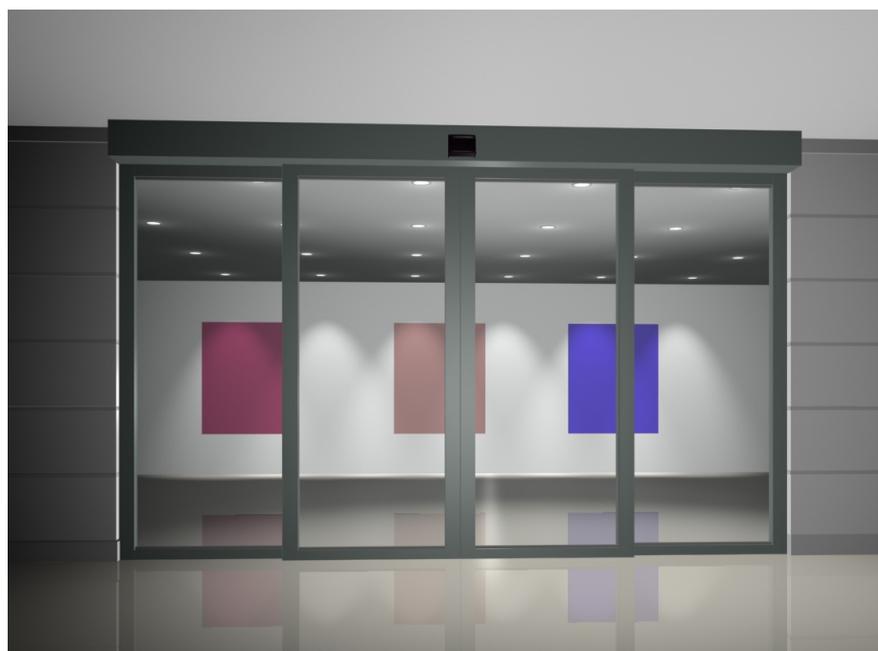


# Assembly Manual

( KS3000 Sliding Door )



**KBB Automated Entrances Inc.**

**(Ver 201112-01)**



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## PREFACE



# 1. READ BEFORE INSTALLATION

The following manuals and data sheets are helpful for installation and commissioning of the KBB automatic doors. Make sure that you are in possession of these documents prior to commencing any installation work!

These instructions are intended for qualified installation personnel, trained by KBB, and contain all necessary information and references for the installation on site, including the assembly of the components for the automatic all glass door.

## 1.1 INSTRUCTION OF THE MANUAL

- The manual offers instructions for the installation, adjustment, maintenance, and troubleshooting of KS3000.
- The manual is just for professional persons from Metal construction and electronic technology.
- The manual includes the instruction of main components and all specifications of KS3000.
- Uses the following signs as important mark of certain dangers and significant explanation
- Surroundings requirements  
Ambient temperature:  $-20^{\circ}\text{C} \sim 40^{\circ}\text{C}$ ;  
Ambient humidity  $\leq 75\%$  Wind speed  $\leq 10\text{m/s}$

**Note:**

*Correct installation and use of products will achieve the best performance.*

*Particular Attention*



**Warning:**

Be dangerous to the life and limb



**Attention :**

Could be dangerous or cause components malfunction



**Notes :**

Clues that facilitate the work

The manual is subject to change without notice.

All dimension unit is “mm”.



## 1.2 SAFETY NOTICE

### 1.2.1 General Safety and Accident Prevention Instructions

Before commissioning the door and before doing any repair or maintenance work, read very carefully the KBB operating instructions as well as the following safety instructions!

Pay particular attention to the specially marked bits of information in this manual!

#### ➤ **Correct Use**

KS3000 must be installed at the inside of buildings.

Any other use is considered incorrect and may result in injuries to the user or third parties. It may also result in damages to the system or to other real assets. The manufacturer is not liable for damages resulting from incorrect use: the risk is to be borne by the user only.

#### ➤ **Requirements for the Installation**

The components are to be assembled only by experienced specialists who have been trained and provided with the necessary knowledge on power operated doors, and who know about the relevant worker's protection rules, accident prevention instructions, guidelines, and generally accepted technical safety rules of their country.

**Basic Safety  
Measures  
Appropriate  
Behaviors**

➤ **Basic Precautionary Measures—Appropriate Behaviors**

Do not use the system in other than technically perfect condition. A malfunctioning door can affect the user's safety and must therefore be repaired immediately.



*Be particularly careful of the movable parts!*



*Electric voltage/current: touch/clean only when the power supply is turned off!*

Before plugging in the power plug make sure all internal cables are connected.

Use only instruments fit for your work, and make sure they are in perfect condition.

➤ **Relevant Instructions**

The operating instructions as well as the maintenance instructions given by the manufacturer must be observed.

KBB drive units may only be maintained and repaired by trained people who are aware of any possible danger that may occur.

## SAFETY LABELS

### 1.2.2 SAFETY LABELS



Warning: Be careful don't be hurt by the gears etc during inspection, maintenance, repair and installation.



Warning : Take care of the head during inspection, Maintenance, repair and installation.



小心触电  
Take Care Not To Receive An Electric Shock

Warning : Take care the electric shock during inspection, maintenance, repair and installation.

#### **Note:**

*Must be careful when you see these labels.*



Warning : Take care of the hand during inspection, maintenance, repair and installation.

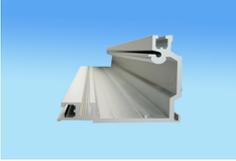
## *WARRANTY*

### 1.3 WARRANTY

- A. KBB provides one year service guarantee with this product, this guarantee is valid in the time period up to one year from the effective date of product arrival and covers the replacement of parts damaged under normal product use only.
- B. Installation must be performed by an authorized professional engineer. Abuse, misuse, acts of God, modification or improper repair or service by unauthorized agent negates this warranty.
- C. Components repaired or replaced under this warranty are warranted only for the remainder of the period covered by this warranty.
- D. KBB follows a policy of innovation. For this reason, specifications may be changed without notice.

## PACKAGE LISTS

### 2. KS3000 PACKAGE LISTS

Item	No.	Part Name	Qty	Unit	Picture
1	S1	Drive Unit	1	pcs	
2	S2	Main control unit	1	pcs	
3	S3	Radar ( eagle 6 )	1	pcs	
4	S4	PSA control panel	1	pcs	
5	S5	Supporting beam	1	pcs	
8	S6	Durable rail	1	pcs	
7	S7	Carriage wheel	2	pcs	
8	S8	Belt clamp	2	pcs	
9	S9	Drive timing belt	1	pcs	

10	S10	Reverse roller	1	pcs	
11	S11	Stopping device	2	pcs	
12	S12	Electro-mechanical lock	1	pcs	
13	S13	Back up battery	1	pcs	
14	S14	Operator cover	1	meter	
15	S15	Photocell	2	pcs	

TOOLS FOR  
INSTALLATION

### 3. TOOLS FOR INSTALLATION



Steel Tape



Skew Driver



Electric Hand Drill



Electric Hammer



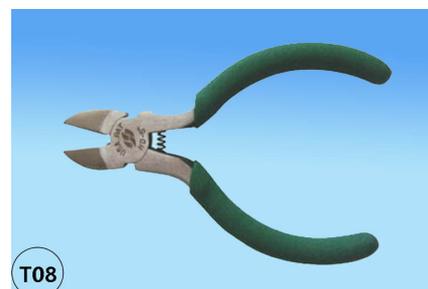
Scissors



Rubber Hammer



Shape-nosed Pliers



Skew-mouth Pliers



Inner Hexagon Spanner



Universal Meter

INSTALLATION

PROCESS



GENERAL

STRUCTURE

# 4. INSTALLATION

## 4.1 General Structure

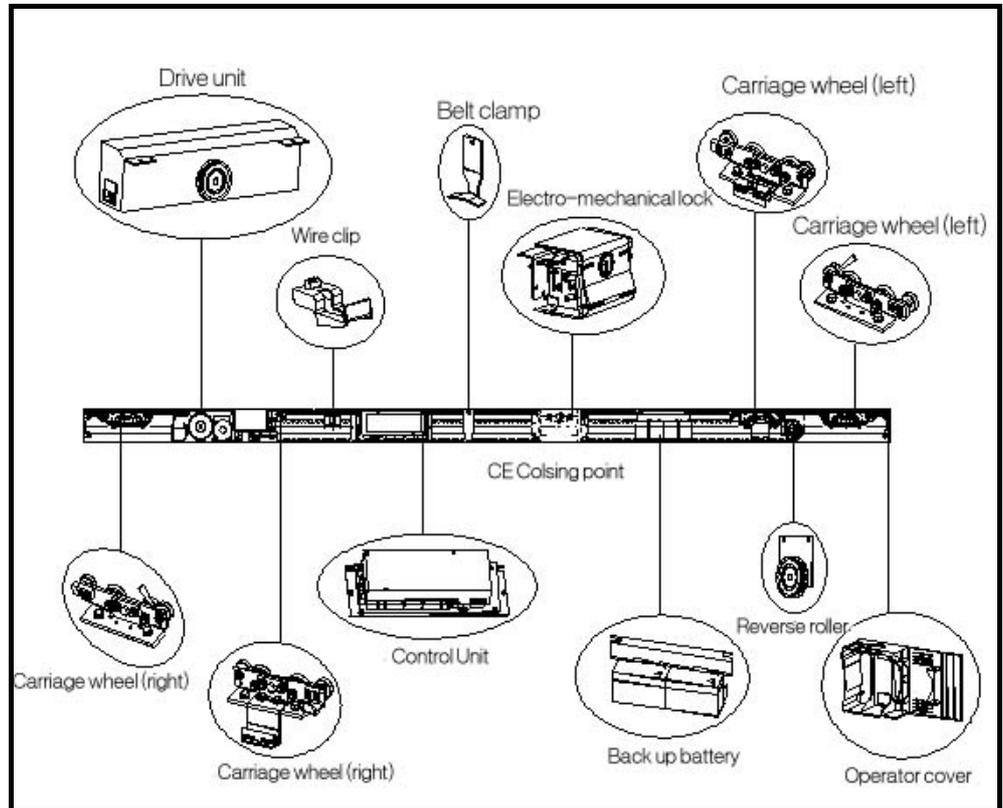


Figure 4-1

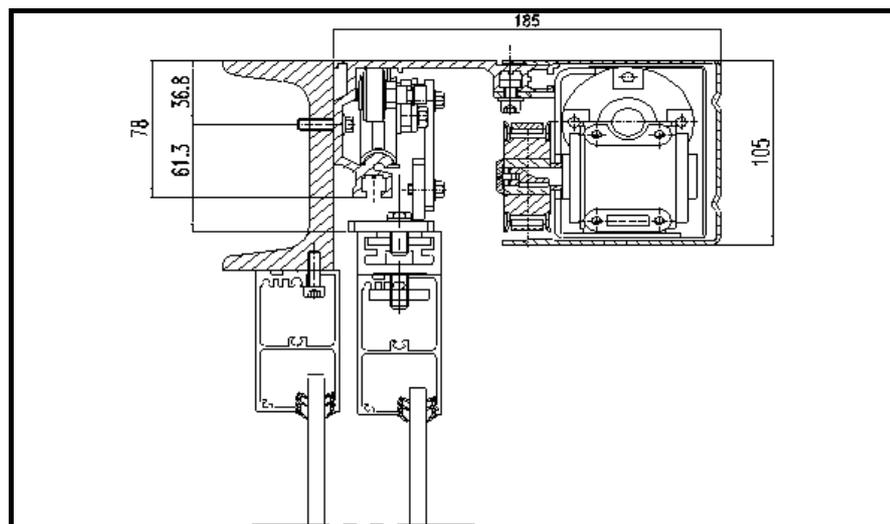


Figure 4-2

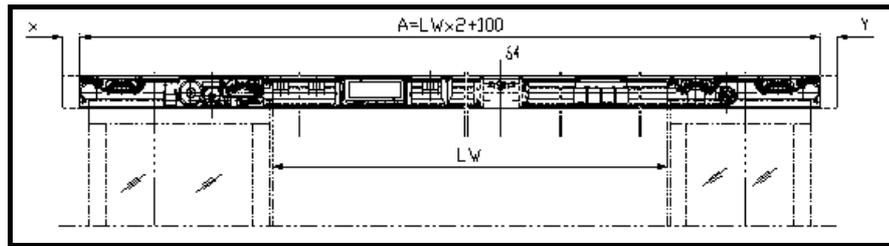


Figure 4-3

A Overall length of guide way profile

LW Clear passage width

## 4.2 Attention

### 4.2.1 Application area

Type	Specification	Clear passage width	Max. weight /leaf	Max. speed ( due to the weight of leaf )
Single wing ( left or right opening )	107..115	700-1500mm	140kg	0.45-0.65m/s
Double wings	208..230	800-3000mm	90k g	0.45-0.65m/s



**Attention:** The application limits of KS3000 sliding drive unit are defined in the sales documents. Any application beyond the limits is not allowed.

## Technical parameters

### 4.2.2 Technical parameters

Power source	230V $\pm$ 10% , 50/60Hz , 10A
Power consumption	200W
Max. drive power ( static )	150N
Duration of battery backup	30min
Temperature of working environment	-30°C ~ +50°C
Max relative humidity	90%
Protection level	IP23

## Security

### 4.2.3 Security

Once the sliding door is applied, the Max. opening and closing speeds are automatically adjusted depending on the wing weight. Users needn't do any presetting.

The entire security device has to be checked to ensure the reliability.

**Assembly Types**

### 4.3 Basic Assembly

#### 4.3.1 Assembly Types

There are 3 types available.

A. Door lintel is consist of assistant profile and supporting profile :

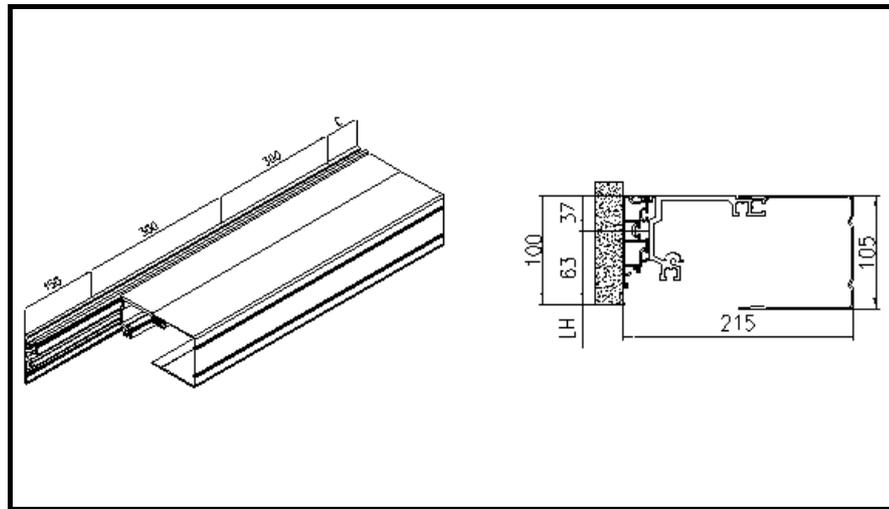


Figure 4-4

B. Door lintel: Under-prop rail

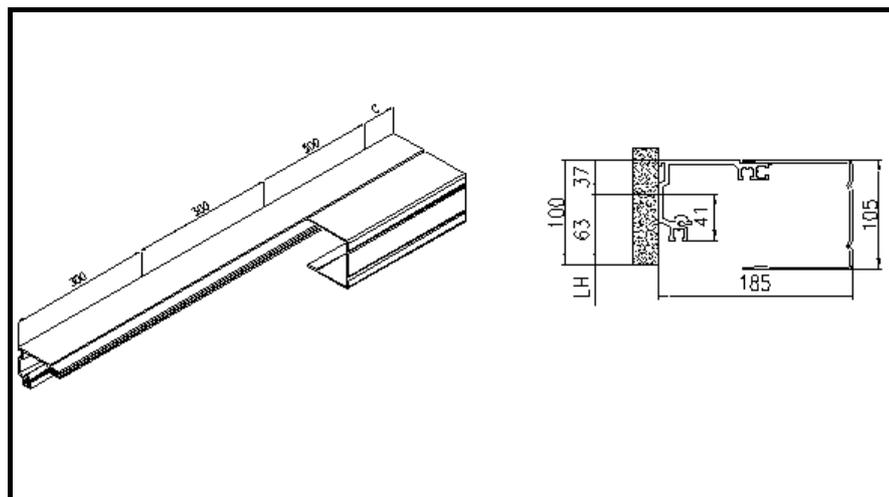


Figure 4-5

C. Lintel assembly with angle profile.

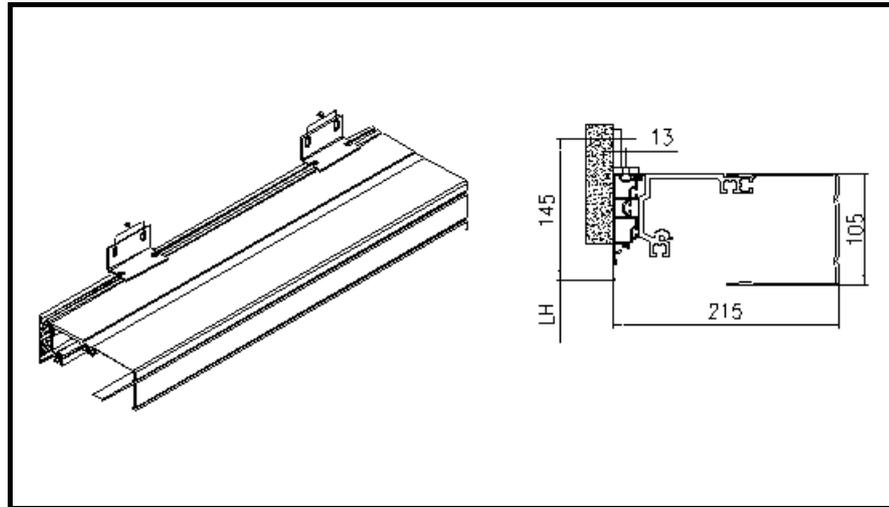


Figure 4-6

Assembly

4.3.2 Assembly

The assembly position of the supporting profile is determined by the closing edge (SK).

Bi-Parting sliding door:

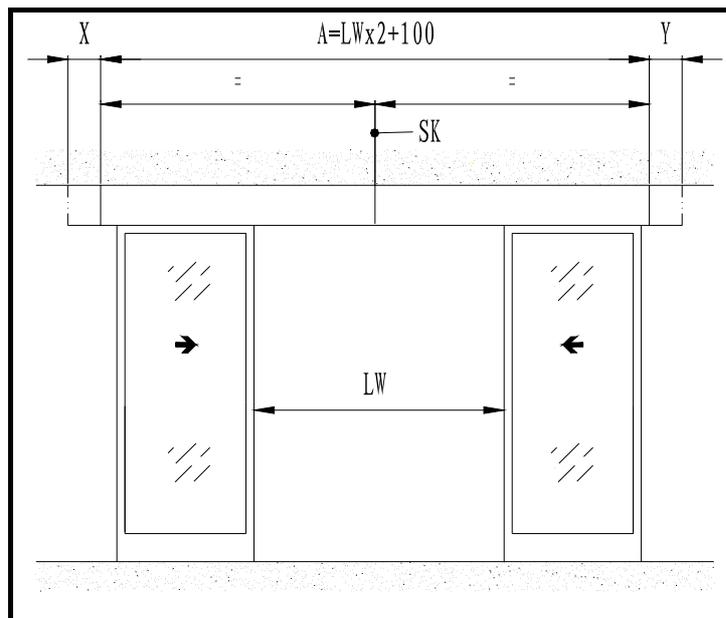


Figure 4-7

Single Slide sliding door:

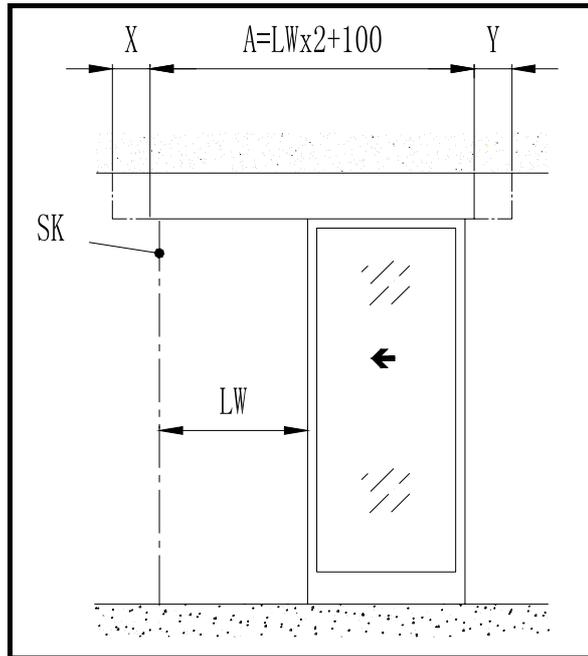


Figure 4-8

A Min. supporting profile length ( $2 \cdot LW + 100$ )

X、Y Possible over-length of carrier profile

LW Clear passage width

The following description is assembly example for Bi-Parting sliding door systems. It describes the assembly process of supporting profile. Other types of systems are assembled as the same on CE basis.

## SUPPORTING

## PROFILE

### 4.4 Installation of supporting profile

1 . Mark out the closing point CE on the supporting profile.

Place the supporting profile on the floor , adjust the levelness with gradienter and mark out the water level line

UK.



**Attention:** Levelness <math>< 1\text{mm/m}</math>.

CE Closing edge

UK The bottom edge of the supporting profile should be parallel with the flat floor.

LH Clear masonry height

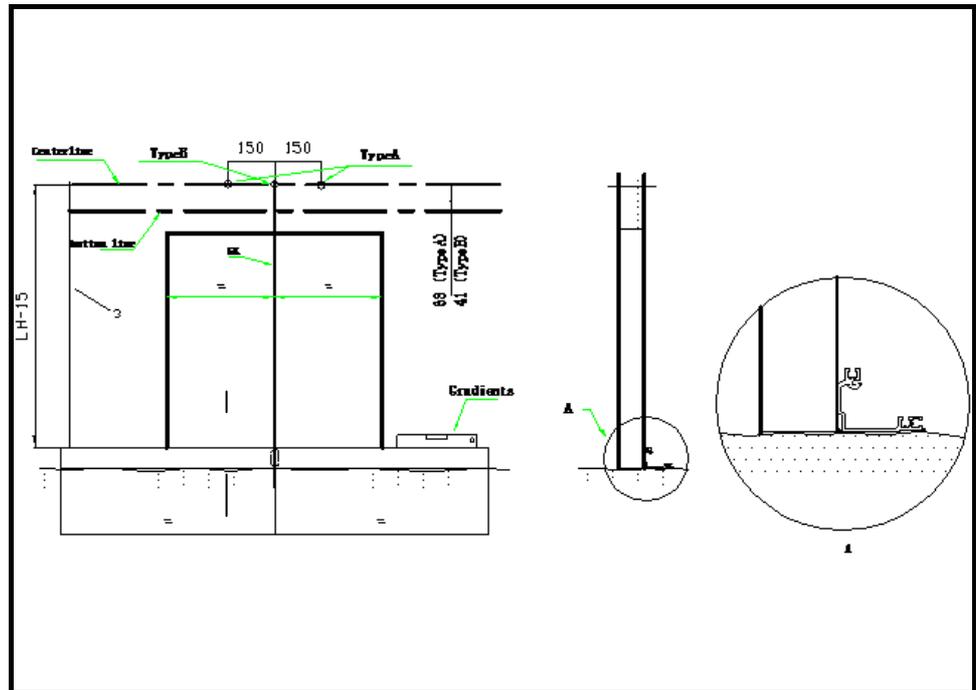


Figure 4-9

2 . Mark out the line L according to the following data:

Assemble type A: Make 2 holes for screws M8 around

150mm interval the center, and fix the carrier profile temporarily using screws;

Assemble type B: Drill the mounting holes for screws M8 at the center position. Adjust the balance with the thin spacer.

- 3 . Draw the bottom edge M of the supporting profile.
- 4 . Draw the vertical line of L line through the two centers of long-round holes at both ends of supporting profile, and mark out the intersection point Q.

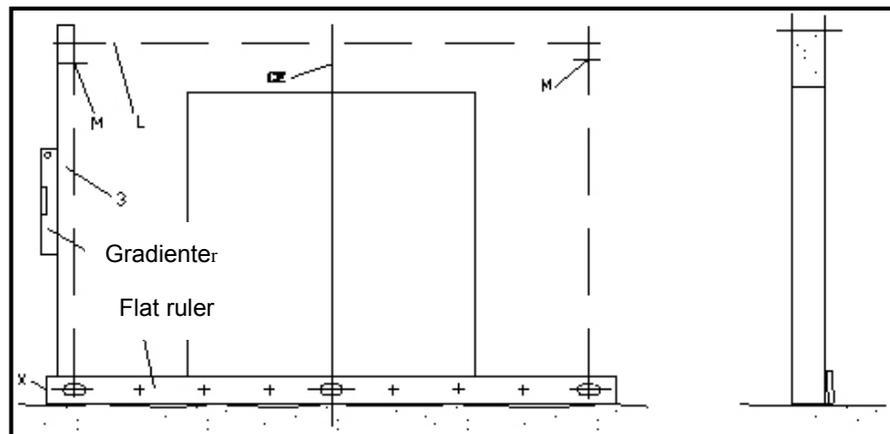


Figure 4-10

- 5 . Drill the mounting holes for screws M8.
- 6 . Fix the supporting profile with screws and thinner spacer and align the bottom edge M with closing edge CE.



**Attention:** The tolerance should be less than 2mm.



**Note :** Install the carriage wheel after the supporting profile is installed, and put two blocks at the two ends of supporting profile to prevent wheels from sliding out.

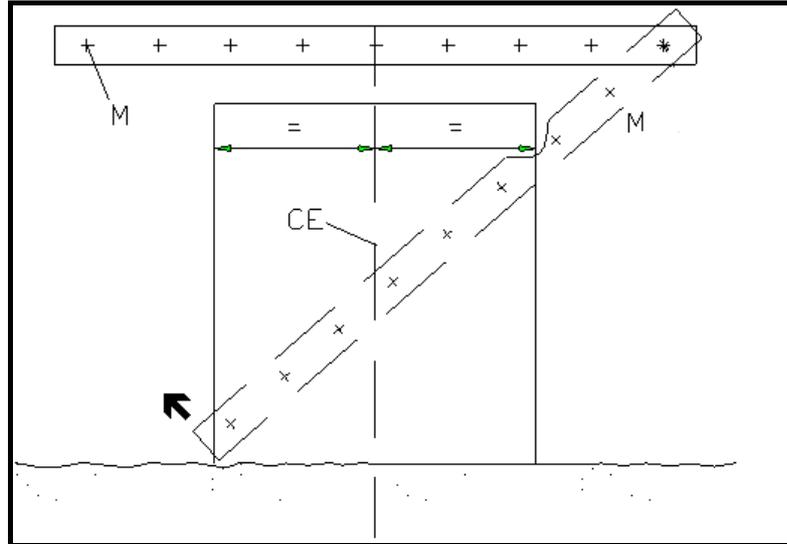


Figure 4-11

- 7 . Drill the other holes.
- 8 . Assemble other fixing screws.
- 9 . Assemble type A: Hang the supporting profile into the assistant profile and fix a screw M8\*20 and a washer every 400mm.

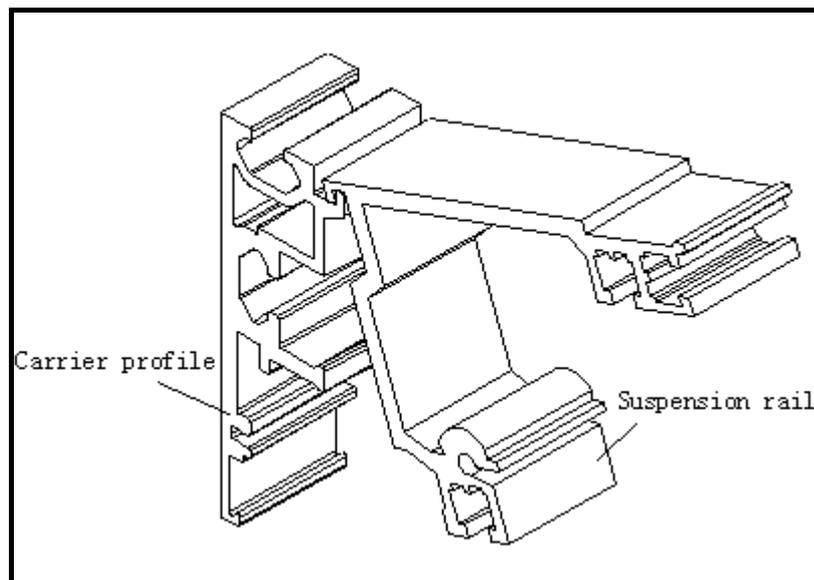


Figure 4-12

## CARRIAGE WHEEL

### 4.5 Installation of carriage wheel

The basic set of carriage wheel includes:

Carriage wheel	2 sets
Stop block	1set
Wiper brush	2 sets
Belt clamp	1set

#### Bi-Parting sliding

#### 4.5.1 Installation of carriage wheel for Bi-Parting sliding

- 1 . The screws board of running carriage set should cut into the doors;
- 2 . Push the door to the close position and superpose with the SK;



**Attention:** The closing pressure on the sliding wings must not exceed a maximum value of 80N

- 3 . Push the inboard running carriage set together and close with the SK;



**Attention:** When using the electron lock, the center of the stop pieces should touch in the center position;

- 4 . Tentatively fix the indoor running carriage set onto the doors;
- 5 . Tentatively fix the outdoor running carriage set onto the

doors ;

- 6 . Fix the running carriage set onto the doors;
- 7 . Turn the doors open, fix the stop piece;
- 8 . Fix the doors;
- 9 . Fix the stop piece and outboard running carriage set.

## Single Slide sliding

### 4.5.2 Installation of carriage wheel for Single Slide sliding

- 1 . Put the doors on the rail, install the running carriage set into the horizontal profile;
- 2 . Install the stop piece;

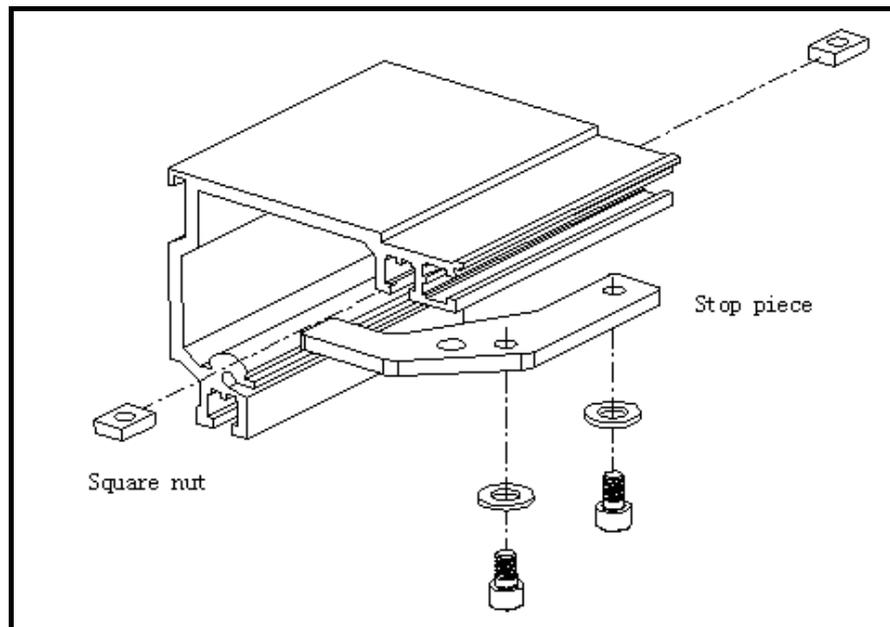


Figure 4-13

- 3 . Close doors superpose with the SK.

## 4.6 Installation of the sliding wings

- 1 . Fix the wings to the carriage with the screws.



**Attention:** For Bi-Parting sliding door, the stop blocks must touch at the closing point CE after the door is close (The closing pressure applied on the sliding wings must not exceed 80N).

- 2 . Check the anti-loose roller after completing the installation to make sure the roller rotate flexibly, and the carriage wheel can be pushed manually.
- 3 . Adjust the anti-loose roller: loose the screw about 1/2 circle, push the screw to the right position and fasten it.

## 4.7 Installation of drive unit



**Attention:** Check if the four cables are plugged into the control panel before fixing.

Mark out C on supporting profile.

- 1 . Insert square nuts into T groove.
- 2 . Fasten the drive unit on point C with inner hexagon screws and washer.
- 3 . Connect the cable along the groove, and insert the cable clip into the groove to fasten the cable.
- 4 . Connect the cables and after the control unit is installed.

➔ **Note:** The groove is applied for outer cables and cables of control components, such as PSA. The groove is applied to in-house connect battery control panel of control unit.

## 4.8 Installation of the reverse wheel

### *REVERSE WHEEL*

The position of the reverse wheel in the profile can refer to the appendix.

1. Insert nut into T groove.
2. Pre-fix the reverse wheel on the supporting profile with inner hexagon screw and washer. Refer to following figure :

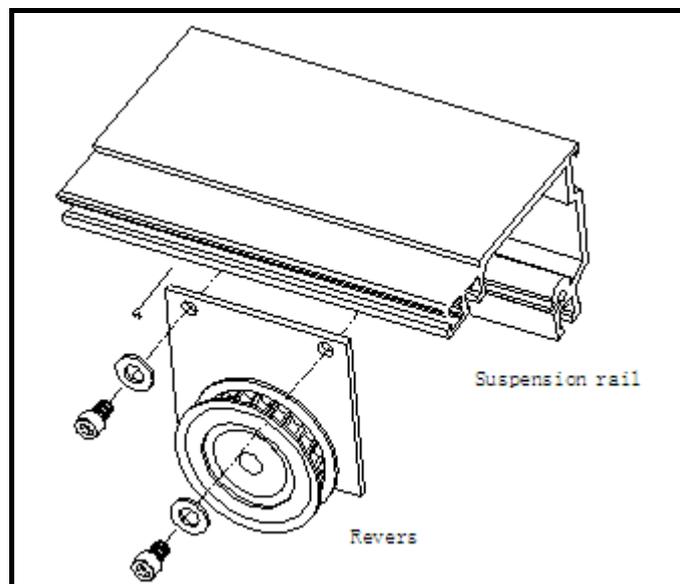


Figure 4-14

## 4.9 Installation of the toothed belt

- 1 . Cut the toothed belt according to the value D in attached drawing.

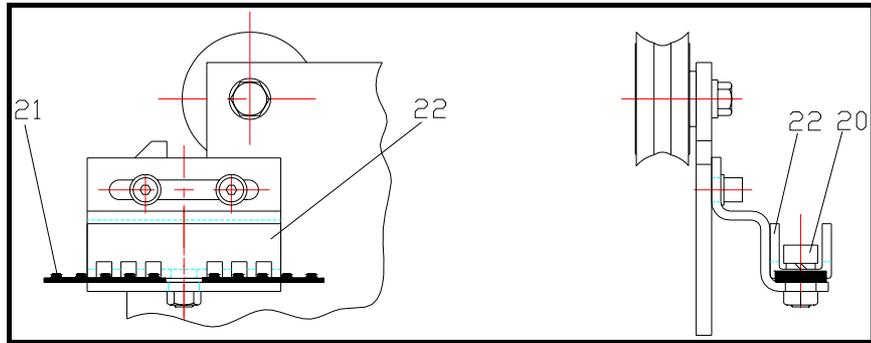


Figure 4-15

- 2 . Loosen the fasten screws slightly;
- 3 . Insert 3 teeth end of the belt (21) into belt clamp (22);
- 4 . Tighten the screw(20);
- 5 . Place the toothed belt onto the drive wheel and the reverse wheel:

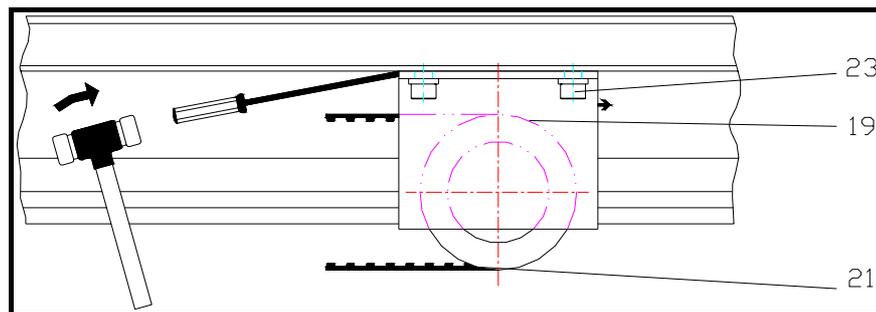


Figure 4-16

- 6 . Push the reverse wheel (19) outwards until toothed belt (21) lies flat. Tighten the screws (23).
- 7 . Knock the reverse wheel (19) with a hammer until the

toothed belt has the following tension.

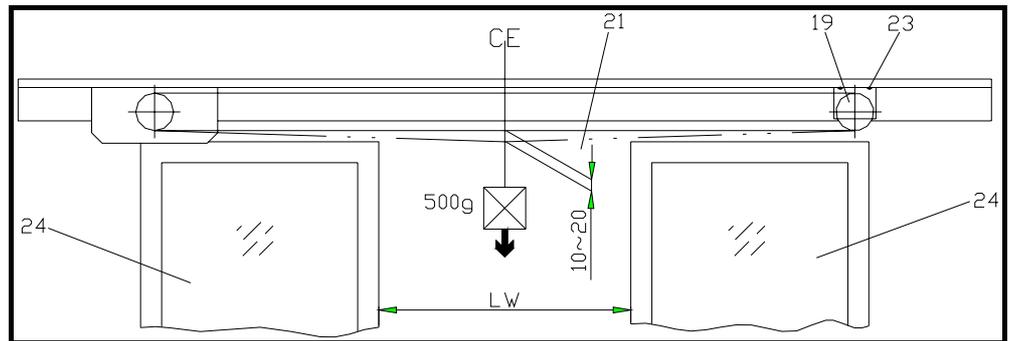


Figure 4-17



**Attention:** The tension of the belt should be appropriate.

Insufficient or excessive tension will increase the wear and cause noise during the operation.

8 . Tighten the fastening screw(23).

#### 4.10 Adjusting the door Center

Take the Bi-parting door for example:

- 1 . The belt clamp must not be tightened when adjusting.
- 2 . Push the door wings until the A is equal to B. If adjusting is insufficient, check the belt lengths or dimension C. Refer to the appendixes.

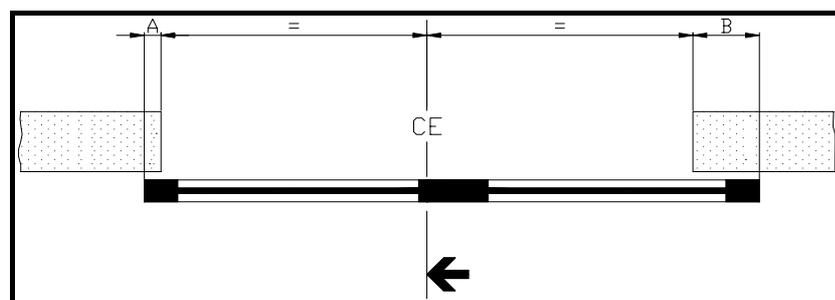


Figure 4-18

*ADJUSTING THE  
DOOR CENTER*

## CONTROL UNIT

3 . Fasten the belt clamp.



**Attention:** Checking the door opening stop blocks.

The wings must touch the blocks when the door is open.

### 4.11 Installation of the control unit

The position of the control unit in the profile can refer to the appendix.



**Attention:** If the system is equipped with locking parts or battery backup, they must be installed before installing the control.

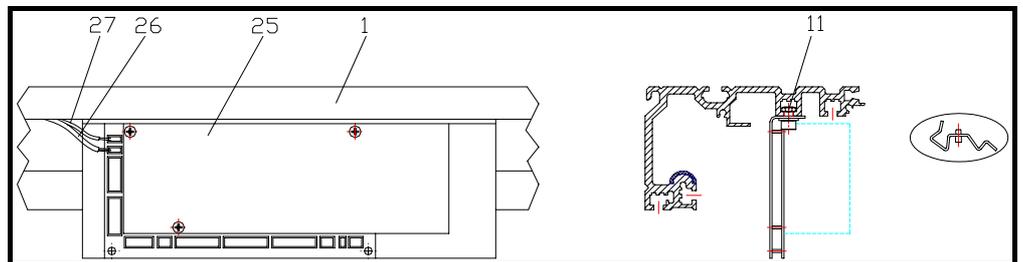
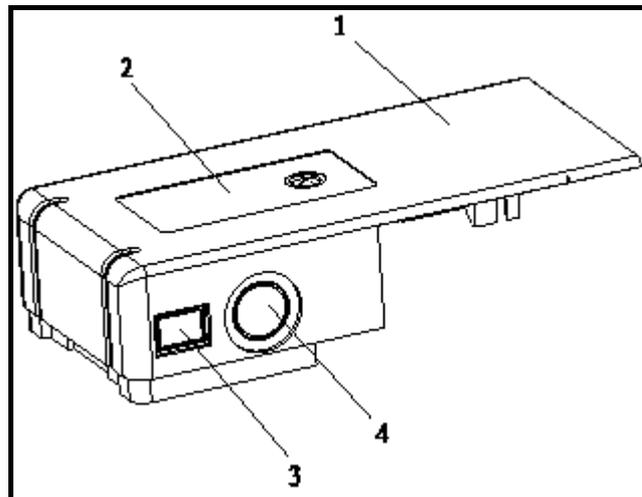


Figure 4-19

- 1 . Insert nuts (11) in “T” groove.
2. Fix the control unit (25) onto the supporting profile with inner hexagon screws and washer. Tighten the screws.
3. Connect the cable of drive unit (26).

*COPING*

## 4.12 Installation of the coping



- 1、Coping (both sides)
- 2、Emergency bottom (depend on the different construction position, or for the main cable)
- 3、Reposition bottom
- 4、Main cable
- 5、Put the nameplate on the cover, write the Date and number.



**Attention:** If you cannot see the cover, nameplate could also stick on the drive unit.

## 4.13 Installation of the control panel

### **Program select switch:**

Fix the switch into the cover: 1=Auto; 0=Night; 2=Open

Stick the label on the cover or hood;



### **Attention:**

Position 1-0-2 must be same with the figure on the cover or hood;

For the door open from right side, soft switch 12 must be ON;

Fix the cover with nuts and screws;

### **Restart switch:**

Restart switch is used with the system control panel along.

Insert the plug of restart switch in drive unit KSM and 25, 26.

### **Emergency bottom**



**Attention:** Emergency bottom is used for manual mode.

## CONTROL

### PANEL PSA

## 4.14 Installation of control panel PSA

The location of control panel is determined by the actual installation project.



**Attention:** Max length of the cable is 50m. A blind plug must be used.

- 1 . Connect the cable plugs to the control panel (terminals 25/26). The shielding must be fastened to the control unit.
- 2 . Connect the cable (30) to the PSA panel (terminals 1/2).

The shielding must be fastened to PSA metal parts.

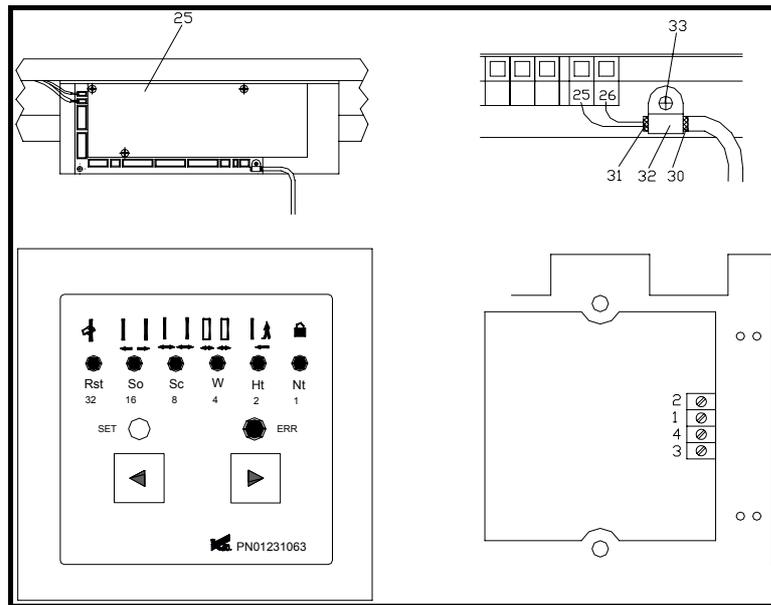


Figure 4-20

### PSA lock

- 1 . Disconnect the connector 3 and connector 4 so as to lock the PSA.
- 2 . Concrete operation process refers to chapter 6.

## ADJUSTMENT

### *PREPARATION*

## 5. Adjustment

### 5.1 Preparation before operation

All basic components and optional parts of KS3000 have been fixed and arranged. All cables are ready for using.



**Attention:** If there is no photoelectric cell, the corresponding terminals must be short-circuited according to the diagram of control unit.

Any additional control and security units have been fixed and connected

### 5.2 Electrical Settings

### *ELECTRICAL*

### *SETTINGS*

The running distance, maximum permission speed and maximum force are set automatically during the initializing (reset) process of drive unit. No preliminary settings are need before the first application.



**Attention:** For single right slide sliding door: soft switch 12 must to be set to ON.

#### **Initializing procedure :**

The initializing procedure is implemented when the drive unit is put into use for the first time or after a reset.

- During the first operation, all the values on the second level are reset to standard.
- If the door has been in operation, reset can be made by Reset switch or PSA.
- If the door weight exceeds approx .10kg, all the values on the second level will be reset.
- A RESET will not influence any value of the third level.

**Function of initializing procedure:**

- Test all the hardware of the control unit.
- Check all the connected components(PSA panel, electro-mechanical lock, battery board)
- The door closes to the closing position with a set-up speed 0.07m/s;
- The door is locked and remains if the program selector is set in the locking position. In all other programmed positions, the opening signal is affected automatically.
- The door opens with a set-up speed 0.075m/s to the opening position. The lock is checked and average friction is determined during the process.
- A short-time acceleration of wing checks the quality of the door. The quality determined the maximum permission speed.

## *STARTING UP*

Total wing weight (KG)	Maximum opening speed ( m/s )
25-125	0.65
125-160	0.55
>160	0.4

The closing speed is 66% of the maximum opening speed

### 5.3 Starting up of the System

1. Push the wings to the center position;
2. Set the power on;
3. LEDS 5V/24V and POWER on the control board are lit;
4. PSA: LED 32 flashes about 5 seconds after the power is on, the PSA is initializing and keep working.

### 5.4 Interruption of self -inspection

The initializing procedure can be interrupted by the following operations:

- Program switch or PSA is on the locking position (lock/one way)

The door is locked and remains. The setting up procedure can be completed only after a valid opening command (key), or after selecting another operating function.

## *INTERRUPTION OF SELF-INSPECTION*

- When initializing, the door opens first: Check the joint position of the belt according to the attached drawing.
- The sliding door does not move: No light barrier or no shorting stub.
- PSA: red error LED flashes along with other LED. See chapter 6.2.4
- Driver unit: safety problem.

## 6. Control unit and PSA control panel

### 6.1 General

KS3000 drive unit can be operated as follows:

#### **PSA control panel (Standard)**

Connect the PSA with 25, 26 terminals to realize the functions of the sliding door. PSA can be locked by the following operation:

1. Connect one switch (e.g.: switch lock) to the inputs 3/4 of the PSA.
2. Apply soft switch No.9.

#### **Program Selector (Optional)**

There are four functions to select: lock-up, one-way, full-open (Automatic), partial open (Automatic) (refer to chapter 6.4 Inputs).

Reset through inputs 25, 26 (Press for 2 seconds at least).

## *PSA CONTROL*

### *PANEL*

## 6.2 PSA control panel

All the functions can be identified and set by the PSA control panel. The number of the LED's on the front board corresponds to their binary value.

The soft switch and the related error number are obtained by adding the numbers next to the lit LED's.

The number of the LED on the panel corresponds to binary value. The soft switch and error code can be obtained by adding the binary values.

Examples: The LED 16/4/1 are lit → Soft switch/error code =  $16+4+1=21$ .

PSA control panel has four level functions:

1<sup>st</sup> level Operation function

2<sup>nd</sup> level Setting function

3<sup>rd</sup> level Program function (At this level, settings can only be made by professional expert)

4<sup>th</sup> level Malfunction display function.

### 6.2.1 Operation function (1st level)

1. Operation function sign are above the LED on the PSA control panel.
2. Selection of functions is indicated by the related LED.
3. ← Button and → Button are used for selecting the program. The LED will be effective upon 2 seconds.

Illustration of  
the function

Illustration of the function		
Sign	Function	LED
	Manual operation	LED32
The door is at a standstill; the wing is released and can be pushed manually.		
	Keep open	LED 16
The door opens and remains.		
	Full open (Automatic)	LED8
The door is unlocked. When it is actuated, it will open automatically.		
	Half open (Automatic)	LED4
The door open half when is activated; other functions are as the "Full open".		
	One-way in/out	LED2
One-way traffic. Only the inside (Standard) or outside sensor will take effect.		
	Night	LED1
The door is locked. Only the program selector can actuate the door to open. The inside sensor will take effect only when the door has not closed.		

## *Setting functions*

Setting-up steps of the half open:

1. Select the LED4. After about 2 seconds, the required function can be set in the following position:

Keep open                      LED16: The door is half open.

One-way in/out                LED2: The door is half open when inner sensor is activated.

Lock-up                         LED1: The door can be half open by the program selector.

2. Select the LED8 to restore the full open.

### **6.2.2 Setting functions (Second Level)**

Select the related function through the ← button and → button; press the SET button to actuate the function.

The ← button and → button also be for modifying the value, ← means quicker or longer, → means slower or shorter.

Press the SET button or without any operation for more than 1minute on the PSA, the system will return to the 1st level.

Function	Instruction
*Rst LED 32	Reset. The door starts and initializes (Chapter 5.2), press RESET button under the battery-power mode, drive unit will stop and the control unit is shut off.
*So LED 16	Opening speed. Standard speed is 100% (it is set when self-testing). Adjustable range: 40-100% of standard speed.
*Sc LED 8	Closing speed. Max. speed is 66% of the standard speed. Adjustable range: 25-66% of the standard speed.
*W LED4	Width of half open. The standard width is 65% of full opening width. Adjustable range: 25-90% of full opening width.
*Ht LED2	Hold opening time. Standard time: 2 seconds. Adjustable range: 0-10 seconds. It is selected by the inside/outside opening signals, photoelectric cell LS1/LS2 and is independent of the program selector position.
*Nt LED1	Night keep-opening time. Standard time: 7 seconds. Adjustable range: 0-30 seconds.

**Notice:**

1. The standard settings are validated upon the first commission of the door.
2. If the reset is made after adjustments have been changed on the 2<sup>nd</sup> level, the opening speed, closing speed and keep opening time will be reset to the standard value.
3. After a RESET, the soft switch 18 should be set to ON position (Refer to 6.2.3, the 3<sup>rd</sup> level)

**6.2.3 Programming function**

The user can set the special functions of control unit under different occasions through PSA. The value remains under the reset mode or power failure.

Programming process:

1. Set the lock-up (LED1) on, and press the SET button more than 2 seconds until the ERR LED is red.
2. Press  button to visit the 3<sup>rd</sup> level (If the input time is beyond 10 seconds, PSA will returns to the 1<sup>st</sup> level.)
3. It will display the soft switch 1 after the ERROR LED is
4. Press  button or  button to select the required soft switch. The soft switch numbers are displayed on

the PSA control panel by LED 1/2/4/8/16.

Examples: The LED 16/4/1 are lit → Soft switch number =  $16+4+1=21$ .

5. The ON/OFF state of soft switch is displayed by LED 32.

Convert the state by pressing the two arrow keys simultaneously.

LED 32 ON: soft switch ON

LED 32 OFF: soft switch OFF

6. Reset the soft switch to 0 by pressing the two arrow keys (No LED is lit).

7. Return to the 1<sup>st</sup> level by pressing the SET button ((It will returns to the 1<sup>st</sup> level if no operation is done on PSA.)

No.	Function	LED32	Remark
0	Exit from level 3 to level 1		
1	One-way mode, the door is lock; One-way mode, the door is unlock	ON	
2	Light output on terminal 24; Alarm output on terminal 24	ON	
3	Bell output on terminal 23; Inter-lock output on terminal 23	ON	*
4	The control unit is passive locked; The control unit is active locked	ON	*
5	Emergency close terminal 12; Emergency open terminal12	ON	
6	Full battery-powered mode Only one open or close	ON	
7	Power failure open Power failure close	ON	
8	Standard reduced distance About 180mm reduced distance on opening position	ON	
9	PSA code lock off PSA code lock on	ON	
10	Keep open time (standard)	ON	

	Keep open time direct closure		
11	Winter/ Summer actuation off Winter/Summer actuation on	ON	
12	Drive unit 1 (Rotation direction normal) Drive unit 1 ( Anti-rotation direction normal)	ON	R
13	Drive unit2 (Rotation direction normal) Drive unit2 (Anti-direction normal)	NO	R
14	Adaptor connected to batteries Adaptor connected to the emergency power	ON	
15	All switch restores to default Retain changed values	ON	R
16	Interlock, impulse the memorized Interlock, impulse the non- memorized	ON	
17	Test program off Test program on	ON	→
18	After reset retain set value (level 2)	ON	
21	The batteries mode off at lock position The batteries mode on at lock position	ON	
22	Last battery-action mode on "OFF" at lock position. Last battery-action mode on"	ON	

	ON" at lock position		
27	Standard brake distance Brake distance is 150mm when the door opens	ON	
28	Floor lock not applied Floor lock applied	ON	
30	Emergency-input terminal 12 standard mode Emergency-input terminal 12 emergency-stop	ON	
31	Closing hindrance standard Closing hindrance special	ON	

Default, corresponds to the standard setting, LED 32 is OFF.

→ : The setting will return to standard after a RESET

\* : The selection applies to the standard lock.

R : Only active after RESET

### No.1 One-way operation

In the lock-up position, the door is locked.

In the lock-up position, the door is unlocked.

## **No.2 Light output on terminal 24**

In the position lock-up of the program switch, all the control elements trigger an impulse during 60 seconds on this output.

## **Alarm output on terminal 24**

This output is actuated if an error is detected (Refer to chapter 6.2.4), the output is activated until the error has been eliminated.

## **No.3 Gong on terminal 23**

If the LS1 infrared light detector is cut, it will touch off an impulse lasting for 1 second at the interval of 0.5 second.

## **Interlock input/output on the terminal 23**

Refer to chapter 6.5 for standard interlock.

## **No.4 Standard interlock**

Master lock: If the interlocking is required, one sliding door (normally the inside one) has to be defined as master control system, and the soft switch 3 of the two sets has to be set to ON.

## **No.5 Emergency open instead of emergency close**

**ON:** The door will emergency open when the terminal 12 has

input signal. The order makes the door open at the set speed at any position & program position. Emergency-open has the highest priority.

#### **No.6 Full battery-powered emergency mode (OFF)**

The system automatically switches to battery-powered emergency mode or back-up power network once the main power fails. The functions of the door haven't any restriction until the exhaustive of the battery. Please refer to the soft switch 7 for the last action.

#### **Open /close only once (ON)**

The door open/close for the last time when it switches to battery-powered mode.

#### **No.7 Open / close in the event of power failure (Soft switch 6)**

**OFF:** The door is close and locked at the lock-up position while is open at any other position. If the one-way in/out lock has been selected, the lock remains released even though the door is open.

**ON:** Door closes in all program switch positions, and the control panel is shut off. Use can open the door through waking-up, the door close after the waking-up. If the door is

not yet closed, the above function applies after the battery is exhausted.

#### **No.8 Sliding distance**

**OFF:** Standard sliding distance

**ON:** The velocity will slow down when the open width is up to 180mm.

#### **No.9 Active the PSA code lock**

**Refer to chapter 6.1**

**ON:** PSA code lock is effective, in place of the switch lock.

#### **No.10 Keep opening time**

**OFF:** Keep opening time starts when the door reaches the open position and all start signals aren't executed.

**ON:** Keep opening time starts once the start signal is invalid.

#### **No.11 Winter/Summer**

Winter/Summer function makes sense only for the sliding door which is equipped with one-way sensitive radar.

**No.12 Chang the rotate direction of the drive unit 1**

**No.13 Chang the rotate direction of the drive unit 2**

**No.14 Battery –power mode**

Refer to battery instruction.

**No.15 Reset function**

Resetting all the soft switch that have not be set to default values through soft switch 15.

**No.16 Interlock impulse is memorized (Shut off)**

If the soft switch is ON, the start signal is memorized (Only the opposite door has been closed, the open command will be receive).

**No.17 Test program**

Start the test program (The control unit generates open command automatically), but the start signal is superior to the inner command. Reset operation will delete this function.

**No.18 Values of 2nd level after reset**

If the soft switch is OFF, the speed and the half open width will

restore to the standard value (Refer to 6.2.2)

If the soft switch is ON, all the set values will be retained.

#### **No.21 Battery mode in the lock-up position**

**OFF:** Battery won't supply power in the lock-up position (the main power is switch off), except waking up through the key switch.

**ON** (soft switch 6 is OFF)

Battery supplies power in the lock-up position to realize the emergency operation.

#### **No.22 Setting of locking function in the battery mode**

**OFF :** Standard locking function

**ON:** In the battery mode and lock-up position, if the soft switch is ON, the door will open when the battery power is exhausted (Last action).

In the battery mode and one-way locking position, the door will open and keep open (Last action)

#### **No.27 Setting**

**OFF :** Standard reduced sliding distance

**ON :** Increase the sliding distance to around 150mm, applied

to the heavy leaf and/or the small distance of the two walls.

### **No.28 Floor lock function**

**ON:** The door will open at a low speed within the range of 100mm when switching lock-up position to full open position, and there is start signal at the same time. Then the door continues to open normally.

The door will open at low speed and with reduced force within the first 100mm when a switch lock signal is given on the Lock-up position.

### **No.30 Emergency function on terminal 12**

**OFF :** Set emergency open or emergency close with soft switch 5.

**ON :** If terminal 12 stops ,the soft switch 5 will lose its function. As soon as the emergency signal is actuated, the door will stop.

### **No.31 Closing hindrance**

#### **Standard**

When the door is closing, it will slide reversely as soon as the leaf(s) meets any obstacle. The movement will repeat until the

obstacle is removed and the door closes completely.

### **Special**

The first four closing attempt is the same as the standard. When in the fifth attempt, the door switches to the open position. The fault code 31 will be displayed on the PSA. This situation will be corrected by the switch lock, emergency terminal 12 or PSA manually.

### *Malfunction indication*

#### **6.2.4 Malfunction indication (4th level)**

In the case of a fault, the normal program position display is interrupted every 2 seconds for a duration of 1 second to display a red error code (LED ERR lights up together with error number the fault code).

Error number can be obtained by adding the binary values.

Example:

2 seconds: LED 8 is lit → "Full Open" program position;

1 second: Red LED ERROR lights up together with LED8/4 →

$8+4 = 12$  → The fault code is 12.

If the last fault have been deleted, press the button SET, it can be displayed in the program/selection (Automatic) position (LED8).

PSA will resume to the 1<sup>st</sup> level through actuating the ←

button and → button or no operation within 1 minute on the PSA.

Fault code	Fault		Warning
1	Drive unit 1 defective	F	YES
2	Incorrectly connected plug to adaptor X4	F	YES
3	Drive unit 1 is obstructed during the learning path smaller than 230mm	FE	YES
4	The learning path on the drive unit 1 greater than 9800mm	FE	YES
5	Excessive friction on the drive unit1 to cause the large travel resistance force.	FE	YES
6	Drive unit 2 defective	F	YES
7	Drive unit 2 is obstructed during the learning path smaller than 230mm	FE	YES
8	The learning path on the drive unit 2 greater than 9800mm	FE	YES
9	Excessive friction on the drive unit 2 to cause the large travel resistance force.	FE	YES
10	Control unit is defective	F	YES
11	Short circuit 24V(External connection or control unit)	K*	NO
12	Lock monitor problem, the path smaller than 38mm/lock monitor	F	YES
13	Lock fault	K	YES
14	Error infrared light detector( connection or barrier)	K	YES
15	Power interrupt, (emergency battery mode)	K	NO
16	Emergency battery is not operative	K	YES
17	Close position error	K	NO
18	Floor lock		YES
20	Jumper on power-print not plugged	E	YES
31	Closing hindrance special	F	YES

\* The 24V power supply is switched off.

E Error is identified only during the initializing procedure.

F Fatal fault (System will be switched to manual)

K Error message remains as long as the mode error is

pending.

**NO.10** Basic kinds (Fatal fault) will cause the system interrupt.

**No.11** It will cause the fatal fault during the adjusting. If occur the fault, the power is switched off for 10 seconds and switched on for 0.6 second to check if voltage is normal, if not, repeat the former action.

**No.12** Without the inside position and lock position monitor: three attempts with reset, then display the error. With lock position monitor, the error will display as soon as it is checked.

**No.13** Error can be checked only equipped with the inside position monitor and lock program position

**No.14** Error can be checked in the open position. If in the lock program position, the door will close at slow speed upon 8 seconds, even if the fault remains.

**No.15** Under the emergency battery-powered, the display will keep until the battery is exhausted. (Example: lock-up program position)

**No.16** Fault exists in adaptor, cable, safe and battery.

**No.17** displays the door has been pushed off from the closing position. So check the installation of the door and adjust it.

**No.18** The floor lock fails to open.

**No.20** Short circuit connection for the power hasn't been connected.

**No.31** Closing hindrance special

Eliminate the hindrance by pressing the emergency button, the switch lock or manual mode.

If there are several errors, the error first detected is the one displayed. The warning refers to the warning output and is activated according to the error table (YES).

The LEDs on the electronic PCB's indicate additional status and error displays which complement the information supplied via PSA.

Supply voltages	Internal electronics	5V(ON)
	External voltage	24V(ON)
	Motor power supply	POWER(ON)
Infrared light detectors	LS1/LS2 (ON)	
Emergency stop	STOP (OFF)	
Emergency battery charge	CHARGED( ON) " blinking"	

The status displayed between brackets indicates if the control unit is operative.

## **6.3 Safety elements and functions**

### **6.3.1 Infrared light detectors LS1 and LS2**

- If the infrared light detectors are cut off, the drive unit is reversed. The hold-open time is reset in the open position.

If the door is not closed, the infrared light detector LS1 activates the bell (impulse duration 1 second).

- The infrared light detectors are tested before a closing motion.
- If only one infrared light detector is connected, a bridge must be inserted on the second input.

### **6.3.2 Reversing and stopping mechanism**

- Limit of the static force is Max. 150N;
- Reversing of the closing movement and stopping of the opening movement: After the next impulse, the movement will continue with a slow down speed in the same sense of travel ( $V = 0.18\text{m/s}$ ).

## *MAIN OUTPUTS &*

### *INPUTS OF*

### *CONTROL UNIT*

## 6.4 Main outputs & inputs of control unit

### 6.4.1 Outputs

All the outputs (except the battery check, power supply) are electronic outputs with a maximum load of 24 V, 300MA. These outputs are used for the external application through a relay.

- 24V Power supply 0 V terminal = 2/5/6/8/16/20

24V terminal = 1/7/13/15/19

This power supply is short-circuit-proof and designed for a maximum load of 2 A.

- Terminals 29, 30 and 31 output BATT CHECK.

This output is for indicating the emergency battery status.

Refer to option (0633-999/16). It is the only relay output and has a maximum load capacity of 24VDC/1A.

- Connector X 15 locking output

The electro-mechanical lock is bi-stable.

## 6.4.2 Inputs

- Program selector without PSA

Program position	Terminal 21	Terminal 22
Lock-up		
One-way	Connect 0 V	
Automatic full open		Connect 0 V
Automatic half open	Connect to 0 V with 2 diodes	

- \* Program selector with PSA (AUTOMATIC position)

Program position	Terminal 21	Terminal 22
Lock-up		Connect 0 V
One-way	Connect 0 V	
Automatic full open		
Automatic half open	Connect to 0 V with 2 diodes	

- Terminals 25 and 26

A RESET can be carried out by short-circuiting the terminals 25 and 26 of PSA for 2 seconds.

- Terminal 27 Stop (emergency stop 1)

If this input is interrupted:

\* The motor speed is immediately reduced.

*INTERLOCK  
OPERATION*

\* 5 V and 24 V supply is switched off ----- The sliding door stop.

If this input is closed:

\* The door closes slowly, and then operates normally according to the program switch position.

\* The door reached the CLOSED position with PSA, LED32 flashing, and then operates normally according to the program switch position.

- Emergency stop (X4 on drive unit)

If this input is cut off, the motor stops immediately and stands still. The door can be pushed open manually.

## 6.5 Interlock operation

### 6.5.1 Principles

- Both doors must be respectively plugged into the same power supply;
- Interlock function in program switch position Night and Exit (locked);
- In order to guarantee the interlock function, both program switches must be in the same position;
- However, the communication via the interlock connection functions in any position of the program switch. This

means that doors, which are not in a locked program switch position, are capable of blocking other doors, which are in a locked program switch position. Conversely, the pending signal is not taken into account.

- Opening commands are memorized.
- Memorization of the opening impulses can be suppressed by soft-switch no. 16.
- The EMERGENCY OPEN or EMERGENCY CLOSE function has priority.
- If a door remains hooked in the locking mechanism, the other door is released after a short delay time has expired.
- Double openings are prevented by a special timing order arrangement, even if two opening commands exist at the same time.

### 6.5.2 Procedure

#### *Procedure*

Both doors are closed. The MASTER supplies a signal, which must be answered by the SLAVE; otherwise the signal is repeated by the MASTER. If in the reverse case the MASTER fails to respond, the SLAVE will repeat the request. If one of the doors is not CLOSED, it transmits a 0 V signal to its interlock output. After a RESET or a mains failure the

synchronization is always made by the MASTER. This ensures that the setting-up procedure is carried out in accordance with the requirements of the interlock.

- The interlock can also be combined with KS3000 sliding door, folding door.

### 6.5.3 Safety interlock

#### *Safety interlock*

- Four opening elem. (e.g. push-buttons) are required.
- After an opening element (A1) or (B1) has been actuated. The respective door is opened and closed again after the hold-open time has expired. In order to open the second door, another opening element (A2) or (B2) must be operated within the interlock.

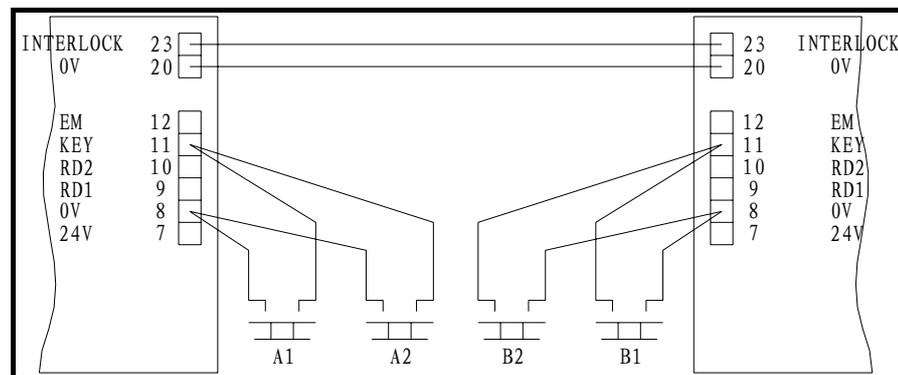


Figure 6-1

#### Hospital interlock

- Only two opening elements are required.
- Soft-switch no. 16 must be positioned on OFF.
- After an opening element (A) or (B) has been activated,

the respective door is opened and closed again after the hold-open time has expired; then the second door is opened without any actuation of an opening element.

- For safety reasons at least one opening element (C) must nevertheless be installed within the interlock area.

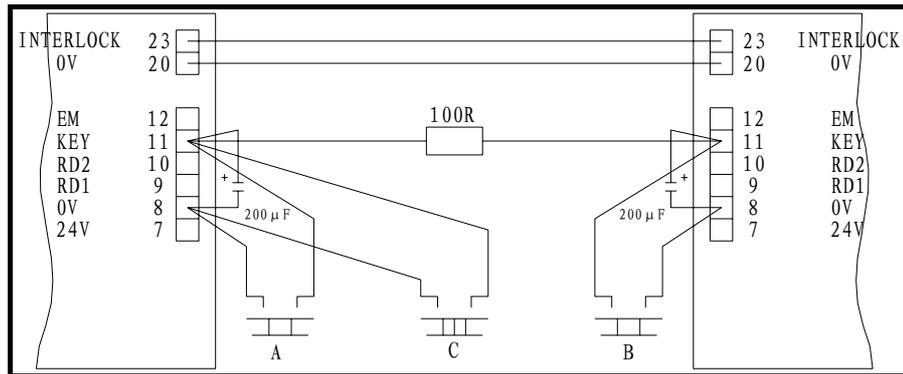


Figure 6-2

**PARTICULAR**

**INSTRUCTIONS**

**6.6 Particular instructions for the users**

**6.6.1 Infrared light detectors fault**

If the installation is open when the premises close, because the infrared light detectors are interrupted, the door will close nonetheless at slow speed when the system is switched to the program position NIGHT, in spite of the fault.

**6.6.2 Emergency battery “wake-up”**

The emergency battery set allows unrestricted operation for approx. 30 minutes.

**Emergency battery**

**“wake-up”**



## **7. Maintenance and Troubleshooting**

### **7.1 Security and warranty**

Regular maintenance and checking at least once a year is absolutely required in order to guarantee a long life span and safe operation of the KS3000 sliding door.

Maintenance must be carried out by specifically trained personnel.

If the maintenance is neglected or carried out by unauthorized personnel, manufacturer will not be responsible for any damages that might occur and the consequences.

Any subsequent intervention or modification of the door should only be carried out by specially trained personnel.

#### **Warning:**

Before working on live elements, always pull out the power plugs and the emergency battery plug!

User must pull out the power plugs and the emergency battery plug before working on electrical elements!

## 7.2 Maintenance

Check the function of different elements according to the operating instructions.

Any defective safety elements should not be disconnected before updating to avoid jeopardizing the safety of the users.

In order to guarantee the availability of the installation, a preventive replacement of any elements showing signs of wear is strongly recommended.



**Attention:** Don't use floating water to wash machine box.

Any corrosive detergent is forbidden.

Installation	Check	Clean	Grease	Adjust
General installation condition	V			
Manually slid the door freely	V			V
Door guides/ground rail	V	V		V
Sealing joints	V	V		V
Side panels/protection wings	V	V		
Covers/Hinge type cover	V	V		
Fastening screws and nuts	V			
Clean the machine	V	V		
<b>Drive unit</b>				
Drive unit	V	V		V

Retentiveness in closed position	V			
Transmission elements: teeth belt, flat belt, cables, rods, and chains	V	V		V
Roller and clamping roller/ traveling carriages	V	V		V
Carrier rails	V	V	V	
Open/ close positions	V			V

### Control unit

Electrical connections	V			
Control functions	V			V
Program switch (Check all the positions)	V			
Emergency battery	V			

### Control Elements

All the control elements: sensor, radar, Key operated switch, contact carpet.	V	V		V
---	---	---	--	---

### Safety Elements

Reversing /stopping mechanism	V	V		V
Door locking/ manual unlocking mechanism	V	V	V	V
Mechanical emergency opening	V			V
Monitoring switch	V	V		V
Light barrier	V	V		V

Additional safety elements	V	V		V
----------------------------	---	---	--	---

### Miscellaneous

Stickers/rating plates	V	V		
------------------------	---	---	--	--

## 7.3 Troubleshooting:



**Warning :** Pull out the power plug before doing any check or other work on the drive unit.

Malfunctions	Visual checking	Reason	Solution
Door is blocked in any position	Emergency stop (X4 drive unit) Emergency stop terminals (27.28) No LED lit on PSA	No wire link or defective connection PSA on manual NO power or fuse fine-wire defect	Make a bridge connection Check PSA on automatic
Door is blocked in open position	Program switch (PSA) Emergency open Light barrier LS1/LS2 connected. Opening element	PSA on open or manual Light barrier cut, defective or wrong connections	PSA on automatic Check connection and the light barriers LS1/LS2
Door remains closed	Program switch (PSA) Emergency closing	PSA on lock, one way, manual position. Emergency close activated	PSA on automatic Check the connections or element.
Door keeps on short opening and closing movement	Door movement	Stopping mechanism active Defective control unit	Check the mechanical part (traveling carriage, guide ways, wings, etc) Replace the control unit.
During the closing motion, the door suddenly reopens automatically.	Door movement	Reversing Mechanism active Defective control unit	Check the mechanical part (traveling carriage, guide ways, wings, etc) Replace the control unit.
The locking is not energized in the program switch position NIGHT	Door attempts to open but remains locked	Defective locking magnet Defective locking PCB Defective control unit	Check the connection Measure the magnet Replace the locking PCB Replace the control unit

*ENVIRONMENT*

*PROTECTION*

*TREATMENT*



**Warning:** It's impossible to eliminate all potential dangerous malfunctions immediately. If necessary, the door should stop running before overall repair and checking.

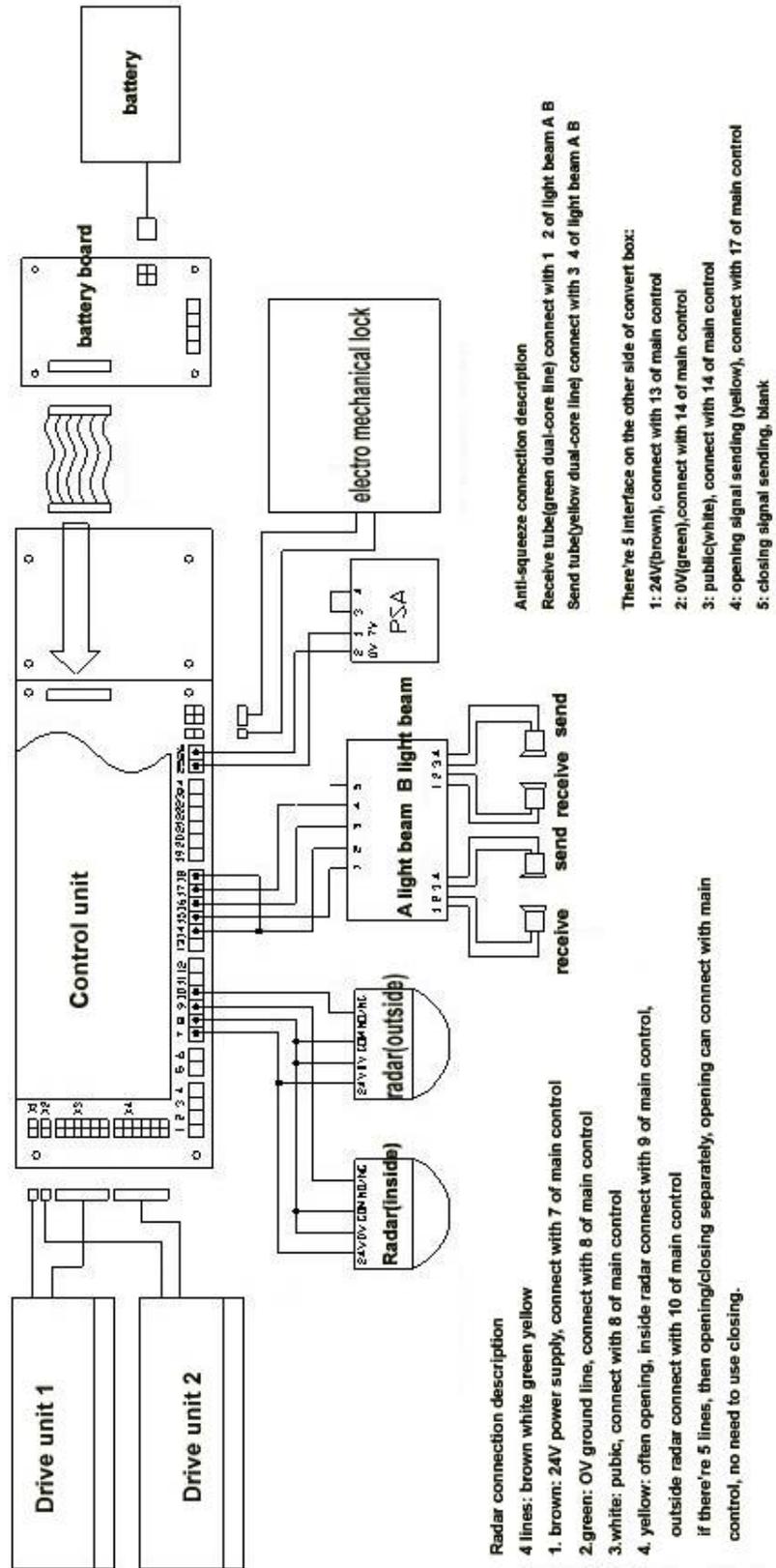
Each maintenance and troubleshooting which has been carried out should be fully noted in the check book.

## 7.4 Environment protection treatment

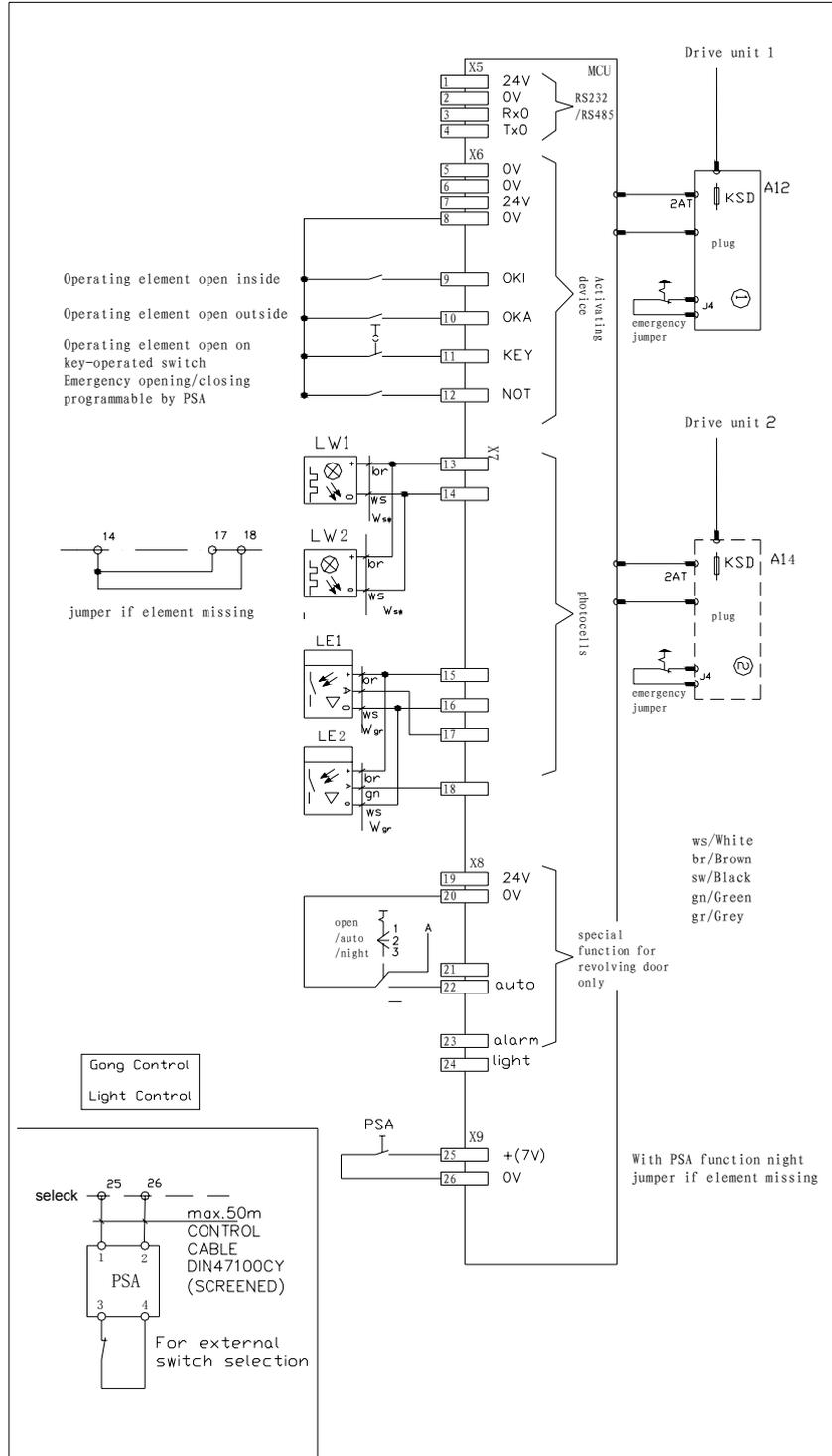
An ecological acceptable disposal of the sliding door is possible, by separating and recycling the individual materials.

No particular inspection is required for the environment protection.

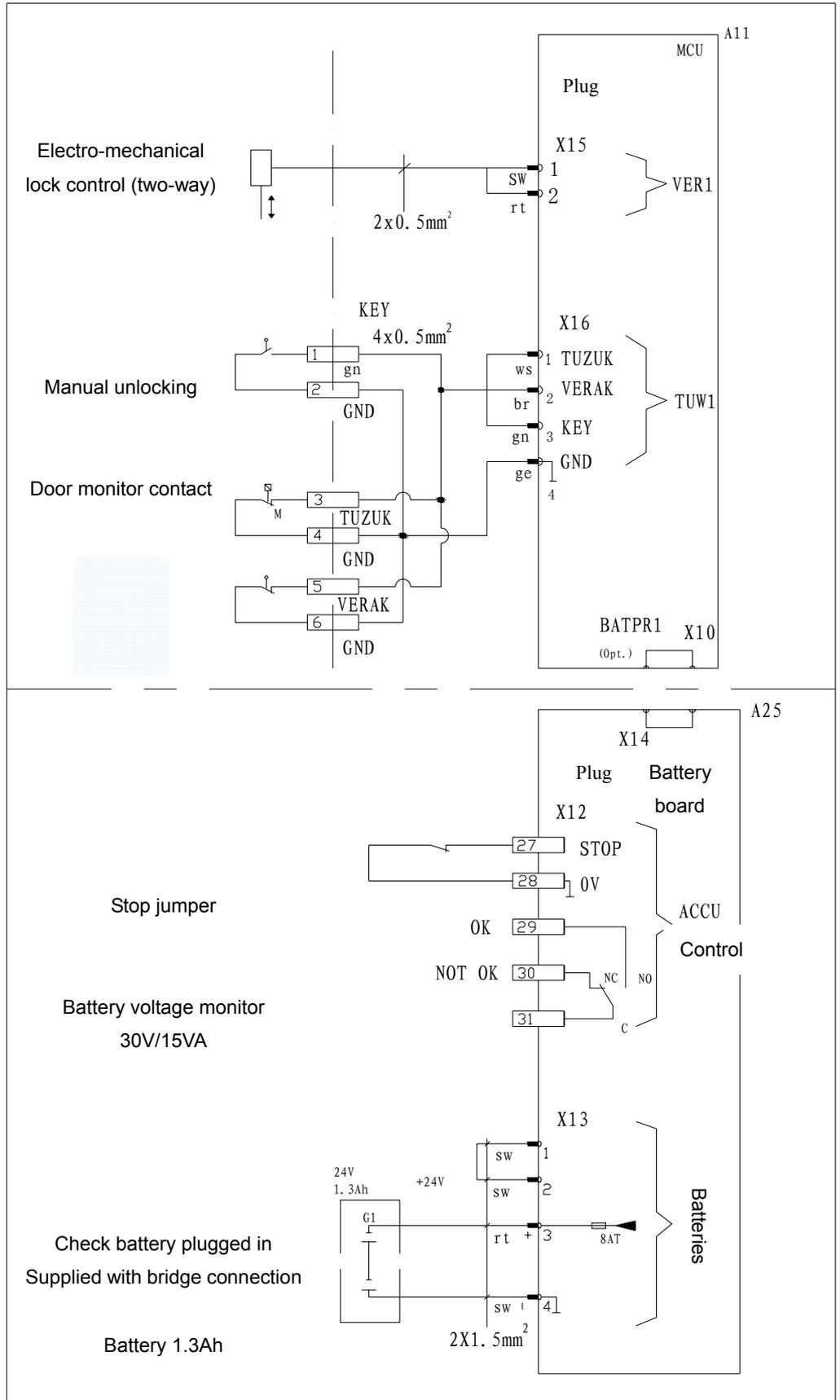
# Appendix 1: Electrical equipment connection diagram of KS3000



## Appendix 2: Connection diagram of KS3000 electrical equipments

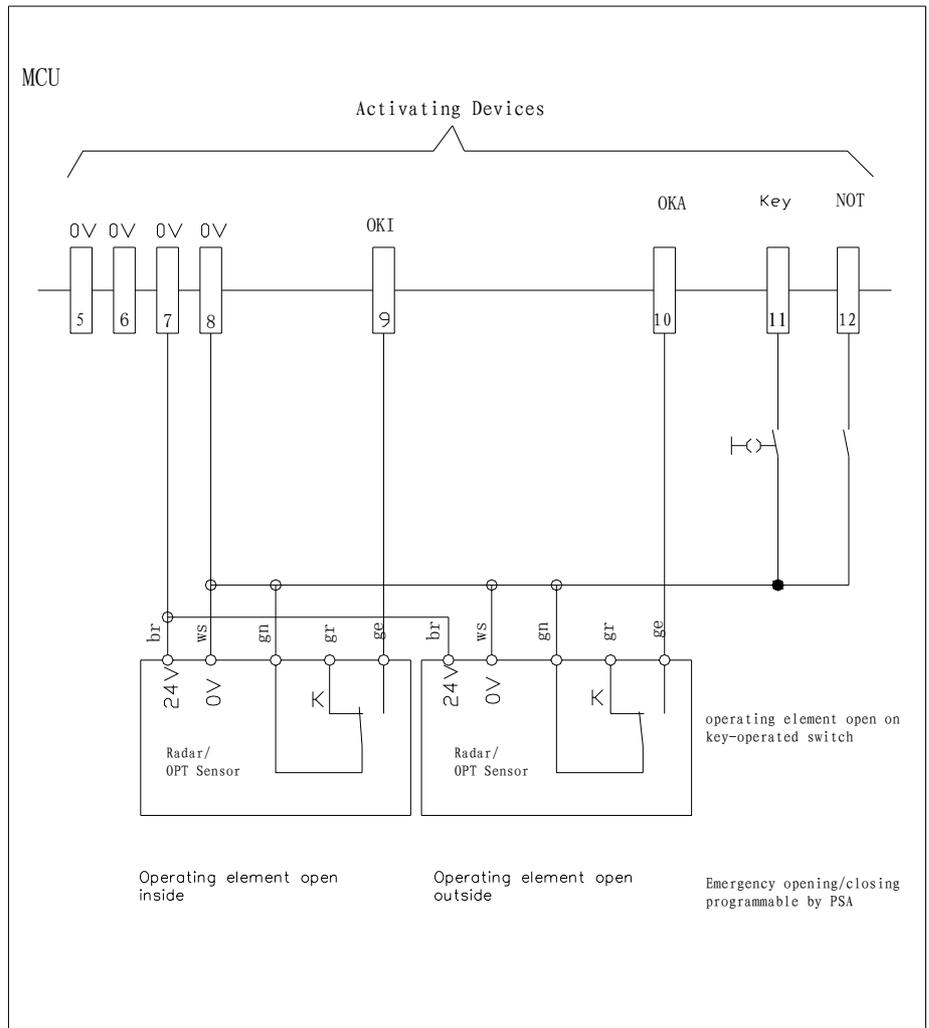


Appendix 3



Appendix 3: Wiring diagram of battery & Electro mechanical lock

### Appendix 4: Wiring diagram of starting-up signal





*Automatic door*

*KBB REVOLVING DOOR*

*KBB SLIDING DOOR*

*KBB SWING DOOR*

*KBB CURVED DOOR*

*KKBB HERMETIC DOOR*

*BB TELESCOPIC DOOR*

*KBB PLATFORM SCREEN DOOR*

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