Control System of Elevator and Escalator V2.0

CORPORATION Introduction

Shanghai STEP Electric Corporation-National High-tech Enterprise, National Innovative Enterprise, Shanghai IPR Model Enterprise, Shanghai Patent Model Enterprise and Shanghai Technology Center was founded in 1995 and the registered trademark is *STEP*. . STEP Tenet is customer satisfaction, employee pride, community benefit. In December of 2010, STEP is listed in Shenzhen Stock Exchange, named STEP and No. 002527.

Facilities with the STEP global strategy, R&D centers and manufacturing centers have been established both in China and Germany. STEP Group, based in Electric Corporation, owns Shanghai Sigriner STEP Electric Co.,Ltd., Shanghai STEP Elevator Components Co.,Ltd., Shanghai STEP Electric Wire & Cable Co., Ltd., Shanghai STEP Software Technology Co.,Ltd., Yixin (Shanghai) International Trade Co., Ltd. and two overseas companies: STEP Sigriner Elektronik GmbH and Hong Kong STEP International Electric Holdings Co., Ltd..

STEP is the national Postdoctoral workstation. The company was also responsible for edition and revision of 7 national technical standards, gaining 77 patents (patentability of 23 inventions) and 29 software copyrights. The industrialization of inverter project has received financial support of the national key technology innovation fund and was listed in the National Torch Program; Vector-type inverter and control system have been identified as National Key New Products and been honored with Shanghai Science &Technology Invention Award, and servo drive system was an appointed product for independent innovation in Shanghai.

STEP specializes in industrial automation, energy efficiency and green energy resource. The products are widely applied in equipment manufacture, energy saving and renovation project, mainly concerned with elevator, harbor crane, hoisting, rubber & plastic, mining, metallurgy cement, solar power/wind power generation, CNC, package, municipal administration, etc. The products mainly include high/medium/low voltage inverter, integrated controller, SVC, servo drive; elevator control system, elevator parts, elevator wire and cables; STEP Software Technology Co., Ltd. is committed to providing customized intelligent management software products such as E-order, elevator IOT (including remote monitoring), ESMS-elevator service management software; Yixin International deals in relevant import and export businesses.

CORPORATION Culture

STEP Spirit
Face the world, pursue the best, stay always ahead of the line.

STEP Value
Faith, innovation, excellence.

STEP Tenet
Customer satisfaction, employee pride, community benefit.

STEP Mission
Provide the best control, drive and energy-saving products, serve the society, benefit the employees.

STEP Vision
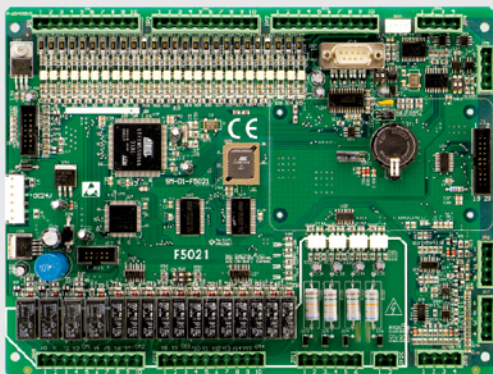To be a world leading high-tech enterprise in electrical industry.

R&D   SMT   EMC

Provide the best control,drive and energy−saving products,
serve the society,and benefit the employees

Contents

32-bit Standard Serial Control Board
SM-01-F5021

SM-01-F5021

Product Characteristic

- 32-bit high performance industrial class ARM controller
- Wide voltage suitable range of DC20~28V
- Adopts "safety loop" design in safety and door-lock check
- District monitoring through isolated CAN, strong anti-interference
- Strong electromagnetic anti-interference ability (EFT- 4000V)
- Strong electrostatic anti-interference ability (ESD 8000V)
- Complies with EN81, GB7588, passes CE, CSA certification

Functional Description

- Suitable for commerce elevator, resident elevator, hospital elevator and tourist elevator
- Suitable for 0.63～4m/s elevator control
- Maximum stops up to 64 stops
- Suitable for synchronous gearless and asynchronous greared traction machine
- CANBus serial communication mode
- Analog speed and multi speed given
- Compatible to difference, open-collector and push-pull types of encoders
- Supports duplex and group control function
- Supports load-weighing compensation function
- Supports elevator IC card management function
- Supports district monitoring and remote monitoring
- Supports STEP standard hand-held operator
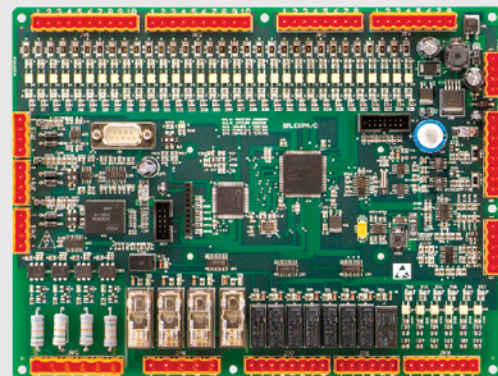- 20 elevator fault records

32-bit High Performance Serial Control Board SM.01PA/D

Product Characteristic

- 32-bit high performance industrial class ARM controller
- Specially design for high speed elevator, the fourth slow down switch is added.
- Speed signal is precisely given, with excellent riding comfort
- Wide voltage suitable range of DC20～28V
- Adopts "safety loop" design in safety and door-lock check
- District monitoring through isolated CAN, strong anti-interference
- Strong electromagnetic anti-interference ability (EFT- 4000V)
- Strong electrostatic anti-interference ability (ESD 8000V)
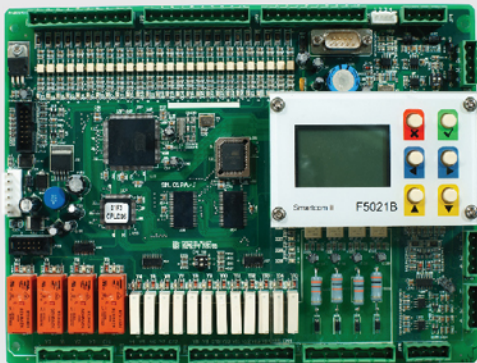- Complies with EN81, GB7588, passes CE、CSA certification

Functional Description

- Suitable for commerce elevator, resident elevator, hospital elevator and tourist elevator
- Suitable for 0.63～4m/s elevator control
- Maximum stops up to 64 stops
- Suitable for synchronous gearless and asynchronous geared traction machine
- -10～+10V analog voltage output
- CAN Bus serial communication mode
- Analog speed and multi speed given
- Compatible to difference, open-collector and push-pull types of encoders
- Supports duplex and group control function
- Supports load-weighing compensation function
- Supports elevator IC card management function
- Supports tri-car door opening
- Supports district monitoring and remote monitoring
- LCD display operator, can display the system status and parameter, and display the real-time elevator speed curve
- Supports STEP standard hand-held operator
- 20 elevator fault records

SM.01PA/D

32-bit Serial Control Board SM.01PA/J

SM.01PA/J

Product Characteristic

- 32-bit high performance industrial class ARM controller
- Wide voltage suitable range of DC20～28V
- Adopts "safety loop" design in safety and door-lock check
- District monitoring through isolated CAN, strong anti-interference
- Strong electromagnetic anti-interference ability (EFT- 4000V)
- Strong electrostatic anti-interference ability (ESD 8000V)
- Complies with EN81, GB7588, passes CE、CSA 、TUV certification

Functional Description

- Suitable for commerce elevator, resident elevator, hospital elevator and tourist elevator
- Suitable for 0.63～4m/s elevator control
- Maximum stops up to 64 stops
- Suitable for synchronous gearless and asynchronous geared traction machine
- -10～+10V analog voltage output
- CAN Bus serial communication mode
- Analog speed and multi speed given
- Compatible to difference, open-collector and push-pull types of encoders
- Supports duplex and group control function
- Supports load-weighing compensation function
- Supports elevator IC card management function
- Supports tri-car door opening
- Supports district monitoring and remote monitoring
- LCD display operator, can display the system status and parameter, and display the real-time elevator speed curve
- Supports STEP standard hand-held operator
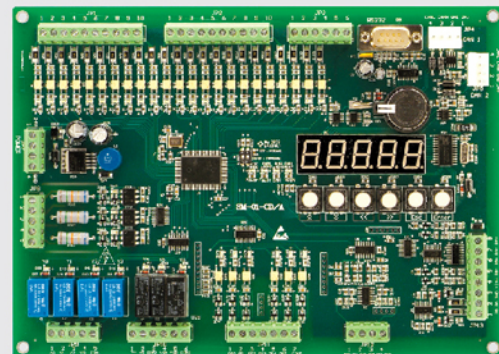- 20 elevator fault records

16-bit Serial Control Board SM-01-CD/A

Product Characteristic

- 16-bit high performance industrial class CPU
- Adopts "safety loop" design in safety and door-lock check
- Wide voltage suitable range of DC20~28V
- Strong electromagnetic anti-interference ability (EFT- 4000V)
- Strong electrostatic anti-interference ability (ESD 8000V)
- Two independent brake switch detection points
- Complies with EN81, GB7588, passes CE, CSA certification

Functional Description

- Suitable for commerce elevator, resident elevator, hospital elevator and tourist elevator
- Suitable for 0.63~1.75m/s elevator control
- Maximum stops up to 32 stops
- Suitable for synchronous gearless and asynchronous geared traction machine
- CAN Bus serial communication mode
- Analog speed and multi speed given
- Compatible to difference, open-collector and push-pull types of encoders
- Supports duplex control function
- Supports 7- segment commissioning interface on board, can perform elevator commissioning without other additional equipment, thus cost saving
- Supports load-weighing compensation function
- Supports STEP standard hand-held operator
- 20 elevator fault records
- Low cost solution, does not support group control and monitoring function

SM–01–CD/A

16-bit Parallel Control Board
SM-01-DP/C
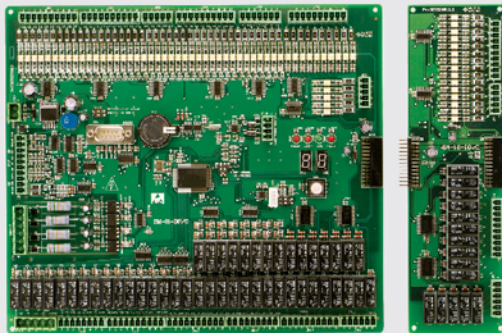
SM-01-DP/C

Product Characteristic

- 16-bit high performance industrial class CPU
- Wide voltage suitable range of DC20～28V
- Adopts "safety loop" design in safety and door-lock check
- Strong electromagnetic anti-interference ability (EFT- 4000V)
- Strong electrostatic anti-interference ability (ESD 8000V)
- Simple and reliable landing call point extension method
- Compressing spring-type terminal, convenient for site wiring work
- Complies with EN81, GB7588

Functional Description

- Suitable for goods elevator
- Maximum elevator speed up to 1.75m/s
- Maximum stops up to 15 stops
- Supports VVVF, two speed and hydraulic drive
- Parallel signal input
- Analog speed and sectionalized speed given
- Compatible to difference, open-collector and push-pull types of encoders
- Supports duplex control function
- Supports district monitoring and remote monitoring
- Displays fault code in the fault indicator on board
- Supports STEP standard hand-held operator
- 20 elevator fault records

Home Lift Control Board
SM.01.HO/D

Product Characteristic

- 16-bit high performance industrial class CPU
- Wide voltage suitable range of DC20～28V
- Strong electromagnetic anti-interference ability (EFT- 4000V)
- Strong electrostatic anti-interference ability (ESD 8000V)
- Excellent extensive ability, CAN connection point reserved.
- Compact size, convenient for installation

Functional Description

- Suitable for home lifts
- Maximum stops up to 5 stops
- Elevator rated speed ≤0.5 m/s
- Supports hydraulic drive
- Parallel signal input
- Can perform commissioning and examine the system status using the operator on board
- Supports STEP standard hand-held operator
- 20 elevator fault records
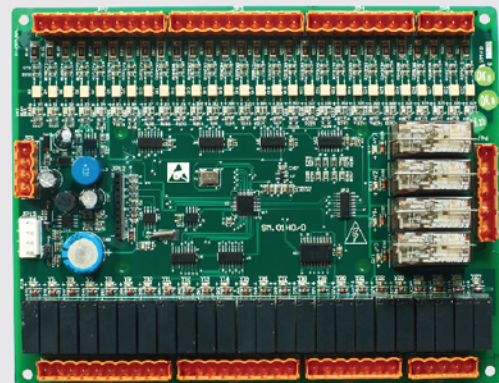
SM.01.HO/D

Elevator Car Control Board SM-02-E
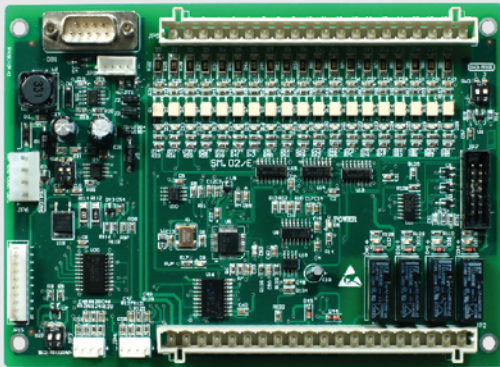
SM-02-E

Product Characteristic

- CAN Bus serial communication method, thus saving in the quantities of cables, convenient for wiring work
- Sufficient input/ output port resources can meet the requirement of input and output port of the system in most cases
- Protection for over current of push button lamp output
- Excellent electromagnetic and electrostatic anti-interference ability
- Supports in car debugging

Functional Description

- Signal output for arrival gong, car lighting, forced door closing, overload lamp and buzzer etc.
- Connecting points for door open and door close buttons
- Safety edge switch, light curtain switch for front and rear door
- Supports serial and parallel voice announcer
- Supports maximum 8 nos. of SM-03 command boards (total 64 stops)

SM-03-D

SM-03-E

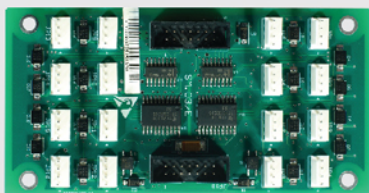# Elevator Command Board SM-03

Product Characteristic

- Protection for over current of push button lamp output
- Excellent electromagnetic and electrostatic anti-interference ability

Functional Description

- Must be applied together with the car controller board SM-02
- One SM-03-D supports maximum 8 floor numbers.
- One SM-03-E supports maximum 16 floor numbers.
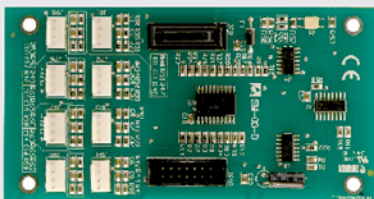
# Elevator Car Control Board SM.02/G
Elevator Car Top Control Board SM.02/H
Extension Board SM.09IO/B

SM.02/G

Product Characteristic

- Separate signals in car (door open button, door close button, attendant switch, by-pass switch etc.) and on car top (light curtain signal, door motor signal etc.) to 2 boards, thus saving in the quantities of cables, convenient for wiring work
- Both car control board and car top control board can extend I/O port through extension board
- Car control board supports debugging in car
- Car control board size is thin and small, which is suit for slim type COP
- Integrate the buzzer with car control board, which means external buzzer is not necessary


SM.02/H

Functional Description

- Signal output for arrival gong, car lighting, forced door closing and overload lamp etc.
- Connecting points for door open and door close buttons
- Safety edge switch, light curtain switch for front and rear door
- Supports serial and parallel voice announcer
- Supports maximum 8 nos. of SM-03 command boards (total 64 stops)
- Supports extension functions such as Hold-Button, NS-SW and so on
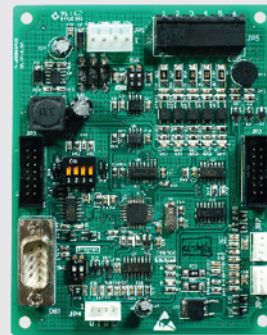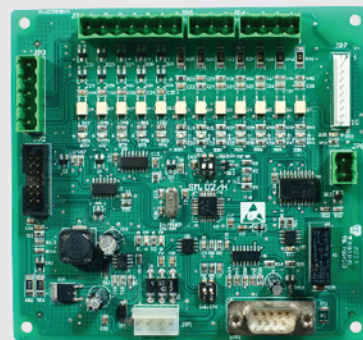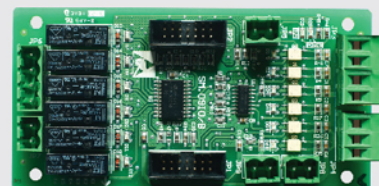
SM.09IO/B

Elevator Call/Indicator Board SM-04
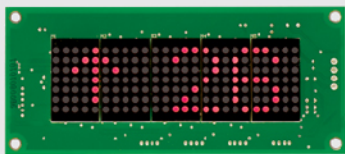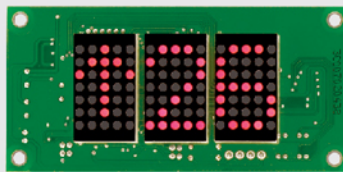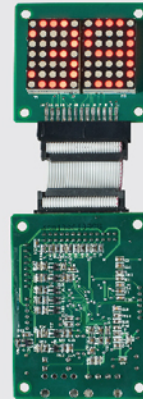

SM.04HR/C	SM.04HR/D	SM.04HR/F
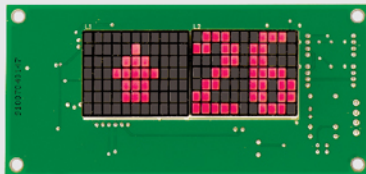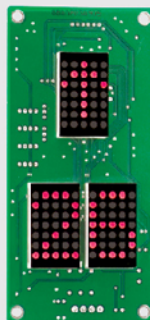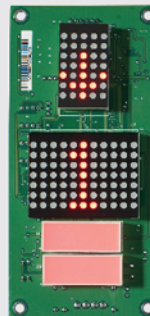
SM–04–HSC	SM–04–VRF	SM.04VR/G	SM.04VR/H
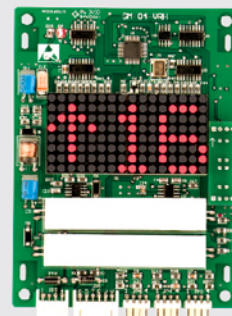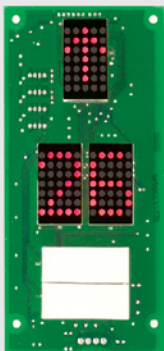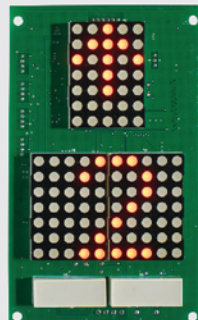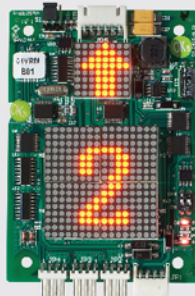
SM–04–VRJ	SM.04VR/L	SM.04VR/M	SM.04VS/C	SM.04VS/D
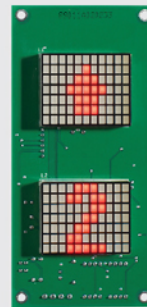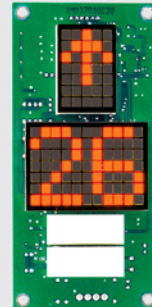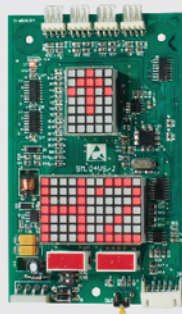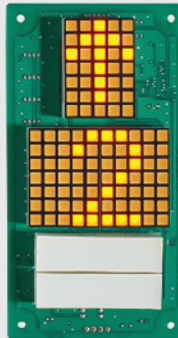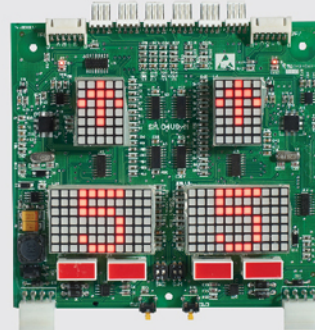
SM.04VS/J   SM.04VS/L   SM.04VS/M
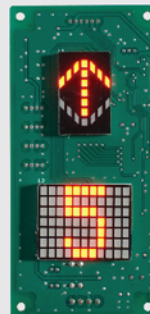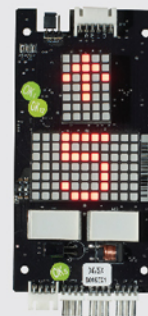
SM.04.VS/P   SM.04VS/V   SM.04VS/X

Serial Dot-matrix LED Call & Indicator

Product Characteristic

- 16-bit high performance industrial class CPU
- CAN Bus serial communication method,thus saving in the quantities of cables,convenient for wiring work
- Display Method:Square dot matrix, Round dot matrix
- Color: Red, Orange, Blue

Functional Description

- Dynamic display for elevator running direction and floor indication
- With the landing call and parking function

Parallel Dot-matrix Led Indicator
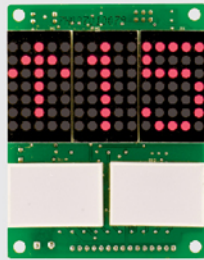
SM.04HR/G
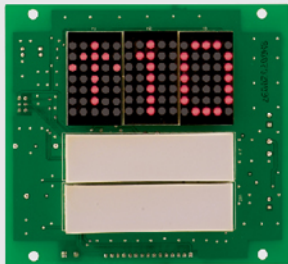
SM.04HR/H
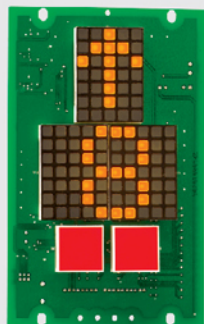
SM.04VS/E

Product Characteristic

- High performance industrial class CPU
- Parallel communication
- Display Method: Dot matrix
- Color: Red, Orange, Blue

Functional Description

- Dynamic display for elevator running direction and floor indication

Serial Segment LED Call & Indicator
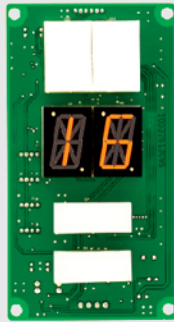
SM.04V7/B
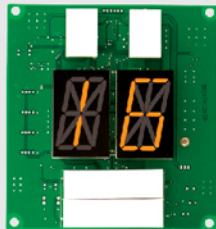
SM.04V7/C
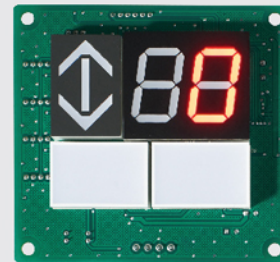
SM.04H7/C

SM.04H7/D

SM.04-04-V7

Product Characteristic

- 16-bit high performance industrial class CPU
- CAN Bus serial communication, thus saving in the quantities of cables,convenient for wiring work
- Display Method: 7 Segment or 16 Segment LED
- Color: Red, Orange, Blue

Functional Description

- Dynamic display for elevator running direction and floor indication
- With the landing call and parking lock function

Parallel Segment LED Indicator
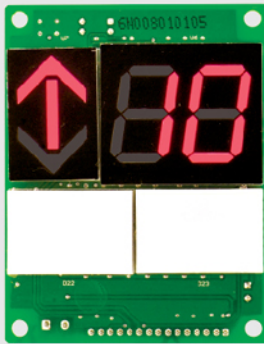
SM.04H7/A
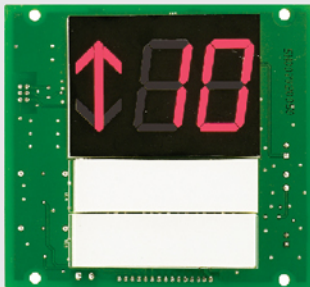
SM.04H7/B

Product Characteristic

- High performance industrial class CPU
- Parallel communication
- Display Method: 7 Segment
- Color: Red, Orange, Blue

Functional Description

- Dynamic display for elevator running direction and floor indication

Serial Super Large Screen Dot-matrix Call & Indicator
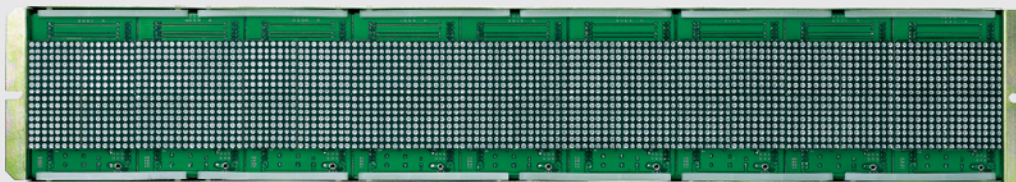
SM−04−HREB
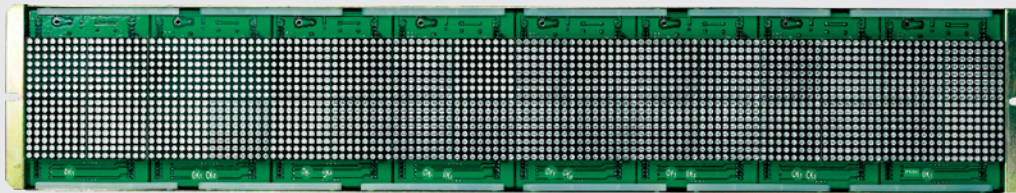
SM−04−HREC

Product Characteristic

- 16-bit high performance industrial class CPU
- CAN Bus serial communication, thus saving in the quantities of cables, convenient for wiring work

Functional Description

- Super large display screen, display for elevator running direction and floor indication
- Changeable Chinese/English welcome messages by the customer
- With the landing call and parking lock function
- Display Method：Round dot-matrix
- Color: Red, Orange, Blue
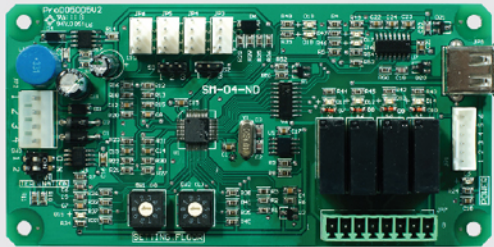
SM-04-ND

Serial Call Board
(Without Display Module)
SM-04-ND

Product Characteristic

- 16-bit high performance industrial class CPU
- CAN Bus serial communication method, thus saving in the quantities of cables, convenient for wiring work
- 4-way relay output

Functional Description

- Drives arrival gong and arrival lantern
- With the landing call and parking lock function

Serial Call Board (Without Display Module)
SM-04-ND/A

Product Characteristic

- 16-bit high performance industrial class CPU
- CAN Bus serial communication method, thus saving in the quantities of cables, convenient for wiring work

Functional Description

- With the landing call and parking lock function

Serial Dot-matrix LCD Call & Indicator Board SM-04-UL

Product Characteristic

- 16-bit high performance industrial class CPU
- 320×240 dot matrix display, extremely rich display contents
- Clear and soft display contents, display zone：120mm×90mm
- Users can define the welcome messages
- Color：White word in Blue background

Functional Description

- Displays elevator running direction and floor indication
- With the landing call and parking lock function
- Chinese/English display of elevator status（overload，full-load，fire, inspection, automatic, attendant etc.）
- Chinese/English welcome messages，customer can amend the welcome messages contents directly through software
- Supports time and date display, can be set and amended manually

SM-04-UL

Serial Dot-matrix LCD Call & Indicator Board SM-04-UL/A

SM–04UL/A

Product Characteristic

- 16-bit high performance industrial class CPU
- 320×240 dot matrix display, extremely rich display contents
- Clear and soft display contents, display zone：115mm×86mm
- Users can define the welcome messages
- Color: White word in Blue background, White word in Black background, Yellow work in Black background

Functional Description

- Displays elevator running direction and floor indication
- With the landing call and parking lock function
- Chinese/English display of elevator status（overload，full-load，fire, inspection, automatic, attendant etc.）
- Supports time and date display, can be set and amended manually

Serial Segment LCD Call & Indicator Board SM-04-VL B3 SM.04VL16/A
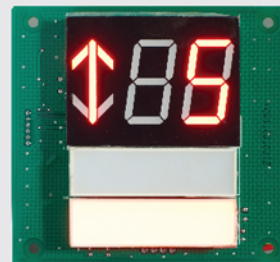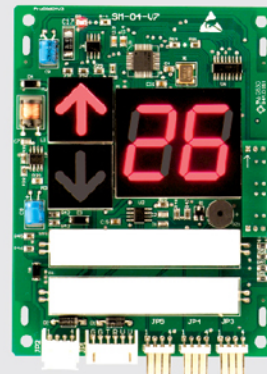

SM–04–VL B3

SM.04VL16/A

Product Characteristic

- 16-bit high performance industrial class CPU
- CAN Bus serial communication method, thus saving in the quantities of cables, convenient for wiring work
- Clear and soft display contents, display zone：
  SM-04-VL B3, 124 mm×65 mm；
 SM.04VL16/A, 115 mm×49 mm
- Color: White word in Blue background

Functional Description

- Displays elevator running direction and floor indication
- With the landing call and parking lock function
- Chinese/English display of elevator status（OVER LOAD, FIRE, FULL, STOP）
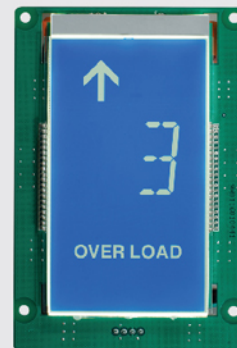
TFT LCD Indicators   SM.04TL/A   SM.04TL/C   SM.04TL/F   SM.04TL/G SM.04TL/H

SM.04TL/A

SM.04TL/C(Vertical)

SM.04TL/C(Horizontal)

SM.04TL/F(Vertical)

SM.04TL/F(Horizontal)

SM.04TL/G
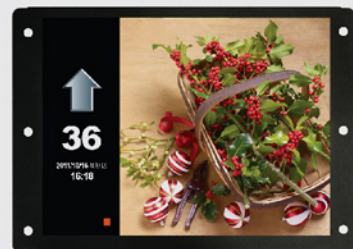
SM.04TL/H

Product Characteristic

- Using high resolution TFT display module
- CAN-BUS Communication
- Users can define background pictures, arrow types,letterforms
- Display zone 7 inch and above can support time and date showing
- Display zone 4.3 inch and above can change Chinese and English showing through trigger switch

SM.04TL/A 3.5 inch TFT LCD Indicator

Product Characteristic

- Display Zone: 72mm×54mm
- Resolution: 320×240
- Display Type: Horizontal
- Communication Type: CANBUS Serial Communication
- Rated Voltage: 24VDC
- Pictures Updating Method: Using USB port cable connects with PC to update pictures.

SM.04TL/A

SM.04TL/C 4.3 inch TFT LCD Indicator

SM.04TL/C(Vertical)

SM.04TL/C(Horizontal)

Product Characteristic

- Display Zone: 97mm×55.5mm
- Resolution: 480×272
- Display Type: Horizontal or Vertical (Trigger switch choosing)
- Communication Type: CANBUS Serial Communication
- Rated Voltage: 24VDC
- Pictures Updating Method: Using USB port cable connects with PC to update pictures.

SM.04TL/F(Vertical)

SM.04TL/F(Horizontal)

SM.04TL/F 7 inch TFT LCD Indicator

Product Characteristic

- Display Zone: 154mm×86mm
- Resolution: 800×480
- Display Type: Horizontal or Vertical (Trigger switch choosing)
  Communication Type: CANBUS Serial Communication
- Rated Voltage: 24VDC
- Pictures Updating Method: Use Flash-Disk to update pictures.

SM.04TL/G 8 inch TFT LCD Indicator

SM.04TL/G

Product Characteristic

- Display Zone: 161mm×121mm
- Resolution: 800×600
- Display Type: Horizontal or Vertical (Trigger switch choosing)
- Communication Type: CANBUS Serial Communication
- Rated Voltage: 24VDC
- Pictures Updating Method: Use Flash-Disk to update pictures.

SM.04TL/H 10.4 inch TFT LCD Indicator

Product Characteristic

- Display Zone: 210mm×157mm
- Resolution: 800×600
- Display Type: Horizontal or Vertical (Trigger switch choosing)
- Communication Type: CANBUS Serial Communication
- Rated Voltage: 24VDC
- Pictures Updating Method: Use Flash-Disk to update pictures.
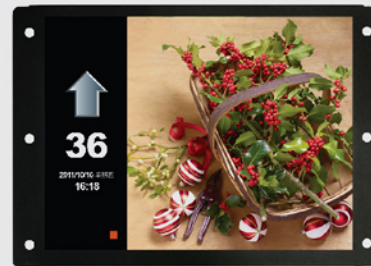
SM.04TL/H

SM.04TL/I 12 inch TFT LCD Indicator

Product Characteristic

- Display Zone: 246mm×184.5mm
- Resolution: 800×600
- Display Type: Horizontal or Vertical (Trigger switch choosing)
- Communication Type: CANBUS Serial Communication
- Rated Voltage: 24VDC
- Pictures Updating Method: Use Flash-Disk to update pictures.

SM.04TL/I

Control System of Elevator and Escalator
PRODUCTS INTRODUCTION ————

Elevator Group Control Basic Feature
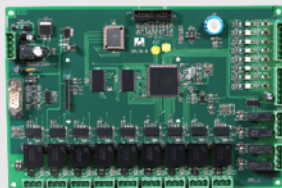
SM-GC

BCP/PO 100

No.	Basic Feature
01	The group control system uses centralized-control technology, which means system arrange and dispatch hall call by a special control board. To minimize the waiting time, group control system analyses very situation including floor height, car call and hall call situation, overpass situation and reverse direction situation to dispatch hall call to the elevator which can response fast. Group control system can increase the efficiency of the elevator.
02	The group control system can control 8 elevators at the same time, the maximum floor number of each elevator is 48.
03	Group control board uses CAN BUS to communicate with elevator control board, which assure the credibility and the speed of data transfer.
04	Group control system has back up protection function. If group control system has any problem, it will cut off the power supply. The elevators in the group control system can run normally as simplex mode. When the group control system recovers to normal, all the elevators in system will transfer to group control mode automatically.
05	Group control system can cut off the fault elevator. If the system finds the elevator which has received the hall call does not response, the system will cut off this fault elevator and re-dispatch the hall call to assure the users won't wait a long time.
06	If elevator control board runs normally, the hall call is send to group control board from elevator controller. The group control system then send call register signal to call controller through controller to light the call button. If elevator controller is power off, the group control system will communicate with call controller directly to assure call controller still have effect in the system.
07	There are LEDs on the group control board, users can monitor whether the communication is normal through these LEDs. Input ports also have LEDs to indicate the ON/OFF situation.

Elevator Group Control System Main Function (table1)

No.	Name	Main Function
01	Homing Function	a. Standard Mode: In group control system, if there is no elevator at homing station and the elevator which can back to homing station immediately has no hall call and car call registered, then the elevator will homing at once and standby with door closed, which can improve the homing station carrying capacity. b. Setting Mode: When elevator quantity is less than setting value at homing station, the group control system will dispatch suitable elevator to homing station. The elevator will delay running homing station. The delay time can be set.
02	Dispatch Parking Floor	a.Standard Mode: When all elevators in the system have standby for one minute, group control system start the dispersion standby function: 1. If there is no elevator at homing station and the floor below it, system will dispatch an elevator which can reach homing station most easily and standby with door closed. 2. If there are more than two elevators running normally and there is no elevator above central floor, the system will dispatch an elevator to upper standby floor with door closed. b.Setting Mode: Setting mode can easily set delay parking time and parking floor. When all elevators are in parking state and delay parking time is limited. If there is no any elevator in parking floor, the group system will dispatch one proximate elevator to parking floor. Maximum 4 parking floors can be set and each parking floor can only park one elevator.
03	Up Peak Service	When this function is chosen, system will start up-peak service. If the up direction running elevator from homing station has more than three call resister at up-peak time (set by time relay or manual switch). At this time all elevators in the system will run to homing as long as respond the hall call and car call. System will recover to normal, when the up-peak time is passed.
04	Down Peak Service	When this function is chosen, system will start down-peak service. If the down direction running elevator to homing station has full load at down peak time (set by time relay or manual switch). At this time all elevators in the system will run to top floor as long as respond the hall and car call. System will recover to normal, if the down peak time is passed or the elevator is not full load for 2 mins.

Elevator Group Control System Main Function (table2)

No.	Name	Main Function
05	None Service Floor Control	The group control system has two service floor schemes for choosing, which can set by switches or time relay. When one switch is closed, the system will dispatch elevators run as one service scheme. The other service scheme is the same. If both two switches are not closed, the elevators run normal service floor. Each service scheme should pre-set which floor can respond car call, up or down landing call.
06	Group Region Segmentation	When this function is chosen, the group region segmentation switch is valid. When the switch is closed, group control system divides the elevators to two dependant group control systems. When the switch is opened, the group control system becomes normal mode.
07	Partly Group Region Segmentation	In group control system, when the elevator terminal floor numbers are different, partly group region segmentation is needed. When this function is open, the group control system will divide to two parts. One part has basement, the other has not. If the basement hall call is registered, only the elevator which has basement will respond. If the elevator hall calls except basement floor are registered, the group control system normally dispatches elevators. When top floor number is different, the dispatching method is similar that the elevator has basement condition.
08	Emergency Power Running Mode	If the building has generator, when the local power supply is cut off, the elevator will switch to back up power running. Considering the capacity of backup power, system will let the elevator return to homing station one by one and standby with door opened. When all elevators have returned to homing station, group control system will dispatch elevators continues running or stopping, as per setting value.

Destination Dispatch System
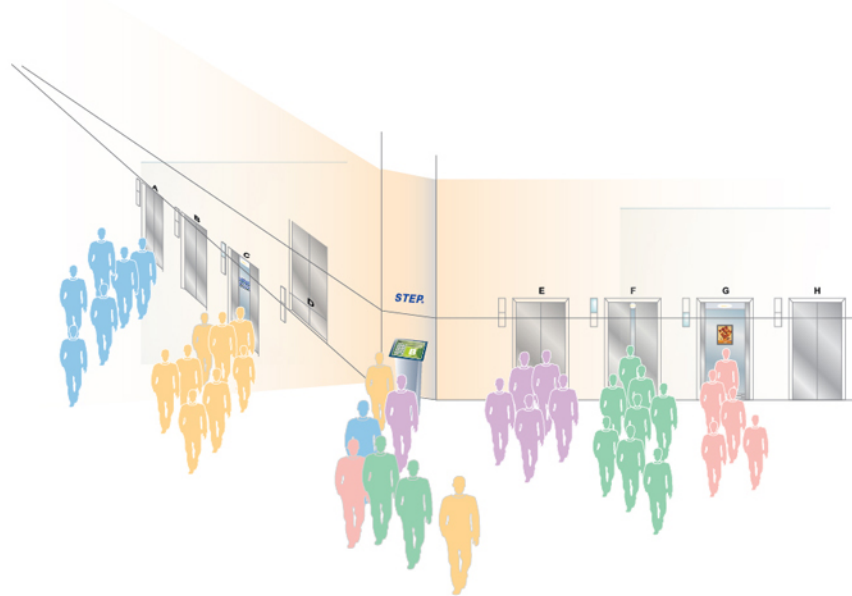
Features

■ **Super Efficient**
Various leading-edge technology applied such as expert system, fuzzy Logic, neural network, etc., CAN bus based, improve dispatching efficiency greatly.

■ **Joy-Journey**
By destination dispatching system to guide passengers to the assigned lift, it reduces the average waiting time & long waiting ratio to avoid the crowded lobby and rushing people, which makes them more comfortable.

■ **Cost-saving**
With more efficient dispatching, reducing lifts deployment in a group for same traffic capacity requirement.

■ **Energy-saving**
Fewer unnecessary stops helps reducing energy consumption in the building.

■ **Flexible Configuration**
Adaptable to various hoist-ways' layout & different service floor in a group, suitable for unique building designing.

Configuration

- **Support Hybrid & Full DDS both.**

  Hybrid DDS
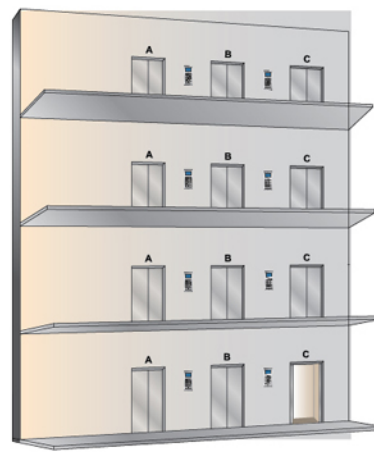 - → Destination operating panel at main entrance floor or parts of floors
  - → Conventional landing call stations on the other floors

  Full DDS
  - → Destination operating panel at each landing
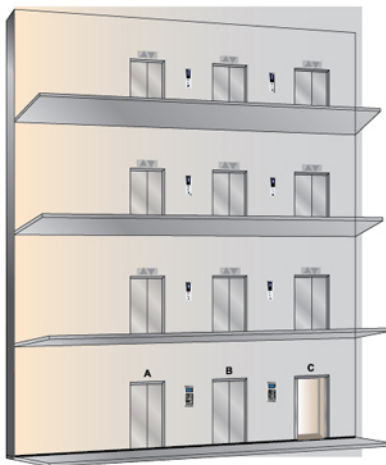
Hybrid DD

Full DDS

- **Multi-Choice for Destination Selector**

  Touch-Panel/Keypad/IC reader/Buttons

- **Multi-Choice for Destination Indicator**

  car/landing, vertical/horizontal, dot-matrix LED/ LCD

Touch Panel

Keypad

System Function

1.Up Peak

→Trigger Mode

A) Set by time, set each day's initial time and end time within a week (week, hour, minute).

B) Triggered by switch, after the up peak service switch act, enter up peak mode, elevator will enter up peak mode after this switch acts under any condition.

C) Up peak Intelligent identification, when all elevators in group are running, and quantity of registered destination floor call departing from labby exceed the given value.

→ Running Mode

Enter up peak, all elevators that involved in peak time service return to lobby to wait after this service is finished.

A) Peak time partition service: set service zone that each elevator in group serves separately by parameters, (up half area, down half area, whole area).

B) Peak time even/odd floor service: set even/odd floors that each elevator in group serves separately by parameters.

C) Peak time up collective selection: set each elevator in group to up collective selection via parameters.

D) Intelligent division service: allocate service zone of each elevator dynamically based on floor layout of the building and quantity of elevators involved in group control, allocate service floor of each elevator dynamically.

E) Non-service floor setting: non-service floor during up-going peak time can be set by parameters.

Note: A,B,C,D above only be effective to elevators involved in peak time service, activate one or several options among A,B,C via parameters. A,B,C will become ineffective after D is activated.

→ Exit Mode

A) Set by time, exit up peak after exceeding the time given.

B) Triggered by switch, exit from up peak after up peak service has been canceled.

C) Up peak can be identified intelligently, exit from up peak after up peak condition can't be achieved for 3 minutes.

2. Down Peak

→ Trigger Mode

A) Set by time, set each day's initial time and end time within a week (week, hour, minute).

B) Triggered by switch, after the down peak service switch act, enter down peak mode, elevator will enter down peak mode after this switch acts under any condition.

C) Down peak Intelligent identification, when all elevators in group are running, and quantity of registered destination floor command departing from hall exceed the given value.

→ Running Mode

Enter down peak, all elevators that involved in peak time service return to highest floor of zone to wait after this service is finished.

A) Peak time partition service: set service zone that each elevator in group serves separately by parameters, (up half area, down half area, whole area).

B) Peak time even/odd floor service: set even/odd floors that each elevator in group serves separately by parameters.

C) Peak time down collective selection: set each elevator in group to down collective via parameters.

D) Intelligent division service: allocate service zone of each elevator dynamically based on floor layout of the building and quantity of elevators involved in group control, allocate service floor of each elevator dynamically.

Note: A,B,C,D above only be effective to elevators involved in peak time service, activate one or several options among A,B,C via parameters. A,B,C will become ineffective after D is activated.

→ Exit Mode

A) Set by time, exit peak time after exceeding the time given.

B) Triggered by switch, exit from down peak after down peak service has been canceled.

C) Down peak can be identified intelligently, exit from peak time after peak time condition can't be achieved for 3 minutes.

3. Lunch Peak Time

→ Trigger Mode

A) Set by time， set starting time and over time of each day within one week(week, hour, minute).

B) Trigger by switch, after the lunch peak service switch acts, enter lunch peak mode, elevator will enter lunch peak mode after this switch acts under any condition.

→ Run Mode

Enter lunch peak, all elevators that involved in peak time service return to hall or top floor to wait in after this service is finished.

A) Peak time partition service：set service zone that each elevator in group serves separately by parameters, (up half area, down half area, whole area).

B) Peak time even/odd floor service：set even/odd floors that each elevator in group serves separately by parameters.

C) Peak time one-way collective selection: set one-way collective selection based on direction along which each elevator in group goes to dinning room.

Note: A,B,C above can only be effective to elevator involved in peak time service. Activate one or several options of A,B,C via parameters.

→ Exit Mode

A) Set by time, exit peak time after exceeding the time given.

B) Triggered by switch, exit from lunch peak after lunch peak service has been canceled.

4. Noon Peak

→ Trigger Mode

A) Set by time， set starting time and over time of each day within one week(week, hour, minute).

B) trigger by switch, after the noon peak service switch acts, enter noon peak mode, elevator will enter noon peak mode after this switch acts under any condition.

→ Run Mode

Enter noon peak, all elevators that involved in peak time service return to dinning room to wait after this service is finished.

A) Peak time partition service：set service zone that each elevator in group serves separately by parameters, (up half area, down half area, whole area).

B) Peak time even/odd floor service：set even/odd floors that each elevator in group serves separately by parameters.

C) Peak time one-way collective selection: set one-way collective selection based on direction along which each elevator in group departs from dinning room.

Note: A,B,C above can only be effective to elevator involved in peak time service. Activate one or several options of A,B,C via parameters.

→ Exit Mode

A) Set by time, exit peak time after exceeding the time given.

B) Triggered by switch, exit from noon peak after noon peak service has been canceled.

5. Peak Time Self-identification in Idle Mode

During non-peak time segment, enter peak time mode automatically based on volume of passengers in building. Only enter up peak or down peak service mode at this time, using intelligent partition mode.

6. Idle Mode

Set idle mode initial time and end time, when enter idle time mode, all elevators in group will return to hall floor to wait, elevators involved in idle running mode can continue service, other elevator stop service in hall, idle mode is ineffective after entering peak time.

7. Energy Saving Mode

Activate this function via parameters. Group control allocate each elevator passengers as many as possible. Energy saving mode become ineffective after entering peak time.

8. Distribution Waiting

Three base stations can be set via parameters, the first base station is hall floor, second base station is the top station(no need to be the top floor in the building), the third floor is dinning room. Quantity of the elevators in waiting status in the first floor can be set by parameters too. After returning to base floor has been activated , when all the elevators in group stop running for a long time that exceed the given time, group control will allocate elevators in group to return to base floor in turn, if there is any destination call or hall call being registered during returning to base floor, exit from base station automatically. Priorities of base station: first station >second station>third station. If idle elevator still exist after elevator returning has been completed, idle elevator will wait in floors among base floors randomly.

9. Service for Disabled

Elevators in group can be set to elevators for Disabled, after Disabled destination call has been registered, only allocate this destination call to elevators for Disabled. As to destination selector, when Disabled call is being registered, button delay will be enlarged automatically, together with voice indication.

10. Immediate Forecasting

When passengers register destination call or hall call command, dispatched elevator will be indicated to passengers immediately.

11. Automatically Switching of Service Floors at Time Periods

Floors service can be set within time given, elevators in group serve only floors being preset after entering time given.

12. Anti-nuisance

If several destination calls have been registered in some floor, when elevator arrive at this floor, safety light curtain doesn't act within time given, then destination calls registered in this floor will be canceled .

13. Car Call Disable

It can be set by parameters that if car calls can be registered or not in each elevator of the group.
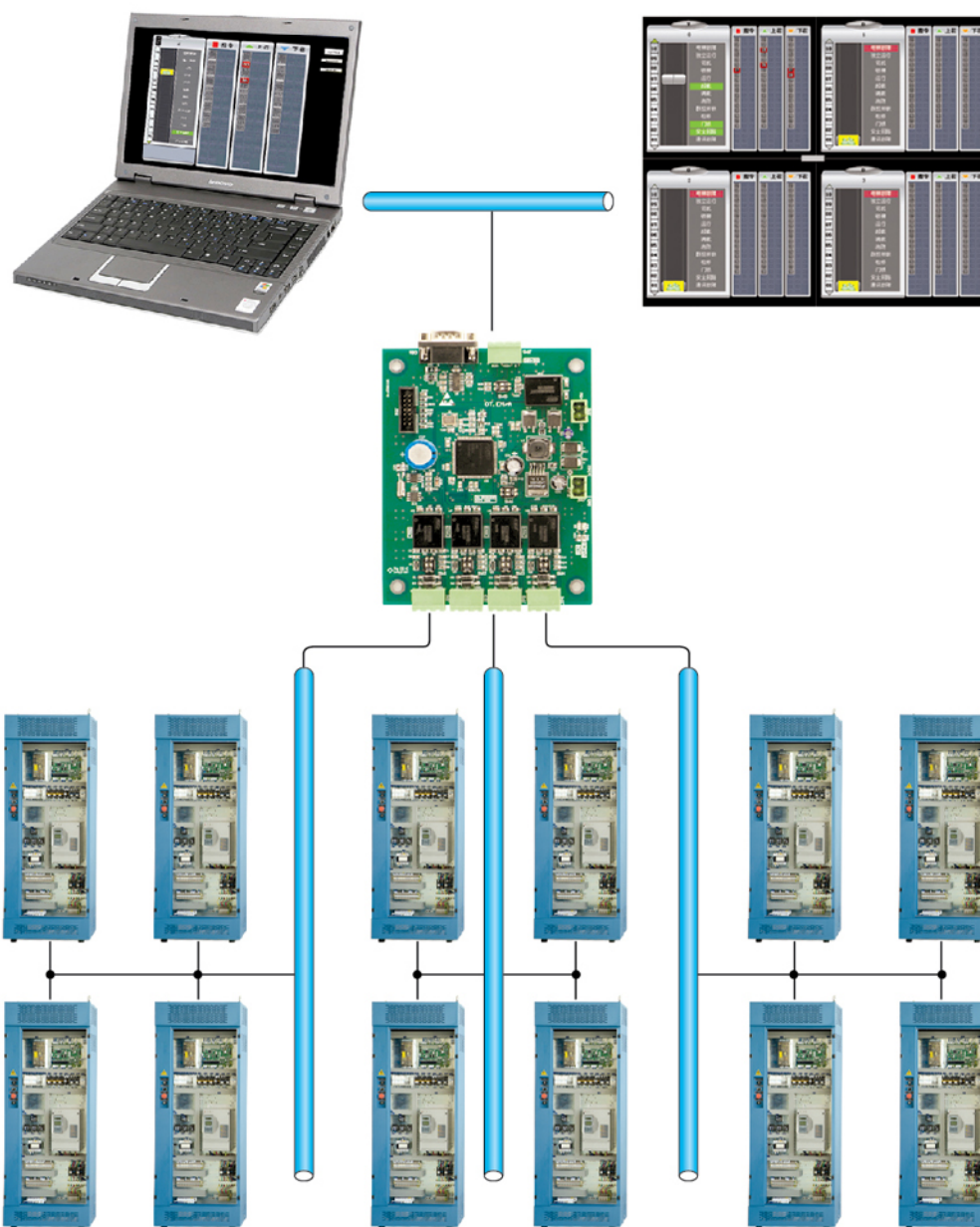
14. Setting of Door Open Time at Destination Floor

Door open time of lobby and other floors can be set by parameters separately.

Elevator Remote Monitoring System

Schematic Diagram of District Monitoring System

District Monitoring System OT.EM/A

Product Characteristic

- 32-bit high performance industrial class ARM controller
- 4-way complete independent electric isolated CANBUS port reduces communication cable and simple wiring connection
- 1-way independent electric isolated RS485 port
- Supports star and bus connection, provide effective short cut solution for wiring work
- 500 ms perfect monitoring for 100 units of individual elevators
- Real-time fault alarm alert and intelligent fault reading function
- Multi-level authorization, management by levels can be set up through intelligent customer software
- Remote elevator commissioning in monitoring room
- Remote elevator locking function, humanized management is realized
- Advanced intelligent analysis function which can automatically output elevator's parameter, performance and various reports
- GPRS remote monitoring port reserved, optional GPRS function can be selected
- BA(Intelligent building automation)port reserved, optional intelligent building automation function can be selected
- Excellent performance in anti-electrostatic ability (ESD 8000V) and anti-electromagnetic interference ability (EFT-4,000V)

Functional Description

- The intelligent elevator monitoring software provides an intelligent management for the elevators inside an estate. Remote elevator commissioning is also possible under multiple levels of authorization. Information and reasons of elevator's fault can be obtained at first moment.
- Optional functions are available including GPRS remote monitoring; Internet remote monitoring; input port for intelligent estate security system and door security system.
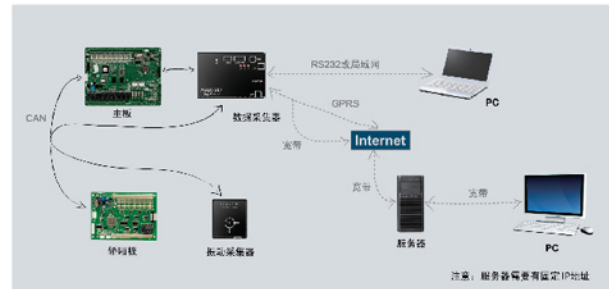
Remote Intelligent Diagnosis System

Vibration collector


Signal collector

System Characteristic

■ Only 3 parameters is needed to complete the elevator debugging.
Simple and convenient, and reduce debugging costs

■ Only 2-minute vibration curve
Automatically debug the riding comfort according to the vibration curve data

■ Humanized leveling adjustment
Prompting the state of the flat layer, car sill distance and fool style debug direct

■ Normally open normally closed self-learning
Contacts of the contactor, the switch door in place self-learning

■ Intelligently recognise the display board address
Board is not needed to set the address, the debugging process can complete the address setting.

■ Remote assist in debugging
The remote expert system to assist field personnel debugging elevator together, 800 customer personnel plus field Maintenance staff> Senior Commissioning Engineer.
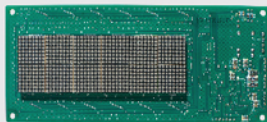
Escalator Control System
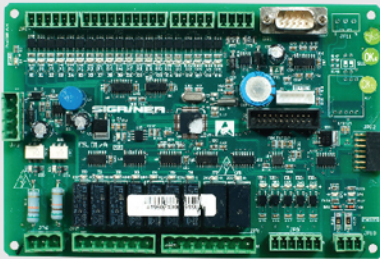
Escalator Control Board ES.01/A
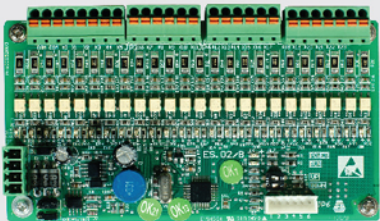
Escalator Failure Collection Board ES.02/B

Escalator Failure Indicator Board SM.04HG/A
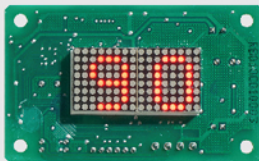
Escalator Failure Indicator Board SM.04HG/B
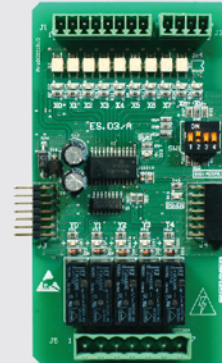
Escalator I/O Extension Board ES.03/A
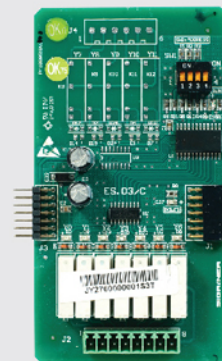
Escalator Monitoring Board ES.03/C

Product Characteristic

- 32-bit high performance industrial class controller
- Strong electromagnetic and electrostatic anti-interference ability
- Supports I/O functions extension

Functional Description

- Suitable for escalator
- Optional safety circuit fault monitoring system
- Supports failure codes displaying
- Support STEP standard hand-held operator

IC Card Elevator Intelligent Management System

IC card elevator intelligent management system schematic diagram

IC card elevator intelligent management system aims to provide an intelligent support for operational management of elevators, which enables the operation of the elevator to become a manageable, extensible, controllable and cost-measurable mode. Call commands, door opening control, elevator usage measurement, elevator charges, etc. can be activated through the messages inside the IC card.
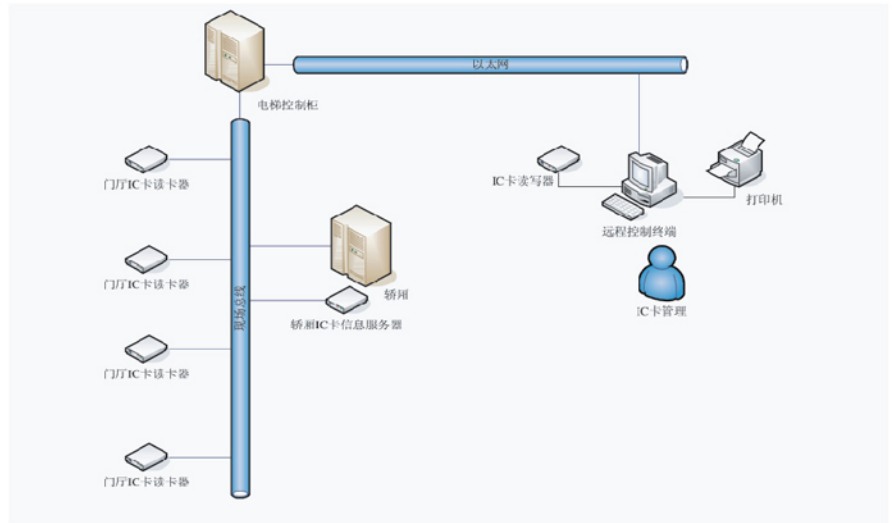

IC card & Card reader

Functional Description

- Automatic elevator calling according the messages inside the IC card
- Register car call automatically after tapping the card inside car
- Automatic price calculation
- Achieve monthly, yearly and fixed number of times usage packages.
- Prevention against repeatedly card tapping
- Access multi-floors with one card (suitable for multi-floors passengers)
- Access every floor with one card (suitable for real estate management)
- Multi-floors IC card can reset the call instruction of those accessible floors, the passenger can register call through call button on his own
- Supports VIP elevator calling function
- Automatic cancelling of IC card management function in case of activation of attendant control and fireman control
- IC card user information management system, lost card cancellation, new card registration and IC card value refill
- Every elevator can support up to 32,768 IC cards

Hand-held Operator
SM.08/G

Functional Description

- Elevator parameter setting: elevator floors, elevator speed etc, can be set up through the hand-held operator.
- Elevator status monitoring:
  Elevator running status such as automatic, inspection, attendant, fire, etc.
  Car position and running direction
  Elevator running record and error code
  Shaft data of elevator
  Input and output status of elevator
- Elevator shaft learning: During elevator commissioning, the hand-held operator can be used to carry out the shaft learning operation, which allows the control system to learn and record the datum of each landing position.
- Monitoring and registration of car and landing call: hand-held operator can be used to monitor and register the car and landing call.
- Review of error codes: The error codes of the latest 20 breakdowns or operational faults together with the elevator floor position and time at which they took place
- Supports control board, integrated driver controller and inverter etc. commissioning.

SM.08/G

SW11

3 Phase Sequences Relay SW11

Product Characteristic

- Input voltage：AC230～440V, 3-phase
- Power frequency：50～60Hz
- Output terminal：NC contact 1 set、NO contact 1 set
- Contact rated load：6A/250V
- Dimension（mm）：100×26×78 (length × width × height)
- Safety standard：Europe CE, China CCC

Functional Description

- Monitoring 3 phase power effectively, when there is a power sequence fault (phase lacking or voltage lacking), the relay will display and act immediately so as to keep the electric equipment working normally.

SW–11–A

Advanced Door Opening Controller Board SM-11-A

Product Characteristic

- Specially designed circuit. Enables the safety operation of the elevator during advanced door opening or re-leveling after door opening.
- Safety relays which use different metal materials in one set contactor to assure that the contactor will not stick.
- Modularized design, suitable for standard manufacturing, reduces errors in wire connection.
- Standard guide-rail card slot bottom shell, convenient for control cabinet installation.
- Complies with EN81, GB7588, passes CE certification.

Group Control Relay Interchange Board SM.11CM/A

SW.11CM/A

Functional Description

■ The board uses signals relay circuit and power relay circuit to control the CAN signal and power signal separately, implements the interchange between group control and simplex control.
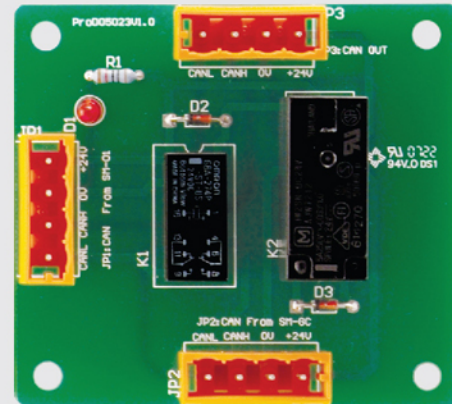
MP3 Voice Announcer OT.VA/C

OT.VA/C

Product Characteristic

■ The device announces accurately and has strong anti-interference ability.

■ Adopts professional MP3 audio decoding, amplifying technology and high quality sound box, clear and loud sound, elegant tone.

■ SD card can store voice data, background music or advertising messages, which is easily for file changing.

■ Supports MP3 file type

■ Supports CAN BUS serial communication or binary code parallel communication

Elevator Automatic Rescue Device HCYD43 Serial

Functional Description

■ The standard model is divided into three sections: HCYD43-15，HCYD43-22，HCYD43-30；Based on the power of inverter or integrative machine, they are then divided into: ≤15kW，18.5-22 kW and 30-37 kW separately.

■ This device still works in the case of external power grid blackout or grid phase failure. Specifically, When external power supply fails, the device will supply electric power to the elevator and inverter(DC 48V), and sends commands to the elevator control system to notice that the system can adopt automatic rescue mode. At the same time, such device is only an electric power source to supply power for each circuit of the elevator system; however, safety detection, door zone detection, drive commands, door open and close commands, brake control ,etc. are all managed by the main control system in order to ensure the safety of operation. After the elevator levels, door opens and releases passengers, the whole process is completed due to the main control system shutdown the power supply of automatic rescue device and then waiting for the resumption of the external power supply. Working with STEP voice system can play propitiatory voice message and background music during emergency running process.

■ According to the characteristic of battery's floating charge, the battery special charge self-maintenance circuit is designed to ensure longer battery life and easy maintenance.

# Elevator Load Weighing Device DTZZ

Functional Description

■ DTZZ Ⅲ series elevator load weighing device is designed specially to support the elevator main board, it transforms weight into electric signal through strain gauge sensor and transmits to the main board through CAN Bus communication, the main board will output a analog compensation voltage to the inverter, so as to enhance the startup comfort.

■ DTZZ Ⅲ-A model installs at rope hitch plate，and uses strain gauge sensor contacting installation method.

■ DTZZ Ⅲ-B model installs at bottom of car，and uses inductance displacement sensor non-contacting installation method, convenient for installation.
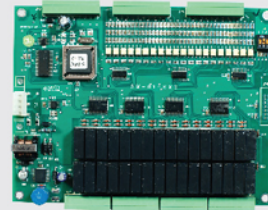
I/O Extension Board
SM.091CA.11 SM.091CA.12 SM-01-EXT

SM.091CA.11
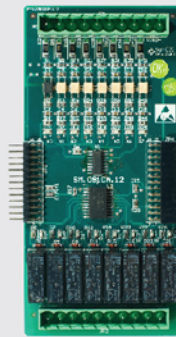
SM.091CA.12

SM-01-EXT

Functional Description

- I/O port can be extended through CAN Bus
- Supports optical coupler inputs and dry-point relay outputs
- SM-01-EXT board supports maximum 20-way inputs and 32-way outputs
- SM.091CA.11 board supports maximum 8-way inputs and 8-way outputs, which can extend 8-way inputs and 8-way outputs through SM.091CA.12 board

B/A Interface Board
SM-09-I485

Functional Description

- Specifically designed for the building B/A interface
- Supports CAN, RS485 or RS232 port
- 8-way optical coupler isolated inputs, 2-way relay dry-point output. I/O points can be extended through SM.091CA.12 board.
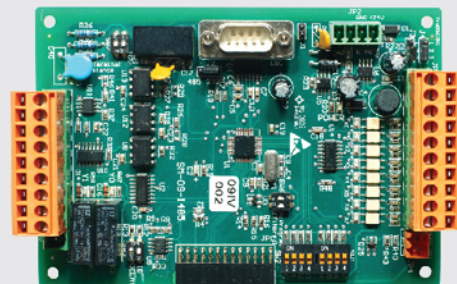
SM-09-I485

Research Building

Guesthouse Yongquan

Air Corridor

Step by Step, Dreams Come True

STEP® Shanghai STEP Electric Corporation

Shanghai STEP Electric Corporation
NO.289 Xinqin Road,Jiading District,Shanghai
Tel：0086-21-39126902
Fax：0086-21-39126607
Zip：201802

STEP Sigriner Elektronik GmbH
Martin-Moser-str.15,84503 Altoetting,Germany
Tel：0049-8671-3096
Fax：0049-8671-72476
Website：www.step-sigriner.com

HONG KONG International STEP Holdings Co., Ltd.
Unit AD, 9/F., Nathan Commercial Building,
430-436 Nathan Road, Kowloon , Hong Kong
Tel: 00852-27592938, 23327719, 27819038
FAX: 00852-27590662

Shanghai Sigriner STEP Electric Co., Ltd.
NO.1560 Siyi Road,Jiading District,Shanghai
Tel：0086-21-69926000
Fax：0086-21-69926010
Zip：201801

Shanghai STEP Elevator Components Co., Ltd.
NO.289 Xinqin Road,Jiading District,Shanghai
Tel：0086-21-39126902
Fax：0086-21-39126607
Zip：201802

Shanghai STEP Electric Wire & Cable Co., Ltd.
NO.289 Xinqin Road,Jiading District,Shanghai
Tel：0086-21-39126902
Fax：0086-21-39126607
Zip：201802

Shanghai STEP Software Technology Co., Ltd.
NO.289 Xinqin Road,Jiading District,Shanghai
Tel：0086-21-39126902
Fax：0086-21-39126607
Zip：201802

Shanghai Yixin International Trade Co., Ltd.
3503-3504, CITIC Plaza, No.859, North Sichuan Road, Shanghai
Tel：0086-21-63931220
Fax：0086-21-63931223
Zip：200085

STEP201205

Website: **www.stepelectric.com**