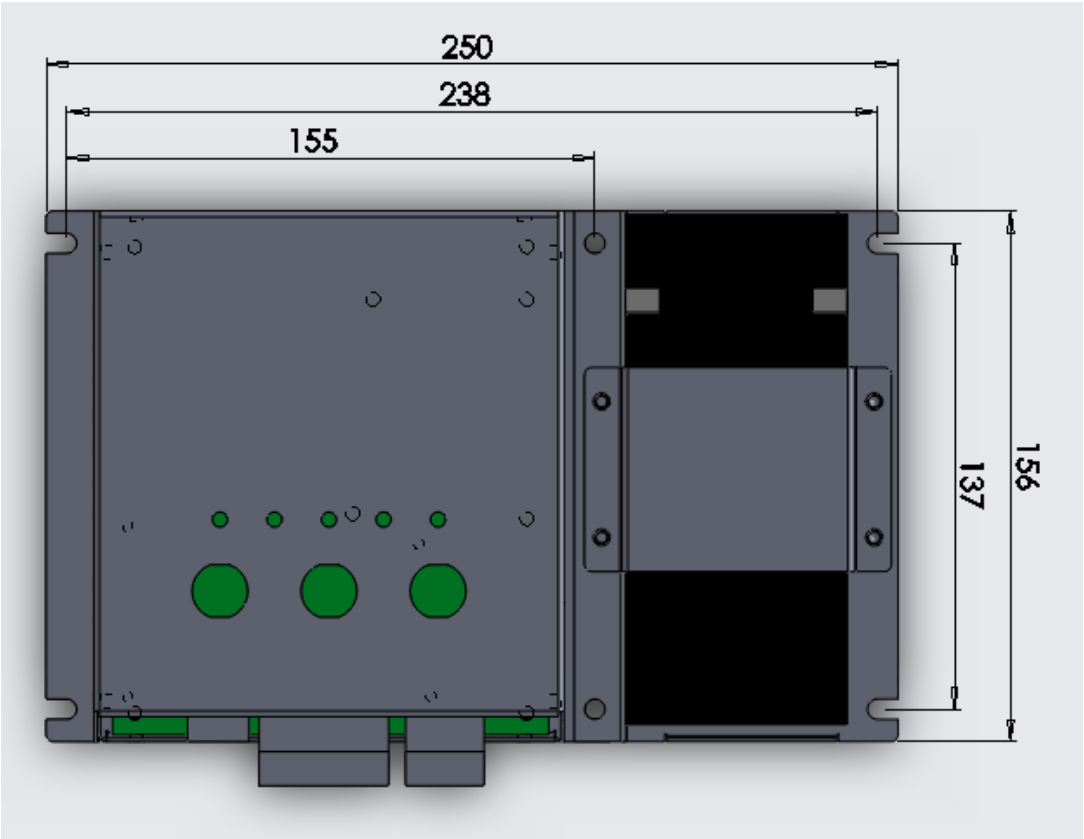


Figure 1.7 EXTERIOR DIMENSION FRONT VIEW（SJT－EPB/D 110PF）

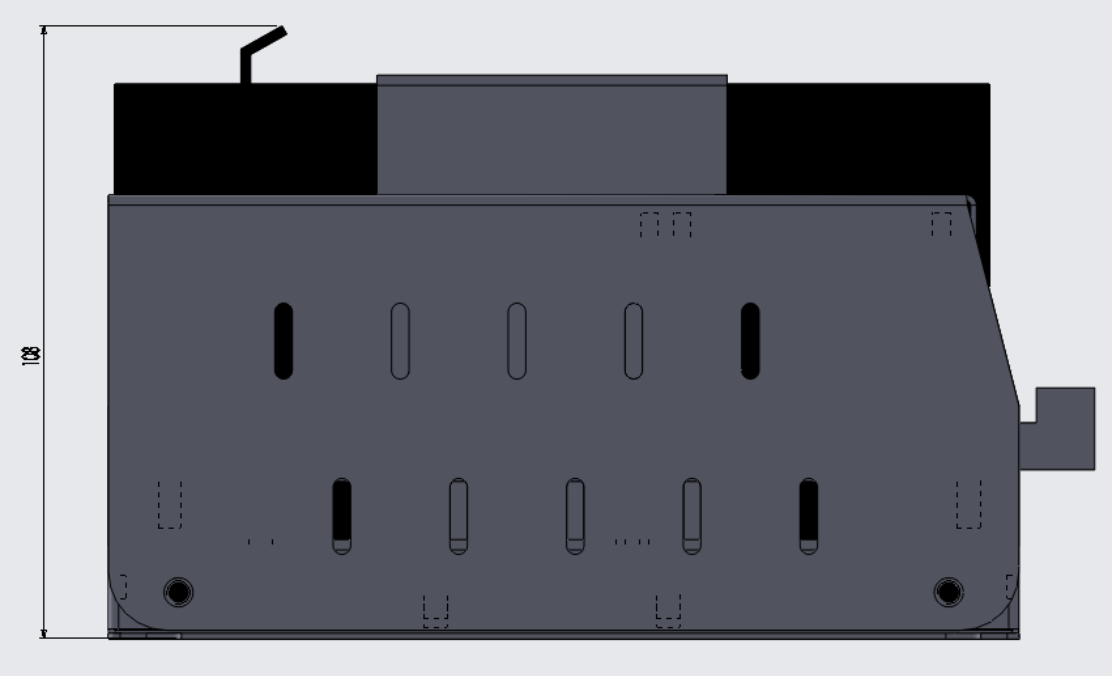


Figure 1.8 EXTERIOR DIMENSION SIDE VIEW（SJT－EPB/D 110PF）

Chapter 2 Wiring

This chapter describes the terminals wiring and functions.

2.1 Terminal Definition

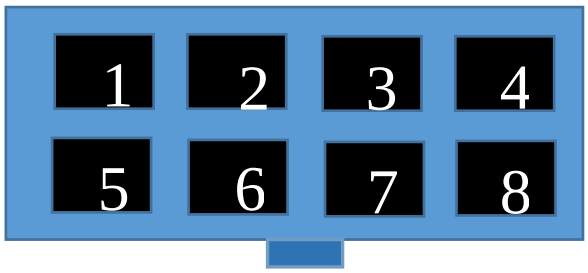
Terminal definition of electric brake release device is shown in Chart 2.1.

Chart 2.1 Terminal Definition（SJT-EPD series）

Terminal symbol	Terminal name	Function description
**J1-1	AC220V input	Single-phase AC 220V Input
**J1-2	AC220V input	Single-phase AC 220V Input
**J1-3	DC110V Output 1+ or DC220V output 1+	Open Brake Voltage 1 Output+
**J1-4	DC110V Output 1- or DC220V Output 1-	Open Brake Voltage 1 Output-
**J1-5	DC110V Output 2+ or DC220V Output 2+	Open Brake Voltage 2 Output+
**J1-6	DC110V Output 2- or DC220V Output 2-	Open Brake Voltage 2 Output-
J3-1	24Vpower output	Open Brake Device Inner 24V Output
J3-2	24VGND	24V Load COM
J3-3	Switch power GND	Connect to COM of Switch Power in Cabinet
J3-4	Door Zone input+	Door Zone Circuit Positive End
J3-5	Door Zone input-	Door Zone Circuit Negative End
J3-6	Door Lock circuit+	Door Lock Circuit Positive End
J3-7	Door Lock circuit-	Door Lock Circuit Negative End
*J4-1	Power COM	Start Button, Public Button, Force Button inputs+
*J4-2	Start Button	Start Button-
*J4-3	Public Button	Public Button-
*J4-4	Force Button	Force Button-
*J4-5	Door Zone Indicator	Door Zone Indicator Output
J5-8	5V	Main 5V Power
J5-4	5V_COM	Main 5V Power COM
J5-3	NC	Floating
J5-7	NC	Floating
J5-2	13V	13V Power
J5-1	13V_COM	13V Power COM
J5-5	5V_2	Additional 5V Power
J5-6	5V_2_COM	Additional 5V Power COM

Note:

1.Please be aware of J5 terminal order and convex side.



***2. The definition of J4 terminal is slightly different of the old version of electric brake release (iron shell), for example:**

Chart 2.2 SJT-EPB series J4 Terminal Definition

Terminal symbol	Terminal name	Function description
J4-1	Start button +	Start button input+
J4-2	Start button -	Start button input -
J4-3	Public Button +	Public Button input +
J4-4	Public Button -	Public Button input -
J4-5	Force Button +	Force Button input +
J4-6	Force Button -	Force Button input -

****3. J1 terminal of the SJT-EPB series electric brake release has only 4 positions，for example：**

J1-1	AC220V input	Single-phase AC 220V input
J1-2	AC220V input	Single-phase AC 220V input
J1-3	DC110V Output + or DC220V output +	DC brake output “+”
J1-4	DC110V Output - or DC220V output -	DC brake output “-”
J1-5	None	None
J1-6	None	None

4. SJT-EPB series J3 terminal is 5.08mm pitch 7P horizontal terminal

SJT-EPD series J3 terminal is 3.81mm pitch 7P horizontal terminal

2.2 Terminal Wiring

2.2.1 J1 Terminal Wiring

J1 Terminal includes DC110V（or DC220V）output and AC220V input. AC 220V has no pole and connect to 220V power in cabinet. DC 110V (or DC 220V) output are directly connected to brake coil of motor. Pay attention to their electrodes.

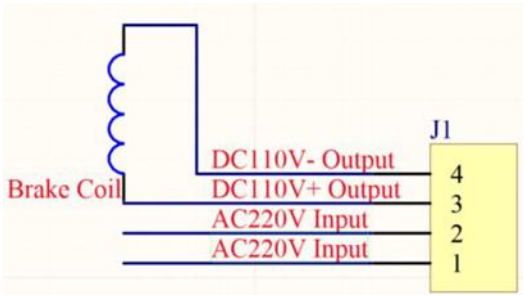


Figure 2.1 Input & Output Wiring

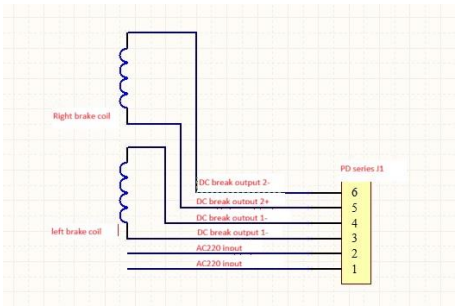


Figure 2.2 EPDSeries input and output wiring

2.2.2 J3 Terminal Wiring

J3 Terminal is for door zone detection and door lock detection.

2.2.2.1 Door Lock Wiring

As shown in Figure 2.3.

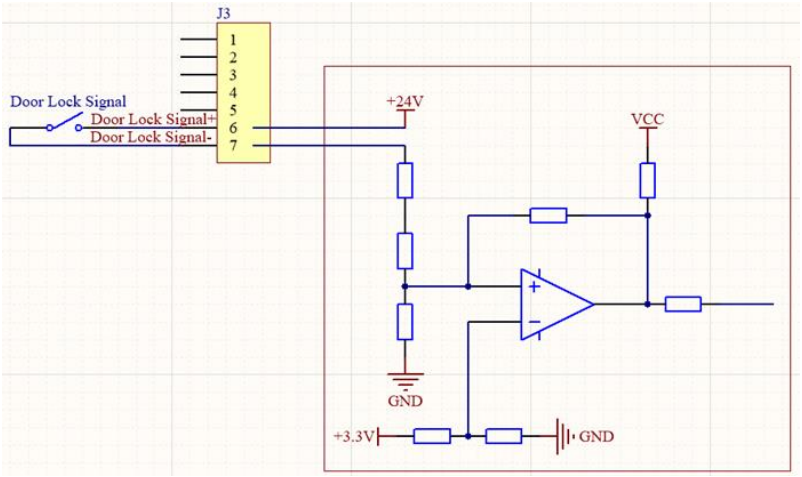


Figure2.3 Door Lock Wiring

Attention:

1. If door lock signal is used to control brake release device, the signal type that connected to J3-6 and J3-7 should be dry contact (Relay contact). Using door circuit that is part of the safety circuit, as this signal is forbidden. We suggest you use double-door-lock-switch or middle relay in door circuit to achieve it.

2. When using SJT-EPB110(220)P/PF model Electric Brake Release Device, and control cabinet is in door lock contactor free configure (so no transformer or AC contactor coil in door lock circuit when power off), the door lock signal terminals (J3-6, J3-7) of Electric Brake Release Device can connect directly into the safety circuit and parallel with door lock, no double-door-lock-switch or middle relay is needed.

3. If door lock signal is not used to control brake release device, J3-6 and J3-7 should be short connected. Otherwise, this device will not output voltage to release brake. If manual control is required, we suggest connecting to normally open contact with self-lock switch.

2.2.2.2 Door Zone Wiring

（1）Door zone sensor is REED， For the motherboard input port type is common anode input.

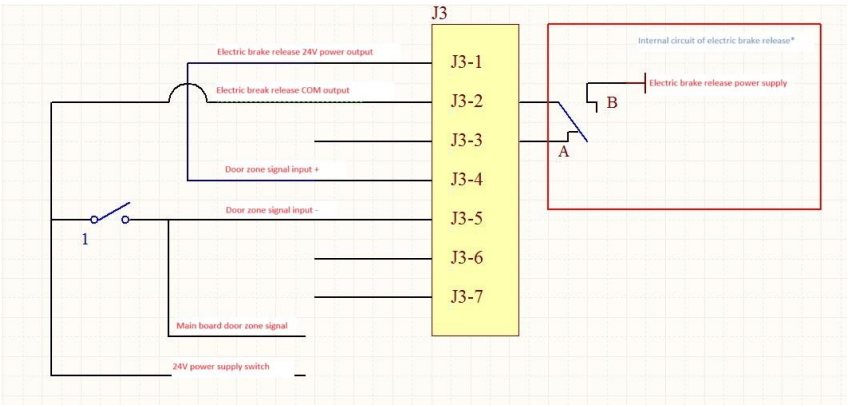


Figure 2.4 Door zone signal access method 1

（2）Door zone sensor is REED，For motherboard input port type is common cathode input.

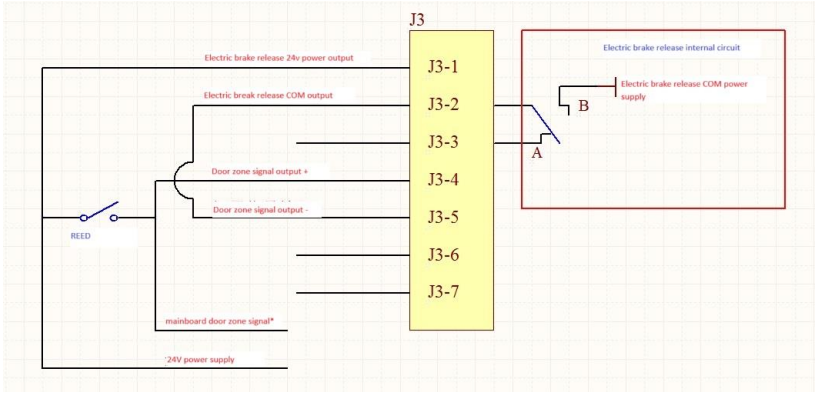


Figure 2.5 Door zone signal access method 2

（3）Door zone sensor is Infrared Photoelectric switch type， Output low level when door zone is active.

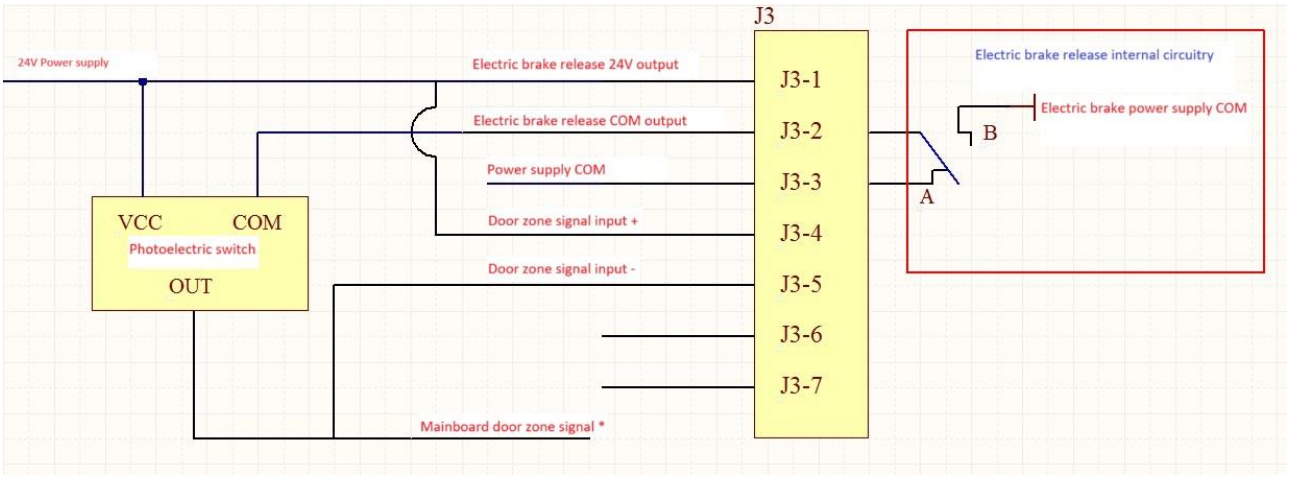


Figure 2.6 Door zone signal access method 3

（4）Door zone sensor is Infrared Photoelectric switch type， Output high level when door zone is active.

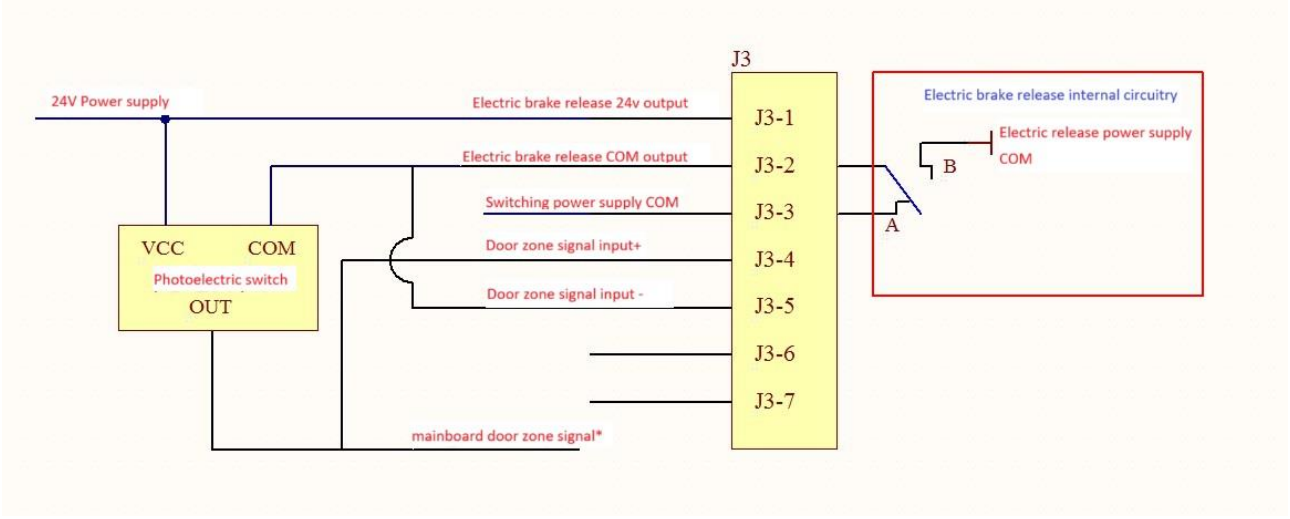


Figure 2.7 Door zone signal access method 4

NOTE：

1. **If lots of door zone sensors are used on site, please use the door zone signal connected to the main board as the electric release door zone signal.**
2. **J3-2 terminal is a set of single-pole double-throw switches inside the electric brake. When the external power grid is powered, the switch is switched to point A, which is short-circuited with the J3-3 terminal; after the external power grid is powered off and the electric brake is started, the switch is switched to point B and switched to the electric brake power supply COM.**

3. If the photoelectric switch is used as the door sensor, please connect the photoelectric switch COM to the electric release J3-2 separately, and the photoelectric switch COM can not be connected to the electric release after the switching power supply COM is combined

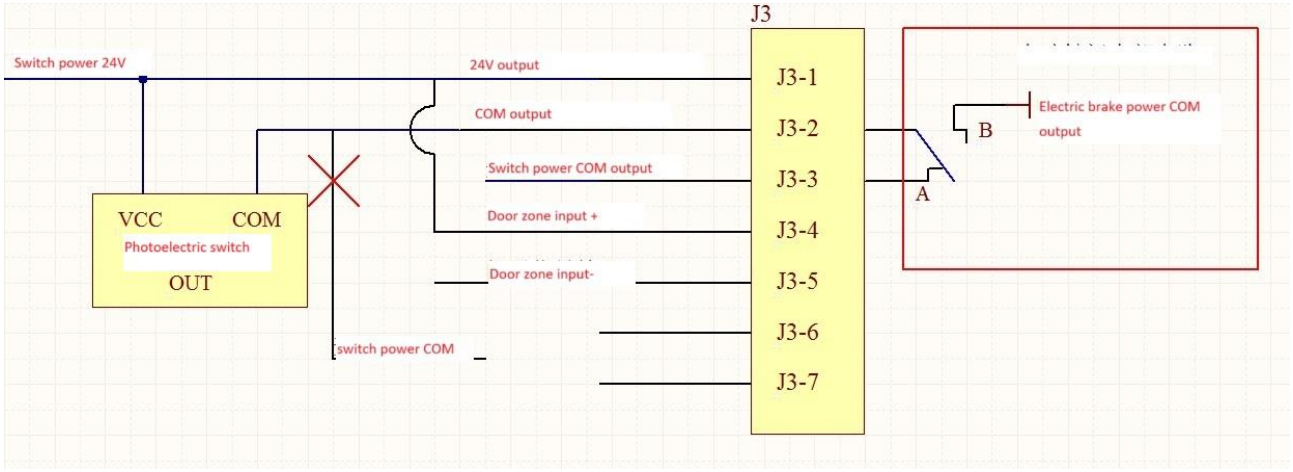


Figure 2.8 Wrong wiring method

2.2.3 J4 Terminal wiring

J4 Terminal includes 3-button inputs and can be used for remote control. After connecting this terminal to external contact through extension cable, brake power can be remotely controlled. This function is same as three buttons control on panel. Extend connection of the door zone light for door zone indication in remote operation.

Attention: Extension cable should not exceed 3 meters.

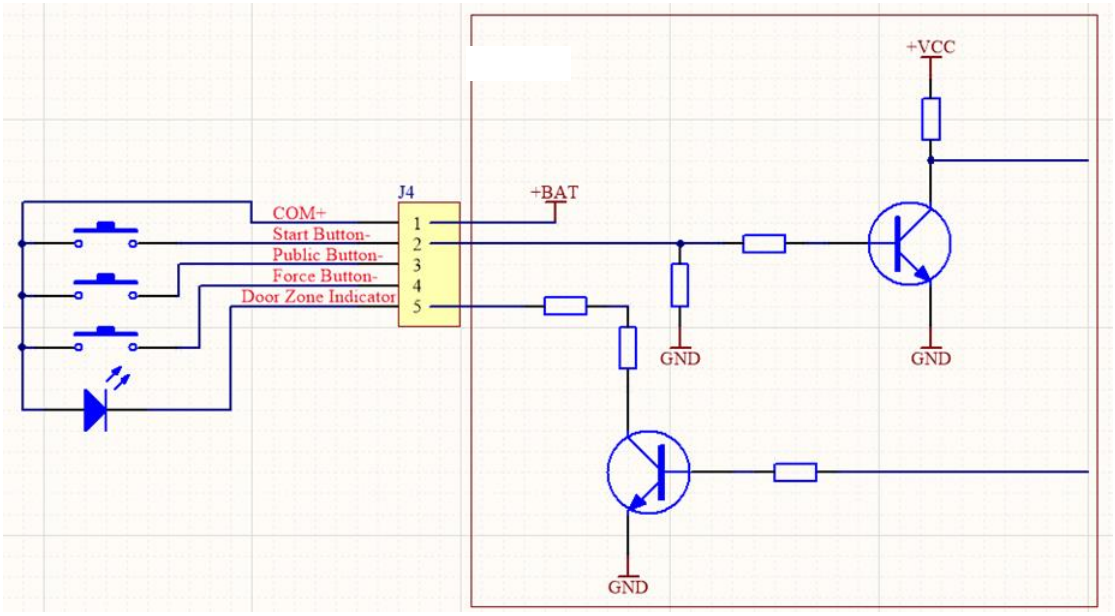


Figure2.9 Button Connection

Note: The wiring of J4 terminal of the old version SJT_EPB iron shell series is as follows:

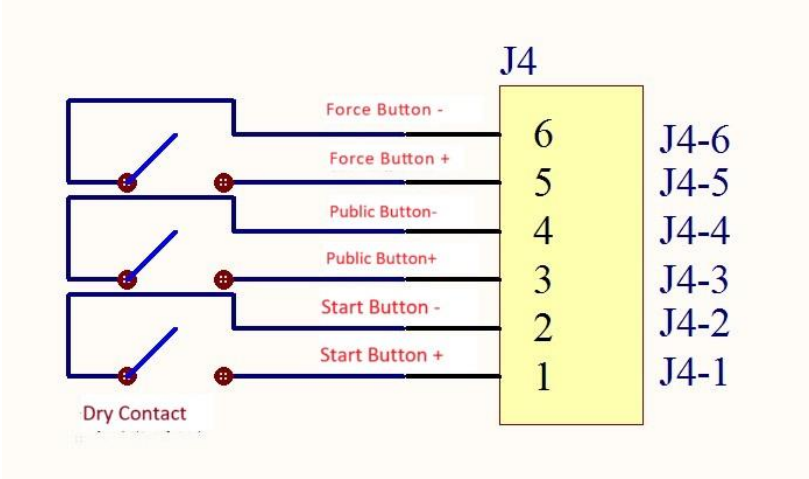


Figure 2.10 Button Connection（SJT_EPB iron shell series）

2.3 Precautions of wiring

1. Before connection make sure that the power supply 220V is completely off.
2. Please ask trained and authorized professionals for wiring.
3. After wiring, make sure to check the following:
   1) If connecting to door lock, make sure the contact of door lock is dry contact of mechanical switch.
   2) If connecting to door zone, confirm door zone sensor type and trigger voltage level, then wire as shown in diagram.
   3) Correctness and reliability of connection.
   4) Take care of leftover, such as wire, screw and metal filing.
   5) Whether the connection of screw, terminal and the connection parts are loose.
   6) Whether the bare wire of terminals contacts with other terminals.

Chapter 3 Operation Panel

Operation panel consists of 3 buttons and 5 LEDs. The appearance is shown in figure 3.1.

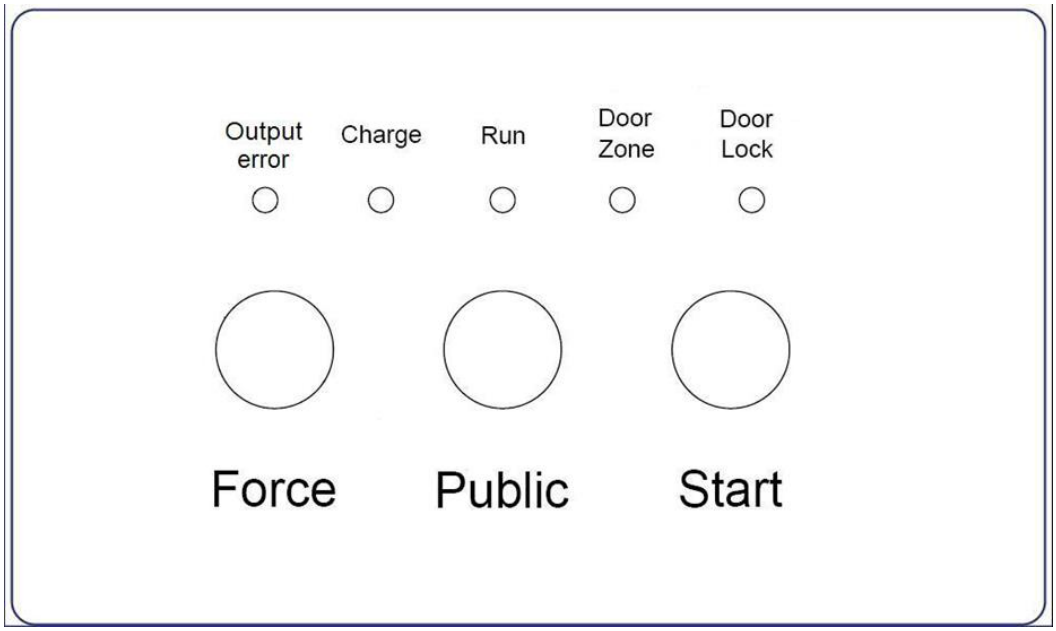


Figure 3.1 Appearance of Operation Panel

3.1 LED Definition

Definition and Function of the 5 LEDs on operation panel are shown in Chart 3.1

Chart 3.1 LED Definition and Function of LED

Name	Function
Undervoltage	When device is undervoltage, this LED will turn on for 20s. Please recharge device as soon as possible.
Charge	When battery is not full, this LED will flicker; After battery is fully charged, this LED will keep on indicating battery is full.
Run	When device is outputting open-brake voltage, this LED is on to indicate voltage raise. When there is no voltage outputting, this LED flickers to indicate operation.
Door Zone	When receive door zone signal, this LED turns on. Otherwise, it is off.
Door Lock	When door lock is closed, this LED turns on. Otherwise, it is off.

3.2 Application

3.2.1 When 220V exist

While AC 220V exist, Electric Brake Release device will not boost voltage. Internal circuit will be isolated from external brake circuit. “Door zone”, “Door Lock” and “Output error” LEDs will keep off. No matter which button on panel is pressed, it does not start to boost output. This can prevent open-brake voltage of cabinet output from superimposing on the brake coil with brake release device output when AC 220V exist. Otherwise, it may cause brake coil or brake power damage.

（1）While AC 220V exist, it will automatically power up and intelligently charge battery according to battery voltage. At this moment, “Charge” LED will flicker.

（2）When battery has bad earth connection that causes battery undervoltage, it will show undervoltage alarm. At this moment, “Charge” LED rapidly flickers and “Output error” LED keeps on.。

3.2.2 When 220V non-exist

When AC 220V non-exist, ensure external wirings are correct and then,

（1）When “Run” LED keeps off, press “Start” button to start internal circuit of the brake release device until “Run” LED begin to flicker. Then release “Start” button and complete power start.

（2）After Electric Brake Release Device starts, it supplies three isolated channels of power from terminal J5, voltage of +5V, +13V and +5.2V, connecting with Bluelight integrated controller via flat cable to power the MCU board, PG card and Hand operator. These are used for monitoring car coasting speed and direction. These power outputs can also be used individually to other devices. When using it, make sure not to exceed power limit, please avoid overloading and short circuit of power source.

（3）When car is at non-door zone, “Door zone” LED will turn off. At this moment, press both “Start” and “Public” button, brake release power will start to boost circuit and “Boost” LED turns on. Brake release device will output an excitation voltage (Voltage value is shown in Figure 1.1 Specifications). It can reduce battery power consumption and extend its lifetime.

（4）When boost output needs to emergency stop, release “Start” and “Public” buttons. Then brake release power will stop outputting, brake coil will lose power and elevator will stop moving.

（5）When car enters door zone, brake release device automatic stops outputting immediately, so rescuer can open car door at door zone and let trapped passenger go out. If elevator door cannot open at this door zone or rescuer needs to move elevator to another near floor by other reason, press both “Public” and “Force” buttons, if door zone signals are effective at this moment, then brake release device will continue outputting power to brake coil and make elevator move. When elevator moves out of door zone, door zone signals will be ineffective and boost output stops. Then press both “Start” and “Public” buttons to restart boost output.

（6）When connecting door lock signal correctly, “Door Lock” LED will turn off as door lock break. Brake release device will stop boosting voltage immediately and cannot restart. Only after door lock is closed, then it can continue to boost output. **Attention: when door lock break, car door is open, and passengers**

enter or leave the elevator, if someone starts to boost output and car moves, this is very dangerous. When connecting to door lock signals, pay attention to avoid such danger.

（7）The maximum running time of each boost operation is 5 min. After 5 min, brake release device stops automatically and will not allow to restart. Wait for 1 min after power off, then boost output can be started.

（8）After pressing “Start” button to start brake release device, if no button is pressed in 1 min, power will turn off automatically and wait for next start.

（9）After brake release device starts operating, if low voltage of battery is detected, it will output undervoltage alarm for 20 seconds. At this moment, if the device is boost outputting, it will stop the output and turn on “Output error” LED. During this 20-second alarm, it cannot start to boost again. Then please charge battery as soon as possible. If battery voltage recovers after 20 seconds, under-voltage alarm will be canceled. Then “Output error” LED turns off and device can boost output again.

3.2.3 Door Zone Signal Determine And Normally Open/Normally Close Selection

（1）If “Run” LED flicker in 1 second period (on 0.5 second, off 0.5 second), door zone signal is effective when closed (circuit is open when not in door zone, closed when in door zone).

（2）If “Run” LED flicker in 6 seconds period (on 3 seconds, off 3 seconds), door zone signal is effective when open (circuit is closed when not in door zone, open when in door zone).

（3）When neither “Start” nor “Public” button is pressed, press 5 times of “Public” button in 5 seconds continuously, at this moment, “Door Zone” LED will flicker for several times, then you can select door zone sensor type (close effective or open effective). After selection, the door zone sensor types can be proved by determining whether brake release device indicates door zone correctly via “Run” and “Door Zone” LEDs.

3.2.4 Other Function

Switch full voltage start voltage (default 110V)：

When the Electric Brake Release Device “Run” LED is flickering, press and hold “Force” button, meanwhile press “Start” button 5 times continuously, this can switch the voltage The voltage between 110V and 80V. After this switch operation, if current Full Voltage is 80V, “Door Zone” LED flickers. If current Full Voltage is 110V, “Door Lock” LED flickers.

Switch whether to enable the half-voltage maintenance function (default on)：

When the Electric Brake Release Device “Run” LED is flickering, press and hold “start” button. meanwhile press “Start” button 5 times continuously, this can switch the half-voltage maintenance function. After this switch operation. The electric brake release turn to half-voltage maintenance after 2 seconds full-voltage output. After deactivation, the electric brake release will always output the full voltage. If the function enable, “Undervoltage ” LED flickers. If the function disable, “Charge ” LED flickers.

Attention: When the half-pressure maintenance function is disabled, the output power consumption of the electric brake will increase dramatically, and the time and the number of times of the brake can be opened will be reduced.

Chapter 4 Maintenance

4.1 Safety Precautions for Maintenance & Storage

（1）The maintenance should only be carried after power is off;

（2）There are high voltage terminals, please DO NOT TOUCH!!!

（3）Only authorized and qualified professionals are allowed to inspect/service this device;

（4）DO NOT remove or change terminals and wires when module power is on;

（5）After maintenance, please make sure all terminals and contactors are tightly secured;

（6）DO NOT touch components on control board directly;

（7）Avoid crash.

4.2 Cautions of Using Battery

（1）The lift time of battery are expected 3~5 years under 25℃ or 5 years under 20℃;

（2）Fully charge the battery (at least 8 hours) before device is packaged and stored;

（3）At least charge and discharge battery once per 6 months (charge for over 8 hours continuously) if long term spared;

（4）Charge for over 8 hours continuously before use this device for the first time;

（5）Before device operates, please confirm the power supply of cabinet is cut off to ensure safety.

4.3 Change Battery

Iron shell products:

（1）Unscrew the 8 screws around Electric Brake Release Device. 2 screws each side;

（2）Take off device cover, be aware that the cover is attached to power board with flat cable, please detach the flat cable first;

（3）Unplug the power cable from battery, take out device PCB together with its scale board (do not untight any screw on PCB);

（4）Now, the battery holder is exposed. Unscrew the 4 screws of battery holder, then one can change battery;

（5）Assemble the device accordingly. Make sure connect red cable to battery positive, connect black cable to battery negative. When install device cover back, don’t forget to connect the flat cable first.

Plastic shell products：

（1）Follow the arrow on the battery compartment to push open the battery compartment cover;

（2）Unplug the battery cable;

（3）Remove the old battery from the clip, then insert the new battery and secure it with the clip;

（4）Connect the battery cables. Note that the red wire is connected to the positive pole and the black wire is connected to the negative pole;

（5）Finally, push the battery compartment cover and snap tightly.