Destination Dispatch System

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Product version: V1.5

Preface

Destination dispatch system (DDS) is a kind of intelligent dispatch system for the destination floor developed and produced by Shanghai STEP Electrical Corporation. With this system, several lifts (maximum 8) can be grouped into a group and the passengers can input the destination floor in the human-machine interactive device, then one of the lifts can be distributed by the system to transport the passengers according to the current status of run of the lifts.

Characteristic of destination dispatch system is that the information on destination floor has been obtained prior to lift distribution, which means that the arrival time of the passengers has been considered in the lift dispatching information. Contrasting to the traditional dispatch system, the destination dispatch system can greatly reduce the average time of arrival and long-time wait rate.

The dispatching advantages of DDS controller are especially obvious among the buildings with dense crowd, which are behaved as: the destination dispatch system can execute zoning service according to the information on destination floor registered by the passengers, to possibly shorten the round travel of the lift and transport the passengers with the shortest time.

The design objective of the system is to improve the accuracy of group control dispatching, reduce the waiting time during busy time (especially at the peak hours) and long-time wait rate, as well as apply to different architectural layouts.

Abstract

The instructions have entirely and systematically explained the installation, use, setting of functional parameters, maintenance and troubleshooting of DDS destination dispatch system. The manual can be served as the reference data for group control design adopting DDS destination dispatch system, also used by the system installation, debugging and maintenance.

In order to ensure the proper installation, please carefully read the instructions before the destination dispatch system is applied.

Readers

Users

Lift control designers

Engineering maintenance personnel

Technical support personnel for the users

Contents in the instructions are subject to supplement and modification, please pay attention to our website to update it. Our website: www.stepelectric.com.

System advantages

- **High efficiency and safety**. It integrates various advanced dispatching technologies such as expert system, fuzzy logic and neutral network, to ensure the high efficiency and safety of the lift based on CAN bus.

- **Comfort travel**. Waiting time and long-time wait rate of the passengers can be effectively reduced by distributing the destination floor areas, to avoid the crowding during waiting and relax the anxiety of the passengers during waiting.

- **Cost reduction**. Improvement of the operation efficiency can reduce the total quantity of lifts equipped in the building and reduce its construction cost.

- **Energy conservation and environmental protection**. The high efficiency operation dispatching can reduce the run times of lift, to reduce the power consumption of buildings, realizing energy conservation and environmental protection.

- **Flexible configuration**. The flexible layout modes of the car apply to the unique building design.

Run mode

- Support the mixed type and full-configuration destination floor system

Mixed type destination floor system

Destination selector is mounted at the main floors or partial floors

Call box is mounted at other floors

Full-configuration destination floor system

Destination selector is mounted at every floor

- Several indication modes for the destination floor: destination indicator inside and outside the car.

Main functions

No.	Functions
1	Up peak
2	Down peak
3	Lunch peak
4	Afternoon peak
5	Self-identification of the peak at free time
6	Energy-saving mode
7	Distribution waiting
8	Service for the disabled
9	Immediate forecasting
10	Automatic switching of the service floors at periods of time
11	Anti-nuisance
12	Car calls disable
13	Setting of hold time for door open at destination floor

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1 Product Functions

List of functions of **DDS destination dispatch system** and function details are introduced in this chapter.

1.1 List of product functions

No.	Functions
1	Up peak
2	Down peak
3	Lunch peak
4	Afternoon peak
5	Self-identification of the peak at free time
6	Energy-saving mode
7	Distribution waiting
8	Service for the disabled
9	Immediate forecasting
10	Automatic switching of the service floors at periods of time
11	Anti-nuisance
12	Car calls disable
13	Setting of hold time for door open at destination floor

1.2 Function details

1. Up peak

- Trigger mode:

A. Set the starting time and end time everyday within a week (week, hour, minute) by time setting (G20,G30, G32, G33).

B. Identify the up peak intelligently(G20). When all the lifts of the group are running and the destination floor instructions starting from lobby floor (G3) registered are greater than the set value (G50).

- Run mode:

After enter the up peak and all lifts of the group (G21-G28) involved in peak service have finished their services, they will come back to the lobby floor (G3) to wait.

A. Zoning service at peak hours (G21-G28): separately set the service area (upper half area, lower half area and whole area) for each lift of the group by parameter.

B. Odd/even floor service at peak hours (G21-G28): separately set the odd floor or even floor serviced of each lift of the group by parameter.

C. One-way collective selection (G21-G28): separately set every lift of the group as up collective selection by parameter.

D. Intelligent zoning service (G20): dynamically distribute the service area of each lift according to floor distribution and number of lifts of the group involved.

Notes: A, B, C and D above are only valid for the lifts involved at peak hours.

One or several items among A, B and C can be put into operation by parameter.

After D is put into operation, A, B and C will be invalid.

Exit mode:

A. Exit from the peak hours by time setting if the setting time is exceeded (G30, G32, G33).

B. Identify the up peak intelligently. When the peak conditions are unmet for 3 minutes, it will automatically exit from peak hours.

2. Down peak

- Trigger mode:

A. Set the starting time and end time everyday within a week (week, hour, minute) by time setting (G20,G30, G34, G35).

B. Identify the down peak intelligently(G20). When all the lifts of the group are running and the destination floor instructions to lobby floor (G3) registered are greater than the set value (G50).

- Run mode:

After enter the down peak and all lifts of the group (G21-G28) involved in peak service have finished their services, they will come back to the top floor of the subarea to wait.

A. Zoning service at peak hours (G21-G28): separately set the service area (upper half area, lower half area and whole area) for each lift of the group by parameter.

B. Odd/even floor service at peak hours (G21-G28): separately set the odd floor or even floor serviced of each lift of the group by parameter.

C. One-way collective selection (G21-G28): separately set every lift of the group as down collective selection by parameter.

D. Intelligent zoning service (G20): dynamically distribute the service area of each lift according to floor distribution and number of lifts of the group involved.

Notes: A, B, C and D above are only valid for the lifts involved at peak hours.

One or several items among A, B and C can be put into operation by parameter.

After D is put into operation, A, B and C will be invalid.

Exit mode:

A. Exit from the peak hours by time setting if the setting time is exceeded (G30, G34, G35).

B. Identify the down peak intelligently. When the peak conditions are unmet for 3 minutes, it will automatically exit from peak hours。

3. Lunch peak

- Trigger mode:

Set the starting time and end time everyday within a week (week, hour, minute) by time setting (G20,G31, G36, G37).

- Run mode:

After enter the lunch peak and all lifts of the group involved in peak service have finished their services,

they will come back to the lobby floor (G3) and the top floor (G4) to scatter to wait.

A． Zoning service at peak hours (G21-G28): separately set the service area (upper half area, lower half area and whole area) for each lift of the group by parameter.

B． Odd/even floor service at peak hours (G21-G28): separately set the odd floor or even floor serviced of each lift of the group by parameter.

C． One-way collective selection (G21-G28): separately set every lift of the group to approach to the restaurant by parameter.

D． Intelligent zoning service (G20): dynamically distribute the service area of each lift according to floor distribution and number of lifts of the group involved.

Notes: A, B,C and D above are only valid for the lifts involved at peak hours.

One or several items among A, B,C and D can be put into operation by parameter.

- Exit mode:

Exit from the peak hours by time setting (G31, G36, G37) if the setting time is exceeded.

4. Afternoon peak

- Trigger mode:

Set the starting time and end time everyday within a week (week, hour, minute) by time setting (G20,G31, G38, G39).

- Run mode:

After enter the afternoon peak and all lifts of the group involved in peak service have finished their services, they will come back to the restaurant floor (G5) to wait

A． Zoning service at peak hours (G21-G28): separately set the service area (upper half area, lower half area and whole area) for each lift of the group by parameter.

B． Odd/even floor service at peak hours (G21-G28): separately set the odd/even floor serviced of each lift of the group by parameter.

C． One-way collective selection (G21-G28): separately set every lift of the group to leave the restaurant floor(G5) by parameter.

D． Intelligent zoning service (G20): dynamically distribute the service area of each lift according to floor distribution and number of lifts of the group involved.

Notes: A, B,C and D above are only valid for the lifts involved at peak hours.

One or several items among A, B ,Cand D can be put into operation by parameter.

- Exit mode:

A. Exit from the peak hours by time setting (G31, G38, G39) the setting time is exceeded.

5. Self-identify the peak at free time (G20)

The passenger flow passing the building automatically enters the peak mode at non-peak time periods. At this time, only enter the service mode of up peak or down peak, as well as the mode of intelligent zoning will be adopted.

6. Idle mode

Set the starting time and end time (G71, G72) of idle mode by parameter. After enter idle mode, all lifts of the group will come to the lobby floor (G3) to wait. The lift (G70) which is set to take park in free run can continue to serve, while the rest will stop service at lobby floor (G3). After the lift enters peak, idle mode becomes invalid.

7. Distribution waiting

A. When G1=1,set three home landings by parameter. The first one is lobby floor (G3), the second one is the highest floor (G4) (maybe not that of the building) and the third one is restaurant floor (G5). Number of the lifts waiting can be set by parameter (G8). Returning home landing (G1) is put into operation, when all lifts in the group stop running and exceed the setting time (G2) when returning home landing is delayed, the group control will locally dispatch its lifts to return to the home landing in turn. If there is destination floor call or call register during return, then it will exit from returning home landing. Priority of different home landing: the first home landing > the second home landing > the third home landing. After returning home landing of the lift in the group has been completed, if there are still the idle lifts, then they will wait at different home landing randomly.

B. When G1=2,waiting floor can be set by parameter.G120 is the waiting floor of lift A, G121 is the waiting floor of lift B, G122 is the waiting floor of lift C, G123 is the waiting floor of lift D, G124 is the waiting floor of lift E, G125 is the waiting floor of lift F, G126 is the waiting floor of lift G, G127 is the waiting floor of lift H.

8. Service for the disabled

Set the lift in the group as the lift for disabled (G100). After the destination floor instruction of the disabled has been registered, this destination floor instruction only can be distributed to the lift for disabled. For the destination selector, when the disabled instruction is registered, button delay will be automatically enlarged, with voice prompt.

9. Immediate forecasting

When the passenger registers the destination floor instruction or call, it will immediately indicate the lift distributed to the passenger.

10. Automatic switching of service floors at time periods

Set the service floors (G82-G85) within the appointed time (G80, G81). After enter the setting time, lifts in the group only serve the floors set.

11. Anti-nuisance (G101)

If several destination floor instructions have been registered at some floor, after the lift reaches this floor, destination instruction registered at this floor will be cancelled if the light curtain hasn’t been activated within the setting time (G103).

12. Car calls disbale

Separately set whether each lift in the group can register the car calls by parameter (G104).

13. Setting of hold time for door open at destination floor

Separately set the hold time for door open at lobby floor (G105), other floors (G106) and the destination floor by parameter.

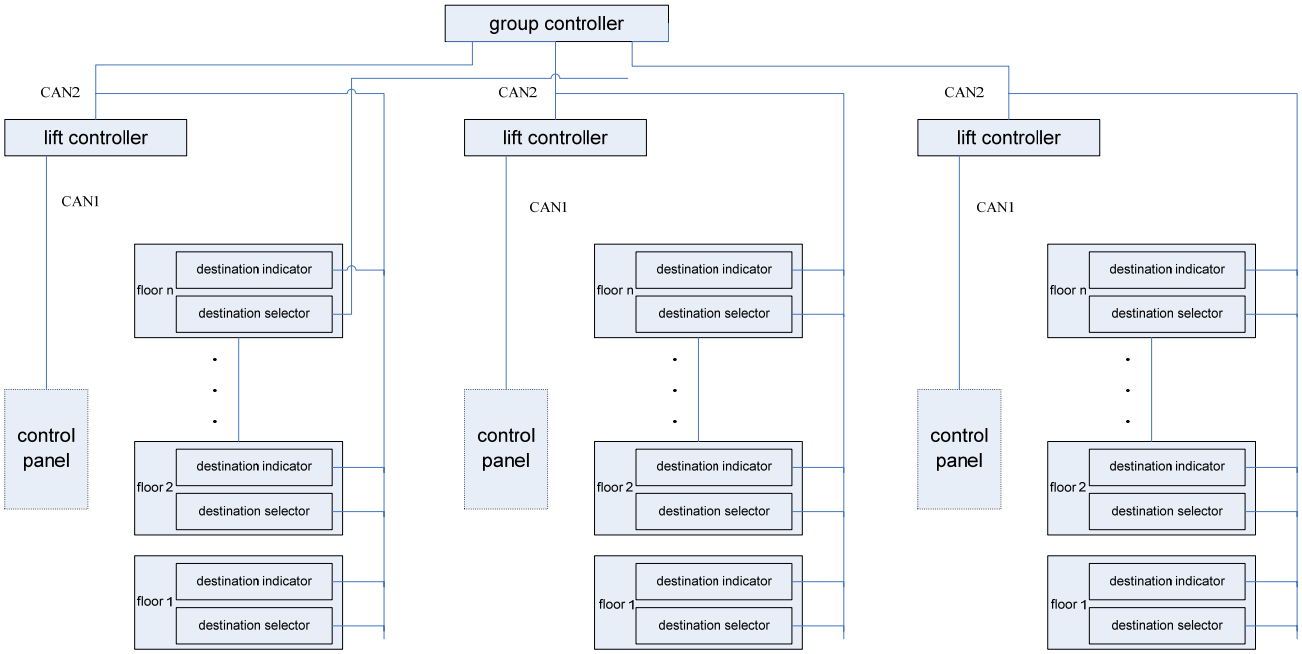
2 Structural Drawing of Destination Dispatch System

2.1 Hall destination indicator is adopted

There are two modes of configuration for the hall destination indicator, namely mode of full configuration destination floor and mode of mixed destination floor.

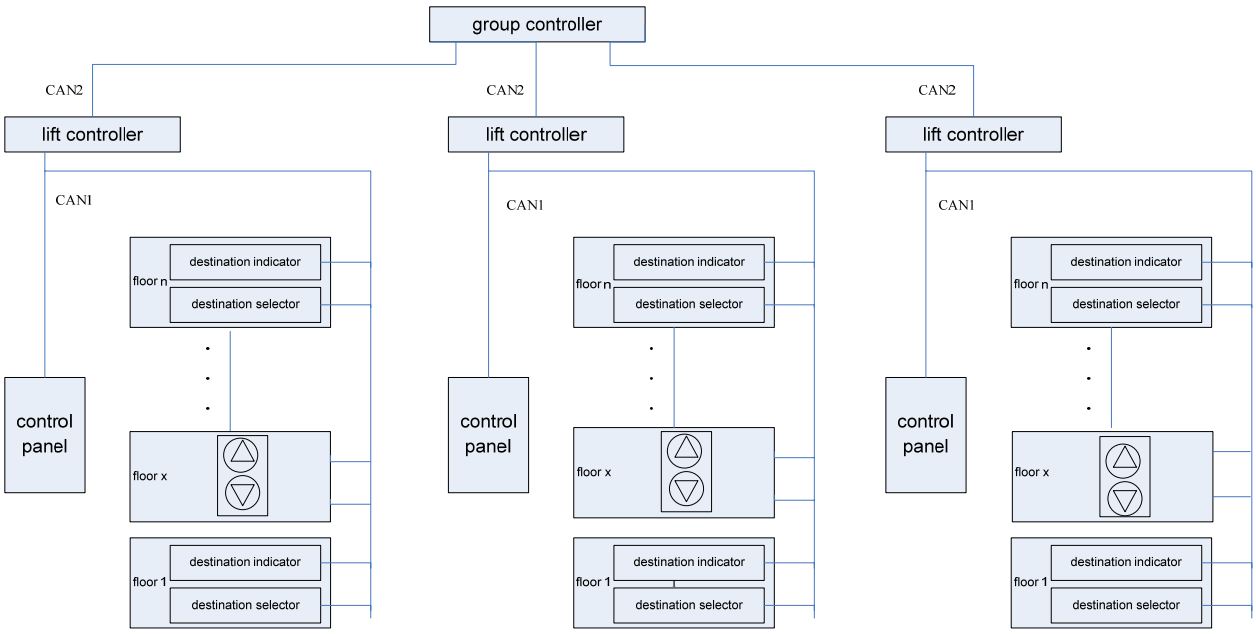
Typically the hall destination indicator is mounted on the lintel. At the same time, the hall Arrival lantern and arrival gongcan be mounted as required by the user. Drive plate of the arrival lantern and arrival gongmust be connected to CAN1.

2.1.1 Mode of full configuration destination floor (A1)



Note: the control panel is optional.

2.1.2 Mode of mixed destination floor (A2)



Note: call or destination selector can be chosen for every floor outside the car, which will be configured

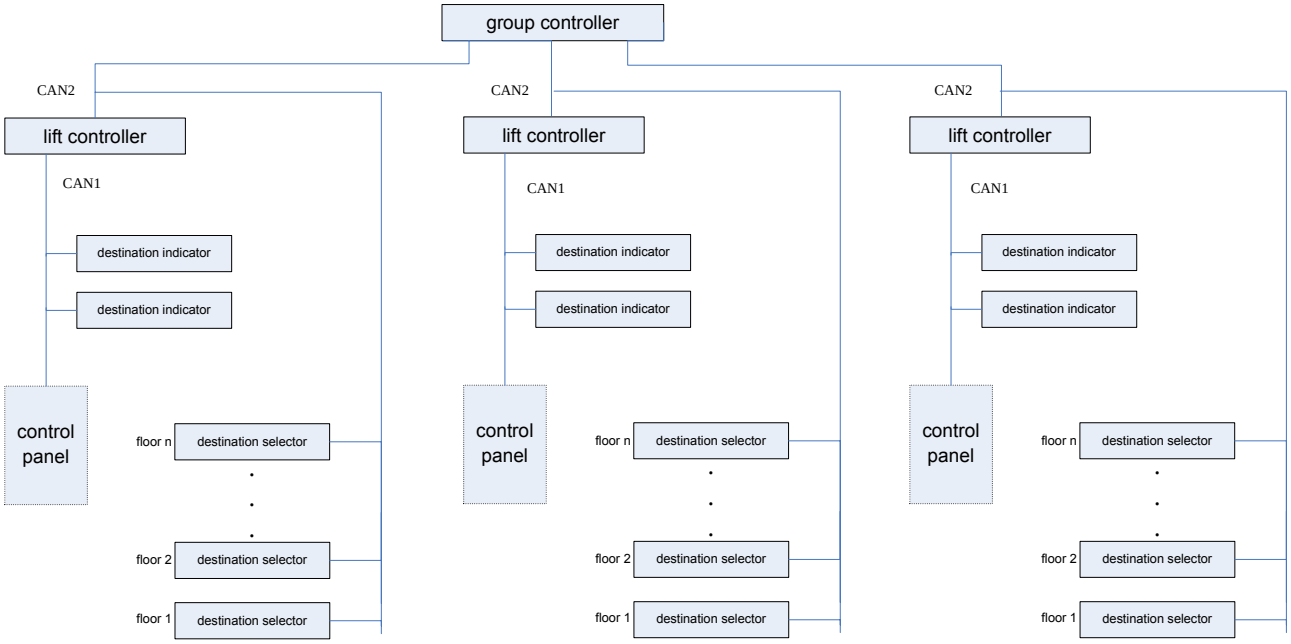
according to the actual requirements. The typical usage mode is that destination selector and display are applied by the hall, while hall call is applied by other floors. Under this configuration, control panel is required and number of the destination selectors can’t exceed 3.

2.2 Car destination indicator adopted

There are two modes of configuration for the car destination indicator, namely mode of full configuration destination floor and mode of mixed destination floor.

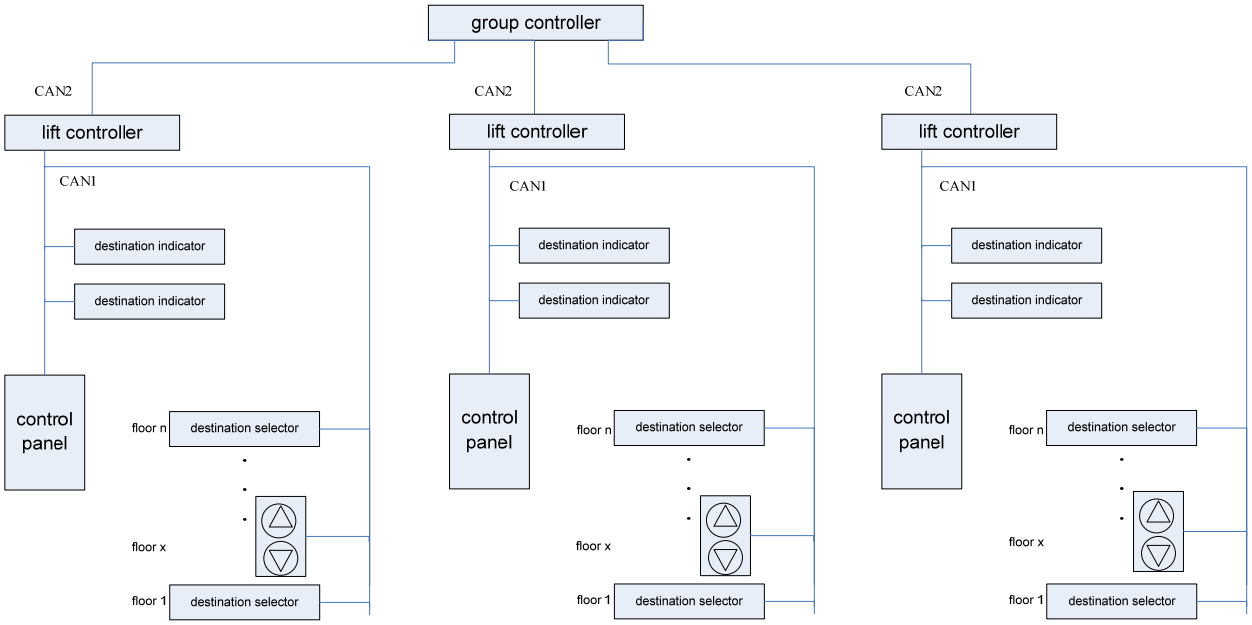
Typically the car destination indicator is mounted on both sides of the car. At the same time, the hall arrival lantern and arrival gongcan be mounted as required by the user. Drive plate of the arrival lantern and arrival gongmust be connected to CAN1.

2.2.1 Mode of full configuration destination floor (B1)



Note: the control panel is optional.

2.2.2 Mode of mixed destination floor (B2)



Note: call or destination selector can be chosen for every floor outside the car, which will be configured according to the actual requirements. The typical usage mode is that destination selector is applied by the hall, while hall call is applied by other floors. Under this configuration, control panel is required and number of the destination selectors can’t exceed 3.

3 System Configuration

The matching products of DDS destination dispatch system are shown as follows, and the user can choose the related products according to their actual configuration.

3.1 Hall destination selector adopted

	Mixed destination floor	Full configuration destination floor
Computer room		
Group controller	●	●
Lift controller	●	●
Home landing		
Destination selector	●	●
Destination indicator	●	●
Arrival lantern	○	○
Arrival gong	○	○
Non-home landing floor		
Destination selector	○	●
Destination indicator	○	●
Arrival lantern	●	○
Arrival gong	○	○
Hall call (no display)	●	
Inside the car		
Control panel	●	○

● Standard ○ Optional

3.2 Car destination indicator adopted

	Mixed destination floor	Full configuration destination floor
Computer room		
Group controller	●	●
Lift controller	●	●
Home landing		
Destination selector	●	●
Arrival lantern	○	○
Arrival gong	○	○
Non-home landing floor		
Destination selector	○	●
Arrival lantern	●	○
Arrival gong	○	○
Hall call (no display)	●	
Inside the car		

Control panel	●	○
Destination selector	●	●

● Standard ○ Optional

4 Destination Floor Group Controller

Destination floor group controller SM.GC/D is the main controller of DDS, whose functions are to group several lifts into a group, and connect the human-machine device, as well as dispatch the proper lift to the floor called to transport the passengers to the destination floor.

4.1 Characteristics

1. 32-bit ARM7 chip for the main CPU

2. 9 independent CAN transceivers completely isolated, to provide 9 group control communication interfaces

3. 8 isolated input channels

4. 4 isolated output channels

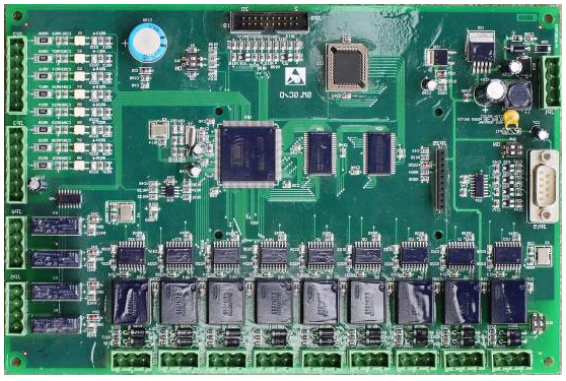
5. Anti-conduction interference and anti-coupling interference reach 4000V

6. It includes a real-time clock chip, equipped with a high capacity capacitor, which can be maintained for 7 days under power failure.

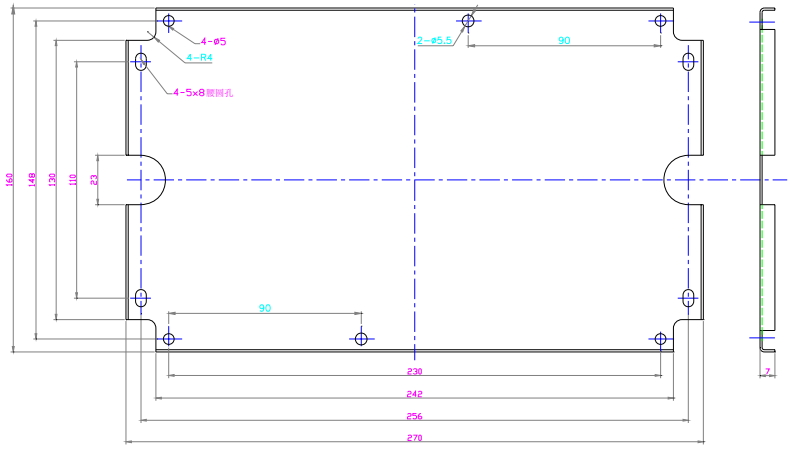
7. Provide an RS232 serial interface to connect the manipulator, so as to set parameters.

4.2 Profile and dimensions

Profile picture:



Installation dimensions of baseboard:



4.3 Electrical specifications

4.3.1 Specifications of printed board

Name of printed board	SM.GC/D (ProD0957BV1)
Color	Green
Thickness	1.6mm
Wiring layers	4

4.3.2 DIP switch and jumper

No.	Functions
SW1	Programming for AT91M55800 via RS232 when two ways are ON, while it connects to the hand manipulator when both of them are OFF.
SW3	CAN BUS 1 connects to terminal resistor when two ways are ON, while it won't connect to terminal resistor when both of them are OFF.
SW5	Output is available from RS232 interface and supply 5V power to the hand manipulator when two ways are ON, while no output is available when both of them are OFF.

4.3.3 Specifications of connectors

Socket No.	Type of wafer	Type of plug	Qty.
JP1	MSTBVA2.5/4-G-5.08	FKC2.5/4-ST-5.08	1
JP2	MSTBVA2.5/6-G-5.08	FKC2.5/6-ST-5.08	1
JP3	MSTBVA2.5/6-G-5.08	FKC2.5/6-ST-5.08	1
JP5	MSTBVA2.5/4-G-5.08	FKC2.5/4-ST-5.08	1
JP6	MSTBVA2.5/4-G-5.08	FKC2.5/4-ST-5.08	1
JP16	MSTBVA2.5/3-G-5.08	FKC2.5/3-ST-5.08	1
JP17	MSTBVA2.5/3-G-5.08	FKC2.5/3-ST-5.08	1
JP18	MSTBVA2.5/3-G-5.08	FKC2.5/3-ST-5.08	1
JP19	MSTBVA2.5/3-G-5.08	FKC2.5/3-ST-5.08	1
JP20	MSTBVA2.5/3-G-5.08	FKC2.5/3-ST-5.08	1
JP21	MSTBVA2.5/3-G-5.08	FKC2.5/3-ST-5.08	1
JP22	MSTBVA2.5/3-G-5.08	FKC2.5/3-ST-5.08	1
JP23	MSTBVA2.5/3-G-5.08	FKC2.5/3-ST-5.08	1
JP24	MSTBVA2.5/3-G-5.08	FKC2.5/3-ST-5.08	1

4.3.4 Specifications of the main components

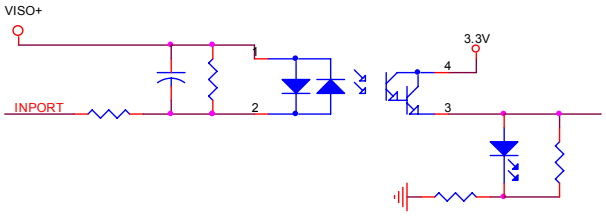
Component marking	Product name	Product specifications	Manufacturer
U1, U3, U5、U7, U9, U11, U13, U20, U22	CAN control chip	MCP2510	Microchip
U35, U36, U37, U38, U39, U40, U41, U42, U26	CAN transceiver	65HVD1050	TI
U15	MCU	AT91M55800A	ATMEL
U24, U25	RAM chip	IS61LV5128	ISSI

U23	FLASH chip	AT49LV040	ATMEL
U17, U18	Reset chip	CAT809S-2.98V	CAT
U16	Ferroelectric memory	FM25CL64-S	RAMTRON
U34	RS-232 transceiver	SP3232EEN	SIPEX
U32	Linear power	LM1117DT-3.3	HTC
U31	DC-DC converter chip	LM2596	NS

4.3.5 Power specifications

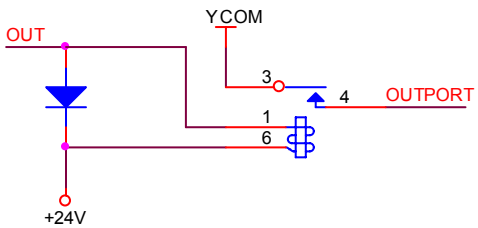
Input voltage	22 ~ 26VDC	
Scope of standard input voltage	24VDC	
Characteristic operating current	250mA	
Maximum operating current	350mA	
Type of the socket on PCB board	MSTBVA2.5/4-G-5.08	
JP1	JP1.1	24V input
	JP1.2	24V input
	JP1.3	0V input
	JP1.4	0V input

4.3.6 Input interface

Input point	8-way	
Input form	Common anode, low level input is valid	
Input voltage threshold	Absolute making value	≤ 6V
	Absolute breaking value	≥ 18V
Effective input voltage value recommended	0V	
Input schematic		
Type of the socket on PCB board	MSTBVA2.5/6-G-5.08	
JP2	JP2.6	Input X0
	JP2.5	Input X1
	JP2.4	Input X2
	JP2.3	Input X3
	JP2.2	Input X4
	JP2.1	Input X5
JP3	JP3.6	Input X6

	JP3.5	Input X7
	JP3.4	Input common terminal, the inside is connected to JP3.2
	JP3.3	Input common terminal, the inside is connected to JP3.2
	JP3.2	VISO-, isolated negative power input
	JP3.1	VISO+, isolated positive power input

4.3.7 Output port

Number of output channels	4-way			
Output form	Normally open contact output of relay			
Relay specifications	Model of relay	F3AA024E		
	Safety standard	UL, CSA, VDE		
	Contact parameters	Contact form	1 normally open	
		Contact impedance (initial state)	Maximum 100mΩ (at 6VDC 1A)	
		Rated load (resistive load)	250 VAC/30 VDC, 3A	
	Coil parameters	Normal power (20℃)	0.2W	
		Operating temperature (frostless)	-40℃ - +70℃	
	Time parameters	Actuation (normal voltage)	Maximum 10ms	
		Release time (normal voltage)	Maximum 10ms	
	Insulation parameter	Resistance (500VDC)	Minimum 1000MΩ	
		Electrical insulating capacity	Between the contacts	750VAC (1 minute)
			Between the contact and the coil	4000VAC (1 minute)
		Surge insulating capacity	Between the coil and the contact 10kV/1.2×50ms	
	life	Mechanical life	≥ 5×10^6	
		Electrical life (contact)	≥ 2×10^5	
Schematic				
Model of the socket on PCB board	MSTBVA2.5/4-G-5.08			

JP6	JP6.4	Y0
	JP6.3	Common terminal of output relay Y0
	JP6.2	Y1
	JP6.1	Common terminal of output relay Y1
JP5	JP5.4	Y2
	JP5.3	Common terminal of output relay Y2
	JP5.2	Y3
	JP5.1	Common terminal of output relay Y3

4.3.8 Specifications of EEPROM

Model of EEPROM	FM25CL64-S
Protocol used	SPI (maximum speed 20Mhz)
Capacity	64Kbit
Operating temperature	-40℃ - +85℃

4.3.9 RS-232 communication

Communication port	1-way RS232
Mode of communication	RS232
Operating baud rate	9600 bps
Model of the socket on PCB board	Type D 9-pin straight socket
JP15	JP15: 1. PDCD0 2. PRXD0 3. PTXD0 4. PDTR0 5. GND 9. +5V (maximum output current 0.5A is available when two ways of SW5 are ON)

4.3.10 CAN communication

Communication port	9-way CAN	
Mode of communication	CAN BUS	
Operating baud rate	25Kbps	
Model of the socket on PCB board	MSTBVA2.5/3-G-5.08	
JP16	JP16.1	CAN1 isolated GND
	JP16.2	TXA1+
	JP16.3	TXA1-
JP17	JP17.1	CAN2 isolated GND
	JP17.2	TXA2+
	JP17.3	TXA2-
JP18	JP18.1	CAN3 isolated GND

	JP18.2	TXA3+
	JP18.3	TXA3-
JP19	JP19.1	CAN4 isolated GND
	JP19.2	TXA4+
	JP19.3	TXA4-
JP20	JP20.1	CAN5 isolated GND
	JP20.2	TXA5+
	JP20.3	TXA5-
JP21	JP21.1	CAN6 isolated GND
	JP21.2	TXA6+
	JP21.3	TXA6-
JP22	JP22.1	CAN7 isolated GND
	JP22.2	TXA7+
	JP22.3	TXA7-
JP23	JP23.1	CAN8 isolated GND
	JP23.2	TXA8+
	JP23.3	TXA8-
JP24	JP24.1	CAN9 isolated GND
	JP24.2	TXA9+
	JP24.3	TXA9-

4.3.11 Power specifications

Input －>output	Maximum current output capability		Maximum ripple voltage (ripple of the linear power is very small, so it won't be considered)	
	Room temperature	+60℃	Room temperature	-20℃
24V－>5V	1.2A	1.2A	50mV (output current> 220mA)	150mV (output current> 220mA)
5V－>3.3V	465mA	300mA		

4.3.12 Working environment and EMC

Temperature	-20℃ ～ +60℃
Humidity	<95%
Salt mist	Salt mist content: 0.13ug/m3
Impact	Peak acceleration: 100gn, 100 times
Vibration	10Hz-100Hz 50 times 100Hz-10Hz 50 times -
Instantaneous pulse train interference	Harsh industrial environment (4000V)
Electrostatic discharge	Contact discharge 8KV

4.4 Port definitions

Port	Definition	Type

JP1	JP1.1	24V input	Power supply
	JP1.2	24V input	
	JP1.3	0V input	
	JP1.4	0V input	
JP2	JP2.6	Reserve	Input
	JP2.5	Reserve	
	JP2.4	Up peak switch	
	JP2.3	Lunch peak switch	
	JP2.2	Afternoon peak switch	
	JP2.1	Down peak switch	
JP3	JP3.6	Reserve	
	JP3.5	Reserve	
	JP3.4	Input common port	
	JP3.3	Input common port	
	JP3.2	VISO-, isolated negative power input	
	JP3.1	VISO+, isolated positive power input	
JP5	JP5.4	Reserve	Output
	JP5.3	Common port of JP5.4	
	JP5.2	Reserve	
	JP5.1	Common port of JP5.2	
JP6	JP6.4	Reserve	
	JP6.3	Common port of JP6.4	
	JP6.2	Reserve	
	JP6.1	Common port of JP6.2	
JP15		Program burning port/manipulator interface	RS-232 communication
JP16		CAN1, communication port 1 with lift mainboard, selector and indicator	CAN communication
JP17		CAN2, communication port 2 with lift mainboard, selector and indicator	
JP18		CAN3, communication port 3 with lift mainboard, selector and indicator	
JP19		CAN4, communication port 4 with lift mainboard, selector and indicator	
JP20		CAN5, communication port 5 with lift mainboard, selector and indicator	
JP21		CAN6, communication port 6 with lift mainboard, selector and indicator	
JP22		CAN7, communication port 7 with lift mainboard, selector and indicator	
JP23		CAN8, communication port 8 with lift mainboard, selector and	

	indicator	
JP24	CAN9, reserve	
SW3	CAN9 terminal resistor DIP switch	

4.5 Classification of parameters

4.5.1 Basic parameters

Grades of the group controllers

Grades of the group controllers are used to identify the master/slave relation of the group controllers. In the system that two group controllers are required, grade 0 controller undertakes group control dispatch; while grade 1 controller is used as reserve. When the former experiences any trouble, the latter will to undertake group control dispatch.

Note: different grades must be set, otherwise the system can't work normally.

About home landing

Home landing is a special floor of the dispatch system. The dispatch system has three special floor stations.

Lobby floor: the floor where the entrance & exit of the building are located.

Top floor: that needs the lifts to scatter stop

Restaurant floor: it can be set at a certain floor in the building, also may be at the lobby floor.

Return home landing function:

When the lift is in idle state, it will return to the home landing to wait. If the three special floors are set at different floors, the idle lift will be separately dispatched to these three floor stations to wait.

Number of lifts to wait at the lobby floor:

Number of the lifts to wait at the lobby floor can be set. Only when it is met, can the rest lifts be dispatched to the restaurant floor and highest level to wait.

Home landing opens door to wait:

When the lift stops at the lobby floor station, it will keep the door opened. Once the lift is used, door open will be finished. The purpose is to make the home landing to open door to wait passengers.

Home landings during peak services:

Lobby floor station means the floor where the entrance & exit of the building are located, therefore the services during up peak and down peak are based on this station.

Restaurant hall station means the floor where the restaurant of the building is located, therefore lunch peak and afternoon peak are based on this station.

About door open overtime

When some lift is kept at the state of door open for a long time for some reason, the group controller will temporarily cancel its distribution. Door open overtime duration can be set by parameter G7.

4.5.2 Peak services

Peak services are to set morning and down peak as well as lunch and afternoon peak by parameters.

Peak mode

Peak mode G20 is set as 0:

Peak services will be triggered by input point of the group control board. Connect the input point X2 to start up peak service; X3 to start lunch peak; X4 to start afternoon peak and X5 to start down peak.

Setting parameter G20 for peak mode:

Bit0:

Peak services set by parameters.

Parameter G30 is the date with morning and down peak within a week;

Parameter G31 is the date with lunch and afternoon peak within a week;

Parameter G32 is the starting time of up peak;

Parameter G33 is the end time of up peak;

Parameter G34 is the starting time of down peak;

Parameter G35 is the end time of down peak;

Parameter G36 is the starting time of lunch peak;

Parameter G37 is the end time of lunch peak;

Parameter G38 is the starting time of afternoon peak;

Parameter G39 is the end time of afternoon peak;

Set the service areas involved in peak hours of each lift by parameters G22-G28

Bit1:

Peak services set by parameters.

Parameter G30 is the date with morning and down peak within a week;

Parameter G31 is the date with lunch and afternoon peak within a week;

Parameter G32 is the starting time of up peak;

Parameter G33 is the end time of up peak;

Parameter G34 is the starting time of down peak;

Parameter G35 is the end time of down peak;

Parameter G36 is the starting time of lunch peak;

Parameter G37 is the end time of lunch peak;

Parameter G38 is the starting time of afternoon peak;

Parameter G39 is the end time of afternoon peak;

Dynamic zoning for instructions of the up and down destination floor based on the lobby floor

Bit2:

It means the intelligent morning and down peak based on the instructions of destination floor besides the

time appointed by the above two items. When the destination floor instructions sent from home landing are greater than the value set by parameter G50, up peak service will be started; when the instructions sent from the destination floor (served as the home landing) are greater than the value set by parameter G50, down peak service will be started.

Service mode during peak hours

Service mode during peak hours of each lift can be set by parameters. Parameters G21, G22, G23, G24, G25, G26, G27 and G28 are service modes of 8 lifts. Setting of the service mode is shown as the following:

Bit0: one-way collective selection

Bit1: service in the lower half area

Bit2: service in the upper half area

Bit3: service for odd floors

Bit4: service for even floors

Divided by the floor set by parameter G29, the floors (including this floor) below G29 is the lower half area, otherwise those above G29 is the upper half area.

4.5.3 Idle mode

In order to save energy, part of lifts won't be involved in distribution at the time when the lifts are seldom used. Parameter G70 is used to set the lifts involved in distribution when idle mode is started:

Bit0: A# lift

Bit1: B# lift

Bit2: C# lift

Bit3: D# lift

Bit4: E# lift

Bit5: F# lift

Bit6: G# lift

Bit7: H# lift

Parameter G71 is the starting time of idle mode; while G72 is its end time.

In addition, input point X6 also is a condition to start idle mode.

4.5.4 Energy saving mode

Energy saving mode is a special mode distributed aiming at the destination floor instructions. Typically, when there are 3 destination floor instructions distributed to some lift, the fourth one won't be taken by it again, which will be distributed to another lift as far as possible. Under energy saving mode, the fourth instruction will still be distributed to this lift. It means that an lift will obtain as much destination floor instructions as possible.

Parameter G37 it used to start the energy saving mode, which becomes invalid during peak hours.

4.5.5 Setting of service floors at periods of time

During the periods of time set, a group of service floor list will be used to serve the instructions and hall calls. Parameter G80 is the starting time of service floor; parameter G81 is its end time; parameters G82, G83, G84 and G85 are settings of service floors. In addition, input point X7 also is a condition to start the service floor at periods of time.

4.5.6 Options of destination floor

Lift for the disabled

Lift for the disabled is the lift appointed during destination floor distribution. When push down the key Disabled on the destination floor input panel and input the destination floor, the lift shown will be distributed to the disabled for service. Only one lift can be appointed to serve the disabled. Parameter G100 is used to appoint the lift for the disabled.

4.5.7 Automatically registering the destination floor call

When the lift reaches the floor to be registered, there are two modes to automatically register the destination floor into the car, which is set by parameter G101:

G101 = 0: After the lift door opens, the destination floor call will be automatically registered into the car after a delay.

G101 >0: The destination floor call will be automatically registered into the car after the actions of light curtain are triggered.

Bit0: Register the destination floor call into the car when the light curtain or safety shoe is activated. If the light curtain or safety shoe isn't activated, destination floor distribution at this floor will be eliminated after door open is kept for some time (G103).

Bit1: Register the destination floor call into the car when there is car call registration, otherwise destination floor distribution at this floor will be eliminated after door open is kept for some time (G103).

When new call is distributed to the lift, the lift won't register the call into the car at once, but to wait some time (G105/G106) before registration:

G105 wait time of the destination floor call at lobby floor

G106 wait time of the destination floor call at other floors

Destination floor call registered by passengers

When the lift reaches the floor registered, destination floor call won't be automatically registered into the car, but by the passengers. Generally, it will be applied when the passengers are not required to take the lift not strictly following the destination floor indicated on the destination floor distributor.

4.6 Parameters Description

Name	Description	Default	Unit
Basic Parameters			
G0	Reserve	0	
G1	Enable home return function 1:return to lobby 2:return to waiting floor set by parameter	0	

G2	Home return delay time	0	s
G3	Lobby floor	1	
G4	Top floor	1	
G5	Restaurant floor	1	
G6	Enable waiting with door open	0	
G7	Opening over-time	60	s
G8	Lift quantity of Returning lobby floor	1	
G9	Reserve	0	
Peak service			
G20	Peak mode: Bit0: fixed-time up peak service (peak triggered by time set by G21-G28) Bit1: intelligent zoning in up peak (only available when Bit0 set to 1, G21-G28 setting peak service is invalid.) Bit2: Generally, destination floor call record and calculate peak service Bit3: fixed-time down peak service (peak triggered by time set by G21-G28) Bit4: intelligent zoning in down peak (only available when Bit3 set to 1, G21-G28 setting peak service is invalid.) Bit5: fixed-time noon peak service (peak triggered by time set by G21-G28) Bit4: intelligent zoning in noon peak (only available when Bit5 set to 1, G21-G28 setting peak service is invalid.)	0	
G21	Peak setting for lift A 0: not available Bit0: one-way collection (up collection in up peak, down collection in down collection) Bit1: Lower half area service Bit2: Upper half area service Bit3: Odd floor service Bit4: Even floor service	0	
G22	Peak setting for lift B 0: not available Bit0: one-way collection (up collection in up peak, down collection in down collection) Bit1: Lower half area service Bit2: Upper half area service Bit3: Odd floor service Bit4: Even floor service	0	
G23	Peak setting for lift C 0: not available Bit0: one-way collection (up collection in up peak, down collection in down collection) Bit1: Lower half area service Bit2: Upper half area service	0	

	Bit3: Odd floor service Bit4: Even floor service		
G24	Peak setting for lift D 0: not available Bit0: one-way collection (up collection in up peak, down collection in down collection) Bit1: Lower half area service Bit3: Upper half area service Bit4: Odd floor service Bit5: Even floor service	0	
G25	Peak setting for lift E Bit0: not available Bit0: one-way collection (up collection in up peak, down collection in down collection) Bit1: Lower half area service Bit2: Upper half area service Bit3: Odd floor service Bit4: Even floor service	0	
G26	Peak setting for lift F 0: not available Bit0: one-way collection (up collection in up peak, down collection in down collection) Bit1: Lower half area service Bit2: Upper half area service Bit3: Odd floor service Bit4: Even floor service	0	
G27	Peak setting for lift G 0: not available Bit0: one-way collection (up collection in up peak, down collection in down collection) Bit1: Lower half area service Bit2: Upper half area service Bit3: Odd floor service Bit4: Even floor service	0	
G28	Peak setting for lift H 0: not available Bit0: one-way collection (up collection in up peak, down collection in down collection) Bit1: Lower half area service Bit2: Upper half area service Bit3: Odd floor service Bit4: Even floor service	0	
G29	UP/down area boundary floor	15	
G30	Up/down peak day: Bit0: Sunday Bit1: Monday Bit2: Tuesday	62	

	Bit3: Wednesday Bit4: Thursday Bit5: Friday Bit6: Saturday		
G31	Lunch/afternoon peak day: Bit0: Sunday Bit1: Monday Bit2: Tuesday Bit3: Wednesday Bit4: Thursday Bit5: Friday Bit6: Saturday	62	
G32	Up peak start time (Corresponding to the lobby floor)	830	
G33	Up peak end time (Corresponding to the lobby floor)	930	
G34	Down peak start time (Corresponding to the lobby floor)	1700	
G35	Down peak end time (Corresponding to the lobby floor)	1800	
G36	Lunch peak start time (Corresponding to the restaurant floor)	1130	
G37	Lunch peak end time (Corresponding to the restaurant floor)	1200	
G38	Afternoon peak start time (Corresponding to the restaurant floor)	1230	
G39	Afternoon peak end time (Corresponding to the restaurant floor)	1300	
Destination floor intelligent peak			
G50	Automatic identification of destination call number in peak	8	
Idle mode			
G70	Idle lift: 0: No idle operation; 1: Idle operation BIt0: A# Lift Bit1: B# Lift Bit2: C# Lift Bit3: D# Lift Bit4: E# Lift Bit5: F# Lift Bit6: G# Lift Bit7: H# Lift	255	
G71	Idle operation start time	0	
G72	Idle operation end time	0	
Service floor			
G80	Service floor start time	0	
G81	Service floor end time	0	
G82	Service floor (1~16 floor)	65535	
G83	Service floor (17~32 floor)	65535	
G84	Service floor (33~48 floor)	65535	
G85	Service floor (49~64 floor)	65535	

Destination floor options			
G100	Lift for disabled: 0: No disabled 1: A# lift (Lift A) 2: B# lift (Lift B) 3: C# lift (Lift C) 4: D# lift (Lift D) 5: E# lift (Lift E) 6: F# lift (Lift F) 7: G# lift (Lift G) 8: H# lift (Lift H)	0	
G101	Self-record destination floor call : 0: Self-record when the door open Bit0: Self-record when light curtain or safety shoe activated Bit1: Self-record when receive car call	0	
G102	Register car call by passengers (G101 invalid when G102 equals to 1)	0	
G103	No entry over time (clear the floor call allocation when light curtain no-action is over time)	20	s
G104	Car call disable Bit0: Lift A setting, 0: allowable 1: Unallowable Bit1: Lift B setting, 0: allowable 1: Unallowable Bit2: Lift C setting, 0: allowable 1: Unallowable Bit3: Lift D setting, 0: allowable 1: Unallowable Bit4: Lift E setting, 0: allowable 1: Unallowable Bit5: Lift F setting, 0: allowable 1: Unallowable Bit6: Lift G setting, 0: allowable 1: Unallowable Bit7: Lift H setting, 0: allowable 1: Unallowable	0	
G105	Destination floor call of the lobby floor hold time	10	s
G106	Destination floor call hold time	3	s
G120	Waiting floor of lift A	0	
G121	Waiting floor of lift B	0	
G122	Waiting floor of lift C	0	
G123	Waiting floor of lift D	0	
G124	Waiting floor of lift E	0	
G125	Waiting floor of lift F	0	
G126	Waiting floor of lift G	0	
G127	Waiting floor of lift H	0	

5 Destination selector(AS.DS/A)

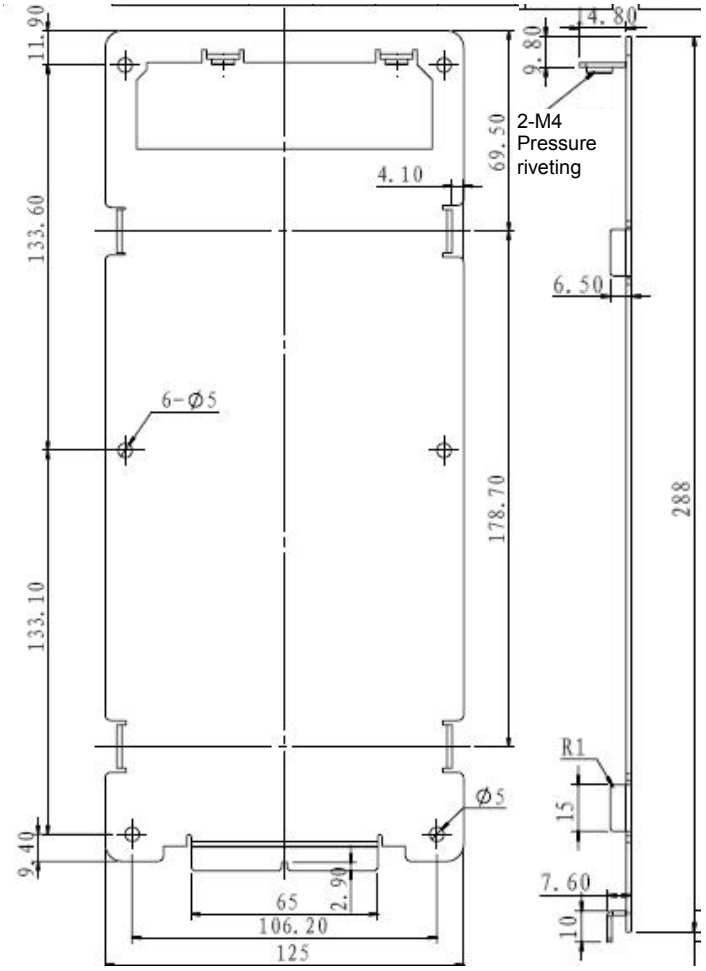
The destination selector is a human-machine interactive device for passengers and DDS system. The selector can receive destination floor input by passengers and then send elevator allocation message to them through image-text and audio.

5.1 Features

1. Main CPU uses 32-bit chip ARM Cortex3
2. TFT color display screen driven by Actel FPGA with 512K display cache
3. Support audio output
4. Audio and display can be switched anytime
5. Expand function through RS-485 interface
6. Support the disabled call
7. Both anti-conducted and anti-coupling interference are 4000V

5.2 Appearance

5.3 Dimensions of installation baseplate



5.4 Floor selector controlboard

5.4.1 Appearance

5.4.2 Printed board specification

Printed board name	ProD1054BV4
Color	Green
Thickness	2mm

Wiring layer	4 layers

5.4.3 DIP switch

No.	Functions
SW2	CAN BUS connects terminal resistor when both ways are ON, no connection when OFF
SW3	RS485 connects terminal resistor when both ways are ON, no connection when OFF

5.4.4 Connector specification

Socket Name	Socket Model	Plug Model
JP1	JST-B4B-XH-A	JST-XHP-4
JP2	JST-B5B-XH-A	JST-XHP-5
JP3 JP4	JST-B2B-XH-A	JST-XHP-2
JP8	SYY12500-4A	SYY12500-4Y
JP9	SYY12500-2A	SYY12500-2Y

5.4.5 Main components specification

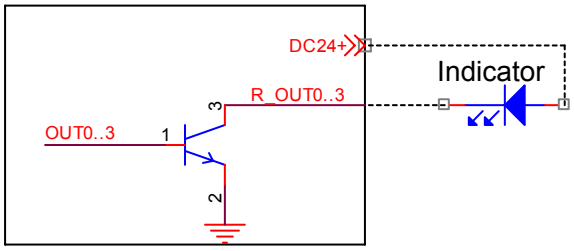
Component identification	Product Name	Product Specification	Manufacturers
U4	Main chip	STM32F103RC	ST
U3	SRAM	IS61LV25616	ISSI
U2	FPGA	A3P030	ACTEL
U30	Decoding chip	VS1003	VLSI
U5	CAN transceiver	VP1050	TI
U28	RS485 transceiver	75176	TI
U31	power amplifier	HT2144	HEROIC
U10	Power chip	LM2576	NS

5.4.6 Power Specification

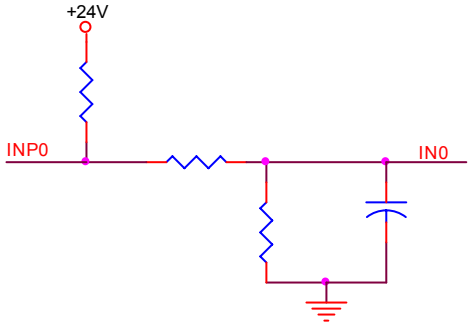
Input Voltage	24VDC
Standard input voltage range	20~28V/DC
Characteristic working current	110mA
Maximum working current	200mA
Maximum power consumption	3.6W
PCB board socket model	JST-B4B-XH-A
Terminals position number	JP1 (pin 1: +24V, pin 2: GND)

5.4.7 Output Interface

Output way	Open collector output
Output point	One

Output driving figure		
Maximum output current	40mA	
PCB connector model	JST-B2B-XH-A	
Terminals position number	JP4.1	Key light output
	JP4.2	VOUT output

5.4.8 Input Interface

Input point	One	
Input way	Low level efficient	
Input threshold	Low level	0V~4V
Input schematic		
PCB connector model	JST-B2B-XH-A	
Terminals position number	JP3.1	Key input
	JP3.2	GND

5.4.9 Programming interface specification

Communication interface	SM.04HL/A programming interface	
Communication way	UART	
PCB board socket model	JST-B6B-XH-A	
Terminals position number	JP10.1	Vacant
	JP10.2	GND
	JP10.3	TXD
	JP10.4	RXD
	JP10.5	+5V
	JP10.6	BOOT0

5.4.10 CAN communication

Communication interface	One way CAN
Communication way	CAN BUS
Baud rate	25000bps

PCB board socket model	JST-B4B-XH-A	
JP1	JP1.4	CAN communication signal terminal (TXA1-)
	JP1.3	CAN communication signal terminal (TXA1+)

5.4.11 RS485 communication

Communication interface	One way	
Communication way	RS485	
Recommended baud rate	9600bps	
PCB board socket model	B5B-XH-A	
Plug model	JST XHP-5	
JP2	JP2.3	GND
	JP2.4	RS485-A
	JP2.5	RS485-B

5.4.12 TFT display

Screen size	3.5 inch
Resolution	320×240
Color	16 bit true-color

5.4.13 Speaker interface

JP8	Speaker interface

5.4.14 Working environment and EMC

Temperature	-20^0C～ $+60^0$C
Humidity	<95%
Salt mist	Salt mist content: 0.13ug/m3
Impact	Peak acceleration: 100gn, 100 times
Vibration	10Hz-100Hz 50 times, 100Hz-10Hz 50 times-
Instantaneous pulse train interference	Harsh industrial environment (400V)
Electrostatic discharge	Contact discharge 8KV

5.4.15 Port definition

Port		Definition	Type
JP1	JP1.1	24V input	Power/CAN communication
	JP1.2	0V input	
	JP1.3	TXA+	
	JP1.4	TXA-	
JP2	JP2.1	Vacant	RS-485 communication
	JP2.2	Vacant	
	JP2.3	GND	
	JP2.4	RS485-A	
	JP2.5	RS485-B	

JP3	JP3.1	Reserve	Input
	JP3.2	Input common terminal	
JP4	JP4.1	Reserve	Output
	JP4.2	Output common terminal	
JP8		Speaker interface	
JP9		Grounding Terminal	
JP10		Program burning port	
U7		TF card bed	
SW2		CAN terminal resistor DIP switch	
SW3		RS-485 terminal resistor DIP switch	

5.5. Function description

5.5.1 Normal floor selection function

1 Input the destination floor by keyboard. When the input number is one-digit, floor selector confirm it after a delay time (set by K18); when the input number is two-digit, floor selector confirm it immediately after input. (Note: Interval of two-digit destination floor input should less than value set by K18);

2 The first digit input is larger than high digit of the display floor (set by K21), floor selector immediately confirm it without the second digit input;

3 When input floor is invalid, floor selector will display “Please re-input". Invalid floor as following: the current floor, input is out of display code range (set by K24-K87), non-service floor sent by group control board;

4 When the input is valid, the floor selector displays the allocated lift, with display time set by K20.

5.5.2 Disabled floor selection function

1 Floor selector sends audio prompt ”Please input the destination floor” after pressing the disabled key;

2 Input the destination floor by keyboard. When the input number is one-digit, floor selector confirm it after a delay time (set by K19); when the input number is two-digit, floor selector confirm it immediately after input. (Note: Interval of binary destination floor input should less than value set by K19);

3 The first digit input is larger than high digit of the display floor (set by K21), floor selector immediately confirm it without the second digit input;

4 When input floor is invalid, the floor selector will display “Please re-input the floor”. Invalid floor as following: the current floor, input is out of display code range (set by K24-K87), non-service floor sent by group control board;

5 When the input is valid, floor selector displays the allocated lift, with display time set by K20. At the same time, the input floor and the allocated lift are prompted through audio.

5.5.3 TFT LCD display and audio prompts

1 Display language set by K02, supporting Chinese and English

2 Audio prompt “tick” after pressing the key except the parameter setting status

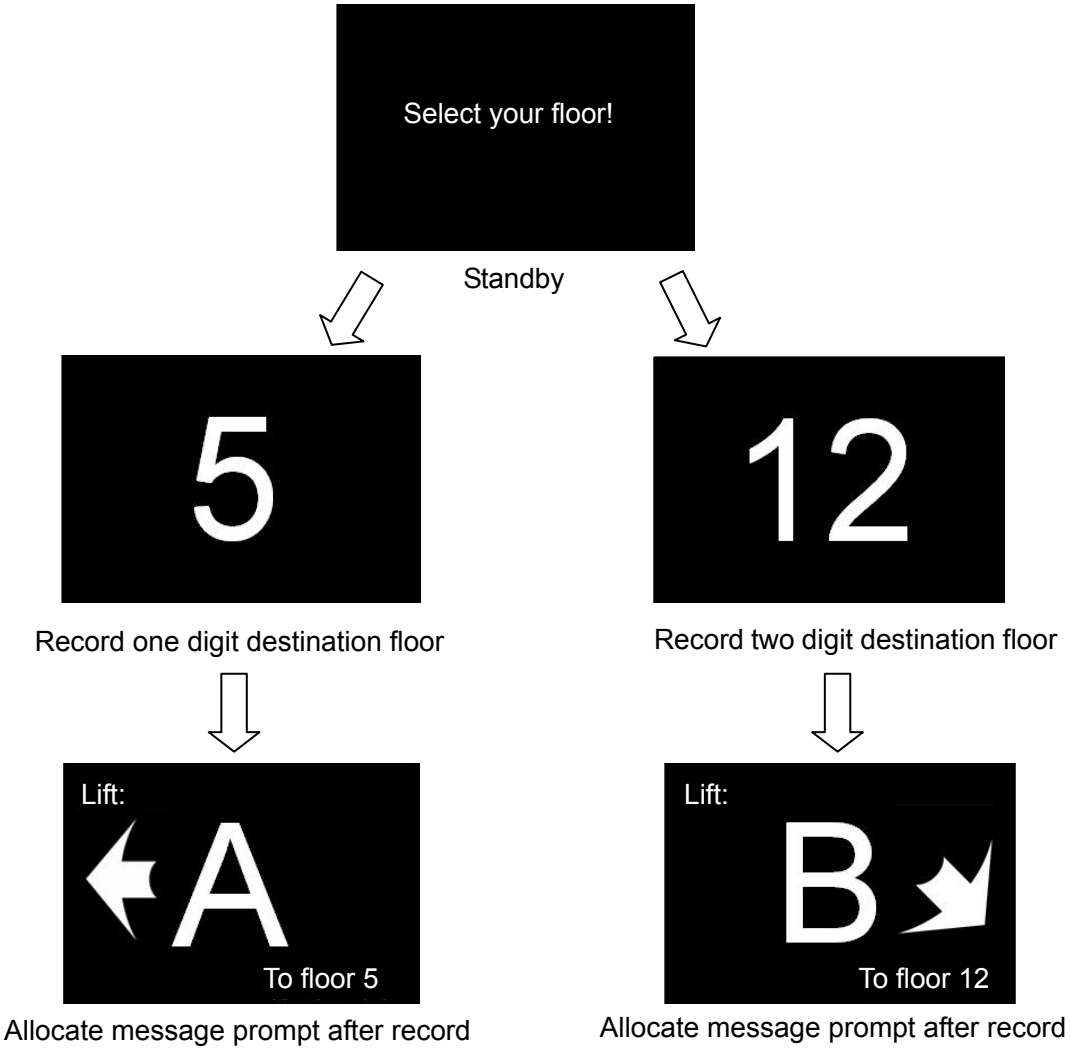
3 Audio prompt in normal operation set by K88 and disabled status set by K89.

4 Display and audio status table

Status	Display/language	Remarks
Waiting for input	Select Your Floor	
Input service floor	Floor X	
Input floor wrong or out of service	This elevator does not go to floor selected	
Lift allocation	Lift X direction	The display remain time is set by K20
Group control out of service	Not Available, Please Wait…	Only play the audio when press the disabled key.
Disabled input over time	Selecting time is over, Please Try Again	
Reallocation prompts	Lift X is not in Service, Please Try again	Floor selector play the non-service lift set by K13, generally, one selector is in charge of one elevator.

5.6 Instructions

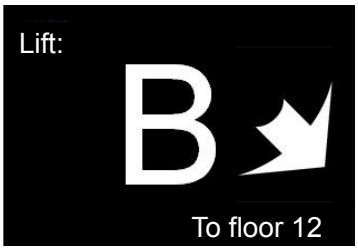
5.6.1 Steps



5.6.2 Allocated message description

Passengers to floor 5 wait for lift A to the left side

Passengers to floor 5 wait for lift C to the right side



Passengers to floor 12 wait for lift B to the right rear side

Passengers to twelfth floor wait for lift D to the left rear side

5.7 Parameters Setting and Description

Operation key functions

Keys		Meanings	Functions
Function keys	★	Cancel	1. Return to the previous menu 2. Cancel the input during dada input The key is multi-functional depending on the situation, it can be 'L', 'R', 'B', 'P', 'C', 'T', 'G' and 'M' through parameter K14 setting
	—	Enter	1. Enter a function during function selection 2. Enter the edit status during data view 3. Save data during data input The key is multi-functional depending on the situation, it can be '-', 'L', 'R', 'B', 'P', 'C', 'T', 'G' and 'M' through parameter K15 setting
Direction keys	2	Up direction	1. Move up by 1 item during function selection 2. Plus 1 from the current digit during data input
	8	Down direction	1. Move down by 1 item during function selection 2. Reduce 1 from the current digit during data input
	4	Left direction	1. Move up by 10 items during parameter setting 2. Move the cursor to the left during data input
	6	Right direction	1. Move down by 10 items during function selection 2. Move the cursor to the right during data input

Enter parameter setting	★ —	Press	In normal input status, press ★ and — for 5s, enter parameters setting
Exit parameter setting	★		Exit parameter setting status in no operation for 30s or pressing ★

Parameters	Parameters name	Default	Range	Unit	Remarks
K00	Software vision (read only)				
K01	Audio volume adjustment	8	0-10		
K02	Language selection 0-English 1-Korean 2-Chinese	English	English Korean Chinese		
K03	Keypad address (1-8); corresponding to lift number for VIP lift display and input	1	Corresponding to lift number set by K90-K97		
K04	Keypad floor	1	1-64		
K05	Lift 1 position: 0-no direction, 1-left, 2-right, 3-left rear, 4-right rear	0	0-4		
K06	Lift 2 position: 0-no direction, 1-left, 2-right, 3-left rear, 4-right rear	0	0-4		
K07	Lift 3 position: 0-no direction, 1-left, 2-right, 3-left rear, 4-right rear	0	0-4		
K08	Lift 4 position: 0-no direction, 1-left, 2-right, 3-left rear, 4-right rear	0	0-4		
K09	Lift 5 position: 0-no direction, 1-left, 2-right, 3-left rear, 4-right rear	0	0-4		
K10	Lift 6 position: 0-no direction, 1-left, 2-right, 3-left rear, 4-right rear	0	0-4		
K11	Lift 7 position: 0-no direction, 1-left, 2-right, 3-left rear, 4-right rear	0	0-4		
K12	Lift 8 position: 0-no direction, 1-left, 2-right, 3-left rear, 4-right rear	0	0-4		

<table>
<tr><td rowspan="2">K13</td><td>Start audio prompt reallocation in lift failure only when destination floor preallocation prompt of the lift and the floor
1: Reallocation prompt of lift failure
0: No prompt of lift failure</td><td>0</td><td>0-255</td><td></td><td></td></tr>
<tr><td colspan="5">Digit parameter meaning:
<table><tr><td>Lift 8</td><td>Lift 7</td><td>Lift 6</td><td>Lift 5</td><td>Lift 4</td><td>Lift 3</td><td>Lift 2</td><td>Lift 1</td></tr></table></td></tr>
<tr><td>K14</td><td>Left lower special keys function selection
‘A’ – ‘Z’, ‘-’, ‘’</td><td>L</td><td>0-8</td><td></td><td></td></tr>
<tr><td>K15</td><td>Right lower special keys function selection:
‘A’ – ‘Z’, ‘-’, ‘’</td><td>B</td><td>0-9</td><td></td><td></td></tr>
<tr><td>K16</td><td>Left lower special keys floor (1-64)
This parameter is not valid for ‘B’, ’-‘ and ‘C’</td><td>1</td><td>1-64</td><td></td><td></td></tr>
<tr><td>K17</td><td>Right lower special keys floor (1-64)
This parameter is not valid for ‘B’, ’-‘ and ‘C’</td><td>1</td><td>1-64</td><td></td><td></td></tr>
<tr><td>K18</td><td>Normal key interval time selection for the second key waiting time</td><td>1</td><td>1-3</td><td>s</td><td>1s</td></tr>
<tr><td>K19</td><td>Disabled key interval time selection for the second key waiting time</td><td>3</td><td>3-5</td><td>s</td><td>3s</td></tr>
<tr><td>K20</td><td>Allocated lift number display time selection, pre-allocated lift number and direction display remain time</td><td>7</td><td>2-10</td><td>s</td><td>7s</td></tr>
<tr><td>K21</td><td>2-64, if the first digit key is larger than higher digit of the top floor, no waiting for the second digit input</td><td></td><td>2-64</td><td></td><td></td></tr>
<tr><td>K23</td><td>Under-ground floor. Automatic adjust K24-K87 display code through parameter setting, under-ground floor display code such as B. Alternatively, you can directly change K24-K87 display code without parameter change, actual display is depending on parameter K24-K87.</td><td>0</td><td>0-64</td><td></td><td></td></tr>
<tr><td>K24</td><td>Floor 1 code setting (display and audio), respectively set the higher and lower digit, the following are available code:
‘ ‘, ’P’, ’M’, ’-‘, ’B’, ’1’ - ‘6’ for higher digit
‘ ‘, ’P’, ’R’, ’T‘, ’L’, ’0’ - ‘9’ for lower digit</td><td></td><td></td><td></td><td></td></tr>
<tr><td>…</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

K87	Floor 64 code setting (display and audio), respectively set the higher and lower digit, the following are available code: ‘ ‘, ’P’, ’R’, ’M’, ’-‘, ’B’, ’1’ - ‘6’ for higher digit ‘ ‘, ’P’, ’R’, ’T‘, ’L’, ’0’ - ‘9’ for lower digit				
K88	Play audio selection in normal operation: 0: Not play 1: Play				
K89	Play audio selection in disabled operation: 0: Not play 1: Play				
K90	IC card enable: 0: Normal Mode ,1: IC Card mode				
K91	Lift 1 lift number display selection: A-Z	A	0-25		
K92	Lift 2 lift number display selection: A-Z	B	0-25		
K93	Lift 3 lift number display selection: A-Z	C	0-25		
K94	Lift 4 lift number display selection: A-Z	D	0-25		
K95	Lift 5 lift number display selection: A-Z	E	0-25		
K96	Lift 6 lift number display selection: A-Z	F	0-25		
K97	Lift 7 lift number display selection: A-Z	G	0-25		
K98	Lift 7 lift number display selection: A-Z	H	0-25		
K99	The parameter is reset, parameter value is 0. Input 5678 validation code to reset with prompt ”Reset Success” indicating success, otherwise prompt input error				

6 Destination indicator

The display can provide destination floor prompt for passengers. There are two kinds of display:

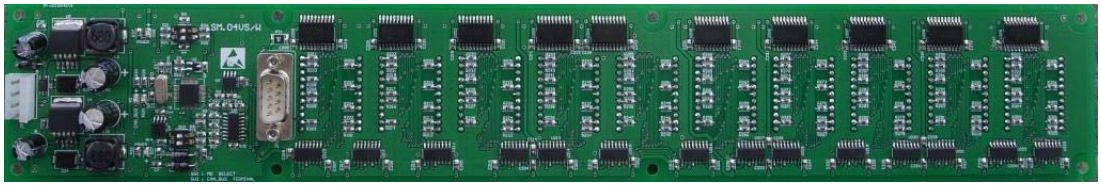
6.1 Vertical destination indicator(SM.04VS/W)

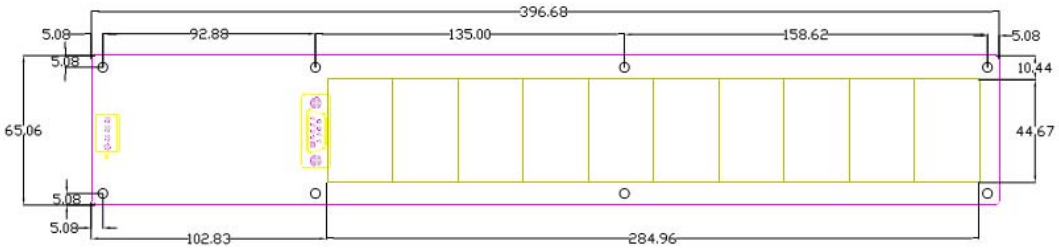
Generally, the display is installed in the two sides of the car door frames. When the door opens, passengers can see the allocated destination floors.

6.1.1 Features

1. One RS232 serial communication interface
2. One CAN communication interface
3. 10 5×7 dot matrix LED highlight display modules

6.1.2 Profile and dimensions





6.1.3 Electrical Specification

6.1.3.1 Printed board specification

Printed board name	ProD1054CV2
Color	Green
Thickness	2mm
Wiring layer	4 layers

6.1.3.2 DIP switch and jumpers

Port	Function definition
JP1	Program burning port

JP2	SW1 is at “ON”: Program burning port SW1 is at “OFF”: TT manipulator connection port
SW2	CAN terminal resistor

6.1.3.3 Connector specification

Socket No.	Socket Model	Plug Model
JP1	CH3.96-4A	CH3.96-4
JP2	D-type 9 pin 180 degree straight socket (male)	D-type 9 pin straight plug (female)

6.1.3.4 Main components specification

Components identification	Product name	Product specification
U1	Main chip	MB90F387S
U210~U223	Cache	74HC595
U200~U209	Cache	TPIC6B595
U2	Reset chip	CAT809MTBI
U4	CAN communication transceivers	SN65HVD1050
U5	Memory chip	24C02
U6, U8	Power chip	LM2596
U7	RS232 communication chip	MAX202E
Y1	Crystal	4M

6.1.3.5 Power Specification:

Input voltage	24V/DC
Standard input voltage range	22~28V/DC
Characteristic working current	436mA
Maximum working current	582mA (not including output/input terminal JP2 output current)
Maximum power consumption	14W
PCB board socket model	CH3.96-4A
Terminal position number	JP1 (pin1: +DC24V, pin2: GND)

6.1.3.6 Programming port specification

Communication port	JP2
Communication way	RS232 communication
Maximum baud rate	9600bps
PCB board socket model	D-type 9 pin 180 degree straight socket (male)
Terminal position number	JP2.2 (RXD), JP2.3(TXD), JP2.5(GND), JP2.9(+5V)

6.1.3.7 EEPROM specification:

EEPROM model	AT24C02
Protocol	I^2C

Capacity	2k bits
Working temperature	-40℃∽+85℃
Read and write cycles	1,000,000

6.1.3.8 Communication Specification

Communication port	JP1
Communication way	CAN communication
Maximum baud rate	100Kbps
PCB board socket model	CH3.96-4A
Terminal position number	JP1.3 (CANH), JP1.4(CANL)

6.1.3.9 DIP Switch

Main function	Jumper position number
Burning program	SW1 is at ON: program burning status
Terminal resistor	SW2 is at ON: terminal resistor connection status

6.1.3.10 Allowable working environment

Temperature	-20°C~60 °C
Humidity	≤95%
Electromagnetic environment	Harsh industrial environment(2000V full pulse test)

6.1.4 Port Definition

Port	Definition
JP1	CAN communication Port
JP2	Program port when SW1 is on Service tool connecting port when SW1 is off
SW2	CAN terminal resistance switch

6.1.5 Function description

1. Display the service floors from down to up and low to high, up to 10. If the floors are larger than 10, it will display in different pages.

2. Display the service floor with same direction.

6.1.6 Parameter Description

Parameter name	Default	Range	Remarks
Lift No.	1	1-8	Set display lift number
Floor No.	0	0-64	The value is 0 for car destination indicator
Floor 1	1		Set the floor display code with higher and lower digit set respectively, you can choose following characters: ’0’ - ‘9’, ’-‘, ’B’, ’P’, ’L’, ’R’ and ‘M’
Floor 2	2		
……	…	…	
Floor 64	64		

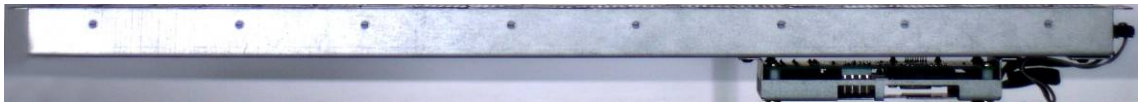
6.2 Horizontal destination indicator(AS-HDI-ST01)

Generally, the display is installed in the top of the door providing convenience for passengers to see the allocated destination floors.

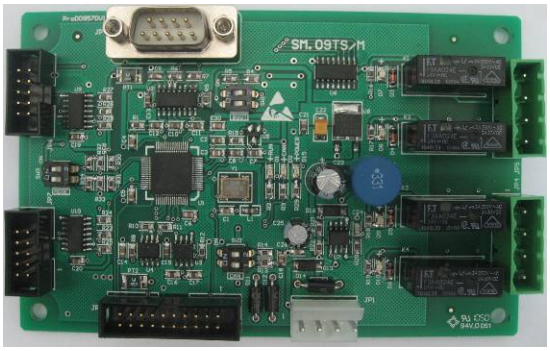
6.2.1 Features

1. It consists of driver board and display board
2. One RS232 serial communication port
3. One CAN communication port
4. 20 5×7 dot matrix LED highlight display modules

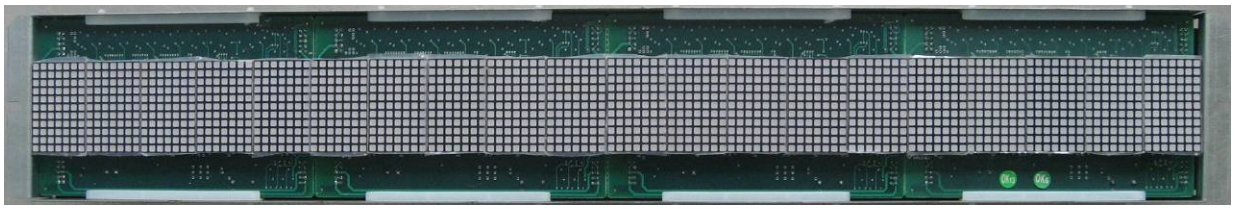
6.2.2 Profile and dimension



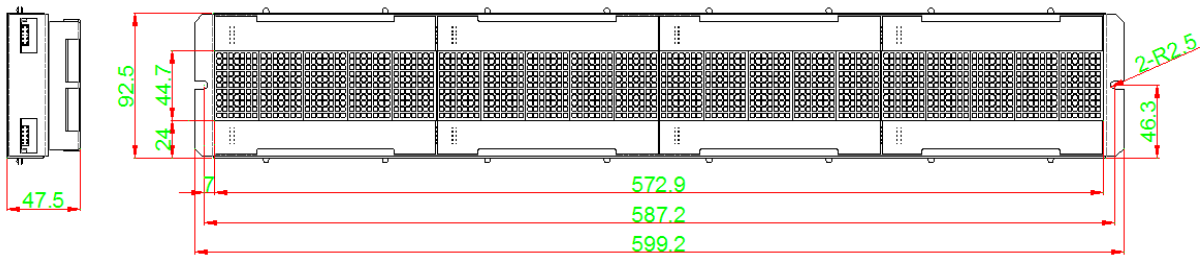
Horizontal destination indicator（Assembly）



Horizontal indicator driver board



Horizontal indicator board



Mounting dimension

6.2.3 Electrical specification

6.2.3.1 Printed board specification

- Horizontal display driver board

Printed board name	ProD0957DV1
Color	Green
Thickness	1.6mm
Wiring layer	2 layers

- Horizontal display display board

Printed board name	ProD0957CV2
Color	Green
Thickness	1.6mm
Wiring layer	4 layers

6.2.3.2 Connector specification

- Horizontal display driver board

Socket No.	Socket model	Plug model
JP1	CH3.96-4A	CH3.96-4
JP2	D-type 9 pin 180 degree straight socket (male)	D-type 9 pin straight plug (female)
JP3	DENK2.54*10*2 double row straight socket	DENK double row 20 pin plug
JP4, JP5	ANYTEK 5.08*4 straight socket	ANYTEK 5.08*4 spring socket
JP6, JP7	DENK2.54*2*2 double row straight socket	DENK double row 10 pin plug

- Horizontal display display board

Socket No.	Socket model	Plug model
JP1, JP3	Jih vei double row 10 pin long right angle socket	Jih vei double row 10 pin long right angle socket
JP2, JP4	Jih vei double row 10 pin long right angle socket	Jih vei double row 10 pin long right angle socket

6.2.3.3 Main components specification

- Horizontal display driver board

Components identification	Product name	Product specification
U1	Main chip	STM32F103RC
U2	RS232 communication chip	SP3232EEN
U3	CAN communication transceivers	SN65HVD1050
U4	Memory chip	24C02
U5	Reset chip	CAT809ST
U6	Op-amp chip	ULN2003A
U7	Power chip	MC33063
U8	Power chip	LM1117SR-3.3V
U9, U10	Inverter	74HC14
Y1	Crystal	8M

- Horizontal display display board

Components identification	Product name	Product specification
U1~U5	Shift register	TPIC595
U6~U12	Shift register	74HC595
U13, U14	Inverter	74HC14
U15	Power chip	LM2596

6.2.3.4 Power specification:

- Horizontal display driver board

Input voltage	24V/DC
Standard input voltage range	22~28V/DC
Characteristic working current	55mA
Maximum working current	73mA
Maximum power consumption	1.75W
PCB board socket model	CH3.96-4A
Terminal position number	JP1 (pin1: +DC24V, pin2: GND)

- Horizontal display display board

Input voltage	24V/DC
Standard input voltage range	22~28V/DC
Characteristic working current	211mA
Maximum working current	282mA
Maximum power consumption	6.77W
PCB board socket model	CH3.96-4A
Terminal position number	JP1 (pin 1, 4, 6, 8, 9: GND) JP3 (pin 1, 2, 3, 4: +DC24V, pin 5, 6, 8, 9: GND)

6.2.3.5 Programming port specification

- Horizontal display driver board

Communication port	JP2
Communication way	RS232 Communication
Maximum baud rate	9600bps
PCB board socket model	D-type 9 pin 180 degree straight socket (male)
Terminal position number	JP2.2 (RXD), JP2.3 (TXD), JP2.5 (GND), JP2.9 (+5V)

6.2.3.6 EEPROM specification

- Horizontal display driver board

EEPROM model	AT24C02
Protocol	I^2C
Capacity	2k bits
Working temperature	-40℃∽+85℃

Read and write cycles	1,000,000

6.2.3.7 Communication specification

- Horizontal display driver board

Communication port	JP1
Communication way	CAN communication
Maximum baud rate	100Kbps
PCB board socket model	CH3.96-4A
Terminal position number	JP1.3 (CANH), JP1.4 (CANL)

6.2.3.8 DIP switch

- Horizontal display driver board

Main function	Jumper position number
Burning program	SW1 is at ON: serial burning program status
Terminal resistor	SW2 is at ON: terminal resistor connection status

6.2.3.9 EEPROM specification

- Horizontal display driver board

EEPROM model	AT24C02
Protocol	I^2C
Capacity	2k bits
Working temperature	-40℃∽+85℃
Read and write cycles	1,000,000

6.2.3.10 Communication specification

- Horizontal display driver board

Communication port	JP1
Communication way	CAN communication
Maximum baud rate	100Kbps
PCB board socket model	CH3.96-4A
Terminal position number	JP1.3 (CANH), JP1.4 (CANL)

6.2.3.11 Relay output

- Horizontal display driver board

Output point	4 way
Relay model	FTR-F3AA024E
Electrical life	>=200,000 cycles
Mechanical life	>=5000,000 cycles
Coil power consumption	0.2W
Rated current	5A

Rated voltage	24V
Pick-up voltage	18.0V
Release voltage	2.4V
Working temperature	-40°C~+70 °C

6.2.3.12 Allowable working environment

- Horizontal display driver board

Temperature	-20°C~60 °C
Humidity	⩽95%
Electromagnetic environment	Harsh industrial environment (2000V full pulse test)

- Horizontal display display board

Temperature	-20°C~60 °C
Humidity	⩽95%
Electromagnetic environment	Harsh industrial environment (2000V full pulse test)

6.2.4 Port description

- Horizontal display driver board

Port		Description	Remarks
JP1	JP1.1	+24V	Power
	JP1.2	GND	Common ground
	JP1.3	CANH	CAN communication positive
	JP1.4	CANL	CAN communication negative
JP2	JP2.2	RXD	RS232 receiving pin
	JP2.3	TXD	RS232 transmitting pin
	JP2.5	GND	Common ground
	JP2.9	+5V	Power
JP4	JP4.1	Up arrival gong	Output 2
	JP4.2	YCOM2	Common terminal 2
	JP4.3	Down arrival gong	Output 3
	JP4.4	YCOM3	Common terminal 3
JP5	JP5.1	Up real-time forecast lantern /up arrival lantern	Output 0
	JP5.2	YCOM0	Common terminal 0
	JP5.3	Down real-time forecast lantern /down arrival lantern	Output 1
	JP5.4	YCOM1	Common terminal 1
JP3		Simulation port	
JP6		Display driven signal port, connecting with SM.04HS/G JP1	
JP7		Display driven signal port, connecting with SM.04HS/G JP3	

SW1	Program burning status selection, ON for burning status
SW2	CAN communication terminal resistor selection, ON for connecting terminal resistor

6.2.5 Function description

1, Display the service floor from left to right and low to high, up to 10 floors. If the number is larger than 10, it will display in different pages.

2, Display all allocated calls. When the lift is arriving, the same-direction call flashes to remind passengers of the service floor.

3, After passengers record destination floor call, the real-time forecast light outputs, starting flashing (flash time is settable). When the setup is over time, the forecast light is constant on to remind passengers of the assigned lift.

4, when the lift is arriving, the arrival gong and arrival lantern outputs to remind passengers of arrival.

6.2.6 Parameters description

Parameters name	Default	Range	Remarks
Lift No.	1	1-8	Set display lift number
Floor No.	1	1-64	Install floor setup depending on the display
Flash Time	0	0-60	Real-time forecast light flash time, unit: s
Floor 1	1		Set the floor display code, setting high and low digit respectively. You can choose following characters: ’0’ - ‘9’, '-', 'B', 'P', 'L', 'R', 'M'.
Floor 2	2		
……			
Floor 64	64		

A letter of Advice to Clients

Dear clients,

RoHS is the abbreviation for *The restriction of the use of certain hazardous substances in electrical and electronic equipment* which was implemented by EU on July 1st, 2006. It stipulates that in the newly launched electrical and electronic equipment, the following six hazardous substances are restricted: lead, mercury, cadmium, hexavalent chrome, PBB and PBDE.

In our country, the *Electronic Information Products Pollution Control Management Measures* was issued on February 28th, 2006 jointly by the Ministry of Information Industry, Status Development and Reform Commission, Ministry of Commerce, Administration of Customs of the P.R.C, General Status Administration for Industry and Commerce, General Administration of Quality Supervision, Inspection and Quarantine and Status Bureau of Environmental Protection, becoming an RoHS direction of Chinese Version and enforced. On February 1st, 2008, *Electronic waste environmental pollution prevention and control management measures* issued by the Status Bureau of Environmental Protection of the P.R.C began to executed, clearly specifying that the users of electronic and electrical products shall provide or entrust the electronic waste to the disassembling and disposing units (including small individual business) with corresponding business scope listed in directory (or temporary directory) to disassemble, make use of or dispose.

Our company follows the requirements in the *Electronic Information Products Pollution Control Management Measures* and RoHS directive in the aspects such as purchasing and selecting the types of electronic parts and components, PCB bare boards, wiring harness material and structural parts and strictly controls the above-mentioned six hazardous substances. Meanwhile in the production process, PCB parts and components are welded on XinChi lead free welding production line with a lead free welding technology.

Hazardous substance which may be contained in the following assemblies:

Type of assembly	Electronic components	Electronic printed circuit board (PCB board)	Sheet metal pieces	Radiators	Plastic pieces	Conductors
Possible hazardous substances	Six hazardous substances: lead, mercury, cadmium, hexavalent chrome, PBB and PBDE					

1) Analysis of environmental impact. Our electronic product will produce some heat in use, which may lead to the emission of individual hazardous substance but will not cause serious influence on the surrounding. Once an electronic product is discarded after the expiry of its life, the heavy metallic and chemical hazardous substance in it will severely pollute the soil and water resources.

2) The life cycle of electronic product and equipment. Any electronic product and equipment has a life cycle and can be damaged and discarded. Even if it can still be used, it will be replaced and washed out by new generations of electronic products. Our products and equipment normally have a life cycle not more than 20 years.

3) The treatment of discarded electronic products. If the discarded electronic products can not be treated properly, they will pollute the environment. Our company requires our clients establish a reclaiming system in accordance with related national regulation and not throw away them as ordinary domestic waste or general industrial solid waste. The products shall be stored and used in environment-friendly ways or reclaimed by qualified units by strictly complying with the *Electronic waste environmental pollution prevention and control management measures* issued by the Status Bureau of

Environmental Protection of the P.R.C. Any individual or unit having no such qualification is prohibited conducting the activity of disassembling, making use of and disposing electronic wastes.

Please don’t throw away electronic waste together with ordinary domestic waste, but call the local waste disposing agencies or environment protection agencies for suggestion on how to deal with the electronic waste.

Shanghai Sigriner STEP Electric Co.,Ltd